



# ANNUAL REPORT 2011

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## Executive 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 2011 reports upon the final commission year starting 1<sup>st</sup> September 2010 and ending on 31<sup>st</sup> August 2011. It notes all LATIS-based applications as at 31<sup>st</sup> August 2011.

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 in 2011 focussed upon integration of modelling and appraisal skills and application; a joint Transport Appraisal and Modelling user group day was held in February 2011, highlighting updates to the Department for Transport's Transport Appraisal Guidance (WebTAG), forthcoming updates to Scottish Transport Appraisal Guidance (STAG) and latest developments in LATIS. As part of this meeting, a workshop was held inviting attendees to evaluate the performance of LATIS in providing the above four elements and suggest

objectives for a possible future commission. Transport Scotland and LATIS consultants presented papers at three industry conferences in 2010-2011.

This year has seen development of the park and ride sub-model within the TMfS:07 national demand model. These improvements can be rolled out to regional models in due course.

For the first time, LATIS has produced a range of demand forecasts based on a range of underlying economic and demographic forecasts. This work had three objectives; to better understand the key drivers of travel demand, to better understand the responses of the model itself and to provide a range of forecasts as the basis for project appraisal. More details can be found in Chapter 6 of this report.

2011 also saw the launch of the Scottish Trip End Programme (STEP), based on the Department for Transport's Trip End Modelling Program (TEMPRO). 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, enquiries and regional model development.

This year has seen 18 applications of LATIS models. These are categorised as follows: Supporting the Strategic Transport Projects Review, Supporting Planning Reform, Supporting Regional Models and Other Transport Planning applications. In 2011, LATIS has supported decision-making within the wider policy environment as demonstrated by our contribution to strategic and local planning work and the Scottish Government's Spatial Planning Assessment for Climate Emissions (SPACE) greenhouse gas emissions quantification tool.

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 in 2011. LATIS is shown to offer value for money over this alternative in 2011 and within the wider investment cycle. Again, repeating points made in the Annual Report 2010, in

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 were set out for the 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	Build on the relationships with stakeholders by introducing a LATIS support network.

**Model Development Objectives**

Objective	
1	Update the LATIS national and regional models to reflect changes to the transport network and updated planning policies and allocations.
2	Continue to develop national and regional models to support the Scottish Government's Infrastructure Investment Plan (IIP)
3	Develop alternative forecasts of travel demand and trip-making for application to project appraisal and design.

## 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.
3	To promote the use of LATIS within the Scottish Government's Infrastructure Investment Plan (IIP).

## Data Collection Objectives

Objective	
1	Prepare a data collection programme that supports the appraisal work required by the Infrastructure Investment Plan
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

## 2011 Annual Report

Land-Use and Transport Integration in Scotland (LATIS) is 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 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 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 in 2011.

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

## **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 2010 Annual Report have been delivered. Chapter 3 reviews how LATIS has been managed in 2011 and Chapter 4 outlines the progress of the LATIS user engagement programme. Chapter 5 addresses model development during 2011, and this is followed by a commentary on the data collection commission and model applications in Chapters 6 and 7 respectively.

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

**The Annual Report 2011 reports upon the commission year starting 1 September 2010 to the end of August 2011. Chapter 7 refers to all LATIS based applications, including ongoing applications of the LATIS models throughout 2011.**

**The current LATIS Commission formally ended on 31<sup>st</sup> August 2011. A number of committed workstreams continued to completion beyond this date. The process of procurement of a subsequent Commission to provide Transport Planning, Modelling and Audit services began in July 2011.**

## **Glossary**

A number of acronyms are used within LATIS Annual Reports. Each one is explained when first introduced but, for ease of reference, a list is provided in **Appendix A.**

## 2 LATIS OVERVIEW

### 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 engagement; and
- to promote technical excellence and improvement.

Transport Scotland aims to fulfil these objectives through development of the LATIS models, by effective project management and an ongoing interaction between transport planners and land-use, planning and development specialists.

