



## **ANNUAL REPORT 2010**

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## Summary

Land-Use and Transport Integration in Scotland (LATIS) is one of Transport Scotland's principal tools in ensuring that transport investment is well focused and integrated with the wider policy environment. LATIS assists in the planning of strategic transport interventions and the testing of innovative policies to encourage modal shift, improve journey time reliability, improve safety and reduce emissions.

The LATIS service has four key elements as follows:

- transport and land-use modelling capability (TMfS and TELMoS);
- a user (customer) engagement programme;
- a data collection facility; and
- project management.

The Annual Report 2010 reports upon the commission year starting 1 September 2009 to end of 31 August 2010 and all LATIS-based applications, including ongoing applications of the LATIS models throughout 2010.

Effective project management of LATIS is central in delivering on Transport Scotland's twin aims of user engagement and technical excellence. A number of scheduled meetings and reports facilitate this:

- Client Progress Meetings and Commission Progress Meetings;
- Quarterly Steering Group Meetings;
- Bi-annual Directors' Meetings;
- Bi-annual Data Collection Progress Meetings; and
- The Annual Report.

The LATIS user engagement programme continued to develop in 2009-2010; the 7<sup>th</sup> Annual User Group was held in March 2009 focusing on key issues such as Planning Reform, the Carbon Account for Transport, mapping of Scotland's transport data and the Regional Modelling Hierarchy. LATIS presented papers at four industry

conferences in 2009-2010. Close liaison with Key Agencies in Scotland and other external stakeholders including the DfT and the Highways Agency have led to a number of LATIS applications which are described in detail in Chapter 7.

This year has seen continued enhancement to the LATIS modelling capability, with ongoing improvement to the Transport Model for Scotland (TMfS:07) and development of regional models covering the SEStran area and the Moray Firth Area. Transport Scotland has also invested in the collection of additional data to support future updates to LATIS, including collection of Planning Policy data from Local Authorities across Scotland in conjunction with Scottish Water. More details can be found in Chapter 5 of this report.

The LATIS data collection commission and data repository continue to serve a number of Transport Scotland directorates and teams, to support specific LATIS applications and regional model development.

This year has seen 24 applications of LATIS models which can be broadly categorised as supporting the Strategic Transport Projects Review, supporting Planning Reform, supporting Regional Models, other Transport Planning applications and Environmental applications. These applications originate from a wider range of organisations than ever before, realising Transport Scotland's ambition for LATIS to support decision-making within the wider policy environment.

As in the previous LATIS Annual Report, we demonstrate the value of LATIS in terms of economics, efficiency and effectiveness. This recognises the benefits of the on-the-shelf LATIS modelling capability compared with an alternative modelling strategy in which models were developed for each LATIS application initiated or ongoing in 2010. LATIS is shown to offer value for money over this alternative in 2010 and within the wider investment cycle; the LATIS service is seen to have cost around 50% of the estimated costs of the alternative modelling strategy in 2010. In addition to monetised benefits, the LATIS service also offers a range of qualitative benefits:

- the provision of evidence based and consistent policy advice;
- substantial project time savings;
- innovation and enhanced modelling practice;

- a forum for industry discussion and sharing of best practice; and
- economies of scope across the service.

The following objectives have been set out for the coming final year of the LATIS Commission, 2010-2011.

### User Engagement Objectives

Objective
1 Hold a joint LATIS/STAG user group to consider the links between appraisal and modelling in more detail.
2 Evaluate the work of the LATIS Commission through consultation with stakeholders and key model users.
3 Identify emerging modelling needs and recent technological developments towards setting the objectives for a subsequent LATIS Commission.

### Model Development Objectives

Objective
1 To improve the representation, efficiency and calibration levels of the TMfS:07 Park and Ride sub-model and, where possible, incorporation of those improvements within regional models on a project-by-project basis.
2 Analysis of existing national model do-minimum outputs for selected STPR corridors.
3 Undertake an analysis of key drivers within the national model to understand the relative importance of input assumptions upon model outputs.

## Model Application objectives

Objective	
1	To provide support to current ongoing and forthcoming approved LATIS applications.
2	To continue to support and make more effective use of regional models where appropriate.
3	To promote the use of LATIS within applications of Scottish Transport Appraisal Guidance.

## Data Collection Objectives

Objective	
1	Review consultant cost proposal and approval process to ensure best value procurement for Transport Scotland.
2	Ongoing data collection that supports specific model applications and other Transport Scotland Directorates.

## Model Support Objectives

Objective	
1	Analytical support in taking forward the STPR outcomes.
2	Support the application of DPMTAG and specific development-related model applications.

# 1 Introduction

## 2010 Annual Report

Land-Use and Transport Integration in Scotland (LATIS) is one of Transport Scotland's principal tools in ensuring that transport investment is well focused and integrated with the wider policy environment. It aims to serve the Scottish Government's overall Purpose, which is "to focus the Government and public services on creating a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth."

Transport Scotland's Annual Report outlines the means by which LATIS will support the delivery of the Scottish Government's Purpose:

- "delivering the Scottish Government's vision for transport, making a real difference for people and businesses using the national road and rail networks"; and
- "focussing on making journey times better and more reliable, improving strategic transport connections, encouraging a shift from lorries and private cars, and on improving safety, while at the same time promoting innovation and reducing emissions"<sup>1</sup>.

LATIS helps define that vision, assists in the planning of strategic transport interventions and the testing of innovative policies to encourage modal shift, improve journey time reliability, improve safety and reduce emissions.

This Annual Report demonstrates how LATIS has contributed to the realisation of Transport Scotland's objectives and delivery of the Scottish Government's Purpose.

## Structure of this Report

Chapter 2 provides a brief recap on the functions of the LATIS service and its role within the wider policy context. It will also reflect on how the objectives set in the 2009 Annual Report have been delivered. Chapter 3 reviews how LATIS has been managed in 2010 and Chapter 4 outlines progress of the LATIS user engagement programme. Chapter 5 addresses model development during 2010, and this is followed by a commentary on the data collection commission and model applications in Chapters 6 and 7 respectively.

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<sup>1</sup> Transport Scotland Annual Report and Accounts 2007, p. 7.

Chapter 8 draws together the evidence presented in the previous chapters to determine the value of LATIS to Transport Scotland's decision-makers in policy considering both qualitative and quantitative terms. Chapter 9 concludes the Annual Report by setting a vision and objectives for LATIS for the year ahead.

**The Annual Report 2010 reports upon the commission year starting 1 September 2009 to end of 31 August 2010. Chapter 7 refers to all LATIS based applications, including ongoing applications of the LATIS models throughout 2010.**

## **Glossary**

A number of acronyms are used throughout this document. Each one is explained when first introduced but, for ease of reference, they are all listed in **Appendix A**.

## 2 Land-Use and Transport Integration in Scotland (LATIS)

### What is LATIS?

Land use and Transport Integration in Scotland, known as LATIS, has four key elements as follows:

- transport and land-use modelling capability (TMfS and TELMoS);
- a user (customer) engagement programme;
- a data collection facility; and
- project management.

Transport Scotland seeks to improve the capabilities and effectiveness of LATIS by setting the following two objectives:

- to promote user (customer) engagement; and
- to promote technical excellence and improvement.

Transport Scotland aims to fulfil these objectives by means of effective project management and an ongoing interaction between transport planners and land use, planning and development specialists. This structure and process is illustrated in Figure 2.1 below.

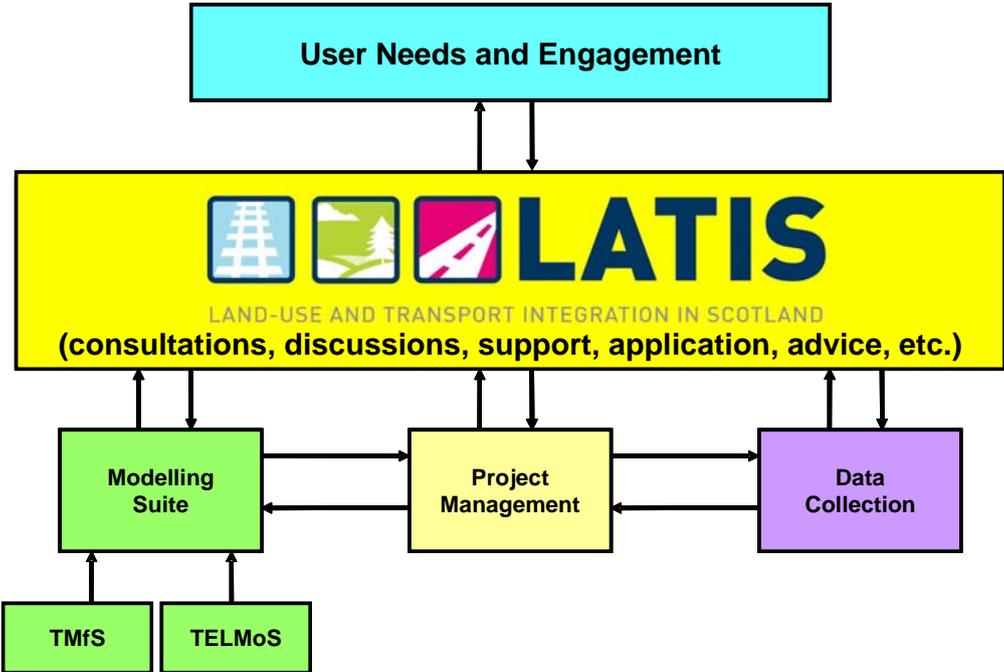


Figure 2.1 Land use and Transport Interaction in Scotland (LATIS)

## LATIS and the Policy Context

In November 2007, the Scottish Government published its *Government Economic Strategy*. The aim of the Strategy is to set out how the Scottish Government will achieve its central Purpose:

- “to focus the Government and public services on creating a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth.”

The Purpose provides a benchmark against which all Government policy may be assessed. In a transport context, interventions must be focused on delivering the connections commensurate with stimulating economic growth in a sustainable and financially viable manner.

In order to establish how policy measures contributed towards the Purpose, the Scottish Government designed a National Performance Framework, a tiered approach highlighted in Figure 2.2:



**Figure 2.2 The Scottish National Performance Framework**

By definition, any policy or intervention that contributes towards the National Indicators also contributes towards the overall Purpose because it feeds up through the hierarchy. The focus on sustainable economic growth provides a clear rationale for transport and planning policy. The direct contribution of transport and land-use interventions towards the Purpose is measured through a number of specific National Indicators, including:

- to reduce the proportion of driver journeys delayed due to traffic congestion;
- to increase the proportion of journeys to work made by public or active transport;
- to increase the rate of new house building; and
- to reduce our overall ecological footprint.<sup>2</sup>

The LATIS modelling capability allows Transport Scotland to quantitatively assess and compare how far the projects we are analysing deliver against the National Indicators that are outlined in the National Performance Framework on a consistent basis. This is typically undertaken through providing inputs to studies which apply Scottish Transport Appraisal Guidance (STAG).

LATIS also supports the delivery of the policy objectives of other organisations, including directorates within Transport Scotland, the Scottish planning authorities, Network Rail, the NHS, Scottish Environment Protection Agency (SEPA) and Scottish Water. The use of LATIS in other policy areas encourages greater integration along with a number of economies of scope; lower costs of application through repeated use; innovation and long-term planning; and knowledge transfer between stakeholders.

### **The Emerging Role of Models**

The value of models in the prevailing fiscal climate is two-fold:

- models are important for providing preliminary evidence for and comparing interventions on a like-for-like basis, identifying projects which meet stated objectives and offer value for money; and
- models form a core evidence base for informing appraisals and thus wider policy.

Indeed, a unique benefit of models is that they allow analysts to test how different schemes and/or policies (ie interventions) perform under different demand and supply conditions. Given the uncertainty associated with current and future economic performance in the UK and Europe, models can be used to better understand how interventions would be predicted to perform under those different conditions.

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<sup>2</sup> <http://www.scotland.gov.uk/About/scotPerforms/indicators>

## What has LATIS achieved in 2009-2010?

Tables 2.1 – 2.4 outline key commitments made in the 2008-2009 Annual Report and the steps taken to deliver these targets:

**Table 2.1 User Engagement Objectives – 2009-2010 Achievements**

Objective	Fulfilment of objective in 2009-2010
Ongoing liaison with the Key Agencies and stakeholders and ongoing customer engagement, with a continued focus on supporting the Scottish Government's policy commitments.	Ongoing liaison with the Key Agencies to support planning reform. The LATIS team are also working closely with Scottish Water to coordinate the collection of up to date planning data.
Close engagement with the Department for Transport on High Speed Rail and Network Rail in the production of the future Rail Utilisation Strategy.	Provision of data in support of the Scotland Rail Utilisation Strategy (RUS) and ongoing rail project appraisal.
A future User Group Day aimed at a particular subset of the wider User Group.	A User Group Day was held focussing on regional models, aimed largely at Regional Transport Partnerships, local authorities, and planning authorities.
Identify and act upon opportunities to assist in the assessment of policy initiatives to further serve the Government's Purpose, including the strengthening of key networking opportunities, both internally and externally.	LATIS has taken advantage of a wide range of opportunities over the past year, including the development of a shared data collection approach with Scottish Water; liaison with RTPs on the creation of Regional Models; and continued close working with the Key Agencies on planning reform.
Publication of full model documentation and audit findings, to reflect the launch of the new National Model.	The TMfS:07 and FRCM model documentation has been published on the LATIS website.

