

A90 South Comparative Appraisal of Major Sites

Aberdeenshire Council

A DPMTAG Based Study



A90 SOUTH COMPARATIVE APPRAISAL OF MAJOR SITES

Description: **A DPMTAG Based Study**

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EXECUTIVE SUMMARY

Purpose of Report

SIAS Limited (SIAS), under the North East Framework Agreement was requested by Aberdeenshire Council to undertake a transport Comparative Appraisal of Major Sites study for the A90 South corridor. SIAS was assisted by MVA who provided strategic transport model support to the study. The Steering Group for the study consisted of:

- Aberdeenshire Council – The local government administration for Aberdeenshire
- Transport Scotland – The national transport agency for Scotland
- Nestrans – The Transport Partnership for Aberdeen City and Shire
- Aberdeen City Council – The local government administration for Aberdeen City

The key aim of the study was to provide transport information to the Planning Service of Aberdeenshire Council and to Transport Scotland on the impacts of a series of development options in the A90 corridor. **It should be noted that the transport information is only one of a series of technical inputs that will be used to make decisions on the future land use allocations in the South of Aberdeenshire.**

The fundamental basis that development should be allocated in this general transport corridor was established in the *Aberdeen City and Shire Structure Plan 2009* that has been approved in principle by the Scottish Government.

The emerging *Aberdeenshire Local Development Plan* that has been developed from the *Structure Plan* provides greater depth of detail and has been introduced through a *Main Issues Report (MIR)* that was published for consultation in May 2009. The *MIR* gives details of currently preferred sites across Aberdeenshire; although this may change as the document moves towards becoming the draft *Local Development Plan (LDP)* on considering the results of the consultation and further study work.

Study Methodology

The study methodology was developed by SIAS and agreed with the Steering Group and is an objective led appraisal using Transport Scotland's emerging guidance. A Consultative Draft version of *Transport Planning Appraisal Guidance for Developing Planning and Management DPMTAG Version 8 (Transport Scotland, 13 August 2009)* was made available to SIAS so that the influence of this methodology could permeate the study.

The DPMTAG methodology is closely allied to the best practise principles of *Scottish Transport Appraisal Guidance (STAG)*. This appraisal method, specifically aimed at assessing future development plans, was effectively trialled in this study for the new *Aberdeenshire Local Development Plan*. Close partnering with both Transport Scotland and Aberdeenshire Council has been undertaken to ensure the study outcomes meet the high level aims of each organisation.



Study Objectives

DPMTAG Transport Appraisal procedures suggest that it would be desirable to set out broad objectives for the transport networks in the context of the overall vision and planning objectives.

The aims of the Aberdeenshire LDP are not solely transport related; they encompass improving quality of life and protecting and improving assets in addition to sustainability and transport issues. The purpose of objectives for this study are to comparatively appraise transport issues to allow decisions to be made on that perspective of the plan, without losing sight of the overall vision and planning objectives.

Broad Objectives for this transport study were drafted following a pre-appraisal assessment of existing problems/issues and opportunities of the A90 transport corridor and reflection on the structure and local plan aims. The study objectives were set by the Steering Group and cross checked against national regional and local Transport Strategy objectives. The study objectives were:

- **Objective 1 – Make the most efficient use of the transport network**
By movement of people and goods using existing and committed networks; locally, across boundaries, and strategically
- **Objective 2 – Reducing the need for people to travel**
In terms of communities being able to operate locally for some journeys and by reducing distance to other facilities
- **Objective 3 – Making sure that walking and cycling are attractive choices**
By taking cognisance where sites are accessible to facilities within an active travel range and that any natural or manmade barriers to walking or cycling movement are considered
- **Objective 4 – Making sure that public transport is an attractive choice**
By making best locational use of existing public transport networks and identifying where additional measures can be effectively provided

Land Use Scenarios

During the early stages of the study the Steering Group set the series of land use tests to be undertaken. These were based on corridor locations between Aberdeen and Stonehaven. In Scenario 1 and 2 the bulk of development is in the north of the corridor. In Scenario 3 the bulk of development is between the north and south of the corridor. In Scenario 4 the bulk of development is in the south of the corridor. The locations of the major sites are shown in the Figure ES.1.



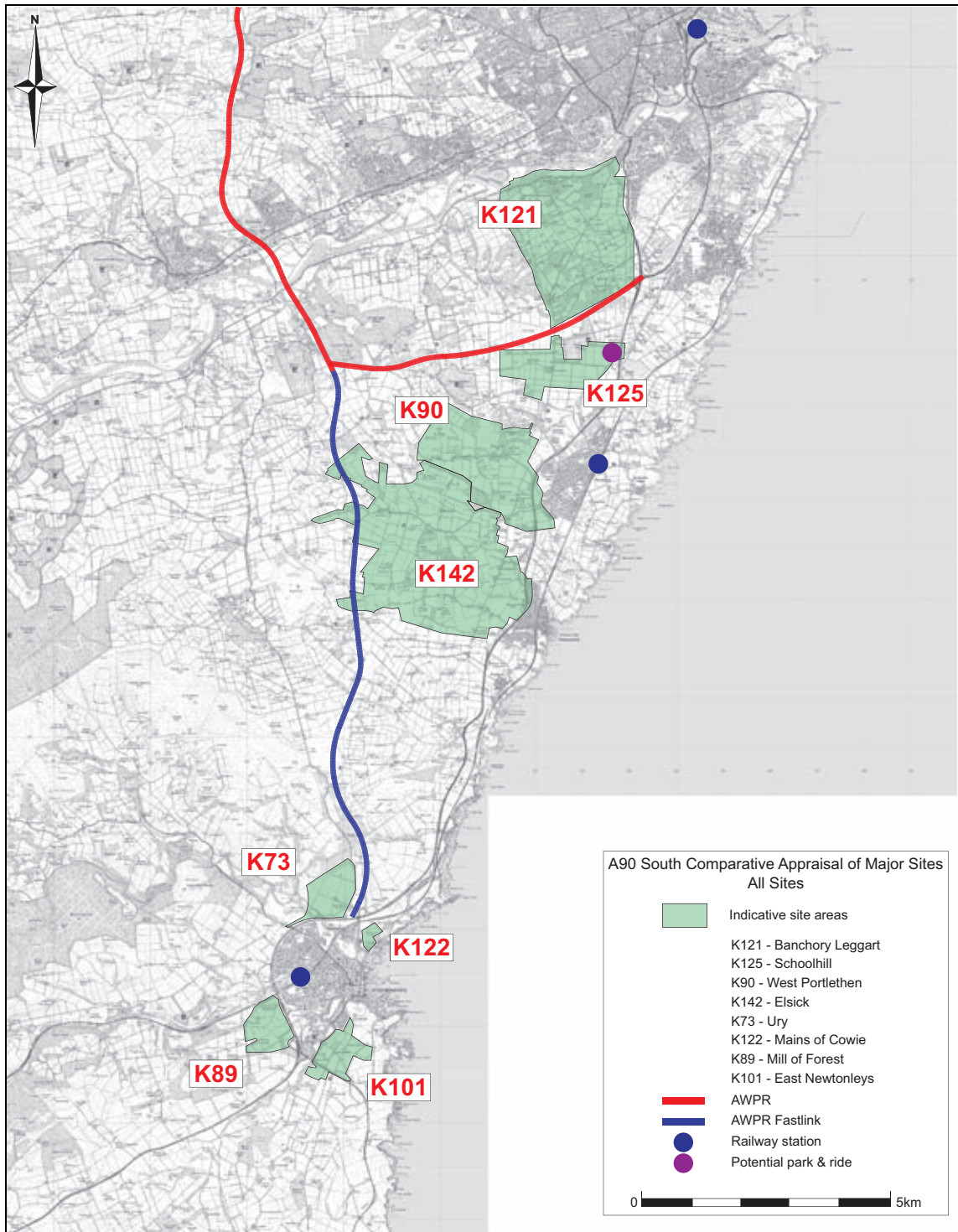


Figure ES.1 : All Sites Location Plan

The land use scenario housing sites were further confirmed by the full Steering Group as, Land Use Scenario:

1. Preferred MIR strategy Banchory Leggart (K121) & Schoolhill (K125)
2. Banchory Leggart (K121) & West Portlethen (K90)
3. Elsick (K142)



4. Stonehaven South Sites (K89 & K101)

The Stonehaven sites at Ury (K73) and Mains of Cowie (K122) have been also been consistently included in each land use scenario at the request of the Steering Group.

Assumptions

A basic assumption established by the Steering Group was that for each land use scenario the total number of new households assumed would be the same, a total of 4,600 houses by the year 2023. The equity in establishing the same housing content for each overall scenario has made the comparative nature of the study a robust and transparent exercise when reviewing key indicators.

The preferred *MIR* stand alone employment sites were assumed to be unchanged between each Land Use Scenario. Potential internal employment sites in the proposed major site areas are also being taken into consideration in this study. The assumption for each site will be that one hectare of employment land would be brought forward per 200 houses. This is based on Structure Plan allocations as advised by Aberdeenshire Council. The proportion of internal trips is based on the characteristics of areas adjacent to the potential sites.

Summary of Results

The Steering Group did not want the Comparative Study to recommend which Land Use option would be the most appropriate in transport terms, but rather desired to see all the data provided to weigh up options, beside other planning criteria.

Common Themes

Some common themes have come forward from the strategic modelling assessment that is applicable for any Land Use Scenario in the A90 (T) corridor as based on the assumptions in the study:

- Congestion in the Bridge of Dee area is likely to continue as this is a key pinch point
- Journey times from Findon to Charleston may continue to come under pressure at peak times
- Traffic levels using the AWPR Charleston and Stonehaven Interchanges are likely to be higher than previously predicted
- The substantial growth in regional traffic levels is likely to increase the time to travel between South Aberdeenshire and Aberdeen City Centre
- The occupancy of rail services between Stonehaven and Aberdeen is forecast to remain close to or above seated capacity
- There are limited public transport options available for travelling between new developments and areas out with Aberdeen City Centre

On a local level common themes for all scenarios include the need to address barriers to active travel and the need to implement bus service improvements. Local modelling has suggested that all scenarios require further detailed assessment of their impacts on the Bridge of Dee area.



Comparative Impacts or Benefits

Scenario 1: Banchory Leggart and Schoolhill

The relatively close proximity of Banchory Leggart and Schoolhill to Aberdeen would minimise the length of the vehicle journeys and produce the least Carbon emissions of the Scenario options.

Strategic modelling has indicated that the close proximity of Banchory Leggart to the Bridge of Dee concentrates the development traffic in an already congested area and is likely to present the highest risk for delays to this area of the network compared to the other options. The introduction of a second A90 access junction helps to alleviate these impacts, but congestion in this area remains likely. When reviewed under local modelling conditions overall queues in the area were similar to other scenarios, but as traffic queues were backing into the development an effective transport management system has not yet been established. Journey times on the A90 were the most efficient in comparison to other scenarios, mainly due to the queueing into the development rather than on the A90, but also due to a slight potential enhancement of the network gained by the Leggart Terrace bus gate.

The Schoolhill proposal creates less substantial access issues compared to other options, as Findon Interchange has the potential to provide access to the A90.

Banchory Leggart has good short term potential for extending existing public transport services to serve the site, and is forecast to generate a slightly higher public transport mode share compared to other options. It also has long term potential to support new local services. In interim periods some support for public transport would be required to reduce impact on existing users of City services and provide other local services. There is also potential to integrate the Schoolhill site with the proposed Park & Ride at Findon. Further investigation into the potential benefits of Leggart Terrace as a bus priority route from the Park and Ride could be undertaken at this site.

Banchory Leggart has poor access to the rail network, however, accommodating additional population at Schoolhill (relatively close to Portlethen station) could support the desire for improved services to/from this area.

In terms of potential to use active travel, the Banchory Leggart and Schoolhill sites have the highest overall potential of all sites to promote walking to access employment and similar potential to Scenario 2 in promoting cycling to employment opportunities.

The feasibility of introducing transport infrastructure for this proposal will rely on joint working between local councils and the trunk road authority to develop a new junction on the A90 and satisfactory traffic management arrangements between Charleston and Bridge of Dee. The existing arrangement tested has not been demonstrated to operate effectively. In the modelling undertaken queueing traffic blocking back from the Bridge of Dee, causes queueing back into the development site at peak times of day.

Introducing a second junction on the A90 presents some more technical constraints, but appears from first inspection to be beneficial from an operational aspect. Further assessment will also be required into the viability of a A90 High Occupancy Vehicle lane being investigated by Aberdeen City Council, as there are negative design and traffic impacts on this potential intervention.



Scenario 2: Banchory Leggart and West Portlethen

With the relative close proximity of Banchory Leggart and West Portlethen to Aberdeen, vehicle distance and Carbon emissions statistics compare favourably compared to other options.

Although, public transport mode share and passenger levels are also similar to that forecast for Scenario 1, the overall impact to travel time lost due to congestion is the highest of all Scenarios.

Strategic modelling has indicated that the West Portlethen site would see development-related traffic accessing the A90 to the west but the level of traffic there is predicted to be slightly less than 2007 levels, due to the AWPR/Fastlink. When reviewed under local modelling conditions overall queues in the area between Charleston and Bridge of Dee were similar to other scenarios but with queues backing into Banchory Leggart. As with Scenario 1, an effective transport management system has not yet been established and requires further assessment. The journey times on the A90 were good in comparison to other scenarios, mainly due to the queueing into the development, but also due to the slight potential enhancement of the network gained by the Leggart Terrace bus gate.