### 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.

***Note – The Scottish Government published a revised Government Economic Strategy on 12 September 2011. As this Annual Report only considers the period up to and including 31 August 2011, it continues to refer to the previous / original Government Economic Strategy.***

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 2.1: 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) and the Development Planning Management Transport Appraisal Guidance (DPMTAG).

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

LATIS also supports the delivery of the policy objectives of other organisations, including directorates within Scottish Government, 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 role of models**

The role of models 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.

A unique benefit of models is that they allow analysts to test how different schemes and/or policies (ie interventions) may 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.

### **What has LATIS achieved in 2010-2011?**

Tables 2.1-2.4 review the key objectives set out in the 2009-2010 Annual Report and the steps taken to meet these:

**Table 2.1: User Engagement Objectives – 2010 Annual Report**

<b>Objective</b>	<b>Fulfilment of Objective in 2011</b>
Hold a joint LATIS / STAG User Group day to consider the links between appraisal and modelling in more detail.	A joint STAG - LATIS User Group Day was held on 7 <sup>th</sup> February 2011.
Evaluate the work of the LATIS Commission through consultation with stakeholders and key model users.	Attendees at the joint STAG - LATIS User Group day were consulted towards setting the objectives of the next LATIS Commission.
Identify emerging modelling needs and recent technological developments towards setting the objectives for a subsequent LATIS Commission.	The above consultation together with a forthcoming Commission Review Report prepared by current Commission holders identifies modelling needs and potential technological developments.

**Table 2.2: Model Development Objectives – 2010 Annual Report**

<b>Objective</b>	<b>Fulfilment of Objective in 2011</b>
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.	A significant enhancement has been made to the representation of P&R in the TMfS:07 National Model. This functionality has also been included in the SEStran Regional Model.
Analysis of the existing National Model do-minimum outputs on an STPR corridor basis.	Key STPR outcomes have been included and analysed within the current National Model Do Minimum, but corridor level analysis has not been undertaken due to a change in emphasis.
Undertake an analysis of key drivers within the National Model to understand the relative importance of input assumptions upon model outputs.	A range of 'Alternative Forecast Scenarios' has been investigated using the National model to understand the influence of assumptions on the economy, population and fuel prices. The report will be published in due course.

**Table 2.3: Model Application Objectives – 2010 Annual Report**

<b>Objective</b>	<b>Fulfilment of Objective in 2011</b>
To provide support to current ongoing and forthcoming approved LATIS applications.	The LATIS Team has supported a wide range of applications of the modelling capability during 2010-2011. Please refer to Chapter 7.
To continue to support and make more effective use of regional models where appropriate.	Both the SEStran Regional Model and Moray Firth Transportation Model have been applied during 2011. Where possible, enhancements made to the National Model have informed or drive development of regional models.
To promote the use of LATIS within applications of Scottish Transport Appraisal Guidance.	LATIS continues to be the core quantitative evidence base for STAG appraisals concerning the strategic road and rail network.

**Table 2.4: Data Collection Objectives – 2010 Annual Report**

<b>Objective</b>	<b>Fulfilment of Objective in 2011</b>
Review consultant cost proposal and approval process to ensure best value procurement for Transport Scotland.	Improvements made to the DCC review and cost approval process during 2010-2011 have achieved significant cost savings.
Ongoing data collection that supports specific model applications and other Transport Scotland Directorates.	No specific LATIS data collection has been required during 2010-2011.

**Table 2.5: Model Support Objectives – 2010 Annual Report**

<b>Objective</b>	<b>Fulfilment of Objective in 2011</b>
Analytical support in taking forward the STPR outcomes.	LATIS continues to support appraisal and testing of specific STPR interventions, including the Edinburgh-Glasgow Improvement Programme.
Support the application of DPMTAG and specific development-related model applications.	LATIS has informed the preparation of the guidance by providing initial experience of applying it. In 2011, LATIS models have enabled delivery of a number of local authority baseline reports, Local Development Plan assessments and formulation of strategic development plans.