**Table 2.1 Model Development Objectives – 2009-2010 Achievements**

Objective	Fulfilment of objective in 2009-2010
<p>Application and further refinement of TMfS:07 and the FRCM. Undertaking of sensitivity testing which permits more diverse applications.</p>	<p>The TMfS:07 Do-Minimum has been revised to reflect recent investment commitment and improvements have been made to the P&amp;R demand sub-model utilising catchment analysis. The FRCM has been used as the basis for a South East Scotland Regional Model (SRM).</p>
<p>Liaison with the Regional Transport Partnerships and other key stakeholders to identify the scope for development of sub-area models to compliment the National Model in support of regional transport policy-making and the appraisal of emerging development or transport interventions.</p>	<p>This has been a high priority of Transport Scotland over the past year – a regional model has been developed for South East Scotland (SRM) and for the Moray Firth area (MFTM). A further regional model is evolving in Dumfries and Galloway, while cooperation with SPT on SITM and NESTRANS on ASAM is ongoing.</p>
<p>Discussions with all key stakeholders on the future course of model development. Inherent in this is the need to explore options for helping to create an evidence base in support of the Scottish Government's targets, both in the transport field and other areas (planning and environmental policy).</p>	<p>The LATIS Management Team has continued to work with the Steering Group and colleagues within both Transport Scotland and the Scottish Government to prioritise investment in LATIS. For example, the Steering Group is reviewing proposals to develop alternative forecast scenarios which would consider variations in population and economic projections.</p>

**Table 2.2 Data Collection Commission – 2009-2010 Achievements**

Objective	Fulfilment of objective in 2009-2010
Ongoing data collection that supports specific model applications.	Data collection support has been provided to key projects during 2010, most notably the Moray Firth Transport Model and projects taking forward the STPR outcomes.
Continued data collection support for the Scottish Government and Transport Scotland Directorates.	LATIS continues to support wider Transport Scotland and Scottish Government data collection requirements, in particular those for the concessionary travel scheme.

**Table 2.3 Model Applications – 2009-2010 Achievements**

Objective	Fulfilment of objective in 2009-2010
Ongoing application support to all live applications.	There have been 24 model applications in 2010.
Support for approved future applications.	Transport Scotland has continued to work with LATIS users to identify potential future applications and advise on their strategic modelling requirements.
Analytical support in taking forward the STPR outcomes.	LATIS has supported testing of proposed improvements to the A82, A96 and M77 and the proposed West of Scotland rail enhancements during 2010.
Continued contribution to the planning reform agenda and supporting Transport Scotland's role as a Key Agency.	LATIS has assisted SESplan and TAYplan in assessing their Strategic Development Plan, and Highland Council in support of their Local Development Plan.

## 3 Project Management

### Overview

Effective project management is central in delivering on Transport Scotland's twin aims of user engagement and technical excellence. There has been a strong focus on the effective delivery of LATIS and its supporting workstreams. Throughout 2009-2010 and Transport Scotland and the LATIS Commission holders, MVA Consultancy have continually worked to improve their approach to project management.

Strategic meetings and reports that have assisted in defining and monitoring the direction of LATIS have included:

- Client Progress Meetings and Commission Progress Meetings;
- Quarterly Steering Group Meetings;
- Bi-annual Directors' Meetings;
- Bi-annual Data Collection Progress Meetings; and
- The Annual Report.

Each of these meetings and reports are now considered in turn. In advance of this however, it is important to consider the means by which Transport Scotland internally manage the LATIS Commission.

### Transport Scotland's Management of LATIS

LATIS is a large and complex commission, with numerous spin-off contracts including data collection, audit, and applications. In ensuring good project control and value for money, Transport Scotland has developed a rigorous and accountable management structure for LATIS.

#### *Strategic Management*

Overall requirements for the project are driven by the policy requirements of the Scottish Ministers. Like any project, there is an almost endless list of enhancements that could be made to LATIS. However, it is essential that any improvements implemented are focused and offer value for money, particularly in the current fiscal

climate. In order to ensure that this is the case, long-term strategic direction for LATIS is set by an appointed Steering Group, which includes representatives from across Transport Scotland, the Scottish Government other strategic transport and planning agencies and the LATIS Commission holders.

The Steering Group meets on a quarterly basis and assists in agreeing priorities for investment in LATIS.

#### *Day-to-day management*

Day-to-day management of the commission is the responsibility of the Strategy and Investment Directorate of Transport Scotland. The Management Team consists of a:

- Project Director, responsible for strategic direction of the commission;
- Project Manager, responsible for all day-to-day management of LATIS including the monitoring of how LATIS is applied; and
- Project Engineer, responsible for advising the Project Manager on technical issues.

The Transport Scotland Project Management Team manages the maintenance and development term consultants, the auditors, and the data collection contracts. They also ensure close liaison with other government agencies, Regional Transport Partnerships, local authorities and other relevant organisations.

#### Client Progress

Client Progress Meetings focus on higher level strategic and financial issues; they ensure that the project is effectively managed, focused and delivers value for money. The Client Progress Meetings have been essential throughout 2010 – the LATIS team continues to actively reach out to new stakeholders and firm strategic direction has been required to ensure that we continue to effectively meet stakeholder needs.

#### Commission Progress

The Commission Progress Meetings are an important medium in determining the short-term direction of LATIS and in ensuring that Transport Scotland effectively manages the interface between model users and the Term Consultant.

Table 3.1 highlights the key discussions related to model development and support for the planning reform process over the last year.

**Table 3.1 LATIS Commission Progress Meetings 2010 – Key Discussions**

Month	Model Development Discussions	Support to Planning Reform
September	Updates to TMfS:07 Do Minimum and Reference Case scenarios. Consideration of revised economic forecasts to better reflect recent recession.	Consideration of the development of regional models to support planning reform work.
October	Agreement of TMfS:07 Do Minimum and Reference Case updates. MVA agreed to cost sensitivity tests for the new economic and demographic scenarios.	Discussion of forthcoming work to support the Inverness Model.
November	Update on new Do Minimum scenarios and costing for the Reference Case update.	Agreement to develop a LATIS Website Planning Portal, which contains information on planning data required from local authorities. The page hosts a pro forma, guidance notes, and FAQs.
December	The Do Minimum updates were completed and the Reference Case runs were underway. Proposal put forward for alternative modelling scenarios in TMfS:07. Additional proposal put forward for improved modelling of HGVs and LGVs. FRCM Development Reports included on the LATIS Website.	The scope of information to be provided to TAYplan was discussed.
January	Reference Case update completed. Consideration given to a TEMPRO style application for Scotland using LATIS data.	LATIS transport and planning dataset provided to TAYplan. Future traffic demand matrices prepared for input into the Inverness Traffic Model.
February	Discussion of potential 2010 model updates and the Do Minimum summary note. Consideration given to releasing the Scottish Trip End Model (STEP).	Additional minor outputs were supplied to TAYplan.

Month	Model Development Discussions	Support to Planning Reform
March	Further discussion of the Do Minimum updates and the potential release of STEP.	Discussion of ongoing inputs for the TAYplan and Inverness work.
April	MVA advised that the main issues relating to relatively significant changes in future modelled occupancy of some Park and Ride sites in the Lothian area had been resolved. A copy of the STEP program was provided to Transport Scotland. Thoughts also turned to a potential 2010 rebase of LATIS.	Discussion about the possibility of preparing an alternative set of planning and travel demand forecasts for the TAYplan area based on the TAYplan preferred development plan.
May	Agreed that the creation of alternative economic scenarios and the potential release of STEP would be discussed at the next Steering Group Meeting. The 2010 APPI data collection programme was also discussed.	A methodology for undertaking revised tests in the TAYplan area was discussed. This would include the appraisal of alternative spatial strategies.
June	Issues covered included GIS enhancements, emissions forecasting, and Park and Ride.	TS explained that DPMTAG would be published in July 2010, going out to a 12 week consultation period before being finalised.
July	Model development discussions included a consideration of alternative forecast scenarios and the collection of 2010 APPI data.	Discussion of the publication of the DPMTAG Guidance and the ongoing work for TAYplan.
August	Model development discussions focused on the potential update of the TMFS:07 park and ride model, the proposal for alternative economic forecasts, and a discussion of possible STPR corridor appraisals.	MVA presented the outcomes of phase 2 of the TAYplan SDP assessment.

### LATIS Steering Group

The LATIS Steering Group consists of representatives from various directorates of Transport Scotland and the Scottish Government, covering rail and road modes, as well as planning. This ensures that the maintenance and enhancement of LATIS is aligned with the needs of potential end users. Strathclyde Partnership for Transport

(SPT) and SEStran also hold a permanent place on the Steering Group, so as to ensure good communication between LATIS and both the Strathclyde Integrated Transport Model (SITM) and the SEStran Model teams. Steering Group meetings are held on a quarterly basis. The LATIS Commission holders are also Steering Group members.

Typically, the Term Consultant reports on progress and issues encountered, providing recommendations for the future development of LATIS, which are discussed by the Steering Group and considered by Transport Scotland as the Client.

Table 3.2 provides a key point summary of the issues discussed at Steering Group Meetings during 2010.

**Table 3.2 LATIS Steering Group Meetings – Key Discussions**

Month	Key Areas of Discussion
January	<ul style="list-style-type: none"> <li>- 2009 Annual Report – valuing LATIS</li> <li>- Audit</li> <li>- April 2010 User Group Day</li> </ul>
April	<ul style="list-style-type: none"> <li>- Change of Transport Scotland management of the LATIS Commission</li> <li>- Alternative forecast scenarios</li> <li>- Second tier models</li> <li>- Conference presentations</li> </ul>
August	<ul style="list-style-type: none"> <li>- Background to procurement of Next Term Commission</li> <li>- End of Term report</li> <li>- Alternative forecast scenarios</li> <li>- Planning policy data collection</li> <li>- Key model applications</li> <li>- Second tier models</li> <li>- Conference presentations</li> </ul>

### LATIS Project Directors' Meetings

In order to ensure that LATIS represents good value for public money and is aligned with the Scottish Government's Purpose, bi-annual LATIS Directors' Meetings are held. The Project Directors' Meetings focus on areas of strategic importance to LATIS, such as finances and the future direction of the project, whilst also ensuring that LATIS remains aligned with the interests of the Scottish Ministers.

### Data Collection Commission Meetings

Bi-annual meetings are also held with the appointed data collection consultants in order to review progress. These meetings and data collection generally, are described in more detail in **Chapter 6** of this report.

### Audit Management Meetings

Audit meetings are held regularly throughout the audit period to discuss progress and any emerging issues. These meetings are generally attended by personnel from Transport Scotland, the Traffic and Transport Advisor and Auditor (TTAA) team and the model developers, typically MVA Consultancy / David Simmonds Consultancy. The audit is an iterative process of queries and responses between the auditor and auditee before audit findings are published in a series of documents relating to the different aspects of model development.

The audit management meetings are an essential component of the audit process and provide an opportunity to exchange information and discuss initial findings prior to the preparation of documentation.

## 4 User Engagement

### Overview

Effective user engagement is one of the twin aims of LATIS. As the LATIS commission widens its scope and the models are used more frequently, the user engagement programme has naturally had to expand to meet these emerging needs. Throughout 2010, Transport Scotland has continued to engage widely, fostering links that have been previously developed and have established relations with other policy areas. This chapter explains the achievements of the User Engagement programme in more detail.

### LATIS and Appraisal

An important aspect of the LATIS commission is the close link it shares with national appraisal guidance. LATIS makes an invaluable contribution towards the robust appraisal of transport schemes, as undertaken using the Scottish Transport Appraisal Guidance (STAG). This section explores exactly how LATIS contributes towards appraisals and provides case study examples.

### LATIS and STAG

The Scottish Transport Appraisal Guidance (STAG) was developed by the then Scottish Executive in 2003 and refreshed by Transport Scotland in 2008. STAG supports the Government's Purpose and National Outcomes by assessing what contribution can be made by potential transport interventions. The STAG Guidance is compliant with the H.M. Treasury Green Book, which sets the standard for all appraisal and evaluation in central government.