A new grade-separated interchange at Bruntland Road (Bourtreebush) would improve access to the A90 – reducing delays and mitigating the risk of further road traffic accidents at this location.

The potential for public transport services to West Portlethen appears broadly similar to that for Schoolhill. Both developments could access and support new Park & Ride services at Findon and rail services at Portlethen Station. As with Scenario 1, further investigation into the potential benefits of Leggart Terrace as a bus priority route from the Park and Ride could be undertaken. Scenario 2 has long term potential to support new local services. In interim periods some support for public transport would be required to reduce impacts on existing users of City bus services and provide other local services.

In terms of potential to use active travel, the Portlethen sites has less potential than Schoolhill to promote walking to access employment, however, the combination of Banchory Leggart and West Portlethen has the highest overall potential to promote cycling to access employment with a similar level to Scenario 1.

As with all scenarios, the feasibility of introducing transport infrastructure for this proposal will rely on joint working between local councils and the trunk road authority to develop a new junction on the A90 and satisfactory traffic management arrangements between Charleston and Bridge of Dee. The existing arrangement tested has not been demonstrated to operate effectively. In the modelling undertaken the blocking back from the Bridge of Dee, causes queuing back into the development site at peak times of day.

Introducing a second junction the A90 presents some more technical constraints but appears from first inspection to be beneficial from an operational aspect. This scenario also relies on additional junction improvements at Bruntland Road (Bourtreebush). As with other scenarios further assessment will be required into the viability of a A90 High Occupancy Vehicle lane being investigated by Aberdeen City Council, as there are negative design and traffic impact impacts on this potential intervention.



Scenario 3: Elsick

Situated further from Aberdeen, the Elsick development would generate slightly longer road journeys compared to Scenarios 1 and 2, although the Carbon emissions statistics are similar to Scenario 2.

With this rural location, Elsick also generates slightly less public transport mode share than for Scenarios 1 and 2, however, due to the larger scale of a single development site, Elsick could be more self contained in nature, reducing the number of journeys made out with the settlement.

Elsick-related traffic would access the A90 to the South of Charleston Interchange, which would increase traffic at this section of the A90 in excess of present day levels.

Strategic modelling has suggested that the inclusion of direct access to the AWPR Fastlink reduces the impact of the Elsick development on the performance of the A90, however, the section of the A90 between Findon and Charleston would remain heavily trafficked. When reviewed under local modelling conditions overall queues in the area between Charleston and Bridge of Dee were similar to other scenarios but with all queues being held on the A90 and potentially extending as far as Charleston. The journey times on the A90 were not as efficient as Scenarios 1 and 2.

The Elsick development would provide a new grade-separated interchange at Bruntland Road (Bourtreebush), reducing delays and mitigating the risk of road traffic accidents at this location

There is potential for public transport services to Elsick to access and support new Park & Ride services at Findon and rail services at Portlethen Station. With the scale of completed development, Elsick may present long term potential to support alterations to existing bus services and the development of new routes. In interim periods major support would be required for more buses on the high profile Coastrider route, to reduce negative diversion impact on existing users.

In terms of potential to use active travel, the Elsick site has similar potential to Scenario 2 to promote walking to access employment, but it has the least overall potential of any scenario to access employment opportunities within cycling distance.

As with all scenarios, the feasibility of introducing transport infrastructure for this proposal will also rely on joint working between local councils and the trunk road authority to develop satisfactory traffic management arrangements between Charleston and Bridge of Dee. This scenario also relies in the first instance on additional junction improvements at Bruntland Road (Bourtreebush) and then on another potential junction onto the AWPR Fastlink. Further assessment will be required into the viability of a High Occupancy Vehicle lane being investigated by Aberdeen City Council, as from first inspection there are negative traffic impacts on this potential intervention, although less design issues to overcome than Scenario 1 and 2.

Scenario 4: Stonehaven – Mill of Forest and Newtonleys

Situated further south, Stonehaven-related developments would generate the longest vehicle journeys and the highest Carbon emissions of the options considered.

The public transport mode share and increase in patronage levels associated with the Mill of Forest and Newtonleys developments are similar to that forecast for other developments.



These developments, particularly Mill of Forest is the closest of the major sites in walking distance to a train station, potentially encouraging use of existing Stonehaven train services and supporting the introduction of improved service patterns, although the site is outside the general classification of a conveniently accessible walking distance to rail. As with other scenarios, there is also potential to utilise the proposed Park & Ride at Findon. In interim periods local bus route extensions would require support, in the long term they may be self sustaining.

Strategic modelling has shown that Stonehaven developments are anticipated to increase traffic levels to the West of Stonehaven, however the A90 and AWPR Fastlink is anticipated to cope with this additional pressure without significantly affecting strategic journeys times – a point illustrated by the Stonehaven Scenario producing the least time lost due to congestion of all development options. When reviewed under local modelling conditions overall queues in the area between Charleston and Bridge of Dee were similar to other scenarios, but with all queues being held on the A90 and potentially extending as far as Charleston. The journey times on the A90 were not as efficient as Scenarios 1 and 2.

In terms of potential to use active travel, the Stonehaven sites has similar potential to Scenario 2 in potential to promote walking to access employment, but it has relatively low overall potential to access employment opportunities within cycling distance.

As with all scenarios, the feasibility of introducing transport infrastructure for this proposal would also rely on joint working between local councils and the trunk road authority to develop satisfactory traffic management arrangements between Charleston and Bridge of Dee. This scenario also relies on a new bridge over the A90 from Mill of Forrest Road and connection into the existing A90/A92 interchange. East Newtonleys requires junction connections from the A92 and A957. As with Scenario 3, further assessment will be required into the viability of a High Occupancy Vehicle lane on the A90 that is being investigated by Aberdeen City Council as from first inspection there are negative traffic impacts on this potential intervention, although less design issues to overcome than Scenario 1 and 2.

Risks

In addition to technical challenges that require further investigation and the need for additional local transport modelling to be undertaken, there is a series of risks associated with developing transport options for the scenarios including phasing requirements, transport trend changes, and reliance on committed infrastructure.

Ideally, to reduce risk, a development should be able to be relatively simple to implement and grow over time, utilising existing established transport networks and services or have the ability to adapt in a sustainable way. Where a development can meet these lower risk criteria there is more chance of keeping to the principles of sustainable transport, to support the aims of the Structure Plan and the Local Development Plan. Deliverability plans for individual phases of development would be needed to assess this fully in respect of the development sites considered in this study.



1 INTRODUCTION

1.1 Purpose of Report

SIAS Limited (SIAS), under the North East Framework Agreement was requested by Aberdeenshire Council to undertake a transport Comparative Appraisal of Major Sites study for the A90 South corridor. SIAS was assisted by MVA, who provided strategic transport model support to the study. The Steering Group for the study consisted of:

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- Transport Scotland – The national transport agency for Scotland
- Nestrans – The Transport Partnership for Aberdeen City and Shire
- Aberdeen City Council – The local government administration for Aberdeen City

The key aim of the study was to provide transport information to the Planning Service of Aberdeenshire Council and to Transport Scotland on the impacts of a series of development options in the A90 corridor. **It should be noted that the transport information is only one of a series of technical inputs that will be used to make decisions on the future land use allocations in the South of Aberdeenshire.**

The fundamental basis that development should be allocated in this general transport corridor was established in the *Aberdeen City and Shire Structure Plan 2009*¹ that has been approved in principle by the Scottish Government.

The emerging Aberdeenshire Local Development Plan that has been developed from the Structure Plan provides greater depth of detail and has been introduced through a *Main Issues Report*² (MIR) that was published for consultation in May 2009. The *Main Issues Report* gives details of currently preferred sites across Aberdeenshire; although this may change as the document moves towards becoming the draft *Local Development Plan (LDP)* on considering the results of the consultation and further study work.

Transport Scotland has written in response to the *Main Issues Report* consultation expressing concern over the settlement strategy being proposed for the A90 south corridor with the proposed strategy having significant consequences for the strategic road network. To be able to reach a conclusion on which approach is to be supported, a more detailed comparative appraisal was needed which considers the consequences of a range of major development options along the A90 south corridor in both a site specific and cumulative context.

1.2 Study Methodology

The study methodology³ was developed by SIAS and agreed with the Steering Group and is an objective led appraisal using Transport Scotland's emerging guidance. A Consultative Draft version of *Transport Planning Appraisal Guidance for Developing Planning and Management DPMTAG Version 8 (Transport Scotland, 13 August 2009)* was made available to SIAS so that the influence of this methodology could permeate the study.

¹ <http://www.aberdeencityandshire-sdpa.gov.uk/nmsruntime/saveasdialog.asp?IID=423&SID=149>

² http://www.aberdeenshire.gov.uk/planning/localplan_new/issues/index.asp

³ <http://www.aberdeenshire.gov.uk/transportation/72173A90SouthMethodology.pdf>



The DPMTAG methodology is closely allied to the best practise principles of *Scottish Transport Appraisal Guidance*⁴ (STAG). This appraisal method, specifically aimed at assessing future development plans, was effectively trialled in this study for the new Aberdeenshire Local Development Plan. Close partnering with both Transport Scotland and Aberdeenshire Council has been undertaken to ensure the study outcomes meet the high level aims of each organisation.

The A90 south corridor major development sites are identified in the Kincardine and Mearns sections of the *Main Issues Report (MIR)*; particularly those sites at Banchory Leggart, Marywell, Portlethen, Elsick Estate (Newtonhill), Stonehaven and Laurencekirk. The impact of development proposed in settlements along the A92 coast road has also been taken into account where the A92 meets the A90 south of Stonehaven.

The study area is shown in Figure 1.1. The study area includes the areas of Aberdeenshire aligned to the A90 south of Aberdeen and the A92. The study area also includes areas of the City of Aberdeen up to the River Dee crossings to evaluate any cross border transport impacts.



Figure 1.1 : Study Area

⁴ <http://www.transportscotland.gov.uk/stag/home>



1.2.1 Key Questions to be Answered by the Transport Appraisal

DPMTAG recommends that at the start of the study there are key questions that require to be answered in order to provide an evidence base for any future decisions on land allocations. The questions have assisted in developing the study:

- What is the relationship between demand and supply of transport networks and how will this affect the Strategic Transport Network?
- What is the cumulative impact of the plan proposals on travel demand?
- What options best meet Local Development Plan objectives?
- What are the wider policy impacts (social, economic and environmental)?

These questions are addressed in a strategic but quantitative way in this study.

For the proposed plan there will also have to be additional questions to be addressed:

- Are the interventions technically feasible?
- How will they be funded?
- When are they required?

It is proposed to address these questions in a strategic qualitative way in this current study. More detailed appraisal will be subsequently required.

Some local transport appraisal work has already been undertaken in the study area for the towns of Portlethen and Stonehaven. Capacity studies⁵ for these locations assessed traffic capacity and sustainable accessibility.

1.3 Report Structure

The report structure follows the comparative appraisal process. There were a series of tasks to be undertaken for the comparative study. Figure 1.2 illustrates the process that has been used based on DPMTAG. It was found that the option generation and sifting element would be best undertaken early in the process to enable a people trip generation exercise to take place, as this may vary between modes with differing potential transport options.

