SEStran (South East Scotland Transport Partnership)

Freight Routing Study

Final Report

Scott Wilson Scotland Ltd

June 2009

Revision Schedule

Freight Routing Study

June 2009

S106019

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Executive Summary

E.1 Introduction

E.1.1 SEStran and its partner Napier University's Transport Research Institute (TRI) are leading the Scottish element of the EU funded Dryport Project (Intereg IVB). A major element of this study is to define the existing freight distribution network in the South East of Scotland and where improvements are required. There is also a requirement to establish the feasibility/viability of a Dryport in Scotland which is being carried out by TRI, although part of this involves examining the network impacts of potential location(s) for the facility. Consequently, this analysis will need to look at existing freight routing issues and in terms of freight distribution consider the traffic impacts of various locations for a Dryport. In November 2008, SEStran appointed Scott Wilson to study freight movements in their area and to develop a Freight Routing Strategy (FRS) examining signing and lorry parks as initial elements of the Dryport project and produce an associated map.

E.1.2 This involved undertaking a number of tasks, which included the following:

- identify the main movements of road-based freight traffic in the SEStran area and the areas of major freight generation/attraction;
- consult with the relevant Local Authorities on these routes especially in relation to network constraints and possible routing;
- identify existing lorry parking locations, assess the level of provision they offer and identify need for improvement;
- develop an Advisory Routing Network and map out routes and parking locations in a format that can be distributed to potential users;
- assess the level of signing from the proposed advisory freight routing network and identify need for improving signing;
- review network-wide impacts of potential locations for a Dryport including connectivity issues from the advisory network; and
- set out the conclusions and recommendations for the way forward.

E.2 Summary of Conclusions

E.2.1 A modelling exercise was carried out to determine which routes were used most intensively by the road freight sector. This looked at future road freight flows based on Low Growth and High Growth scenarios. The result from the modelling was a series of road sections which made up an initial strategic advisory road network based on current and future demand levels. These were then cross-referenced against the identified constraints and issues raised during a series of consultations with local authorities to select the preferred routes in the area.

E.2.2 A truck stop analysis was subsequently carried out examining the parking facilities in the SEStran area. This identified seven sites within SEStran, with five basic and two intermediate sites as classified using recommended best practice guidance. From the appraisal it was clear that most of the facilities would benefit from upgrading to make them secure parking facilities. Furthermore, additional overnight demand was identified for three areas:

- Falkirk – Laurieston Road (off the industrial area) to serve Falkirk;
- Fife – enhancement of the current site at Halbeath to provide secure parking; and
- West Lothian – off Junction 4 of the M8, next to Whitehill Industrial Estate.

E.2.3 The last site, however, was discounted due to lack of suitable land available. However, an alternative site could be considered along the M8 corridor at potential locations in Livingston/Bathgate.

E.2.4 An advisory map was developed within the course of the study to encourage prioritising by vehicle drivers of routes using the strategic roads first and only using local roads when no other option was possible. The benefits of implementing the advisory lorry routing map were assessed in terms of reduced Sensitive Lorry Miles (SLMs). The results suggested the advisory network could provide potential benefits of £1.9m to £2.3m per annum, depending on Low Growth or High Growth Scenarios.

E2.5 The level of signing to the main trip generators/attractors in the SEStran area was investigated. From this it was clear that the standard of signing varies within SEStran, and there are 27 locations where improvements to signing could potentially be addressed by appropriate measures.

E2.6 The study considered the potential impacts of possible locations for a Dryport site, using a high-level appraisal of the network-wide changes to veh-km and veh-hrs of road freight movements. Research and analysis identified five possible locations which were then tested to assess the impact of shifting freight from road to rail/sea. The benefits were then monetised using standard economic appraisal methodology.

E2.7 The results suggested that the Dryport proposals can potential provide significant transport benefits ranging from £1.4m to £5.7m per annum (for both time savings and reductions in vehicle operating costs), depending on Low Growth and High Growth Scenarios, and also the locations and assumptions about how the Dryport would operate.

E.3 Summary of Recommendations

E.3.1 The recommendations are summarised as follows:

- examine the potential to upgrade some of the existing truck stop sites, taking particular note of security facilities;
- investigate the feasibility of developing two new lorry parking sites, one in Falkirk and one in Fife, to meet anticipated future demand;
- consult with Local Authorities to identify suitable locations for a third lorry parking site to serve the Bathgate / Livingston corridor;
- distribute the developed advisory map to freight companies, local authorities and other stakeholders (e.g. GPS providers) to promote the specified routing network;
- review the 27 identified locations where improvements to signing could enhance lorry movements and consult with the relevant roads authority on the opportunities for improvements; and
- consider taking forward the proposed Dryport plans for more detailed analysis, in particular examining the wider level of benefits which could be provided and comparing against the costs.

1 Introduction

1.1 Background

1.1.1 In November 2008, SEStran appointed Scott Wilson to study freight movements in the Regional Transport Partnership area and to develop a Freight Routing Strategy (FRS) as an integral part of the Dryport project. The Dryport project is an EU funded Intereg IVB North Sea Region Programme funded project of which SEStran and Napier University's Transport Research Institute (TRI) are the Scottish partners. Sustainable freight distribution is a key element of SEStran's Regional Transport Strategy (RTS), which was given Ministerial approval in July 2008. An Action Plan was produced last year by Faber Maunsell for improving freight movements in the SEStran area, the results of which were approved by the SEStran Board.

1.1.2 This study follows on from the previous Faber Maunsell study and is intended to develop a sustainable freight routing strategy with an associated map. This included a review of freight signing and freight lorry parking provision in the SEStran area. This study will also provide input into assessing the feasibility/viability of a Dryport by testing the potential high-level overall network impacts of possible locations for siting Dryports in and near the SEStran area.

1.1.3 This report sets out the findings of our consultations with local authorities, analysis of future freight demands and development of the advisory freight map. Also presented is the review of existing lorry parking facilities and identification of potential new sites.

1.2 Study Tasks

1.2.1 The study involved undertaking a number of tasks including:

- identify the main movements of road-based freight traffic in the SEStran area and the areas of major freight generation/attraction;
- consult with the relevant Local Authorities on these routes especially in relation to network constraints and possible routing;
- identify existing lorry parking locations, assess the level of provision they offer and identify need for improvement;
- develop an Advisory Routing Network and map out routes and parking locations in a format that can be distributed to potential users;
- assess the level of signing from the proposed advisory freight routing network and identify need for improving signing;
- review network-wide impacts of potential locations for a Dryport including connectivity issues from the advisory network; and
- set out the conclusions and recommendations for the way forward.

1.3 About this Report

1.3.1 The overall structure of this report is as follows:

Chapter 2 – outlines the data analysis and estimates of future road freight demand;
Chapter 3 – identifies current network constraints and issues;
Chapter 4 – assesses existing truck stops and locations for potential sites;
Chapter 5 – sets out the development of an advisory freight map;
Chapter 6 – sets out the signing strategy used for the network;
Chapter 7 – appraises potential locations for future Dryports sites;
Chapter 8 – summarises the conclusions; and
Chapter 9 – outlines the recommendations.

2 Data Analysis & Future Estimates

2.1 Introduction

2.1.1 Scott Wilson undertook the Scottish Multi-Modal Freight Locations Study (SMMFLS) on behalf of the Scottish Government, Transport Scotland and Scottish Enterprise. This was a national freight study which included a detailed consultation and data collection programme as well as the development of a nation-wide multi-modal Scottish Freight Model (SFM) which is capable of examining freight movements across the network.

2.1.2 It was therefore considered beneficial to use as much data from the SMMFLS as possible, in order to nest within the emerging national freight study. Specifically, in order to identify freight movements across the SEStran strategic road network, elements from the nation-wide Scottish Freight Model (SFM) would be refined to a more local level covering key points of interest in the SEStran area.

2.1.3 Hence, the SFM was further enhanced and calibrated to 2007 conditions across key roads in SEStran using observed data collected from a series of surveys, existing databases and supplied from key stakeholders including operators consulted during the course of the SMMFLS. Appendix A contains details of the developed SEStran Freight Model (SESFM) including the calibration and statistical goodness-of-fit tests which confirmed it was validated to observed data. This Chapter summarises the results from the modelling and shows how the model was used to identify the key strategic roads with quantified flows of lorry movements, for use in the development and testing of the planned advisory freight map.

2.2 Data Processing

2.2.1 Different areas of SEStran have distinct freight characteristics, patterns of movements and priorities. This means the data collected for the freight modelling should recognise the specifics of different regions of Scotland and the various economic sectors. Consequently, we have maintained the same level of data disaggregation for the enhanced SEStran Freight Model (SESFM) as was used in the development of the SFM.

2.2.2 Data was collated from the various end-user telephone surveys, origin/destination (OD) surveys of operators and carriers, and targeted one-to-one meetings. The data was then mapped against a new zone system, which is more refined for the SEStran region to allow for a more detailed assignment of freight patterns across the network. This is discussed in some detail in the modelling note shown in Appendix A.

2.2.3 The freight data was cross-referenced with the following economic sector groupings [based on the Standard Index Classifications (SIC) codes] in order to maintain the modelling of variations in the key freight industries and sectors:

1. Agriculture, Fishing and Foodstuffs;
2. Forestry and Forestry Products (timber/furniture/paper);
3. Solid Fuels and Petroleum Products;
4. Minerals, Building Materials and Construction;
5. Metal Products, Machinery and Transport Equipment;
6. Leather and Textiles, and Retail/Wholesale;
7. Fertilizers and Chemicals;
8. Electronic (white) Goods; and
9. Other/Miscellaneous.

2.2.4 Data was processed and coded into the model separately for each of the above freight commodities, allowing for a more refined analysis of future freight demands.

2.3 Presentation of Data

2.3.1 A significant element of the data provided is commercially sensitive and hence the surveys were carried out in accordance with the Market Research Society Code of Conduct (MRSCC) and the Interviewer Quality Control Scheme (IQCS), which stated all information provided by stakeholders, would be treated in strict confidence. This is important since it facilitates a free and candid exchange of information and views from stakeholders, including operators and end-users, which would otherwise not have been available.

2.3.2 Consequently, the information can not be presented in a very detailed level, but it is possible to present information in an outline format and aggregated for the main areas. SESFM will be used under these conditions of operation. When future levels of freight demand and traffic patterns are estimated and taken forward into the rest of the study, flows at the aggregate level will be shown in order to maintain the commercial sensitivities requested by stakeholders who donated data.

2.4 Future Estimates of Freight Demand in SEStran

Test Years

2.4.1 In order to assess the changes of freight movements in the future, a horizon year of 2020 was estimated as being a suitable future modelling year. In particular, two different scenarios were appraised:

- 2020 with low level of freight growth; and
- 2020 with high level of freight growth.

2.4.2 These two scenarios are consistent with the scenarios appraised in the National Scottish Freight Model.

Overall Freight Demand

2.4.3 Before looking at individual SEStran areas, it is worth looking at the overall changes in the demand for freight, by commodities based on the categories outlined in Section 2.2.3.

2.4.4 Tables 2.1 and 2.2 overleaf show the estimated changes by 2020 for both low and high growth scenarios. Table 2.1 shows the levels of freight within the SEStran area (i.e. internal only demands) or having either an origin or destination in the SEStran area (i.e. internal-to-external or external-to-internal movements). Table 2.2 shows the through movements (i.e. external-to-external freight tonnages), which are for the rest of Scotland.

2.4.5 Although individual commodities vary, total future forecasts are tied back to the Government's national indices for low and high growths.

Table 2.1 – Forecast Tonnage per Commodity (2 way flows) – SEStran-related Tonnages Only (i.e. Int-Int, Int-Ext & Ext-Int)

	2007*		2020 Low Growth			2020 High Growth		
	2-way Tons (000)	Prop.	2-way Tons (000)	Prop.	Growth Rates	2-way Tons (000)	Prop.	Growth Rates
Agriculture, Fishing and foodstuffs	1,957	2.3%	2,363	2.1%	1.21	2,534	2.1%	1.29
Forestry and forestry products	460	0.5%	707	0.6%	1.54	799	0.7%	1.74
Solid Fuel and petroleum** products	2,831	3.3%	1,739	1.6%	0.61	1,198	1.0%	0.42
Minerals, building materials and construction	15,460	17.8%	19,869	18.0%	1.29	21,783	17.9%	1.41
Metal, machinery and transport equipments	568	0.7%	740	0.7%	1.30	811	0.7%	1.43
Leather, textiles and retail/wholesale	13,709	15.8%	17,979	16.3%	1.31	20,479	16.9%	1.49
Fertilisers and chemicals	437	0.5%	484	0.4%	1.11	506	0.4%	1.16
Electronics goods	4	0.0%	5	0.0%	1.25	6	0.0%	1.56
Other/Miscellaneous	51,464	59.2%	66,728	60.3%	1.30	73,271	60.4%	1.42
Total	**86,891**	**100%**	**110,612**	100%		**121,387**	100%	
Index	100.0		127.3			139.7		

Notes: * includes intra-zonal and OD double-counting
** see paragraph 2.4.7

Table 2.2 – Forecast Tonnage per Commodity (2 way flows) - External-to-External (i.e. Through Trips)

	2007*		2020 Low Growth			2020 High Growth		
	2-way Tons (000)	Prop.	2-way Tons (000)	Prop.	Growth Rates	2-way Tons (000)	Prop.	Growth Rates
Agriculture, Fishing and foodstuffs	5,928	2.8%	8,172	3.1%	1.38	9,262	3.2%	1.56
Forestry and forestry products	15,859	7.5%	27,846	10.4%	1.76	33,226	11.3%	2.10
Solid Fuel and petroleum products	60,719	28.9%	42,589	15.9%	0.70	30,995	10.6%	0.51
Minerals, building materials and construction	15,643	7.4%	22,961	8.6%	1.47	26,597	9.1%	1.70
Metal, machinery and transport equipments	877	0.4%	1,305	0.5%	1.49	1,512	0.5%	1.72
Leather, textiles and retail/wholesale	15,648	7.4%	23,438	8.8%	1.50	28,209	9.6%	1.80
Fertilisers and chemicals	885	0.4%	1,119	0.4%	1.26	1,235	0.4%	1.40
Electronics goods	10	0.0%	15	0.0%	1.43	20	0.0%	1.88
Other/Miscellaneous	94,653	45.0%	140,169	52.4%	1.48	162,625	55.4%	1.72
Total	**210,223**	**100%**	**267,614**	**100%**		**293,682**	**100%**	
Index	100.0		127.3			139.7		

Notes: * includes intra-zonal and OD double-counting
** see paragraph 2.4.7

2.4.6 As observed in the previous tables, the estimated growth rates are different for all commodities, but this does not alter significantly their proportions in the SEStran area. Furthermore, the total growth (27.3% in the low growth scenario and 39.7% in the high growth scenario) is consistent with the increase in Freight forecasted in the November 2005 Government National Road Traffic Forecasts.

2.4.7 All freight commodities increase in the future. The exception is with the movement of petroleum products. This is because of the trend of moving fuel through pipe-lines, which has grown dramatically over the last decade and is predicted to continue. In the high growth scenario, this trend is assumed to be taken up more than in the low growth scenario which is why forecast tonnages of fuel at 2020 are actually lower for the high growth scenario.

Forecast by Local Authority and RTP

2.4.8 These different growth rates for each commodity results in a modified distribution between zones, the composition of freight varying between different areas of SEStran and between SEStran and other RTPs or the UK.

2.4.9 The 2020 freight trip distribution for both low and high growth scenarios are illustrated in the following table, with the 2007 figures for comparison.

Table 2.3 – 2020 Forecasts by Distribution ('000 Tonnes)*

	Base 2007*		2020 Low Growth			2020 High Growth		
	2-Way Tons (000)	Prop	2-Way Tons (000)	Prop	Growth Rate	2-Way Tons (000)	Prop	Growth Rate
Edinburgh	17,510	20.2%	21,362	19.3%	1.22	23,431	19.3%	1.34
East Lothian	12,233	14.1%	15,010	13.6%	1.23	16,573	13.7%	1.35
Mid Lothian	5,330	6.1%	7,399	6.7%	1.39	8,130	6.7%	1.53
West Lothian	4,200	4.8%	6,012	5.4%	1.43	6,596	5.4%	1.57
Borders	4,501	5.2%	5,857	5.3%	1.30	6,447	5.3%	1.43
Falkirk	21,856	25.2%	28,410	25.7%	1.30	30,986	25.5%	1.42
Clackmannanshire	2,983	3.4%	4,627	4.2%	1.55	5,077	4.2%	1.70
Fife	18277	21.0%	21934	19.8%	1.20	24147	19.9%	1.32
Total SEStran	**86,891**		**110,612**			**121,387**		
NESTRAN	34,435	16.4%	43,518	16.3%	1.26	47,611	16.2%	1.38
TACTRAN	32,430	15.4%	41,426	15.5%	1.28	45,447	15.5%	1.40
SPT	108,672	51.7%	138,389	51.7%	1.27	152,005	51.8%	1.40
HITRANS	15,745	7.5%	20,105	7.5%	1.28	22,098	7.5%	1.40
SWETRANS	18,941	9.0%	24,176	9.0%	1.28	26,520	9.0%	1.40
Total Scotland	**210,223**		**267,614**			**293,682**		

Note: * includes intra-zonal and OD double-counting

2.4.10 Results show that although there are variations in growth for each area, freight distribution stays similar in both 2020 low growth and high growth scenarios.

Flows across the SEStran Strategic Network

2.4.11 While the above total demand estimates show the overall future freight levels in SEStran as an area, this data needs to be modelled across the strategic road network in order to identify the roads used by lorries. This helps identify where lorries are coming from and going to, routes they use currently and will use in the future and also allows us to relate this to identified constraints.

2.4.12 The following Figures 2.1 to 2.3 illustrate the resulting assigned freight trips in the SEStran area for 2020 low growth and 2020 high growth scenarios.

Figure 2.1 – Future Freight Flows across the Strategic Network – AM Peak

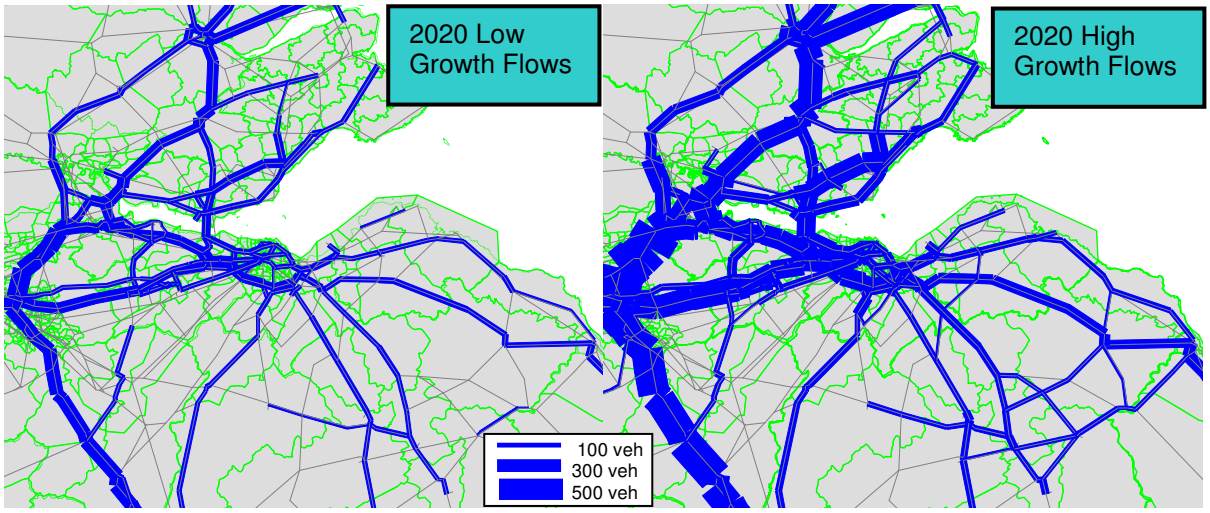


Figure 2.2 – Future Freight Flows across the Strategic Network – Inter Peak

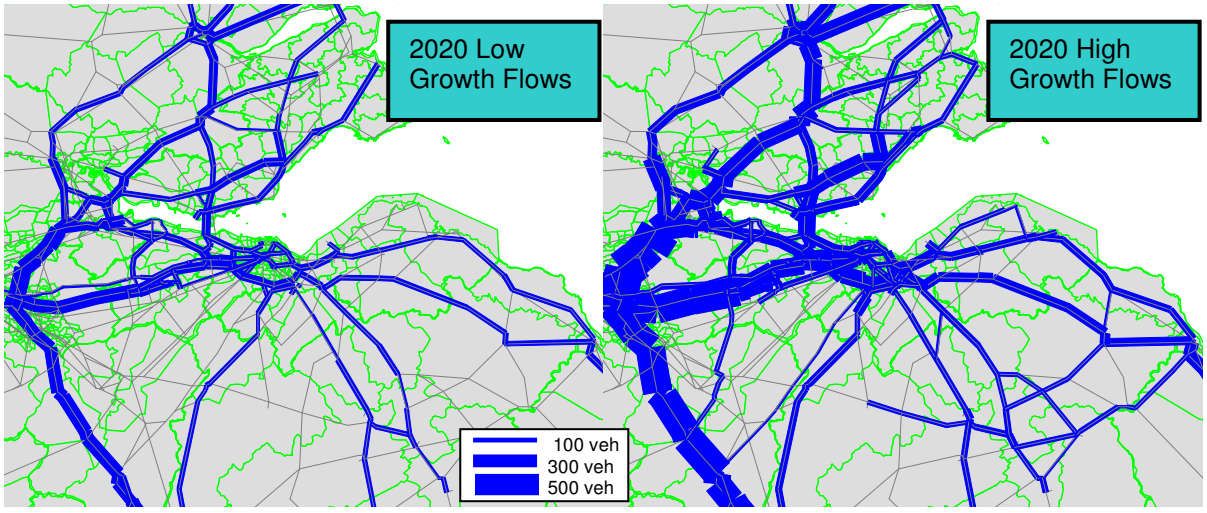
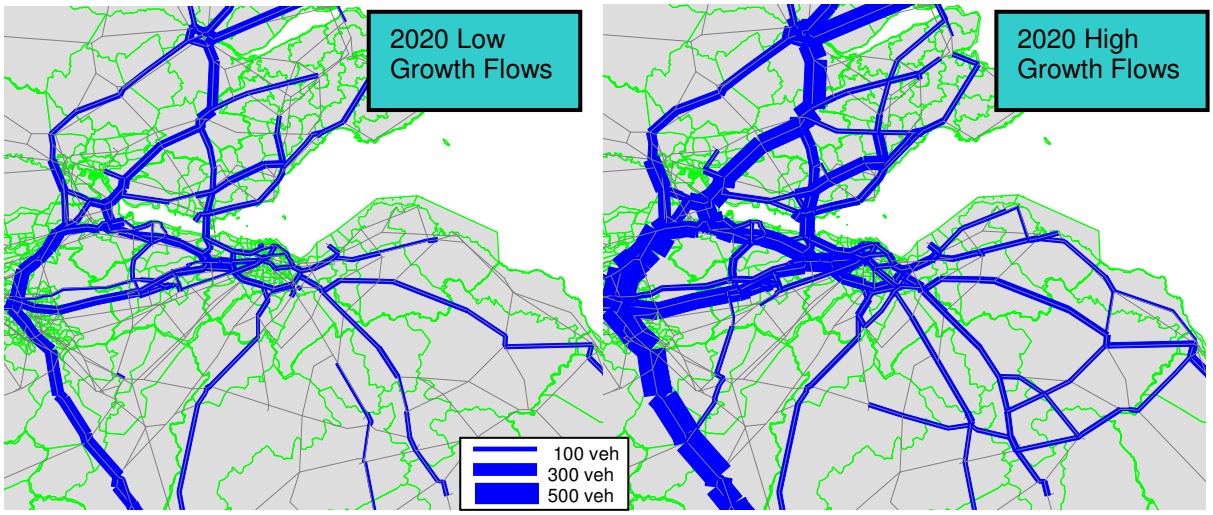


Figure 2.3 – Future Freight Flows across the Strategic Network – PM Peak



Initial Route Selection

2.4.13 The above network-wide modelling highlighted the main highway routes used by freight in SEStran. This was for both current (2007) and future levels (2020) to allow for an element of anticipated growth across the network.

2.4.14 Each road link has estimated volumes of HGVs at different time periods throughout the day to reflect periods of peak demand and the evenings when overnight stay is likely to occur. These flows were used as the starting point for the development on an initial map. Routes were identified based on a standard criteria suggested in the Department for Transport's (DfT's) Guidance[3], whereby routes were selected if traffic flows showed there to be more than 1,000 HGVs (Heavy Goods Vehicles) over a 24hour period, or where HGVs comprised 5% or more of the total traffic flow.

2.4.15 The result from the above analysis was a series of road sections which made up an initial strategic advisory road network based on current and future demand levels. These were then cross-referenced against the identified constraints and issues raised during the consultations with local authorities to select the preferred routes in the area. This is discussed in the following Chapter.

[3] Local Authority Freight Management Guide, Department for Transport, 2007

3 Identification of Network Constraints

3.1 Introduction

3.1.1 Having identified the current and future movements of lorries on the network, we then carried out a two-stage consultation process with the local authorities covered in the SEStran area. The first stage involved gathering information on constraints and structural weaknesses across the highway network, this allowed us to discount unviable roads from the network and also highlight any restrictions on the network.

3.1.2 The second stage of the process followed after the development of an initial map and invited the local authorities to comment on its design and information provided.

3.2 Identification Process

3.2.1 In order to collate information on existing network constraints or structural weaknesses, face-to-face meetings with each of the eight local authorities in SEStran were carried out. This was particularly useful as it allowed the study to take on board any plans by the various local authorities to strengthen bridges as part of their on-going maintenance programmes. It was also useful in identifying sensitive areas which would not be suitable for being designated as advisory routes.

3.2.2 Meetings and discussions were held with key officials in each of the local authorities, and in some cases local Councillors also attended to express the views of local residents and businesses.

3.2.3 The main aims of the consultations were to:

- highlight unsuitable freight routes;
- identify weak structures, low bridges and possible alternative routes;
- confirm lorry parking locations for inclusion in the map; and
- assess where freight routing is an issue.

