

Stirling Local Development Plan: Draft Proposed Plan

Transport & Access Consequences of Development Allocations:

Background Report: October 2011

1. Purpose of Paper

This paper summarises the key transport issues considered by officers and/or members in proposing the preferred growth option included in the Proposed Local Development Plan being presented to Council on 6th October.

In doing so, it builds on the information included in the Transport Issues Paper (April 2010) and the Main Issues Report (May 2010).

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2. Updating Network Context

Since the Main Issues Report was published, a mid-term review of the Local Transport Strategy was concluded in May 2011. Key issues identified include:

- A reduction in traffic volumes in the City between 2007 - 2010, reflected by an increase in average speeds on most strategic routes
- Modal share has remained at similar levels since 1991 i.e. the proportion of car trips are not increasing – although car ownership is continuing to increase.
- The % of Stirling residents working or studying within Stirling (2001) is 73.1%, (Glasgow 6.5%; Falkirk 6.0%; Clackmannanshire 3.2%; Edinburgh is 3.1%). while 68.9% of Stirling's workforce come from Stirling (9.8% from Clackmannanshire and 8.8% from Falkirk)

The review recognised that Stirling is an attractive location for residents and business in part due to its good access to the Central Belt, and hence recognised the role of Stirling's Local Transport Strategy in maintaining this attractiveness (in terms of accessibility and physical environment), whilst maximising the proportion of residents who choose to access employment, services and leisure locally.

3. Constraints and Opportunities

While traffic issues within Stirling City appear to have improved over recent years – in part as a result of the delivery of local (eg park and ride, radial and ring road improvements) and national (opening of Clackmannanshire Bridge and the Stirling to Alloa passenger rail service) transport programmes - there remain threats to the ability of the current transport network to support the aspirations reflected in the development plan.

3.1 Urban

- Stirling City is a compact urban area with a limited number of gateways and radial routes (in part due to geographical constraints such as the River Forth) The limited number of opportunities for traffic to distribute around the network increases the level of impact that a development, or an accident, or maintenance works will have across the network. The key pinch points are:
 - Pirnhall Roundabout
 - Clock Roundabout
 - Cornton Rd / Causewayhead Rd junction and Causewayhead Rd
 - Kerse Rd / Craigs Roundabout / Wellgreen / Port Street
 - St. Ninians Roundabout / Glasgow Rd
 - Airthrey Rd / Causewayhead rd junction

Only trips originating in and leaving Stirling from the west of the City do not use these routes.

Threat: traffic growth which will increase congestion at the above points, which will quickly have a knock on affect on adjacent pinch points and decrease the accessibility to and from Stirling for businesses, visitors and residents.

- Stirling City has good opportunities for managing travel demands in a manner consistent with Local, Regional and National Transport Strategies:
 - The compact nature of Stirling City means that a good proportion of local trips could be made by walking or cycling.

Threat: development patterns which distance people from local facilities, services and opportunities. With the consequence that car owning households may not be able to walk or cycle to destinations.
 - Stirling, Bridge of Allan and Dunblane rail stations provide good levels of service to Falkirk, Glasgow and Edinburgh
 - The urban area is well connected to the motorway network.

3.2 Rural

- Few settlements in the rural area have either a significant range of facilities, services and opportunities and/or a good public transport service to access such.
- Most routes in the rural area will either be major or minor roads. In both instances, where dispersed patterns of development occur coincide with routes where there is relatively fast traffic and/or poor visibility, road safety issues will arise. Pedestrian access to facilities or public transport is also unlikely¹.

¹ See Roads, Transport and Open Space response (December 2008) to a Planning Services consultation on 'Housing in the Countryside Policy' This subsequently became Policy H10A in 2009

4. Development Pattern

As a consequence of the key issues highlighted above, as well as other considerations, there is support for the general pattern of development which:

- Concentrates the majority of development in the Stirling urban area
- Concentrates limited growth in smaller settlements

4.1 Issues relating to the Growth Scenarios Presented in the Main Issues Report

In considering development patterns for the Stirling City area, the Main Issues Report proposed high, medium and low growth scenarios. All placed an emphasis on development in or close to the City, which helps reduce the need for travel. The key difference between the scenarios were whether development occurs at:

- Durieshill
- Between Causewayhead and Bridge of Allan
- A new settlement
- Fallin

The differences between these 4 locations (and therefore the 3 scenarios) were considered in terms of:

- Reducing the need to travel / accessibility to services
- Ability to travel by sustainable modes
- Impact on local transport network (informed by traffic modelling of the 3 growth scenarios)
- Impact on strategic transport network
- Mitigation

The key issues arising from this high level assessment were:

- Traffic problems arising from the Local Plan allocations are likely to start occurring before 2017. New development will account for approx 12% of total traffic
- There will then be little difference between the LDP options until 2022 – 2032. By 2032, high growth option results in 50% more additional traffic compared to the low growth option
- Causewayhead best placed to enable a choice of means of access to a range of services and opportunities
- Fallin: good bus access to employment, but not further education or other services
- Any new settlement is unlikely to have as good a range of facilities as developments which are part of an existing built up area. This is likely to mean more trips outwith the settlement, with less likely to be taken by sustainable modes
- Cont..

- Access to Stirling via Pirnhall is critical to the perception of how accessible Stirling is. 70% of the new housing and employment sites access the motorway network via Pirnhall (i.e this proportion is even greater if existing allocations such as Durieshill are included).

In conclusion, Option 2, the low growth scenario, could be expected to:

- present the fewest transport issues
- also provide solutions to best manage trips – and encourage trips to remain – within the Stirling conurbation. This is predominately due to encouraging growth within the City in the Causewayhead area, rather than accommodating growth in Durieshill where residents are likely to look beyond Stirling to the central belt for job and services.

4.2 Issues relating to the Preferred Growth Scenario

The final identification of sites to be included in the preferred growth scenario was confirmed in August 2011, later than had been hoped in spring 2011. The level of assessment to identify the precise impacts of the development proposals is therefore less at this stage than it could have been, however, it should be remembered that this remains within the context of:

- The general pattern of development provides opportunities for transport and accessibility issues to be resolved as best they can.
- In opting for the high growth scenario, the Council could realistically expect the scale of transport and accessibility issues that require to be addressed to be greater than for the lower growth options.

Nonetheless, the following conclusions are able to be made about the proposed growth scenario:

Travel Generated Carbon Emissions

A simple assessment of the carbon emissions generated by travel of some of the key development sites included in the proposed scenario (Table 1 overleaf) reinforces the principles applied to date that locating development close to the City where there is both a shorter distance to a range facilities and a better choice of means of access results in lower carbon emissions than sites outside the City.

	Modal Split	C02 Car (kg/day)	Relative 'Score'
Durieshill (2500)	SHTS ²	67411	0.89
SSG (800)	City (Census)	15209	0.63
Airthrey Mains (800)	CTS Target	15368	0.64
MOD (200)	CTS Target	2316	0.51
Plean (667)	SHTS	14860	0.98
Cowie (510)	SHTS	6044	1.00
			Lower Score = Lower Emissions

² SHTS – Scottish Household Travel Survey – provides information including mode share from a sample of households across the Stirling Council Area.

Location and Phasing of Development

Table 2 below shows the new and 'existing' allocations housing allocations proposed in the preferred growth scenario, and when they may be developed³. The table helps highlight when and where the transport networks will be placed under the pressure.

	2012 – 17	2017-22⁴	2022-32	Total
City North	293	450	614	1357
City West	1019	250	180	1449
City Centre	395	266	200	861
City East	150	0	0	150
Eastern Villages	89	474	1197	1760
City South	292	1460	1850	3602
Dunblane	148	10	100	258
Rural	467	205	100	772
Total	2853	3115	4241	

The table helps highlight that in:

2012 – 2017 (the next 5 year phase of the CTS): The principle growth will be in and around the City Centre (MOD site, Cambusbarron, Raploch etc). This will put pressure on:

- the inner ring road and
- access to the City along the west-east axis.

2017-2022: The rate of development is likely to be greater than the first 5 years, both due to the proposed phasing, but also due the possibility that there may be a more stable economic climate. If significant build out of the first 5 year allocations has begun, the major development sites to the south and north of the City, plus development in the Eastern Villages is expected to have begun. This will put pressure on:

- the A91 and Pirnhall Roundabout
- A872 Glasgow Rd
- Airthrey Rd / Causewayhead Rd, Cornton Rd/ Causewayhead Rd/ Clock Roundabout junctions, and Henderson Street.