⁵ <http://www.aberdeenshire.gov.uk/transportation/TrafficCapacityStudies.asp>



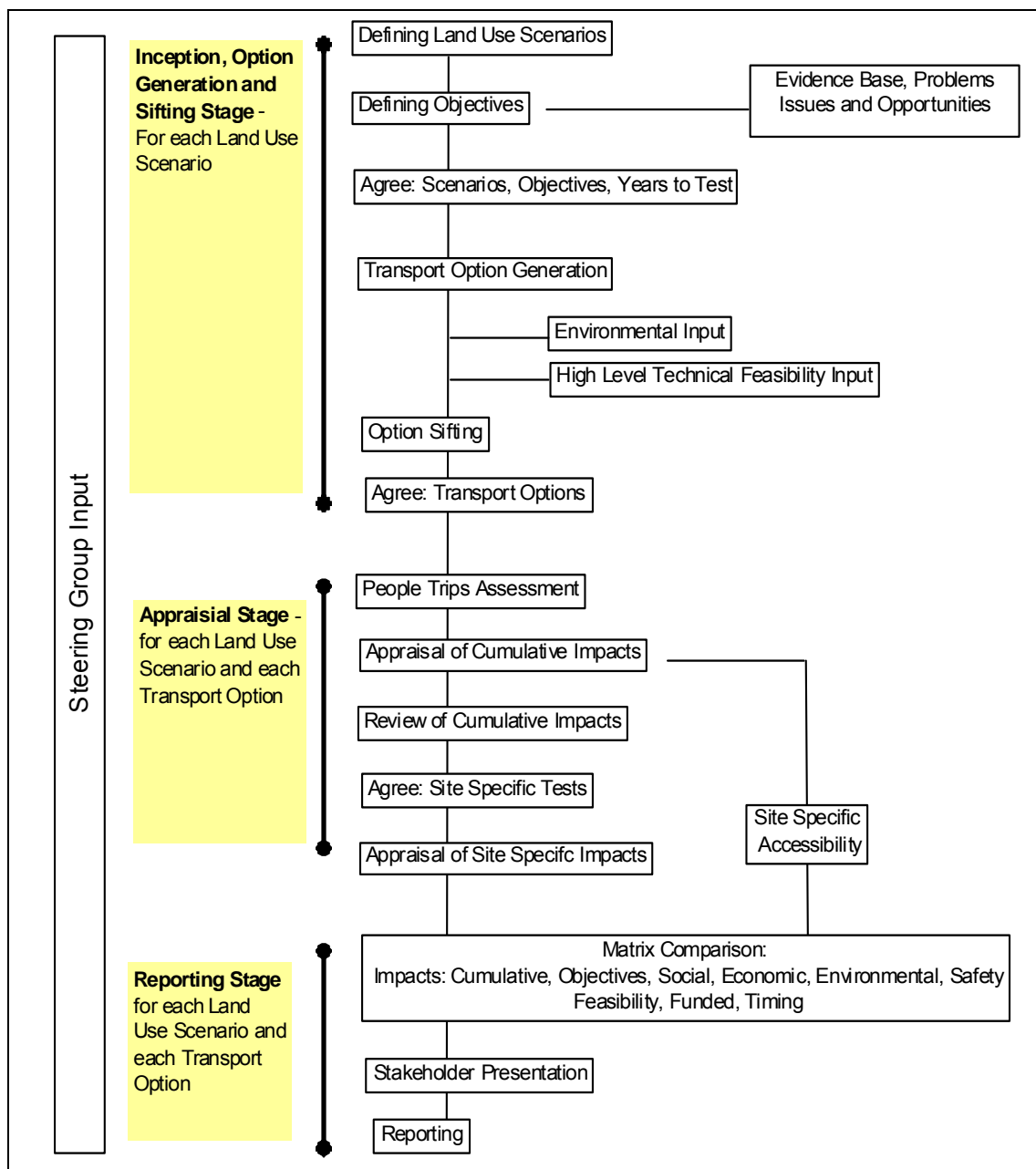


Figure 1.2 : Study Process

The report structure has been developed to firstly document the Inception Option and Generation Stage in Section 2. Sections 3 – 6 document the Appraisal Stage for each land use scenario and transport option.

There is supporting information on the appraisal for:

- Land Use Scenario 1 (Banchory Leggart and Schoolhill) with two transport options, shown in Section 3
- Land Use Scenario 2 (Banchory Leggart and Portlethen) with two transport options, shown in Section 4
- Land Use Scenario 3 (Elsick) with two transport options, shown in Section 5



- Land Use Scenario 4 (Stonehaven) with one transport option, shown in Section 6

Finally, Section 7 contains the main outcomes of the Reporting Stage summarising the comparison of major sites, Key indicators had been developed for this to align with DPMTAG and STAG shown in an overall comparison table.





2 PRE APPRAISAL OF MAJOR SITES

2.1 Introduction

Pre-appraisal is an essential part of any STAG based study. The Pre-Appraisal element of the study includes:

- Analysis of Problems/Issues and Opportunities
- Objectives Setting
- Option Generation, Sifting and Development

2.2 A90 Corridor Characteristics

A collation of data on key transport characteristics of the A90 corridor was undertaken to inform the study. Data on rail came from Nestrans' *Annual Monitoring Report*⁶ with additional traffic flow data being derived from the report in Appendix A that details current base conditions in the study area.

2.2.1 Rail

Rail Passengers per year to and from the stations for the year 07/08 was:

- Portlethen 22,000
- Stonehaven 453,000

The relative level of use of the stations demonstrates how attractive the stations are to passengers. Stonehaven has over twenty times the number of passengers than Portlethen. The reasons for this include criteria, such as the service frequency of rail services and accessibility.

2.2.2 Road

The passenger numbers for rail are given above as annual patronage but the traffic flow figures below are given as a daily average for road transport. A relative annual comparison between the figures shows the current modal use of the corridor between road and rail. At Stonehaven over twenty times more vehicles (around 10,500,000 per year) use the A90 north of Stonehaven when compared to passengers that use the rail network from Stonehaven.

Currently traffic flows on the A90(T) on an Annual Average Daily Traffic flows two-way (2007) are:

- A90(T) North of Stonehaven 28,700
- A90(T) South of Charleston 45,000
- A90(T) Bridge of Dee Approach 37,400

The most intensively used section of the A90 in terms of link volumes is south of the Charleston Interchange. At Charleston the A90(T) enters the City of Aberdeen where the A956 Wellington Road provides a secondary route to destinations in the city, so the reduction in intensity of traffic at the approach to the Bridge of Dee. Some additional pertinent transport facts include transport characteristics in the North East (2005/06), as follows:

⁶ http://www.nestrans.org.uk/db_docs/File/Board%20Meeting%20-%2029%20April%202009/2d%20Appendix_Monitoring%20Report.doc



- 70% of commuters drive to work in Aberdeenshire, 59% drive in Aberdeen
- 91% of car commuters have free car parking
- 56% of 'Shire residents find public transport convenient
- 53% of 'Shire households own at least one adult bicycle

2.3 Problems/Issues and Opportunities

2.3.1 Key Transport Problems/Issues in the Study Area

There are a number of key existing transport problems issues and constraints in the study area and these were discussed and detailed by the Steering Group. These have been grouped below into Council area considerations of rail and road based transport issues.

Aberdeenshire Rail Based Issues:

- Rail Capacity between Stonehaven and Aberdeen City (overcrowding at peak times)
- Car Parking capacity at Stonehaven Rail Station (demand does not meet supply)
- Portlethen has a limited rail service frequency

Aberdeenshire Road Based Issues:

- Bus destinations in and around Aberdeen are limited, focusing on the city centre
- Rural areas have low frequency of buses
- Badentoy junction is constrained
- A90 Portlethen to Charleston is congested at peak times
- Safety at A90 dual carriageway at-grade junctions (significant increases in right turning traffic would not be permitted)
- Rat running on the B979

Aberdeen City Rail Based Issues:

- No train station in the study area (and no prospect as new stations at this location not supported by government policy which aims to reduce inter urban journey times on the route)

Aberdeen City Road Based Issues:

- Buses and HGVs restricted at Bridge of Dee (max. width 7'00")
- Bridge of Dee is an ancient monument
- No bus priority measures on the A90
- Limited bus lanes on A956
- River Dee Bridge Crossings put a constraint in the road network
- Congestion at Bridge of Dee roundabouts has an extended peak
- Leggart Terrace congestion at peak times
- Air Quality Issues A956 Wellington Road



- Rat running on Cove Road and Cairngorm Road

2.3.2 Key Transport Opportunities in the Study Area

There are a number of key recent or committed transport opportunities in the study area and these were discussed and detailed by the Steering Group. These have been grouped under the timescale in which they are anticipated.

Recent/Short Term Transport Opportunities:

- Findon Interchange (opened 2008) – provides another access for Portlethen traffic
- A956 dualling (opened 2008) – between Charleston and Souterhead
- Train Service improvements (December 2008)
- Laurencekirk Rail Station re-opens (May 2009)
- Portlethen Train Service improvements (December 2009)
- Souterhead roundabout signal enhancement (scheduled for 2010)

Medium Term Transport Opportunities:

- Aberdeen Western Peripheral Route (AWPR) (scheduled for opening 2012) provides:
 - Alternative routes in and out of the study area
 - Window of Traffic Reduction on A90
 - Reduces tendency to rat run
 - De-trunking A90 Charleston – Bridge of Dee
- Park & Ride/Choose sites on A90 and A96 (scheduled for opening 2012)
- Badentoy-Schoolhill Link road (developer led)
- Stonehaven Train Station car parking enhancement (developer led)
- Stonehaven Train Station access enhancement – one-way working on rail bridge (developer led)
- A956 Wellington Road junction improvements (ACC)
- Potential HOV pilot project on A90 (ACC)

Long Term Transport Opportunities:

- Additional River Dee crossing capacity

The Steering Group confirmed the above issues and opportunities prior to refining objectives and developing transport options. The Steering Group were reminded that the key drivers of the *LDP* are not all transport related. The *LDP* aims include the importance of Assets (rail, road and harbours/ports) and achieving outcomes related to the general quality of life and the environment. The objectives for the study were set in this context, with the knowledge that general government objectives would also be reviewed in a *STAG* based approach including environment, safety, economy, integration accessibility and social inclusion criteria.



2.4 Defining Objectives

2.4.1 Local Development Plan Vision and Aims

Aberdeenshire Council has adopted the vision and aims of the finalised *Structure Plan* for the Aberdeenshire *LDP* and will develop objectives for the plan based on those aims. These are to:

- *provide a strong framework for investment decisions which help to grow and diversify the regional economy, supported by promoting the need to use resources more efficiently and effectively; and*
- *take on the urgent challenges of sustainable development and climate change.*

To support these main aims, the *LDP* also aims to:

- *make sure the area has enough people, homes and jobs to support the level of services and facilities needed to maintain and improve the quality of life;*
- *protect and improve our valued assets and resources, including the built and natural environment and our cultural heritage;*
- *help create sustainable mixed communities, and the associated infrastructure, which meet the highest standards of urban and rural design and cater for the needs of the whole population; and*
- *make the most efficient use of the transport network, reducing the need for people to travel and making sure that walking, cycling and public transport are attractive choices.*

This transport study is required to compare the site specific and cumulative impacts and best fit of a series of land allocations against the objectives of the *LDP* and make sure that these also meet the overall objectives of Local, Regional and National Transport Strategies. At the moment there are not specific objectives associated with the *LDP*, but the *vision* and *aims* that exist can be used to develop over-arching transport objectives that can be given indicators on which to evaluate performance.

2.4.2 DPMTAG Transport Appraisal

DPMTAG Transport Appraisal procedures suggest that it would be useful to set out broad objectives for the transport networks in the context of the overall vision and planning objectives.

The aims of the Aberdeenshire *LDP* are not solely transport related; they encompass improving quality of life and protecting and improving assets in addition to sustainability and transport issues. The purpose of objectives for this study are to comparatively appraise transport issues to allow decisions to be made on that perspective of the plan, without losing sight of the overall vision and planning objectives. The objectives will be outcome focused relating transport issues to the overall quality of life in the Aberdeenshire area and beyond.

Broad Objectives for this transport study were drafted by the consultants and then refined by the Steering Group and are established as follows:

- **Objective 1 – Make the most efficient use of the transport network**
By movement of people and goods using existing and committed networks; locally, across boundaries, and strategically



- Objective 2 – **Reducing the need for people to travel**
In terms of communities being able to operate locally for some journeys and by reducing distance to other facilities
- Objective 3 – **Making sure that walking and cycling are attractive choices**
By taking cognisance where sites are accessible to facilities within an active travel range and that any natural or manmade barriers to walking or cycling movement are considered
- Objective 4 – **Making sure that public transport is an attractive choice**
By making best locational use of existing public transport networks and identifying where additional measures can be effectively provided

As per *STAG* best practice guidance the objectives are SMART (specific, measurable, attainable, realistic and timed). Timing is set by the period of the *LDP*.

2.5 Cross Examination of Objectives

A cross examination has been undertaken to ensure that the objectives developed for the study are fit for purpose in the overall framework of the high level aims for transport of the Steering Group organisations. These include outcomes and objectives from the:

- Scottish Government's National Transport Strategy
- Nestrans' Regional Transport Strategy
- Aberdeenshire Council's Local Transport Strategy

The national outcomes from the Scottish Government's *National Transport Strategy*⁷ are:

- **National Outcome 1:** Improving journey times and connections
To tackle congestion and the lack of integration and connections in transport which impact on our high level objectives for economic growth, social inclusion, integration and safety
- **National Outcome 2:** Reducing emissions
To tackle the issues of climate change, air quality and health improvement which impact on our high level objective for protecting the environment and improving health
- **National Outcome 3:** Improving quality, accessibility and affordability
To give people a choice of public transport, where availability means better quality transport services and value for money or an alternative to the car.

The assessment in Table 2.1 illustrates that the study objectives correlate across all national outcomes with particular emphasis on reducing emissions where three out of the four study objectives connect with this strategic outcome of the Scottish government.

⁷ <http://www.scotland.gov.uk/Resource/Doc/157751/0042649.pdf>



Table 2.1 : National Transport Outcomes/Study Objectives Matrix

National Outcomes	Study Objectives			
	Objective 1 Make the most efficient use of the transport network	Objective 2 Reducing the need for people to travel	Objective 3 Making sure that walking and cycling are attractive choices	Objective 4 Making sure that public transport is an attractive choice
Improving journey times and connections	✓			
Reducing emissions		✓	✓	✓
Improving quality, accessibility and affordability			✓	✓

In terms of Nestrans' *Regional Transport Strategy*⁸ the study objectives would equally support the transport aims of the region, as shown in Table 2.2. Again the study objectives strongly support the environmental strategic objectives of the region in three out of four cases.

Table 2.2 : Regional Transport Aims/Study Objectives Matrix

Regional Strategic Objectives	Study Objectives			
	Objective 1 Make the most efficient use of the transport network	Objective 2 Reducing the need for people to travel	Objective 3 Making sure that walking and cycling are attractive choices	Objective 4 Making sure that public transport is an attractive choice
<i>To enhance and exploit the north east's competitive economic advantages, and reduce the impacts of peripherality.</i>	✓			
<i>To enhance choice, accessibility and safety of transport, particularly for disadvantaged and vulnerable members of society and those living in areas where transport options are limited.</i>			✓	✓
<i>To conserve and enhance the north east's natural and built environment and heritage and reduce the effects of transport on climate and air quality.</i>		✓	✓	✓
<i>To support transport integration and a strong, vibrant and dynamic city centre and town centres across the north east.</i>	✓			✓

⁸ http://www.nestrans.org.uk/db_docs/docs/Nestrans%20RTS%20final%20printed.pdf



Aberdeenshire Council also has a *Local Transport Strategy*⁹. The high level objectives from the local strategy are shown in Table 2.3. The study objectives correlate well with the local high level objectives for transport at an Aberdeenshire level; again with three out of four study objectives supporting local transport environmental objectives.

