4 APPRAISAL OF LAND USE SCENARIO 2 – BANCHORY LEGGART & WEST PORTLETHEN

4.1 Introduction

This section summarises the results of an appraisal of Land Use Scenario 2. The land use scenario includes the Banchory Leggart and West Portlethen 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.

4.1.1 Proposal Description (Land Use Scenarios)

Land Use Scenario 2 includes the following development sites, with associated housing and employment assumptions:

- K121 Banchory Leggart 2,544 households and 840 jobs
- K90 West Portlethen 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* which is 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. The following sections focus on the Banchory Leggart and West Portlethen sites that are the main sites in Land Use Scenario 2.

4.1.2 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 2x local accesses from south. Bus gates to be introduced on Leggart Terrace and Nigg Way
- K90 West Portlethen – Access from A90 via Bourtreebush Interchange and 1 x local access from the north

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

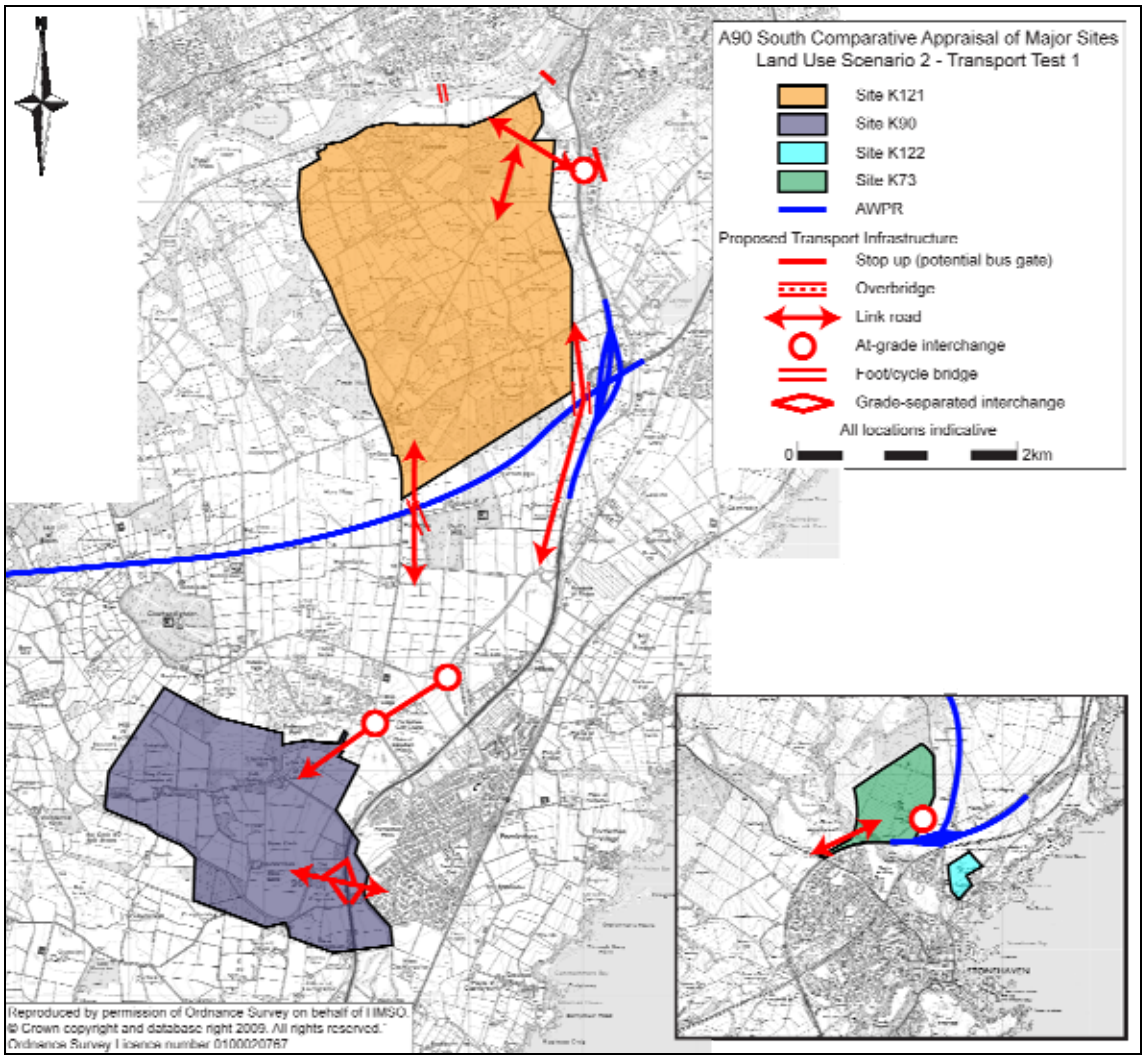

Figure 4.1 : Transport Test 1 Access Strategy

4.1.3 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
- K90 West Portlethen – Access from A90 via Bourtreebush Interchange and 1x local access from the north