Effective application of STAG in appraisal of interventions depends on the quality of the data available and used. The guidance document explains that practitioners must identify appropriate data analysis requirements. Those undertaking an appraisal must ensure that the analysis of data provides sufficient evidence of the problems and / or opportunities. The analysis of the data should provide a significant contribution to establishing the basis of a STAG study. Indeed, an appropriate evidence base is essential in developing the Transport Planning Objectives.

The LATIS models allow the formation of a robust evidence base for STAG-compliant appraisal, contributing evidence in support of each of the five STAG criteria, as is illustrated in Table 4.1:

**Table 4.1 Contribution of LATIS to STAG**

STAG Criterion	Potential Contribution of LATIS
Environment	- Baseline and forecast vehicle emissions
Safety	- Baseline and forecast accident data
Economy	<ul style="list-style-type: none"> <li>- Baseline and forecast traffic flows and journey times for input into Transport Economic Efficiency (TEE) analysis</li> <li>- Baseline and forecast public transport patronage data for input into TEE analysis</li> <li>- Inputs into Economic Area and Location Impacts (EALI) analysis and the agglomeration aspect of Wider Economic Benefits</li> </ul>
Integration	<ul style="list-style-type: none"> <li>- Detailed analytical support to assessments of transport and land-use integration, most notably the assessment of both Strategic Development Plans and Local Plans</li> <li>- Support of policy integration through establishing how transport proposals contribute towards the National Indicators</li> </ul>
Accessibility and Social Inclusion	- Baseline and forecast changes in accessibility as a result of transport improvements

It can be seen from Table 4.1 that the LATIS models can make a substantial contribution towards developing the evidence base for STAG appraisals. This is critically important as it ensures that investment decisions are made on the basis of the best information available.

LATIS and DPMTAG

As part of the Scottish Government’s commitment to reforming the planning system, Transport Scotland has recently published the Development Planning Management and Transport Appraisal Guidance (DPMTAG). The purpose of the guidance is to provide greater clarity on the specific requirements for transport appraisal relating to the Scottish motorway, trunk road and rail network at different stages of the development plan preparation and development management process. This will

ensure consistency and efficiency with national transport investment and statutory approval processes.

## **Direct Communication**

### External LATIS Liaisons

In continuing to promote the culture change brought about by the move to LATIS, Transport Scotland has liaised at length with the User Group and Key Agencies. It is important to ensure that the User Group provide input to the development of LATIS going forward, to ensure it plays a central role in responding to the policy context and shapes future policy.

Supporting the Scottish Government's process of planning reform has been the centre point of the user engagement programme over the past year. Transport Scotland has engaged extensively with the Regional Planning Authorities, offering the use of LATIS to both SESplan and TAYplan to assess their respective Strategic Development Plans. In addition, ongoing support has been provided to Highland Council and Aberdeen City Council / Aberdeenshire Council in assessing their Local Development Plans.

In the context of the wider planning reform agenda, the DPMTAG Guidance was published in July 2010. LATIS will be heavily employed in supporting the application of DPMTAG going forward. Transport Scotland will continue to work with planning colleagues and the Convention of Scottish Local Authorities (COSLA) partners to ensure that LATIS continues to fulfil a central role in delivering our Key Agency commitments.

The other major stream of user engagement in 2010 has been liaison with Regional Transport Partnerships and local authorities regarding the development of regional models. As part of the 2007 LATIS Enhancement Report, Transport Scotland committed in principle to develop a top tier national model with lower tier regional travel demand models. The TMfS:07 National Model was completed in mid-2009 and initial regional model discussions were being undertaken when the 2009 Annual Report was published. In the period since that report, a regional model for the SEStran area has been under development and a model of the Inner Moray Firth

area of the Highland area has commenced. In addition, the development of a model of the Dumfries and Galloway region has been initiated and the potential for a regional model of the TACtran area has been scoped out, the findings of which were discussed at the User Group day.

LATIS has also continued to provide input to other regional models, including the:

- Aberdeen Sub-Area Model (ASAM); and
- The Strathclyde Integrated Transport Model (SITM).

A full review of LATIS model development can be found in Chapter 5.

Transport Scotland has also continued to formally and informally liaise with external stakeholders throughout 2010, including:

- other Directorates of Transport Scotland;
- the Scottish Government;
- Regional Transport Partnerships;
- Local Authorities;
- the Department for Transport;
- the Highways Agency;
- the Key Agencies;
- the General Register Office for Scotland;
- the Department for Transport;
- the Highways Agency; and
- SUSTRANS.

### **Internal Liaisons**

The LATIS team have conducted a range of discussions with UK and Scottish Government teams towards improving the inputs and outputs of LATIS and greater application of LATIS to support decision-making.

LATIS has been consulted by the UK Department of Energy and Climate Change (DECC) regarding the potential development of Devolved Administration Greenhouse

Gas Emissions Inventories (GHGI). LATIS is one of a range of tools being considered by the Scottish Government to contribute to development of the National and Devolved Administration inventories.

The LATIS team has engaged with Scottish Government colleagues regarding the evolving climate change agenda, providing support to the evaluation of project and policy contributions towards meeting the obligations of the Climate Change Scotland Act (2009). Specifically, LATIS provided inputs to the Carbon Account for Transport Report 2009. Further to this, LATIS has communicated with Scottish Government Local Air Quality policy teams regarding the quantification and evaluation of transport emissions at regional and local level. The principles of the modelling hierarchy and understanding the implications of the cumulative impacts of land-use plans on vehicle emissions were also discussed at these meetings.

A range of meetings have been held with planning, statistics and Scottish Household Survey teams in Scottish Government towards improving the evidence base of LATIS models, particularly regional and local models employed by Transport Scotland in project appraisal and scheme design.

Finally, the Scottish Government's Planning Reform agenda obliges Key Agencies, of which Transport Scotland is one, to develop map-based plans and advice to share with other key agencies and, in the longer term, with the development planning sector. To this end, Transport Scotland, as present chair of the Key Agencies Working Group, has liaised with the Key Agencies regarding the development of a web-based portal hosting links between key agency datasets, guidance and policy. LATIS already draws upon the opportunities provided by Geographical Information Systems technology and undertakes map-based analysis of transport opportunities, problems and issues in support of internal STAG-based appraisal of potential transport interventions.

### **Stakeholder Liaisons**

Transport Scotland's key forum for direct communication with actual and potential users remains the LATIS User Group. The User Group provides an appropriate forum for bringing together a wide range of existing and potential users of the LATIS service.

## LATIS User Group Days

The seventh LATIS User Group Day was held on 29 March 2010 at Hampden Park.

The March User Group day had a varied morning session focusing of key issues and applications emerging in 2009, including:

- planning reform;
- carbon accounting; and
- mapping Scotland's transport data.

The theme for the afternoon session was 'Regional Models', reflecting Transport Scotland's commitment to developing the LATIS modelling hierarchy. Transport Scotland provided an overview of their approach to regional models and was followed by presentations from NESTRANS, SEStran, SPT, and TACTRAN on their current capabilities and potential future requirements. The presentations provided the wider User Group with a good understanding of how the regional model agenda is likely to develop in the short to medium term.

This User Group also introduced an 'Ask the Panel' session, where delegates were asked to provide any relevant questions in advance, thus allowing for the preparation of full and detailed answers.

## User Group Day Feedback

User Group Days are a key opportunity for Transport Scotland to understand how LATIS is perceived amongst the User Group and what improvements they would like to see being made. General satisfaction with the 29 March User Group Day was high, with 82% of survey respondents explaining that the day was either 'Very Useful' or 'Quite Useful'.

The User Group Day exit questionnaire asks for suggestions on what elements of LATIS delegates would like to see improved. A sample of comments from the previous two events is provided in Table 4.2 below:

**Table 4.2 LATIS User Group Day Exit Questionnaire Feedback**

Comment	Actions
Development of second tier / regional models.	Transport Scotland has worked with SEStran and Dumfries and Galloway Council in developing regional models. Ongoing support has also been provided to Highland Council and SPT.
Better communication of the planning and economic input assumptions to TELMoS for each TMfS planning scenario.	Creation of a new TELMoS section on the LATIS website and improved feedback meetings with planning authorities.
Ability to assess impacts of the model at a more local level.	New second tier / regional models suited towards more local assessment.

LATIS Model Request Form and LATIS User Satisfaction Form

The LATIS Model Request Form must be filled in before the modelling capability and / or its data are released for use. As part of the request process, users must agree to fill in a User Satisfaction Form at the end of their application. Both forms have been updated during 2010 in line with evolving requirements and requests from LATIS.

**LATIS Training**

Training Sessions

A dedicated two-day training programme for the use of the LATIS modelling capability is available to model users. The content is largely generic but, dependent on specific needs, it can be tailored to meet the trainee’s requirements, for example TMfS:05a, TMfS:07 or the FRCM.

Formal training has been provided to Jacobs this year with various training sessions on various aspects of the modelling provided to Halcrow and Aecom on request. In addition, an overview of LATIS capabilities was provided to Transport Scotland economists.

Areas typically covered in training include instruction on using the road, public transport and demand models, as well the interactions between TMfS and TELMoS.

In addition, tuition is provided on undertaking secondary analysis, such as environmental assessments or congestion analysis. Training is interactive, with delegates having the opportunity to work through examples and ask questions.

Support, guidance documentation and training is available throughout for each model application.

## **Conferences**

The LATIS team has continued to promote the service and wider best practice through appearances at the following prestigious conferences during 2009-2010:

- European Transport Conference (ETC) (5-7 October 2009);
- National Environmental Protection UK Conference (4 November 2009);
- Scottish Transport Applications and Research (STAR) Conference (24 March 2010); and
- Transport Practitioners' Meeting (TPM) (20-22 July 2010).

LATIS presented at the National Environmental Protection UK conference which looked at the impacts of cumulative planning decisions on air quality, with particular reference to derived transport demands of land use development.

The LATIS paper at the STAR Conference explained how the LATIS models can be used to calculate a current and forecast national 'carbon footprint'. The Scottish Government has made a high profile commitment to reducing Scotland's carbon emissions and Transport Scotland are eager to demonstrate how LATIS can play a role in facilitating policy in this area.

The paper for the ETC 2009 and TPM Conferences focused on the role of Transport Scotland in supporting the Scottish Government's planning reform agenda. It demonstrated Transport Scotland's new and more integrated approach to transport and land use planning. The presentation explained how the LATIS team has worked with regional authorities to develop a consistent and more pragmatic approach in preparing strategic land-use plans.

Looking ahead, the LATIS team have had an abstract accepted for the forthcoming European Transport Conference (ETC) in October 2010. The theme for the ETC

abstract is 'Are models worth it?', exploring how Transport Scotland has established a qualitative and quantitative valuation methodology for LATIS. The paper asks why it is important to value models and explores or methodological approach to valuing LATIS.

The presentation of LATIS at conferences is key to raising the profile of LATIS and the work of Transport Scotland. In addition, Transport Scotland's presence at conferences allows us to explore the approach of other organisations to strategic transport modelling, development planning and environmental appraisal.

### Model Application Meetings

In addition to the general user engagement meetings described above, there have been a large number of meetings held to discuss the detailed requirements of specific applications of the LATIS modelling capability, agree any modifications or assumptions and to discuss the resulting model outputs. There has been a specific focus on applications related to the planning reform process. These meetings are extremely useful as they allow potential users to best understand how to use LATIS and appropriately interpret its outputs.

### LATIS Newsletters

We have continued to issue LATIS Newsletters at three monthly intervals. These are an important means of communicating with all stakeholders. The newsletters generally cover a wide range of topics including model development, data collection and liaison initiatives. All of the published newsletters to date can be found on the LATIS Website. In 2009-2010, the newsletters have, where possible, provided project case studies highlighting the role that LATIS has played in their appraisal and subsequent decision-making.

### **Indirect Communication**

The completion of the TMfS:07 National Model meant that the user engagement materials had to be updated to reflect the improvements in the LATIS service. This included improving the LATIS website and reviewing the content of user manuals, guides, and brochures.

## LATIS Website

The LATIS Website continues to play an important role within the overall commission, providing a cost effective means of engaging with the User Group and other parties interested in LATIS. In addition, the website hosts all LATIS documentation, including technical modelling reports, manuals, guides, newsletters, and brochures.

A number of improvements have been made to the website during 2009-2010, including:

- a new section on the SEStran Regional Model;
- updated the environmental analysis page for the National Model, which includes more detailed descriptions and case studies;
- updated congestion mapping; and
- a new traffic emissions page, focusing on how emissions are modelled within TMfS.