One local objective, shown in Table 2.3, that is not specifically highlighted by the study objectives is the desire to improve safety and security of journeys by reducing casualties and enhancing the personal safety of all users of the transport network. 'Safety' is a key criteria in the STAG process and as such will be reviewed for each land use scenario and transport test on an individual basis within the study.

It should be noted that from the outset of the study the Steering Group had the pre-requisite that additional right turning traffic could not be applied to at-grade junctions of the A90(T) between Laurencekirk and Charleston due to the safety concerns that this may have presented, from an increase in conflicting traffic movements.

Table 2.3 : Aberdeenshire Local Transport Strategy Objectives/Study Objectives Matrix

Local Transport Objectives	Study Objectives			
	Objective 1 Make the most efficient use of the transport network	Objective 2 Reducing the need for people to travel	Objective 3 Making sure that walking and cycling are attractive choices	Objective 4 Making sure that public transport is an attractive choice
<i>To promote a sustainable economy by maximising the effectiveness and efficiency of transport services, infrastructure and networks.</i>	✓			
<i>To promote social inclusion by connecting communities to facilities and services, and increasing the accessibility of the transport network.</i>			✓	✓
<i>To reduce the 'environmental footprint' of transport services, infrastructure and networks by reducing harmful emissions, and consumption of non-renewable resources and energy.</i>		✓	✓	✓
<i>To improve safety and security of journeys by reducing casualties and enhancing the personal safety of all users of the transport network.</i>				
<i>To improve the integration of the transport system between different services and modes, and with other relevant local, regional, national, and European policies.</i>				✓

⁹ <http://www.aberdeenshire.gov.uk/transportation/lts/LTS-textwithactivehyperlinksPDF.pdf>



2.6 Defining Land Use Scenarios

During the early stages of the study the Steering Group set the series of land use tests to be undertaken. These were primarily based on the locational aspect between Aberdeen and Stonehaven. In Scenario 1 and 2 the bulk of development is in the north of the corridor. In Scenario 3 the bulk of development is between the north and south of the corridor. In Scenario 4 the bulk of development is in the south of the corridor.

The major sites scenario tests for the study were agreed with Aberdeenshire Council, Transport Scotland and Nestrans at a pre-inception meeting on 21 August 2009. The land use scenario housing sites were further confirmed by the full Steering Group including Aberdeen City Council on the 8 October 2009 as, Land Use Scenario:

5. Preferred MIR strategy Banchory Leggart (K121) & Schoolhill (K125)
6. Banchory Leggart (K121) & West Portlethen (K90)
7. Elsick (K142)
8. Stonehaven South Sites (K89 & K101)

The Stonehaven sites at Ury (K73) and Mains of Cowie (K122) have been also been consistently applied in each land use scenario at the request of the Steering Group. There are a few minor sites in the corridor that have not been applied or reviewed (MIR Ref. K13, K59 and K71). Figure 2.1 indicates the location of the scenario sites considered in the study.



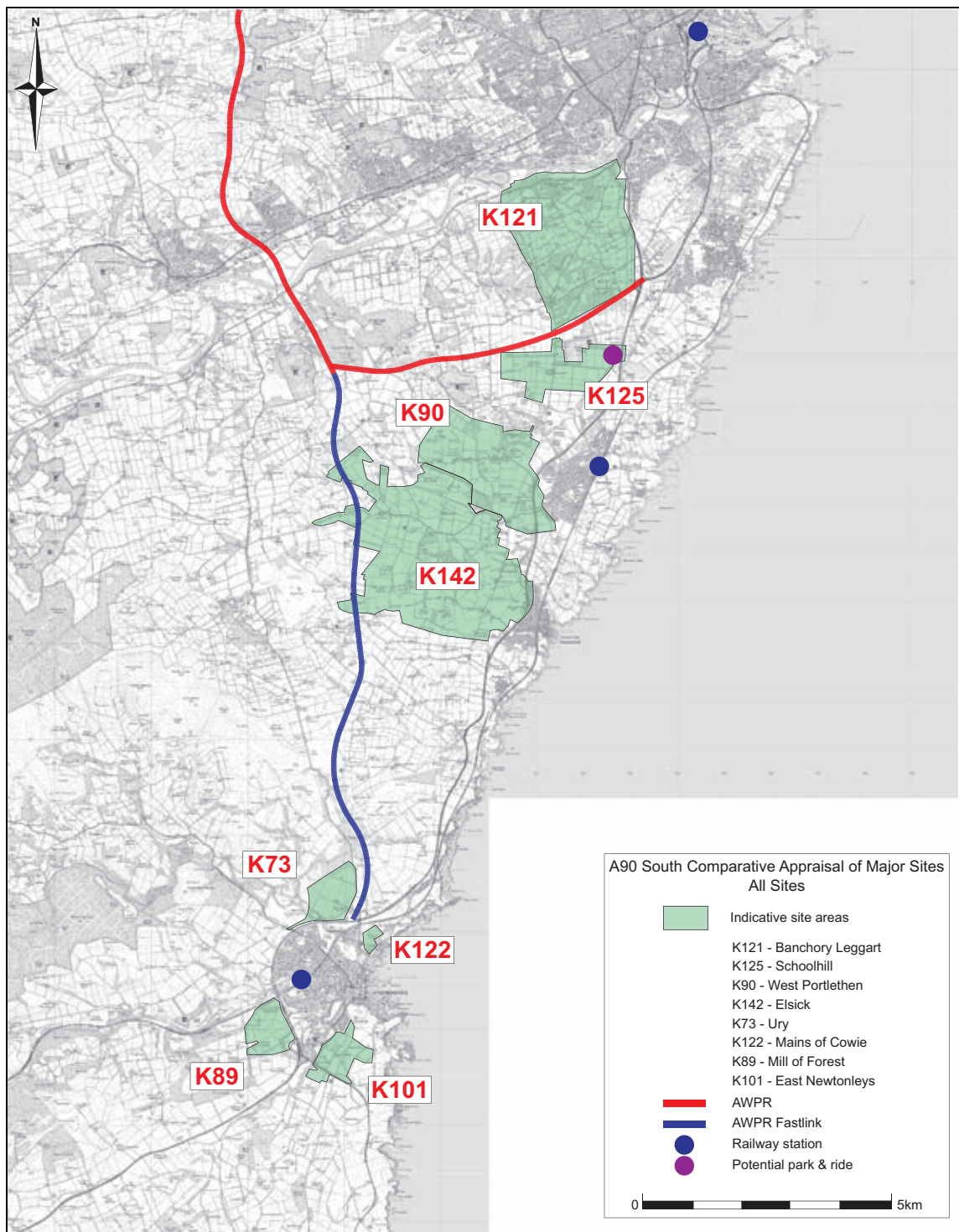


Figure 2.1 : Major Sites Location Plan

A basic assumption established by the Steering Group was that for each scenario the total number of new households assumed would be the same, with a total of 4,600 houses by the year 2023. The equity in establishing the same housing content for each overall scenario has made the comparative nature of the study a robust and transparent exercise when reviewing key indicators. Details of the locations of sites and the allocations within each option are shown in Section 3 – 6.



The preferred *MIR* stand alone employment sites were assumed to be unchanged between each Land Use Scenario¹⁰. These stand alone employment sites are:

- Mains of Cairnrobin North, Marywell (K135)
- Mains of Cairnrobin South, Marywell (K45)
- Extension of Badentoy Industrial Estate, Portlethen (K136)
- Redcloak, North Stonehaven (K67)
- Redcloak South, Stonehaven (K36)
- Inverbervie South, Inverbervie (K15)
- Extension of Linton Business Park, Gourdon (K44)

Potential internal employment sites within the proposed major site areas are also taken into consideration in this study. The assumption for each site will be that one hectare of employment land would be brought forward per 200 houses. This is based on *Structure Plan* allocations as advised by Aberdeenshire Council. The proportion of internal trips was based on the characteristics of areas adjacent to the potential sites:

- Banchory Leggart & Schoolhill was based on Cove characteristics
- Portlethen sites was based on Portlethen characteristics
- Elsick sites was based on Portlethen characteristics
- Stonehaven site was based on Stonehaven characteristics

The plans shown do not include all the *MIR* preferred strategy for the areas south of Stonehaven. It is assumed that the preferred *MIR housing* and *employment* allocations for areas further south and south-west of Stonehaven (in Aberdeenshire) will be included in each of the above Option Scenarios.

The potential line of the proposed AWPR and AWPR Fastlink has been included on the plans for ease of reference. The outcome of the AWPR public inquiry was announced during the course of the study.

2.7 A90(T) Corridor Accumulation

The assumptions for the A90 South corridor generally follow the housing allowances stated on page 27 of the *Aberdeen City and Shire Structure Plan 2009* document, including:

- 4,600 additional houses in the Portlethen to Stonehaven corridor by the year 2023, the location of which would change between scenarios, but the total number of houses would remain constant.
- Around a further 1000 houses will be included in the Portlethen to Stonehaven corridor to represent the current Effective Housing Land Supply (EHLS) – The level and location of the EHLS allocation will be consistent for every scenario.
- South of Drumlithie to Laurencekirk would have 900 additional houses to the year 2023 and an additional 235 houses to represent the current (EHLS) in this area. The level of housing in this part of the corridor would be consistent for every scenario.

¹⁰ <http://www.aberdeenshire.gov.uk/transportation/72173A90SouthMethodology.pdf>



- The total number of additional houses in the A90 South corridor would be around 6,700, with 4,600 of which would change location between scenarios.
- The A92 Coast is not strictly located within the A90 South corridor and therefore the future housing allocation would be covered by a proportion of the housing 'requirement', in line with that allocated for the *Local Growth Rural Housing Market Area (RHMA)*.

2.8 Transport Option Generation

A number of outline strategic access transport options were identified to provide sufficient information for further assessment as discussed with the Steering Group.

The problems, issues and constraints with each site were the starting point for addressing access options. The access options were based on input from the Steering Group, environmental constraint information (from Aberdeenshire Council), and engineering judgement. Transport options included public transport and roads based options, including any relevant documented representations from major site developers on potential access solutions.

Each land use scenario had a series of transport options which were sifted to two access strategies for appraisal purposes. Given the high level nature of the study, the public transport options were approved by the Steering Group following consultation with Aberdeenshire Council's Public Transport Unit. Consultation with Bus Operators will be required in the more detailed development planning stages. Where developer consultations with Bus Operators have already taken place then this information was utilised in the study. Details of the transport options as developed by the Steering Group are shown in subsequent Sections 3 – 6.

2.9 Sifting

The Steering Group developed the transport options to be tested. Some sifting occurred in relation to any potential for a new rail halt at either Cove or Newtonhill. As neither of these proposals was featured in the *Scottish Transport Project Review*¹¹ (STPR) their feasibility is outwith the timescale for the LDP and, as such, they are not considered in the transport options being proposed.

2.10 Transport Options

The Transport Options for each site are described in detail in Sections 3 – 6. In essence they vary between having one major junction access or two major access points onto the strategic or primary road network. Full development allocations of housing and employment in the year 2023 have been assumed in the assessment. The walking, cycling and Public Transport measures for each transport option are also described in detail in Sections 3 – 6.

The transport options have been established in an indicative outline form for this study. To support any planning application the potential sites and any transport measures applying to them would still require to be appraised in detail through a Transport Assessment (TA). It is noted that the key pre-requisites for determining the transport acceptability of a development, as shown in a TA are detailed in *Scottish Planning Policy*¹². For ease of reference some key points from the planning policy are shown as follows.

¹¹ <http://www.transportscotland.gov.uk/stpr>

¹² <http://www.scotland.gov.uk/Resource/Doc/300760/0093908.pdf>



Scottish Planning Policy states that:

Planning permission should not be granted for significant travel generating uses in locations which would encourage reliance on the private car and 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,*
- *it would have a detrimental effect on the capacity of the strategic road and/or rail network, or*
- *the transport assessment does not identify satisfactory mechanisms for meeting sustainable transport requirements.*

In addition it should be noted that a Travel Plan is likely to be required, *Scottish Planning Policy* states that:

A travel plan is a package of measures aimed at promoting more sustainable travel choices and reducing reliance on the car, and should be encouraged for all significant travel generating developments. Development plans or supplementary guidance should explain when a travel plan will be required in support of an application for planning permission.

2.11 Appraisal Assumptions

2.11.1 Methodology

The person trip generation for the land use scenarios of the A90 South corridor has been developed within the Aberdeen Sub-Area Model (ASAM version 4). ASAM uses household, population and employment information to calculate the level of trip movements across Aberdeen and Aberdeenshire. This includes forecasting future traffic levels and public transport patronage. Mode share is determined by the travel characteristics of a particular area (i.e. time to travel to/from other origins/destinations), so it was important that an appropriate representation of access strategies (for both road based and public transport modes) was included at an early stage of the appraisal process. Where a transport option has an intensification of public transport availability this will have impacts modelled by ASAM.