2022 – 2032: Will continue to see further build of the sites referred to in 2017-2022 above, exacerbating the problems referred to.

³ The phasing proposed in the Local Development Plan indicates the order in which sites may be developed. It is unlikely that sites will be developed before these dates, but they may be developed after these dates subject to housing demand and economic conditions.

⁴ While the LDP does not identify phasing between 2017 and 2032, some phasing was necessary to enable any transport modelling. A linear build of the sites has been identified.

Local Traffic Modelling

Traffic modelling of the proposed growth scenario which has been undertaken to date suggests:

- Traffic problems arising from the Local Development Plan allocations are likely to start occurring before 2017. The City road network while not suffering from permanent congestion, will become significantly more unstable, with a greater risk of congestion and unreliable journey times (the latter is of particular concern to businesses)
- the average speed of vehicles across the network is expected to reduce from 36 mph to 29mph and the average time taken for a journey will increase by 2 min from 6 to 8 min by 2017

The above assumptions:

- do not include tourist trips
- assumes current modal share
- no CTS improvements

Some sensitivity testing using the model has begun to take account of such factors.

Effect of changing the modal share (i.e. the proportions travelling by car vs walking, cycling and public transport)

- If there are 10% less car trips for new development (i.e. 10% shift from car to walk / cycle / bus) journey speeds are likely to reduce by a smaller amount from 36mph to 32mph.
- However due to the 'base' volume of trips within the network (i.e. those trips that are a consequence of existing land uses), then there will still be traffic growth (see Appendix A for examples),

CTS improvements

Due to Council finances, the funding for the City Transport Strategy has currently been removed. The figures for the proposed growth scenario above therefore do not assume any CTS improvements, other than those improvements which are required with committed development. However, sensitivity testing has shown that if the bare minimum CTS package is delivered over 2012 to 2017 then

- Journey speeds reduce from 36mph to 30mph rather than 29mph, but more importantly the network will not be as unstable, and the risk of congestion will be reduced.

Impact on the strategic network

In preparing the Strategic Transport Projects Review (STPR) - a purpose of which was to determine the likely future demands on the strategic transport network and the required response to these future demands - Transport Scotland had previously assessed an expected level of growth in Stirling and its impact on the strategic transport network.

Work was therefore undertaken with Transport Scotland to ascertain whether:

- The growth assumptions used by Transport Scotland were sufficiently similar to those emerging in the MIR growth scenarios (in particular, was the MIR high growth option significantly higher than a high growth scenario assumed by Transport Scotland)
- There was a greater than expected impact on the strategic network at any point due to the distribution of proposed development.

Confirmed with Transport Scotland (early 2011) that the overall level of growth in Stirling is similar to that included in LATIS which was used to inform STPR. It was also agreed that local area modelling using Stirling Paramics traffic model would be able to confirm whether the distribution of development would have a greater than assumed impact at any one point of the strategic network (in particular Pirnhall M90 / M9 / A91 / A872 junction). This work is ongoing.

5. Development Sites

A brief assessment of all proposed sites identified through the LDP process, were made on the basis of their ability to ensure a safe and realistic choice of access by motor vehicles, walking & cycling, and by public transport⁵. In addition, varying levels of engagement were undertaken with proposers of specific sites. The following is a brief summary of the key issues relating to specific sites:

5.1 Small Settlements (housing)

A number of sites were identified in the smaller towns and villages across the local planning authority area. As could be expected many of these proposals were on the edge of the settlements. Where this was the case concern was expressed with regard to the speed of traffic along stretches of road where there is development along only one side of it, with the request that such development should either be discouraged or provide for new or extending village gateways to ensure traffic is slowed down.

5.2 Eastern Villages (housing)

The scale of proposals in Cowie, Fallin and Plean are significant in comparison to the size of the existing settlement.

- while the level of services and opportunities in these settlements is relatively limited, it is acknowledged that the proposed level of growth is intended to support the retention and improvement of services (including public transport) – which is essential given the lower levels of car ownership in these communities. Nonetheless, there is no guarantee that the commercial public transport operators will provide improved services to any new development area⁶.
- development on the edge of settlements should provide for new or extending village gateways to ensure traffic is slowed down (as in the smaller settlements above)
- there will be a significant increase in both vehicle and pedestrian (and potentially cycle) trips within the settlements. It is likely that improved pedestrian facilities will be required.

While there is the opportunity for regeneration to enhance the range of local facilities available in Cowie, Plean and Fallin, this is less likely in Throsk due to the lower base it is starting from. Hence local facilities are less likely to be within walking and cycling distance to any potential residents of Throsk, and therefore reliance on access to a car is far more likely.

5.3 Kippendavie, Dunblane (housing)

The site is too remote from the centre of Dunblane to expect the vast majority of trips to be made by any mode other than the car.

⁵ See 'Site assessment' submissions

⁶ See response to 'Main Issues Report'

5.4 Airthrey Mains (housing)

Development in the Bridge of Allan / Causewayhead head area is supported in principle because of

- the ability of the site to be close to existing facilities and to existing bus services and therefore best able to maximise the proportion of trips which are undertaken by walking, cycling and public transport.

However:

- the site is bounded by three pinch points in the network at Airthrey Rd / Causewayhead Rd junction; Cornton Rd / Causewayhead and Clock junctions and Henderson St, Bridge of Allan and traffic issues affecting these locations will occur unless the ability of this constrained area to accommodate this additional traffic is provided. The current CTS programme includes a proposal to provide a link through the site and across the river to Kildean. Either of these links would help spread the load across the immediate network and/or the wider network – as well as having other advantages. The site should incorporate the former link into its development framework.
- While the rail services from Bridge of Allan rail station to Stirling, Edinburgh and Glasgow are attractive, relatively few users walk or cycle to the station, choosing to drive instead. Any significant development in the Bridge of Allan area is likely to significantly increase the parking pressures at the station.

5.5 South Stirling Gateway (housing / retail superstore / employment)

Development within the outer ring road is most likely to provide access to existing services and opportunities by a choice of modes. The area bounded by the southern extent of Bannockburn, the A91 and the A872 perhaps provides the single largest opportunity for growth within the ring road.

- The site is large enough to provide a range of facilities to meet local needs such as a primary school and a superstore
- As an extension of the built up area, better able to attract public transport services
- The site can be integrated via walking and cycling routes into the existing urban framework and facilities at Bannockburn / Whins of Milton
- Any traffic will access / exit directly via the strategic radial routes of A91 / A872
- A strategic park and ride site⁷ included with the site would provide good access to both Stirling City Centre as well as to Glasgow and Edinburgh

⁷ Included in both the current City Transport Strategy and Transport Scotlands 'Strategic Transport Projects Review'

5.6 Pirnhall Services (employment)

The removal of this allocation from the Main Issues Report was supported due to:

- The potential impact on the efficiency on the Pirnhall junction in addition to all the other development proposals
- The inability of the site to be realistically accessible by a choice of modes (as required in Scottish Planning Policy) without the provision of substantial mitigation measures.

5.7 Manor Farm (employment)

While the Manor Powis site is remote from any residential area in Stirling (and therefore not realistically accessible by walking or cycling) – it does have a good level of bus service as it is adjacent to the Stirling to Alloa bus route, and realistic cycle links could be made to the settlements in Clackmannanshire. Attractive cycling links towards Stirling would be reliant on improvements in the Manor Powis area.

5.8 Millhall / Crookbridge (employment and household retailing)

Access to the site is via the A91 ring road and A905 Kerse Rd radial route. Hence while there is potentially good vehicular access, this is via the already congested Kerse Rd. In addition as employment sites need to be accessible by a realistic choice of access, development should look to improving access to the area from residential areas.

5.9 Durieshill (housing / employment)

The site sits outside the outer ring road and remote from the Stirling built area. Unless there is a sufficient range of local services and opportunities, a good proportion of trips would have to be beyond the site. The proposal needs to:

- Minimise the number of external trips through the provision of a range of services and opportunities on site
- Maximise the number of external trips that can be made by public transport
- Address the impact of residual car borne trips on the strategic and local road networks.