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

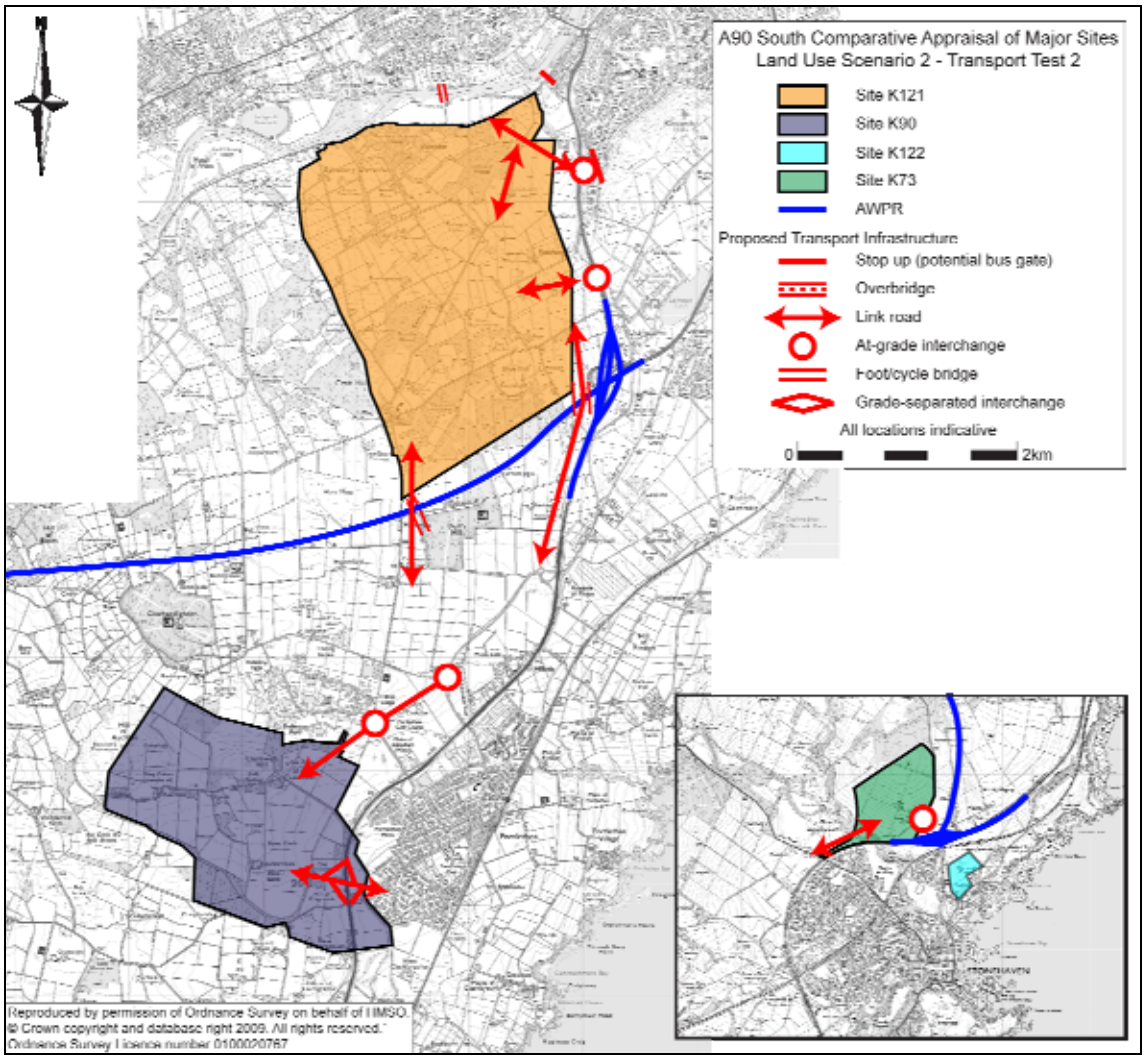

Figure 4.2 : Transport Test 2 Access Strategy

A detailed appraisal of existing public transport services has been undertaken as part of this study with a mode share for public transport usage for each site. Table 4.1 summarises the development generation (car drivers and public transport users) and mode share which has been assumed for the purpose of this study. The daily trip figure is a total figure (arrivals and departures) for residential and employment uses, it does not include active travel modes, goods vehicles or car passengers.

Table 4.1 : Development Trip Generation and PT Mode Share (Transport Test 1 & Test 2)

Site	Daily Trips	PT Mode Share
Banchory Leggart	11,939	13%
West Portlethen	7,395	11%

4.2 Background and context of the location

4.2.1 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 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 West Portlethen site is located to the west of Portlethen. The site is bound on the north by the Badentoy Industrial Estate and the east by the A90(T) and the western edge of Portlethen. The site can currently be accessed from the A90(T) via the at-grade Bourtreebush junction.

4.2.2 Social Context

The Banchory Leggart and West Portlethen 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)* 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. Refer to Section 3 for the background on this figure.

Table 4.2 summarises the *SIMD* and *GAD* rank which pertains to the two development sites.

Table 4.2 : SIMD Rank and GAD Rank

Site	SIMD Rank	GAD Rank
K121 Banchory Leggart	4,689	527
K90 West Portlethen	4,933	447
Maximum Rank for Scotland	6,505	6,505

The summary provided in Table 4.2 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.

4.2.3 Economic Context

Portlethen is the nearest Aberdeenshire town to the Banchory Leggart and West Portlethen 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.

4.3 Cumulative Transport Impacts

Key indicators have been used to summarise the cumulative impact of Land Use Scenario 2 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. The analysis which has been undertaken using the ASAM4 model is described in detail in Appendix A.