2.11.2 Types of Transport Modelling in The Study

The ASAM facility has been used to provide strategic modelling information to the study in relation to the transport impacts on the A90(T) corridor and the northeast as a whole. Full technical details of the development of person trips and application of public transport assumptions with outputs from the strategic modelling for this study are detailed in Appendix A.

Initial site specific modelling has been undertaken at a local level between Charleston and Bridge of Dee using a high level input S-Paramics microsimulation model. The purpose of this was to provide further information on the potential transport impacts on this area of the network on the A90T) corridor. Full technical details of the local modelling are shown in Appendix B.

Additional accessibility analysis has been undertaken using Accession modelling to assess the existing and future potential for active travel and public transport relative to the Land Use Scenarios being reviewed. Full technical details of the active travel modelling are shown in Appendix C and Appendix D contains the public transport modelling.



2.11.3 Strategic Modelling ASAM4 Inputs

At the initial stages, ASAM4 required the following specific information (at a geographical or zonal level) to generate forecasts relating to people trip generation associated with particular developments:

- Household Estimates
- Population estimates
- Employment Estimates

Where relevant, ASAM also requires information relating to road and public transport access strategies for new development areas (i.e. general information anticipating how each development would be connected to the transport system. ASAM has derived person trips from factoring hourly time periods with an average single annualisation/daily factor to achieve a daily total for comparative purposes only between land use scenarios. Congestion assessments are based on peak hourly data. More detailed assessment and approval of mode share targets will be required in association with development specific Transport Assessments.

Existing settlements in the A90 South corridor (such as Stonehaven and Portlethen) have a recorded (or modelled) public transport mode share of around 10% - 13%, which is broadly inline with the PT forecasts associated with these new developments. Of course, the public transport forecasts provided here are dependent on the development actually delivering the (reasonably good) level of public transport accessibility assumed for this study.

All assumptions have been discussed with the Steering Group to verify the assumptions for the sub-area model.

2.11.4 Strategic Modelling ASAM4 Outputs

Using the input assumptions ASAM4 forecasts changes in the level of travel movements based on car ownership levels. ASAM4 has also generated forecasts at a more detailed time period level, producing overall levels of Road and Public Transport Demand in the morning (AM), inter peak (IP) and evening peak (PM) periods. Forecasts are given to the year 2023.

ASAM4 has generated travel statistics for each modelled time period: (AM, IP and PM): giving Change in Vehicle Kilometres Travelled and Change in Vehicle or Public Transport Travel Time

- Along specific sections of the road network
- Between key origins and destinations (i.e. to/from key employment locations or transport interchange points)

The modelling has also been used to identify congestion pinch points and evaluated changes in road vehicle based carbon emissions ASAM4 has output strategic road based link flows and changes in public transport patronage.

2.11.5 S- Paramics Site Specific Testing

In addition to strategic modelling, specific local transport modelling of the A90(T) corridor between Charleston and Bridge of Dee has been undertaken using S-Paramics microsimulation techniques. The full detail of this process is described in Appendix B.



The main aim of this piece of work was to assess, making best use of the available data, the impact of the proposed development scenarios on the A90 between Charleston and Bridge of Dee and identify whether the traffic modelling shows this impact to affect the operation of the future Aberdeen Western Peripheral Route at Charleston.

Key junctions at Bridge of Dee and at Cairngorm Drive remained as per the base scenario with no assumptions regarding improvements or increased capacity other than the affects of interventions integral to the transport options.

In some cases results of journey times between Strategic and Site Specific testing can vary due to the differing nature of the modelling process and can not be directly compared. Site specific microsimulation models provide a more detailed assessment of junction delay and can replicate queueing from junctions, subject to validation criteria, should be utilised to determine impacts at a local level. The appraisal undertaken was an initial appraisal using input from ASAM4 as applied in this study. Further more detailed assessment will be required when the *LDPs* for both Aberdeenshire and Aberdeen City have been developed further.

The potential impact on the operation of a High Occupancy Vehicle (HOV) lane that Aberdeen City Council has been considering has not been taken into account in this piece of work due to time constraints, it may be necessary to revisit this at a future date. A qualitative assessment of the operation of impact on this proposal has been undertaken in the overall assessments described in Sections 3 – 6.



3 APPRAISAL OF LAND USE SCENARIO 1 – BANCHORY LEGGART & SCHOOLHILL

3.1 Introduction

This section summarises the results of an appraisal of Land Use Scenario 1. The land use scenario includes the Banchory Leggart and Schoolhill sites in addition to the Ury and Mains of Cowie sites which are common to all four scenarios. The format of this appraisal is consistent with STAG guidance.

3.1.1 Proposal Description (Land Use Scenarios)

Land Use Scenario 1 includes the following development sites, with associated housing and employment assumptions:

- K121 Banchory Leggart 2,544 households and 840 jobs
- K125 Schoolhill 1,626 households and 537 jobs
- K73 Ury 230 households
- K122 Mains of Cowie 200 households

The scenario includes Structure Plan development allocations in all other locations as described in detail in the *Strategic Transport Modelling Report*, contained in Appendix A.

The Ury and Mains of Cowie sites are common to all four scenarios and have been appraised in detail in Section 6 of this Report. The following sections focus on the Banchory Leggart and Schoolhill sites that are the main sites in Land Use Scenario 1.

3.1.2 Transport Test 1

Transport Test 1 as specified by the Steering Group and supported by developer submissions, includes the following infrastructure:

- K121 Banchory Leggart – Access from A90 at Nigg Way and x2 local accesses from south. Bus gates to be introduced on Leggart Terrace and Nigg Way
- K125 Schoolhill – x2 local accesses from north, 1 from east and 1 from south

The transport test includes infrastructure which is committed in the *Structure Plan*, as described in detail in Appendix A. Public transport provision has also been assumed for the purpose of this study, at levels consummate with the implementability criteria.

Figure 3.1 confirms the indicative access strategy for the four sites included in Transport Test 1.



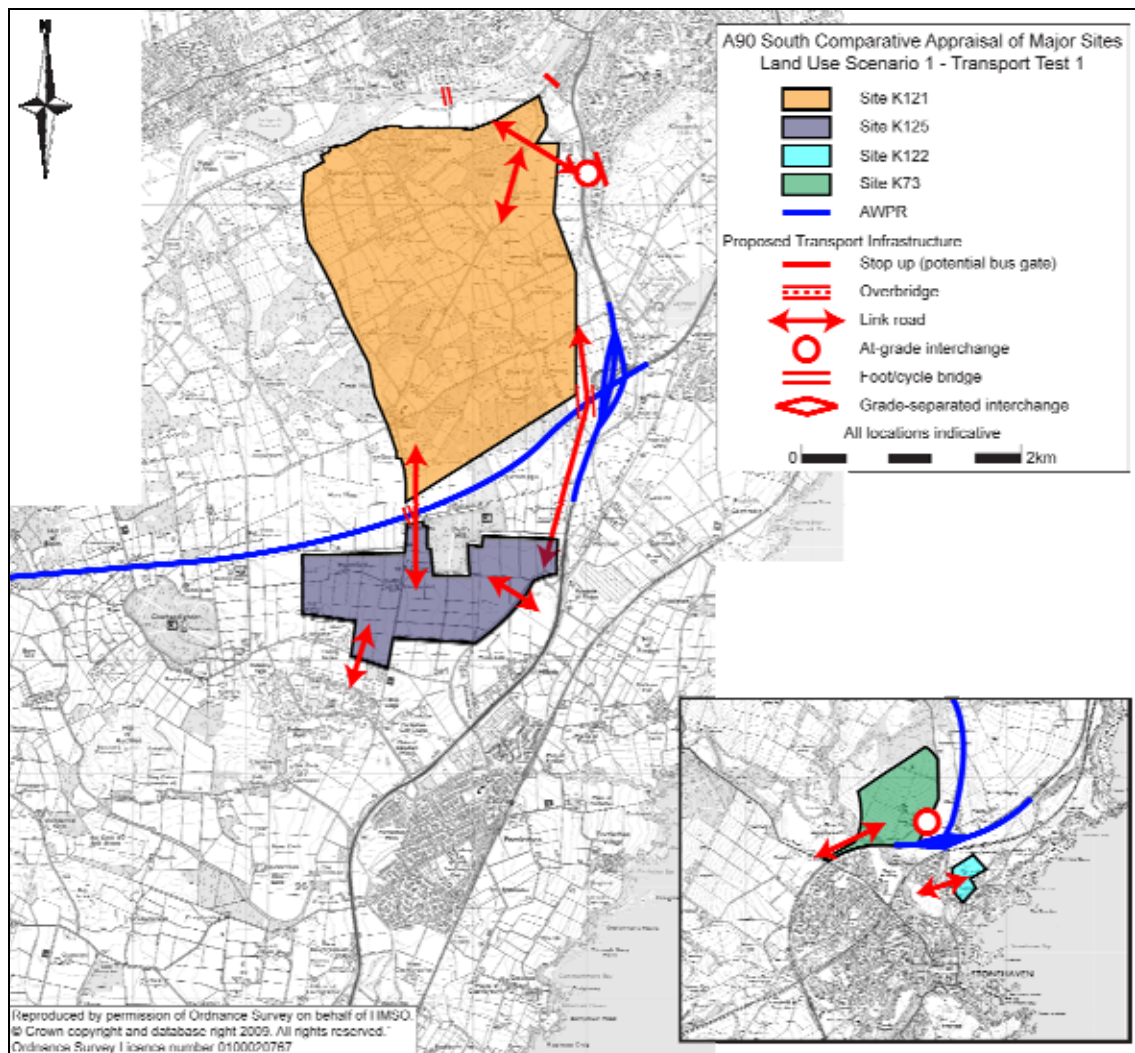


Figure 3.1 : Transport Test 1 Access Strategy

3.1.3 Transport Test 2

Transport Test 2 as specified by the Steering Group and supported by developer submissions, includes the following infrastructure:

- K121 Banchory Leggart – 2x accesses from A90 at Nigg Way and Redcraigs, 2x local accesses from south. Bus gates to be introduced on Leggart Terrace and Nigg Way
- K125 Schoolhill – 2x local accesses from north, 1x from east and one from south

The transport test includes infrastructure which is committed in the Structure Plan as described in detail in Appendix A. Public transport provision has also been assumed for the purpose of this study, at levels commensurate with the implementability criteria.

Figure 3.2 confirms the indicative access strategy for the four sites included in Transport Test 2.



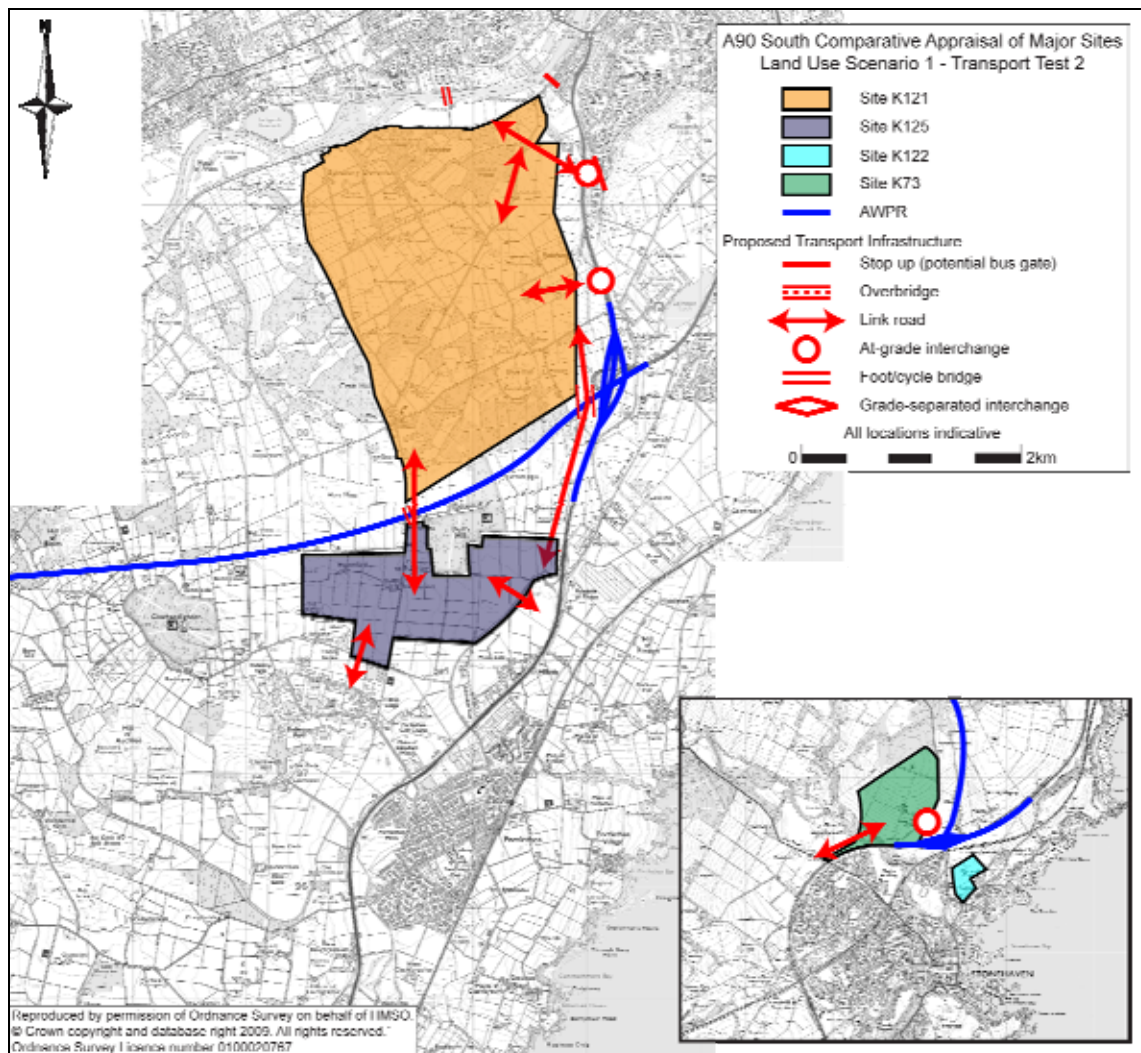


Figure 3.2 : Transport Test 2 Access Strategy

A detailed appraisal of existing public transport services has been undertaken in consultation with Aberdeenshire Council’s Public Transport Unit as part of this study with a mode share for public transport usage for each site. Table 3.1 summarises the development generation (car drivers and public transport users) and mode share which has been assumed for the purpose of this study, as determined by ASAM4 strategic modelling. The daily trip figure is a total seven day annual average figure (arrivals and departures) for residential and employment uses, it does not include active travel modes, goods vehicles or car passengers and is presented for comparative purposes only.