Appendix 1 includes the text submitted to be included in the Durieshill Supplementary Guidance.

5.10 Bannockburn Hospital

As a housing site, the development is not within realistic or safe pedestrian access of any facilities. However, because the site lies on the main bus route between Stirling and Larbert / Falkirk it benefits from reasonable access by public transport and is therefore able to provide a reasonable choice of access as an employment location.

5.11 Craigforth (employment)

Issues around the accessibility of this site for active travel modes (walking and cycling) will require to be addressed as part of the expansion of the site

6. How can the Council respond to proposed growth?

6.1 Development Management process

The importance of encouraging a greater proportion of trips to be made by walking cycling and public transport is critical to reducing, or at least delaying, the levels of capital investment required to getting the most out of the City's transport network and reducing the risk of severe congestion incidents. At the very least this needs to be achieved with new development, whose new trips it will be much easier to encourage to be undertaken by walking, cycling and public transport.

Hence the development management process must strive to ensure that measures required to minimise the number of car trips from all new development be implemented and enforced.

6.2 Local Transport Strategy

The mid-term review of the Local Transport Strategy confirmed that Stirling's LTS remains an appropriate framework for delivering transport and access improvements to support the economic, social and environmental objectives of Stirling Council and the Stirling Community Planning Partnership. As the transport strategy aims to address existing and future transport demands, and the LDP heavily influences the new travel demands in an area, a commitment was made⁸ to review the delivery package for the City area (the CTS) once the pattern of development to be proposed was known. However the final identification of sites to be included in the proposed growth scenario was confirmed in August 2011⁹, later than had been hoped in spring 2011.

Timetable for CTS and TVRA Programme Reviews

The process for reviewing the transport packages has now commenced, this involves:

- Ongoing: Model impact of preferred development pattern and identify problem locations (ongoing)
 - Test the sensitivity of this impact against different modal share scenarios and different destination scenarios
- Oct – Nov 2011: Propose and test solutions, including
 - Testing the effectiveness of different CTS packages
 - Working with Transport Scotland on understanding the impact of development on the Pirnhall junction and testing appropriate solutions.
 - Develop a Towns, Villages and Rural Area Transport Programme (TVRA)
- Dec 2011: discuss draft CTS and TVRA programmes with a member working group, including
 - Alternative packages for the City area

⁸ See minutes of Executive Committee of 26/05/2011.in relation to the Mid-term Review of Stirling's Local Transport Strategy (<http://minutes.stirling.gov.uk/pdfs/executive/minutes/ex20110526.pdf>)

⁹ The final housing, employment and retail allocations were received between 1Aug2011 and 11 Aug2011

This timetable will enable transport programmes which respond to the proposed LDP allocations to be confirmed by the Council prior to the LDP being submitted to the Scottish Government in summer 2012.

Key Issues for CTS programme review

Key issue for CTS is how to retain and improve (relative) attractiveness of Stirling in terms of

- accessibility (residents / business / visitors)
- as a residential location

The measures included within the City Transport Strategy to achieve the above can be grouped under four headings:

- **Sustainable communities:** Maximising opportunities for residents to access jobs and services by walking, cycling and public transport to ensure access for all
- **Attractive City Centre:** Maximise attractiveness of and access to Stirling City Centre
- **Accessible City:** Maintain accessibility to/from Stirling City and along the radial and ring roads
- **Supporting Development** at other strategic employment locations across the City

The CTS programme must consider

- What interventions are included under these headings; and
- When they are required

In doing so, consideration should be paid to:

- When (including which CTS phase) and where traffic problems will be generated
- The need to encourage a modal shift, and the need for this to be encouraged sooner rather than later

At the time of writing, the rate of development remains uncertain. The LTS mid-term review committed to a review process that ensured that the CTS and TVRA remained responsive. Such a framework allows traffic levels to be kept under review to ensure that the implementation of necessary measures can be made as and when required.

Consequences of the CTS review for the Local Development Plan

Stirling's Local Development Plan will be supported by supplementary guidance for Ensuring a Choice of Access, which sets out how we will consider the transport and access consequences of new development. One of the ways the transport consequences of development in the City will be mitigated against will be a contribution to the City Transport Strategy. The exact contribution is determined by the cost of the City Transport Strategy programme which is developed. The draft SPG currently includes the principle of the contribution and how it will be calculated using the current figures.

It will be important to confirm the City Transport programme and its cost before the final LDP and its Supplementary Guidance is approved in summer 2013, to enable the contribution figures to be updated.

Car Traffic Growth Scenarios

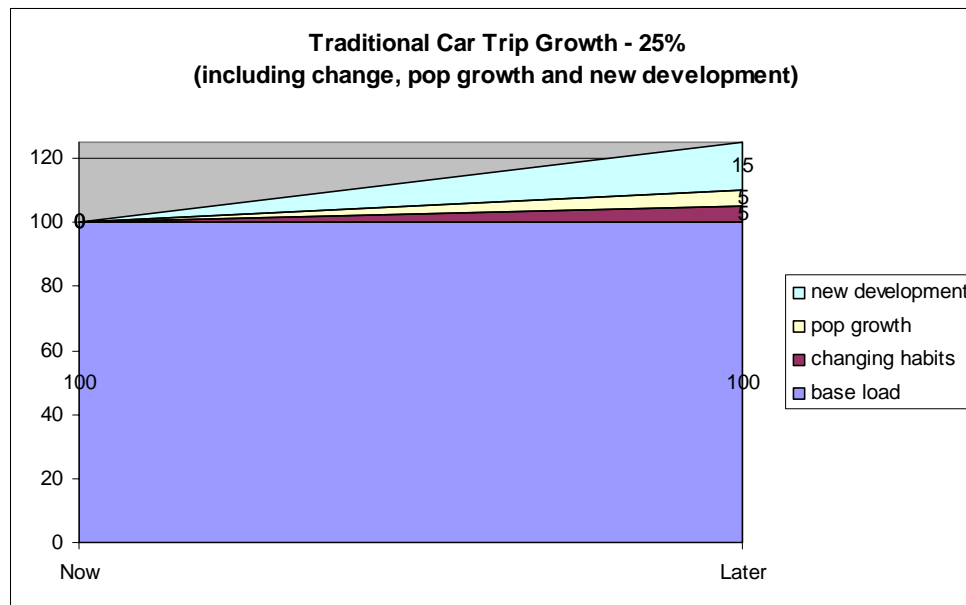
The following three graphs illustrate the effect changing the number of new vehicle trips generated by new development on the overall levels of traffic growth. They are intended as an illustration of a concept rather than actual values applicable to the Stirling area.

These figures illustrate that even if significant modal shift away from the use of the private car is achieved it is still likely that traffic levels will increase over time.

It also highlights that if the rate of growth of traffic levels is to be reduced measures will need to have an effect on the existing traffic in addition to restraining the traffic generated by new developments and changing travel habits.

Scenario 1

This represents the “traditional approach” with the overall level of traffic increasing over time as a result of population growth, changing habits and new development. In this example the overall growth over the period is 25%

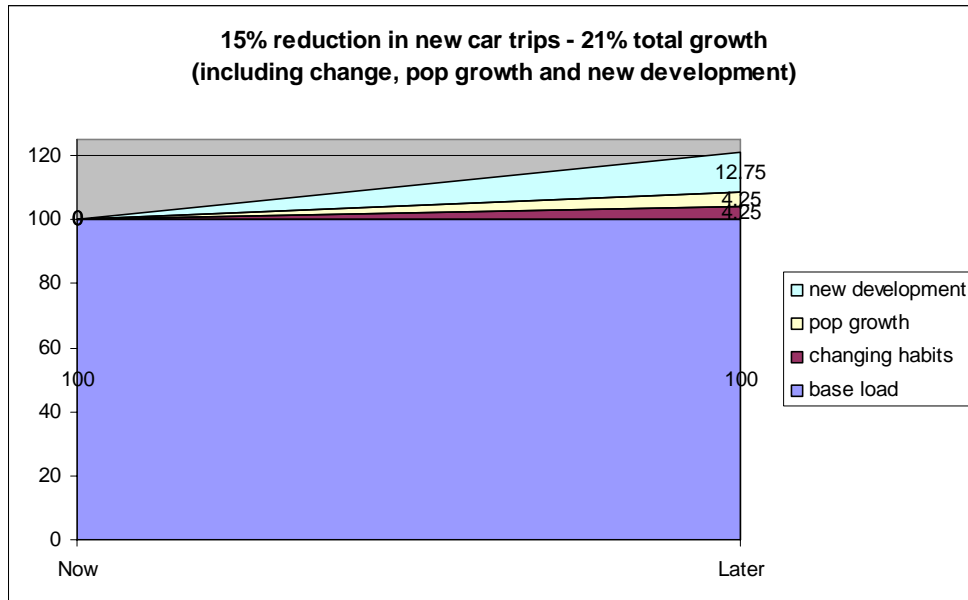


The traffic growth in this example consists of:

- **Existing Population, Changing Habits** – existing population making more use of a car for journeys where other modes may have been used or having additional cars available to the household
- **Existing Population, Population Growth** – Trips arising from an expansion in the existing households.
- **Increased Population, New Development** – Trips resulting from new development sites, Housing, Offices etc. These developments lead to an increase in population due to new households and employment leading to in-migration

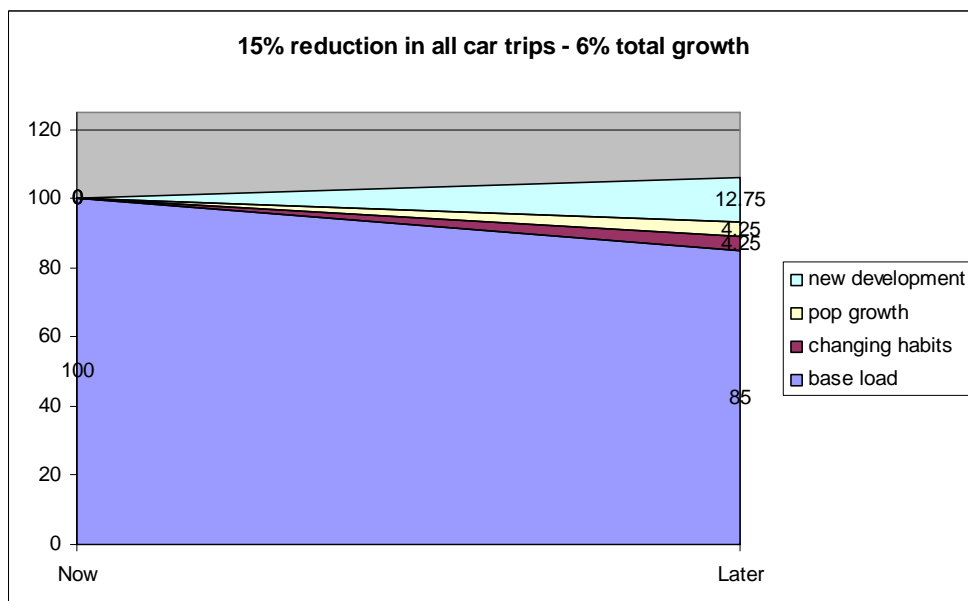
Scenario 2

In this scenario a 15% reduction in the volume of new car trips has been applied. This represents the achievement of a significant modal shift away from car use compared with the current situation. Despite this the overall growth over the period is still 21%

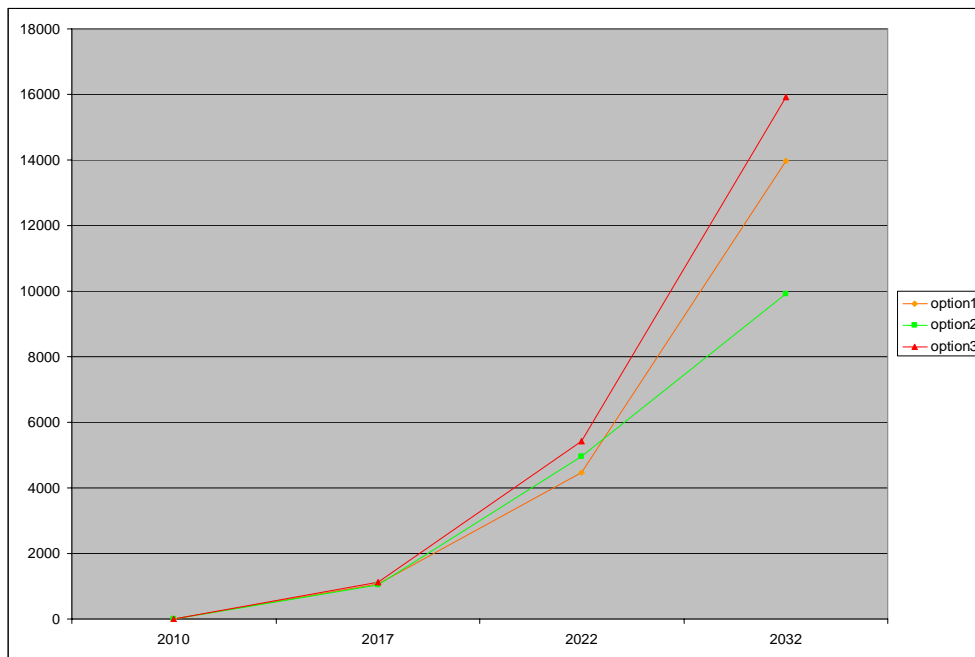


Scenario 3

In this scenario a 15% reduction in the volume of all car trips has been applied. This represents the achievement of a significant modal shift away from car use compared with the current situation including influencing existing travel habits. Despite this the overall growth of 6% still occurs.



LDP Options – PM Peak Period, Vehicle Trip Generation



	option1	option2	option3
2010	0	0	0
2017	1072	1054	1113
2022	4455	4956	5422
2032	13978	9909	15912

The volume of new vehicle trips generated during the 4 hour PM Peak Period for each of the LDP growth options are shown in the graph and table above. Due to the rate of site development that has been assumed for the testing of the options, the Low Growth Option (Option 2) results in more vehicle trips occurring in 2022 than for the preferred Medium Growth Option (Option 1).

By 3032 it is expected that the High Growth Option will result in around 50% higher vehicle trip generation compared to the Low Growth Option as a result of the new development trips. This represents around an additional 5% increase in traffic on the whole network.

Initial Model Results

The initial results (December 2011) from the traffic model are shown in the following table:

	Average Journey	Total Distance	Average Distance	Number of Vehicles	Average Speed
2008 Base Average	00:06:24	579,748	6.11	94834	35.6
2008 Updated Base Average	00:06:13	564,682	6.01	93991	36.0
2012 Do Min Average	00:06:30	587,099	6.00	97777	34.4
2017 LDP Do Min Average	00:07:38	640,278	6.18	103584	30.2
Option 1	00:07:32	642,687	6.17	104124	30.6
Option 2	00:08:03	647,353	6.21	104293	28.9
Option 3	00:07:52	645,307	6.20	104147	29.4

The 2008 base is a model representing traffic conditions at the time of the traffic model update surveys undertaken in June 2008. The 2008 Updated base takes into account the effect of road schemes that were undertaken / completed shortly after the base model surveys, these include the Drip Road traffic calming, A91 Millhall roundabout slip lane and the opening of the Clackmannanshire Bridge.

The 2008 updated base was taken forward as the basis of the 2012 and 2017 Do Minimum Models. These models include the developments expected to be completed by those years including schemes included in the CTS and sites allocated through the HLA and existing Local Plan.

When projecting developments forward for the future year assessments, assumptions have been made regarding the timescales for this happening. The current economic climate has led to a downward revision of the growth expected in the short term, but it is anticipated that a recovery will be underway by 2017. In recent years traffic levels have been reducing, leading to an increase in average speeds. It is expected that this trend will be reversed as future developments are undertaken.

Between 2008 and 2017 the levels of congestion in the model increase with average travel time increasing by around 2 min and the average speed also drops as a result of congestion. The 2017 Do Min results are the baseline against which the three LDP Option test models can be compared.

In 2017 there is little difference between the Do Minimum and the three options. This is due to majority of the increase in traffic levels by 2017 being attributable to already committed developments rather than the LDP sites. The impact of the LDP sites will be more significant beyond 2017.