Table 4.3 summarises the change in daily traffic flows and rail passenger numbers as extracted from ASAM4 for Transport Tests 1 and 2.

Table 4.3 : Cumulative Transport Impact – Key Indicators (Transport Tests 1 & 2)

Indicator	Location	Change Test 1	Change 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%	6%
AM Peak hour traffic flows Change 2007-2023	A90(T) Bridge of Dee Approach	-4%	-5%
AM Peak hour traffic flows Change 2007-2023	A90(T) South of Charleston	-5%	-6%
Change in Peak Hour Rail Patronage and Utilisation 2007-2023	Northbound rail travel north of Portlethen	17%	17%

4.4 Transport Planning Objectives

The following planning objectives have been set as part of this study and are described in Section 3.4:

- 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**

The following sections summarise the results of the analysis which has been undertaken to enable Land Use Scenario 2 to be appraised against the above objectives.

4.4.1 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 in Appendix B. A maximum journey time of around **22min** has been determined by the modelling undertaken with the additional of Land Use Scenario 2 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 6,700m 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 queuing back into the development site at peak times of day.

Transport Test 2

A maximum journey time of around **21min** has been determined by the modelling undertaken with the additional of Land Use Scenario 2 generated traffic in 2023, an equivalent journey time

of 16 around minutes 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 6,900m 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.

4.4.2 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 2 in 2023. Comparison is made with the 2007 base model with the increase predicted to be **999 million kilometres** per year which equates to an increase of 26% 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 **1,000 million kilometres** per year when compared to the 2007 base model which equates to an increase of 26% over the 2007 base of 3,819 million kilometres per year.

4.4.3 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.