A website satisfaction questionnaire is also available on the homepage of the LATIS Website. It is intended that responses gathered from this questionnaire will be used to assist in the maintenance and development of the website. We would like to encourage those who visit the website to provide their feedback.

Between August 2009 and July 2010, the LATIS Website has recorded a monthly average of around 2,800 visits.

Peaks in visits to the website are concentrated around the User Group Days and other major LATIS events. The website continues to be a well used resource, with the majority of entry pages being via the modelling portal of the website.

The Transport Scotland LATIS portal page can be found at <http://www.transportscotland.gov.uk/strategy-and-research/scottish-transport-analysis-guide/LATIS>. This website hosts high level information on LATIS as well as links to the STAG Guidance.

In addition to the current reports available on the website, an archive of all published documents and presentations is maintained and any required information can be provided on request.

## LATIS Brochure and LATIS Non-Technical Guide

The LATIS Brochure was revised to coincide with the release of the new TMfS:07 National Model. In addition, a new and TELMoS specific brochure was developed, with the aim of providing a high level overview of the land-use model.

The LATIS Non-Technical Guide was also updated to correspond to the TMfS:07 model. The Guide continues to be available on the LATIS Website and is presented as a series of web-based chapters with links to a stand-alone glossary to explain technical terms.

## LATIS Guide for Users

The LATIS Guide for Users (formerly known as the LATIS Protocol Report) has also been updated to reflect the new LATIS models.

## Other Documentation

All other documentation, including user manuals and model development reports, remain on the LATIS Website.

## 5 Model Development

### Overview

Model development remains focused on supporting the appraisal of proposed transport interventions to support decision-making by Scottish Ministers. Following the completion of TMfS:07 and the FRCM prior to this annual report period, the main areas of model development in 2010 has been the development of second tier models.

### SEStran Regional Transport Model

In March 2008, Transport Scotland committed to provide modelling support and advice for the Forth Replacement Crossing Team. As part of this project, the FRCM, a sub-area model of TMfS:07 was developed in SATURN (Road model) and Cube Voyager (Public Transport model and Demand model). In August 2009, the South East Scotland Transport Partnership (SEStran), in partnership with Transport Scotland, extended the FRCM to encompass the entire SEStran area.

Figure 5.1 provides a map of the coverage of the SEStran model:



**Figure 5.1 SEStran Model Coverage**

Key features of the model

Some key features of the SEStran model include:

**Software**

- SATURN (Road Model) and Cube Voyager (PT & Demand models) software.

**Network & Zones**

- 470 zones in total covering the SEStran region;
- - 335 internal zones (296 simulation zones, 39 buffer zones) ;

- - 36 external zones; and
- - 99 Park and ride site specific zones (not all used).

The TMfS:07 network was used as the basis for the development of the SEStran SATURN Model network. Additional road links were added where necessary in order to achieve a more detailed representation of the traffic movements through the SEStran area. All A-class roads and a number of key B-class roads are included.

The PT network has been based on the SATURN road network with the addition of the TMfS:07 rail network. The modelled network includes the following elements: road network; heavy rail; road and rail zone connectors; and walking connections between rail stations and the road network. Inter urban bus, intra urban bus and rail services have been coded to a base year of 2007.

### Data Sources

Data sources used in the development of the model include:

#### *Calibration and Validation traffic counts:*

- Scottish Road Traffic Database (SRTDb);
- local authority traffic counts;
- traffic Counts used for TMfS:05 calibration / validation;
- Scottish Borders Council traffic counts; and
- Forth Replacement Crossing Model traffic counts.

#### *Journey Time data:*

- journey time surveys; and
- traffic speed and location data provided by ITIS.

#### *Demand Matrices (based on TMfS:07 National Model):*

- 2001 Census travel-to-work;
- roadside interviews;
- National Rail Travel Survey; and
- Origin Destination surveys of Inter Urban Bus Travel.

### *Approximate Model Run Times:*

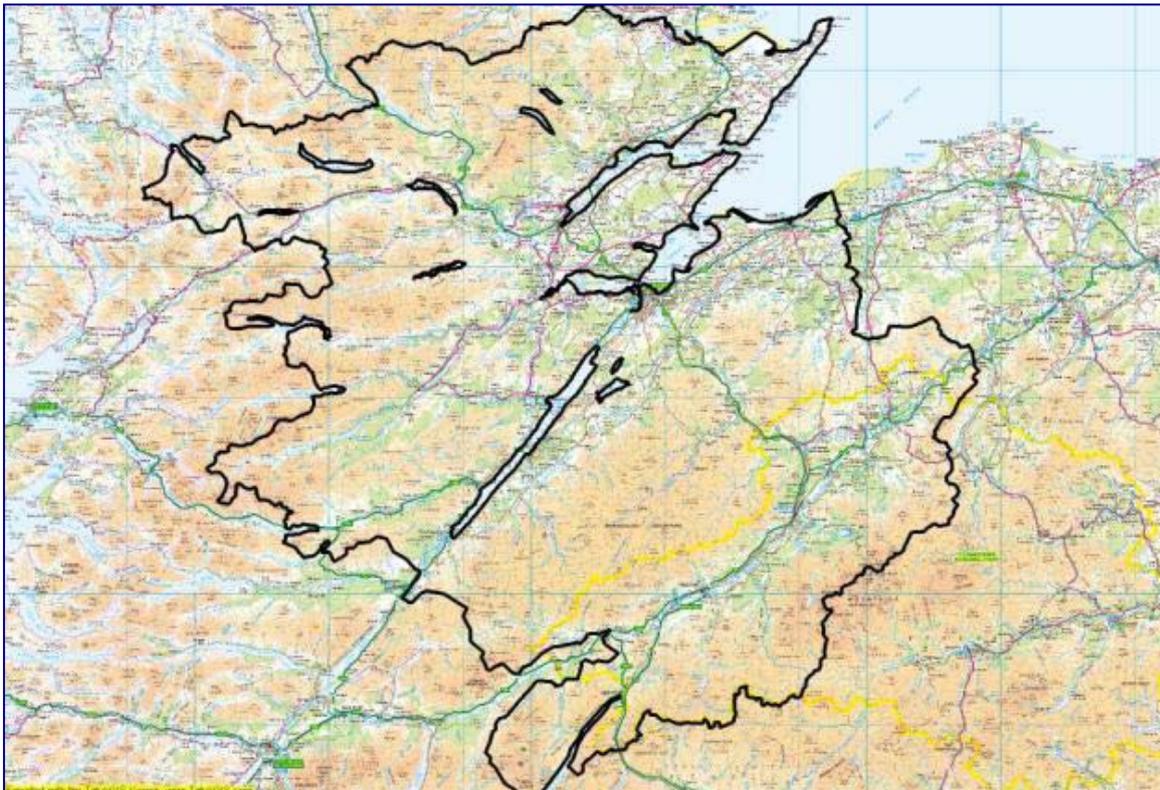
- full demand model run = 10 hours;
- road model only = 15 minutes; and
- PT model only = 2 to 3 hours.

### *Interaction with the 07 National model:*

- Trip ends are derived within the SEStran Model. It should be noted that many aspects of the base model have been derived from the national model, including school trips and Park and Ride trips.

## **Moray Firth Transport Model**

The Highland Council commissioned the development of a multi-modal transport model for the “travel to work” catchment area of the city of Inverness in February 2010. The model coverage is illustrated in Figure 5.2 below.



**Figure 5.2 Moray Firth Transport Model Coverage**

The model is based in 2009 with “out of season” AM and PM peak periods and incorporates a variable demand model with road and public transport assignment modules developed using VISUM software. Traffic data was supplied by Highland Council and, where possible, from the Scottish Road Transport Database (SRTDb) held by Transport Scotland. In addition, new data was collected in the form of:

- roadside interviews;
- turning counts;
- journey time surveys; and
- public transport surveys.

The model is to be used to assist Highland Council with a number of aspects relating to the operation and development of the area covered by the model, including scheme assessment and local plan development impacts.

### Dumfries and Galloway Regional Transport Model

Dumfries and Galloway Council commissioned the development of a regional transport model. The model will comprise a traffic model that will cover the entire local authority area with a focus on the Dumfries travel-to-work area, as is illustrated in Figure 5.3 below:



Figure 5.3 Dumfries and Galloway Regional Model Coverage

The model will be linked to the national LATIS models forming a complementary regional model in line with the overall modelling approach envisaged by Transport Scotland. The national model will principally provide data on external traffic movements at the edges of the modelled area in the base year and forecast years. It will also provide a potential source of data for local models throughout Dumfries and Galloway.

It is anticipated this Dumfries and Galloway model will be used to:

- assist in the development of the Local Development Plan (LDP), in particular by facilitating the preparation of detailed transport and travel information for Transport Scotland in their requirements for DPMTAG;
- take forward plans for the proposed Dumfries Southern Bypass or alternatives to it;
- assisting in any future modelling in connection with proposals for the A75/A709 motorway links;
- appraising SWESTRANS' own regional transport initiatives (for which neither TMfS:07 or TMfS:05 would be suitable in their current form); and
- assisting in the formulation and evaluation of the next Regional Transport Strategy.

### **Enhancements to TMfS:07**

While the focus during 2010 has been on the development of regional models, we have continued to invest in ensuring the TMfS:07 is fit for purpose.

#### Do Minimum and Reference Case Updates

The TMfS Do Minimum and Reference Cases were updated in early 2010 to take account of the interventions proposed by the Strategic Transport Projects Review. Throughout this process, we liaised closely with the term consultant to ensure that the updates reflected Transport Scotland's future expectations.

#### Assembly of Planning Policy Inputs (APPI)

Transport Scotland and Scottish Water has undertaken a joint exercise to collect information on likely future development across Scotland. Transport Scotland commissioned the exercise known as APPI – Assembly of Planning Policy

Information- in the past; most recently in 2005 and 2007. This involved contacting all Local Planning Authorities and National Park Authorities and requesting information on planning permissions, allocations and other proposals for long term development. The information was sought for seven categories of land use.

This information provides a key input to the forecasts of future land-use and transport patterns in LATIS. It will also inform Scottish Water's strategic planning process.

## 6 Data Collection Commission

### The Data Collection Commission

The Data Collection Commission began in 2007 and partitioned Scotland into three broad geographical regions, as follows:

- **North**, which includes Aberdeen City, Aberdeenshire, Angus, Argyll & Bute, Dundee City, Moray, Perth & Kinross and the Highlands and Islands;
- **South-East**, which includes Borders, City of Edinburgh, Clackmannanshire, East Lothian, Falkirk, Fife, Midlothian, Stirling and West Lothian; and
- **South-West**, which includes Dumfries and Galloway, East Ayrshire East Dunbartonshire, East Renfrewshire, Glasgow City, Inverclyde, North Ayrshire, North Lanarkshire, Renfrewshire, South Ayrshire, South Lanarkshire and West Dunbartonshire.

The Data Collection Commission provides support for the data requirements of the LATIS commission, but also general data requirements of Transport Scotland.

A bi-annual progress meeting is held between the DCC and the LATIS team to discuss progress to date and forthcoming workloads. Meetings are held between Transport Scotland and the Data Collection consultants on an 'on-demand' basis.

### 2009-2010 Data Collection

2009-2010 has seen data collection in support of second tier (regional) model development, Transport Scotland traffic model development, and in ongoing Concessionary Fares monitoring.

The DCC was used by Transport Scotland to undertake traffic surveys and roadside interviews in the Inverness area to support the development of the Moray Firth Transport Model (MFTM) and assessment of the impact of Highland Council's proposed local development plan upon the trunk road network in conjunction with the proposed project 18 of the STPR. Similar surveys were undertaken in two batches to support the appraisal of options for proposed STPR intervention 3; A82 Targeted Road Improvements. Finally, between the publication of the Annual Report 2009 and the end of 2009, a large number of traffic surveys were procured through the DCC to

support development of a strategic traffic model of the trunk road network through Glasgow (note, 2009 costs in Table 8.3 reflect this work).

### Transport Scotland Concessionary Fares

Transport Scotland is responsible for running and monitoring the Scotland-wide concessionary travel scheme, which provides free bus travel throughout Scotland for elderly and disabled people. Bus operators issue tickets for each concessionary passenger and make a claim to Transport Scotland on the basis of their passenger records. In order to ensure that operator reimbursement is accurate, the LATIS DCC carries out a number of onboard surveys to validate operators' claims.