Table 3.1 : Development Trip Generation and PT Mode Share (Transport Test 1 & Test 2)

Site	Daily Trips	PT Mode Share
Banchory Leggart	11,991	13%
Schoolhill	7,340	11%



3.2 Background and context of the location

3.2.1 Geographic Context

The Banchory Leggart site is located to the south of Aberdeen. The site is bound on the north by the B9077 and River Dee, east by the Aberdeenshire Local Authority boundary and the A90(T), and south by the route of the proposed AWPR. An unclassified rural road network currently provides access into the site with no direct access provided from the strategic road network.

The Schoolhill site is located to the north-west of Portlethen. The site is bound on the north by the route of the proposed AWPR, by the A90(T) to the east and south by the Badentoy Industrial Estate. The site can currently be accessed from Schoolhill Road, which connects to the strategic road network at the A90(T) Findon Interchange.

3.2.2 Social Context

The Banchory Leggart and Schoolhill sites are both rural in nature with no existing villages, only residential hamlets and farmsteads, contained within the site boundaries.

The *2009 Scottish Index of Multiple Deprivation (SIMD) 2009* provides details on an area's demographics including a relative ranking of an area's deprivation based on 38 indicators across 7 domains including; income, employment, health, education, skills and training, housing, geographic access and crime.

The Scottish Government calculate a *Geographic Access Domain (GAD)* rank based on the accessibility of an area by both car and public transport, to a range of services including; GP surgeries, primary schools, secondary schools, retail centres, post office and petrol stations.

Scotland is divided into 6,505 output areas based on defined data zones. Data zones are groups of Census output areas with populations of between 500 – 1,000 residents. Each zone is allocated an *SIMD* rank and a *GAD* rank. The higher the *SIMD* Rank, the less deprived it is assumed to be. The higher the *GAD* rank, the more accessible it is.

Table 3.2 summarises the *SIMD* and *GAD* Rank which pertains to the two development sites.

Table 3.2 : *SIMD* Rank and *GAD* Rank

Site	<i>SIMD</i> Rank	<i>GAD</i> Rank
K121 Banchory Leggart	4,689	527
K125 Schoolhill	4,689	527
Maximum Rank for Scotland	6,505	6,505

The summary provided in Table 3.2 confirms that the sites are all in the top 25% overall least deprived areas in Scotland according to the *SIMD* rank.

The sites are both within the top 10% most deprived areas in terms of access to local facilities, in Scotland according to travel *GAD* rank.

3.2.3 Economic Context

Portlethen is the nearest Aberdeenshire town to the Banchory Leggart and Schoolhill sites. The town has a population of 6,632 and was developed as a new town in the 1970s to accommodate the demand for new housing in Aberdeen which was generated by the oil and gas boom. 2006



statistical data (obtained from www.aberdeenshire.gov.uk/statistics) confirms that the majority (64.2%) of the town's residents aged 16 – 74 work in Aberdeen City.

3.3 Cumulative Transport Impacts

The Aberdeen Sub-Area Model 4 (ASAM4) is a strategic transport model which has been developed by MVA for the Aberdeenshire and Aberdeen City areas. The analysis which has been undertaken using the model to inform this study is described in detail in Appendix .

Key indicators have been used to summarise the cumulative impact of Land Use Scenario 1 on the operation of the strategic road network. Data has been extracted from ASAM4 which pertains to the change in daily traffic flows (2007 – 2023 with the development scenario) on the A90(T) on the approach to Bridge of Dee and to the south of Charleston. In addition, data has been extracted with regard to the change in rail patronage and utilisation for trips travelling into Aberdeen in the AM peak hour. Data has been extracted for the rail network to the north of Portlethen.

Table 3.3 summarises the change in daily traffic flows and rail passenger numbers as extracted from ASAM4 for Transport Tests 1 and 2. It is noted that benefits of traffic reduction from the Aberdeen Western Peripheral Route at the A90(T) Bridge of Dee would be absorbed by the development with 2007 levels of daily traffic flow by 2023 at this location.

Table 3.3 : Cumulative Transport Impact – Key Indicators (Transport Tests 1 & 2)

Indicator	Location	Change	
		Test 1	Test 2
Daily traffic flows Change 2007-2023	A90(T) Bridge of Dee Approach	0%	0%
Daily traffic flows Change 2007-2023	A90(T) South of Charleston	6%	1%
AM Peak hour traffic flows Change 2007-2023	A90(T) Bridge of Dee Approach	-5%	-5%
AM Peak hour traffic flows Change 2007-2023	A90(T) South of Charleston	-5%	-12%
Change in Peak Hour Rail Patronage and Utilisation 2007-2023	Northbound rail travel north of Portlethen	17%	17%

3.4 Transport Planning Objectives

The following planning objectives have been set as part of this study:

- Objective 1 – **Make the most efficient use of the transport network**
By movement of people and goods using existing and committed networks; locally, across boundaries, and strategically
- Objective 2 – **Reducing the need for people to travel**
In terms of communities to operate locally for some journeys, by reducing distance to other facilities
- Objective 3 – **Making sure that walking and cycling are attractive choices**
By taking cognisance where sites are accessible to facilities within an active travel range and that any natural or manmade barriers to walking or cycling movement are considered
- Objective 4 – **Making sure that public transport is an attractive choice**
By making best locational use of existing public transport networks and identifying where additional measures can be effectively provided

The following sections summarise the results of the analysis which has been undertaken to enable Land Use Scenario 1 to be appraised against the above objectives.



3.4.1 Objective 1 – Make the most efficient use of the transport network

Transport Test 1

A high level local S-Paramics model has been constructed to inform this study with journey time data collected for the northbound A90(T) between Charleston and Bridge of Dee. The modelling exercise is described in detail within Appendix B. A maximum journey time of around **20min** has been determined by the modelling undertaken with the additional of Land Use Scenario 1 generated traffic in 2023, an equivalent journey time of around 16min was recorded in the 2007 Base. The maximum journey time is reported for the AM peak period and has assumed that traffic is permitted to re-route via Findon.

A maximum cordoned queue of around 6,300m has been recorded in this transport test which compares to a maximum cordoned queue of around 4,100m in the 2007 Base. In addition to the model showing vehicles queueing on the A90(T) on the approach to Bridge of Dee, the model shows that vehicles will be queueing back into the Banchory Leggart site when accessing the A90(T) during peak periods of network operation.

The arrangement tested has not been demonstrated to operate effectively. In the local modelling undertaken, queueing was shown to block back through the first access junction from the Bridge of Dee, causing queueing back into the development site at peak times of day.

Transport Test 2

A maximum journey time of around **19min** has been determined by the modelling undertaken with the additional of Land Use Scenario 1 generated traffic in 2023, an equivalent journey time of around 16min was recorded in the 2007 Base. The maximum journey time is reported for the AM peak period and has assumed that traffic is permitted to re-route via Findon.

A maximum cordoned queue of around 6,600m has been recorded in this transport test which compares to a maximum cordoned queue of around 4,100m in the 2007 Base. In addition to the model showing vehicles queueing on the A90(T) on the approach to Bridge of Dee, the model shows that vehicles will be queueing back into the Banchory Leggart site when accessing the A90(T) during peak periods of network operation.

As with Test 1, the existing arrangement tested has not been demonstrated to operate effectively but the availability of a second junction has some operational benefits by providing a secondary access point to the A90 further from the congestion at the Bridge of Dee.

3.4.2 Objective 2 – Reducing the need for people to travel

Transport Test 1

ASAM4 has been used to predict the overall increase in vehicle kilometres which is generated by development of Land Use Scenario 1 in 2023. Comparison is made with the 2007 base model with the increase predicted to be **960 million kilometres** per year, which equates to an increase of 25% over the 2007 base of 3,819 million kilometres per year.

Transport Test 2

Transport Test 2 is predicted to generate an increase in vehicle kilometres of **958 million kilometres** per year when compared to the 2007 base model which equates to an increase of 25% over the 2007 base of 3,819 million kilometres per year.



3.4.3 Objective 3 – Making sure that walking and cycling are attractive choices

An appraisal of the accessibility of the sites by active travel modes (walking and cycling) has been undertaken based on their proximity to existing and potential future employment sites. The results of the appraisal do not alter between Transport Test 1 and 2.

It is generally accepted that employees will be prepared to travel up to 20 minutes on foot or by cycle to access their place of work. This equates to a 1.6km walk and around a 5km cycle, which is within the indicative guidance for acceptable walking and cycling distances as set out in *STAG*.

Accession and Mapinfo GIS software packages have been used to inform the accessibility analysis which is presented in this study. Full details of the accessibility appraisal in terms of active modes of travel (walking and cycling), is presented in Appendix C.

The accessibility of the land use scenario sites has been appraised in terms of the sites proximity to existing and future employment opportunities in Aberdeenshire. Accession has been used to appraise the number of employees who currently work within a convenient walk (1.6km) or cycle (5km) of the land use scenario sites.

Table 3.4 summaries the employment population (existing and potential future) which is located within a convenient walk or cycle of the land use scenario sites.

Table 3.4 : Employment Site Accessibility by Active Travel Modes

	Existing Employment	Existing + Future Employment
Access on Foot (1.6km)	4,039	5,415
Access by Cycle (5km)	51,028	52,404

Table 3.5 summarises the accessibility of the land use scenario sites to potential future employment sites based on a qualitative assessment.

Table 3.5 : Accessibility to Future Employment Sites¹³

Site	Future On-site Employment	North Portlethen (K136)	Marywell (K45 & K135)	Stonehaven (K36 & K67)
Banchory Leggart	√√	X√	X√	XX
Schoolhill	√√	√√	X√	XX

Key:

- XX Not accessible on foot or by cycle
- X√ Not accessible on foot but accessible by cycle
- √√ Potentially accessible on foot and by cycle

As can be seen from the summary which is presented in Table 3.5, it is anticipated that there will be future employment provided in the Banchory Leggart and Schoolhill sites with residents of the sites expected to be able to access these opportunities on foot or by cycle.

The Schoolhill site is predicted to be the most accessible in terms of active travel modes as it is located within 5km of the North Portlethen and Marywell employment areas in addition to

¹³ Distance measured from centre of site



within 1.6km of the North Portlethen site. The analysis does not take account of future employment sites in the Aberdeen City boundary, which may be accessible from the Banchory Leggart site although it does take account of all existing employment sites in Aberdeenshire and Aberdeen City.

The accessibility of Land Use Scenario 1 sites has also been appraised in relation to existing and proposed education amenities. Table 3.6 summarises the accessibility of the amenities in terms of active travel from the sites.

Table 3.6 : Accessibility to Existing and Future Schools¹⁴

Site	Existing Primary School	Proposed Primary School	Existing Secondary School	Proposed Secondary School
Banchory Leggart	X√	√√	X√	X√
Schoolhill	X√	√√	X√	XX

Both the Banchory Leggart and Schoolhill sites are to be developed to include a primary school which will be accessible on foot and by cycle. The location of the nearest existing secondary schools in Kincorth and Portlethen are considered to be outwith convenient walking distance of both sites although they are considered to be accessible by cycle. As agreed with Aberdeenshire Council, it has been assumed that there is to be a secondary school provided at Loirston Loch which would be located within a convenient cycle distance of the Banchory Leggart site.

An appraisal of the transport network in the vicinity of the sites has been undertaken with barriers to active travel (i.e. travel on foot or by cycle) highlighted.

Table 3.7 summarises existing issues and considerations for implementation to minimise the impact of the identified barriers to movement.