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

Table 4.4 : Site Accessibility by Active Travel Modes

	Existing Employment	Existing + Future Employment
Access on Foot (1.6km)	1,993	3,369
Access by Cycle (5km)	51,237	52,613

Table 4.5 summarises the accessibility of the land use scenario sites to potential future employment sites based on a qualitative assessment.

Table 4.5 : Accessibility to Future Employment Sites[21]

Site	Future On-site Employment	North Portlethen (K136)	Marywell (K45 & K135)	Stonehaven (K36 & K67)
Banchory Leggart	√√	X√	X√	XX
West Portlethen	√√	X√	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 4.5 it is anticipated that there will be future employment provided in the Banchory Leggart and West Portlethen sites with residents of the sites expected to be able to access these opportunities on foot or by cycle.

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 2 sites has also been appraised in relation to existing and proposed education amenities. Table 4.6 summarises the accessibility of the amenities in terms of active travel from the sites.

Table 4.6 : Accessibility to Existing and Future Schools[22]

Site	Existing Primary School	Proposed Primary School	Existing Secondary School	Proposed Secondary School
Banchory Leggart	X√	√√	X√	X√
West Portlethen	X√	√√	X√	XX

Both the Banchory Leggart and West Portlethen 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 4.7 summarises existing issues and considerations for implementation to minimise the impact of the identified barriers to movement.

21 Distance measured from centre of site

22 Proposed secondary school assumed to be located at Loirston Loch

Table 4.7 : 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 West Portlethen site	Provision of connection between site and existing transport networks

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

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

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

Table 4.8 summarises journey time by public transport from the development sites and provides a comparison with an equivalent journey by car.

Table 4.8 : Existing Accessibility to Aberdeen City Centre and Westhill by Public Transport and Private Car

		Banchory Leggart	West Portlethen	Weighted Average Journey Time
Peak Hour Rail Travel	Nearest Rail Station	Portlethen	Portlethen	
	Distance to Rail Station[23]	6km	4km	
	Travel Time to Aberdeen[24]	31 – 33min	29 – 31min	31min
	Rail Frequency	2 services	2 services	
Peak Hour Bus Travel	Travel Time to Aberdeen[25]	40min	55min	46min
Peak Hour Car Travel	Travel Time to Aberdeen[26]	20min	26min	22min
Peak Hour Bus Travel	Travel Time to Westhill[27]	55min	75min	63min
Peak Hour Car Travel	Travel Time to Westhill[28]	35min	45min	39min

The analysis which is presented in Table 4.8 suggests that car travel will provide the quickest mode of travel when accessing the centre of Aberdeen and Westhill from the Banchory Leggart and West Portlethen sites. Rail services are reported to provide a shorter journey time than bus services when accessing the city centre.

The location of Portlethen rail station in relation to the Banchory Leggart site is unlikely to provide an attractive facility for development residents as they will be required to travel south to access the station. The travel time which is offered from Portlethen rail station may encourage residents of the West Portlethen site to utilise rail services to access the centre of Aberdeen.

Bus services are expected to provide the most attractive alternative to the private car for journeys made from the Banchory Leggart site into employment opportunities located in the centre of Aberdeen and in Westhill.

4.4.5 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.

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

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

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

26 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

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

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

Table 4.9 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 4.9.

Table 4.9 : 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.
West Portlethen	Issue	West Portlethen site has a poor level of existing service provision due to its rural location however frequent services route along the A90(T) through the east of the site providing access to the centre of Aberdeen.
	Potential Measure	Introduce a new 30min frequency circular bus service to provide connection between the Banchory Leggart and West Portlethen 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. The service, in the long term, is likely to be self-financing given the number of residents planned to live in the development sites. In earlier phases it will require support. Introduction of the service will enhance the service provision for existing Portlethen residents and provide access to the Schoolhill Park & Ride.

Figure 4.3 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 4.9.