## 3 PROJECT MANAGEMENT

### Overview

Throughout 2010-11, Transport Scotland and the LATIS Commission holders, MVA Consultancy, have worked to improve their approach to project management; implementing model developments more efficiently, seeking to apply models more effectively and flexibly while retaining quality.

We have continued to ensure a robust approach to the management of the commission, identifying and mitigating risks that can emerge in projects of this nature.

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

- Client Progress Meetings and Commission Progress Meetings;
- Quarterly Steering Group Meetings;
- The Annual Report.

There have also been informal Directors' meetings during the last year which have assisted in the strategic direction of the commission. There have not been any progress meetings with the data collection contractors as there have been no major data collection workstreams during 2010-2011 (see Chapter 6).

Each of these meetings and reports are now considered in turn.

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

### Transport Scotland Management team

During 2010-2011, restructuring within Transport Scotland means that responsibility for the LATIS commission has moved to the Major Transport Infrastructure Projects (MTRIPS) Directorate. The Management Team remains unchanged and consists of:

- Project Director, responsible for the strategic direction of the commission (ie ensuring it is aligned with the priorities of the Scottish Ministers);
- Project Manager, responsible for all day-to-day management of LATIS, including monitoring the application of the LATIS models; and
- Project Engineer, responsible for advising the Project Manager on technical issues.

The Transport Scotland Project Management Team manages the LATIS consultants, the auditors and the data collection consultants. They also ensure close liaison with other government agencies (both Scottish and UK), Regional Transport Partnerships, local authorities and other relevant organisations.

### **Client Progress Meetings**

Client Progress Meetings focus on high level strategic and financial issues, ensuring that the project is effectively managed, focused and delivers value for money. Firm strategic direction ensures that LATIS continues to effectively meet stakeholder needs while also reaching out to new stakeholders.

### **Commission Progress Meetings**

The Commission Progress Meetings are an important means of determining the short-term direction of LATIS, overcoming technical challenges and managing the interface between model users, Transport Scotland and the LATIS Commission consultants.

Table 3.1 overleaf considers the Commission Progress Meetings in some more detail, highlighting key discussions related to model development and support for the planning reform process over the last year.

**Table 3.1 LATIS Commission Progress Meetings 2010-2011 – Key Discussions**

<b>Month</b>	<b>Model Development Discussions</b>	<b>Support to Planning Reform</b>
September	Transport Scotland explained that the national model will be an important tool for appraising P&R. Positive discussions on Alternative Forecast Scenarios and STEP.	Agreed provision of a Baseline Data Report covering Midlothian using the SEStran Model to assist Midlothian Council in preparation of their Local Development Plan.
October	Detailed discussion on the potential improvements to P&R modelling, both in the National and Regional models.	
November	First ScotRail identified the availability of new data on rail car parking for the new P&R model. Transport Scotland committed in principle to proceed with STEP.	
December	No Commission Progress Meeting held.	No Commission Progress Meeting held.
January	Detailed discussions on the form and content of STEP. MVA feedback on the APPI Local Authority Summary Notes.	
February	MVA informed that development of the P&R model was complete – focus was on validation reporting. Discussion on whether to use of APPI 2007 or 2009 data for the Alternative Forecast Scenarios.	Discussed potential support to Stirling Council regarding local development plan.
March	Discussion of completed P&R enhancements. Transport Scotland provided permission to proceed with Alternative Forecast Scenarios A and B but requested further work on Scenario C.	Agreed provision of Baseline Data Reports to Stirling Council and North Ayrshire Council.
April	Discussion of timescales for the delivery of STEP and Alternative Forecast Scenarios.	Discussion of outcomes of Stirling Travel to Work analysis and modelling in North Ayrshire. Agreed preparation of Baseline Data Report for East Ayrshire Council.
May	Discussion of the outputs from STEP and Alternative Forecast Scenarios.	Further discussion of support for Stirling Council, North Ayrshire Council and East Ayrshire Council.