3.2.4 Appendix B contains notes of each of the discussions held and Table 3.1 summarises the main points raised.

Table 3.1 – Key Points Raised

Local Authority	When	Comments
Fife	19 Nov 08	• There are existing lorry parks at Kirkcaldy & Halbeath. • The lorry park at Halbeath could be developed to provide a secure parking site. • Due to the location of Anstruther Fish Market, lorries are forced to use lower class roads as they provide a more direct route. • There has been an increase in lorry movements on the A92 since removal of tolls on Forth Road Bridge. • Fife already has a preferred lorry routing map.
Falkirk	5 Dec 08	• Would like to see access to Grangemouth improved.
East Lothian	9 Dec 08	• There are no formal lorry parks in the area. • There are currently no HGV access issues to developments off main roads at the moment.
Clackmannanshire	10 Dec 08	• There is a lorry park in Alloa. • The new Clackmannanshire Bridge will affect HGV movements but it is too soon to predict the effects. • Would like to divert Forth Road Bridge traffic to use M9 via Stirling.
West Lothian	10 Dec 08	• The A801 near J4M8 has high volumes of HGVs and the route has a 3.2km sub-standard section through the Avon Gorge (STPR project 20). • The A706 south of Whitburn, is a key route to the M74 and M6 corridors and has a high volume and percentage of HGVs. • To support development plan proposals, the council would like to see a new junction on the M9 near Duntarvie (Winchburgh).
City of Edinburgh	16 Dec 08	• There is an existing private lorry park at Portobello.
Midlothian	8 Jan 09	• The area acts as a through route for HGV's. • Open cast sites have lorry approval at planning stage, so there is no issue with this type of transport.
Scottish Borders	By email	• There are existing lorry parks in Newtown St Boswells, Coldstream and Galashiels. • The Industrial areas of Kelso and Duns currently experience unofficial parking. • There are currently no areas where freight is an issue.

3.2.5 Other suggestions and comments were made relating to lorry movements which were either outwith the study remit or not relevant to the development of an advisory routing network.

3.2.6 In addition to meeting with us, some local authorities supplied data and information on constraints which was used in the analysis. Edinburgh Council supplied information on height restrictions but at the time of writing this report, we are awaiting data on weight restrictions.

3.3 Route Constraints / Restrictions

3.3.1 From the above stakeholder consultations and the data supplied by local authorities on weak structures and height restrictions we have identified a number of constraints for inclusion in an advisory routing map.

3.3.2 In addition we have also reviewed government criteria for high loads, as it is considered useful to use this criteria as a cut off height for selecting which height restrictions should be shown on the map.

3.3.3 There is currently no legislation which limits the height of vehicles that can travel on the roads in the UK. Drivers are not required to notify or seek approval to travel because of vehicle height. The standard minimum clearance on every part of a public highway is 16'-6" (5.03m). All bridges with lower clearances have signs identifying the maximum safe vehicle height which can pass beneath. High vehicles are those which:

- cannot pass safely under a bridge of 16'-6" (5.03m) minimum headroom; or
- have a vehicle/load combination greater than 16'-3" (4.95m) high – allowing for the minimum safety margin of 0.275m.

3.3.4 Using the above limit of 16'6", 16 height constraints and one weight restriction were identified as summarised in Table 3.2.

Table 3.2 – Restrictions on HGV movements in SEStran area

Local Authority	Location	Restriction
Fife	N/A	
Falkirk	M9	16'6" height restriction
East Lothian	A6137	11'9" height restriction
Clackmannanshire	A977	16'7" height restriction
	A907	16'7" height restriction
	A908	15'9" height restriction
West Lothian	A706	12'9" height restriction
	M8	16'6" height restriction
	M8	16'5" height restriction
	M8	16'6" height restriction
City of Edinburgh	A7	15'3" height restriction
	A7	14'9" height restriction
	A70	14'9" height restriction
	A71	15'6" height restriction
	Lady Road	15'6" height restriction
	A6095	13'3" height restriction
Midlothian	N/A	
Scottish Borders	B710	12'0" height restriction
	B710	10 T weight restriction

4 Truck Stop Assessment

4.1 Introduction

4.1.1 The inclusion of truck stops and appropriate signing to main routes and facilities are critical to the success of an advisory map and freight routing strategy. To include these elements, best practice guidance was consulted to ensure an appropriate strategy was developed.

4.2 Existing Truck Stop Assessment

4.2.1 To ensure drivers comply with working time regulations and rest periods, they will require access to truck stops and rest facilities. Drivers new to the area will require this information to allow them to incorporate these rest breaks into their route. Short stops during the day may require basic facilities such as a lay-by and snack bar with drivers finding these facilities on route. However, when overnight parking is required the drivers or freight companies may require more secure parking depending on the nature of the cargo and their own insurance policies. Therefore information on secure parking facilities in the SEStran area was collected in order to identify the levels of provision within the area.

4.2.2 The Local Authority Freight Management Guide[7] ranks parking facilities under three categories, basic, intermediate and premium, based on the services provided at facilities. This ranges from basic parking on lay-bys or rough ground with no facilities to premium facilities with 24 hour security and driver facilities including food and showers. The guidance is however not weighted and does not put greater emphasis on one type of facility over another.

4.2.3 Our analysis has identified 16 overnight parking facilities within the SEStran area and nearby as these would be used by drivers in the area, sourced from the consultations and Scottish Freight website.

4.2.4 Given the above criteria the facilities provided at each of the sites were investigated and a table produced to allow the sites to be compared against each other using standard Guideline criteria such as showers, toilets, lighting, CCTV, refreshments (i.e. shops, cafes, snack bars and vending machines). The sites were then given rankings of basic, intermediate or premium (as per the Guidance) based on the services and security available. This is shown in table 4.1.

4.2.5 The table shows 7 facilities within the SEStran area with the remaining facilities being adjacent to the region (i.e. outwith the area but located close to and on key routes serving the SEStran area). The Scottish Freight website lists 30 truck stops in Scotland. Based on this, SEStran would have approximately 23% of the truck stop facilities located within their area.

[7] Local Authority Freight Management Guide. Department for Transport, 2007

Table 4.1 – Assessment of Truck Stop Facilities

Facility	Location	Showers	Toilets	Lighting	CCTV	Refreshments	Charges	Rating
Welcome Break (M74)	Adjacent	●	●	●		●	£17.50	Intermediate
Lockerbie Truck Stop (M74)	Adjacent	●	●	●	●	●	£7.50	Premium
Newtown St. Boswells Lorry Park	Within			●			Free	Basic
Heathergyll Transport Café (M74)	Adjacent	●	●	●		●	£7	Intermediate
Hillview Lorry Park	Within			●			Free	Basic
Cedar Cafe	Within	●	●	●		●	Free	Intermediate
Harthill Services	Adjacent		●	●		●	Free	Intermediate
Portobello	Within		●	●	●		£15	Intermediate
Halbeath	Within		●	●		●	£10	Basic
Esplanade Lorry Park	Within		●	●			Free	Basic
Moto Hospitality Ltd (M90)	Adjacent	●	●	●		●	£14	Intermediate
Tayside Truckstop (Dundee)	Adjacent	●	●	●	●	●	£8	Premium
Norrie Munmuir (Perth)	Adjacent		●			●	Free	Basic
Alloa Lorry Park	Within		●	●			Free	Basic
Moto Hospitality Ltd (M9)	Adjacent	●	●	●		●	£15	Intermediate
Muirpark Truckstop	Adjacent	●	●	●	●	●	Free	Premium

4.2.6 From this we can see that within and close to the SEStran area there are:

- 3 facilities of basic rating;
- 7 stops of intermediate rating; and
- 3 locations of premium rating.

4.2.7 There is currently a mix of facilities available within the area, ranging in price from free to £17.50 for overnight parking, reflecting the facilities and security available.

Case Study: Priory Park Truckstop, Hull

Priory Park Truck stop located on the western edge of Hull is a purpose built lorry park operated by Hull City Council. Developed in conjunction with a park and ride site the truck stop shares some of the facilities.

Security at the site is highly developed to provide a safe overnight stop and meets the requirements for the British Parking Associations 'Secure by Design' award status. The enhanced security includes security fencing, CCTV, floodlights, electronic gates and 24hour security guards. The entry gate to the site is locked at night but drivers can gain entry/exit using an electronic key card.

Facilities have also been developed at the site to cater for the drivers needs with the park and ride bus control building also acting as a driver facilities station, providing toilets and showers. Other facilities such as food outlets and shops are located close to the site.

The 'Secure by Design' concept is also approved by insurance companies due to the lower risk of theft or damage as a result of parking in a secure overnight location.

4.2.8 Looking specifically at the 7 sites within the SEStran area, currently there are no Premium facilities within the SEStran area; most are basic with two intermediate sites. Several of the sites are free and operated by the local council including Hillview, Esplanade and Alloa Lorry Park. However, it should be noted that the future of the Esplanade lorry park at Kirkcaldy is currently uncertain.

4.2.9 In order to provide a network of secure lorry parking throughout the SEStran area, the 7 sites should be upgraded to the same standard as the case study above, whereby a 'Secure by Design' award from the British Parking Association and police crime reduction unit was awarded. In order to achieve such a level the following best practice criteria should be considered for incorporation into the sites:

- CCTV;
- Secure Entry Gate;
- Floodlights;
- Secure Perimeter Fencing; and
- 24 hour on site security guards.

4.2.10 Furthermore, for driver facilities, toilets and showers are required while food outlets should be available nearby.

4.2.11 Table 4.2 overleaf examines the facilities currently available in the SEStran area and provides a set of recommendations for upgrading the current facilities to more secure sites, providing satisfactory driver facilities whilst also meeting the above criteria.

Table 4.2 – Appraisal of Required Upgrades to Parking Facilities

Facility	Location	Showers	Toilets	Flood Lighting	CCTV	Secure Fencing	Security Guard	Security Gate
Newtown St. Boswells Lorry Park	Council lorry park in Newton St. Boswells (Borders)	●	●	●	●	●	●	●
Hillview Lorry Park	Council lorry park in Hillview (Borders)	●	●	●	●	●	●	●
Cedar Cafe	Private Site near Grantshouse (Borders)				●	●	●	●
Portobello	Private Site located in Portobello (Edinburgh)	●						
Halbeath	Private Site Located at Halbeath Junction (Fife)	●		●	●	●	●	●
Esplanade Lorry Park	Council lorry park in Kirkcaldy (Fife)	●		●	●	●	●	●
Alloa Lorry Park	Council lorry park in Alloa (Clackmannanshire)	●		●	●	●	●	●

4.2.12 From the table it is clear that most of the facilities could benefit from upgrading to make them secure parking facilities, of the same level as the case study. The exception to this is the site at Sir Harry Lauder Road, Portobello, which is currently run as a secure coach and lorry park.

4.2.13 It is also clear that 3 of the existing sites are in private ownership and the remaining 4 are Council-owned, so the onus on making improvements is down to both the public and private sectors.

4.3 Proposed Truck Stop Assessment

4.3.1 In addition to existing sites, potential new sites for further truck stops were identified. The selection of sites for this purpose was conducted following the criteria below, based on best practice from EU BESTUFS Guide[8]:

- demand flows on strategic routes display a need for more parking;
- availability of land for development of site and possible expansion;
- proposed site should have good access to strategic road network; and
- should be close to or have provision of basic facilities.

4.3.2 From the freight model we identified where there would be future demand for overnight parking. This was based on the amount of trips entering and leaving SEStran in the

[8] Good Practice Guide on Urban Freight Transport, EU Best Urban Freight Solutions (BESTUFS) Programme, 2007

evening peak from areas which were a significant distance away such as the north of Scotland, Borders and England. The PM peak data was then factored up to account for overnight demand. Areas which had more lorries entering than leaving in the evening represented locations with demand for overnight parking. The reverse was computed for the morning peak to gain an insight into the numbers of vehicles parking overnight and leaving SEStran in the morning.

4.3.3 The above process helped to identify demand for lorry parking throughout SEStran. This demand must be related to existing parking facilities in the area, as identified in the previous truck stop analysis in Table 4.1. Comparing the estimated demand against the level of existing facilities has highlighted the areas which have surplus demand and hence should be considered for new parking facilities. These were Falkirk, Fife and West Lothian. In particular, Falkirk and West Lothian currently have no parking facilities in their areas and Fife has one basic facility in Kirkcaldy.

4.3.4 During the consultations some stakeholders expressed a desire to use existing park and ride sites for overnight lorry parking. However, the above identified surplus demand is in areas where there are no park and ride facilities. Consequently, while it seems sensible to use park and ride sites, the analysis suggests the demand is in locations where there are insufficient large park and ride facilities. Therefore we have identified potential sites for new lorry parking locations as shown in Table 4.2.

Table 4.2 – Possible Sites for New Lorry Parks

Site	Location	Description	Identified demand	
			Low Growth	High Growth
Site 1	Falkirk	Laurieston Road (off the industrial area) to serve Falkirk	21	29
Site 2	Fife	Enhance current site at Halbeath to provide secure parking	13	16
Site 3	West Lothian	Off Junction 4 of the M8, next to Whitehill Industrial Estate	52	58

4.3.5 However, based on the above criteria, Site 3 (off junction 4 of the M8) had to be discounted as there is no available land at this location to develop. As demand for lorry parking along the M8 corridor was identified to cater for the Livingston and Bathgate areas, there is a need to look at alternative sites along the corridor. The council thinks the site should be at an existing park and ride site.

4.3.6 The other sites were considered suitable at meeting all the criteria, but naturally more detailed investigation should be carried out as part of the detailed engineering designs for the sites.

4.3.7 Therefore, for the purposes of the remainder of this study, only the two remaining sites were considered and the justification for these sites is as follows.

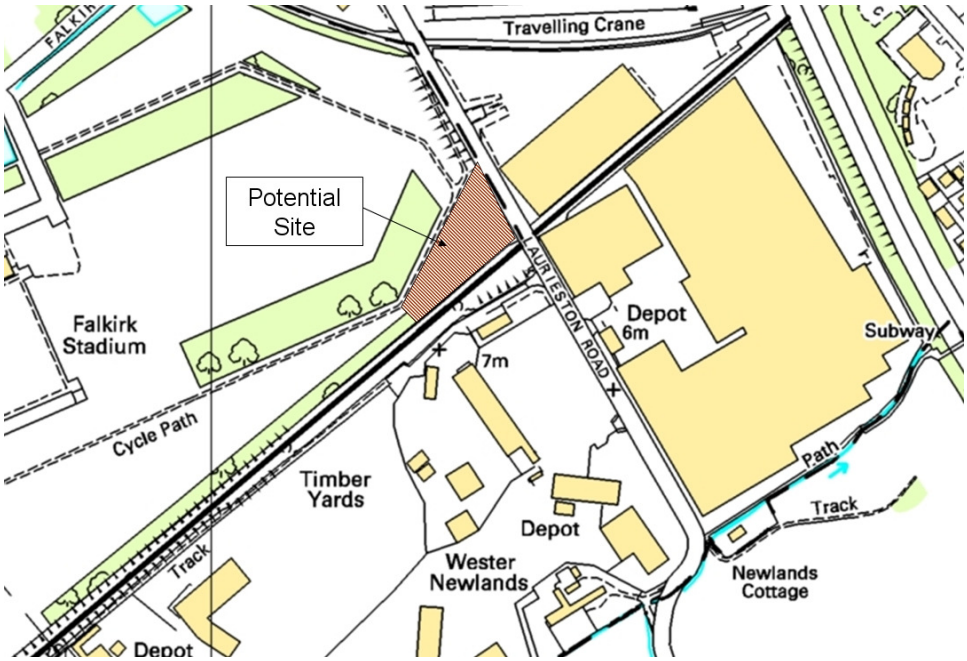
4.3.8 The location at Halbeath already acts as a truck stop and has significant space to allow the development of a secure parking facility. The site is situated just off the M90, a main route used for freight transport travelling north (see Figure 4.1 overleaf).

4.3.9 The site at Laurieston Road, Falkirk, is situated just off the M9, in an ideal location to serve Grangemouth and Falkirk town centre, ensuring sufficient demand for the site. Furthermore the M9 is a busy route for freight transport. The site is also close to the A80/M80 and would be easily accessible for HGVs using this route (see Figure 4.2 overleaf).

4.3.10 These sites should also be constructed to meet the criteria for a secure parking site, as discussed earlier in Section 4.2.

Figure 4.1 – Site of the Proposed Lorry Park at Halbeath

Figure 4.2 – Site of the Proposed Falkirk Lorry Park



5 Development of a Potential Lorry Advisory Network

5.1 Introduction & Map Function

5.1.1 From the demand analysis and the identification of the network constraints and issues, described earlier in this report, an advisory lorry map was developed. Before developing the map, it was considered important to set out the objective of the map. Based on the stakeholder feedback during the consultations, the following was suggested:

> ***"To provide a strategic advisory network map of the SEStran area showing key routes to help improve driver awareness of the most appropriate road network for freight traffic movements"***

5.1.2 The primary function of the map would be to show the main trip generators and attractors for lorry movements and the preferred routes they should follow. The map should also show truck stops (lorry parking sites) and highlight any network constraints which may influence some drivers.

5.1.3 The map would target drivers new or unfamiliar with the area in order to help them select the most appropriate route to their destination and locate required facilities.

5.2 Map Development Criteria

5.2.1 In order to identify the level of information and detail to be included in the map, Department for Transport Guidance on designing freight maps was used as the basis of the content of the map[9]. This suggested the freight map should include the following:

- Designated Freight Routes;
- Height and Weight Restrictions;
- Retail Parks;
- Industrial Estates;
- Town Centres;
- Motorway Services and Lorry Parks; and
- Restricted Motorway Junctions.

5.2.2 Given the above criteria an initial freight advisory network was developed based on the constraints information gathered from the local authorities and also the main generators and attractors of freight demand in the area sourced from the modelling.

[9] Local Authority Freight Management Guide, Department for Transport, 2007

5.3 Main Trip Generators/Attractors

5.3.1 The SEStran Freight Model was used to identify the key zones which produce and attract freight flows. This was carried out for future 2020 levels to allow for an element of anticipated growth across the network. This produced estimates of volumes of HGVs at different time periods throughout the day to reflect varying periods of freight demand. These flows were extrapolated to give the daily volume of HGV trips and used as the starting point for the identification on an initial list of main attractors/generators of freight in the SEStran area.

5.3.2 Key locations were subsequently identified based on a standard criteria suggested in the Department for Transport's (DfT's) Guidance , whereby locations were selected if traffic flows showed there to be more than 1,000 HGVs (Heavy Goods Vehicles) over a 24hour period.

5.3.3 The result from the above analysis was a series of zones from the freight model which represent the main generators/attractors of HGV trips in the area which should be carried into the advisory network. Table 5.1 shows the identified locations and their corresponding daily HGV flows.

Table 5.1 – Main Attractors Identified

Model Zone	Name	Daily HGVs	Key Trip Generators/Attractors
39	Falkirk	4929	• Falkirk Town Centre • Croft Industrial Estate • Ladysmill Industrial Estate • Laurieston and Bog Road Industrial Estate • Middlefield, Burnbank and Falkirk Industrial Estate • Tamfourhill Industrial Estate
2	Hermiston Gait	4276	• Gyle Shopping Centre • Hermiston Retail Park • Riccarton Campus • Juniper Green • Currie
40	Grangemouth	4100	• Grangemouth Port and Industrial Estates
14	Livingston	3676	• Livingston Town Centre • Camps Industrial Estate • Turnbull Way Industrial Estate • Livingston Village Units
41	Bankside Industrial Estate	3265	• Bankside Industrial Estate • Stenhousemuir • Larbert
1	City Centre	2941	• Edinburgh City Centre
52	Glenrothes	2752	• Queensway Industrial Estate • Viewfield Industrial Estate • Southfield & Whitehill Industrial Estates • Bankhead Industrial Estate and Park • Cadham Centre • Eastfield and Woodside Industrial Estate
45	Dunfermline	2079	• Lyneburn Industrial estate • Dunfermline Business Centre • Axis Point • Halbeath Interchange • Phoenix Industrial Estate

Model Zone	Name	Daily HGVs	Key Trip Generators/Attractors
51	Kirkcaldy	1812	• Mitchelston Industrial Estate • Smeaton Industrial Estate • Forth Avenue Industrial Estate • Frances Industrial Park
49	Rosyth	1785	• Rosyth Port and Industrial Estates
43	Alloa	1778	• Alloa Industrial Estate; Business Centre and Castle Street Industrial Estate • Kelliebank Industrial Estate and Midas Cargo Village • Trade Centre and Cooperage Way Business Village
46	Cowdenbeath	1523	• Queensferry Industrial Estate • Tullis Russelll • Glenfield Industrial Estate • Thistle Industrial Estate • Woodend Business Centre and Industrial Estate
25	Port Seton	1415	• Inveresk Industrial Estate • Wallyford Industrial Estate
23	Dalkeith	1346	• Edinburgh Millerhill Yard • Thornybank Industrial Estate • Easthouses Industrial Estate • Hardengreen Business Park and Industrial Estate
22	Bonnyrigg	1341	• Mayfield Industrial Estate • Butlerfield Industrial Estate and Lady Victoria Business Centre
6	Granton	1220	• Granton Port and Industrial Estates
53	Leven	1152	• Methil Port • Banbeath Industrial Estate • Methil Industrial Estate
5	Leith	1102	• Leith Port and Industrial Estates
54	Cupar	1036	• Prestonhall Industrial Estate • Riverside Court

5.4 Advisory Network Developed

5.4.1 Using the constraints and issues identified at the consultations, demand flows from the modelling and route selection criteria an initial map was developed. This classified the routes in a hierarchy of preferred routes, namely:

- motorways and dual carriageway;
- main roads; and
- local roads.

5.4.2 The above road hierarchy was used to encourage prioritising by vehicle drivers of routes using strategic roads first and only using local roads when no other option was possible, thereby avoiding any sensitive areas.

5.4.3 An initial draft version of the advisory network and associated map was prepared and an emerging findings paper produced. These were then sent to the Local Authorities in the

SEStran area and also to the SEStran Freight Quality Partnership Steering Group. A second round of consultations was carried out in order to gather their comments on the emerging map and draft report. Feedback and suggested revisions were received and appropriate amendments were subsequently made to the initial map and report. Table 5.2 summarises the feedback received.

Table 5.2 – Comments Received on the Initial Appraisal and Map

Local Authority	When	Comments
Fife	27 February 2009	• Would like Kelty and Lochore open cast sites included as they generate heavy HGV movements. • Sent information on location of Halbeath parking site, site for possible development of secured parking site.
Falkirk	20 February 2009	• A801 should be included on map as it carries 15% HGV traffic from M8 to M9.
East Lothian	n/a	• No additional comments.
Clackmannanshire	23 February 2009	• Alloa lorry park is only available in evenings from 17.30pm to 07.45am, this should be noted on the map • Requested A823 to be removed from map as it is unsuitable for HGVs.
West Lothian	20 February 2009	• A706 has a bridge height limit which should be added to map. • A904 no longer has a weight limit so this should be removed from map. • Remove site of possible lorry park at J4 of M8 as no land is available at this location. • Add Tesco distribution centre on A89 and Scottish Courage distribution at J4 M8 as high HGV numbers at these locations. • There is a weigh station on the A90 at Cramond Brig.
City of Edinburgh	24 March 2009	• Sent details of some height restrictions to be added on map.
Midlothian	n/a	• No additional comments.
Scottish Borders	27 February 2009	• Requested removal of B710 as not suitable for HGV's • Would like to add Jedburgh lorry park at a later date when have finalized their own plans.
Freight Transport Association	17 April 2009	• Many lorry parks are not dedicated facilities and so lack basic amenities. • Park and Ride sites should be considered as possible lorry parking facilities. • Most lorry drivers depend on GPS for directions, but this is often poor.
Road Haulage Association	20 April 2009	• Park and Ride sites should be considered as possible lorry parking facilities. • Newbridge could be a good location for a third

Local Authority	When	Comments
		lorry park as it is close to the trunk road system and has spare land available close by. • GPS does not cater for the HGVs, but it would be very useful if it was adapted for these.
DHL Express	17 April 2009	• Secure lorry parking is essential, and in most sites lacking. • Segregation of Goods vehicles from general parking areas is essential.
Network Rail	20 April 2009	• No additional comments.
Scottish Enterprise	5 May 2009	• No additional comments.
John Mitchell Haulage	5 May 2009	• A truck stop at the proposed Halbeath site would cater for local trips. Falkirk is a better location. • Using park and ride sites is a good idea if possible.
Forth Ports Plc	8 May 2009	• Existing truck stops are very basic and could benefit from improvement. • Proposed new site at Falkirk seems acceptable. • The concept of minimizing environmental impacts using the proposed advisory lorry map seems reasonable.

5.4.4 There was a general consensus among the key stakeholders that many if not most of the lorry parks do not offer more than very basic amenities, or, as in the case of Portobello, mainly serve only as hardstanding. Security is a crucial issue and this was noted by many of the stakeholders, with a minimum of good lighting and CCTV as a prerequisite. In some cases stronger security provision may be required, such as fencing and possibly security patrolling.

5.4.5 The stakeholders in general supported the two proposed sites for new lorry parks. The central belt of Scotland was very much the preferred location for the proposed site for the third lorry park. Although the actual sites differed, with Newbridge and Coatbridge areas quoted as being the most suitable, the important characteristics in common were good trunk road and rail connections with the rest of Scotland and reasonable accessibility to a port for international freight traffic. In terms of a new Dryport, concern was expressed whether there was sufficient space for a new facility of the size required, and that there might be significant duplication of activities that already take place at current port sites.

5.4.6 A number of stakeholders highlighted the growing importance in the use of GPS in terms of a signing strategy. Greater dependence on satellite navigation by the road haulage industry has highlighted important deficiencies in the systems used, including inaccurate road depiction and absence of either weight, height or width restrictions in the base maps used. There is support from some stakeholders in allowing the output of this study to feed into a revised or updated version of GPS mapping that caters for the freight haulage industry.

5.4.7 The above comments were then taken on board for the production of the report and also incorporated into a revised version of the map where appropriate. The resultant map details routes suggesting the most appropriate route for HGVs to use. The locations of existing lorry parks are also shown along with heights and weight restrictions on key routes, indicating constraints on the network. The developed map is shown in Appendix C.