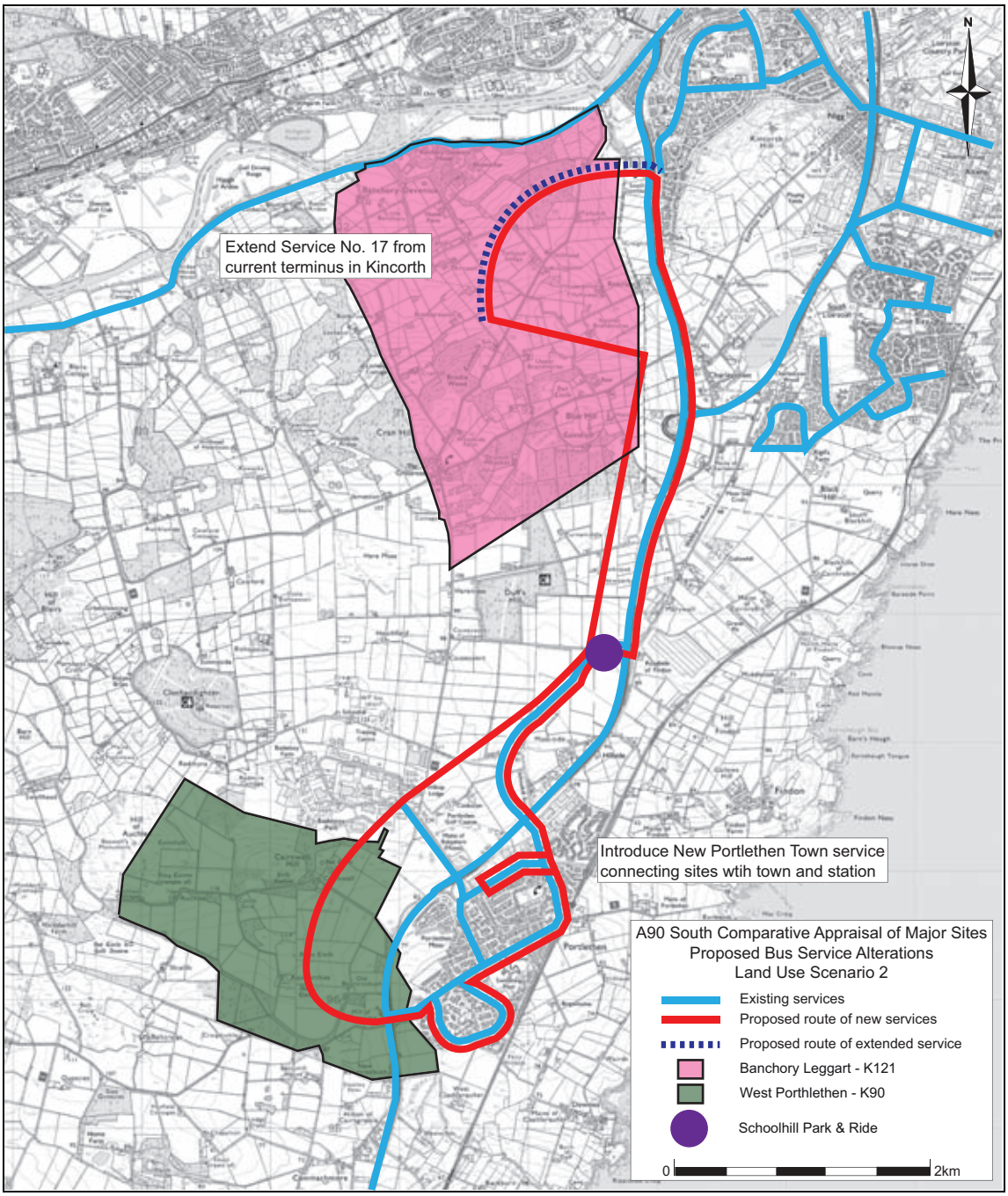

Figure 4.3 : Proposed Bus Service Alterations

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 West Portlethen 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.

