

## EXECUTIVE SUMMARY

### Introduction

The *Draft Dunfermline and West Fife Local Plan (2010)* prepared by Fife Council (FC) sets out masterplan proposals to deliver a strategic expansion of Dunfermline over the period 2015 – 2030. The proposals involve the development of four separate land parcels located at the western edge of Dunfermline with a mixture of residential, employment and education uses.

SIAS Limited (SIAS) was appointed by FC in September 2009 as part of a term consultancy framework to undertake a Transportation Appraisal of the masterplan proposals as set out in the *Willie Miller Urban Design (WMUD) Strategic Framework (Dunfermline) Final Report (June 2009)*. This Transport Assessment seeks to determine the transportation characteristics of the proposed developments, examining the total demand for travel associated with new housing and employment and establishing the resulting transportation infrastructure requirements associated with key travel modes. A key part of the process is the development, validation and application of an S-Paramics model of the study area.

The outcomes of this study provide outline scheme designs and costings which have been identified to deliver the development proposed in the Fife Structure Plan and the Draft Fife Local Dunfermline & West Fife Local Plan.

The schemes are concept schemes to demonstrate deliverability, however, other schemes and proposals should not be ruled out when considering any detailed Planning Application or if any additional sensitivity testing is undertaken.

The Dunfermline expansion proposals considered in this exercise constitute four distinct land parcels located along the western boundary of the city. From north to south, the land parcels are identified as:

- Wellwood
- Berrylaw
- Liggart Bridge
- Broomhall

The four development areas are shown in Figure 1.



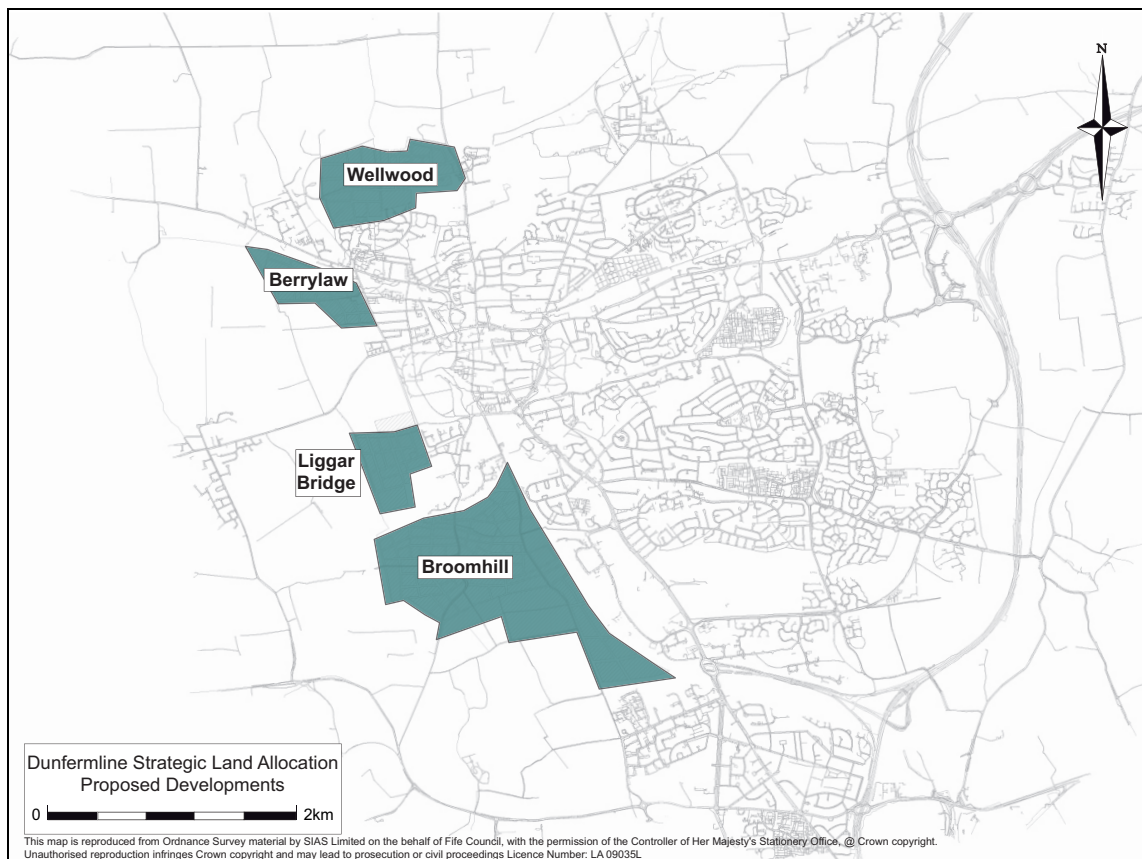


Figure 1 : Dunfermline Western Expansion Development Areas

SIAS worked in conjunction with FC Development Services to identify the scale and type of development proposed in the respective land parcels. This has enabled the assembly of a development schedule for each site.