Month	Model Development Discussions	Support to Planning Reform
June	MVA provided a presentation of the Alternative Forecast Scenario work which provoked further discussion relating to the testing of alternative vehicle fleet and alternative fuel prices.  STEP available for download from LATIS website.	Agreed preparation of Baseline Data Report for Falkirk Council.
July	Ongoing discussion of initial outputs of Alternative Forecast Scenarios.  Agreement that the recent Park and Ride enhancements of the National Model would be included within the SEStran Regional Model.	No specific actions.
August	Discussion of specification of further fuel price scenario tests.	Agreed preparation of City of Edinburgh and East Lothian Baseline Data Reports.

### LATIS Steering Group

The LATIS Steering Group consists of representatives from various directorates of Transport Scotland and the Scottish Government covering trunk roads, rail and development planning, thus ensuring that the maintenance and enhancement of LATIS is aligned with the needs of key 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. The LATIS Commission Term Consultants are also Steering Group members.

Steering Group Meetings are typically held on a quarterly basis and a typical Steering Group meeting generally involves the Term Consultant reporting on progress and issues encountered, providing recommendations for the future development of LATIS. These recommendations are discussed by the Steering Group and considered by Transport Scotland as the Client.

Key issues discussed by Steering Group Meetings during 2010-2011 are:

- The development of the Scottish Trip End Program;
- The availability and use of planning data collected during 2009 and 2010;

- Alternative Forecast Scenarios to be tested using the National Model;
- National model applications;
- Regional models and key regional modelling applications;
- Park and Ride enhancements to the National Model;
- User Engagement and conference presentations;
- Support to the planning reform; and
- The rationale and objectives for the next LATIS Commission.

### **LATIS Project Directors' Meetings**

There have been no formal Project Directors' Meetings during 2011. Nonetheless, there have been informal meetings and regular contact between the respective Project Directors in Transport Scotland and the LATIS Commission holder.

### **Data Collection Commission Meetings**

Bi-annual meetings are normally held with the appointed Data Collection Consultants in order to review recent and forthcoming workloads and potential future demands. In 2011, data has not been collected for LATIS model development but has been routine data collection to support the monitoring of operator claims under the national concessionary fares scheme. A meeting of all consultants was held with the National Concessionary Fares team but not with the LATIS team specifically..

### **Audit Management Meetings**

The LATIS national models (TMfS and TELMoS) were developed and extensively audited between 2007 and 2010. We are now largely in a stage of model application and thus limited development and consequently audit work is being undertaken. As a result, there have been no Audit Management Meetings during 2010-11.

## 4 USER ENGAGEMENT

### Overview

LATIS user engagement during 2011 has had a particular emphasis on planning reform and model application. This chapter provides a summary of user engagement activities during 2011.

### LATIS and Appraisal

An important aspect of the LATIS commission is the close link it shares with national appraisal guidance. The 2010 Annual Report explored in detail the links between LATIS and STAG-based appraisal, demonstrating how the modelling capability can support robust appraisal. Over the past year, LATIS has contributed to a wide range of appraisals and a joint LATIS / STAG User Group Day was held (see Section 4.5).

#### Development Planning Management Transport Appraisal Guidance

As part of the Scottish Government's commitment to reforming the planning system, Transport Scotland recently published the Development Planning Management Transport Appraisal Guidance (DPMTAG). The purpose of DPMTAG 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. DPMTAG is designed to ensure consistency and efficiency with national transport investment and statutory approval processes.

LATIS has supported the development and early experience of applying DPMTAG from an early stage. As well as providing comment on the guidance itself, LATIS models have been used to undertake DPMTAG compliant baseline assessments for Strategic Development Planning Authorities and Local Authorities (see Section 7.4).

### Direct Communication

#### External LATIS Liaisons

In late 2010, Transport Scotland and the LATIS team worked with Key Agency partners Scottish Water to finalise Planning Policy Input data used by both

organisations as a basis for future forecasting models. Data formats and transferability were discussed together with the potential for wider application of the data.

In April 2011, Transport Scotland, including members of the LATIS team, met with representatives of appraisal teams in England, Wales and Northern Ireland to discuss latest developments in appraisal, specifically updates to WebTAG. The implications for LATIS modelling and assumptions were discussed.