4.4.6 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
- K90 West Portlethen – Park & Ride located approximately 4km to the north of the site and is likely to provide an attractive and convenient facility for Aberdeen commuters

4.4.7 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 4.10 summarises the issues and impact which has been identified at the sites:

Table 4.10 : 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)
K90 West Portlethen	No impact	

4.5 Implementability Appraisal

The Implementability Appraisal has been undertaken taking cognisance of the following seven point scale of assessment 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 West Portlethen sites have been assessed against the following *STAG* implementability criteria:

- Technical Issues
- Operational Issues

- Financial Issues
- Public Issues

4.5.1 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 West Portlethen site can be accessed via the A90(T) Badentoy Interchange however, it is expected that the Bourtreebush junction will require to be grade separated to provide an appropriate form of access into the site. Grade separation of the junction will provide an improved facility in terms of its efficient and safe operation than the current junction arrangement.

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 at-grade crossings 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. Pedestrian and cycle facilities should be incorporated into the improved Bourtreebush junction to minimise the impact of the A90(T) as a barrier to movement between the site and Portlethen.

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 West Portlethen 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.

4.5.2 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

It is expected that the Schoolhill Park & Ride will attract a proportion of West Portlethen residents to use the facility to access employment opportunities in and around Aberdeen 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.

4.5.3 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 West Portlethen site is expected to support the operation of the nearby Park & Ride facility which is proposed to be constructed adjacent to the A90(T) Findon Interchange.

4.5.4 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 will require construction of a minimum of one access on the A90(T) and the West Portlethen site is to be supported by grade separation of the existing Bourtreebush junction. The introduction of new junctions on the A90(T) is likely to generate an increased level of disruption to existing road users both during construction and terms of its operation.

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 West Portlethen site remains unchanged.

4.5.5 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 – Moderate Negative Impact (-2)
Transport Test 1 requires the construction of one new development access junction on the A90(T) to facilitate access into the Banchory Leggart site. In addition, development of the West

Portlethen site will require grade separation of the existing A90(T) Bourtreebush junction. Grade separation of the interchange will provide an improved junction facility in terms of its efficient and safe operation.

Transport Test 2 – Major Negative Impact (-2)
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. In addition, development of the West Portlethen site will require grade separation of the existing A90(T) Bourtreebush junction.

4.6 STAG Criteria

The transport interventions which have been developed to support the development of Land Use Scenario 2 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.

4.6.1 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 constrains 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 a number of small Aberdeenshire *SMR* sites shown to be located in the West Portlethen site it is, however, considered that these will not have a significant impact on the location and form of development accesses from the east. There is a large Aberdeenshire *SMR* site located in the south of the West Portlethen site which may impact on the location or form of

any development access provided from the local road network to the south of the site. The classification of the sites does not however preclude development.

There are no environmental constraints shown to be located to the east of the site. A small constraint is shown to be located immediately to the east of the A90(T) adjacent to the Bourtreebush junction, however, its classification does not preclude development. The majority of the site is located to the west of the A90(T) and it is considered that development of the West Portlethen site and associated access junctions is 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.

4.6.2 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 accidents, 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 West Portlethen site is expected to have an impact on the operation of local transport networks in terms of additional traffic. The site will require grade separation of the existing A90(T) Bourtreebush junction which will provide a junction arrangement which is expected to be safer for all modes of travel.

Development of the Banchory Leggart and West Portlethen 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.

4.6.3 Economy

Transport Test 1 - Appraisal Score: -1

Small Negative Impact
The majority of trips which are predicted to be generated by the Banchory Leggart and West Portlethen sites are expected to travel north to employment opportunities 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 4.11confirms the ration of traffic flow to link capacity on the northbound A90(T) in the 2023 AM peak hour.

Table 4.11 : Peak Hour Traffic Volume/Capacity

	Bridge of Dee	South of Charleston
Volume/Capacity (PCUs)	114%	85%

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 5% 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 4.12 confirms the ration of traffic flow to link capacity on the northbound A90(T) in the 2023 AM peak hour.

Table 4.12 : Peak Hour Traffic Volume/Capacity

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

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 4% increase over the 2007 base year (5,799 hours time lost in the base).

4.6.4 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 West Portlethen site will also assist in supporting the introduction of a new town circular bus service serving Portlethen. Grade separation of the Bourtreebush junction will ensure that the West Portlethen transport network will be connected to the existing Portlethen transport network, which will assist in the implementation of a Portlethen 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.

4.6.5 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 West Portlethen 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.