Table 3.7 : Assessment of Physical Barriers to Active Travel

Issue	Consideration
River Dee presents a barrier to movement to the north of the Banchory Leggart site	Provision of a foot/cycle bridge to provide connection to the existing pedestrian network located to the north
A90(T) presents a barrier to movement to the east of the Banchory Leggart site	Introduction of pedestrian crossing facilities in association with reduced speed limit on de-trunked A90
Limited pedestrian/cycle network in vicinity of Banchory Leggart site	Provision of connection between site and existing transport networks
Limited pedestrian network in vicinity of Schoolhill site	Provision of connection between site and existing transport networks

3.4.4 Objective 4 – Making sure that public transport is an attractive choice

A review of the accessibility of Land use Scenario 1 sites has been undertaken in terms of existing public transport provision in particular with regard to the accessibility of Aberdeen City Centre in relation to the sites. The results of the appraisal do not alter between Transport Test 1 and 2.

¹⁴ Proposed secondary school assumed to be located at Loirston Loch



Data has been obtained from the following sources to appraise the accessibility of Aberdeen City Centre from the sites:

- Distance to nearest rail station estimated using <http://www.gmap-pedometer.com>
- Rail timetable information obtained (30 October 2009) from <http://www.nationalrail.co.uk>
- Total average bus service journey time (including drive time estimated using Accession GIS software) + 5min wait time
- Average car travel journey time data estimated using <http://www.transportdirect.info> and assumes travel to City Centre with 5min added for accessing car park

Rail travel times have been calculated based on car travel time to the nearest Aberdeenshire rail station and travel time by rail to Aberdeen City Centre. An additional 5min has been added to the travel time to allow for passengers arriving at the rail station in advance of boarding a scheduled rail service.

Accession has been used to appraise the journey time by bus into the centre of Aberdeen from the development sites. Data which pertains to car travel has been obtained from the Transport Direct website for comparison with travel by public transport. To provide a robust comparison with public transport services, travel time to the centre of Aberdeen has been estimated. An additional 5min has been added to the extracted journey times to account for drivers finding a parking space in the city centre.

In addition to estimating the accessibility of Aberdeen City's main employment area (city centre), the Transport Direct has been used to estimate the journey time by public transport and car from the land use scenario sites to Westhill which contains one of Aberdeenshire's main employment areas.

An average weighted journey time has been derived for the Banchory Leggart and Schoolhill sites based on the number of houses which is to be accommodated on each site to enable comparison of the scenarios to be undertaken.

Table 3.8 summarises journey time by public transport from the development sites and provides a comparison with an equivalent journey by car.



Table 3.8 :Existing Accessibility to Aberdeen City Centre and Westhill by Public Transport and Private Car

		Banchory Leggart	Schoolhill	Weighted Average Journey Time
Peak Hour Rail Travel	Nearest Rail Station	Portlethen	Portlethen	
	Distance to Rail Station ¹⁵	6km	3km	
	Travel Time to Aberdeen ¹⁶	31 – 33min	28 – 30min	31min
	Rail Frequency	2 services	2 services	
Peak Hour Bus Travel	Travel Time to Aberdeen ¹⁷	40min	45min	42min
Peak Hour Car Travel	Travel Time to Aberdeen ¹⁸	20min	23min	21min
Peak Hour Bus Travel	Travel Time to Westhill ¹⁹	55min	65min	59min
Peak Hour Car Travel	Travel Time to Westhill ²⁰	35min	43min	38min

The analysis which is presented in Table 3.8 suggests that car travel will provide the quickest mode of travel when accessing the centre of Aberdeen and Westhill from the Banchory Leggart and Schoolhill sites. Rail services are reported to provide a shorter journey time than bus services when accessing the city centre, but would involve a change of mode from car to rail.

The location of Portlethen rail station in relation to the Banchory Leggart and Schoolhill sites is unlikely to provide an attractive facility for development residents as they will be required to travel south to access the station.

The journey time data which is presented for car travel is considered to provide an overly optimistic indicator of travel time as it has been extracted from <http://www.transportdirect.info/>, which appears to provide off-peak journey time information.

Bus services are expected to provide the most attractive alternative to the private car for journeys made from the Banchory Leggart and Schoolhill sites into employment opportunities located in the centre of Aberdeen and in Westhill, because they can be directly accessed by walking.

3.4.5 Bus Measures

An appraisal of existing bus service provision has been undertaken as part of the study with existing issues and potential mitigation measures identified at each of the land use scenario sites. The results of the appraisal do not alter between Transport Test 1 and 2. An appraisal of developer concepts has been undertaken with cognisance taken of a number of the developer's proposals, to identify potential alterations to local bus services to support the development of

¹⁵ Distance to nearest rail station estimated using <http://www.gmap-pedometer.com/>

¹⁶ Rail timetable information obtained (30/10/09) from <http://www.nationalrail.co.uk/>

¹⁷ Total average bus service journey time (including drive time estimated using Accession GIS software) + 5 minute wait time

¹⁸ Average car travel journey time data estimated using <http://www.transportdirect.info/> and assumes travel to City Centre with 5 minutes added for accessing car park

¹⁹ Peak hour journey time to Westhill by bus estimated using <http://www.transportdirect.info/> + 5 min wait time

²⁰ Peak hour journey time to Westhill by car estimated using <http://www.transportdirect.info/> with 5 minutes added for accessing car park



the land use scenario sites. Initial discussions have subsequently been undertaken with Aberdeenshire Council's Public Transport Unit (ACPTU) to ascertain the feasibility of the potential bus service alterations. It is acknowledged that further discussions will be required with local bus operators prior to finalising a bus service strategy for the sites.

Table 3.9 summarises results of the bus service appraisal highlighting potential measures which could be introduced to address existing issues. Comment on the implementability of the identified measures is also provided in Table 3.9.

Table 3.9 : Potential Bus Measures

Site	Criteria	Comment
Banchory Leggart	Issue	Banchory Leggart site has a poor level of existing service provision due to its rural location.
	Potential Measure	Introduce extended or diverted service – potential to extend existing Kincorth area service (No. 17).
	Implementability	Service No. 17 operates within the Aberdeen City Council area. Additional buses may be required to extend the service into the site and maintain the current service frequency. It is considered to be straightforward to extend the service via the development access junction. Current service frequency 15min, proposed to reduce this to 20min with no additional buses required.
Schoolhill	Issue	Schoolhill site is currently served by a 60min frequency service which provides linkage between the site and Aberdeen
	Potential Measure	Introduce a new 30min frequency circular bus service to provide connection between the Banchory Leggart and Schoolhill sites and Portlethen with its associated amenities.
	Implementability	Introduction of new 30min frequency Portlethen town bus service would be welcomed by ACPTU. It will require initial funding to implement. Concern has been raised with regard to the ability of the service to serve the Banchory Leggart site due to the site's location in relation to Portlethen.

It is expected that it will be relatively straightforward to extend Service No. 17 which currently terminates in Kincorth, into the Banchory Leggart site in association with the necessary road improvements including formation of a development access junction. The service could utilise the proposed development access junction with a bus gate introduced on Nigg Way to prevent access by general vehicular traffic. It is expected that the existing service frequency could be reduced from its current four buses per hour to a 20min frequency without the need for additional buses to operate on the route. Journey times would be unaffected for existing residents although bus wait times would increase.

It is proposed to introduce a new Portlethen town circular service to link Portlethen with the land use scenario sites and the Schoolhill Park & Ride. This service could enable the route of existing Coastrider services to be rationalised through Portlethen. In the long term the service is likely to be self-financing given the number of residents which are planned to live in the development sites. In the early phases of development support is likely to be needed. Introduction of the service will enhance the service provision for existing Portlethen residents and provide access to the Schoolhill Park & Ride.

Figure 3.3 confirms the routes of existing bus services which operate in the vicinity of the site and the route of new and extended bus services as detailed in Table 3.9.



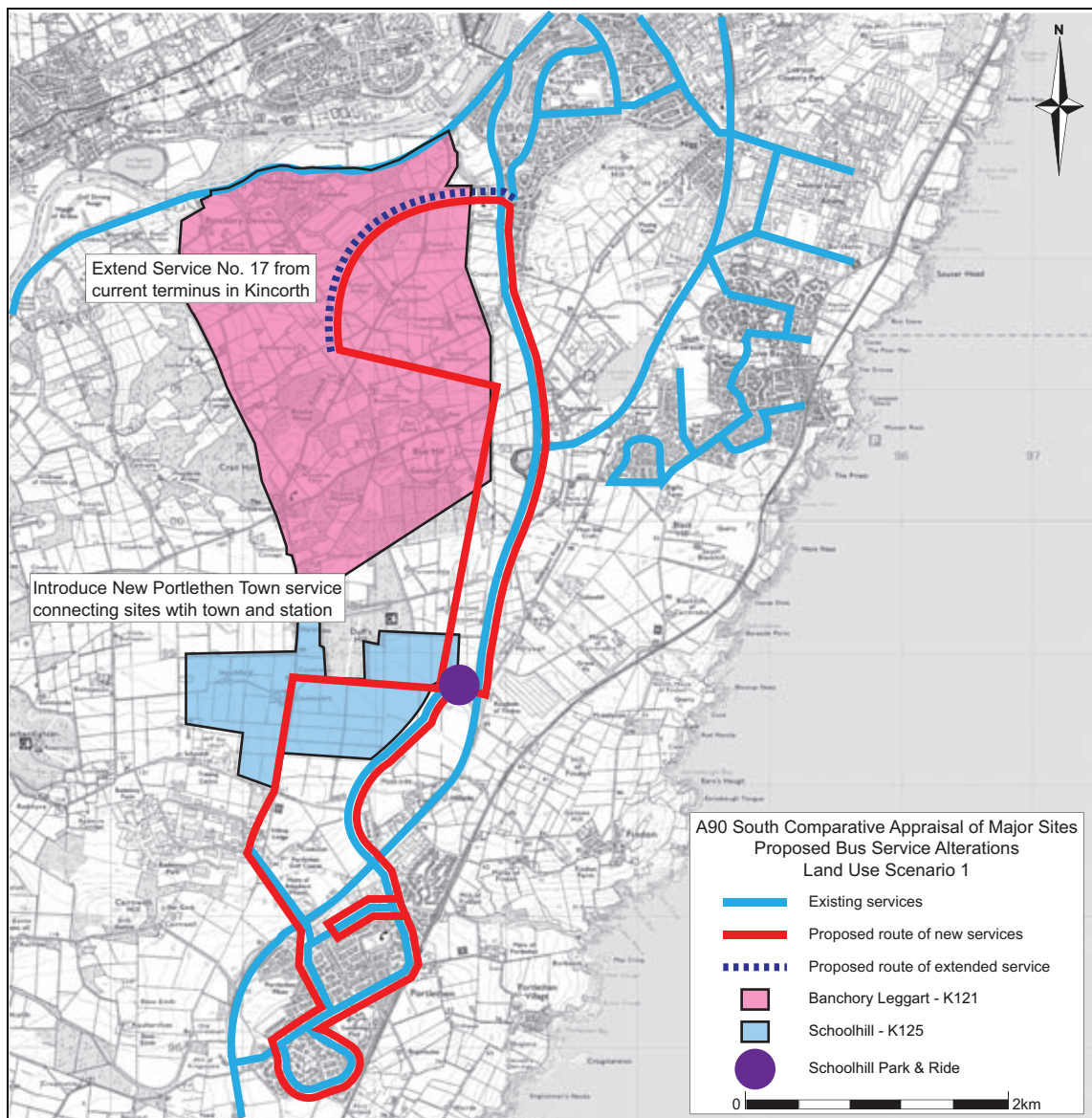


Figure 3.3 : Proposed Bus Service Alterations

Accession and Mapinfo GIS software packages have been used to inform the accessibility analysis which is presented in this study. Full details of the accessibility appraisal in terms of public transport services, is presented in Appendix D.

The accessibility analysis which is presented in Appendix D confirms that the introduction of new and extended bus services will enable a large proportion of the Banchory Leggart and Schoolhill sites to be within a 10min walk of buses which operate with a 30min service frequency and provide access to a number of destinations including Aberdeen, Portlethen and Stonehaven.

3.4.6 Schoolhill Park & Ride

The Schoolhill Park & Ride is a commitment in the NESTRANS *Regional Transport Strategy 2021 (NESTRANS, 15 July 2008)* and is to be located immediately to the west of the A90(T) Findon Interchange.