Recently, LATIS has been consulted upon the range of observed and modelled transport data which could be presented within a future Scottish Environmental Website Portal due to be launched in late 2011.

Transport Scotland also continued to formally and informally liaise with external stakeholders throughout 2011, including:

- Other Directorates of Transport Scotland – eg Rail Division, winter resilience team etc;
- The Scottish Government – eg carbon forecasts;
- Regional Transport Partnerships – eg development and application of SRM;
- Strategic Planning Authorities; and
- Department for Transport.

### Internal Liaisons

As per 2010, the LATIS Team have conducted a range of discussions with UK and Scottish Government teams towards improving the inputs and outputs of LATIS, whilst encouraging greater application of LATIS to support decision-making.

Transport Scotland continues to work with the UK Department of Energy and Climate Change (DECC) regarding the potential development of Devolved Administration Greenhouse Gas Emissions Inventories (GHGI). Within this wider remit, we have continued to liaise closely with Scottish Government colleagues regarding the evolving climate change agenda, providing support to the evaluation of policy contributions aimed at delivering the Climate Change Scotland Act (2009). For example, the LATIS Service was deployed to support the development of a new

Scottish Government tool designed to forecast and appraise the greenhouse gas emissions impact of spatial planning policies.

At a more local level, the LATIS Team has continued to liaise closely with Scottish Government Local Air Quality Policy teams regarding the quantification of transport emissions at the regional and local level. This has been assisted by the development of regional models, each of which could allow us to improve the quality of our assessments in this area.

Liaison with the Scottish Household Survey (SHS) Team at the Scottish Government has also been maintained. The National Travel Survey is being reduced in scope and there is a danger that important data used by LATIS may no longer be collected. As a result, we are working closely with the SHS Team to discuss how that survey can be improved and thus support LATIS data needs.

### 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**

Transport Scotland hosted a User Group Day on 7 February 2011 entitled "Transport Appraisal and Modelling in Scotland". This event discussed the work that LATIS is doing to support appraisal in Scotland and to address criticisms voiced in industry media following the announcement of a range of changes to the UK Department for Transport's Transport Appraisal Guidance (WebTAG). Two case studies utilising evidence derived from LATIS models were presented; the Aberdeen Local Development Plan and Clyde Gateway.

A core element of the day was to seek attendees views on the current and potential future direction of the LATIS service which would then be used by Transport Scotland to assist in preparing the objectives of a subsequent LATIS commission.

The User Group Day attracted predominantly local authority representatives and consultants, but also representatives of regional transport partnerships and academics. 33% has no previous experience of LATIS, demonstrating an ongoing need to engage with and to train users in the application of LATIS models and to encourage broader use of transport appraisal in Scotland.

Feedback from attendees suggested that they found the Commission Evaluation Workshop and the appraisal best practice case studies most helpful. Overall, 87% of respondents agreed or strongly agreed that the content of the day was relevant and informative, 93% found the opportunity for interaction valuable and 95% felt they had opportunities to contribute. On content, 78% agreed or strongly agreed that modelling content was pitched at a level they could understand and 83% that transport appraisal content was pitched accordingly.

Transport Scotland invited suggestions for future user group content, some of which will be reflected in the form and scope of the future LATIS Commission and in future updates to STAG.

### **LATIS Model Request Form and LATIS User Satisfaction Form**

A LATIS Application Form must be completed before the modelling capability or associated LATIS observed 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 are updated as required so as to accurately reflect evolving requirements.

During 2010 and 2011, responsibility for the receipt and processing of LATIS Application Forms has moved from the LATIS Commission consultant to Transport Scotland.

### **Training**

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; FRCM; SEStran Model; Dumfries and Galloway Model etc.

There were no formal training days in the use of LATIS during 2011. However, as part of the development of the Moray Firth Transportation Model (MFTM), LATIS was used to develop the MFTM forecasting capability and the LATIS Commission Consultants provided training to AECOM to this end.

## **Conferences**

Throughout 2011, the LATIS Team has continued to promote the service and wider best practice through appearances at the following prestigious conferences during 2010-11:

- European Transport Conference (October 2010); and
- Transport Practitioners Meeting (July 2011).