A number of studies have contributed to this appraisal and are listed as follows:

- *Dunfermline Bus Priority Study (SIAS 2008)*
- *Fife 20 Year Plan for Fife (SIAS 2010)*
- *Dunfermline BRT/LRT Project (Scott Wilson, 2008)*
- *Dunfermline Strategic Framework (WMUD, 2009)*

### Existing and Potential Transport Infrastructure

#### *Walking*

Dunfermline has an existing network of footways and footpaths within the urban conurbation. In the proposed Strategic Land Allocation areas pedestrian provision is currently limited due to the existing rural nature, but all proposed areas (Wellwood, Berrylaw, Liggar Bridge and Broomhall) have the potential to connect to existing footway networks on at least three flanks towards Dunfermline or Rosyth.



### *Cycle Routes*

Dunfermline has an established network of off road and on road cycleways with a number of National and Regional Cycleways serving the town.

- National Cycle Route 1 provides a long distance cycle route stretching from Dover to the Shetland Islands along the east coast of the UK. In Fife it connects Dunfermline to the Forth Road Bridge and to Kinross.
- National Cycle Route 764 provides a long distance route from Queen Margaret Station in Dunfermline to Alloa.
- Regional Route 65 connects from National Cycle Route 764, through Pittencrieff Park in Dunfermline to Rosyth and National Cycle Route 76 (St Andrews to Stirling).

The majority of facilities in Dunfermline may be within around 20min cycling distance, with the town centre being within 10min cycle. Where possible, new cycling infrastructure should be designed to allow cyclist to maintain a reasonable level of momentum with the aim of providing routes suitable for cycling speeds of between 20 – 30kph.

### *Bus Based Public Transport*

Bus services in Dunfermline are operated largely by Stagecoach East Scotland, as part of its wider Fife network. These include a range of Dunfermline town services, services which operate between Dunfermline and other destinations in Fife and a range of express and longer distance services. Increasingly, buses which operate local services in Dunfermline are to a low-floor specification.

### *Bus Based Park & Ride*

The Ferrytoll Park & Ride facility, located adjacent to the M90 north of the Forth Road Bridge, plays an important role in the context of local and regional bus and coach services. The facility, which provides parking capacity for more than 1,000 cars, serves not only as a Park & Ride, but as a hub for interchange between the various local and express services that use the site.

As part of a wider strategy to increase the share of trips made by public transport, a further Park & Ride facility at Halbeath has now been approved and is due for completion by 2013. It is anticipated that spaces for up to 1,000 cars could be provided. The addition of a Park & Ride facility at Halbeath provides an opportunity to further develop the network of local and express bus services in the Dunfermline area.

### *Rail Based Public Transport*

There are two train stations in Dunfermline; Dunfermline Town to the south of the town centre, and Dunfermline Queen Margaret, to the east of the town centre. The stations are outside a walking distance of 800m, but have the potential to be accessible by cycling, bus, taxi and car sharing.

Rosyth Train Station is close to the Broomhall Strategic Land Allocation area that has the potential at its southern end to be within an acceptable 800m walking distance of Rosyth Station.



The three railway stations are all fully accessible and have a variety of facilities including: secure cycle parking lockers, bus access, disabled car parking and free public car parking. The Town Centre and Dunfermline Queen Margaret Stations also have taxi ranks.

#### *Main Road Links*

Dunfermline is bounded to the east by the M90 motorway running south towards Edinburgh and north towards Perth, Dundee and Aberdeen. Key road links in Dunfermline include:

- The A907 Halbeath Corridor
- The A823 Queensferry Corridor
- The A994, which runs west through Crossford towards the Kincardine Bridge
- The B916 Aberdour Road, between the A823 through east Dunfermline to the B981

#### **Development Travel Characteristics**

The following elements of the development travel characteristics were quantified during this study:

- Trip generation
- Trip purpose
- Trip length
- Trip distribution
- Model split

Historically, a Transport Impact Appraisal would primarily seek to determine the requirement for highway capacity improvements resulting from additional development related traffic. Under current guidelines, there is a requirement to consider total person trip making activity and the provision of measures to support trips by all travel modes.

Opportunities exist to promote non-car based trip making behaviour, and particularly to increase the proportion of person trips that are made using active travel modes, such as walking and cycling. Through the promotion of sustainable travel modes, FC aspires to achieve a reduction in demand for private car trips. This in turn reduces the degree to which measures are required to mitigate the negative effects of car travel.