This has been a significant stream of work throughout 2009-2010, as the data collection contractors have conducted a rolling programme of onboard bus surveys. Indeed, this support has now been ongoing for almost three years. The use of the LATIS DCC has reduced procurement costs and allowed enumerators to get into the field more quickly. In 2009-2010, efforts have been made to improve the cost effectiveness and quality of outputs of the DCC over alternative data collection mechanisms available to the National Concessionary Fares team. This has been achieved primarily through improved cost management and reviewing the scope and scale of surveys required in verification processes.

### External Requests for Data

Throughout 2009-2010, there has again been a number of external parties who have requested the provision of data from LATIS. Examples of such data requests are outlined in Table 6.1:

**Table 3.1 Example LATIS Data Requests**

Data Item	Applicant
A9 / A96 count data for Inverness East Link Road.	SIAS
Count data, Lidl Inshes Retail Park.	JMP
Stratton, Inverness.	Inverness Estates Limited

## **Accessing LATIS Data**

Data from the modelling capability and the LATIS databank are available to support studies being undertaken by transport or land-use planners or other users across Scotland. A LATIS Model Request Form is required to be completed and submitted via the LATIS website to Transport Scotland prior to any data being released. A charge may be incurred for data requiring model runs to be undertaken.

## **Summary**

2009-2010 has been a relatively quiet year in terms with respect to specific data collection for the purpose of the LATIS commission. This is not in itself a bad thing – it simply reflects that part of the LATIS investment cycle where there is little activity in terms of refreshing model data. At present, the focus is on applying the models rather than updating them or undertaking further development. Nonetheless, the LATIS DCC has continued to play an important role in supporting the National Concessionary Travel scheme, and the LATIS databank has been used to provide data to various stakeholders.

## 7 LATIS Applications

### Overview

LATIS provides robust quantitative evidence on the impact of a scheme or policy, which in turn, helps to determine the manner in which each particular intervention will contribute towards meeting the Scottish Government's objectives and serving its Purpose. This chapter will review applications of LATIS during the Annual Report period of 1 September 2009 to end of 31 August 2010.

In total, there have been 24 separate applications of LATIS, including several studies of national importance. LATIS is also now being used in other policy areas, with an increasing number of planning and land use related applications. In addition, consultants working on behalf of private developers are also using LATIS to inform strategic transport flows relevant to their developments.

### The Strategic Transport Projects Review

One important point of note has been the steady emergence of applications related to taking forward the Strategic Transport Projects Review (STPR). The STPR was a review and prioritisation of the schemes and policies to be included in the Scottish Government's long-term capital investment programme for the strategic transport network. The modelling capability was used extensively throughout the study to compare and contrast a wide range of surface transport interventions.

The findings of the study were reported in late 2008 and outlined a range of long-term strategic commitments to improve Scotland's land-based transport infrastructure, ranging from major road and rail schemes to measures such as improved road safety and integrated ticketing.

The STPR outcomes are central to shaping the long-term future of transport in Scotland. The outcomes tackle the problems and issues within the Scottish transport system, whilst also realising opportunities for economic improvement. It is essential that LATIS facilitates the smooth delivery of these outcomes. In this respect, LATIS has been used during 2010 to support:

- rail improvements in the west of Scotland (STPR Intervention 24 – West of Scotland Strategic Rail Enhancements);
- enhancements to the A82 (STPR Intervention 3 – Targeted Programme of Measures to Improve Road Standards between Glasgow and Oban / Fort William (A82));
- the assessment of strategic Park and Ride sites (STPR Intervention 8 – Strategic Park and Ride / Park and Choose Strategy); and
- the assessment of intelligent transport systems on parts of the road network (STPR Intervention 9 – Managed Motorways).

### STPR – West of Scotland Rail

- Applicant: Jacobs Consultancy;
- Model User: Jacobs Consultancy;
- Ultimate Client: Transport Scotland; and
- Model Version: TMfS:07.

One of the proposed STPR interventions is to implement a package of improvements to the rail network in the west of Scotland. Jacobs Consultancy used LATIS to assess demand and assignment changes resulting from this intervention.

### STPR – A82

- Applicant: Jacobs Consultancy;
- Model User: Jacobs Consultancy;
- Ultimate Client: Transport Scotland; and
- Model Version: TMfS:07.

Transport Scotland committed to improving the quality of the A82 between Glasgow and Oban / Fort William. The aim of this particular study was to define the likely improvements that could be taken forward, which will reduce accident levels and severity on the route. Jacobs Consultancy used traffic survey data available from LATIS and interrogated the TMfS:07 model to establish travel demand on key routes along and near the A82.

### STPR – Managed Motorways

- Applicant: Mouchel;

- Model User: MVA Consultancy;
- Ultimate Client: Transport Scotland; and
- Model Version: TMfS:07.

Intervention 9 of the STPR promotes using intelligent transport systems on parts of the road network to enhance capacity and operations including the application of measures such as hard shoulder running, variable speed limits, ramp metering and average speed enforcement. Mouchel used a range of transport and planning policy data from LATIS to develop the STPR recommendations into proposed operational regimes. This included the provision of assigned road traffic data for the base and forecast years from which vehicle flow and journey time information was extracted for further analysis.

## **Supporting Planning Reform**

### SESplan Strategic Development Plan

- Applicant: MVA Consultancy;
- Model User: MVA Consultancy;
- Ultimate Client: SESplan; and
- Model Version: TMfS:07.

SESplan is one of the new strategic planning authorities created as part of the Scottish planning reform process. MVA Consultancy was asked by Transport Scotland to consider the potential impact of their Strategic Development Plan (SDP) on the strategic transport network. The transport implications of the SDP were assessed and a package of transport measures were identified which may be required to accommodate the plan. The study also quantified the use of new investments by development traffic and used this as a means of informing decisions on contributions.

### Rural West Edinburgh Local Plan

- Applicant: Halcrow;
- Model User: Halcrow;
- Ultimate Client: West Edinburgh Planning Framework Board and City of Edinburgh Council; and

- Model Version: Forth Replacement Crossing Model.

Halcrow were commissioned to consider the transport related impacts of the Rural West Edinburgh Local Plan. The Forth Replacement Crossing Model provided a suitable basis for modelling and assessing the transport impacts of potential developments in West Edinburgh. The modelling simulated the proposals within the study area by adjusting the travel demand within matrices, as well as the road and public transport system infrastructure and services. Halcrow undertook the DMRB stage II study of the detailed design and assessment of junction layouts using TMfS.

### Dunfermline Strategic Land Allocation Assessment

- Applicant: SIAS;
- Model User: SIAS;
- Ultimate Client: Fife Council; and
- Model Version: TMfS:07.

Fife Council is assessing the allocation of strategic land in the Dunfermline area. They commissioned SIAS to develop a 2009 base microsimulation model of the wider Dunfermline Area, which includes traffic generation and distribution characteristics of the proposed development area, and the development of various future year model scenarios. LATIS provided cordon matrices and future year growth forecasts to feed into the microsimulation model.

### SITLUM Re-Zoning

- Applicant: TRL;
- Model User: MVA Consultancy;
- Ultimate Client: Strathclyde Partnership for Transport; and
- Model Version: TMfS:07.

As part of our commitment to regional models, Transport Scotland has been working with SPT to develop closer links between TMfS and their modelling suite. One element of this engagement is the re-zoning of the SPT's SITLUM land-use and transport model to make it contiguous with TMfS:07 / TELMoS. It is anticipated that any future enhancement of the Strathclyde Integrated Transport Model (SITM) will also include adjustment of the zonal definition to make it consistent with the LATIS

national models. LATIS also provided base and forecast HGV traffic flows for input to the SITLUM forecasting procedures.

### Bishopton Community Growth Area – Stage 3

- Applicant: JMP;
- Model User: MVA Consultancy;
- Ultimate Client: BAE Systems Properties Limited; and
- Model Version: TMfS:07.

The LATIS service has been used extensively to advise on developments in the Bishopton area. The purpose of this element of the study was to undertake an operational assessment and design exercise for a proposed new motorway junction at the A8 overbridge near Bishopton. The LATIS models were used to determine forecast traffic growth to 2032.

## **Regional Models**

### Moray Firth Transport Model

- Applicant: AECOM;
- Model User: AECOM;
- Ultimate Client: Highland Council and Transport Scotland; and
- Model Version: TMfS:07.

Highland Council is developing a VISUM model of the Moray Firth area, with the aim of assessing major transport interventions within the area. LATIS was used in the development of this model. LATIS was firstly used to provide a highway sub-area of the modelled area. In addition, a large volume of data were also provided from the LATIS databank, including roadside interviews; manual classified and junction turning counts; average peak-period rail and bus service head transport origin-destination surveys; and observed and modelled rail service passenger boarding and alighting for rail stations within north and north east Scotland.

## Other Transport Planning Applications

### Commonwealth Games – Athletes Village

- Applicant: WSP;
- Model User: MVA Consultancy;
- Ultimate Client: City Legacy (developer for the Commonwealth Games Athletes Village); and
- Model Version: TMfS:05a.

AECOM previously used TMfS:05a to feed into a model of the Clyde Gateway area (in the East End of Glasgow). Much of the Commonwealth Games infrastructure will be developed in the Clyde Gateway area, including the Athletes Village. WSP requested the data from 2017 Do Minimum scenario developed for AECOM, although with revised land-use and infrastructure inputs. These data were used to feed into a Transport Assessment of the Athletes Village site.

### A90 West of Dundee Park and Ride Study

- Applicant: Colin Buchanan;
- Model User: MVA Consultancy;
- Ultimate Client: TACTRAN; and
- Model Version: TMfS:07.

TACTRAN are investigating a proposal to open a new Park and Ride site on the A90 to the west of Dundee, an investment that would support attainment of STPR outcomes. The purpose of this study was to develop a business case for the provision of the Park and Ride site.

LATIS model skims were used to determine private transport demand, time, and distance. The skims were then combined with more detailed demand data from the Dundee city centre Paramics model. The complete dataset was then fed into bespoke appraisal software developed by Colin Buchanan (PRIDE).

### South Stirling Park and Ride Study

- Applicant: SIAS;
- Model User: SIAS;

- Ultimate Client: TACTRAN and Stirling Council; and
- Model Version: TMfS:07.

TACTRAN and Stirling Council commissioned a STAG study of a potential new Park and Ride site to the south of Stirling. This is again in keeping with the STPR outcome of developing strategic Park and Ride sites. LATIS made a significant contribution to the study, providing; observed data from existing Park and Ride sites; observed and forecast strategic bus trip data for journeys from the south of Stirling Edinburgh, Falkirk, and Glasgow; a TMfS base year run with the Park and Ride site included; and select link counts on existing Park and Ride corridors.

#### Glasgow 2014 Transport Strategic Plan – Spectator Demand

- Applicant: AECOM;
- Model User: AECOM;
- Ultimate Client: Glasgow City Council; and
- Model Version: TMfS:07.

AECOM were commissioned by Glasgow City Council to contribute towards the Strategic Transport Plan for the 2014 Commonwealth Games. Specifically, the Council were keen to understand where the trips of event spectators are likely to originate. AECOM used the TMfS 2012 Do Minimum road and public transport skims as an input to a gravity model.

#### A737 Dalry Bypass

- Applicant: MVA Consultancy;
- Model User: MVA Consultancy;
- Ultimate Client: North Ayrshire Council; and
- Model Version: TMfS:07.

North Ayrshire Council commissioned MVA Consultancy to carry out an economic evaluation of the potential impact of the proposed A737 Dalry Bypass on the Irvine Bay Regeneration Area. TMfS was used to establish changes in generalised cost as a result of the bypass. The cost changes identified were fed into TELMoS to provide an estimate of the impact on local employment and GVA.

## Clyde Gateway Infrastructure and Enabling Works

- Applicant: Halcrow;
- Model User: Halcrow;
- Ultimate Client: Clyde Gateway Urban Regeneration Company; and
- Model Version: TMfS:05a.

Halcrow are working as part of the wider Clyde Gateway regeneration project and were commissioned to consider preliminary design of a signal controlled junction. The aim of the project is to facilitate future access to the Shawfield area. Traffic flow data were extracted from TMfS to contribute towards an estimation of expected demand at the new junction.

## A76 Closure, Mauchline

- Applicant: Amey;
- Model User: MVA Consultancy;
- Ultimate Client: Transport Scotland; and
- Model Version: TMfS:07.

Transport Scotland planned to close the A76 at Mauchline for structural repairs and commissioned Amey to consider the traffic impacts and potential diversion routes. Journey origins and destinations were extracted from TMfS to establish expected routing as a result of the road closure. The traffic data were used to feed into a wider roadworks strategy, ensuring minimum disruption to motorists' journeys.

## M8 Roadworks Strategy

- Applicant: Amey;
- Model User: Amey;
- Ultimate Client: Transport Scotland; and
- Model Version: TMfS:07.