5.5 Benefits of the Advisory Routing Strategy

5.5.1 Having developed the advisory routes, the benefits of implementing the advisory lorry routing map were assessed. This involved comparing the scenarios with and without the advisory routes using the SEStran Freight Model. In particular, we used the Department for Transport's process for estimating the benefits from reduced Sensitive Lorry Miles (SLMs). This is an evaluation process whereby standard environmental rates for each type of road are used to estimate the environmental benefits of switching HGV routes from more environmentally sensitive roads (e.g. local, residential areas) to more strategic routes (e.g. motorways, trunk roads).

5.5.2 The analysis used the model to assign freight trips across the existing road network using and applying monetised values to the resultant HGV-kms on the key road sections in the area. Different SLM values are published by the Government for different road categories to reflect the environmental impact of HGV flows on those types of roads. For example, travelling on a local residential road is valued at 51p per lorry-mile while the same journey on a motorway is valued at 27p per lorry-mile. The local road is valued higher since it is in a built up area and more people would experience an impact compared to a motorway.

5.5.3 The above modelling was carried out using the existing road network layout. The routes in the proposed map were then coded into the model and the same freight demand was assigned across the network representing the advisory lorry routing strategy. This produced adjusted flows across the network and hence some traffic was re-routed from previous inappropriate routes to the strategic roads. The SLMs for the assigned flows was calculated. Comparing both sets of SLMs showed the economic network-wide benefits of the proposed advisory routing strategy. These tests were carried out for three time periods in the model (AM peak, inter-peak and PM peak) and annualisation factors were used to expand the results into annual equivalents.

5.5.4 In addition, because the future freight demand estimates were produced for both low growth and high growth freight scenarios, the estimation of SLMs was carried out for both growth assumptions. This allowed for a range of potential benefits to be identified. The results of the SLM analysis, showing the differences between the routing strategy and advisory routes, are shown in Table 5.3.

Table 5.3 – Estimated Annual SLM Benefits

Scenario	Vehicle Km Increase	SLM Benefit
2020 Low Growth Estimate	12,770	£1.89m
2020 High Growth Estimate	13,038	£2.34m

Note: all monetary values are in 2002 prices, as per the DfT's SLM process

5.5.5 The above table shows an increase by 2020 in vehicle kilometres due to the advisory routes. This is to be expected, since the strategy is encouraging more use of strategic roads which mean a slight detour from the shortest paths. However, the advisory routes are more environmentally friendly as they use less intrusive roads and hence they provide an overall environmental benefit of between £1.9m to £2.3m per annum (at 2002 prices as used by the DfT's analysis process), depending on low or high growth scenarios. These benefits are as a result of traffic switching to more appropriate routes. Furthermore, there could be other benefits to operators including, more predictable travel times, reliability of route, etc.

6 Signing Appraisal

6.1 Introduction

6.1.1 Having developed the advisory map with the hierarchy of routes to be used, the actual signing on the road network was investigated. This would allow weaknesses in the network to be addressed to ensure drivers could effectively find the end location from the advisory map. The results would then be compared to Government guidance and standards and recommendations for improvements on the network made.

6.2 Guidance and Standards

6.2.1 To appraise the current signing on the network, government criteria and standards must be considered. Therefore the following provides an overview of the best practice to be used in signing for HGVs.

6.2.2 The correct signing of a freight route can have a significant impact on the flow of lorry traffic through the strategic road network. This information is of critical importance to new or unfamiliar drivers as it can allow them to effectively plan their route in advance avoiding any height and weight restrictions which could otherwise impede their journey. Furthermore, by designating preferred routes, freight can be steered away from sensitive areas.

6.2.3 Good use of signing can help aid the movements of freight traffic to and from an area. Best practice on this issue is provided by the Department for Transport and Best Urban Freight Solutions[10]. The following criteria are of critical importance to be included in the signing strategy and on the freight map:

- warn drivers of roads that may be inappropriate for their vehicle (e.g. narrow streets);
- inform drivers about regulations on roads (e.g. vehicle weight, size and time regulations);
- direct drivers on advisory lorry routes; and
- provide information on lorry parks and key industrial areas.

6.2.4 The format and implementation of signs is also very important in helping drivers find their way from the strategic road network to a facility. The Design Manual for Roads and Bridges[11] and Traffic Signs Manual[12] were consulted to provide essential criteria for the signing strategy. These criteria were:

- the main purpose of the sign should be to guide drivers to their intended destination along the most appropriate route during the latter stage of their journey, particularly where the destination or entrance may be difficult to find.

[10] Good Practice Guide on Urban Freight Transport, EU Best Urban Freight Solutions (BESTUFS) Programme, 2007
[11] Design Manual for Roads and Bridges Volume 8, Section 2, Part 3, TA93/04, & Part 6, TA53/05, Highways Agency 2009
[12] Traffic Signs Manual Chapter 7: The design of traffic signs. Department for Transport 2003

- priority for signing will be given to destinations which attract a large volume of traffic and which cannot be reached simply by following signs to a town or city which appears in their address.
- similarly, the extent of any directional signing that may be required will be dependent on the volume of traffic and location destination in relation to the local and trunk road networks.
- information on signs should be kept to a minimum to ensure drivers can read information quickly and at speed;
- the distance from the first sign to the destination should be appropriate to the traffic management and safety requirements;
- for large destinations, signing from the wider network within the vicinity may be justified where specific route guidance is needed, but this should not normally extend more than 5 miles from the destination;
- there should be a consistent signing and continuity along the route across local authority boundaries;
- similarly consistency and continuity must be maintained from junction to junction with destinations appearing at each junction until the destination is reached;
- signing should only be used where necessary and should be kept to a minimum to avoid environmental intrusion and unnecessary distractions for drivers;
- lighting of important signs for drivers arriving in the dark; and
- any additional information relating to the signing of a particular location.

6.2.5 Signing strategies can help drivers find the most appropriate route for their vehicle and avoid possible confusion on the road network. Furthermore, restrictions information is crucial to lorry drivers to avoid them encountering structures which they cannot traverse and have to make U turns etc. This can lead to time savings and reduce delays on the network.

6.2.6 Therefore the advisory map should include information on height and weight restrictions, driver rest facilities, main freight destinations and the preferred routes to use in accessing these areas.

6.2.7 The above criteria would be considered when investigating the signing to the locations on the map.

6.3 Assessment Criteria & Methodology

6.3.1 Considering the guidance summarised in Section 6.2 above, the signing to the main trip generators/attractors in the SEStran area was investigated. All the sites within the local

authorities were examined, allowing any differences in signing strategy over the SEStran area to be considered.

6.3.2 This was carried out by looking at the route to each location using the advisory network map and identifying the shortest route to the relevant destination from the strategic roads recommended by the map. The signing along the network to the site was considered, and then upon exiting the mapped network the actual signing on local roads was investigated.

6.3.3 An appraisal Summary Table (AST) was prepared which shows the identified locations for improving the sites. The AST is contained in Appendix D and includes a description of the routes to each location, following the roads from the advisory network as far as possible. Furthermore the issues found at each location are also identified in the AST, as are possible improvements.

6.4 Summary of Results

6.4.1 The level and quality of signing varies throughout the SEStran area. Some sites such as Grangemouth and Rosyth are signed for several miles from the motorway network, whereas others lack any signing.

6.4.2 Furthermore in some destinations, the actual signing and information available on entering the industrial areas varied in some locations. Some offered no information on entry, while others provided a list and some a full directory map.

6.4.3 The AST in Appendix D identified issues and recommended improvements to each of the sites when required. The main points to note from this assessment are:

- there is a lack of signing on the main road at some locations, and in the other areas there are no signs for HGVs at key junctions;
- there are a few locations where signs are set back from the road or are obscured making them hard to read;
- some retail parks lack direction signs to HGV loading/unloading areas, and some industrial estates have no signs until the actual entrance, making it hard for drivers to anticipate turning in advance; and
- the information on entry to industrial areas varies, with many sites having no directory signs.

6.5 The Way Forward

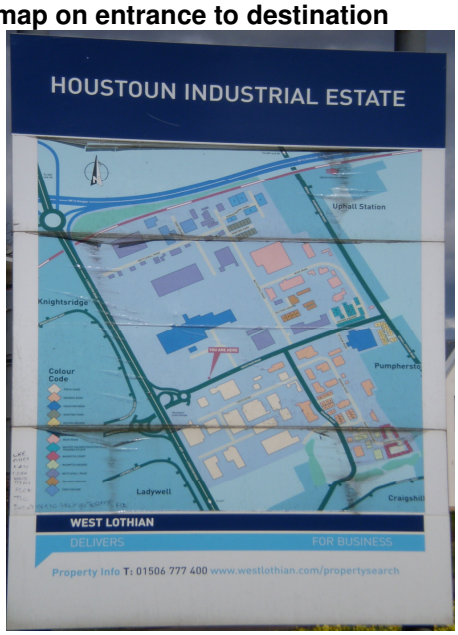
6.5.1 From the above investigations it is clear that the standard of signing varies between the local authorities and also each industrial estate. Some appropriate good practice measures and conclusions for signing for HGVs can be drawn from this. These include:

- signs for HGV traffic should be specifically adapted for the purpose of road-based freight. For example there should be black and white signs to differentiate signing for HGV traffic from signage for other traffic;

- industrial areas should be signed from A roads and major B roads as these are the roads HGV drivers will be travelling on and will need guidance;
- directional signs into industrial areas should be placed on the approach to allow drivers to reduce their speed in advance of entering the location;
- signs must be kept clearly visible and free of obstructions (see photo example 1) such as trees and other obstacles;
- entrances to industrial areas should include a map-based directory in an appropriate location to allow drivers to stop and examine the sign and plan their route to the specific business (see photo example 2); and
- there is a lack of lighting on signs throughout the study area, and it would be useful to light important signs for drivers arriving at night-time.

Photo 1 – Example of obscured signing

Photo 2 – Example of directory map on entrance to destination



6.5.2 In terms of specific locations for improvements, the AST in Appendix D shows identified recommendations. From the AST there are 27 locations indentified which warrant further investigation.

7 Outline Dryports Appraisal

7.1 Introduction

7.1.1 The study also considers possible locations for sites of Dryports. SEStran are involved in the Dryport project, which is funded by the EU Interreg IVB North Sea Programme. The project partners are:

- South East Scotland Transport Partnership (SEStran), UK;
- Transport Research Institute, UK ;
- Essex County Council for Haven Gateway, UK;
- Babergh Discrict Council, UK;
- Falkoping Kommun, Sweden;
- Port of Gothenburg, Sweden;
- Banverket Region Vastra Sverige, Sweden;
- Vagverket Region Vast, Sweden;
- Port of Zeebrugge, Belgium;
- Kamer van Koophandel West Vlaanderen, Belgium;
- Gemeente Emmen, the Netherlands;
- Provincie Friesland, the Netherlands;
- Provincie Drente (sub-partner), the Netherlands; and
- Gemeente Coevorden (sub-partner), the Netherlands.

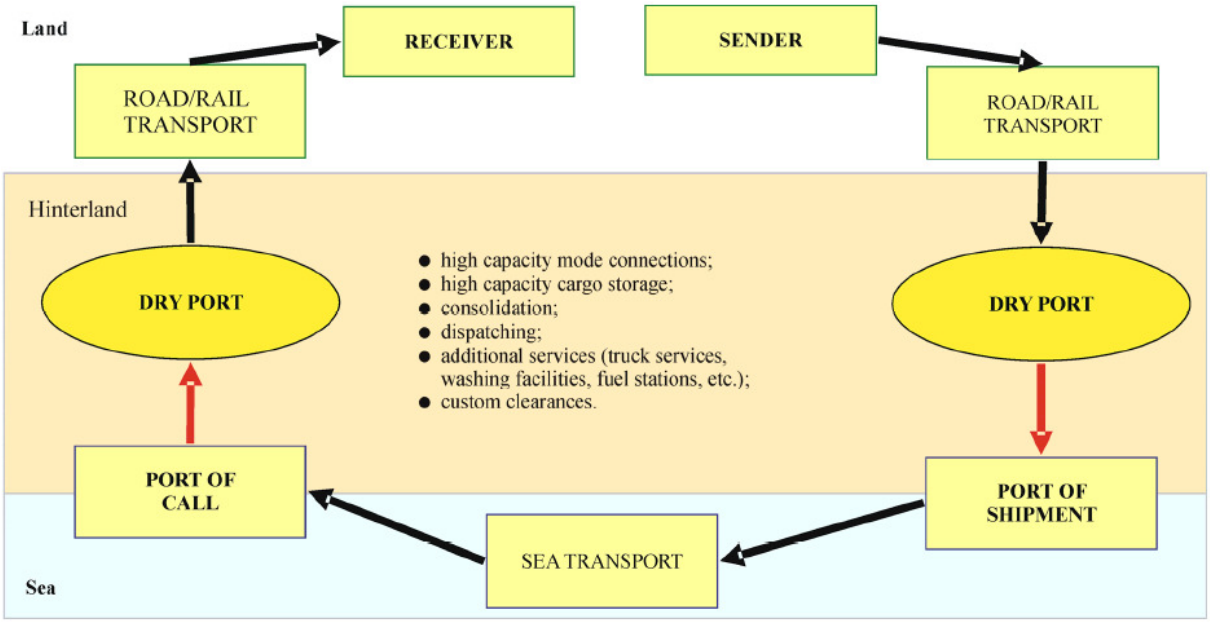
7.1.2 Further information can be found at the Dryport website (http://www.tri-napier.org/current-tri-projects/current-tri-projects/dryport.html).

7.1.3 Dryports are intermodal facilities located inland connecting rail and road facilities with sea ports. They allow containers to be moved around from each mode and can help shift freight from road to rail and sea options. Furthermore, they can help relieve congestion from sea ports and provide them with support functions.

7.1.4 Dryports operate 24 hours a day and assist with the transport of Twenty Foot Equivalent Units (TEUs). Essentially they can carry out all the functions and value added services of a sea port required for the shipping and forwarding of cargoes. These functions include customs clearance, storage, information exchange etc. These functions can save time and space at sea ports and reduce loading times. Figure 7.1 overleaf shows the Dryports concept as part of the supply chain process[13].

[13] Strategic Business Networks in the Transport Sector – New Opportunities, L Bentzen. In Proceedings of the InLoc Final Conference on Logistics Trends, on 21 September 2006, Turku, 2006. 22 p

Figure 7.1 – Dryports in the Supply Chain Process



7.1.5 Dryports are designed to send and receive cargoes, distributing them by various means of transport, and in turn transfer freight from road to more environmentally sustainable forms of transport. Existing facilities can be developed to provide Dryport facilities; the following three criteria should be fulfilled to meet the necessary requirements of a Dryport.

- The terminal should have a direct connection to a seaport by road or rail;
- The terminal should have a high capacity traffic mode; and
- The terminal should offer the same services and facilities as a sea port.

7.1.6 To ensure a Dryport operates effectively it should be working to consolidate maritime goods in intermodal short and long distance transport flows and collecting and distributing local, regional and international goods.

7.1.7 In order to effectively provide these functions the Dryport should carry out the following functions:

- Storage and warehousing facilities;
- Manage container flows to ports and individual destinations;
- Reduce need for road transport on route and promote rail network;
- Co-ordinate transport between different carriers; and
- Offer information on integrated transport including rail, sea and road.

[15] Inland Port / Dry Port Logistics, José-Luis Estrada, 25th World Ports Conference Houston, May 2007

7.2 Existing Dryport Sites

7.2.1 There are many examples of existing Dryport sites throughout the world, serving large ports. The following will provide a few examples of current sites and their operations.

7.2.2 The Dryport of Madrid is currently operating in Spain and covers an area of 120,000m². The Dryport and its facilities was designed to handle future development of intermodal maritime-rail transport and links the seaports of Algeciras, Barcelona, Valencia and Bilbao with the country's inland regions by the rail network. This facility now handles a large segment of port traffic bound for inland segments previously transported by road. Furthermore, the Dryport now carries out the customs processing of these containers and manages the distribution of goods from seaports. The Dryport now handles 1/5 of goods shipped to the country by sea.

7.2.3 The Dryport of Lyon covers an area of 184 hectares and is connected to the sea port of Marseille, around 300 km away. The Dryport uses both rail services and canal barges to transfer freight to and from the sea port. Lyon Dryport provides seaport services for the Marseille sea port, saving time at the seaport and customs procedures have been set up for containerised goods. The development of river/sea traffic now offers direct connections without transhipment from Lyon to the Mediterranean basin.

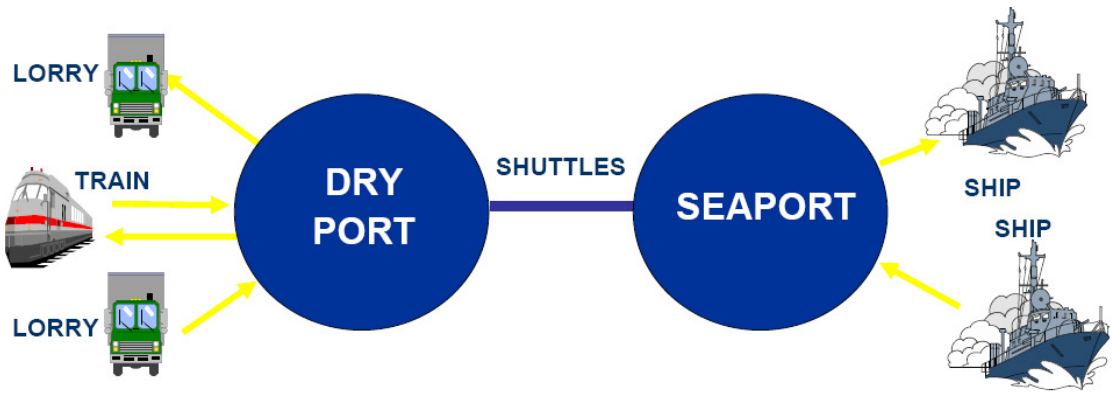
7.2.4 Sao Paulo has a Dryport of 160 Hectares located within its metropolitan area. The Dryport links to the airports of Guarulhos and Viracopos and the port of Santos. The Dryport offers storage facilities, customs facilities, yards and gantry cranes for handling containers, and computerised control of cargo and electronic weighing.

7.2.5 There are many other Dryports operating at present including, Hoeje-Taastrup in Copenhagen, Venlo in the Netherlands, Viginia in North America and numerous facilities in Pakistan to name but a few.

7.3 Dryport Concept Tested for the SEStran Area

7.3.1 From the above information we have an idea of the structure and functions of a typical Dryport. Figure 7.2 below shows the modes of transport at a typical Dryport concept[15].

Figure 7.2 – Dryport Operations



7.3.2 From this we can see there are direct links between the terminals (Dryport and seaport), typically a train running to a fixed timetable and capacity with agreements in place on times and quality of service offered. Dryports offer integrated prices accounting for transport, handling in the Dryport and distribution of goods and also provide customs services on site, saving time and space at the seaport.

7.3.3 For the purposes of the Dryport assessment the average size of a Dryport was determined, based on the current operations at Madrid, Lyon and Sao Paulo ranging from 120,000m² to 1,840,000m², as described earlier and also Santo Andre at 92,000m². If an average of these ranges was used this would mean a Dryport size of 913,000m² which is clearly too large for available space within the SEStran area. Hence, to err on the side of caution we have assumed a size comparable to the lower range of sizes and used 120,000m² as per the facilities at Madrid. This has been incorporated into the demand modelling to test the potential network-wide impacts of introducing such a facility in the area. The modes assumed to operate at the new Dryport site and tested in the modelling were rail and road based on fixed rail timetable accessing existing port facilities.

7.3.4 Clearly, there are a number of potential permutations to the operation and layout of a Dryport. Therefore, Dryports should be set up to cater for regional circumstances. For example, a Dryport could be configured to serve more than one sea port or more than one Dryport serving the same sea port, depending upon the geography of the region and associated freight flows. This appraisal has assumed one Dryport serving one sea port, although the results can be interpolated for other assumptions.

7.3.5 Scott Wilson undertook the Scottish Multi-Modal Freight Locations Study on behalf of the Scottish Government, Transport Scotland and Scottish Enterprise. This was a national freight study which has identified a number of locations/options across Scotland for providing multi-modal freight hubs. A number of these could be used as potential locations for a Dryport in and around the SEStran area. Consequently, from a review of the emerging multi-modal freight hubs strategy the Scottish Freight Study has developed, we have identified 5 potential locations for a Dryport facility, either within the SEStran boundary or adjacent to the area. These are:

- Option 1 – Leven/Methil Dock;
- Option 2 – Rosyth;
- Option 3 – Grangemouth;
- Option 4 – Coatbridge; and
- Option 5 – Lockerbie.

7.3.6 The first three options above are within SEStran while the other two are adjacent to the area. The latter two have been selected for appraisal in this study as they offer good road and rail connections to other parts of the country via the motorway/Trunk Road network and also the West Coast Main Line (WCML). In addition, there are also synergies with some of the interventions from the recently announced Scottish Transport Projects Review (STPR)[16].

7.3.7 In particular, the Grangemouth hub option compliments the access improvements proposed in STPR Intervention 20 which identified an objective to improve road and rail freight access to the port and freight hub. Improved road access onto the motorway network would be

[16] Strategic Transport Projects Review, Report 4: Summary, Transport Scotland, 2008

provided through upgrades to the M9 and the A801 between Grangemouth and the M8. Improved rail access would be provided through capacity enhancements at and around Grangemouth Junction, to allow more trains to access the freight facilities at Grangemouth. These would build on other STPR Interventions and would include increased loading gauge to allow larger containers to be carried, and also track modifications to provide improved access from the west and a new curve to permit direct access from the east.

7.3.8 In addition, STPR Intervention 27 also identified a new line between Mossend and Coatbridge to improve rail access to/from the site. This would compliment the emerging plans from the Scottish Freight Study for a proposed multi-modal freight hub at Coatbridge.

7.3.9 Furthermore, the Lockerbie hub option compliments the access improvements proposed in STPR Intervention 27. This includes plans to increase rail freight capacity by lengthening passing loops, removing speed limits that are below 75mph for freight trains, increasing the loading gauge on the route and increasing freight terminal capacity. This STPR intervention would improve rail access to/from the site and aid connections with the WCML.

7.4 Tests Carried Out

7.4.1 The appraisal process has used the SEStran Freight Model to estimate the network-wide impacts of introducing a Dryport at each of the 5 location options identified above. At a meeting with SEStran we agreed the Dryport scenario to test should be made up of the following characteristics:

- multi-modal facilities for road and rail freight;
- connection to sea port via a segregated rail link with fixed timetable;
- market is international/long-distance freight including deep sea containers; and
- the storage capacity of the facility is assumed to be 120,000 m^2 per annum.

7.4.2 The impact appraisal has been based on the standard network-based headline indicators of vehicle-kms and vehicle-hrs saved per annum. We compared each location/option against the developed advisory lorry network (the Do-Minimum) to show the incremental changes from the newly developed routing strategy.

7.4.3 Since the link between the Dryport and the sea port is assumed to be a heavy rail service, to estimate the transfer from road to the Dryport facility we used an Incremental Transfer Model from the railways Passenger Demand Forecasting Handbook[17] (PDFH). The incremental model took the form of:

$$\text{Incremental Change} = (GJT_{option} / GJT_{base})^{E}$$

where GJT_{option} is the generalised journey time to the Dryport option being considered;

GJT_{base} is the generalised journey time in the base case (i.e. with the Dryport);

GJT consists of the Time, Distance and Interchange. These were sourced from network skims from the model to take into account congestion effects and future traffic growths. Weighting co-efficients of 2.7, 1.9 and 1.0 were used for time, distance and

[17] Passenger Demand Forecasting Handbook (PDFH), ATOC, 2007

interchange, respectively, in order to convert the units into generalised time. These were sourced from Section B of the PDFH; and

E is the elasticity and a standard value of -0.9 was used for all options, sourced from Section B of the PDFH.

7.4.4 The above model was applied to long-distance trips, including journeys to England and overseas. The assumption is the Dryport has sufficient capacity to accommodate 2020 forecast demand levels whereas thee are capacity constraints at English ports.

7.4.5 The results of each analysis was a reduction factor for measured origin-destination (OD) pairs of freight movements in the model. The base demand matrices in the model were factored down by the estimated transfer reductions, but only for the long-distance OD pairs to represent the type of trips expected to use the Dryport facility (this also gave a conservative estimate of the network-wide impacts and associated benefits).

7.4.6 The modelling was carried out for each of the three time periods represented in the freight model (AM, inter-peak and PM peak periods) to allow for variations in the level of demand throughout the day. These were added together to give daily savings in HGVs across the SEStran network and annualised using an average expansion factor of 300.

7.4.7 In addition to estimating the changes in veh-kms travelled by HGVs and veh-hrs saved by HGVs across the road network, we also estimated the monetised values of these benefits. This allows for an indication of the potential monetary worth of some of the transport society benefits (only those included in this high-level appraisal). For this analysis we estimated the vehicle operating costs (VOC) savings and the time benefits. There would be other benefits and costs, but these would be captured within a full Transport Economic Efficiency (TEE) analysis which is outwith this study remit. Nonetheless, these two transport benefits are useful in helping to gauge the potential economic impacts of the various options.

7.4.8 VOCs were estimated using the calculated annual veh-kms saved from the road network. Using values from WebTAG[18] and average default data, a monetised value of 8.2 pence per km was used to derive VOC benefits. Time benefits were estimated using an average value-of-time of £11.28 per hour, also sourced from WebTAG, and applied to the estimates of the veh-hrs saved.

7.4.9 The results of the modelling are shown in Table 7.1. This shows the changes in veh-kms and veh-hrs (a negative means there is a reduction, i.e. a saving off the road network, due to modal shift). Also shown are the various estimates of the monetised transport benefits. These are the annual values, calculated at 2002 prices as per WebTAG.