These summary statistics allow a quick comparison of the overall network performance to be made. As further testing is completed and a more detailed appraisal of the final option is undertaken it will be possible to quantify the impact of increasing congestion on travel times along particular corridors such as Kerse Road or Glasgow Road.

Appendix B

Brief assessments of those sites which differentiated the growth options in the Main Issues Report presented to Member/Officer working group

Causewayhead

Reducing the need to travel / Accessibility to services	Being within the built up area residents could be expected to be more likely to look to Stirling for services
	Short distance to rail p&r at BoA
	bus times: further ed 10mins / GP 20mins / SRI 40mins / empl 15mins
	Adjacent to secondary and primary schools
	Employment sites: University / City / Forthside / Manor Farm
Enabling travel by sustainable modes	Close to established bus routes.
	Ability to walk / cycle to City Centre and local facilities at Causewayhead / BoA
Traffic Impact: Local Network	Traffic would have to exit via the 3 pinch points of Clock rbt / Henderson St / Causewayhead rbt
Impact: Strategic Network	undeveloped areas in Causewayhead are at the watershed point where traffic chooses to access the m'way network. So may access m'way via Pirnhall / Kier / Craigforth. Better distribution?
	If likely to undertake more local trips, may mean less trips on strategic network
Mitigation	Traffic improvements desired to address the 3 pinch points anyway. If new infrastructure required with new development, is this best where it will have greatest benefit to City
	Ability to increase p&r facilities at BoA

Fallin

Reducing the need to travel / Accessibility to services	Limited jobs / services in Fallin. Most trips will involve travel which is most likely to be by car. But closer to Falkirk (2nd highest destination behind Glasgow) and Grangemouth 1 in 4 households do not have access to a car Primary school. Secondary currently at Wallace bus times: further ed 15mins / GP 10mins / SRI 30mins / Emp 10mins Easy access to Springkerse p&r Employment centres: Springkerse/ Broadleys/ Crookbridge/ Bandedeath/ City / Forthside / Millhall
Enabling travel by sustainable modes	Limited opportunities to travel to travel by walking or cycling to a range of services. Likely to be over 1km from site to existing limited facilities Established bus service
Traffic Impact: Local Network	Acces to A91 at Millhall Rdt. Also A905 east
Impact: Strategic Network	Access to m'way at Pirnhall (and M876 J3?)
Mitigation / Ability to provide infrastructure	May strengthen level of services and public transport. V little that can be done in improving pt access or making services closer to new housing

Durieshill

Reducing the need to travel / Accessibility to services	Residents more likely to look beyond Stirling for jobs and services May provide some facilities, but unlikely to be a sufficient to significantly reduce the need for travel Bus times: further ed 50mins / GP 30mins / SRI 30mins / emp 35mins Employment sites: Corbiewood / Durieshill / City
Enabling travel by sustainable modes	new public transport services would need to be provided, and yet these can not be guarenteed. Public transport services if provided will inevitably be phased, ie little opportunity to encourage bus use from the start, which wil mean more difficult to change to bus use in the future.
Traffic Impact: Local Network	Traffic will access Stirling either via A872 or A91
Impact: Strategic Network	Unlikely to use rail Access m'way network via Pirnhall
Mitigation / Ability to provide infrastructure	Pirnhall improvements necessary provision of local p&r may reduce car trips into Stirling provision of strategic p&r may reduce car trips on m'way

Stirling Local Development Plan Main Issues Report

Response by Improvement and Development Team, Roads Transport and Open Space

30th August 2010

1. Vision

“More pedestrianised streets, bus lanes, cycle tracks, more opportunities for walking, etc”

This statement is potentially misleading. While there is certainly the intention to:

- improve pedestrian priority where it is required – in line with the function of any particular street – the extension of the City Centre pedestrianised area is more likely to take the form of increased pedestrian priority in the Dumbarton Rd, Barnton St and Port Street / Upper Craigs areas rather than the provision of “more pedestrianised streets”
- provide bus priority measures where required – the provision of “more bus lanes” is not necessarily the most appropriate – or even achievable solution – solution (NB at the locations where bus services are held up most there are limited opportunities for bus lanes)
- improve facilities for cyclists – the hierarchy of provision for cyclists, starts with providing a street environment which is safe for all users. Hence there is not necessarily the desire to provide a network of cycle tracks – but rather a network of safe routes (some of which will be tracks)

Therefore request that if the LDP framework contains a vision this line is reworded as

- “improved pedestrian environments, more facilities for cyclists and bus priority measures where they can be introduced”

2. Main Issue 1: How do we manage the strategic land use changes required by a growing population and local economy?

Preferred Approach to Housing Land Supply (p17)	In terms of understanding the transport impacts of developments, both individually and cumulatively, it is important that issues identified in the HNDA are made clear in the housing supply and allocations. For example, the travel demands arising from a development of 4 bed detached houses is significantly different than developments comprising of a significant number of retired people. The extent to which developments can contain a mix of housing needs may minimise such issues.
Preferred Approach to Housing Land Supply (p18)	Option 2, the low growth scenario could be expected to: <ul style="list-style-type: none"> • present the fewest transport issues • also provide solutions to best manage trips – and encourage trips to remain – within the Stirling

	<p>conurbation. This is predominately due to encouraging growth within the City in the Causewayhead area, rather than accommodating growth in Durieshill where residents are likely to look to the central belt for job and services.</p>
<p>Preferred Approach to the supply of employment land (p20)</p>	<p>Support – particularly:</p> <ul style="list-style-type: none"> • “The integration of employment generating opportunities with supporting infrastructure and housing development will require to be considered as part of the proposed Spatial Strategy, particularly in the north and south strategic development options.” • “All development should take into account the ability to access by a range of transport modes. Travel plans will continue to be a requirement for the majority of major employment developments” <p>Strategic employment sites:</p> <ul style="list-style-type: none"> • support the removal of Pirnhall • employment is included as part of the Durieshill development to help provide local job opportunities and therefore help reduce the need to travel. To date the assessments of the transport impact of the Durieshill site have been on the basis of employment opportunities being available within the site, removal of this allocation will have an adverse effect on the levels of traffic generated and the subsequent impact on the road network. It is therefore important that a sufficient number and type employment opportunities are encouraged to fit the residential opportunities provided. • Manor Farm Business Park – if this site is intended to help meet the employment needs for the residents of Stirling, then it is not currently safely accessible by walking and cycling for residents of Stirling. Investigations would also be required to consider its affect on the functioning of the Manor Powis roundabout at peak times. • Crookbridge: whilst transport constraints are not referred to, it should be noted that it is considered these could be overcome. • Craigforth: issues around the accessibility of this site for active travel modes (walking and cycling) will require to be addressed as part of the expansion of the site
<p>Preferred approach to retail space provision (p25)</p>	<p>Support. 22% of households do not have access to a car. It is therefore vital that food stores are located so as to be reasonably accessible by walking, cycling and public transport. Any pattern of provision which reduces food provision for approximately one fifth of the population cannot be considered to be socially inclusive.</p>

In particular a food superstore – which is a major generator of trips – is unlikely to be reasonably access by walking and cycling unless it is within reasonable walking and cycling distance of a significant number of people. Scottish Planning Policy (para 168)states that:

- Planning permission should not be granted for significant travel generating uses Where
 - Direct links to walking and cycling networks are not available or cannot be made available
 - Access to public transport networks would involve walking more than 400m

3. Main Issue 2: How best do we address the problem of supplying the necessary infrastructure to support future development?