The potential of future residents to use the Schoolhill Park & Ride has been appraised in terms of the land use scenario sites and can be summarised as follows:

- K121 Banchory Leggart - Minor – site located to north of facility with commuters required to travel away from their final destination to access the park & ride
- K125 Schoolhill – Park & Ride located adjacent to site and likely to provide an attractive and convenient facility for Aberdeen commuters

3.4.7 High Occupancy Vehicle Lane

An appraisal has been undertaken of the proposed development’s impact on the proposed High Occupancy Vehicle (HOV) lane which is to be located on the northbound A90(T) between Charleston and Bridge of Dee. Aberdeen City Council has a commitment to further investigation of a HOV lane in this location following completion of the AWPR. Table 3.10 summarises the issues and impact which has been identified at the sites:

Table 3.10 : Impact on HOV Lane

Site	Design Issue	Cumulative Traffic Impact
K121 Banchory Leggart	Major negative impact on operation and design of HOV lane	HOV lane would not operate satisfactorily as currently designed using existing roadspace (Peak period traffic flows > 3000 vehicles)
K125 Schoolhill	No impact	

3.5 Implementability Appraisal

The Implementability Appraisal has been undertaken taking cognisance of the following seven point scale of assessment which is set out in *STAG*:

- +3 Major benefit
- +2 Moderate benefit
- +1 Minor benefit
- 0 No benefit or impact
- -1 Small negative impact
- -2 Moderate negative impact
- -3 Major negative impact

The transport interventions which are to be introduced to support development of the Banchory Leggart and Schoolhill sites have been assessed against the following *STAG* implementability criteria:

Technical Issues

A preliminary assessment of the feasibility of construction or implementation (if relevant) of a proposal and the status of its technology (e.g. proven, prototype, in development, etc.) as well as any cost, timescale, or deliverability risks associated with the construction of an option, including consideration of the need for any departure from design standards that may be required

Operational Issues

Who would operate the option, including, if relevant, their statutory powers to operate a proposal and any other issues (e.g. cost) which may impact on its operation



Financial Issues

What is the scale of the financing burden on the promoting authority and other possible funding organisations and what are the risks associated with these. What is the level of risk associated with a proposal's ongoing operating or maintenance costs and its likely operating revenues (if applicable);

Public Issues

The likely public response to an option. Reference to supporting evidence, for example results from a consultation exercise, should be provided where appropriate

3.5.1 Technical Issues**Transport Test 1 – Appraisal Score: -1****Small Negative Impact**

The Banchory Leggart site can currently only be accessed from the local road network with no trunk road junctions located in the vicinity of the site. It is proposed to construct a new at-grade junction on the A90(T) at Nigg Way to provide access into the Banchory Leggart site. A bus gate is to be installed on Nigg Way in association with the development access construction. Leggart Terrace is also to be restricted to the use of bus services by the installation of a bus gate with general traffic diverted through the development access junction. The A90(T) is being de-trunked in association with the AWPR in the vicinity of the site.

The Schoolhill site is expected to be relatively straightforward to access from the both the local and strategic road network as it is located close to the Findon and Badentoy A90(T) interchanges.

The impact of the existing A90(T) and proposed AWPR as barriers to movement for residents of the Banchory Leggart site, can be minimised by the introduction of an at-grade crossing on the A90(T) in conjunction with a reduced speed limit. The form of the development access would be required to take cognisance of a requirement for future bus services to route through it

Transport Test 2 - Appraisal Score: -2**Moderate Negative Impact**

Transport Test 2 adds a second access into the Banchory Leggart site from the A90(T) to be located at Redcraigs. The access strategy for the Schoolhill site remains unchanged.

The transport test requires two junctions to be constructed on the A90(T). The proximity of the second Banchory Leggart development access to the future AWPR Charleston Interchange may have an impact on the form and location of the junction.

3.5.2 Operational Issues**Transport Test 1 & 2 – Appraisal Score: +1****Minor Benefit**

The scale of the developments is likely to enable any new or extended bus services to be self-financing following the first 3 – 5 years being underwritten by developers. The location of the Banchory Leggart site provides opportunity to extend the existing Aberdeen City Centre – Kincorth bus service (Service No. 17) into the site via the proposed development access. It is suggested that the extension could be implemented without the need to introduce additional buses by reducing the service frequency from its current level to a 20min frequency



The Schoolhill Park & Ride is expected to attract trips from the adjacent Schoolhill site which will assist in supporting the facility. The development of both sites is expected to enable the introduction of a Portlethen town bus to connect the sites with existing Portlethen facilities including the rail station, in addition to the Schoolhill Park & Ride. The service will also provide an enhanced level of local service provision for existing Portlethen residents.

3.5.3 Financial Issues

Transport Test 1 & 2 – Appraisal Score: 0

No Benefit or Impact

It is expected that the majority of the transport infrastructure costs which will be associated with the development of the sites will be borne by developers.

The scale of both development sites is expected to support the extension of existing and introduction of new bus services without the need for financial support following initial funding by developers. The Schoolhill site is expected to support the operation of the adjacent Park & Ride facility which is proposed to be constructed adjacent to the A90(T) Findon Interchange.

3.5.4 Public Issues

Transport Test 1 – Appraisal Score: -1

Small Negative Impact

The development transport proposals could generate objections by introducing additional transport movements in rural areas. The Banchory Leggart site is considered to be less straightforward to access than the Schoolhill site given that the site will require construction of a minimum of one access on the A90(T). This is likely to generate an increased level of disruption to existing road users both during construction and terms of its operation. The Schoolhill site can be accessed from the A90(T) via two existing grade separated junctions and will not require the formation of a new junction on the A90(T).

Improvements to transport infrastructure and bus service provision are likely to be welcomed by existing Portlethen residents and employees.

Transport Test 2 – Appraisal Score: -2

Moderate Negative Impact

The addition of a second development access from the A90(T) to support development of the Banchory Leggart site is expected to generate additional delay to existing road users through construction of the junction and in terms of its operation. The access strategy for the Schoolhill site remains unchanged.

3.5.5 Feasibility Summary

The concepts of operational implementability, financial impacts to government and public acceptability of transport interventions can be complex to summarise. An overall feasibility factor has been derived for this DPMTAG Study based primarily on Technical Implementability of infrastructure for ease of comparison.

Transport Test 1 – Appraisal Score: -1



Small Negative Impact (-1)

Transport Test 1 requires the construction of one new development access junction on the A90(T) to facilitate access into the Banchory Leggart site.

Transport Test 2 - Appraisal Score: -2**Moderate Negative Impact**

Transport Test 2 requires the construction of two new development access junctions on the A90(T) to facilitate access into the Banchory Leggart site. The proximity of the southern development access to the AWPR Charleston Interchange could have an impact on the form and location of the junction.

3.5.6 STAG Criteria

The transport interventions which have been developed to support the development of Land Use Scenario 1 have been appraised in terms of the following criteria as defined by *STAG*:

- Environment
- Safety
- Economy
- Integration
- Accessibility & Social Inclusion

Again, a seven point scale of assessment has been used to illustrate relative impacts.

3.5.7 Environment**Transport Test 1 – Appraisal Score: -2****Moderate Negative Impact**

Aberdeenshire Council maintain a database of locations which are subject to environmental constraints. Information has been extracted from the database by Aberdeenshire Council for use in this study. The database indicates Areas of Landscape Significance, the *Aberdeenshire Sites and Monuments Record (SMR)*. The database confirms the location and significance of the sites with the majority of sites classified as having environmental constraints which do not preclude development.

The area to the south of the River Dee which forms part of the Banchory Leggart site is classified as an Aberdeenshire Area of Landscape Significance. A large area of the site which is located in the vicinity of Banchory Devenick is shown to be an Aberdeenshire *SMR* site. This has the potential to influence the form and location of any northern development accesses including potential provision of a footbridge over the River Dee to provide connection to the Garthdee and Kaimhill areas of Aberdeen, although it will not preclude development due to its classification. There appear to be no significant environmental constraints to the east of the site which may have prevented access being taken from the A90(T). The site's rural location is relatively remote from existing properties and its development is unlikely to have a significant impact on a large number of residential receptors.

There are no environmental constraints which are expected to significantly affect the development of an access strategy for the Schoolhill site. There are, however, two areas of Aberdeenshire *SMR* sites which could have an impact on the form and location of an access



from the south although the sites do not preclude development due to their classification. There are no environmental constraints shown to be located to the east of the site. The site is relatively remote from existing residential areas with its development unlikely to have an impact on local receptors.

Further environmental assessment would be required should any transport infrastructure be progressed.

Transport Test 2 – Appraisal Score: -2

Moderate Negative Impact

It is considered that the addition of a second development access to serve the Banchory Leggart site will not have an impact on the appraisal score. There are no environmental constraints shown to be located to the east of the site which will have an impact on the form or location of the development access junctions which are to be constructed on the A90(T) as part of this transport test. The appraisal score is therefore unchanged from Transport Test 1.

3.5.8 Safety

Transport Test 1 – Appraisal Score: -1

Small Negative Impact

The main point of access to the Banchory Leggart site will be provided from the east via a newly constructed junction on the A90(T) which is planned to be de-trunked following completion of the AWPR. The introduction of an additional junction has the potential to have an impact on the operation of the network and safety as an increase in traffic and traffic manoeuvres at more junctions would increase the likelihood of accident, however, road infrastructure will be designed in accordance with standards to ensure safe operation. The form of access junction will be designed to ensure that pedestrians will be able to safely cross the A90(T) minimising the impact of the trunk road as a barrier to movement.

Development of the Schoolhill site is expected to have an impact on the operation of local transport networks in terms of additional traffic. No additional junctions are required to be constructed on the strategic road network to provide access into the site with the site accessed directly from the local road network.

Development of the Banchory Leggart and Schoolhill sites will include a network of pedestrian and cycle facilities which is likely to provide an improvement over the existing situation which requires pedestrians and cyclists to use the rural road network to travel in the vicinity of the areas.

Transport Test 2 – Appraisal Score: -2

Moderate Negative Impact

The introduction of a second Banchory Leggart access junction on the A90(T) will provide an additional point of potential conflict between vehicles. The proximity of the southern of the two development accesses from the A90(T), to the A90(T)/AWPR Charleston Interchange could have an impact on the safe operation of the A90(T) in the vicinity of the Banchory Leggart site. The form of access junction will be designed to ensure that pedestrians will be able to safely cross the A90(T) minimising the impact of the trunk road as a barrier to movement.



3.5.9 Economy – Appraisal Score: -1

Transport Test 1 – Appraisal Score: -1

Small Negative Impact

The majority of trips which are predicted to be generated by the Banchory Leggart and Schoolhill sites are expected to travel north to employment opportunities which are located in and around Aberdeen. While this will increase the magnitude of traffic travelling on the A90(T) in the vicinity of the site, it is expected that the AWPR will remove a significant proportion of traffic from the road which is to be de-trunked.

ASAM4 has been used to provide an indication of the impact of the land use scenario in terms of the ratio of traffic volume to road link capacity. Table 3.11 confirms the ration of traffic flow to link capacity on the northbound A90(T) in the 2023 AM peak hour.

Table 3.11 : Peak Hour Traffic Volume/Capacity

	Bridge of Dee	South of Charleston
Volume/Capacity (PCUs)	114%	84%

The analysis predicts that the northbound A90(T) will be operate above capacity at Bridge of Dee in the AM peak period with the addition of development generated traffic. As confirmed from local testing, the Bridge of Dee is a major pinch point in the road network and the transport tests to date have not addressed this issue satisfactorily. Blocking back from the Bridge of Dee impacts on the operation of the Banchory Leggart junctions at peak times of day, which is an issue that requires further investigation and would have to be managed or mitigated. The A90(T) is predicted to operate within capacity to the south of Charleston.

The analysis indicates that some congestion will occur at this location, but that the congestion is similar to 2007 levels as detailed in Appendix A.

ASAM has been used to provide an indication of the land use scenario in terms of congestion. Comparison has been made between 2007 and 2023 for each land use scenario with a 4% increase over the 2007 base year (5,799 hours time lost in the base).

Transport Test 2 – Appraisal Score: -1

Small Negative Impact

The addition of a second vehicular access into the Banchory Leggart site from the A90(T) has been appraised to have a minor impact on the overall impact of development generated traffic. Table 3.12 confirms the ration of traffic flow to link capacity on the northbound A90(T) in the 2023 AM peak hour.

Table 3.12 : Peak Hour Traffic Volume/Capacity

	Bridge of Dee	South of Charleston
Volume/Capacity (PCUs)	114%	79%

The trend which is predicted for Transport Test 1 is replicated by Transport Test 2. The analysis indicates that some congestion will occur at this location but that the congestion is similar to 2007 levels as detailed in Appendix A.



ASAM has been used to provide an indication of the land use scenario in terms of congestion. Comparison has been made between 2007 and 2023 for each land use scenario with a 3% increase over the 2007 base year (5,799 hours time lost in the base).

3.5.10 Integration

Transport Test 1 & 2 - Appraisal Score: +1

Minor Benefit

It is expected that development of the Banchory Leggart site will assist with supporting the provision of a new footbridge crossing of the River Dee to provide linkage to the Garthdee and Kaimhill areas of Aberdeen. In addition the development will support the provision of a new Portlethen bus service which will link the site to employment, education and retail facilities provided in the town. It is also considered that the Banchory Leggart development will require an extension of Service No. 17 to integrate with the local area of Kincorth.

Development of the Schoolhill site will provide a residential population which is located adjacent to the future bus based Park & Ride facility at Schoolhill. It is expected that development of the site would integrate well with this proposed facility in addition to supporting the introduction of a new Portlethen town bus service.

It is expected that any improvements to local bus services can be accommodated without any detriment to existing travellers with the introduction of a new Portlethen bus service expected to benefit existing residents of the town. Journey times will be unaffected to the centre of Aberdeen by extending Service No. 17. Extending the service will however, have an impact on the service frequency without the introduction of additional buses to serve the route. It is anticipated that a 20min service frequency should be achievable without the introduction of additional buses to serve the route.

3.5.11 Accessibility & Social Inclusion

Transport Test 1 & 2 - Appraisal Score: +2

Moderate Benefit

It is proposed to introduce a new bus service for Portlethen as part of this scenario with the service connecting the Banchory Leggart and Schoolhill sites with facilities and amenities provided in Portlethen including the rail station. The new bus service is expected to improve the accessibility of the area for existing Portlethen residents and provide frequent connection between the town and the Schoolhill Park & Ride facility.

Development of the sites will include a range of facilities and amenities including employment opportunities and education, retail and community facilities which will benefit both future and existing residents living in the vicinity of the sites. The extension of Service No. 17 will provide opportunity for existing Portlethen residents to access facilities and amenities which are to be provided as part of the Banchory Leggart development.