Table 7.1 – Network-wide Impacts of the Dryport Options

	2020 Low Growth			
Site	**Veh-km Saved**	**Veh-min Saved**	**VOC Saving (per annum)**	**Time Savings (per annum)**
Leven / Methil Docks	-6,649,000	-4,662,000	£0.5m	£0.9m
Rosyth	-5,754,000	-5,261,000	£0.5m	£1.0m
Grangemouth	-15,5241,000	-13,813,000	£1.3m	£2.6m

[18] Web-based Transport Appraisal Guidance, Department for Transport, 2003

	2020 Low Growth			
Site	**Veh-km Saved**	**Veh-min Saved**	**VOC Saving (per annum)**	**Time Savings (per annum)**
Coatbridge	-18,070,000	-14,739,000	£1.5m	£2.8m
Lockerbie	-9,419,000	-9,164,000	£0.8m	£1.7m
	2020 High Growth			
Site	**Veh-km Saved**	**Veh-min Saved**	**VOC Saving (per annum)**	**Time Savings (per annum)**
Leven / Methil Docks	-7,579,000	-9,319,000	£0.6m	£1.8m
Rosyth	-6,250,000	-8,140,000	£0.5m	£1.5m
Grangemouth	-17,078,000	-18,099,000	£1.4m	£3.4m
Coatbridge	-20,208,000	-21,050,000	£1.7m	£4.0m
Lockerbie	-10,205,000	-12,326,000	£0.8m	£2.3m

7.4.10 The above results suggest there are significant potential benefits to be gained from the Dryport options. The best performing options/locations are the Coatbridge and Grangemouth options. This suggests the Central Belt corridor is perhaps the optimum location for a Dryport, which is not entirely surprising since they have good access to both the motorway and Trunk Road networks, and also the rail network.

7.4.11 These savings are in trips to England as both Grangemouth and Rosyth are predicted to be operating at capacity in 2020, based on current layouts, and there are also capacity constraints at key English ports.

7.4.12 Clearly the above results are based on the assumptions applied in this study and also the definition of a Dryport.

7.5 Connectivity Appraisal of the Dryport Sites

7.5.1 To assess the effectiveness of the Dryports they must also be considered in relation to the strategic routing strategy developed earlier. Each of the 5 sites are considered below.

Leven/ Methil Docks

7.5.2 Leven is served by the A911, the A915, and the A955. Both the A911 and A915 are shown on the advisory network and join with the A92, the main trunk route linking the area with the rest of Fife, and the Lothians. However, at the moment Leven is not currently connected by rail to the main rail line although examining the feasibility of reopening the rail link is part of the Dryport study project.

Grangemouth

7.5.3 Grangemouth Harbour is situated in the centre of the central belt of Scotland, close to the industrial heartland, with good links to road and rail networks in every direction. Grangemouth is well served by the motorway system, particularly by the M9 motorway which passes close by. The area also has rapid connections to the rest of Scotland via the A80/M80 and the UK via the M73/M74. Other links include the M9/A9 for northern destinations and the A801 for southern destinations and bringing the A801 up to a suitably

high standard is also part of the Dryport Study project. The A904 and A905 provide direct access to the port from the south east and north west respectively. All of these roads are currently included in the advisory network and the presence of the motorways close by makes it a very appealing site. With regards to rail, Grangemouth is connected to the main east–west rail line providing good rail links.

Rosyth

7.5.4 The Port of Rosyth is situated close to good road links with the rest of Scotland and is also connected to the rail system. Rosyth is served by the M90 from the north and the A90 across the Firth of Forth to the south which links in with the motorway network, and the A985 from the west, which connects the area with M9/A9 and M80. Again all these roads are included on the routing strategy so the site would tie in well. The potential for Rosyth to be fully connected to the rail network is being examined as part of the Dryport study project.

Coatbridge

7.5.5 Although not specifically in SEStran, the proposed site at Coatbridge is located relatively close to the area. Coatbridge is well placed to intercept the A8/M8 trunk roads, and via the A8 the M73/M74 and A80/M80 strategic roads, which are of similar class to those included on the routing strategy. Furthermore, Coatbridge is a well developed rail facility with access to both the central rail line and West Coast Main Line.

Lockerbie

7.5.6 Again not within SEStran but close by, Lockerbie is situated on the M74 and on the A709 which links the M74 with the A75 through Dumfries. This is a particularly strong location for road distribution northwards to Glasgow and the rest of Scotland, and southwards to the rest of the UK, including Northern Ireland via the A75. These roads would have been included in the routing strategy had the map included this area. In addition, the area is located next to the West Coats Main Line (WCML) which is also strong for rail connections to the rest of the country. Therefore this site also has good connections for the Dryport.

8 Conclusions

8.1 Introduction

8.1.1 This report has presented the results of a study into freight movements in the SEStran area and developed a Freight Routing Strategy (FRS) for roads-based lorry movements as an integral part of the Dryport project. The outputs from this analysis has been an advisory freight routing network and associated map, which identifies key constraints, recommended strategic roads and main generators/attractors. To facilitate the development of the routing strategy, a review lorry parking provision in the SEStran area was undertaken. This study was also intended to assist with the Dryports project by testing the potential high-level overall network impacts of possible locations for siting Dryports in and near the SEStran area.

8.1.2 A number of conclusions have emerged from this analysis. These are summarised in this Chapter. Following on from these findings, a number of recommendations have been made and are outlined in the following Chapter.

8.2 Consultations

8.2.1 Consultations were carried out with local authorities and key stakeholders with the main aims of the consultations to:

- highlight unsuitable freight routes;
- identify weak structures, low bridges and possible alternative routes;
- confirm lorry parking locations for appraisal; and
- assess where freight routing is an issue.

8.2.2 Based on the consultations and Government Guidance, 16 height constraints and one weight constraint were identified to impact upon strategic freight movements in the SEStran area.

8.3 Future Demands

8.3.1 Future levels of road freight demand and movements across the network were developed using Government-recommended modelling techniques, calibrated to 2007 conditions across key roads in SEStran using observed data collected from a series of surveys, existing databases and supplied by key stakeholders.

8.3.2 In order to assess the changes of freight movements in the future, a horizon year of 2020 was estimated as being a suitable future modelling year. In particular, two different scenarios were appraised:

- 2020 with low level of freight growth; and
- 2020 with high level of freight growth.

8.3.3 The modelling produced estimated flows across each strategic road link in SEStran, with volumes of HGVs at different time periods throughout the day to reflect periods of peak demand and the evenings when overnight stay is likely to occur. These flows were used as the starting point for the development on an initial map. Routes were identified based on a standard criteria suggested in the Department for Transport's (DfT's) Guidance.

8.3.4 The result from the demand analysis was a series of road sections which made up an initial strategic advisory road network based on current and future demand levels. These were then cross-referenced against identified network constraints sourced from the consultations, leading to the selection of the preferred strategic routes in the SEStran area.

8.4 Truck Stop Analysis

Enhancements to Existing Stops

8.4.1 A truck stop analysis was then carried out examining the parking facilities in SEStran. This identified seven sites within SEStran, with five basic and two intermediate sites as classified using recommended guidance.

8.4.2 The current sites were compared to the recommended guidance and also a case study of the minimum standards for suitable lorry parking. This is summarised in an appraisal table, which also highlights sites were improvements would be recommended. From the appraisal it was clear that most of the facilities in SEStran would benefit from upgrading. The exception to this was the site at Portobello which is currently run as a secure coach and lorry park.

Proposed New Stops

8.4.3 As well as enhancing existing lorry parking sites, the study has found there is sufficient overnight demand for new truck stops in Falkirk, Fife and West Lothian. The three possible sites identified were:

- Site 1 : Laurieston Road (off the industrial area) to serve Falkirk;
- Site 2 : Enhance current site at Halbeath to provide secure parking; and
- Site 3 : Off Junction 4 of the M8, next to Whitehill Industrial Estate.

8.4.4 However, Site 3 (off junction 4 of the M8) had to be discounted as there is no available land at this location to develop. As demand for lorry parking along the M8 corridor was identified to cater for the Livingston and Bathgate areas, there is a need to look at alternative sites along the corridor.

8.5 Advisory Lorry Map

8.5.1 Armed with the outputs from the above study elements, an advisory lorry map was developed. This classified the routes in a hierarchy of preferred routes, namely:

- motorways and dual carriageway;
- main roads; and
- local roads.

8.5.2 The above road hierarchy was used to encourage prioritising by vehicle drivers of routes using the largest strategic roads first and only using local roads when no other option was possible, thereby avoiding any environmentally sensitive areas.

8.5.3 The proposed advisory network was tested in the model, and the environmental benefits were estimated using the Department for Transport's process for estimating reduced Sensitive Lorry Miles (SLMs). The results of the SLM analysis, suggested the benefits range from £1.9m to £2.3m per annum depending on Low and High Growth Scenarios.

8.6 Signing Strategy

8.6.1 The level of existing signing in SEStran was also considered. In particular, opportunities for improving the level of signage from the strategic roads as described on the Advisory Lorry Map to the local freight destinations were appraised against Government guidance.

8.6.2 The appraisal has highlighted variations in the standard of signing and locations which could be improved. Some appropriate conclusions include:

- there is a lack of signing on the main road at some locations, and in the other areas there are no signs for HGVs at key junctions;
- there are a few locations where signs are set back from the road or are obscured making them hard to read;
- some retail parks lack direction signs to HGV loading/unloading areas, and some industrial estates have no signs until the actual entrance, making it hard for drivers to anticipate turning in advance; and
- the information on entry to industrial areas varies, with many sites having no directory signs.

8.7 Dryports Appraisal

8.7.1 The study carried out a high-level appraisal of the potential network-wide impacts of possible locations for a Dryport to serve the area. Dryports are intermodal facilities located inland connecting rail and road facilities with sea ports. They allow containers to be moved around from each mode and can help shift freight from road to rail and sea options. Furthermore, they can help relieve congestion from sea ports and provide them with support functions.

8.7.2 Building on the Scottish Multi-Modal Freight Locations Study, five possible options were identified:

- Option 1 – Leven/Methil Dock;
- Option 2 – Rosyth;
- Option 3 – Grangemouth;
- Option 4 – Coatbridge; and
- Option 5 – Lockerbie.

8.7.3 The first three options above are within SEStran while the other two are adjacent to the area. The latter two were selected for appraisal in this study as they offer good road and rail connections to other parts of the country via the motorway/Trunk Road network and also the West Coast Main Line (WCML).

8.7.4 The options were then examined to assess the impact of shifting freight from road to rail/sea. The benefits were then monetised using Government economic appraisal methodology. The results suggested that the Dryport proposals can potential provide significant transport benefits ranging from £1.4m to £5.7m per annum (for both time savings and reductions in vehicle operating costs), depending on Low Growth and High Growth Scenarios, and also the locations and assumptions about how the Dryport would operate.

9 Recommendations

9.1 Introduction

9.1.1 Based on the findings and conclusions of this report there are a number of recommendations proposed to enable the implementation of the emerging Freight Routing Strategy (FRS) for the SEStran area. These are discussed in this Chapter.

9.2 Truck Stop Analysis

9.2.1 Given the existing seven lorry parking areas are generally of a low quality, it would be of benefit to examine the potential to upgrade these sites, taking particular note of security facilities as in the Hull example identified in the case study. From the analysis, it is also clear that 3 of the existing sites are in private ownership and the remaining 4 are Council-owned, so the onus on making improvements is due to both the public and private sectors.

9.2.2 Furthermore, additional demand for overnight parking has been identified in some areas. Therefore, it would be beneficial to investigate the feasibility of developing further truck stops in these areas. Two sites have been identified in Falkirk and Fife which should be considered.

9.2.3 Additionally, a site on the M8 corridor to serve the Livingstone and Bathgate area should be identified and developed to serve the significant overnight demand in these areas. Suitable locations could be discussed with local authorities to identify potential opportunities. Some of the feedback from the consultations has suggested Newbridge could be a possible location. This idea is particularly interesting when considered against the other projects SEStran are pursuing. In particular, the Park-and-Ride Strategy and the proposals for the Edinburgh Orbital Bus Project (EOBP) are considering a large new multi-modal stop at Newbridge. Hence, we would recommend opportunities for synergy between these proposals could also be investigated.

9.3 Advisory Map

9.3.1 The advisory network map has been developed and the modelling has shown there to be significant potential environmental benefits with its introduction. Therefore, the map should be circulated to freight companies, local authorities and key stakeholders to implement the specified routing strategy and achieve the benefits.

9.3.2 In addition, the consultation feedback has highlighted the issue with Global Positioning Satellite (GPS) systems being inaccurate with regards to HGV routing. Hence, there is an opportunity to share the information collected in this study with GPS companies to improve their digital mapping. Clearly, this would need to be carried out in partnership with the local authorities who supplied much of the data on constraints in their networks.

9.4 Signing Appraisal

9.4.1 Having investigated the signing in the area it is clear that the level of signing varies from site to site. The signing Appraisal Summary Table contained in Appendix D identifies 27 locations where improvements could be made. Further consultations with the relevant

highway authorities should be carried out, with a view to looking at opportunities to improve the signing provisions to major freight destinations.

9.5 Dryports Appraisal

9.5.1 From the Dryport analysis and associated transport economic appraisal it is clear that the implementation of a Dryport could have significant network-wide benefits for SEStran. However, this is clearly dependent on the assumptions used in our demand modelling.

9.5.2 Nonetheless, it is clear from our transport analysis that the Dryport proposal is worthy of further, more detailed, investigation.

9.5.3 Hence, the Dryport plans should be considered further and the analysis conducted in this study should be fed into the larger Dryports study being carried out by SEStran and TRI.

Appendix A

Modelling Technical Note

Freight Routing Study

Freight Modelling Technical Note

Final Version

1st May 2009

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Contents

1 Introduction

1.1 Background

1.1.1 In November 2008, SEStran appointed Scott Wilson to study freight movements in the Regional Transport Partnership area and to develop a Freight Routing Strategy (FRS) as an integral part of the Dryport project. The Dryport project is an EU funded Intereg IVB North Sea Region Programme funded project of which SEStran and Napier University's Transport Research Institute (TRI) are the Scottish partners. Sustainable freight distribution is a key element of SEStran's Regional Transport Strategy (RTS), which was given Ministerial approval in July 2008. An Action Plan was produced last year by Faber Maunsell for improving freight movements in the SEStran area, the results of which were approved by the SEStran Board.

1.1.2 This study follows on from the previous Faber Maunsell study and is intended to develop a sustainable freight routing strategy with an associated map. This included a review of freight signing and freight lorry parking provision in the SEStran area. This study will also provide input into assessing the feasibility/viability of a Dryport by testing the potential high-level overall network impacts of possible locations for siting Dryports in and near the SEStran area.

1.1.3 In order to study freight traffic patterns and estimate future freight demand and road freight patterns, as well as to assess the impact of routing options emerging from stakeholder consultations, a freight transport model of the RTP area was developed. This note summarises the methodology adopted to build this model and the results of the calibration of the model, and outlines the high-level results of the future forecasts.

1.2 Linkages to the Scottish Multi-Modal Freight Locations Study

1.2.1 Between 2007 and 2009, Scott Wilson undertook the Scottish Multi-Modal Freight Locations Study (SMMFLS) on behalf of the Scottish Government, Scottish Enterprise and Highland & Islands Enterprise (HIE). This was a national freight study which is assisting the development of the national Freight Action Plan (FAP). The SMMFLS included a detailed consultation and data collection programme as well as the development of a nation-wide multi-modal Scottish Freight Model (SFM) which is capable of examining freight demands and associated movements across the network.

1.2.2 It was therefore considered beneficial to use as much data from the SMMFLS as possible, in order to reduce study costs and also fit-in with the emerging National Freight Strategy. Specifically, elements from the nation-wide Scottish Freight Model (SFM) would be refined to a more local level covering key points of interest in the SEStran area.

1.2.3 Hence, to help assess the implications of future freight patterns in key parts of SEStran, the SFM was further enhanced and calibrated to 2007 conditions using observed data collected from a series of surveys, existing databases and supplied from key stakeholders including operators consulted during the course of the SMMFLS.

1.3 About this Note

1.3.1 The overall structure of this Technical Note is as follows:

Chapter 2 – outlines of the data analysis and the freight categories coded;
Chapter 3 – describes the development of the base model;
Chapter 4 – summarises the modelling assumptions used;
Chapter 5 – presents the model validation results;
Chapter 6 – gives a high-level presentation of the modelling results produced; and
Chapter 7 – summarises the concluding remarks.

2 Data Analysis

2.1 Data Processing

2.1.1 Different areas of SEStran have distinct freight characteristics, patterns of movements and priorities. Hence, the data collected for the Scottish Freight Model has included a 4-pronged approach to gathering new information in recognition of the specifics of different regions of Scotland and the variations across various economic sectors. This level of characteristic is the same for the freight industry within SEStran as it is applicable to Scotland as a whole. Hence, we have maintained the same level of data disaggregation for the enhanced SEStran Freight Model (SESFM) as was used in the development of the SFM.

2.1.2 Data was collated from the various end-user telephone surveys, origin/destination (OD) surveys of operators and carriers, workshops with key stakeholders, and targeted one-to-one meetings with those stakeholders who contributed to the SMMFLS surveys. The data was then mapped against a new zone system, which is more refined for the SEStran region to allow for a more detailed assignment of freight patterns across the network. This is discussed in some detail later in this note.

2.1.3 As with the SMMFLS, the freight data was cross-referenced with the following economic sector groupings [based on the Standard Index Classifications (SIC) codes] in order to maintain the modelling of variations in the key freight industries and sectors:

1. Agriculture, Fishing and Foodstuffs;
2. Forestry and Forestry Products (timber/furniture/paper);
3. Solid Fuels and Petroleum Products;
4. Minerals, Building Materials and Construction;
5. Metal Products, Machinery and Transport Equipment;
6. Leather and Textiles, and Retail/Wholesale;
7. Fertilizers and Chemicals;
8. Electronic (white) Goods; and
9. Other/Miscellaneous.

2.1.4 Data was processed and coded into the model separately for each of the above freight commodities, allowing for a more refined analysis of future freight demands.

2.2 Presentation of Data

2.2.1 A significant element of the data provided is commercially sensitive and hence the surveys were carried out in accordance with the Market Research Society Code of Conduct (MRSCC) and the Interviewer Quality Control Scheme (IQCS), which stated all information provided by stakeholders would be treated in strict confidence. This is important since it facilitates a free and candid exchange of information and views from stakeholders, including operators and end-users, which would otherwise not have been available.

2.2.2 Consequently, the information can not be presented in a very detailed level, but it is possible to present information in an outline format and aggregated for the main areas. SESFM will be used under those conditions of operation and when we reach the stages of the study were we produce estimates of future levels of freight demand and traffic patterns to take forward into the rest of the study we will need to present the flows at the aggregate level in order to maintain the commercial sensitivities requested by stakeholders who donated data.

3 Model Development

3.1 Introduction

3.1.1 The freight modelling was carried out using the CUBE Voyager computer software. This is an industry-standard computer program used to examine traffic and transport conditions and assess proposed improvements in the transport network.

3.1.2 The CUBE Voyager model consists of the following key elements:

- a network representation of the transport network;
- trip matrices to define trip movements within the modelled area;
- an assignment algorithm to allocate trips between each pair of zones to the network based on a defined generalised cost equations;
- a simulation of the network operational performance arising from the assigned flows; and
- the production of benefits, impacts and other effects for use in appraisal.

3.2 Road Network and Traffic Data

3.2.1 Since the focus of this study is road freight, we have enhanced the road network representation in the original SFM and kept the remaining modes as they were. The base model, which is a representation of the existing traffic conditions in the SEStran area, is defined by a series of links and nodes. Traffic is loaded on the roads through zones, which feed into the network at one of the nodes.

3.2.2 The main arteries in the study area and therefore included in the network are the M8, M9 and A701 which links Edinburgh to Glasgow and the west, and the M90 and A92 which links the SEStran region to the north and east of Scotland. The major roads to the south are the A1 and to a lesser extent the A68 and A7. Although not part of SEStran, the A74 motorway runs beside its boundary and attracts a significant part of the traffic between SEStran and the south. This was also maintained in the enhanced network.

3.2.3 The model network also includes the majority of less strategic A-class roads and a number of B-Class Roads.

3.2.4 The link lengths and number of lanes are based on the existing physical conditions and the link capacities and speed/flow relationships are based on the Design Manual for Roads and Bridges (DMRB). Speed limits are based on the actual speed limits on the existing road.

3.2.5 A representation of the network can be seen in Figure 3.1 overleaf.

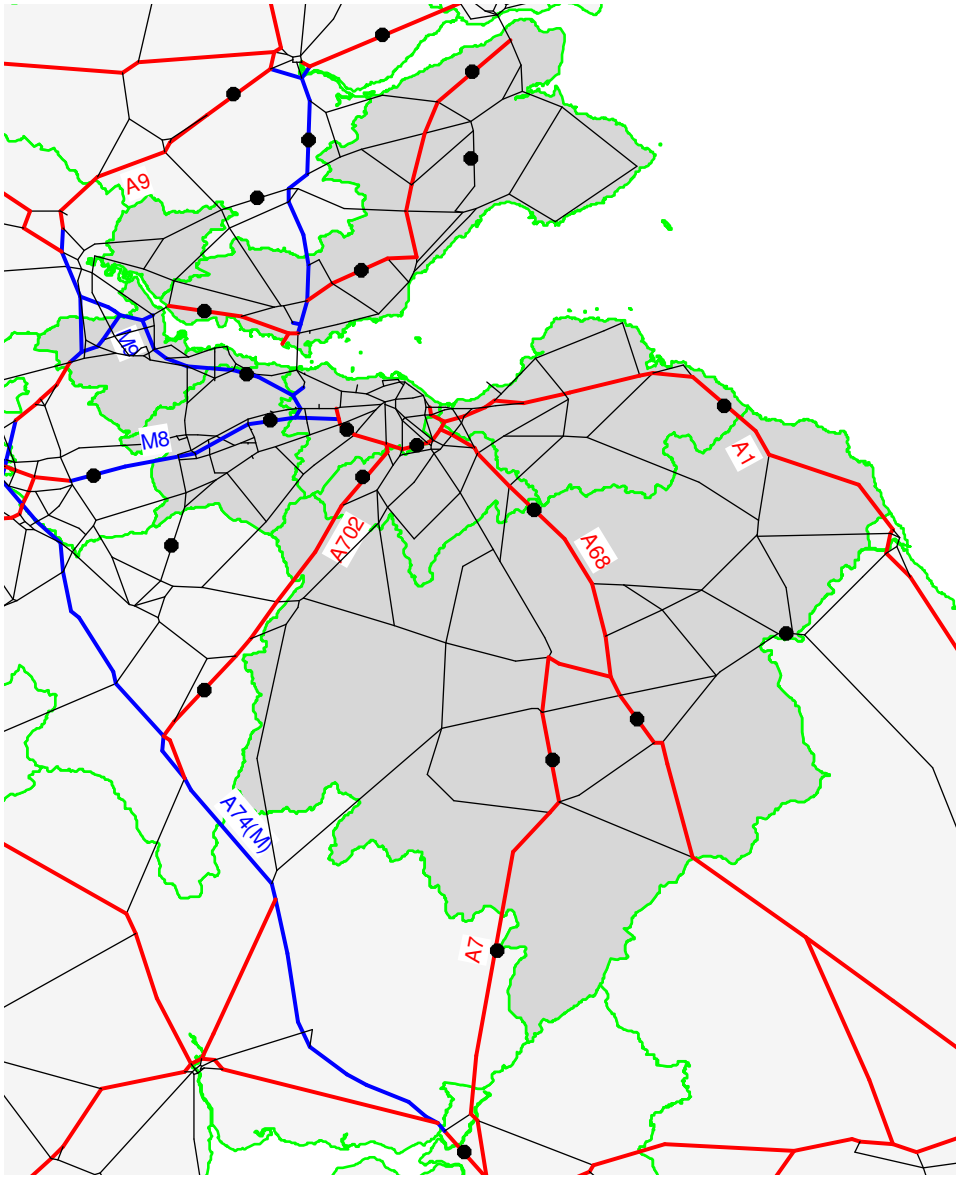
Traffic Counts

3.2.6 Traffic data used as the basis for the calibration of the model was obtained from a number of Automatic Traffic Counts (ATC) for the neutral month of November 2007, to represent the

same conditions as the host data collected from the SMMFLS surveys. The ATC data was supplied by Transport Scotland from their Scottish Road Traffic Database (SRTDb). Where available, counts were for broken down into different vehicle types, for the modelled time periods (0800 hrs and 0900 hrs for the morning peak, 1200 hrs and 1300 hrs for the inter-peak, and 1700 hrs and 1800 hrs for the evening peak). Expansion factors to daily and annual flow equivalents were derived from the traffic counts.

3.2.7 The traffic count sites are illustrated in the following figure, which is based on a screenshot of the newly enhanced SESFM.

Figure 3.1: SEStran Network and ATC Locations



3.3 Production of the Base Matrices

3.3.1 In order to model freight movements in the SEStran area, each of the 8 Local Authorities was divided into a number of zones. These zones are designed so as to correspond to distinct urban/rural areas, or main freight traffic attractors and generators.

3.3.2 Freight demand between SEStran and other RTPs and the rest of the UK, as well as the traffic travelling through the study area, is modelled through the introduction of additional external zones. Each RTP is represented by one zone, with the exception of SPT and TACTRAN which are divided in three zones to better reflect the distribution of traffic on the main arteries between these RTPs and SEStran. The rest of the UK is represented by two zones which are respectively connected to the A1 and to the A74.

3.3.3 The sum of internal and externals zones leads to a total of 66 zones, as summarised in the following table.

Table 3.1: SESFM Zonal System

SEStran Area	No of Zones
Edinburgh City	10
West Lothian	9
Midlothian	4
East Lothian	5
Borders	9
Clackmannanshire	4
Falkirk	3
Fife	11
Externals	**No of Zones**
Rest of Scotland	9
Rest of UK	2
Total	**66**

3.3.4 In addition to the 66 zones mentioned above, 4 'empty' zones were also added to allow for the testing of new infrastructure and options/locations of Dryports later in the study. This took the total zones in the SESFM to 70 zones.

3.3.5 The 2007 calibrated/validated freight demand matrices from the national Scottish Freight Model were used as the basis for the demand matrices for SESFM. Demand data for the 8 Local Authorities forming the SEStran region was disaggregated to the more detailed zone level using ward information from the National Census.

3.3.6 Local Authorities outside the SEStran area were grouped to form the 9 externals as detailed above.

3.3.7 The above matrices were produced for each of the 9 freight commodities as specified in Section 2.1.3. In addition to freight movements, in order to represent the effects of congestion on the highway network, a car matrix was also disaggregated from the national Scottish Freight Model to the above zone system. Each matrix was produced for three modelled time periods namely AM, inter-peak and PM peaks.