Preferred approach to education provision (p29)	The approach is supported. If a consistent approach to the provision of all necessary infrastructure is desired it may be useful to consider the preferred approach to education provision as the preferred approach for all infrastructure
Transport infrastructure (p30)	<p>Subject title: Whilst the heading of this section is entitled ‘Transport Infrastructure’, the text considers:</p> <ul style="list-style-type: none"> • Provision of transport infrastructure to meet the travel demands of new development • Other measures to meet the travel demands of new development • Infrastructural proposals arising from the existing transport programmes <p>Determinants of travel behaviour in Stirling: The introductory text suggests 3 issues as a consequence of the geography (“nature”) of the area which help determine travel patterns and presumably therefore should be considered as parameters when considering potential solutions:</p> <ul style="list-style-type: none"> – Whilst there is “a considerable reliance on private car journeys” we must always also present the fact that more than 1 in 5 households do not have access to a car, otherwise there is a danger we will not be providing solutions which cover all of society. – The text suggests that “<i>less multi purpose journeys are feasible</i>” because “<i>facilities are concentrated</i>”. There is no logic in linking these two statements together. The scattered nature of residential development is an issue determining travel behaviour, but the extent to which this affects multi-purpose trips is not a major issue. – “it is difficult to provide viable communal (‘public’) transport” – but this is true in the city and the rural areas, so suggesting this is a result of the geography of Stirling is only partially true. <p>The text does not reflect on the key issue of making Stirling an accessible destination for both business, commuters and residents which is vital to support future growth of the City</p> <p>Options to addressing the travel demands arising from the growth scenarios: The final set of bullet points on p31 usefully summarises the different approaches to be considered to manage the travel demands arising from the development options.</p>

When considering these approaches it is useful to note that given existing and likely future traffic growth (whichever growth option is chosen) then new infrastructure and/or significant changes in travel behaviour are likely to be required to minimise congestion both for environmental reasons, but also to maintain the attractiveness of destinations in the City compared to destinations in neighbouring areas.

The traffic growth options fall into four broad groupings:

- Maintain traffic growth between National Road Traffic Forecast (NRTF) High and Low
- Traffic growth to be between NRTF Low and no growth
- No growth
- Reduce traffic growth

Growth in Stirling has traditionally been close to or above NRTF High. It should be noted that it is likely - with the potential development and assuming a shift away from the car and towards walking, cycling and public transport – that traffic growth will still occur and is likely to be above NRTF Low Growth.

As anything above no traffic growth means either more infrastructure and/or enormous changes in travel behaviour particularly for new users of the transport network– then new development should be prepared to support at least one of these approaches if the attractiveness of the City is to be retained.

Phasing: The best chance of securing modal shift away from the car is encouraging as many **new trips** as possible arising from the new development to be made by walking, cycling, public transport before travel habits become established. This means getting the infrastructure for sustainable travel in, at or before new development, not after.

Access to sites via rail bridges: Where housing and employment sites are accessed by rail bridges (1) access to the site may be affected during Edinburgh to Glasgow Improvement Programme (EGIP) bridge works (2) if a bridge may need to be improved to enable a site to be developed, better to identify such locations now to maximize the chance of this improvement occurring during planned EGIP works

Preferred approach to

Preferred Approach: The following principles outlined in

<p>provision of transport infrastructure (p32)</p>	<p>the preferred approach are supported:</p> <ul style="list-style-type: none"> • If development is desired then improved infrastructure is also required • The travel demand arising from new development needs to be addressed by a range of measures, not just parking provision • There should be greater emphasis on minimising car trips where there is good access by other modes. Notwithstanding this, we should also seek to improve access by walking, cycling (through the provision of cycle / active travel links – not just tracks) and public transport in all locations. • The package of solutions required (including developer contributions where appropriate) should incentivise developments to minimise potential traffic and accessibility problems (ie supporting the right development in the right place) • The LDP has a role in protecting land required to improve necessary infrastructure
	<p>National Planning Policy: Scottish Planning Policy states that:</p> <ul style="list-style-type: none"> • Opportunities for personal travel should be prioritised by mode in the following order – walking, cycling, public transport, car and other motorised vehicles (para 169) • Buildings and facilities should be accessible on foot and by cycle (para 169) • Planning permission should not be granted for significant travel generating uses Where <ul style="list-style-type: none"> ○ Direct links to walking and cycling networks are not available or cannot be made available ○ Access to public transport networks would involve walking more than 400m (para 168) • Amount of car parking at significant travel generating uses should be controlled to encourage more sustainable travel choices (para 167) <p>It is proposed that these requirements be included within a policy objective of ‘Ensuring that all development is made safely accessible by a realistic choice of modes’. Expectations regarding the realistic level of access by each mode could be determined by the size, type and location of development.</p> <p>It is important that whatever process is established to achieve the objective of ‘ensuring a choice of travel’, that it</p>

	<p>is a transparent process, so developers know what will be expected of them when they are considering their development.</p>
	<p>Funding Infrastructure: If infrastructure is required to address the additional travel demands generated by new development, who should pay for this? For the foreseeable future, it should be assumed that the public sectors ability to contribute to facilitating development by providing infrastructure is extremely limited.</p> <p>This is obviously not just an issue for transport infrastructure, so consideration does need to be given to the consistency of approach across the plan (for example the preferred approach to the provision of education provision (p29) sets a good starting point for this debate)</p>
	<p>Developer Contributions:</p> <p>It is reasonable to expect development to mitigate the adverse impacts arising from their development.</p> <ul style="list-style-type: none"> • This includes the impacts of new trips arising from the development • But does not include accommodating trips arising from natural growth (increased trip making from existing population / or trips from other development. <p>Unfortunately, all infrastructure improvements need to take account of overall growth – so the important principle is ensuring that development pays an appropriate proportion, proportionate to the level of trips it generates.</p> <p>The Council have already introduced – via the current Transport DAN – the principle that all development in the City Transport Strategy area has a cumulative impact on traffic growth in the City and therefore should contribute proportionally to the programme of measures aimed at addressing this growth (ie the CTS programme).</p> <ul style="list-style-type: none"> • It is the intention to continue this principle, making clearer the balance between addressing the transport impacts of a development in the immediate vicinity of the development, and across a wider area • The requirement of a cumulative impact contribution (commonly referred to as a DAN contribution) in the City area only, not only does not address cumulative impacts in the rural area, but could also act as a perverse incentive, discouraging development from the built-up area and encouraging it in the rural area, which would be contrary to many transport objectives. • Options for addressing the cumulative impact of

	development in the rural areas are being examined
	<p>Serving developments by Bus: When considering the extent to which a site will served by a bus service, it should be noted that bus companies are not compelled to ensure developments are served by buses. Services will only be provided if either (a) a bus operator believes that he or she can serve the area profitably or (b) Stirling Council, the developer or some other party is willing to procure and subsidise a service, at least for an initial period.</p> <p>The primary means of matching development with sustainable transport is, of course, to locate development in places where a significant proportion of total journeys can be made by walking and cycling. Once public transport is invoked, there are two main approaches:</p> <ul style="list-style-type: none"> ○ <i>match the development pattern to the public transport network:</i> favour proposals that will make best use of existing public transport resources; ○ <i>match the public transport network to the development pattern:</i> favour proposals that best achieve other criteria and adjust the public transport network to meet development needs. <p>Approach (a) is consistent with Key Objective 1 – Make best use of existing commercial assets. Nine bus operators have operating centres in the Stirling Council area, with several others based in Clackmannanshire and Falkirk. However, the public transport network should not be a constraint on development to the exclusion of other criteria.</p> <p>Approach (b) offers more flexibility as it is influenced by wider development criteria, rather than being constrained by an existing network. However, while infrastructure (bus stops, etc.) can be provided relatively easily, any public transport service provided will have to be paid for unless the development is close to existing bus routes or is so large as to attract commercial provision.</p> <p>It is important to be aware that the bus network cannot easily be changed. Commercial bus operators, both large and small, are extremely risk-averse and, unless an existing service can easily be diverted without deployment of additional resources, will be reluctant to serve a given development commercially unless there is strong evidence of pent-up demand.</p> <p>In practice, a combination of approaches (a) and (b) is the most realistic. To achieve this, it is important that developers be encouraged engage with bus operators at an early stage, in the hope that commercial (i.e. unsubsidised) services can be provided wherever possible. This is more likely to be achievable in and near the urban area than elsewhere.</p>

Preferred approach to drainage infrastructure (p33)	Whilst the concept of a strategic drainage plan included in the preferred approach is desirable, it is considered it is considered that all major developments should still undertake a drainage impact assessment, as identified in the alternative approach
Preferred approach to provision of waste management infrastructure	No views
Preferred approach to securing developer contributions to infrastructure costs	<p>The preferred approach is supported.</p> <p>As stated earlier the preferred approach to the provision of education facilities provides a useful starting point for considering a consistency of approach across all forms of infrastructure</p> <p>When considering resolving the transport issues arising from development, developer contributions could be required for</p> <ul style="list-style-type: none"> (i) measures to mitigate against the transport impact of the development in the immediate vicinity of the development (ii) measures to mitigate against the cumulative transport impact of the development across a wider area <p>(NB the 'infrastructure' measures could be either 'hard' (physical infrastructure) or 'soft' (travel awareness) measures)</p>
	With regard to a flexible approach as suggested in the alternative approach, it is difficult to understand how we could argue monies are necessary for a transport or play or education measure, and then have the money directed elsewhere.