The theme for our paper at the 2010 European Transport Conference (ETC) was “Are Models Worth it?”. The paper and presentation explored how Transport Scotland established a qualitative and quantitative valuation methodology for LATIS published in the Annual Report 2009-2010. LATIS papers to ETC are available from <http://etcproceedings.org/>.

The paper presented at the Transport Practitioners Meeting in July 2011 was entitled “The Past is History, The Future is a Mystery – Appraising Alternative Futures Using Transport Models”. The paper brings together recent work in planning reform and the development of alternative forecast scenarios to discuss how understanding alternative views of the future can support more a robust understanding of the impact of local and strategic development plans.

A further three abstracts were accepted for the European Transport Conference 2011 (October 2011).

The presentation of LATIS at conferences is important in raising the profile of LATIS and the work of Transport Scotland while also providing opportunities to learn about the approaches of other organisations, in other countries, 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 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 continues to be a specific focus on applications related to the planning reform process. These meetings mitigate against risks of mis-specification, ensures proportionality in appraisal and avoids mis-interpretation of model outputs.

## **Indirect Communication**

This section discusses indirect means of communication with the LATIS User Group.

### LATIS Newsletters

The LATIS Newsletters are an important means of communicating with all stakeholders and we have continued to issue them on a quarterly basis. The newsletters generally cover a wide range of topics including model development; planning reform; data collection; and liaison initiatives. Published LATIS newsletters can be found on the [LATIS website](#). The newsletters have provided project case studies highlighting the role that LATIS has played in their appraisal and subsequent decision-making.

### LATIS Website

The [LATIS website](#) continues to play a crucial role within the overall commission, providing a cost effective and mass market 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.

The key focus during 2011 has been maintaining the LATIS website, ensuring that the content remains up-to-date for the User Group.

The LATIS domain name host changed during December 2010, thus web visitor statistics are available only for the period December 2010 to August 2011. On

average, there were 847 visits per month to the LATIS Website. The peak months in terms of usage were February and March 2011, which broadly coincides with the STAG / LATIS User Group Day.

In addition to current reports available on the website, an archive of all published documents and presentations is maintained by Transport Scotland.

The LATIS Website continues to host:

- User manuals;
- Model development reports;
- LATIS Non-Technical Guide
- LATIS Guide for Users; and
- LATIS Brochure.

## 5 MODEL DEVELOPMENT

### Overview

Model development remains focused on supporting the appraisal of proposed transport interventions to support decision making by Scottish Ministers. Since the last Annual Report, a number of enhancements have been made to the National Model and a number of Regional Models have been developed and applied for the first time. This is outlined in the following sections.

### Park & Ride Model Enhancement

#### Overview

The new TMfS:07 National Model represents a step change in the quality of strategic modelling in Scotland. However, Transport Scotland recognises the need to continue developing and refining transport models to ensure technical robustness and user confidence. A key element of this during 2010-11 has been the improvement to the Park & Ride (P&R Model).

During the application of TMfS:07 it was recognised that a number of improvements could be made to the P&R process which would enhance the quality and robustness of outputs and potentially reduce model run times.

The improvements to the P&R model include enhanced representation of P&R sites and an improved mode choice procedure for P&R within the overall demand model.

#### Benefits of Enhanced P&R Modelling

The enhanced park and ride model allows for more detailed and improved interrogation of changes in P&R demand when comparing the forecasts produced by the national model. It also provides an improved representation of the potential demand at new P&R sites for both rail and bus-based proposals.

The assessment of the potential benefits and predicted demand for proposed P&R sites is an increasing area of interest to Transport Scotland, for example several strategic P&R sites are identified within the STPR. The prediction of future rail passenger demand is also an important aspect, whereby more detailed (modelled)

patronage forecasts are required. As the demand for parking at rail stations can form a considerable proportion of station usage, the park and ride model plays a key role in providing rail passenger demand forecasts, particularly for busy stations with large car parks and for proposed new and/or enhanced facilities.