3.4 Assignment Procedure & Generalised Costs

3.4.1 The assignment procedure in the CUBE Voyager model is an Equilibrium Assignment process which, using a set of algorithms, optimally combines a series of assignments such that the ultimate flow pattern reflects the multi-routing evident on the network and satisfying the criterion known as 'Wardrop Equilibrium'.

3.4.2 The assignment process combines an assignment stage and a capacity/delay analysis stage. The delay information from the delay analysis is passed back to the next assignment stage where a new trip pattern is derived. The process is iterated until convergence is reached.

3.4.3 The CUBE Voyager model has a number of parameters which can be set to determine when a suitable level of convergence has been reached. Convergence was deemed to be satisfactory at the point where 99% of link flows changed by less than 1% between two successive iterations. This resulted in a 'gap' statistic of less than 1%. This 'gap' statistic is equivalent to the 'delta' referred to in DMRB Volume 12 Section 2 Part 1 Appendix I, and the convergence criteria therefore meet the DMRB requirements for both proximity and stability.

3.4.4 Under this condition, traffic is arranged on the network such that the cost of travel on all routes used between an origin/destination pair is equal to the minimum cost of travel and all unused routes have an equal or greater cost. The calculation of generalised cost co-efficients has used the recommended approach in Volume 12 of the DMRB and the example in Volume 13.

3.4.5 There are no tolled roads within the modelled area, so a generalised cost equation based only on time and distance was considered sufficient. It was considered appropriate to reflect the different characteristics of light and heavy vehicles through the use of separate generalised cost equations. Following the example given in DMRB Volume 13 Section 2, the generalised cost equations can be summarised as follows:

- Cars 1.00 x time + 0.54 x distance; and
- Freight 1.00 x time + 2.91 distance.

4 Modelling Assumptions

4.1 Introduction

4.1.1 A set of modelling assumptions used for the modelling, based on the same set of assumptions used in the Scottish Multi-Modal Freight Locations Study (SMMFLS). This allowed for consistency with the emerging national strategy, which was considered important. This chapter sets out these assumptions.

4.2 Reference Case schemes

4.2.1 In order to model future scenarios across the transport network, it is important to compare against a Reference Case (or Do-Minimum Scenario). This takes into account planned and committed schemes which will occur and allow for comparison against the future state of the network. The most recent version of the Transport Model for Scotland[1] at the time of the SMMFLS had defined the following Reference Case of committed transport schemes for inclusion in future demand modelling:

By 2012

- M9 Spur Extension;
- A68 Northern Bypass;
- Ferrytoll Link Road;
- New Forth Crossing; and
- M80 Upgrade.

4.2.2 It was also assumed that the schemes entered into the model should not include any outputs from Strategic Transport Projects Review[2] again in keeping with the SMMFLS.

4.2.3 Consideration in the SMMFLS was also given to Road Pricing but that was also ruled out of the assumptions. Hence, there is no road pricing in this study, again to maintain consistency with the emerging national strategy.

4.3 Economic and Population Growth Rates

4.3.1 Unit 3.5.6 of the DfT's WebTAG[3] sets out assumptions for future growth scenarios. Scottish Government have adopted these for transport modelling. These include forecasts for GDP which are produced by HM Treasury. Table 4.1 overleaf sets out the Government values.

[1] Transport Model for Scotland (TMfS:05a), Transport Scotland 2008
[2] Strategic Transport Projects review, Transport Scotland, December 2008
[3] WebTAG, Department for Transport, 2005

Table 4.1: Government Growth Rates

Range of Years	GDP Growth (%pa)	Population Growth (%pa)
2002-2003	2.25	0.27
2003-2004	2.50	0.27
2004-2005	3.50	0.28
2005-2006	3.25	0.28
2006-2007	2.75	0.28
2007-2011	2.50	0.29
2011-2021	2.25	0.31
2021-2031	1.75	0.20
2031-2051	2.00	0.01
2051-2061	1.75	-0.06
2061 onwards	2.00	0.00

4.3.2 Base population and employment data is sourced from the DfT's TEMPRO database, as per standard Government modelling guidance. Version 5.3 of TEMPRO (October 2006) has been used which had the most recent database at the time of the SMMFLS.

4.3.3 Government's NRTF Guidance (November 2005) assumes the average household size falling by 17% between 1996 to 2031. This was used when required.

4.4 Growth in Values of Time

4.4.1 Economic assessments and transport modelling require average values of time for different modes to input into estimating the attractiveness of one mode against another, thereby identifying modal choice and routeing. Base values of time to be used in the modelling are those set out in Unit 3.5.6 of WebTAG, as per Government standards. This also includes the growths in future values of time shown in Table 4.2.

Table 4.2: Forecast Growth in Values of Time

Range of Years	Work VOT Growth (%pa)	Non-Work VOT Growth (%pa)
2002-2003	1.98	1.58
2003-2004	2.22	1.78
2004-2005	3.21	2.57
2005-2006	2.96	2.37
2006-2007	2.46	1.97
2007-2011	2.20	1.76
2011-2021	1.94	1.55
2021-2031	1.55	1.24
2031-2051	1.99	1.59
2051-2061	1.81	1.45
2061 onwards	2.00	1.60

4.5 Growth Rates of Road Traffic

4.5.1 Government National Road Traffic Forecasts (November 2005) set out forecasts of road traffic growth for national appraisal. These are summarised in Table 4.3 for different vehicle types.

Table 4.3: Traffic Growth by Vehicle Types

	Cars			LGVs			Rigid HGVs			Artic HGVs			PSVs			Total traffic		
	Low	[1]Cen	High	Low	[1]Cen	High	Low	[1]Cen	High	Low	[1]Cen	High	Low	[1]Cen	High	Low	[1]Cen	High
A: 1996 traffic (bn kms)		**362.3**			**40.4**			**19.0**			**11.7**			**4.9**			**438.3**	
1996 = 100		**100**			**100**			**100**			**100**			**100**			**100**	
2001	103	109	114	109	115	121	98	104	109	108	114	120	98	103	109	103	109	115
2006	110	118	126	120	129	138	100	108	115	120	129	138	100	107	114	110	119	127
2011	116	127	137	131	144	156	103	112	122	133	146	158	101	111	120	117	128	139
2016	122	136	149	145	161	177	106	117	129	148	165	181	104	115	127	124	138	151
2021	126	143	159	158	179	200	109	123	137	164	186	207	106	120	134	129	146	163
2026	128	148	167	172	198	225	112	129	146	180	208	235	109	126	143	132	153	173
2031	130	153	175	185	218	251	115	136	156	196	231	265	113	133	153	136	160	184

B: Annual % growth rates	Cars			LGVs			Rigid HGVs			Artic HGVs			PSVs			Total traffic		
	Low	Cen	High	Low	Cen	High	Low	Cen	High	Low	Cen	High	Low	Cen	High	Low	Cen	High
1996 - 2001	0.56%	1.65%	2.69%	1.77%	2.87%	3.93%	-0.35%	0.72%	1.76%	1.53%	2.63%	3.68%	-0.39%	0.68%	1.72%	0.65%	1.74%	2.79%
2001 - 2006	1.31%	1.65%	1.95%	1.93%	2.27%	2.58%	0.43%	0.77%	1.07%	2.21%	2.55%	2.85%	0.34%	0.68%	0.98%	1.35%	1.69%	1.99%
2006 - 2011	1.11%	1.46%	1.76%	1.82%	2.17%	2.48%	0.46%	0.80%	1.10%	2.09%	2.44%	2.74%	0.34%	0.69%	0.99%	1.18%	1.53%	1.83%
2011 - 2016	1.01%	1.37%	1.67%	1.92%	2.29%	2.59%	0.55%	0.91%	1.20%	2.15%	2.52%	2.82%	0.41%	0.77%	1.07%	1.12%	1.48%	1.78%
2016 - 2021	0.64%	1.01%	1.31%	1.83%	2.21%	2.51%	0.57%	0.94%	1.24%	2.01%	2.39%	2.69%	0.50%	0.87%	1.17%	0.81%	1.19%	1.49%
2021 - 2026	0.30%	0.69%	0.98%	1.67%	2.06%	2.36%	0.60%	0.99%	1.29%	1.89%	2.27%	2.58%	0.59%	0.97%	1.27%	0.53%	0.91%	1.21%
2026 - 2031	0.28%	0.67%	0.97%	1.49%	1.89%	2.19%	0.60%	1.00%	1.30%	1.73%	2.13%	2.44%	0.66%	1.06%	1.36%	0.49%	0.89%	1.19%

[1]Cen = central most-likely forecast

4.5.2 The National Road Traffic Forecasts consider the Central Scenario as being the most likely and should be adopted.

4.6 Growth in Fuel Costs

4.6.1 Fuel costs have changed dramatically in recent months. Growths in fuel prices are monitored for the Government in the Baxter Indices for DERV fuel website and are shown in Table 4.4.

Table 4.4: Recent Changes in Fuel Prices

Base:	June 1990 = 100		On Year	On Quarter	On Month
Date	Index	Status			
Jan-07	257	Firm	-5.9	-2.7	-3
Feb-07	260	Firm	-3.7	-0.8	1.2
Mar-07	264	Firm	-3.3	-0.4	1.5
Apr-07	271	Firm	-1.8	5.4	2.7
May-07	271	Firm	-3.2	4.2	0
Jun-07	277	Firm	-0.7	4.9	2.2
Jul-07	278	Firm	-1.4	2.6	0.4
Aug-07	279	Revised	-1.1	3	0.4
Sep-07	286	Firm	5.1	3.2	2.5
Oct-07	295	Firm	11.7	6.1	3.1
Nov-07	312	Firm	19.1	11.8	5.8
Dec-07	311	Firm	17.4	8.7	-0.3
Jan-08	313	Firm	21.8	6.1	0.6
Feb-08	318	Firm	22.3	1.9	1.6
Mar-08	329	Provisional	24.6	5.8	3.5
Apr-08	338	Provisional	24.7	8	2.7
May-08	357	Provisional	31.7	12.3	5.6

Time of Update : (at time of SMMFLS) 16 June 2008

4.6.2 The recent observed changes in fuel can be compared to the assumptions and future forecasts set out in the Government's WebTAG modelling guidance, shown in Table 4.5.

Table 4.5: Forecast Growth in the Cost of Fuel

Range of Years	Petrol (%pa)	Diesel (%pa)
2005 - 2006	8.12	6.53
2006 - 2007	-6.37	-6.30
2007 - 2008	-7.46	-7.33
2008 - 2009	-8.06	-7.91
2009 - 2010	-6.93	-6.79
2010 - 2015	0.80	0.78
2015 - 2020	0.86	0.84
2020 +	0	0

4.6.3 The assumption in WebTAG is fuel prices have grown significantly recently but will revert back to previous levels and grow at a modest level until 2020 when they will level off.

4.7 Rates of Change in Non-Fuel vehicle operating costs (VOCs)

4.7.1 Government WebTAG circular Unit 3.5.6 advises non-fuel VOCs are assumed to remain constant in real terms over the forecast period. This assumption is made because the main elements which make up non-fuel VOCs are subject to less volatility than fuel VOCs.

4.8 Future Scenarios Modelled

4.8.1 In order to assess the changes of freight movements in the future, a horizon year of 2020 was defined as being a suitable future modelling year. There was a need to model two extreme scenarios to take into account the wide range of potential assumptions. In particular, two different scenarios were appraised:

- 2020 with low level of freight growth; and
- 2020 with high level of freight growth.

4.8.2 The Low Growth Scenario was based on all the assumptions set out prevously, except fuel prices were assumed to be higher than default values in WebTAG to reflect the spike in prices observed at the time of the analysis (July 2008). Therefore the observed fuel prices in Table 4.4 were used. The High Growth Scenario, however, assumed fuel prices would be lower and therefore there would be a higher propensity to travel. Hence, the default (lower) values from WebTAG were used as per Table 4.5. In addition, in the High Growth Scenario it was assumed there would be a higher uptake of piping fuel rather than transporting by sea. The default rate of piping fuel was sourced from the Scottish Transport Statistics.

5 Model Validation

5.1 Introduction

5.1.1 This chapter presents the results of the model validation exercises carried out on the Base Year (2007) model. This section sets out the various statistical goodness-of-fit tests carried out on the developed SEStran Freight Model (SESFM).

5.2 Model Convergence

5.2.1 Within the assignment, a number of loadings are undertaken until such time as defined criteria are met. The resulting Equilibrium Assignment is designed to fulfil Wardrop's First Principle that for any origin/destination pair, all used routes have equal generalised costs while unused routes have equal or greater costs. The CUBE Voyager model produces a number of convergence statistics for the assignment. This includes the difference between costs on chosen routes and costs on minimum routes, summed across the whole network, and expressed as a unit of minimum costs (RAAD, delta Δ).

5.2.2 This tends to decrease towards a minimum value as the number of iterations increases. For the assignment loop, the main indicator of convergence is a total network wide value of RAAD, which does not change by less than a certain value (here 0.05) between successive iterations.

5.2.3 A high level of convergence was achieved in all time periods, with statistics as presented in Table 4.1.

Table 4.1: Convergence Statistics

Time Period	Assignment (Δ)
AM Peak	0.035
Inter-Peak	0.041
PM Peak	0.043

5.3 Logic Checks

5.3.1 A series of range and logic checks were carried out including:

- movement logic checks;
- directions of trip flows;
- travel times, distances and speeds; and
- network connectivity.

5.3.2 The above did not raise any issues with the assignment.

5.4 Goodness-of-Fit Tests

5.4.1 In accordance with standard modelling practices and Government advice, a series of statistical goodness-of-fit tests was carried out comparing predicted against observed flows. Any discrepancies were investigated and remedial measures carried out. As recommended in Government Guidance, the GEH statistic was used:

$$GEH = \sqrt{\frac{(V_2 - V_1)^2}{(V_1 + V_2)/2}}$$

Where:
V1 is the observed value; and
V2 is the modelled value.

5.4.2 This statistical goodness-of-fit test was carried out for various sites in the model area, which capture observed movements in November 2007. Various iterations were undertaken, which involved carrying out statistical tests and making improvements to the highway assignment model, until a suitable level of fit was achieved.

5.4.3 Acceptable criteria for GEH values are usually 5.0 for local models. This value was therefore deemed suitable for the purpose of this model.

5.4.4 For each time period, 45 links in the model network were assessed using the standard GEH calculation. The analysis showed:

- in the AM peak, about 87% of the links met the GEH criteria with an average network-wide GEH value of 2.1;
- in the Interpeak, 96% of the model links achieved the GEH criteria with a network-wide average of 1.7; and
- in the PM peak, 91% of the links satisfied the GEH criteria with an average GEH result of 3.7 across the network.

5.4.5 All the above results meet the calibration/validation criteria, and hence the model is considered to have met the goodness-of-fit tests. Table 5.2 contains the calculations for each link over each time period.

Table 5.2: GEH Criteria Statistics

Road	Direction	AM Peak			Off Peak			PM Peak		
		Flow (veh)			Flow (veh)			Flow (veh)		
		Observed	Modelled	GEH	Observed	Modelled	GEH	Observed	Modelled	GEH
A74	N/b	1227	1122	3.1	1001	968	1.0	1425	1325	2.7
A74	S/b	1114	1030	2.6	1302	1170	3.7	1455	1365	2.4
A92	N/b	308	293	0.9	210	185	1.8	480	429	2.4
A92	S/b	625	519	4.4	231	208	1.6	334	313	1.2
A702	S/b	314	196	7.4	175	137	3.0	361	213	8.7
A702	N/b	130	120	0.9	166	123	3.6	156	140	1.4
A68	S/b	271	273	0.1	230	230	0.0	476	484	0.4
A68	N/b	446	446	0.0	263	260	0.2	298	382	4.6
A91	W/b	171	170	0.1	76	78	0.2	139	138	0.0
A91	E/b	141	140	0.1	80	82	0.2	140	139	0.1
M90	N/b	1384	1347	1.0	699	677	0.8	986	999	0.4
M90	S/b	944	983	1.3	828	797	1.1	1458	1419	1.0
M8	E/b	2608	3020	7.8	1668	1775	2.6	2117	2309	4.1
M8	W/b	1873	2087	4.8	1827	1818	0.2	2783	2975	3.6
A720	N/b	163	146	1.3	121	123	0.2	157	140	1.4
A720	S/b	120	196	6.0	135	138	0.2	168	246	5.4
A985	W/b	555	495	2.6	287	296	0.5	475	475	0.0
A985	E/b	514	488	1.1	350	342	0.4	521	544	1.0
M90	E/b	2641	2556	1.7	1064	1052	0.4	1496	1481	0.4
M90	W/b	1760	1744	0.4	1448	1394	1.4	2382	2330	1.1
M8	E/b	3283	3313	0.5	1800	1733	1.6	2162	2144	0.4
A720	E/b	1307	1769	11.8	1166	1372	5.8	1642	1798	3.8
A720	W/b	1962	1862	2.3	1386	1500	3.0	2098	2009	2.0
A9	E/b	913	980	2.2	868	916	1.6	1291	1275	0.4
A9	W/b	1314	1307	0.2	741	830	3.2	994	1052	1.8
A706	S/b	206	205	0.1	155	81	6.8	271	271	0.0
A706	N/b	244	239	0.3	155	101	4.8	203	203	0.0
A90	E/b	1365	1434	1.8	1244	1238	0.2	1716	1654	1.5
A90	W/b	1813	1708	2.5	965	997	1.0	1454	1493	1.0
A92	W/b	2077	1622	10.6	1297	1154	4.1	2037	1663	8.7
A92	E/b	2110	1694	9.5	1266	1145	3.5	2089	1728	8.3
A720	W/b	1406	1429	0.6	945	972	0.9	1580	1532	1.2
A720	E/b	1076	1211	4.0	1042	1068	0.8	1283	1368	2.3
A967	E/b	129	127	0.2	116	111	0.5	161	157	0.3
A967	W/b	156	147	0.7	119	121	0.2	126	128	0.2
A7	S/b	293	264	1.7	208	234	1.8	417	386	1.6
A7	N/b	409	370	2.0	231	216	1.0	241	222	1.3
A68	N/b	387	368	1.0	207	195	0.8	210	198	0.8
A68	S/b	235	213	1.5	223	203	1.4	379	344	1.8
A7	N/b	169	150	1.5	126	117	0.8	217	179	2.7
A7	S/b	221	169	3.7	152	169	1.3	178	152	2.0
A1	W/b	421	396	1.3	276	284	0.5	255	279	1.5
A1	E/b	241	242	0.1	298	290	0.5	390	387	0.2
A916	S/b	183	180	0.2	113	96	1.7	256	234	1.4
A916	N/b	294	334	2.2	122	103	1.8	154	183	2.3
Total		39523	39104	2.1	27382	27098	1.7	39611	38883	3.7

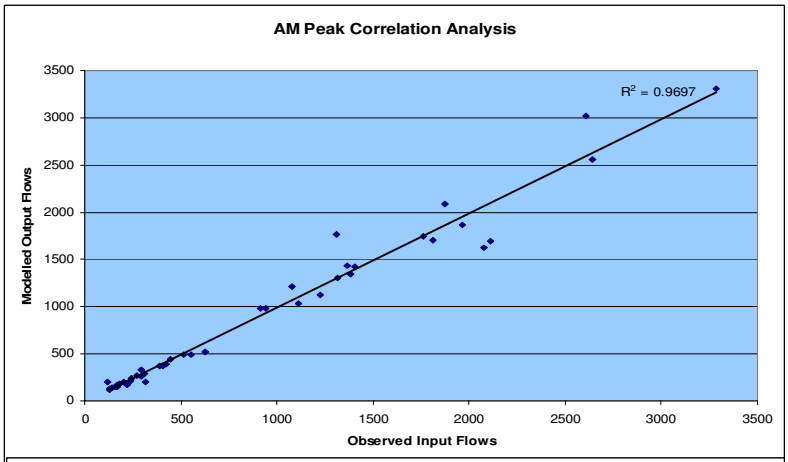
5.5 Regression Analysis Tests

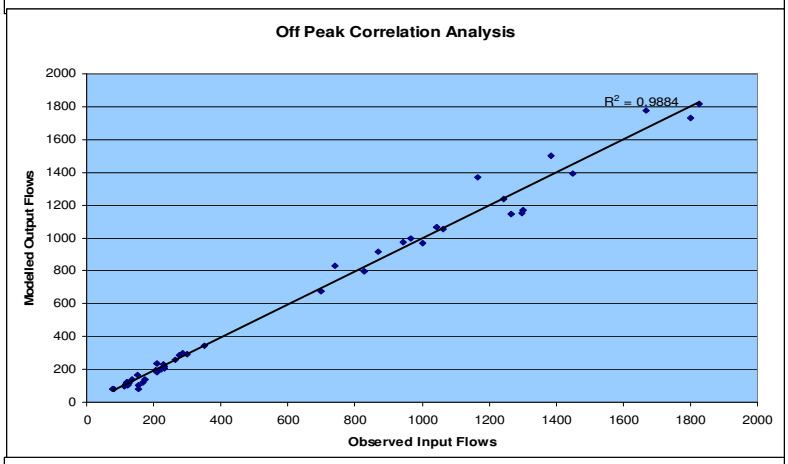
5.5.1 Additionally to the GEH criteria, a comparison of observed and modelled flows using regression analysis was undertaken. For this analysis, the more R^2 (R being the correlation coefficient) tends to 1, the more accurate the result. Given the scale of the model, it was considered than any value above 0.75 could be considered suitable.

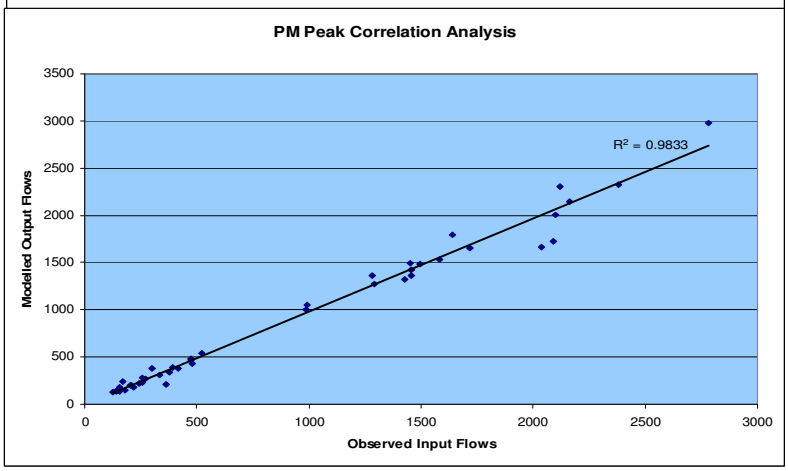
5.5.2 The results are shown in the figures to the right, which plot the regression analysis for the three modelled periods, with the best-fit straight line and the R2 value.

5.5.3 As can be seen on these plots, there is a close fit between the data points and the curve, with R^2 above 0.96 for all three periods. The regression analysis thus confirms the good correlation between modelled and observed values of traffic.

5.5.4 Calibration of the road assignment through both GEH criteria and regression analysis shows that the model is a good representation of traffic observed on the SEStran road network. This will consequently ensure that levels of congestion and the resulting journey times are accurately reproduced in the model and that any future congestion forecast will be based on an adequate base model.







6 Future Forecasts

6.1 Introduction

6.1.1 In order to assess the changes of freight movements in the future, a horizon year of 2020 was estimated as being a suitable future modelling year. In particular, two different scenarios were appraised:

- 2020 with low level of freight growth; and
- 2020 with high level of freight growth.

6.1.2 These two scenarios are consistent with the scenarios appraised in the National Scottish Freight Model.

6.2 Overall Freight Demand

6.2.1 Before looking at individual SEStran areas, it is worth looking at the overall changes in the demand for freight, by commodities based on the categories outlined in Chapter 2.

6.2.2 Tables 6.1 and 6.2 below show the 2007 levels and estimated changes by 2020 for both low and high growth scenarios. Table 6.1 shows the levels of freight within the SEStran area (i.e. internal only demands) or having either an origin or destination in the SEStran area (i.e. internal-to-external or external-to-internal movements). Table 6.2 shows the through movements (i.e. external-to-external freight tonnages), which are for the rest of Scotland.

6.2.3 Although individual commodities vary, total future forecasts are tied back to the Government's national indices for low and high growths.

Table 6.1: Forecast Tonnage per Commodity (2 way flows) – SEStran-related Tonnages Only (i.e. Int-Int, Int-Ext & Ext-Int)

	2007*		2020 Low Growth			2020 High Growth		
	2-way Tons	Prop.	2-way Tons	Prop.	Growth Rates	2-way Tons	Prop.	Growth Rates
Agriculture, Fishing and foodstuffs	1,957	2.3%	2,363	2.1%	1.21	2,534	2.1%	1.29
Forestry and forestry products	460	0.5%	707	0.6%	1.54	799	0.7%	1.74
Solid Fuel and petroleum** products	2,831	3.3%	1,739	1.6%	0.61	1,198	1.0%	0.42
Minerals, building materials and construction	15,460	17.8%	19,869	18.0%	1.29	21,783	17.9%	1.41
Metal, machinery and transport equipments	568	0.7%	740	0.7%	1.30	811	0.7%	1.43
Leather, textiles and retail/wholesale	13,709	15.8%	17,979	16.3%	1.31	20,479	16.9%	1.49
Fertilisers and chemicals	437	0.5%	484	0.4%	1.11	506	0.4%	1.16
Electronics goods	4	0.0%	5	0.0%	1.25	6	0.0%	1.56
Other/Miscellaneous	51,464	59.2%	66,728	60.3%	1.30	73,271	60.4%	1.42
Total	**86,891**	**100%**	**110,612**	100%		**121,387**	100%	
Index	100.0		127.3			139.7		

Notes: * includes intra-zonal and OD double-counting
** see paragraph 6.2.6

Table 6.2: Forecast Tonnage per Commodity (2 way flows) - External-to-External (i.e. Through Trips)

	2007*		2020 Low Growth			2020 High Growth		
	2-way Tons	Prop.	2-way Tons	Prop.	Growth Rates	2-way Tons	Prop.	Growth Rates
Agriculture, Fishing and foodstuffs	5,928	2.8%	8,172	3.1%	1.38	9,262	3.2%	1.56
Forestry and forestry products	15,859	7.5%	27,846	10.4%	1.76	33,226	11.3%	2.10
Solid Fuel and petroleum products	60,719	28.9%	42,589	15.9%	0.70	30,995	10.6%	0.51
Minerals, building materials and construction	15,643	7.4%	22,961	8.6%	1.47	26,597	9.1%	1.70
Metal, machinery and transport equipments	877	0.4%	1,305	0.5%	1.49	1,512	0.5%	1.72
Leather, textiles and retail/wholesale	15,648	7.4%	23,438	8.8%	1.50	28,209	9.6%	1.80
Fertilisers and chemicals	885	0.4%	1,119	0.4%	1.26	1,235	0.4%	1.40
Electronics goods	10	0.0%	15	0.0%	1.43	20	0.0%	1.88
Other/Miscellaneous	94,653	45.0%	140,169	52.4%	1.48	162,625	55.4%	1.72
Total	**210,223**	**100%**	**267,614**	**100%**		**293,682**	**100%**	
Index	100.0		127.3			139.7		

Notes: * includes intra-zonal and OD double-counting
** see paragraph 6.2.6

6.2.4 As observed in the previous tables, the estimated growth rates are different for all commodities, but this does not alter significantly their proportions in the SEStran area. Furthermore, the total growth (27.3% in the low growth scenario and 39.7% in the high growth scenario) is consistent with the increase in Freight forecasted in the November 2005 Government National Road Traffic Forecasts.