This application of the LATIS service was similar to that of A76 closure at Mauchline discussed above. As part of the M74 Completion, Transport Scotland was undertaking a major project to install two new motorway gantries on the M8 between

junctions 22 (Plantation) and 23 (Dumbreck). The £1.1 million project took seven weeks and required extensive roadworks between the aforementioned junctions.

LATIS was used to advise on the traffic characteristics of that section of the motorway, including; an origin-destination profile; the impact of the roadworks on traffic flows and journey times; the impact on specific motorist types; potential diversion routes; available public transport capacity; and a Variable Messaging Sign strategy.

### Dundee Station Enhancement

- Applicant: Steer Davies Gleave;
- Model User: MVA Consultancy;
- Ultimate Client: Dundee City Council and TACTRAN; and
- Model Version: TMfS:07.

SDG was commissioned by Dundee City Council and TACTRAN to advise on a package of enhancements for Dundee rail station. The aim of the project is to demonstrate the benefits of enhancing the concourse level of the station and its immediate environs in order to secure rail industry stakeholder support for the work and demonstrate it has a greater value than a do minimum option.

Rail demand forecasts were extracted from LATIS to help SDG develop the business case for the new station.

### Gogar Interchange - Demand and Revenue Modelling

- Applicant: MVA Consultancy;
- Model User: MVA Consultancy;
- Ultimate Client: Transport Scotland; and
- Model Version: TMfS:05a.

MVA Consultancy was commissioned by Transport Scotland to undertake demand and revenue forecasting for the proposed new rail station and transport interchange at Gogar. This will inform Transport Scotland in terms of train planning and their discussions with the operator. It is important that a high degree of granularity is achieved in the analysis. The forecasting was undertaken using a revised version of

TMfS:05a, which was previously used to assess the Edinburgh – Glasgow Improvement Programme (EGIP).

#### Strathclyde Police Force Headquarters

- Applicant: Halcrow;
- Model User: Halcrow;
- Ultimate Client: Strathclyde Police; and
- Model Version: TMfS:07.

Strathclyde Police are planning to move to a new headquarters in the Dalmarnock area. Halcrow requested traffic flow data from the model to provide baseline traffic data against which to assess the impact of the proposed development.

#### Glasgow Airport Strategic Transport Network Study

- Applicant: MVA Consultancy;
- Model User: MVA Consultancy;
- Ultimate Client: British Airports Authority (BAA); and
- Model Version: TMfS:07.

MVA Consultancy was commissioned by BAA to assess the various issues pertaining to the strategic transport network around Glasgow Airport. The work includes documenting the strategic transport network serving the Airport and its performance, assessing how it impacts on the operation of the Airport and identifying problems and opportunities. LATIS was used to identify congestion hotspots on the strategic transport network serving the airport. Select link analysis of demand at the airport was also undertaken.

#### North Lanarkshire Annual Economic Review

- Applicant: MVA Consultancy;
- Model User: MVA Consultancy;
- Ultimate Client: North Lanarkshire Council; and
- Model Version: TMfS:07.

MVA Consultancy was commissioned by North Lanarkshire Council to prepare an Annual Economic Review of trends within the area. The initial element of the work involved baselining of the North Lanarkshire economy, explaining key strengths and weaknesses in a non-technical fashion. The overarching theme for the review was future opportunities and challenges facing the North Lanarkshire economy as it emerges from recession.

MVA also prepared a transport article to feed into the review. LATIS was used to understand the difference in travel times / accessibility in North Lanarkshire as a result of forthcoming transport improvements, such as the M80 completion.

### Perth Paramics Model

- Applicant: SIAS;
- Model User: MVA Consultancy;
- Ultimate Client: Perth and Kinross Council; and
- Model Version: TMfS:07.

Perth and Kinross Council has commissioned a Paramics model of Perth town centre and the surrounding area. LATIS provided cordon matrices to refine the strategic routing into the Paramics model.

## **Environmental Applications**

### Quantitative Greenhouse Gas Impact Assessment – Spatial Planning Policy Assessment

- Applicant: MVA Consultancy;
- Model User: MVA Consultancy;
- Ultimate Client: Scottish Government; and
- Model Version: TMfS:07.

The Scottish Government commissioned MVA Consultancy to examine the feasibility of developing a robust and practical method of applying quantitative greenhouse gas assessment to the development of spatial planning policies and whether such a method could be integrated with or linked to the strategic environmental assessment (SEA) process. The aim of the project was to identify a simple yet robust method for

quantifying the GHG impacts of alternative spatial planning policies suitable for application in the Scottish planning system. This should help policy makers to identify where changes to spatial planning policy could significantly reduce emissions or, where it is concluded that policy cannot be changed, make explicit the consequences of that decision in terms of GHG emissions.

TMfS:07 was used to inform the development of a method for quantifying GHG impacts of spatial planning policies from changes in transport. Data on trip behaviour was taken from existing base year model runs concerning, for example, journey purpose, mode share, trip length, speeds, and travel costs.

The data were used to help estimate the likely additional traffic generated by different types of development at different locations and the associated trip length and average speed of these additional trips, which forms the basis of the tool for appraising the traffic-related impacts of the different plans.

## **8 Demonstrating Value for Money**

### **Overview of 2009-2010**

2009-2010 has been both an important and challenging year for the LATIS Commission. This Annual Report period has witnessed the emerging use of TMfS:07, the development of the SEStran, Highland, and Dumfries and Galloway regional models, and ongoing LATIS support across a range of areas, including planning reform.

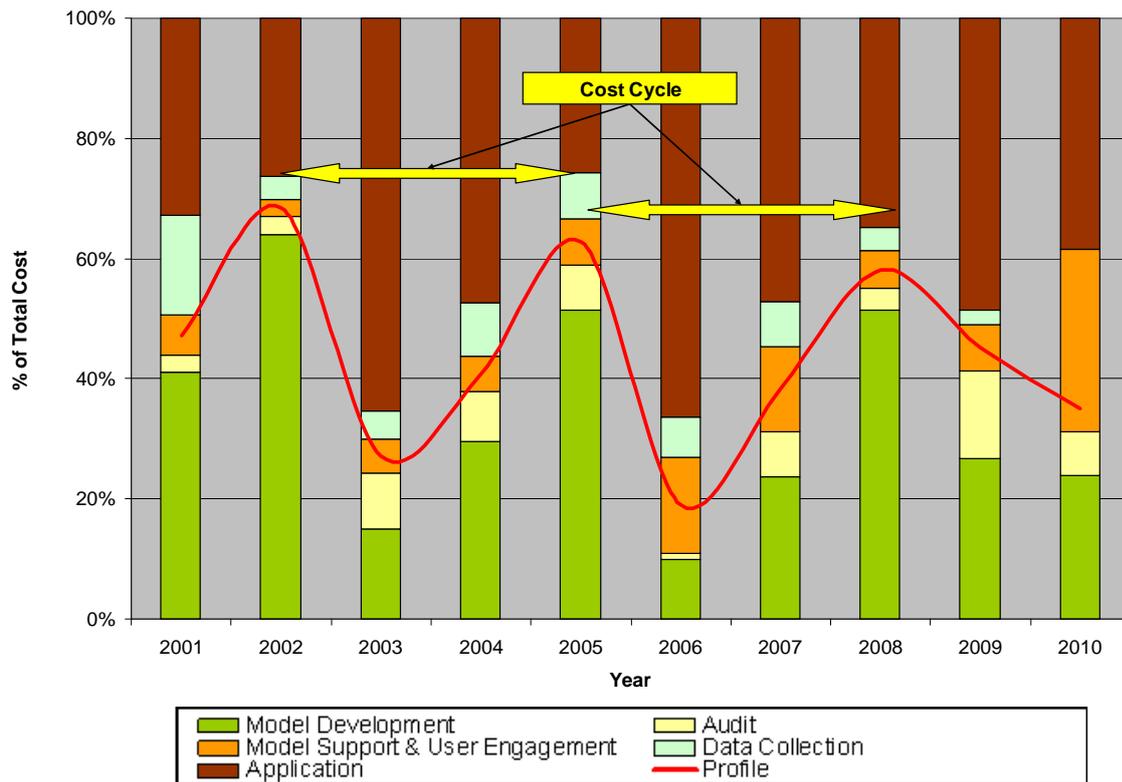
In terms of applications, LATIS has continued to extensively support strategic transport applications, whilst also contributing towards planning reform as presented in Chapter 7. LATIS is also being used more frequently on private development applications.

Transport Scotland is striving to ensure that LATIS remains at the leading edge of strategic transport and land-use modelling. In this chapter, we summarise the ways in which our investment in LATIS represents good value for money and promises added value through future application to projects and policy appraisal.

### **The LATIS Model Life-Cycle**

When considering the valuation of the costs and benefits of the LATIS Commission to Transport Scotland, it is important to note that the composition of costs varies significantly from year-to-year, reflecting the data collection, model calibration and validation, audit, release and model application stages associated with each significant model update.

The LATIS investment lifecycle tends to be between three and four years. A concentrated period of model development and data collection is typically preceded by intensive application, model support, and user engagement. 2010 lies towards the end of the 2007/08 investment cycle and the beginning of a new model lifecycle (development of regional models), as can be seen in Figure 8.1 below:



**Figure 8.1 Model Development Cost Trends**

This Annual Report will focus primarily on the costs of LATIS in 2009-2010 but it is important to keep in mind the longer-term investment lifecycle. Note that data collection costs not associated with LATIS workstreams, for example, Concessionary Fares monitoring, have been excluded from the above analysis.

### **Our Approach to the Valuation of the LATIS Commission**

The value realised through investment in LATIS is outlined in the following sections in two ways:

- Economics; and
- Efficiency and Effectiveness.

The analysis of the economics of LATIS is based in a comparison of LATIS commission costs against the costs of the next best alternative (opportunity costs). LATIS is shown to offer a monetary saving to Transport Scotland over a possible alternative.

However, focussing only on the monetised costs and benefits of LATIS underestimates the benefits of the service. It is argued that LATIS is both more efficient and more effective than the alternative modelling strategy contemplated above, as the model can be applied more quickly and incisively towards supporting scheme appraisal than would otherwise be the case, the average cost of application falls and user familiarity with the model increases over time.

Economics

In understanding the value of LATIS to Transport Scotland, the first step is to consider what each LATIS user would have undertaken in the absence of the service. This question is asked of prospective users of LATIS when they complete a LATIS Application Form, before the modelling capability and / or its data are released for use. The vast majority of responses to this question note that a bespoke model would have been produced, as shown in Table 8.1 below.

**Table 8.1 What would be undertaken in the absence of LATIS?**

Application	What would be undertaken in the absence of LATIS?
Commonwealth Games – Athletes Village.	Not specified.
Clyde Gateway Infrastructure and Enabling Work.	A number of local models would have been used.
Gogar Interchange – Demand and Revenue Modelling.	Bespoke spreadsheet modelling and Passenger Demand Forecasting Handbook methodologies.
Rural West Edinburgh Local Plan.	Halcrow would have investigated the suitability of the Edinburgh VISUM models, which they may have considered updating and enhancing.
STPR – West of Scotland Rail.	Would have developed a bespoke model (although this model would already have been developed if LATIS was not available for the STPR).
A90 West of Dundee P&R Study.	Use of ANPR data and journey time surveys.

Application	What would be undertaken in the absence of LATIC?
South Stirling P&R Study.	The project would have been difficult to undertake without the strategic inputs from LATIC.
STPR – A82.	A detailed set of local traffic surveys would have been undertaken.
Glasgow 2014 Transport Strategic Plan – Spectator Demand.	AECOM would have used web-based journey planners or ArcInfo with network analyst.
A737 Dalry Bypass.	Detailed business surveys would have been undertaken.
A76 Closure, Mauchline.	Amey would have considered use of alternative modelling or analysis of data from other sources, perhaps using sensitivity tests based on local knowledge or roadside interviews.
M8 Roadworks Strategy.	Amey would have considered use of alternative modelling or analysis of data from other sources, perhaps using sensitivity tests based on local knowledge or roadside interviews.
Dundee Station Enhancement.	This application would have used any alternative forecasts of rail demand for the Dundee area.
Strathclyde Police Force Headquarters.	Localised models would have been used.
Glasgow Airport Strategic Transport Network Study.	The Strathclyde Integrated Transport Model would have been used as an alternative.
North Lanarkshire Annual Economic Review.	The approach to the MVA transport article would have been different, based on less robust qualitative statements.
Perth Paramics Model.	Would have commissioned roadside interviews and / or made estimates of strategic traffic.
SESplan Strategic Development Plan.	With no suitable substitute models available, non-modelling methodologies would have been used.