Consistent with the aspiration to increase the proportion of trips made on foot, by cyclists and by public transport, FC has researched travel behaviour in British cities whose mode splits represent a lower dependency on trips made by car. Person trips considered in this appraisal were broken down according to the mode split shown in Table 1.



Table 1 : Agreed Mode Split Targets

Mode	Share (%)
Car (driver only)	41%
Car (drive and Passenger)	12%
Walk	20%
Bus	17%
Train	3%
Cycle	8%
Total	100%

### Traffic Modelling

This Transport Assessment utilises a calibrated and validated S-Paramics microsimulation model of the Dunfermline Area which has been developed for this study.

### Reference Case Forecasting

While scoping the methodology with Transport Scotland it was recommended that Transport Scotland's Land Use and Transport Integration in Scotland (LATIS) service should be approached to discuss if a suitable regional model was available for use for applying forecast growth in this study.

A request for advice was submitted to LATIS on the appropriate regional model to use for forecasting background traffic in the modelling. LATIS recommended the use of the South East of Scotland Transport Partnership (SESTRAN) regional SATURN model, as a suitable methodology for applying forecast growth for this study. This model takes account of multimodal strategic trips influenced by future PT improvements.

The future years required to be assessed in this study are 2015, 2021 and 2029. The SESTRAN regional model cordons for the study area being used as basis for growth. The modelled SESTRAN years are 2007, 2019, 2024 and 2032.

The highway assignment models were provided and cordons of the study area were extracted from the assignments.

To calculate the background traffic growth the absolute growth for each SESTRAN zone to zone movement was extracted for the modelled area. Due to there being a difference between the SESTRAN modelled years and the Dunfermline Strategic Land Appraisal (SLA) modelled years, the growth between each modelled year was assumed to be linear and interpolation was undertaken between the modelled years.

### Development Assumptions

The development phasing is to be undertaken using two approaches as shown in Figure 6.1, namely:

- The preferred phasing as specified in the *Draft Dunfermline & West Fife Local Plan (2010)*



- An Alternative Development Phasing approach which has been derived from discussions with potential developers who have contributed to the study

The phasing has been undertaken using two approaches namely the current phasing as stated in the *Willie Miller Urban Design (WMUD) Strategic Framework (Dunfermline) Final Report (June 2009)* shown in Table 2 and an alternative scenario shown in Table 3.

Table 2 : Local Plan Development Scenario Summary

Development	Land Use	2015	2021	2029
Broomhall	Residential	40% (789 Units)	100% (1972 Units)	100% (1972 Units)
	Employment	26% (32.8 Ha)	66% (83.3 Ha)	100% (126.2 Ha)
Berrylaw	Residential		50% (332 Units)	100% (665 Units)
	Employment		50% (4.9 Ha)	100% (9.8 Ha)
Liggarr Bridge	Residential		100% (1063 Units)	100% (1063 Units)
	Employment		100% (2.4 Ha)	100% (2.4 Ha)
Wellwood	Residential			100% (1085 Units)
	Employment			100% (22.4 Ha)

Table 3 : Alternative Development Scenario Summary

Development	Land Use	2015	2021	2029
Broomhall	Residential	40% (789 Units)	100% (1972 Units)	100% (1972 Units)
	Employment	40% (50.5 Ha)	100% (126.2 Ha)	100% (126.2 Ha)
Berrylaw	Residential			100% (665 Units)
	Employment			100% (9.8 Ha)
Liggarr Bridge	Residential			100% (1063 Units)
	Employment			100% (2.4 Ha)
Wellwood	Residential	40% (434 Units)	100% (1085 Units)	100% (1085 Units)
	Employment	40% (9 Ha)	100% (22.4 Ha)	100% (22.4 Ha)

In each development it is assumed that the construction (i.e. the trip generation) is linear throughout the construction period.

Employment and residential trips generation are disaggregated by each hour in the peak period. Each period length is 3hr and, as such, a profile was applied to represent the different demands levels within each simulated hour.

The trip distribution for each SLA development land parcel was established using the SESTRAN regional model.. By examining the change in trip distribution between the SESTRAN highway assignments which included the SLA development and the highway assignments without (i.e. the assignments used for the Background Growth increments) the distribution for the SLA developments was established.

### Transport Impact

Having identified the need for a range of infrastructure interventions, SIAS liaised with Mouchel to establish indicative scheme costs which are incorporated into this report.



A summary of the potential interventions and the stage they are required is presented in Table 6.23 to Table 6.25 for the Reference Case, the Local Plan Phasing and the Alternative Development Phasing.

The level of development specified in the 2015 scenario is assumed to be completed during the period 2011 – 2015, the 2021 scenario contains the additional development assumed between 2016 and 2021 and the 2029 scenario contains the additional development between 2022 and 2029.