6.2.5 All freight commodities increase in the future. The exception is with the movement of petroleum products. This is because of the trend of moving fuel through pipe-lines, which has grown dramatically over the last decade and is predicted to continue. In the high growth scenario, this trend is assumed to be taken up more than in the low growth scenario which is why forecast tonnages of fuel at 2020 are actually lower for the high growth scenario.

6.2.6 All freight commodities increase in the future. The exception is with the movement of petroleum products. This is because of the trend of moving fuel through pipe-lines, which has grown dramatically over the last decade and is predicted to continue. In the high growth scenario, this trend is assumed to be taken up more than in the low growth scenario which is why forecast tonnages of fuel at 2020 are actually lower for the high growth scenario.

6.3 Forecast by Local Authority and RTP

6.3.1 These different growth rates for each commodity results in a modified distribution between zones, the composition of freight varying between different area of SEStran and between SEStran and other RTPs or the UK.

6.3.2 The 2020 freight trip distribution for both low and high growth scenarios are illustrated in the following table, with the 2007 figures for comparison.

Table 6.3: 2020 Forecasts by Distribution (1000 Tonnes)*

	Base 2007*		2020 Low Growth			2020 High Growth		
	2-Way Tons	Prop	2-Way Tons	Prop	Growth Rate	2-Way Tons	Prop	Growth Rate
Edinburgh	17,510	20.2%	21,362	19.3%	1.22	23,431	19.3%	1.34
East Lothian	12,233	14.1%	15,010	13.6%	1.23	16,573	13.7%	1.35
Mid Lothian	5,330	6.1%	7,399	6.7%	1.39	8,130	6.7%	1.53
West Lothian	4,200	4.8%	6,012	5.4%	1.43	6,596	5.4%	1.57
Borders	4,501	5.2%	5,857	5.3%	1.30	6,447	5.3%	1.43
Falkirk	21,856	25.2%	28,410	25.7%	1.30	30,986	25.5%	1.42
Clackmannanshire	2,983	3.4%	4,627	4.2%	1.55	5,077	4.2%	1.70
Fife	18277	21.0%	21934	19.8%	1.20	24147	19.9%	1.32
Total SEStran	**86,891**		**110,612**			**121,387**		
NESTRAN	34,435	16.4%	43,518	16.3%	1.26	47,611	16.2%	1.38
TACTRAN	32,430	15.4%	41,426	15.5%	1.28	45,447	15.5%	1.40
SPT	108,672	51.7%	138,389	51.7%	1.27	152,005	51.8%	1.40
HITRANS	15,745	7.5%	20,105	7.5%	1.28	22,098	7.5%	1.40
SWETRANS	18,941	9.0%	24,176	9.0%	1.28	26,520	9.0%	1.40
Total Scotland	**210,223**		**267,614**			**293,682**		

Note: * includes intra-zonal and OD double-counting

6.3.3 Results show that although there are variations in growth for each area, freight distribution stays similar in both 2020 low growth and high growth scenarios.

6.4 Flow Charts

6.4.1 The following Figures 6.1 to 6.9 illustrates the resulting assigned freight trips in the SEStran area for 2007, 2020 low growth and 2020 high growth scenarios.

Figure 6.1: Modelled Freight Trips – AM Peak 2007

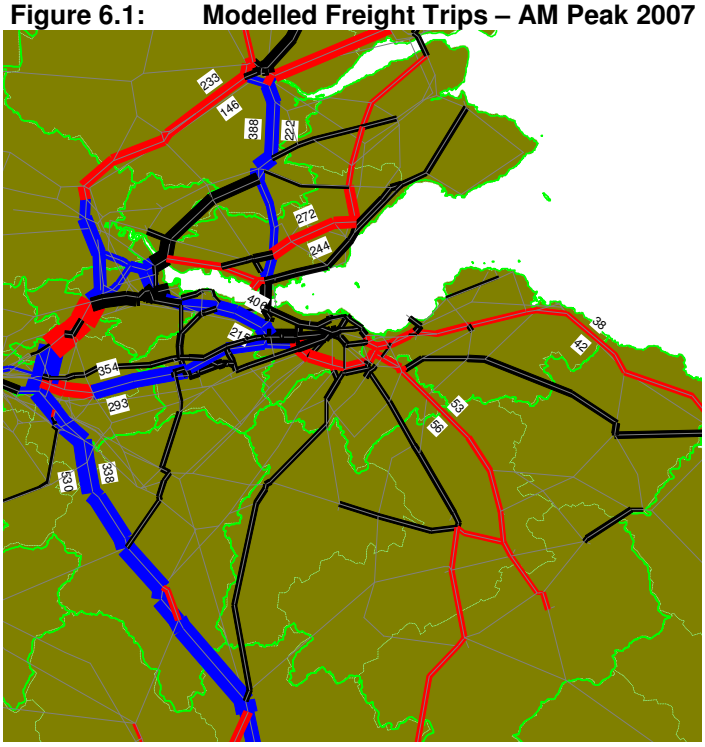


Figure 6.2: Modelled Freight Trips – AM Peak 2020 Low Growth

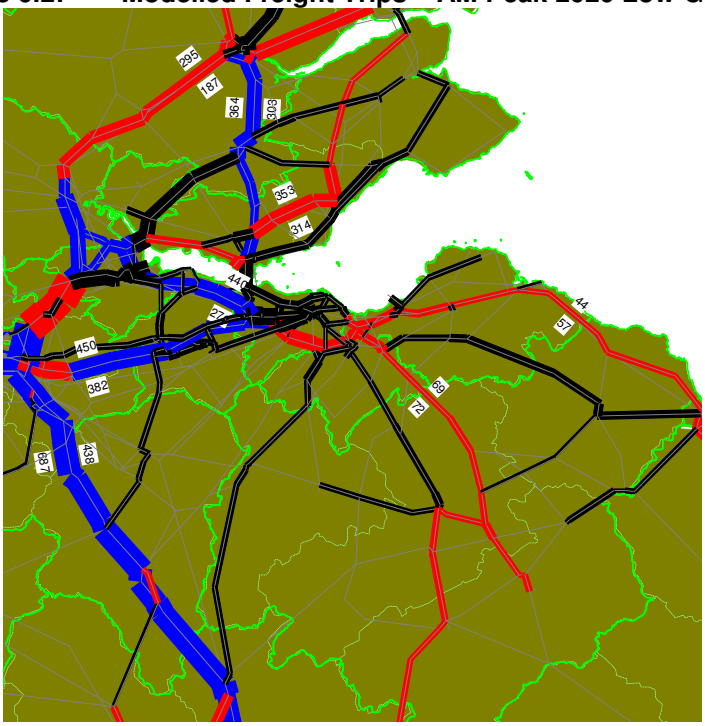


Figure 6.3: Modelled Freight Trips – AM Peak 2020 High Growth

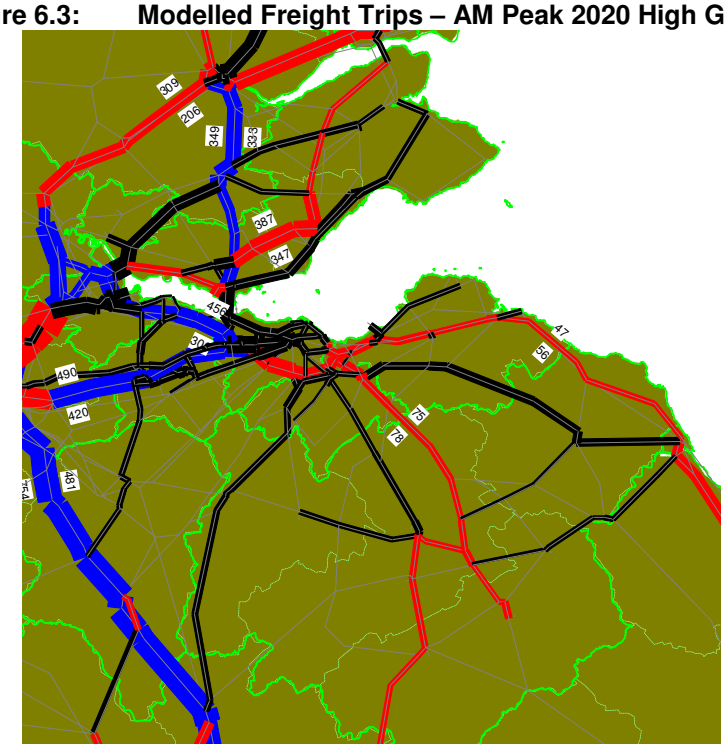


Figure 6.4: Modelled Freight Trips – Off Peak 2007

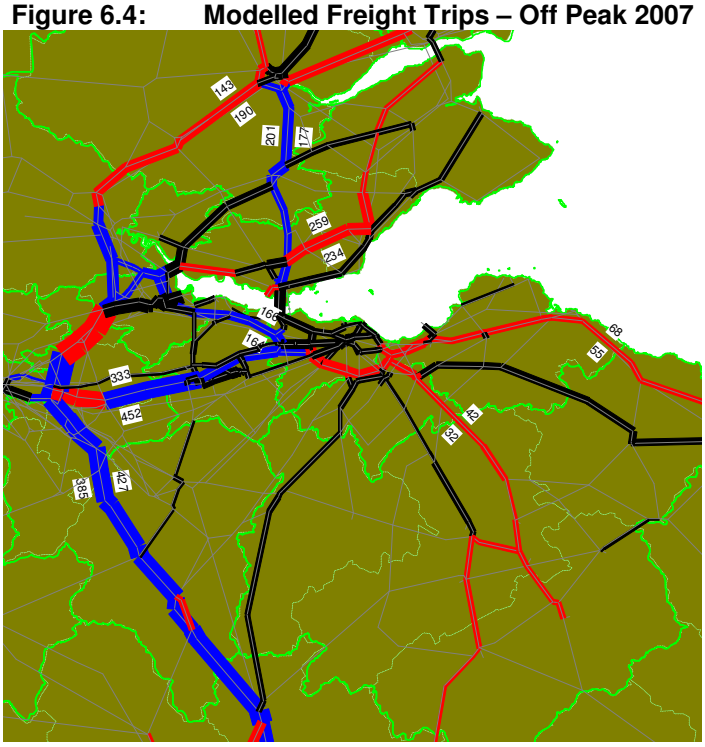


Figure 6.5: Modelled Freight Trips – Off Peak 2020 Low Growth

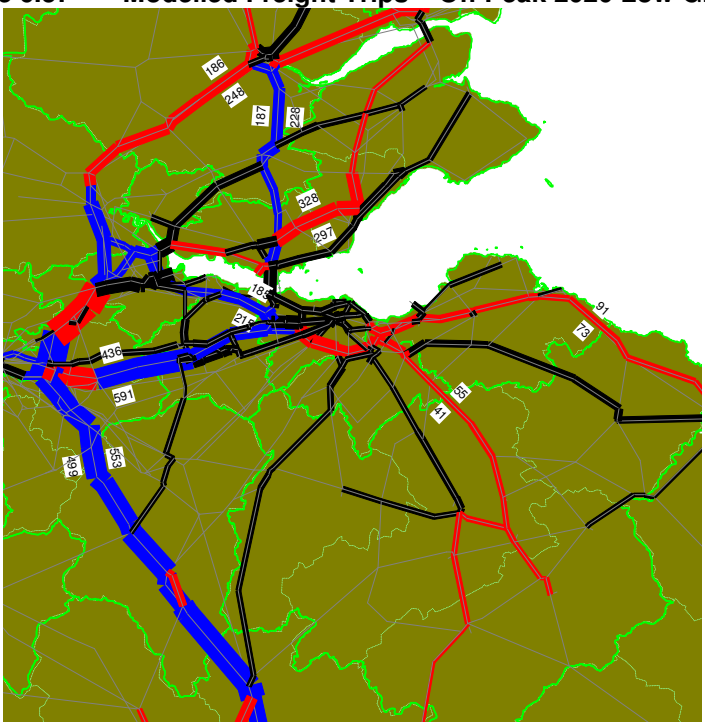


Figure 6.6: Modelled Freight Trips – Off Peak 2020 High Growth

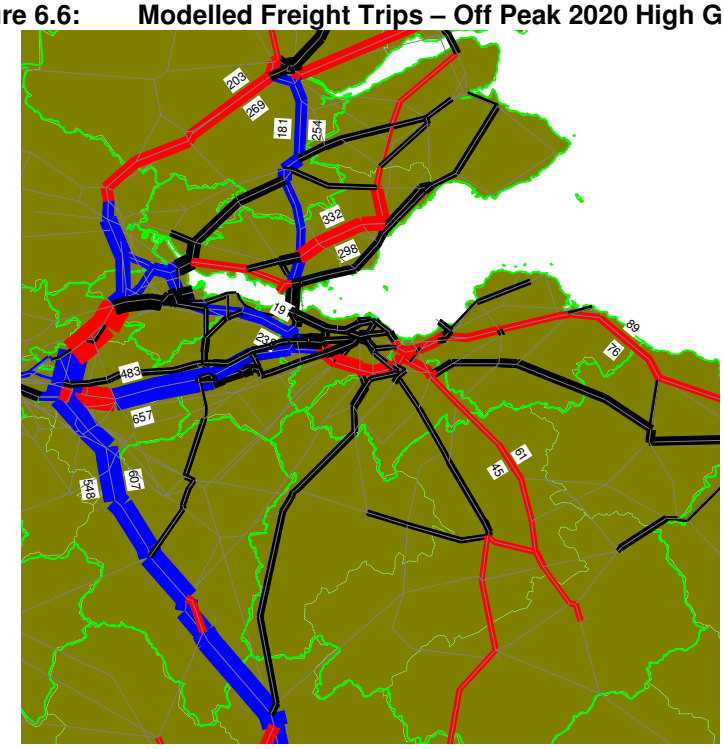


Figure 6.7: Modelled Freight Trips – PM Peak 2007

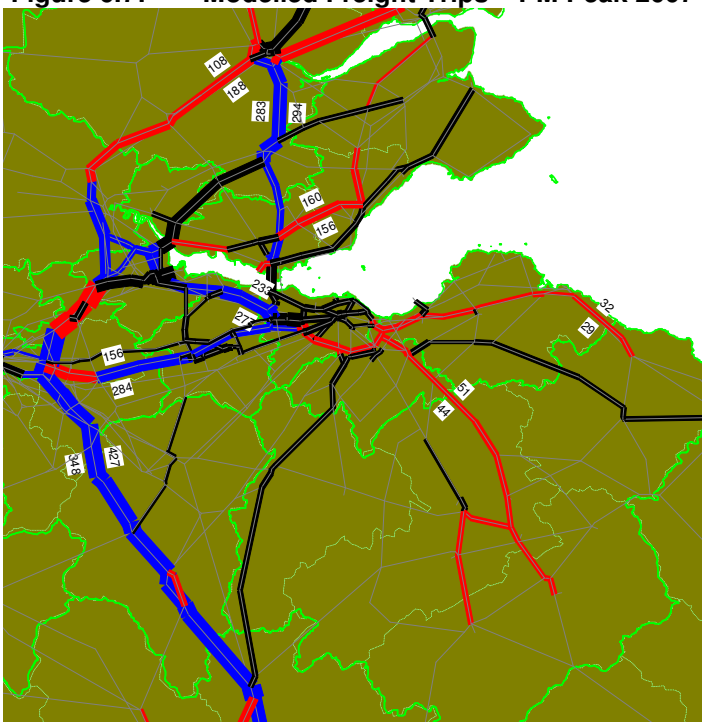


Figure 6.8: Modelled Freight Trips – PM Peak 2020 Low Growth

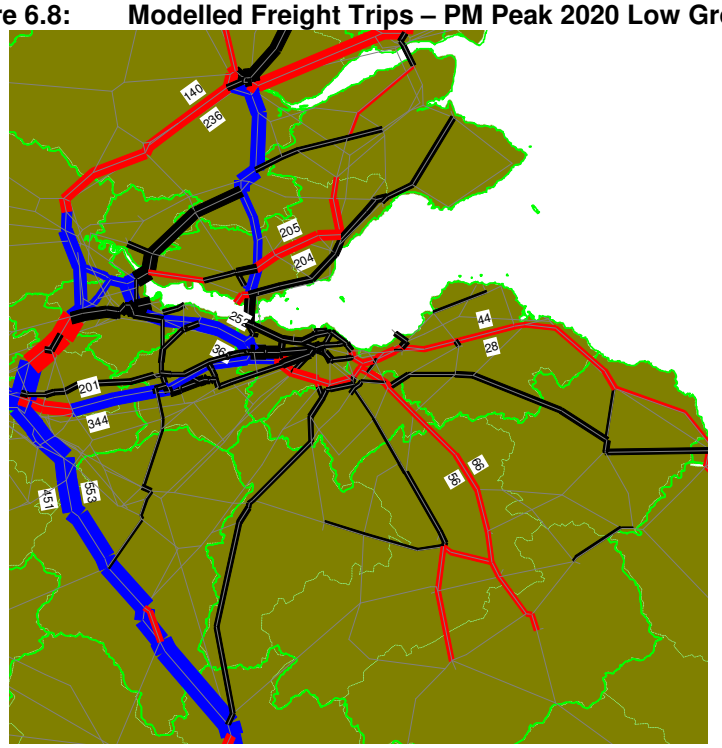
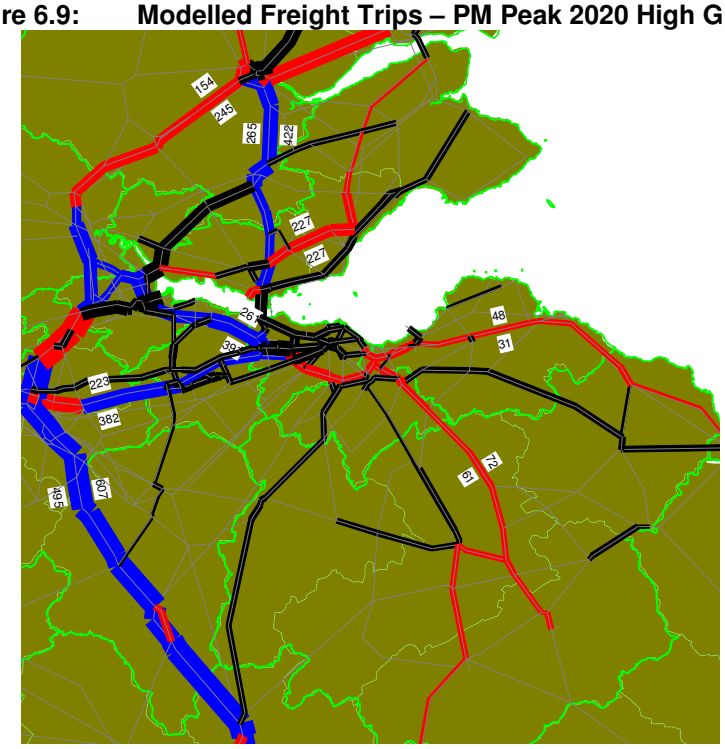


Figure 6.9: Modelled Freight Trips – PM Peak 2020 High Growth



7 Concluding Remarks

7.1 Background

7.1.1 In November 2008, SEStran appointed Scott Wilson to study freight movements in the Regional Transport Partnership area and to develop a Freight Routing Strategy (FRS) as an integral part of the Dryport project. In order to study freight traffic patterns and estimate future freight demand and road freight patterns, a freight transport model of the SEStran area was developed. Known as the SEStran Freight Model (SESFM), this note has summarised the methodology adopted to build this model, the results of the calibration of the model and the results of future forecasts.

7.2 Data Analysis

7.2.1 Data was collated from the Scottish Multi-Modal Freight Locations Study (SMMFLS), including the various end-user telephone surveys, origin/destination (OD) surveys of operators and carriers, workshops with key stakeholders, and targeted one-to-one meetings with those stakeholders who contributed to the SMMFLS surveys. The data was then mapped against a new zone system, which is more refined for the SEStran region to allow for a more detailed assignment of freight patterns across the network. As with the SMMFLS, the freight data was cross-referenced with the following economic sector groupings [based on the Standard Index Classifications (SIC) codes] in order to maintain the modelling of variations in the key freight industries:

- Agriculture, Fishing and Foodstuffs;
- Forestry and Forestry Products (timber/furniture/paper);
- Solid Fuels and Petroleum Products;
- Minerals, Building Materials and Construction;
- Metal Products, Machinery and Transport Equipment;
- Leather and Textiles, and Retail/Wholesale;
- Fertilizers and Chemicals;
- Electronic (white) Goods; and
- Other/Miscellaneous.

7.2.2 In order to model freight movements in the SEStran area, each of the 8 Local Authorities was divided into a number of zones. These zones are designed so as to correspond to distinct urban areas, or main freight traffic attractors and generators. Local Authorities outside the SEStran area were grouped to form the 9 externals. The sum of internal and externals zones leads to a total of 66 zones, plus 4 ‘empty’ zones which were also added to allow for the testing of new infrastructure and options/locations of Dryports later in the study. This took the total zones in SESFM to 70 zones.

7.2.3 Demand matrices were produced for each of the 9 freight commodities specified above. In addition to freight movements, in order to represent the effects of congestion on the highway network, a car matrix was also disaggregated from the national Scottish Freight Model to the above zone system. Each matrix was produced for three modelled time periods namely AM paek, inter-peak and PM peak.

7.3 Modelling Framework

7.3.1 The freight modelling for this study was carried out using the CUBE Voyager computer software. This is an industry-standard computer program used to examine traffic and transport conditions and assess proposed improvements in the transport network.

7.3.2 Statistical goodness-of-fit test were carried out for various sites in the model area, which capture observed movements in November 2007. Various iterations were undertaken, which involved carrying out statistical tests and making improvements to the highway assignment model, until a suitable level of fit was achieved.

7.3.3 All three time periods were assessed as meeting the calibration/validation criteria, and hence the model is considered to have met the goodness-of-fit tests.

7.4 Assumptions

7.4.1 Any model is prone to variations in forecasts due to the different set of assumptions being used. Given the wide potential for variance, two scenarios were modelled under a series of assumptions as discussed in Chapter 4. These represent low growth and high growth assumptions of how the economy and the transport network will develop over time, how background road traffic flows increase, the increase in the value of fuel prices over time, and other relevant factors affecting freight transport.

7.5 Forecasts and Results

7.5.1 In order to assess the changes of freight movements in the future, a horizon year of 2020 was estimated as being a suitable future modelling year. In particular, two different scenarios were appraised:

- 2020 with low level of freight growth; and
- 2020 with high level of freight growth.

7.5.2 These two scenarios are consistent with the scenarios appraised in the National Scottish Freight Model.

7.5.3 The 2007 freight levels and estimated changes by 2020 for both the low and high growth scenarios were calculated. This included the levels of freight within the SEStran area (i.e. internal only demands) or having either an origin or destination in the SEStran area (i.e. internal-to-external or external-to-internal movements). This showed total growth of 27.3% in the low growth scenario and 39.7% in the high growth scenario, this being consistent with the increase in Freight forecasted in the November 2005 Government National Road Traffic Forecasts.

7.5.4 The forecasts show all commodities increase in the future. The exception is with the movement of petroleum products. This is because of the trend of moving fuel through pipe-lines, which has grown dramatically over the last decade and is predicted to continue.

7.5.5 The areas accounting for the largest freight flows in SEStran are Edinburgh (20%), Fife (21%) and Falkirk (25%) followed by other local authorities in SEStran.

Appendix B

Consultation Notes

Meeting Notes

Title	Freight Routing Study	Project Number	S106019		
		Supply Number			
Subject	East Lothian Council Consultation	Meeting Number	1	Date & Time	09/12/08 1000Hours
Attendees	Paul Ince - East Lothian Council Chris Nicol - Scott Wilson	Venue	John Muir House, Haddington		
Distribution		Notes by	Chris Nicol		

Item	Notes	Action
1.	No Weight restrictions in Council area. Height restrictions supplied. All height restrictions caused by East Coast railway line.	
2.	Torness – all nuclear stuff arrives by rail, otherwise road access direct off A1. Cement Works landfill site road access direct off A1.	
3.	Fenton Barns access from Drem on B class roads.	
4.	Pathhead not suitable to HGV to access the Haddington Road.	
5.	Drem – Haddington C Class not suitable for HGVs.	
6.	Wallyford recycling plant for building materials.	
7.	No formal lorry parks in Council area.	
8.	Dunbar has a new ASDA and a Bottling Plant.	