Application	What would be undertaken in the absence of LATIS?
Dunfermline Strategic Land Allocation Assessment.	Other data sources (Observed route choice data, Land-use planning data, Census data, Fife Council, traffic count data) would have been used to form the basis for the construction of base year matrices. These data, along with other traffic growth data (Historic traffic growth, TRICS, NRTF) would then be have been used to estimate future year traffic growth.
Bishopton Community Growth Area – Stage 3.	JMP are unsure how this application would have been undertaken without LATIS.
Quantitative Greenhouse Gas Impact Assessment.	MVA would have used published transport statistics, TRICS data, and TEMPRO.

To provide an indication of the quantitative value of having the LATIS models available for use, we have endeavoured to estimate the cost of the alternative modelling approach for each relevant application of LATIS and associated data collection and audit requirements. While there are many potential options open to the user in the absence of LATIS, including not undertaking the work, the general assumption used here assume that a bespoke model would have been developed.

The cost of building a bespoke model varies with model coverage, scale, complexity and the level of representation of the network and modes. The level of previous modelling and appraisal also determines, to a large extent, the requirement for bespoke modelling. Simplifying assumptions have been made to account for these factors. The following development costs for developing “local”, “regional” and “national” models have been assumed:

- £40,000 for a local model;
- £80,000 for a regional model; and
- £160,000 for a ‘national’ model.

The likely cost of small applications at a local level or for particular projects has been estimated where the local model cost (£40,000) was deemed inappropriate.

For each 'bespoke' application we have made the following cost assumptions:

- an assumed fixed cost for developing an appropriate scale of bespoke model (as above);
- the estimated data collection costs for each application (based on the assumption that the data collected would be used solely for the creation of the bespoke model and not be available for subsequent 're-use'); and
- estimated audit costs where relevant, assumed to be 10% of the corresponding model development costs.

Data collection costs have been estimated by reference to the type and number of surveys that may be required and their corresponding unit cost. The average cost of a Road-side Interview survey and Manual Classified link count or junction turning count has been assumed to be £4,000 and £400 respectively and includes the cost of data processing and validation. The average cost of public transport occupancy or vehicle count surveys has been assumed to be £100 per enumerator per day (which includes cost of data processing, review and validation).

On the basis of the above assumptions, the estimated cost of development and application of an alternative model for all LATIS applications by model version and year (in 2009 prices) is summarised in Table 8.2 below. (Note, the Moray Firth Transport Model development and SITLUM re-zoning LATIS applications have been excluded from this analysis).

**Table 8.2 Estimated costs of developing alternative bespoke models for all LATIS applications**

Year	Alternative Model Development Costs (Est)	Data Collection Costs (Est)	Audit Costs (Est)	Total Cost of Alternative Models (Est)
2007	£1,360,000	£463,200	£136,000	£1,959,200
2008	£902,000	£168,200	£90,200	£1,160,400
2009	£1,158,000	£200,000	£115,800	£1,473,800
2010	£940,000	£71,000	£84,000	£1,095,000
<b>Total (2007-10)</b>	<b>£4,360,000</b>	<b>£902,400</b>	<b>£426,000</b>	<b>£5,688,400</b>

It can be seen from Table 8.2 that the total cost of developing alternative models for LATIS applications undertaken during 2010 would be £1,095,000. Further details of the costs associated with each LATIS application under the alternative modelling strategy can be found in Appendix C.

The main thrust of LATIS model development and data collection was undertaken during the 2007-2009 period, meaning that costs associated with model development during 2009-2010 have been limited. Indeed, the total cost of model development, data collection, and audit specifically relating to LATIS models during 2009-2010 was £126,700. It should also be noted that the majority of these costs to Transport Scotland arose from support to the development of Regional (Second Tier) Models; the majority costs of their development falls to organisations commissioning the models. However, the benefits of regional models to Transport Scotland will accrue in the coming years.

LATIS-specific data collection cost around £66,000 in the 2009-2010 period under consideration. Including user engagement and application support costs, the total cost of LATIS in 2009-2010 was £503,000. That is, the total cost of running the LATIS service during 2009-2010 was approximately 50% of the estimated costs of developing the alternative modelling approach.

This analysis and Table 8.1 above, highlights the benefits of LATIS over alternative approaches to undertaking applications. The most common alternative to LATIS would involve the use and potential further development of local models. Whilst the use of such models could still offer a robust solution, they do not offer the strategic consistency of LATIS. It should also be noted that some of the applications could not have been undertaken or would have required a more modest scope without LATIS.

#### LATIS Data Collection Commission Repository

The Data Collection Commission (DCC) has provided data collection support to Directorates within Transport Scotland and to other organisations. The Commission started in September 2007. A summary of the total number of data collection tasks and the value of work undertaken by the Commission can be found in Table 8.3 below.

**Table 8.3 Data Collection Commission Summary Table**

Year	No. of DCC uses	Total costs of DCC work
2007	26	£444,592
2008	55	£431,343
2009	64	£807,765
2010	23	£186,424
Total	168	£1,870,124

It was noted above that in 2010 the value of LATIS specific data collection work amounted to some £66,000 of the above total costs.

The value of the growing repository of data collected in support of the LATIS modelling capability is difficult to estimate in quantitative terms. In estimating the costs of data collection to support the alternative modelling strategy, it was assumed that the data are used once and have no subsequent residual value. In reality, data collected in support of the LATIS modelling capability are available for use by the wider user group towards a number of applications.

#### Efficiency and Effectiveness

Efficiency and effectiveness are key drivers of the value for money offered by LATIS. The holistic approach of the LATIS service ensures that activities are coordinated, applied across a range of different projects and gives rise to economies of scale and scope.

LATIS offers considerable time savings to Transport Scotland and other stakeholders as the strategic models and data repository are available “off-the-shelf” and outputs can be provided without delay and at a much lower cost than would otherwise be the case. Important policy issues often come to the forefront of the agenda without warning. LATIS provides users with a robust tool that can be used quickly and cost-effectively, obviating either the need to wait for the development of a bespoke model or to proceed with a policy without a robust evidence base. Transport Scotland in particular have requested many ‘quick answers’ from LATIS.

Crucially, Transport Scotland's long-term commitment to LATIS encourages innovation and longer-term enhancements to be identified and incorporated in the model development process, which would not be possible if a series of short-lived, bespoke models had been developed instead. Examples include the development of national demand model and two-stage public transport assignment procedures that have subsequently been successfully used in regional models and the development of the LATIS data repository.

The availability of LATIS ensures a certain level of consistency within Transport Scotland's scheme and policy appraisals and other Government decision-making processes based on the model's outputs. That is, it allows users to compare different scheme and policy interventions on a like-for-like basis. Regular use of a single model is also likely to be more efficient and less error-prone than the development and use of a number *ad hoc* / bespoke models.

The wide range of applications which LATIS can support offers Transport Scotland economies of scope that would not be available within the narrow focus of a model designed for a single purpose or application.

The user engagement programme supports efficiency in a number of ways. The User Engagement programme informs model development, ensuring that any enhancements undertaken are focused on the needs of the User Group and prospective applications. LATIS provides good opportunities for knowledge sharing and wider user interaction through User Group Days, technical documentation and newsletters.

## **Summary**

It is clear from the analysis contained above that LATIS continues to deliver savings to Transport Scotland over an alternative modelling strategy, both in terms of what can be quantified and in terms of wider qualitative benefits.

The continued use of LATIS on a range of projects provides clear cost savings over the development and auditing of a bespoke model for each application. Indeed, the cost of applying the LATIS models during 2010 represents only around 10% of the cost of developing a bespoke model for each application. This point can be verified by reference to user feedback.

In addition to the monetised benefits of LATIS, it also offers a range of qualitative benefits:

- the provision of evidence based and consistent policy advice;
- substantial project time savings;
- innovation and enhanced modelling practice; and
- economies of scope across the service.

## 9 The Year Ahead

### Overview

LATIS has continued to support the appraisal of strategic transport projects and decision-making in 2010. The land use and transport models have been applied to 24 projects this year and data has been supplied to range of model users, practitioners and internal teams. 2010 has also seen the development and initial applications of regional models to support transport appraisal and strategic and local development planners.

This chapter introduces the key objectives for the final year of the LATIS Commission to August 2011.

### User Engagement

The two user group events held in this reporting year provided an opportunity for consultation with users and a platform for the sharing of knowledge and best practice. Continued liaison with model users on a project by project basis also provides Transport Scotland with an understanding of user needs and possibilities for future model development.

Table 9.1 outlines the key tasks associated with user engagement over the next year:

**Table 9.1 User Engagement Objectives**

Objective	
1	Hold a joint LATIS/STAG user group to consider the links between appraisal and modelling in more detail.
2	Evaluate the work of the LATIS Commission through consultation with stakeholders and key model users.
3	Identify emerging modelling needs and recent technological developments towards setting the objectives for a subsequent LATIS Commission.

**Model Development**

Transport Scotland has invested significant resources in the development of the national model and, in this reporting year, regional models. Ongoing regional model development is led by relevant planning authorities with specific applications in mind. For Transport Scotland, the final year of the Commission provides the opportunity to improve aspects of the national model and the creation of tools which can be incorporated within regional models; this is reflected in the objectives shown in Table 9.2 below:

**Table 9.2 Model Development Objectives**

Objective	
1	To improve the representation, efficiency and calibration levels of the TMfS:07 Park and Ride sub-model and, where possible, incorporation of those improvements within regional models on a project-by-project basis.
2	Analysis of the existing national model do-minimum outputs on an STPR corridor basis.
3	Undertake an analysis of key drivers within the national model to understand the relative importance of input assumptions upon model outputs.

**Model Application**

In 2010-2011, LATIS will continue to judge the appropriateness, feasibility and merit of proposed applications of the model towards transport scheme development and appraisal. A key part of this is deliberate and appropriate application of regional models in partnership with regional transport partnerships towards proportionate appraisal of proposed transport interventions using STAG. These models can provide more detailed outputs, with greater spatial resolution than is afforded by the strategic national model. Regional models are also more appropriate for development planning and development management applications which may arise this year.

The model application objectives are outlined in Table 9.3 below:

**Table 9.3 Model Application objectives**

Objective	
1	To provide support to current ongoing and forthcoming approved LATIS applications.
2	To continue to support and make more effective use of regional models where appropriate.
3	To promote the use of LATIS within applications of Scottish Transport Appraisal Guidance.

### **Data Collection**

The LATIS Data repository continues to be well used and the Commission itself is used in support of ongoing Concessionary Fares monitoring and enforcement work. Efforts should be made to ensure best value is obtained through use of the Data Collection Commission. Table 9.4 outlines the two main data collection objectives for the coming year:

**Table 9.4 Data Collection Objectives**

Objective	
1	Review consultant cost proposal and approval process to ensure best value procurement for Transport Scotland.
2	Ongoing data collection that supports specific model applications and other Transport Scotland Directorates.

### **Model Support**

Support to model users, specific model applications and the application of appraisal guidance is critical to the effectiveness and efficiency of the LATIS service. This is particularly the case as STPR interventions are progressed. In addition, LATIS will look to build on its role in development planning and will likely be used to support a number of planning applications.

Table 9.5 outlines key model support objectives for the coming year:

**Table 9.54 Model Support Objectives**

Objective
1 Analytical support in taking forward the STPR outcomes.
2 Support the application of DPMTAG and specific development-related model applications.

## Appendix A –Glossary

This appendix contains a glossary of terms and acronyms used within the Annual Report. For additional information on terms and conditions, please refer to the LATIS no technical user guide which can be found at: <http://www.latis.org.uk/services/modelling/library/nontechguide.html>.