4. Main Issue 3: How can development be concentrated in 'sustainable locations'?

<p>Locations that reduce the need to travel and promote and support a choice of transport modes</p>	<p>Developments within the area encompassing Bridge of Allan, Stirling and the eastern villages are generally easier for public transport to serve than developments elsewhere. Even where new or rerouted services cannot be provided, a fairly frequent bus service is normally available within reasonable walking distance in the urban area. While rural villages on or near main roads will tend to attract bus services, these will generally be at lower frequency, with longer journey times to employment, education, retail, leisure etc facilities, than in the urban area.</p>
	<p>The following rewordings are suggested for any parts of this section which may go forward into further documents:</p> <ul style="list-style-type: none"> • <i>'In rural areas . . . and post buses'</i>: It would more accurately read: 'In rural areas, service buses, Demand Responsive Transport (DRT), school buses/taxis and the Dial-a-Journey service meet diverse community needs.' Note that we no longer have any publicly-available community transport (other than DRT and Dial-a-Journey) or Postbuses.' • <i>'In general, however . . . accessible to all'</i>: 'serviced' should read 'service' and 'reasonable' should read 'reasonably'. DRT should be acknowledged in future, by referring to 'service bus routes and DRT areas'. Note that conversion from fixed-timetable operation to DRT has increased accessibility in rural areas. Fintry DRT offers on-demand links to Killlearn, Balfron and Kippen. The other four DRT areas fall within the National Park planning area. Although, as DRT is cost-effective only in low population areas significant rural population increases may reduce the viability of DRT provision. • <i>'Only east Stirling has rail services . . .'</i>: it would be better to say, 'Within the Local Development Plan area, only Stirling, Bridge of Allan and Dunblane have rail services'. Mentioning the LDP area makes it clear that Crianlarich and Tyndrum, which have rail services but lie in the National Park planning area, haven't been overlooked. • <i>' . . . it is not clear whether accessibility is likely to be improved in the future. Rail operators seem more interested in speed than access'</i> This statement is both inaccurate and unlikely to foster good relations with the rail industry. The Edinburgh to Glasgow Improvement programme (which includes access to Stirling and Dunblane) clearly sets out planned rail improvements in terms of improving reliability, capacity and points of access to the rail network (ie new stations). The fact that these planned improvements may not meet our aspirations in terms of additional stations does not make it unclear.

	<ul style="list-style-type: none"> • <i>'The most significant . . . the alternatives exist':</i> I'd suggest in future saying 'bus and rail alternatives', rather than simply 'the alternatives' to make clear what alternatives are being alluded to.
Preferred approach to concentration at sustainable locations (p38)	<p>The preferred approach of concentrating development in the urban area is supported as this best enables opportunities for:</p> <ul style="list-style-type: none"> • a reduction in the demand for travel • trips to be made by a choice of modes

5. Main Issue 4: How can development be achieved in ways that
(a) maintain and create high amenity;
(b) conserve historic environment, natural heritage and biodiversity;
(c) support social inclusion and mixed communities

Preferred approach to maintaining and creating high levels of amenity	<p>None of the preferred approaches make reference to the need to achieve quality & amenity in the built environment except in historic areas. It is important that the development plan framework (whether in the LDP or supplementary guidance) ensures a quality environment – in particular the street environment, which is the most used of all public spaces.</p> <p>The policy approach adopted within the LDP should make the appropriate linkages between streetscape and how this space is used to manage travel demands, especially in new development.</p> <p>Ensuring the design of environments supports and encourages walking and cycling (ie through the development of 'people friendly places') will be important to delivering the 'walkable city' concept</p>
	<p>Reference will required in the LDP to the role of the Core Path Plan. The plan highlights a network of core paths which provide access to and within settlements, as well as enabling people to enjoy the natural environment. The affect of development on any core path will be a material consideration in the assessment of a proposed development. This could be linked with references to the Central Scotland Green Network.</p>
Preferred approach to conserving the historic environment (p45)	<p>When setting out how development in the historic areas of Stirling City will be considered, the Council's 'Vital Stirling: Framework for Action' – which seeks to maximise the potential of Stirling's historic environment for the benefit of the City - needs to be referenced and taken into account.</p>

Preferred approach to conserving natural heritage and biodiversity	No views
Preferred approach to the delivery of affordable housing	Access to public transport from affordable housing is particularly important. Without it, low income families may decide that they need a car and struggle financially to keep one (or even two) on the road, at the cost of other life-enhancing activities. It follows that public transport considerations should command a high priority when affordable housing developments are being considered.
Preferred approach to the provision of particular needs housing (p50)	<p>Whilst it is proposed that all development should be accessible by a choice of modes, this is particularly true for 'particular needs' housing. With the advent of accessible buses, public transport use has become a valuable component of independent living. Hence:</p> <ul style="list-style-type: none"> • Attention needs to be given to ensure that such developments are in locations which are well served by public transport • The pedestrian environment connecting such housing to local facilities and the public transport network needs to be accessible for all (ie removal of barriers to pedestrian access in line with the principles of the Disability Discrimination Act (soon to be replaced by the Equalities Act)) • Many residents will remain dependent on Dial-a-Journey etc. Consequently, provision access (including boarding and alighting of wheelchair users) for Dial-a-Journey and other specialist services will be required. <p>(SPP states "Statutory equal opportunities obligations relating to accessibility to different users of different means of transport should be taken into account in development plans and development proposals. Accessibility issues and street layout and design should be part of the design and planning process from the outset." Para 169)</p>
Supporting social inclusion and mixed communities	<p>Social inclusion objectives are achieved by:</p> <ul style="list-style-type: none"> ○ Locating development where it can be made accessible by walking, cycling and public transport ○ Ensuring that the assessment of application ensures that the development is made safely and realistically accessible by a choice of modes.

6. Main Issue 5: How can development and land use be managed in ways that reduce, rather than increase, greenhouse gas emissions

Preferred approach to dealing with energy efficiency and renewable energy	No views
Preferred approach to minimising the use of unsustainable resources	Promoting development in locations which support sustainable travel, and then encouraging development to manage its travel demands in such a manner will help minimise the use of non-renewable resources.
Preferred approach to supporting low input food production and self-sufficiency	No views

7. Spatial Strategy

General	<p>As stated earlier, the spatial strategy is generally supported as the preferred approach of concentrating development in the urban area is supported as this best enables opportunities for:</p> <ul style="list-style-type: none"> • a reduction in the demand for travel • trips to be made by a choice of modes <p>And that Option 2, the low growth scenario could be expected to:</p> <ul style="list-style-type: none"> • present the fewest transport issues • also provide solutions to best manage trips – and encourage trips to remain – within the Stirling conurbation. This is predominately due to encouraging growth within the City in the Causewayhead area, rather than accommodating growth in Durieshill where residents are likely to look to the central belt for job and services.
Urban Consolidation – Stirling and the City Centre	Supported
Existing Regeneration Areas – Cornton, Culterhove and Raploch	Supported
New Regeneration Priority Areas – Cowie, Fallin, Plean and Throsk	While there is the opportunity for regeneration to enhance the range of local facilities available in Cowie, Plean and Fallin, this is less likely in Throsk due to the lower base it is starting from. Hence local facilities are less likely to be within walking and cycling distance to any potential residents of Throsk, and therefore reliance on access to a car is far more likely.