Meeting Notes

Title	Freight Routing Study	Project Number	S106019		
		Supply Number			
Subject	Clackmannanshire Council Consultation	Meeting Number	1	Date & Time	10/12/08 1400Hours
Attendees	Scott Walker - Clacks Council Mac West - Clacks Council Chris Nicol - Scott Wilson	Venue	Kilncraigs, Alloa		
Distribution		Notes by	Chris Nicol		

Item	Notes	Action
1.	New Clackmannanshire bridge will alter traffic movements. It is anticipated that HGV movements from Alloa will use the new bridge rather than go by Stirling. This is due to the new road avoiding the village of Kincardine.	
2.	The big problem the Council has is Polish lorry drivers getting lost when trying to find Alloa Industrial Estate.	
3.	Rail freight is mainly coal which reduces 500 lorry movements a day.	
4.	Alloa central car park allows lorry overnight parking, otherwise parking in the industrial estates is preferred.	
5.	The new rail line is being considered by freight companies but as yet it is too early.	
6.	Clackmannan not necessary as a zone.	
7.	Can anything be done to change the main diversion for the Forth Bridge Closure from the Kincardine Bridge, which is using non trunk road routes to the M9 / A9 via Stirling?	SEStran

Meeting Notes

Title	Freight Routing Study	Project Number	S106019		
		Supply Number			
Subject	Falkirk Council Consultation	Meeting Number	1	Date & Time	05/12/08 1330Hours
Attendees	Kevin Collins - Falkirk Council Chris Nicol - Scott Wilson	Venue	Abotsford House, Falkirk		
Distribution		Notes by	Chris Nicol		

Item	Notes	Action
1.	Tesco use Malcolm's rail head at West Mains Industrial Estate. Lorries take goods to Livingston depot via the M9 / M8 because the A801 unsuitable for HGVs.	
2.	Asda have 2 distribution depots, one at West Mains Industrial Estate, and the other off the northern distributor road at Abbots Road roundabout.	
3.	Lorry routing favours M876 Junction1 through Falkirk using A9 distributor Road around the town centre rather than using motorway long way round.	
4.	Can anything be done to solve the awkwardness of the M9 Junction 6 layout, missing southbound on-slip and northbound off-slip.	
5.	Council capital plan has provision of a new road off Lauriston Road to allow easier access to Junction 5 for lorries from the south.	
6.	White & MacKay distribution in Newhouse Business Park.	
7.	Falkirk northern distributor is main lorry routing.	
8.	Height and Weight restrictions to be supplied.	
9.	Lorry Parking provided at Union Road Grangemouth and Briggs Road, Falkirk although regulations state that no sleeping in cabs is permitted.	

Meeting Notes

Title	Freight Routing Study	Project Number	S106019		
		Supply Number			
Subject	Fife Council Consultation	Meeting Number	1	Date & Time	19/11/08 1300Hours
Attendees	Jane Findlay - Fife Council Chris Nicol - Scott Wilson	Venue	SEStran Office, Edinburgh		
Distribution		Notes by	Chris Nicol		

Item	Notes	Action
1.	East Coast main line freight options are limited. The new 10 gauge piggy-back containers are too big for either of the bridges or tunnel out of Fife; this leaves the Stirling – Alloa line as the only way out for these sizes of units.	
2.	Halbeath is well positioned as a dry port as it is already at the head of a rail / road interchange and has excellent motorway connections. Fife are about to install a P&R site beside the petrol filling station, where there is also a Lorry Park. This is not a secure site, but this would not be difficult to change into one.	
3.	Anstruther has thriving fish market with all vehicle types leaving in the morning. Boats arrive at Pittenweem as well as Anstruther. The road network out from the fishing ports are not particularly good, but this remains the only option for bringing out the produce.	
4.	North circle line round Kirkcaldy is 85% full.	
5.	Plant crops with significant potential to grow for fuel are the crops of the future, but this may bring significant problems to small farms over access requirements.	
6.	Methil – a new industrial park is proposed there.	
7.	Fife are trying to generate rail freight from east coast main line to Leven.	
8.	Lorry Parks exist on the Esplanade, Kirkcaldy and at Halbeath.	
9.	There are lorry restrictions to the town centres of Kirkcaldy and Dunfermline during the day.	
10.	Increase in lorry movements through Fife Council area since the removal of bridge tolls as GPS equipment indicates that shortest route from Forth Road Bridge to Aberdeen is via A92 Glenrothes rather than the M90 via Perth. However, M90 is a better road as it is dualled all the way as opposed to the A92, which is single carriageway from Glenrothes to Dundee.	
11.	A map of preferred lorry routes through Fife Council area was handed over along with a list of all haulage firms in the Council area.	

Meeting Notes

Title	Freight Routing Study	Project Number	S106019		
		Supply Number			
Subject	The City of Edinburgh Council Consultation	Meeting Number	1	Date & Time	16/12/08 2pm
Attendees	Chris Day - ECC Chris Nicol - Scott Wilson William Stewart - ECC	Venue	City Chambers, Edinburgh		
Distribution		Notes by	Chris Nicol		

Item	Notes	Action
1.	Suggested that Edinburgh is split into the 6 divisions so if want to talk about any particular area can approach the area manager direct.	
2.	Heavy haul routes are A199, M9, M8, A720.	
3.	Lorry Park at Portobello is privately run by Freightliner. Council continuously asked to support the lorry park by getting lorries to stop there overnight rather than on the streets.	
4.	ECC suggests Millerhill as a possible site for a dry port (since found out that Millerhill is in Midlothian).	
5.	ECC have policies to support rail as freight alternative but there is a skills shortage in the Council for such a venture.	
6.	ECC constantly receive complaints from the public about lorries delivering by parking on footways thus restricting pedestrian passage.	

Meeting Notes

Title	Freight Routing Study	Project Number	S106019		
		Supply Number			
Subject	Midlothian Council Consultation	Meeting Number	1	Date & Time	08/01/09 2pm
Attendees	Lindsay Haddow - MC Chris Nicol - Scott Wilson Alan Heatley - MC Neil McDougal - MC	Venue	Fairfield House, Dalkeith		
Distribution		Notes by	Chris Nicol		

Item	Notes	Action
1.	Danderhall used as lorry park, Neil thinks it is the responsibility of traffic commissioners to organise lorry park positions.	
2.	Newtonloan Bowling Club car park used by HGVs as unofficial lorry stop. Council receives complaints from this area on numerous occasions.	
3.	B703 use by HGVs is inappropriate, similarly Roslin Glen closed last year due to land slide.	
4.	Midlothian really used as a through route for Edinburgh.	
5.	Dalkeith bypass has removed lorry problems from the town centre.	
6.	Retail Park deliveries operate without real problems.	
7.	Industrial estates have acceptable lorry routing.	
8.	Open cast sites have identified routing at planning stage.	
9.	Was supplied with list of height and weight restriction locations.	

Meeting Notes

Title	Freight Routing Study	Project Number	S106019		
		Supply Number			
Subject	West Lothian Consultation	Meeting Number	1	Date & Time	10/12/08 1600Hours
Attendees	Cllr McCarra - West Lothian Council Billy Thomson - West Lothian Council Chris Nicol - Scott Wilson	Venue	West Lothian House, Livingston		
Distribution		Notes by	Chris Nicol		

Item	Notes	Action
1.	The A706 / A801 acts as the main route north / south through the Council area. There are problems however for HGVs.	
2.	The A801 from M8 to Council boundary is a very good road; the problem is just over the boundary in Falkirk where the road is unsuitable for HGVs, so the A706 to Linlithgow is used instead.	
3.	The A706 is used as a short cut route south. Instead of HGVs going on along M8, then M73 then M74. GPS equipment indicates that A706 is shorter and quicker. The problem is from the M8 at junction 4. The A705 takes vehicles towards Whitburn before an inappropriate route is used around the edge of the town. It is hoped that as part of the Heartlands development, a connection to the new motorway junction can be made from the A706.	
4.	Longridge village on the A706 suffers from the amount of HGV traffic passing through.	
5.	Historic towns of Armadale and Bathgate are difficult for HGV movements. While the newer town of Livingston works for lorry movements.	
6.	There are restrictions on lorry access to the central area of Livingston.	
7.	Transport Scotland should be asked to carry out a review of the M9 junction corridor. After junction 1 there is no proper junction till Polmont at junction 4. The two junctions in the Council area should be upgraded at the very least should be replaced with 1 full access junction.	SEStran
8.	Future years should consider an M8 bus corridor down the hard shoulder to Edinburgh and to make best use of road space freight lorries be permitted as well. As they are professional drivers they have same responsibility for road safety as a bus driver does.	
9.	Suggested locations for a Dryport Winchburgh, Heartlands or J4 M8. The Council would like to be considered as a location for the Dryport.	SEStran / Napier

Meeting Notes

Title	Freight Routing Study	Project Number	S106019		
		Supply Number			
Subject	Forth Ports Consultation	Meeting Number	1	Date & Time	15/12/08 1400Hours
Attendees	Duncan Gray - Forth Ports Chris Nicol - Scott Wilson	Venue	Carron House, Forth Ports, Grangemouth		
Distribution		Notes by	Chris Nicol		

Item	Notes	Action
1.	Grangemouth is very well located to act as a hub port whether a seaport or a Dryport. However access is a problem. Can SESTRAN assist with improvements or petition Transport Scotland to provide improvements?	SEStran
2.	Major problems with access from the M9 southbound Junction 6 slip is well before roundabout and brings you to a give-way junction. Due to heavy traffic flows on A905 Glensburgh Road HGVs may have to wait for some time. When leaving the port area rather than accessing M9 at junction 6 for heading southbound HGVs have to use Beancross Road to Junction 5.	
3.	Containers from rail head at Grangemouth to the Tesco depot at Livingston are delivered by Stobart by road. Most direct route is A801 but Avon Gorge is unsuitable for HGVs so have to use the longer M9 / M8 route instead. (Transport Scotland announced funding available in the Strategic Roads Review).	
4.	Grangemouth is a main supply chain depot; however due to rail restrictions a lot of goods that could be rail freight have to be moved by road. Northwards the line is too narrow for the standard 9 foot 6 inch standard size boxes. Special size boxes would have to be used as Stobart provide to get goods to Inverness for Tesco.	
5.	Duncan wanted to promote Grangemouth as a possible Dryport and how it would act as a main hub. He saw Rosyth acting as an additional storage area with barges ferrying goods back and forth. The port does not compete in the big league for worldwide distribution but would like to be the main North British hub from European ports of Antwerp and Zeebrugge. Train route to Daventry would serve Northern England and whole of Scotland. Road freight would obviously have a major requirement.	
6.	The rail line west beyond Glasgow is only quicker for freight than road because of the constant delays on the Kingston Bridge.	

Record of Telephone Conversation

Project Data			
Title	Freight Routing Strategy	Reference Number	S106019
Call Information			
Date	20 April 2009		
From (Receiver)	Jonathan Campbell, SWS&I	Time XX:XX	hrs
Interviewee Name	Anne McKenzie	Organisation	Network Rail
Address		E-mail & telephone	08700005151
Actions			
Please return call ☐		Will call again ☐	

Message You should have received a copy of the Freight Routing Strategy recently, and I am calling to ask your opinion and comments on this document. May I have a few minutes of your time to ask you six very quick questions.

If yes – proceed; If no, when would be a good time - Day: Hour:

I take it that you have received the document in question? If not……

Record of Telephone Conversation

Q1 In terms of the existing truck stop analysis and how it is presented in Chapter 4, (i.e. T4.1) do you have any comments on this (*anything missing*)?

- No comment to add

Q2 Of the three new potential truck stops examined in the study, one that was located in the Livingstone/Bathgate/M8 corridor (West Lothian) was dismissed owing to the unavailability of land; do you have any views or comments on the location of the other 2?

- No comment here

Q3 With regards to the third truck stop originally to be located in the M8 corridor, do you have any views as to where it should be placed?

Q4 Turning now to the Lorry Advisory Network presented in Chapter 5, do you have any views or comments on the identified locations and their key trip generators and attractors as presented in T5.1?

- No comment to add

Q5 Referring to the signing strategy in Chapter 6, do you know of any place with weak signing for any particular location, what are the weaknesses in the signing and where are they?

- No comment here

Q6 Other than what is already presented in the Chapter, in your opinion what else should the signing strategy cover?

- No comment to add

Q7 Given that our remit for the Dry Ports Appraisal in Chapter 7 was limited to a high level evaluation of the potential benefits that such a facility offered, rather than presenting a full business case, do you have any comments or views on the appraisal results?

- No comment here

End & Thank You

Record of Telephone Conversation

Project Data			
Title	Freight Routing Strategy	Reference Number	S106019
Call Information			
Date	30 April 2009		
From (Receiver)	Jonathan Campbell, SWS&I	Time XX:XX	hrs
Interviewee Name	Carl Olufsen	Organisation	DHL Express
Address		E-mail & telephone	01563 570498
Actions			
Please return call ☐		Will call again ☐	

Note. *Responses transferred from e-mail*

Day: Hour:

Record of Telephone Conversation

Q1 In terms of the existing truck stop analysis and how it is presented in Chapter 4, (i.e. T4.1) do you have any comments on this (*anything missing*)?

- It is our experience that good secure lorry parking in the area is practically non existent and needs addressing
- In regard to Truck stops clean, well maintained toilets and showers are a minimum requirement. We would not consider using a site without CCTV and the standard of lighting as opposed to the existence of lighting is a key factor. Segregation of Goods vehicles from general parking areas is essential and some customers with particularly sensitive freight insist that vehicles carrying their can only be parked where there is fencing and controlled access also.

Q2 Of the three new potential truck stops examined in the study, one that was located in the Livingstone/Bathgate/M8 corridor (West Lothian) was dismissed owing to the unavailability of land; do you have any views or comments on the location of the other 2?

- No further comments.

Q3 With regards to the third truck stop originally to be located in the M8 corridor, do you have any views as to where it should be placed?

- No further comments.

Q4 Turning now to the Lorry Advisory Network presented in Chapter 5, do you have any views or comments on the identified locations and their key trip generators and attractors as presented in T5.1?

- I am interested to note that you are forecasting growth in all commodity groups by 2020. Most hauliers are experiencing drop in volumes and expect to do so for the foreseeable future. I would expect lorry volumes to stay fairly static but foresee a continuing increase in smaller urban commercial vehicles ranging from vans to 7.5 tonner rigids and specific urban tractor/trailer combinations

Q5 Referring to the signing strategy in Chapter 6, do you know of any place with weak signing for any particular location, what are the weaknesses in the signing and where are they?

- If the advisory routes and maps are to be introduced are we going to rely totally on information from local authorities. I say this because incorrect information being issued on these documents could have implications from both a safety and a legal position.
- In 3.3 you are concentrating on height restrictions but, in relation to bridges and urban areas clear indication of weight and width restrictions are of equal importance.

Q6 Other than what is already presented in the Chapter, in your opinion what else should the signing strategy cover?

- No further comments.

Q7 Given that our remit for the Dry Ports Appraisal in Chapter 7 was limited to a high level evaluation of the potential benefits that such a facility offered, rather than presenting a full business case, do you have any comments or views on the appraisal results?

- Dry Ports is not my area of expertise but, as with all freight facilities from a vehicle operator's viewpoint, access, surrounding infrastructure and any environmental restrictions (e.g. - HGV curfews) are the key points. I leave the actual port locations etc to the experts.

Record of Telephone Conversation

End & Thank You

Record of Telephone Conversation

Project Data			
Title	Freight Routing Strategy	Reference Number	S106019
Call Information			
Date	17 April 2009		
From (Receiver)	Jonathan Campbell, SWS&I	Time 15:40	hrs
Interviewee Name	Gavin Scott	Organisation	Freight Transport Association
Address		E-mail & telephone	01786 457503
Actions			
Please return call ☐		Will call again ☐	

Message You should have received a copy of the Freight Routing Strategy recently, and I am calling to ask your opinion and comments on this document. May I have a few minutes of your time to ask you six very quick questions.

If yes – proceed; If no, when would be a good time - Day: Hour:

Record of Telephone Conversation

Q1 In terms of the existing truck stop analysis and how it is presented in Chapter 4, (i.e. T4.1) do you have any comments on this (*anything missing*)?

- Portobello is largely a piece of waste ground and therefore only deserves basic status; requires proper hardstanding and other facilities;
- Most so called lorry parks are not dedicated facilities and therefore suffer for lack of basic amenities, of which security is arguably the most important;
- Newton St Boswells is a case in point, it is not a secure park. Security is a crucial issue with all the sites, and it is noted that only 2 of these are in the SEStran area;
- Big issue is to encourage HGV drivers to use the facilities provided, often they are subsidized for the use of a lorry park which is spent on something entirely different and park in a lay-bye. This area needs to be tidied up perhaps by having a contract between lorry park operators and companies using them, with direct payment settlement between them; and
- There needs to be some recognition that the use of park and ride facilities as a lorry park is a possibility (*see also Q3*).

Q2 Of the three new potential truck stops examined in the study, one that was located in the Livingstone/Bathgate/M8 corridor (West Lothian) was dismissed owing to the unavailability of land; do you have any views or comments on the location of the other 2?

- Halbeath is the sensible choice as it is well place and offers reasonable facilities;
- A major issue is to provide a reasonable network of strategic lorry parks, not least to give the relevant councils the ability to move drivers from unauthorised parking areas to proper alternatives; and
- Not convinced that Falkirk is a suitable location, although this is based on personal premise rather than anything else.

Q3 With regards to the third truck stop originally to be located in the M8 corridor, do you have any views as to where it should be placed?

- Need a thorough assessment of demand – not convinced that the Whitehill Industrial Estate is a sensible location if there is insufficient demand; and
- More attention is needed to consider potential park and ride sites in general.
- Need for proper surveys to assess demand.

Q4 Turning now to the Lorry Advisory Network presented in Chapter 5, do you have any views or comments on the identified locations and their key trip generators and attractors as presented in T5.1?

- Is generally concerned with many of the trip generators in terms of ability to produce stated number of trips; Hermiston Gate for instance is largely a retail park, the numbers of trips (4276) is likely to include adjacent industrial areas; and
- Also the figures for Port Seton and Leven appear high, unlikely to have more trips generated than Leith; Port Seton may be misnamed, as neither Inveresk nor Wallyford Industrial Estates are close by, better to term the area Musselburgh – Wallyford.

Record of Telephone Conversation

Q5 Referring to the signing strategy in Chapter 6, do you know of any place with weak signing for any particular location, what are the weaknesses in the signing and where are they?

- The minor road between Hamilton and East Kilbride is weak; for instance junction 6 on the M74 is a case in point where local road network is suggested by GPS devices despite being clearly marked with width and weight restrictions; and
- Point out that signing on the national road network is the responsibility of the National Highways authority and not local authorities.

Q6 Other than what is already presented in the Chapter, in your opinion what else should the signing strategy cover?

- Many if not most HGV traffic relies on GPS for general directions, but some the mapping in the GPS system is inaccurate and can lead to problems, for example often height restrictions are not given – it would be of benefit to update and even customize GPS mapping for HGV traffic;

Q7 Given that our remit for the Dry Ports Appraisal in Chapter 7 was limited to a high level evaluation of the potential benefits that such a facility offered, rather than presenting a full business case, do you have any comments or views on the appraisal results?

- No further comments.

End & Thank You

Record of Telephone Conversation

Project Data			
Title	Freight Routing Strategy	Reference Number	S106019
Call Information			
Date	05 May 2009		
From (Receiver)	Jonathan Campbell, SWS&I	Time	1650 hrs
Interviewee Name	Ian Mitchell	Organisation	John Mitchell Haulage and Warehousing
Address		E-mail & telephone	01324 496330
Actions			
Please return call ☐		Will call again ☐	

Message You should have received a copy of the Freight Routing Strategy recently, and I am calling to ask your opinion and comments on this document. May I have a few minutes of your time to ask you six very quick questions.

If yes – proceed; If no, when would be a good time - Day: Hour:

Record of Telephone Conversation

Q1 In terms of the existing truck stop analysis and how it is presented in Chapter 4, (i.e. T4.1) do you have any comments on this (*anything missing*)?

Q2 Of the three new potential truck stops examined in the study, one that was located in the Livingstone/Bathgate/M8 corridor (West Lothian) was dismissed owing to the unavailability of land; do you have any views or comments on the location of the other 2?

- A truck stop in Halbeath would only really cater for local truck movements and of limited suitability for long distance haulage; and
- Falkirk is a better location, being closer to the main interchanges on the M876 and A/M80, although Bonnybridge could be a better site.

Q3 With regards to the third truck stop originally to be located in the M8 corridor, do you have any views as to where it should be placed?

- No point putting a truck stop in the middle of the M8 as this would only realistically serve the Livingstone area, much better to place it at one end of the M8 or the other, potential ideal location would be at or close to the Bellshill or Coatbridge area, close to the M73 /M74 interchange junctions;
- The idea of using existing Park and Ride sites is excellent, where the sites can switch from day-time usage for car parking to night time usage as a truck stop; and
- It would be better to have more smaller truck stops than a few large ones, at or near the main delivery points, principally because truck drivers often prefer to park overnight as close to their destination or delivery point as possible, and currently often park where they deliver.

Q4 Turning now to the Lorry Advisory Network presented in Chapter 5, do you have any views or comments on the identified locations and their key trip generators and attractors as presented in T5.1?

- No further comments.

Q5 Referring to the signing strategy in Chapter 6, do you know of any place with weak signing for any particular location, what are the weaknesses in the signing and where are they?

- No further comments.

Q6 Other than what is already presented in the Chapter, in your opinion what else should the signing strategy cover?

- No further comments.

Q7 Given that our remit for the Dry Ports Appraisal in Chapter 7 was limited to a high level evaluation of the potential benefits that such a facility offered, rather than presenting a full business case, do you have any comments or views on the appraisal results?

- No further comments.

End & Thank You

Record of Telephone Conversation

Project Data			
Title	Freight Routing Strategy	Reference Number	S106019
Call Information			
Date	20 April 2009		
From (Receiver)	Jonathan Campbell, SWS&I	Time	1445 hrs
Interviewee Name	Phil Flanders	Organisation	Road Haulage Association
Address		E-mail & telephone	0131 472 4180
Actions			
Please return call ☐		Will call again ☐	

Message You should have received a copy of the Freight Routing Strategy recently, and I am calling to ask your opinion and comments on this document. May I have a few minutes of your time to ask you six very quick questions.

If yes – proceed; If no, when would be a good time - Day: Hour:

Record of Telephone Conversation

Q1 In terms of the existing truck stop analysis and how it is presented in Chapter 4, (i.e. T4.1) do you have any comments on this (*anything missing*)?

- The Esplanade Lorry Park needs to be removed as there are plans by Fife Council to close it; and
- Portobello can not really be considered a developed truck stop as it is only an area of hardstanding.

Q2 Of the three new potential truck stops examined in the study, one that was located in the Livingstone/Bathgate/M8 corridor (West Lothian) was dismissed owing to the unavailability of land; do you have any views or comments on the location of the other 2?

- A truck stop in the Borders would be a good idea, as it is a good location in principal and there is little in the way of lorry parking facilities there at present; and
- Falkirk is also a good location, not least in a role as a holding area for freight traffic passing through the area (to and from Grangemouth).

Q3 With regards to the third truck stop originally to be located in the M8 corridor, do you have any views as to where it should be placed?

- Consideration should be given to placing a third truck stop at Newbridge; this is a very useful location with regard as most trunk routes in Scotland, there is plenty of spare land available at a Industrial Estate in the vicinity and is only 10 minutes from the original choice; and
- Consideration should also be given to existing Park and Ride sites (originally an Aberdeen Council idea) which have the advantage of being numerous and not expensive.

Q4 Turning now to the Lorry Advisory Network presented in Chapter 5, do you have any views or comments on the identified locations and their key trip generators and attractors as presented in T5.1?

- Surprised by the number of trips that are going into Edinburgh and especially the city centre, observed that most vehicles going into Edinburgh are small commercial vans which cannot really be classed as freight.

Q5 Referring to the signing strategy in Chapter 6, do you know of any place with weak signing for any particular location, what are the weaknesses in the signing and where are they?

- Not confident able to provide information on this with any degree of accuracy.

Q6 Other than what is already presented in the Chapter, in your opinion what else should the signing strategy cover?

- Signs for HGV traffic should be specifically adapted for this mode of transport; for example there should be black and white signs to differentiate signing for HGV traffic from signage for other traffic, (which is already in use very locally in the Grangemouth area); and
- GPS does not cater for the haulage industry, but it would be very useful if it was adapted to the industry by, for example, giving bridge heights and road widths where appropriate for heavy commercial vehicles.

Record of Telephone Conversation

Q7 Given that our remit for the Dry Ports Appraisal in Chapter 7 was limited to a high level evaluation of the potential benefits that such a facility offered, rather than presenting a full business case, do you have any comments or views on the appraisal results?

- The outline appraisal appears fine; results of course depend on the siting of the proposed dry port.
- A general observation is that Scotland can only have one dry port and given this it would need to be in central Scotland as the most promising location. Advise that Forth Ports should be a driver of the location as they know the origin and destination of a great deal of the cargo that is shipped about Scotland; and
- Some initial thoughts on the proposed sites;
    - Leven/Methil Docks site should be ruled out as not suitable;
    - Both Grangemouth and Rosyth are possible;
    - As is Avon Gorge, the back of which is a very large piece of land that can be made available as a site, but which may be difficult to connect to the rail network owing to the steepness of the grade required; and
    - Coatbridge is a possibility too, which by virtue of its position, has considerable potential as a site.

End & Thank You

Record of Telephone Conversation

Project Data			
Title	Freight Routing Strategy	Reference Number	S106019
Call Information			
Date	5 May 2009		
From (Receiver)	Jonathan Campbell, SWS&I	Time XX:XX	hrs
Interviewee Name	Maya Rousen	Organisation	Scottish Enterprise
Address		E-mail & telephone	0141 248 2700
Actions			
Please return call ☐		Will call again ☐	

Message You should have received a copy of the Freight Routing Strategy recently, and I am calling to ask your opinion and comments on this document. May I have a few minutes of your time to ask you six very quick questions.

If yes – proceed; If no, when would be a good time - Day: Hour:

I take it that you have received the document in question? If not……

Record of Telephone Conversation

Q1 In terms of the existing truck stop analysis and how it is presented in Chapter 4, (i.e. T4.1) do you have any comments on this (*anything missing*)?

- No comment to add

Q2 Of the three new potential truck stops examined in the study, one that was located in the Livingstone/Bathgate/M8 corridor (West Lothian) was dismissed owing to the unavailability of land; do you have any views or comments on the location of the other 2?

- No comment here

Q3 With regards to the third truck stop originally to be located in the M8 corridor, do you have any views as to where it should be placed?

Q4 Turning now to the Lorry Advisory Network presented in Chapter 5, do you have any views or comments on the identified locations and their key trip generators and attractors as presented in T5.1?

- No comment to add

Q5 Referring to the signing strategy in Chapter 6, do you know of any place with weak signing for any particular location, what are the weaknesses in the signing and where are they?

- No comment here

Q6 Other than what is already presented in the Chapter, in your opinion what else should the signing strategy cover?