APPI – Approved Planning Policy Inputs

ASAM – Aberdeen Sub-Area Model

BAA – British Airports Authority

COSLA – Convention of Scottish Local Authorities

DCC – Data Collection Commission

DECC – Department of Energy and Climate Change

DfT – Department for Transport

DPMTAG – Development Management Transport Appraisal Guidance

EALI – Economic Area and Location Impacts

EGIP – Edinburgh – Glasgow Improvement Programme

ETC – European Transport Conference

FRCM – Forth Replacement Crossing Model

GHG – Greenhouse Gases

GHGI – Greenhouse Gas Emissions Inventories

GIS – Geographical Information Systems

LATIS – Land-Use and Transport Integration in Scotland

LDP – Local Development Plan

MFTM – Moray Firth Transport Model

NESTRANS – North East Scotland Transport Partnership

NHS – National Health Service

NRTF – National Road Traffic Forecasting Model

PT – Public Transport

RTP – Regional Transport Partnership

SDP – Strategic Development Plan

SEA – Strategic Environmental Appraisal

SEPA – Scottish Environmental Protection Agency

SEStran – South-East Scotland Transport Partnership

SITLUM – Strathclyde Integrated Transport and Land-Use Model

SITM – Strathclyde Integrated Transport Model

SPT – Strathclyde Partnership for Transport

SRTDb – Scottish Road Traffic Database

STAG – Scottish Transport Appraisal Guidance

STAR – Scottish Transport Applications and Research Conference

STEP – Scottish Trip End Model

STPR – Strategic Transport Projects Review

SWESTRANS – South-West Scotland Transport Partnership

TACTRAN – Tayside and Central Transport Partnership

TELMoS – Transport, Economic, and Land-Use Model of Scotland

TMfS – Transport Model for Scotland

TPM – Transport Practitioners Meeting

TTAA – Transport and Traffic Auditor and Adviser

# Appendix B – Model Documentation

Tables B1 – B7 provide an overview of, and links to the documentation for each version of the model:

**Table B1 TMfS:02 Model Documentation**

Report	Description
<a href="#">TMfS:02 Inception Report</a>	Overview of commitments for the TMfS:02 Commission.
<a href="#">TMfS:02 Road Assignment Model Calibration and Validation Report</a>	Details the calibration and validation of TMfS:02 Road Model.
<a href="#">TMfS:02 Public Transport Assignment Model Calibration and Validation Report</a>	Details the calibration and validation of TMfS:02 Public Transport Model.
<a href="#">TMfS:02 Demand Model Development Report</a>	Details the development of the TMfS:02 Demand Model.
<a href="#">TMfS:02 Model Development Audit Report</a>	This audit report reviews the documentation produced for the different elements of the TMfS model development as well as the road and public transport networks.
<a href="#">TMfS:02 End of Term Report</a>	This report contains a review of the models use, the current model status and proposed enhancements to both the transport and land use models. It also discusses potential additional data sources and surveys that, if included, would improve the quality of model output.

**Table B2 TMfS:05 Model Documentation**

<b>Report</b>	<b>Description</b>
<a href="#"><u>Model Enhancements Note</u></a>	Report detailing the enhancements implemented in the 2005 rebase.
<a href="#"><u>TMfS:05 Road Assignment Model Calibration and Validation Report</u></a>	Details the calibration and validation of TMfS:05 Road Model.
<a href="#"><u>TMfS:05 Road Assignment Model Calibration and Validation Report Appendices</u></a>	Key statistics underlying the TMfS:05 RAM Calibration and Validation Report.
<a href="#"><u>TMfS:05 Public Transport Assignment Model Calibration and Validation Report</u></a>	Details the calibration and validation of TMfS:05 Public Transport Model.
<a href="#"><u>TMfS:05 Demand Model Development Report</u></a>	Details the development of the TMfS:05 Demand Model.
<a href="#"><u>TELMoS:05 Model Description</u></a>	This report documents the implementation of the land use/economic components of TELMoS, and their interactions with the transport components.
<a href="#"><u>TMfS:05 Model Development Audit Report</u></a>	This audit report reviews the documentation produced for the different elements of the TMfS model development as well as the road and public transport networks.
<a href="#"><u>TMfS:05 Model Development Audit Report Summary</u></a>	Summary of the main Audit Report.

**Table B3 TMfS:05a Model Documentation**

Report	Description
<a href="#"><u>TMfS:05a Road Assignment Model Calibration and Validation Report</u></a>	Details the calibration and validation of TMfS:05a Road Model.
<a href="#"><u>TMfS:05a Road Assignment Model Calibration and Validation Report Appendices</u></a>	Key statistics underlying the TMfS:05a RAM Calibration and Validation Report.
<a href="#"><u>TMfS:05a Public Transport Assignment Model Calibration and Validation Report</u></a>	Details the calibration and validation of TMfS:05a Public Transport Model.
<a href="#"><u>TMfS:05a Public Transport Assignment Model Calibration and Validation Report Appendices</u></a>	Key statistics underlying the TMfS:05a PTAM Calibration and Validation Report.
<a href="#"><u>TMfS:05a Park and Ride Model Calibration and Validation Report</u></a>	Details the calibration and validation of TMfS:05a Park and Ride Model.
<a href="#"><u>TMfS:05a Reference Case and Do Minimum Schemes</u></a>	Do Minimum and Reference case schemes codes in the TMfS:05a base and future year networks.
<a href="#"><u>TMfS:05a Model Development Audit Report</u></a>	This audit report reviews the documentation produced for the different elements of the TMfS model development as well as the road and public transport networks.
<a href="#"><u>TMfS:05a Model Development Audit Report Summary</u></a>	Summary of the main Audit Report.

**Table B4 Forth Replacement Crossing Model Documentation**

<b>Report</b>	<b>Description</b>
<a href="#"><u>Forth Replacement Crossing Model Development Audit - Final Report</u></a>	This report presents the audit of the FRCM modelled networks and the development, calibration and validation documentation for the road, public transport and demand models.
<a href="#"><u>Forth Replacement Crossing Model Development Audit - Final Executive Summary</u></a>	This provides an executive summary of the FRCM audit.
<a href="#"><u>Forth Replacement Crossing Road Model Development Report</u></a>	This report presents the development assumptions and the calibration and validation results of the Forth Replacement Crossing (FRC) Base SATURN Model.
<a href="#"><u>Forth Replacement Crossing Road Public Transport Development Report</u></a>	This report presents the development assumptions and the calibration and validation results of the Forth Replacement Crossing (FRC) Base PT Model.
<a href="#"><u>Forth Replacement Crossing Demand Model Development Report</u></a>	This report summarises the development of the Forth Replacement Crossing Demand Model and the subsequent 'realism' testing of the Model.

**Table B5 TMfS:07 Model Documentation**

Report	Description
<a href="#"><u>TMfS:07 National Road Model Development Report</u></a>	Details the development of the TMfS:07 National Road Model.
<a href="#"><u>TMfS:07 National Demand Model Development Report</u></a>	Details the development of the TMfS:07 National Demand Model.
<a href="#"><u>TMfS:07 Public Transport Model Development Report</u></a>	Details the development of the TMfS:07 National Public Transport Model.
<a href="#"><u>TMfS:07 National Road Model Calibration and Validation Report</u></a>	Details the calibration and validation of TMfS:07 National Road Model.
<a href="#"><u>TMfS:07 National Public Transport Model Calibration and Validation Report</u></a>	Details the calibration and validation of TMfS:07 National Public Transport Model.
<a href="#"><u>TMfS:07 National Public Transport Model Calibration and Validation Report Appendices</u></a>	Key statistics underlying the TMfS:07 National Public Transport Model Calibration and Validation Report.
<a href="#"><u>TMfS:07 Do Minimum Scheme Assumptions</u></a>	A list of interventions included in the TMfS:07 Do Minimum.
<a href="#"><u>TMfS:07 National Model Development Audit Report</u></a>	This audit report reviews the documentation produced for the different elements of the TMfS:07 National Model development as well as the road and public transport networks.
<a href="#"><u>TMfS:07 National Model Development Audit Report Executive Summary</u></a>	Summary of the main Audit Report.
<a href="#"><u>TMfS:07 Enhancement Report Summary</u></a>	This report summarises the recommendations for the enhancements to be made to the Transport Model for Scotland (TMfS) over the duration of the new three year term commission.

Report	Description
<a href="#">TMfS:07 Model Enhancements Option Note</a>	This note outlines the initial list of enhancement options that will be addressed within the Enhancement Report for TMfS.
<a href="#">TMfS:07 High Occupancy Vehicle Lane Stated Preference Study</a>	Summary of results from the High Occupancy Vehicle stated preference study.

**Table B6 TELMoS:07 Model Documentation**

Report	Description
<a href="#">TELMoS:07 Model Description Report</a>	Details the structure and sub-models of the Model.
<a href="#">TELMoS:07 Model Demonstration Report</a>	Provides details of four demonstrations conducted to show that TELMoS:07 responds in the way we expect.
<a href="#">TELMoS:07 Audit Report</a>	The Audit Report details findings from a review of the model structure, baseline data, data sources and basic responses.
<a href="#">TELMoS:07 Audit Response Note</a>	A response to the Audit Findings from model developer David Simmonds Consultancy in association with MVA Consultancy.
<a href="#">TELMoS:07 Supplementary Technical Information Note</a>	A number of technical notes providing more information regarding aspects of the TELMoS:07 model.

**Table B7: Other Documentation**

Report	Description
<a href="#">Non-Technical Guide to TMfS</a>	A non-technical introduction to each element of TMfS.
<a href="#">ENEVAL User Manual</a>	This document is the user manual for the Environmental evaluation software ENEVAL which is used to perform a range of environmental appraisal for CUBE and SATURN road assignment models.

## Appendix C - Estimated costs of development and application of alternative models for each LATIS application in 2010

Model	Project	Ultimate Client	Alternative Model Development Costs (Estimated)	Data Collection Costs (Estimated)	Audit Costs (Estimated)	Total Alternative Costs (Estimated)	Intervention Value (Estimated)
TMfS:05a	Commonwealth Games – Athletes Village	City Legacy	£20,000	£5,000	£0	£25,000	£10m - £50m
	Clyde Gateway Infrastructure and Enabling Works	Clyde Gateway Urban Regeneration Company	£20,000	£5,000	£0	£25,000	£10m - £50m
	Gogar Interchange - Demand and Revenue Modelling	Transport Scotland	£80,000	£2,000	£8,000	£90,000	£10m - £50m
	<b>Total</b>		<b>£120,000</b>	<b>£12,000</b>	<b>£8,000</b>	<b>£140,000</b>	
FRCM	Rural West Edinburgh Local Plan	West Edinburgh Planning Framework Board	£80,000	£4,000	£8,000	£92,000	£10m - £50m
	<b>Total</b>		<b>£80,000</b>	<b>£4,000</b>	<b>£8,000</b>	<b>£92,000</b>	
TMfS:07	STPR - West of Scotland Rail	Transport Scotland	£80,000	£8,000	£8,000	£96,000	£1bn+
	A90 West of Dundee P&R Study	TACTRAN	£40,000	£2,000	£4,000	£46,000	£10m - £50m

Model	Project	Ultimate Client	Alternative Model Development Costs (Estimated)	Data Collection Costs (Estimated)	Audit Costs (Estimated)	Total Alternative Costs (Estimated)	Intervention Value (Estimated)
	South Stirling Park and Ride Study	TACTRAN and Stirling Council	£40,000	£2,000	£4,000	£46,000	£10m - £50m
	STPR - A82	Transport Scotland	£80,000	£2,000	£8,000	£90,000	£100m- - £500m
	Glasgow 2014 Strategic Plan - Spectator Demand	Glasgow City Council	£20,000	£5,000	£0	£25,000	£1m - £10m
	A737 Dalry Bypass	North Ayrshire Council	£40,000	£1,000	£4,000	£45,000	£10m - £50m
	A76 Closure, Mauchline	Transport Scotland	£80,000	£4,000	£8,000	£92,000	<£1m
	M8 Roadworks Strategy	Transport Scotland	£80,000	£4,000	£8,000	£92,000	£1m-£10m
	Dundee Station Enhancement	Dundee City Council and TACTRAN	£40,000	£1,000	£4,000	£45,000	£1m - £10m
	Strathclyde Police Force Headquarters	Strathclyde Police	£0	£2,000	£0	£2,000	£1m
	Glasgow Airport Strategic Transport Network Study	British Airports Authority	£80,000	£2,000	£4,000	£86,000	£1m - £10m
	North Lanarkshire Annual Economic	North Lanarkshire Council	£0	£1,000	£0	£1,000	£0

Model	Project	Ultimate Client	Alternative Model Development Costs (Estimated)	Data Collection Costs (Estimated)	Audit Costs (Estimated)	Total Alternative Costs (Estimated)	Intervention Value (Estimated)
	Review						
	Perth Paramics Model	Perth and Kinross Council	£20,000	£2,000	£0	£22,000	£0
	SEStran Strategic Development Plan	SESplan	£80,000	£10,000	£8,000	£98,000	£1bn+
	Dunfermline Strategic Land Allocation Assessment	Fife Council	£40,000	£2,000	£4,000	£46,000	£0
	Bishopton Community Growth Area, Stage 3	BAE Systems Properties Limited	£20,000	£2,000	£4,000	£26,000	£10m - £50m
	Quantitative Greenhouse Gas Assessment	Scottish Government	£0	£5,000	£0	£5,000	£0
	<b>Total</b>		<b>£740,000</b>	<b>£55,000</b>	<b>£68,000</b>	<b>£863,000</b>	
<b>All Models</b>	<b>Total</b>	<b>All Clients</b>	<b>£940,000</b>	<b>£71,000</b>	<b>£84,000</b>	<b>£1,095,000</b>	<b>N/A</b>