Stirling City expansion	<p>Development to the north of the City: Development between Causewayhead and Bridge of Allan may enable more trips to be made by rail, bus and walking and cycling, and encourage more trips to remain in Stirling, compared with development at Durieshill. Albeit some infrastructure improvements would be required.</p> <p>In particular:</p> <ul style="list-style-type: none"> • large-scale development between Causewayhead and Bridge of Allan offers good potential for bus service provision on the grounds that (a) development would be of sufficient size to encourage bus operators to divert and possibly enhance existing commercial services and (b) there are a number of services that could potentially be diverted, extended or enhanced, thanks to the high level of service provision helped by the presence of Stirling University and the fact that Causewayhead and Bridge of Allan lie astride natural routes to Dunblane and points north. • The development would be within walking and cycling distance of many existing facilities including rail stations, schools and shops
	<p>Development to the south of the City: supported as residents are likely to be better able to access existing facilities by a range of modes.</p> <p>Bannockburn is well served by buses, but Corbiewood lies along the A91 corridor between Pirnhall and Greencornhills roundabouts which currently carries no bus services. There is sufficient potential for the diversion, extension or enhancement of existing services, although not quite as great as for development north of the city. The development of Durieshill and the provision of a park & ride facility could enhance the potential of this area for public transport.</p> <p>The masterplanning of this area will need to take into account the provision of a park and ride site on the A872.</p>
	<p>Development at Millhall: there is some potential for diversion of existing bus services to Fallin and Throsk, although, in practice, it is likely that passengers would have to walk from Kerse Road. This should be achievable by most people who would work in business/commercial units at this site.</p>
Strategic development: new	New settlements, unless they are of a size to enable a choice of realistic employment opportunities for a good proportion of the

settlements	<p>potential residents, are not supported on transport grounds as they will increase the demand for travel.</p> <p>(NB on a similar theme, reference is made in the MIR to the contribution of mixed use developments and high density developments of reducing the need to travel. This is true, but only at a certain scale)</p>
	<p>Durieshill remains a development location beyond the Stirling built up area, and it is possible that residents will see themselves more as residents of a commuter development in the central belt, rather than being part of Stirling, and 'look towards' other locations in the Central Belt for employment and services, rather than Stirling.</p> <p>Minimising the volume of traffic arising from Durieshill will therefore be reliant on:</p> <ul style="list-style-type: none"> • Providing sufficient employment opportunities and services within the development • Meeting travel demands by public transport. As long as bus services are provided along the lines outlined at the Public Inquiry in 2006, the Durieshill development can be served adequately and offers good growth potential, particularly if a park & ride/express coach facility can be provided in the vicinity of Pirnhall. The express coach facility brings potential for coach-based commuting to Glasgow, Edinburgh and Perth, without traffic impact on Stirling city centre (unlike rail commuting in the absence of a new station at Bannockburn, development of which now seem unlikely in the foreseeable future).
Sustaining rural communities – development in the villages and the countryside	<p>Development in the rural villages: It is unlikely that any development here would alter the existing bus service patterns. Travel demands are therefore most likely to be met by car. The following issues would still need to be taken into account when considering development in the villages and countryside:</p> <ul style="list-style-type: none"> • Providing safe access to local facilities and public transport by walking and cycling • Ensuring the safety of the local road network (which was never designed for the speeds and volumes which are now experienced) • Supporting public transport, DRT or community transport services or similar <p>Development at Manor Powis: As stated above, the inclusion of this site – which is expected to be a significant travel generating use - may be contrary to SPP which states that:</p> <p>“Planning permission should not be granted for significant travel generating uses where direct links to walking and cycling networks are not available or cannot be made available”</p>

	<p>Albeit, the site is likely to be well served by public transport.</p> <p>Development in the Rural Activity Areas: any developments that are on, or adjacent to, a main road currently carrying bus services, or in a DRT area, can be served with relative ease, although services may be infrequent. Otherwise, public transport provision is unlikely.</p> <p>Development in the Upland Rural Area: Ardeonaig is covered by the Killin DRT area. Otherwise this area is not served by public transport.</p> <p>Development in Small Settlements: such developments can be served only if they on, or adjacent to, a road currently carrying a bus service or in a DRT area.</p>
<p>The city spine / corridor (p73)</p>	<p>The MIR introduces a concept of a City Spine / Corridor. It is suggested that more detailed discussion of this concept is required to understand what are the desirable outputs of the concept.</p> <p>To help provide a context, the A9/A872 does provide a spine to the City but</p> <ul style="list-style-type: none"> • it should be first checked that north to south movements are significantly greater than east to west movements (NB remember our most significant movements are to and from the Clacks and Falkirk areas) <ul style="list-style-type: none"> – the A9 and A872 do provide barriers to movement. In some places the affect of the barrier can be reduced – but not all • Is the intention to focus development around the spine and change its nature? It is important, not only to maintaining reasonable access to the centre, but also enabling improvements to other (existing residential areas) that certain routes are retained as distributor routes for traffic.
<p>Spatial Strategy; Phasing</p>	<p>The importance of providing improved infrastructure so that proposed growth does not undermine the wider objectives for Stirling has been stated earlier.</p> <p>It has also been stated that the best chance to ‘capture’ new trips in a sustainable manner is to ensure infrastructure is provided in advance.</p> <p>At this time, it is difficult to know how much of the allocations will be developed and when. If this is the case, and if development is the major funder of infrastructure, it may be difficult to fund</p>

	<p>infrastructure except on a piecemeal basis.</p> <p>We must therefore consider:</p> <ul style="list-style-type: none"> • Whether certain developments can go ahead without major infrastructure investment in the early stages; and • What are type of infrastructure should put in place first eg road capacity or supporting access by walking, cycling and public transport. This may vary depending on the growth options chosen and their intended phasing.
Walkable City concept	<p>In developing the Walkable City concept in the City Visioning exercise, Architecture and Design Scotland suggested there are perceived barriers which exist between areas of Stirling, and which may discourage walking and cycling movement between these areas. It is important that development is not just located within the urban area to help encourage walking and cycling, but attention is paid to the siting and design within the urban area to support movements by walking and cycling. The use of quality design and a placemaking approach may assist in reducing some of the perceived barriers to active travel.</p>
Open spaces, the Green Network and the Green Belt	<p>A desire of the Central Scotland Green Network is to enhance the network of active travel routes in green corridors to better enable people to travel between local services and opportunities by walking and cycling. The identification and mapping of such an enhanced network will greatly assist the consideration of meeting the travel demands of development by walking and cycling.</p>

Text provided for Durieshill Supplementary Guidance

Whilst being a stand alone settlement, Durieshill will have relationships with neighbouring settlements and beyond, with the consequent demands for travel. These travel demands must be met in a way that:

- Ensures a safe, realistic and convenient choice of access for all to and from all land uses
- Minimise their impact on the safety and efficiency of surrounding transport networks

This will be achieved by

Reducing the need for travel by including a mix of services and opportunities for the community

Maximising the ability of trips to be made by walking, cycling and public transport. This is likely to include:

- Provision of safe streets for all in line with the principles included in Designing Streets
- Convenient walking and cycling links both within the settlement, but also linking the settlement to:
 - South Stirling Gateway
 - Plean, Pleanbank and Plean Country Park
 - Dunipace and Denny

Regard should also be paid to the active travel routes in the Green Corridors identified as part of the Central Scotland Green Network

- Public transport facilities and links to opportunities and services likely to be used by the community, such as Royal Forth Valley Hospital at Larbert, Stirling Community Hospital, Stirling City Centre, Plean, Denny and Falkirk. In recognising the demand for travel to Glasgow and Edinburgh, regard should be paid to the strategic park and ride site in the vicinity proposed in Transport Scotland's Strategic Transport Projects Review.
- Travel plan(s) for housing, business, education, retail and leisure facilities

Addressing the impact of residual vehicular trips. Including mitigating against the impact of the development on:

- Pirnhall Motorway Junction
- A872 and A91 north into Stirling

The resolution of the impacts of the proposal on the motorway junction and the A872 and A91 north will need to pay regard to the cumulative impact of all development on these junctions/routes.

- A872 south into Dunipace and Denny
- C9 Roman Road toward Plean and Torwood, and within Plean and Torwood

Contributions to Stirling's City Transport package to help mitigate against the impact of the development on the transport networks in the Stirling City area are likely to be sought in line with the SPGs on Developer Contributions and Ensuring a Choice of Travel

A transport assessment will be required to understand the travel demands generated by the proposal and how these are best addressed. It is expected that this feed into a comprehensive transport strategy for the site which will include modal share targets and travel plan(s). This process will be lead by Stirling Council but will also include Falkirk Council and Transport Scotland. Further guidance is available in the 'Ensuring a Choice of Travel' SPG.