- No comment to add

Q7 Given that our remit for the Dry Ports Appraisal in Chapter 7 was limited to a high level evaluation of the potential benefits that such a facility offered, rather than presenting a full business case, do you have any comments or views on the appraisal results?

- No comment here

End & Thank You

Record of Telephone Conversation

Project Data			
Title	Freight Routing Strategy	Reference Number	S106019
Call Information			
Date	8 May 2009		
From (Receiver)	Dr Marwan AL-Azzawi, SWS&I	Time 14:30	hrs
Interviewee Name	Maurice McGuinness & Nik Scott-Gray (also present was Alastair Short from SEStran)	Organisation	Forth Ports PLC
Address		E-mail & telephone	01383 421802
Actions			
Please return call ☐		Will call again ☐	

Message You should have received a copy of the Freight Routing Strategy recently, and I am calling to ask your opinion and comments on this document. May I have a few minutes of your time to ask you six very quick questions.

If yes – proceed; If no, when would be a good time - Day: Hour:

I take it that you have received the document in question? If not……

Record of Telephone Conversation

Q1 In terms of the existing truck stop analysis and how it is presented in Chapter 4, (i.e. T4.1) do you have any comments on this (*anything missing*)?

- Existing stops are very basic and could benefit from improvements.

Q2 Of the three new potential truck stops examined in the study, one that was located in the Livingstone/Bathgate/M8 corridor (West Lothian) was dismissed owing to the unavailability of land; do you have any views or comments on the location of the other 2?

- Falkirk site looks acceptable; and
- No comment on the Fife site.

Q3 With regards to the third truck stop originally to be located in the M8 corridor, do you have any views as to where it should be placed?

- The Tesco distribution centre.

Q4 Turning now to the Lorry Advisory Network presented in Chapter 5, do you have any views or comments on the identified locations and their key trip generators and attractors as presented in T5.1?

- There are 2 types of hauliers, some will use it if paid by hour while others, (hire and reward) will always use the shortest route because this is how they are paid. However, the concept of minimising environmental impacts seems reasonable.

Record of Telephone Conversation

Q5 Referring to the signing strategy in Chapter 6, do you know of any place with weak signing for any particular location, what are the weaknesses in the signing and where are they?

- Response from Local Authorities (LAs) to changes in their business has been slow;
- Budgets in LAs seem limited in what can be improved or changed; and
- Sometimes politics can influence the process.

Q6 Other than what is already presented in the Chapter, in your opinion what else should the signing strategy cover?

- No further comments.

Q7 Given that our remit for the Dry Ports Appraisal in Chapter 7 was limited to a high level evaluation of the potential benefits that such a facility offered, rather than presenting a full business case, do you have any comments or views on the appraisal results?

- The principle seems fine but could benefit from more detailed investigation which is anticipated in the coming workstreams.

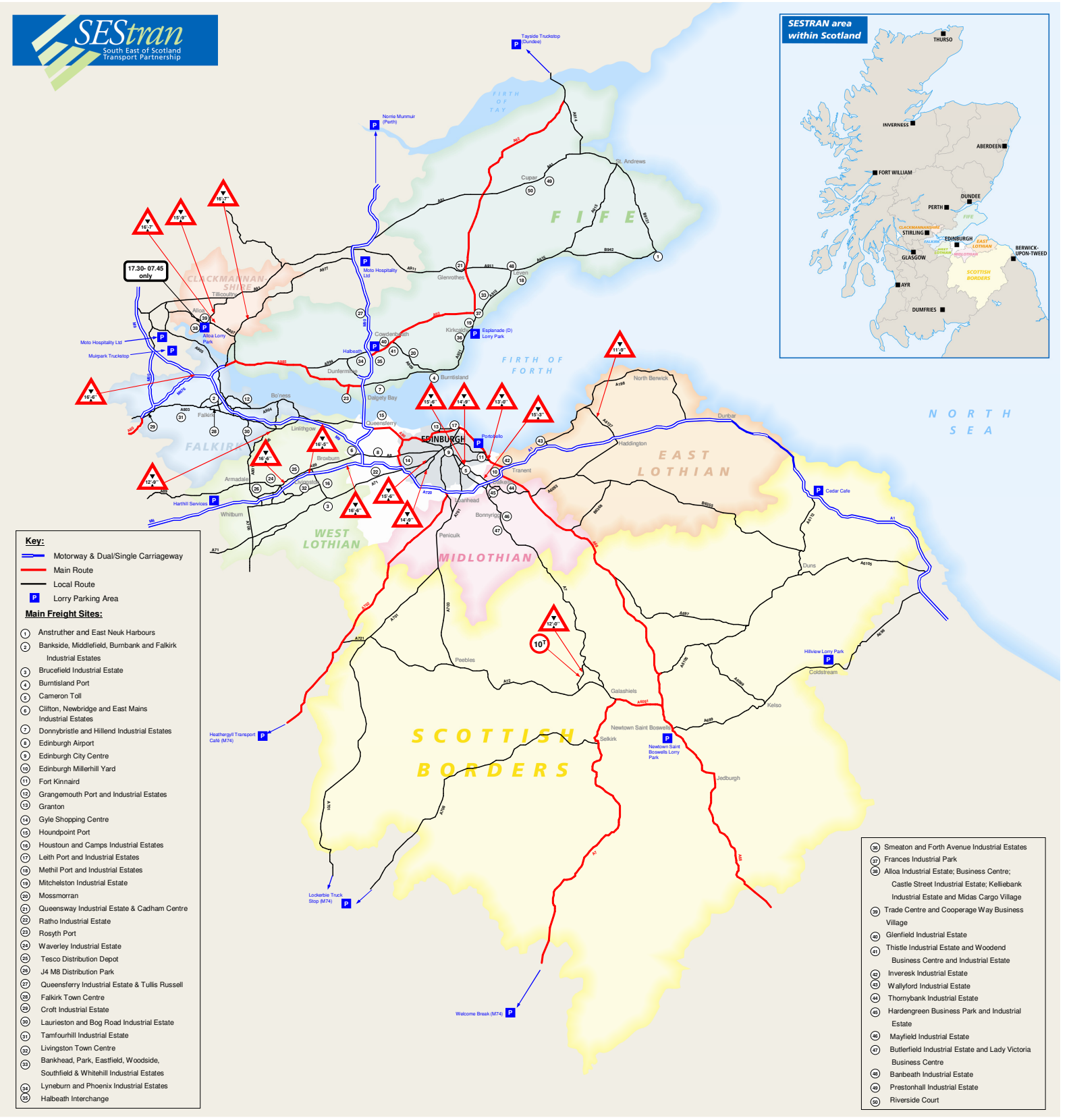
Q8 Is there significant lorry parking in the Leith Docks area?

- You get occasionally long-haul rogue drivers who look for any corner to park, but there is not a significant amount of illegal parking.

End & Thank You

Appendix C

Freight Advisory Map


SESTRAN
South East of Scotland Transport Partnership
SESTRAN area within Scotland
THURSO
INVERNESS
ABERDEEN
FORT WILLIAM
DUNDEE
PERTH
STIRLING
EDINBURGH
GLASGOW
BERWICK-UPON-TWEED
AYR
DUMFRIES
FIFE
CLACKMANNANSHIRE
FALKIRK
WEST LOTHIAN
MIDLOTHIAN
EAST LOTHIAN
SCOTTISH BORDERS
FIRTH OF TAY
FIRTH OF FORTH
NORTH SEA
EDINBURGH
Tayside Truckstop (Dundee)
Norrie Munmuir (Perth)
Moto Hospitality Ltd
Alloa Lorry Park
Muirpark Truckstop
Esplanade (D) Lorry Park
Portobello
Cedar Cafe
Hillview Lorry Park
Coldstream
Newtown Saint Boswells Lorry Park
Heathergyll Transport Café (M74)
Lockerbie Truck Stop (M74)
Welcome Break (M74)
17.30- 07.45 only
10T
Key:
Motorway & Dual/Single Carriageway
Main Route
Local Route
Lorry Parking Area
Main Freight Sites:
1 Anstruther and East Neuk Harbours
2 Bankside, Middlefield, Burnbank and Falkirk Industrial Estates
3 Brucefield Industrial Estate
4 Burntisland Port
5 Cameron Toll
6 Clifton, Newbridge and East Mains Industrial Estates
7 Donnybristle and Hillend Industrial Estates
8 Edinburgh Airport
9 Edinburgh City Centre
10 Edinburgh Millerhill Yard
11 Fort Kinnaird
12 Grangemouth Port and Industrial Estates
13 Granton
14 Gyle Shopping Centre
15 Houndpoint Port
16 Houstoun and Camps Industrial Estates
17 Leith Port and Industrial Estates
18 Methil Port and Industrial Estates
19 Mitchelston Industrial Estate
20 Mossmorran
21 Queensway Industrial Estate & Cadham Centre
22 Ratho Industrial Estate
23 Rosyth Port
24 Waverley Industrial Estate
25 Tesco Distribution Depot
26 J4 M8 Distribution Park
27 Queensferry Industrial Estate & Tullis Russell
28 Falkirk Town Centre
29 Croft Industrial Estate
30 Lauriston and Bog Road Industrial Estate
31 Tamfourhill Industrial Estate
32 Livingston Town Centre
33 Bankhead, Park, Eastfield, Woodside, Southfield & Whitehill Industrial Estates
34 Lyneburn and Phoenix Industrial Estates
35 Halbeath Interchange
35 Smeaton and Forth Avenue Industrial Estates
37 Frances Industrial Park
38 Alloa Industrial Estate; Business Centre; Castle Street Industrial Estate; Kellicbank Industrial Estate and Midas Cargo Village
39 Trade Centre and Cooperage Way Business Village
40 Glenfield Industrial Estate
41 Thistle Industrial Estate and Woodend Business Centre and Industrial Estate
42 Inveresk Industrial Estate
43 Wallyford Industrial Estate
44 Thornybank Industrial Estate
45 Hardengreen Business Park and Industrial Estate
46 Mayfield Industrial Estate
47 Butlerfield Industrial Estate and Lady Victoria Business Centre
48 Banbeath Industrial Estate
49 Prestonhall Industrial Estate
50 Riverside Court

Appendix D

Signing Appraisal Summary Table

Reference No.	Site	Local Authority	Route to Site	Issues/Problems	Recommendations
1	Anstruther Port & East Neuk Harbours	Fife	From South: follow M90 and exit at Junction 3 then follow A92 to A915 then A917 to Anstruther/East Neuk Harbours then B9131 to port From North: follow M90 and exit at Junction 7, follow A911 until it meets A915 then follow as above.		
2	Bankside, Middlefield, Burnbank & Falkirk Industrial Estate	Falkirk	From East: follow M9 and exit at Junction 5, follow A9 to roundabout and take Etna Road then turn left to Universal Road. From West: follow M9 and exit at Junction 6, follow A905 to Earls Gate roundabout then follow A904 to A9 then as above.		
3	Brucefield Industrial Estate	West Lothian	From East: Follow M8 to Junction 3 then turn left to A899 follow until Lizzie Brices Interchange and turn right to A7, follow to Wilderness Roundabout and then enter estate on left. From West: Follow M8 to junction 3 then turn right on to A899 then follow as above.		
4	Burntisland Port	Fife	From South: Follow M90 to Junction 2a then A92 to A909, then follow High Street to port. From North: Follow M90 to Junction 3 then exit and follow A92 as above.	Could be signed upon entry to Burntisland to direct HGVs.	Signs from A909 on entry to Burntisland.
5	Cameron Toll	Edinburgh	From South: Follow A720 to Sheriffhall Roundabout then take A7 to Cameron Toll From North: Follow A90 then A700 then A7 to Cameron Toll	No Directional Signs for HGV traffic on approach.	Signs directing HGVs to specific entrance / parking area would be useful.
6	Clifton, Newbridge & East Mains Industrial Estates	Edinburgh	From South: Follow M8 and exit at junction to for M9, take exit 1 from M9 to Newbridge roundabout, take first exit to B7030 Newbridge Road then Cliftonhall Road to enter Industrial area. From North: From A90 exit and follow A8000 to M9, exit M9 at Junction 1 and take 3rd exit at roundabout and follow as above.	Unclear signing at Newbridge Roundabout.	Signing from Newbridge Roundabout recommended.
7	Donnybristle and Hillend Industrial Estates	Fife	From South: follow A90 to junction 1 and exit then take 3rd exit at Admiralty Road Roundabout, follow A921 until 4th Roundabout and turn right on to Regents Way From North: Follow M90 to A90 an exit at Junction 1, take first exit to A921 then follow as above.	Various roundabouts along route with no signs.	Signing from Admiralty Road roundabout would be useful and signs at some intermediate roundabouts.
8	Edinburgh Airport	Edinburgh	From West/South: Follow M8 to Junction 2 then exit and join M9, exit at Junction 1 then take 3rd exit at Newbridge roundabout to follow A8, continue on this until Eastfield Road on left. From North: From A90 take A8000 to M9 then exit M9 a junction 1, take first exit at Newbridge Roundabout then follow as above.		
9	Edinburgh City Centre	Edinburgh	From West: Follow A8 to join A720 then various roads can be used such as A1, A7, A701 etc. to access city centre, dependant on final location. From East: Follow A1 to city centre or join A720 then various roads can be used such as A1, A7, A701 etc. to access city centre, dependant on final location.		
10	Edinburgh Millerhill Yard	Midlothian	From West: Follow A720 to Sheriffhall Roundabout then take 2nd exit to A6106, follow until roundabout then turn right to B6415 continue until Whitehill road on left. From East: Follow A720 to Sheriffhall Roundabout then take 5th exit to A6106, and follow as above.	Lack of signing on A6106	Signs could be added from A6106 directing HGVs to entrance.
11	Fort Kinnaird	Edinburgh	From East: From A1 exit at NewCraighall Road and follow A6095 to NewCraig Hall Road Roundabout. Take 3rd exit into retail park From West: Follow A720 to Old Craighall Junction, take 1st exit and join A1 then follow as above	Lack of signs directing HGVs to goods entrances on approach	Add HGV specific signs to assist drivers to delivery points.
12	Grangemouth Port and Industrial Estates	Falkirk	From West: Leave M9 at junction 6 then follow A905 to A904 which leads to port From East: Leave M9 at junction 5 and take A904 to port.	No industrial estate directory signs.	Directory sign at entrance to industrial estate.
13	Granton	Edinburgh	From West: From M8/A8 follow A902 then A90/A902 then turn left onto A903 Granton Road, leads to port. From A1 continue on to A199 then A901 which leads to docks.	No signs leading to port or industrial areas.	Signing from junction of A902/A903 to main industrial areas.

Reference No.	Site	Local Authority	Route to Site	Issues/Problems	Recommendations
14	Gyle Shopping Centre	Edinburgh	From West: Follow M8 to Hermiston Junction then follow A720 to Glasgow Road Roundabout and take 3rd exit on to South Gyle Broadway. At first roundabout take first exit. From East: Follow A720 to Glasgow Road Roundabout then as above.	No HGV specific signs, directing to loading/unloading areas.	Some signs directing HGVs to loading/unloading areas would be useful.
15	Houndpoint Port	Edinburgh	From North: Follow M90/A90 across Forth Road Bridge then exit left to B800, turn left at roundabout to B907 then right on to B924 From South: From M9 exit at junction 1a and join A8000 to A90, take first exit on A90 then take 3rd exit at roundabout to join B800 then follow as above.	No Signs found to Hound Point.	Signs would be useful from A90 exit roundabout.
16	Houston and Camps Industrial Estates	West Lothian	From East: Follow M8 to Junction 3 exit and turn left on to A899, estate will be on left. From West: Follow M8 to junction 3 exit then turn right on to A899 then as above.		
17	Leith Port and Industrial Estates	Edinburgh	From West: From M9/M8 join A90, follow this along length of A902, then A901, turn left onto Ocean Drive which provides access to docks. From East: From A1 continue on to A199, continue until junction with Constitution Street then turn right into docks.		
18	Methil Port and Industrial Estates	Fife	From South: From M90 at junction 3 Take A92 then turn right to A911 then A915, A955 to South Street From North: From M90 exit at junction 7 for A911 then follow as before.	No signs until at roundabout to turn in. No signs on entry to port directing HGVs. No signs in Industrial estate for directions to premises.	Signs from A roads (A915, A955) would be useful. Directional signs on entry to port/industrial estate would also be beneficial.
19	Mitchelston Industrial Estate	Fife	From South: From M9/M8 join A90 and cross Forth Road Bridge, exit at junction 2a and follow A92 to Redhouse Roundabout then turn right to A921 then right at roundabout to B981, site is then on left. From North: Follow M90 to junction 7 then take the A911 to junction with A92 and turn right onto A92, follow until Redhouse Roundabout and turn left then follow as above.	More direction to estate recommended.	Sign from Redhouse Roundabout and directory on entry to the industrial estate.
20	Mossmorran	Fife	From South: From M8/M9 follow A90/M90 to junction 2a then join A92 then exit and turn right on to A909, site will then be on left. From North: Follow M90 to junction 3 then exit and join A92, then follow as above.		Sign at exit from A92 and junction of A909.
21	Queensway Industrial Estate & Cadham Centre	Fife	From South: From M8/M9 join A90/M90, follow across Forth Road Bridge then exit at Junction 2a and Follow A92 to junction with A911, turn left at roundabout and continue to Queensway Roundabout then turn right into estate. From North: Follow M90 to junction 7 then turn left on to A911, follow this to Queensway roundabout then turn left into estate.		
22	Ratho Industrial Estate	Edinburgh	From West: Follow M8 to Junction 2 then exit and join M9. Exit at Junction 1 and turn left to B7030, follow this then turn left onto Harvest Road which will lead to estate. From East: Follow A720 until Hermiston Junction and join M8, exit at junction 2 and follow as above.		
23	Rosyth Port	Fife	From North: Follow M90 to junction 1, turn right at roundabout on to A985 (Admiralty Road) then left to Castle Road From South: From M8/A720 follow signs for M9, then exit at Junction 1a signed Forth Road Bridge. Follow A90 to Junction on then turn left at roundabout to A985 and as before.	Signs obscured by trees and bushes upon crossing Forth Road Bridge.	Foliage should be removed or trimmed back regularly
24	Waverley Industrial Estate	West Lothian	From West: Exit M8 at Junction 3a, turn right at roundabout then continue straight through next roundabout and follow A89, Exit A89 onto A800. Turn right onto Waverley Street. Turn right into industrial estate From East, follow M8 to junction 3a then exit and turn left at first roundabout then take third exit at next roundabout and follow as above.		

Reference No.	Site	Local Authority	Route to Site	Issues/Problems	Recommendations
25	Tesco Distribution Depot	West Lothian	From West: From M8, exit at junction 4 then turn left on to A801, site is then located on left at Pottishaw Road From East: Exit M8 at junction 4 then turn right at roundabout to A801 and as above.		
26	J4 M8 Distribution Park	West Lothian	From West: From M8, exit at junction 4 then turn left on to A801, site is then located on left at Pottishaw Road From East: Exit M8 at junction 4 then turn right at roundabout to A801 and as above.		
27	Queensferry Industrial Estate & Tullis Russell	Fife	From South: From M8/M9 follow A90/M90 to junction 4 then exit and turn left on to B914, site is then on left. From North: Follow M90 to junction 4 then exit and turn right and as before..		
28	Falkirk Town Centre	Falkirk	From West: From A90/M90 follow M876 to junction 1 then exit and follow A883 then A803 to centre. From East: Follow M9 then exit at junction 5, then follow A9 then A803 to centre.		
29	Croft Industrial Estate	Falkirk	From West: Exit M80 at junction 4 then follow A803, site is then on right From East: Follow M9 then exit at junction 5, then follow A9 then A803 site will then be on left after Dennyloanhead.		
30	Laurieston & Bog Road Industrial Estate	Falkirk	From West: From A90/M90 follow M876 to junction 1 then exit and follow A883 then A803 then turn right at B816, site will then be on right along road. From East: Follow M9 then exit at junction 5, then follow A9 then A803 turn left to B816 as before.		
31	Tamfourhill Industrial Estate	Falkirk	From West: From A90/M90 follow M876 to junction 1 then exit and follow A883 then A803 then turn right to Boyd Street. From East: Follow M9 then exit at junction 5, then follow A9 then A803 turn left to Boyd street.		
32	Livingston Town Centre	West Lothian	From West: Exit M8 at junction 3 then turn right to A899, then take local road to specific location. From east: Exit M8 at junction 3 then turn left to A899, then take local road to specific location.		
33	Bankhead, Park, Eastfield, Woodside, Southfield & Whitehill Industrial Estates	Fife	From South: From M8/M9 follow A90/M90 to junction 2a then join A92 follow this until Bankhead Roundabout where industrial estates are located. From North: Follow M90 to junction 3 then exit and join A92, then follow as above.		
34	Lyneburn & Phoenix Industrial Estates	Fife	From South: From M8/M9 follow A90/M90 and exit at junction 1 then follow A823 to Sinclair Gardens roundabout and turn left on to A907, then first right From North: Follow M90 to junction 2 then follow as above.	No signs on A907	Directory signs from A907 required.
35	Halbeath Interchange	Fife	From South: follow M90 and exit at Junction 3 From North: follow M90 and exit at Junction 3.		
36	Smeaton & Forth Avenue Industrial Estates	Fife	From South: From M8/M9 follow A90/M90 to junction 2a then join A92 follow this until Junction with A910, turn right to A910 then turn left to B981, sight is then accessed via Whytemanns Brae on right. From North: Follow M90 to junction 3 then exit and join A92, then follow as above.	Hard to locate as accessed via B roads	Sign from A910 as hard to locate at present.
37	Frances Industrial Park	Fife	From South: From M8/M9 follow A90/M90 to junction 2a then join A92 follow this until Junction with A921 and turn right continue along this until fork in road and take left B928, upon reaching A955 turn right then continue until site appears on right after B929 From North: Follow M90 to junction 3 then exit and join A92, then follow as above.	Lack of signing on route	Sign from fork at B928.

Reference No.	Site	Local Authority	Route to Site	Issues/Problems	Recommendations
38	Alloa, Castle Street & Kelliebank Industrial Estates, Alloa Business Centre & Midas Cargo Village	Clackmannanshire	From East: Follow M9 to junction 7 then exit and take A876 across Kincardine Bridge at Gartarry roundabout turn left to A907 then follow until Shillinghill roundabout and turn right to A908, site is then on left. From West: Follow M90 then exit to M876 and follow as above.	No signs on A907	Could add signs on A907 for HGVs.
39	Trade Centre and Cooperage Way Business Village	Clackmannanshire	From East: Follow M9 to junction 7 then exit and take A876 across Kincardine Bridge at Gartarry roundabout turn left to A907 then follow until Shillinghill roundabout and turn right to A908 follow until Whins roundabout and go straight through the site is then on the left. From West: Follow M90 then exit to M876 and follow as above.	No signs on A907	Could add signs on A907 for HGVs.
40	Glenfield Industrial Estate	Fife	From South: From M8/M9 follow A90/M90 to junction 2a then join A92 then exit and turn left on to A909, site will then be on right at Church Street From North: Follow M90 to junction 3 then exit and join A92, then follow as above.	No signing apparent.	Could add signs on approach from A909 to give drivers time to turn.
41	Thistle Industrial Estate & Woodend Industrial Estate & Business Centre	Fife	From South: From M8/M9 follow A90/M90 to junction 2a then join A92 then exit and turn left on to A909, site will then be on right at Church Street.. From North: Follow M90 to junction 3 then exit and join A92, then follow as above.	No signing and estate arrives very quickly after leaving A92.	Could add signs on approach from A909 to give drivers time to turn.
42	Inveresk Industrial Estate	East Lothian	From West: Follow A720 to Old Craighall Junction then take first exit and follow A1 to A6095 and follow until Inveravon Terrace on right. From East: From A1 join A199 then follow to A6095 then turn left.	No signs on approach from A6095	Could add signs on A6095.
43	Wallyford Industrial Estate	East Lothian	From West: Follow A720 to Craighall Junction then turn right onto A1 and follow until exit to A6094, site is then on right. From East: Follow A1 until the A6094 then exit and follow as above.	Not signed until turn in to estate and sign is set back off road, easy to miss.	Sign on approach from A6094.
44	Thornybank Industrial Estate	Midlothian	From West: From M8/M9 join A720 and continue until Sheriffhall Roundabout then turn right onto to Old Dalkeith Road, continue on this road until site on left. From East: Follow A1 then join A720, continue until Sheriffhall roundabout and turn left then follow as before.	Lack of signing	Could add signs along Old Dalkeith Road to direct drivers.
45	Hardengreen Business Park & Industrial Estate	Midlothian	From East: From A1 join A720 to roundabout and turn left at roundabout to A7 then follow until roundabout and turn left to B6392 From West: From M8/M9 join A720 and follow until slip signed for A772 and follow until roundabout and turn right on to A7 then follow as above.		
46	Mayfield Industrial Estate	Midlothian	From West: From M8/M9 join A720 and follow until Sheriffhall Roundabout, then turn right to A7 and follow until fork with B6482, turn left here and follow, site will then be on right. From East: From A1 join A720 and follow until Sheriffhall Roundabout, turn left here to A7 and follow as above.	Lack of signs from B6482	Could add signs along B6482 on approach and also estate directory on entrance to estate.
47	Butlerfield Industrial Estate & Lady Victoria Business Centre	Midlothian	From West: From M8/M9 join A720 and follow until Sheriffhall Roundabout, then turn right to A7 and follow until junction with B704, turn right here then site will be on right. From East: From A1 join A720 and follow until Sherrifhall Roundabout, turn left here to A7 and follow as above.	No signing to site	Could add sign on approach to junction with B704
48	Banbeath Industrial Estate	Fife	From South: Follow M90 to junction 2A then follow A92 to A911 follow this to A915 then turn right on to Kennoway Road. From North: Follow M90 to Junction 7 then follow A911 and follow above.		
49	Prestonhall Industrial Estate	Fife	From South: Follow M90 to Junction 8 then follow A91 past Cupar, estate will then be on right after Cupar. From North: Follow M90 to junction 9 then follow A912 and join A91 and follow as above.		
50	Riverside Court	Fife	From South: Follow A90/M90 to junction 2a then exit and join A92, continue until junction with A91 and follow this until junction with A914, turn right then right again on to Coal Road. From North: Follow M90 to junction 8 then exit and join A91, follow this then as above.	Lack of signing	Sign at junction of A91/A914 would be helpful.

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