As such, the infrastructure will generally not be required at the year of opening. They are required by the year of completion, i.e. 2015, 2021 and 2029. The exact point where the development build is such that interventions are required has not been determined in this study and would require additional sensitivity testing. A factor in this sensitivity testing to consider is the level of employment development build out against the level of housing, i.e. if the employment development is not realised in the timeframe additional houses could be progressed instead.

Table 4 : Summary of Interventions - Reference Case

Scheme	Cost (£m)	2015	2021	2029
Halbeath Road/ Whitefield Road Junction	1.0		✓	
Bothwell Gardens Roundabout	0.3		✓	
Pitreavie Roundabout Signalisation	0.5		✓	
Pitreavie Rbt Widening	0.2			✓
Rumblingwell/ William Street Junction	2.3			✓
Kings Road Signals	1.0			✓
<b>Total Cumulative Cost (£m)</b>		<b>0</b>	<b>1.8</b>	<b>5.3</b>

Table 5 : Summary of Interventions – Local Plan Phasing

Scheme	Cost (£m)	2015	2021	2029
Grange Drive Link Road	4.4	✓		
Halbeath Road/ Whitefield Road Junction	1.0	✓		
Bothwell Gardens Roundabout	0.3	✓		
Pitreavie Roundabout Signalisation	0.5	✓		
Rumblingwell/ William Street Junction	2.3		✓	
William Street/Pittencrief Street Junction	3.2		✓	
Carnegie Drive Bus Gate	0.6		✓	
Coal Road/Lovers Loan	1.8		✓	
Grange Drive/ Queensferry Road Rbt	0.7		✓	
Northern Link Road	11.8			✓
Kings Road Signals	1.0			✓
Pitreavie Rbt Widening	0.2			✓
<b>Total Cumulative Cost (£m)</b>		<b>6.2</b>	<b>14.8</b>	<b>27.8</b>



Table 6 : Summary of Interventions – Alternative Development Phasing

Scheme	Cost (£m)	2015	2021	2029
Grange Drive Link Road	4.4	✓		
Halbeath Road/ Whitefield Road Junction	1.0	✓		
Bothwell Gardens Roundabout	0.3	✓		
Pitreavie Roundabout Signalisation	0.5	✓		
Rumblingwell/ William Street Junction	2.3		✓	
William Street/Pittencrief Street Junction	3.2		✓	
Carnegie Drive Bus Gate	0.6		✓	
Coal Road/Lovers Loan	1.8		✓	
Grange Drive/ Queensferry Road Rbt	0.7		✓	
Northern Link Road	11.8		✓	
Kings Road Signals	1.0			✓
Pitreavie Rbt Widening	0.2			✓
<b>Total Cumulative Cost (£m)</b>		<b>6.2</b>	<b>26.6</b>	<b>27.8</b>

It can be seen from these tables that a proportional level of infrastructure is required to accommodate the four SLAs within Dunfermline.

The notable impact of the Alternative Development Phasing is the Northern Link Road is required to be constructed by 2021.

The schemes are concept schemes to demonstrate deliverability of the SLA development, however, other schemes and proposals should not be ruled out when considering any detailed planning application or if any additional sensitivity testing is undertaken and alternative solutions identified.

### Other Interventions

Reference has been made to other studies such as the Dunfermline Bus Priority Study. The schemes that were proposed could be implemented as part of the overall strategy for Dunfermline. The proposals for the Halbeath and Queensferry corridor amount to approximately £250k.

The infrastructure proposed in this study does not produce any new conflicts with the LRT/BRT Study which could not be addressed during the detailed design phase of any of the schemes.

SIAS has also undertaken liaison with Stagecoach East Scotland in order to establish a broad framework for the introduction and funding of bus services to the developments. As with trips made by pedestrians and cyclists, the rate at which public transport trips take place will be partially dependent on the quality of infrastructure that is provided throughout the developments and it is therefore important that FC, Stagecoach and the respective developer continue to engage as the layout and design of the developments evolves.

### Conclusion

The mode split targets set by FC is critical to the delivery of this strategy and the internal masterplanning of the developments have a crucial role to play with respect to travel patterns and providing opportunities for encouraging short and medium distance non-car trips.





It is imperative that the recommendations made in this Report in respect of facilities for pedestrians, cyclists and public transport users are taken on board early in the design process allowing residents, visitors and employees to establish sustainable travel habits from the outset.

This study demonstrates that the Local Plan SLA development can be delivered along with high quality highway, public transport, walking, cycling infrastructure which can integrate to achieve the desired mode split targets.

There are a number of measures required to mitigate the impact of the development which require funding and this should be considered through an agreed financial framework between FC and the prospective developers.