It is anticipated that second tier (regional) models would be the preferred tool for the detailed assessing of individual park and ride sites. However, the National model provides core input to second tier models, particularly with respect to through traffic (both car based and PT based) and an indication of overall mode choice (note that Park and Ride is classed as a separate mode within the National Model demand processes).

There is an immediate benefit in enhancing the P&R modelling in the national model as it can assist in improving the quality of the second tier models. In addition, a number of emerging second tier models do not currently have specific P&R modelling functionality and rely on forecasts from the National Model in the first instance, eg Moray Firth Transport Model and the Dumfries Regional Transport Model.

The National Model also provides data to second tier (regional) and third tier (local) models on the demand for park and ride where only part of a park and ride journey occurs within the modelled area.

### **Alternative Forecast Scenarios**

Since its development, the current version of the National Model has been used to prepare a single 'baseline' view of the future land-use and transport conditions. The 'baseline' is specified by the following key elements:

- Economic Scenario - Defined by national GDP / GVA trends over time and regional variations in economic performance;
- Demographic Scenario – the GRoS National Population projection is used to constrain the total Scottish population in the TELMoS model;
- Planning Data - Each Local Authority in Scotland provides short, medium and long term information relating to their development plans; and
- Do Min/Reference Case Transport Interventions – A list of transport schemes and policies which are committed or considered 'likely to be implemented'.

The specification of the current baseline includes the following key information:

- Economic Scenario - 2006 Scottish Regional economic projections (as prepared by Tribal for the purpose of STPR);
- National Demographic Scenario – 2006 mid year GRoS National Population projections;
- Planning Data – 2007 and 2008 based approved planning policy inputs; and
- Transport Interventions –list of ‘most likely’ transport interventions.

This baseline is normally referred to as the ‘Do Minimum’ scenario and is used as the basis from which to prepare and compare alternative ‘Test’ scenarios.

A single Do Minimum forecast has conventionally be applied in scheme appraisal. This allows the benefits of individual schemes and policies to be assessed consistently and comparison. However, a single forecast represents a trade-off between resource costs and the range of possible outcomes forecast for the future. Transport Scotland wishes to move away from one ‘absolute view’ of the future towards having a range of views of the future; a range of outputs implying varying performance of the transport network measured using key performance indicators. It should be noted that a range of outputs says nothing about their likelihood of occurring.

The preparation of alternative forecast scenarios were threefold:

- to better understand the key drivers of travel demand by using alternative economic and demographic forecasts;
- to better understand model responses; and,
- to provide a range of forecasts for use in appraisal.

Three alternative forecasts were developed each containing identical assumptions regarding Scotland-wide planning and development aspirations (Planning Policy Inputs) and available transport infrastructure (the assumed network).

These scenarios provide additional information about the sensitivity of key model outputs to model inputs. The alternative forecasts also provide a ‘off the shelf’ forecasts which can be used as the basis for testing in LATIS regional models.

The alternative forecast scenarios taken forward by Transport Scotland are:

- **Scenario A – ‘Updated Do Minimum’:** Taking account of recent changes to the details related to proposed transport schemes, applying updated underlying economic growth, value of time and fuel price growth assumptions, making use of the 2008 mid year GRoS National population projections and taking account of recent changes to modelling guidance in respect of the calculation of vehicle operating costs;
- **Scenario B – ‘Increasing the Price of Fuel’:** A doubling in the rate of increase of the resource cost of road vehicle fuel (based on Scenario A); and
- **Scenario C - ‘Matching Sub National GRoS Population Levels’:** Altering model assumptions to reflect population levels projected by GRoS across six regional areas.

The Alternative forecasts were prepared during mid 2011, will be reported to Transport Scotland in late 2011 and be published in 2012.

### **Scottish Trip End Program**

The Scottish Trip End Program (STEP) is a software application that has been developed by Transport Scotland to enable the derivation of population, employment, households by car ownership, trip predictions and attractions and growth factors based on data from the Scottish National Transport, Demand and Land Use Models and the National Trip End Model (NTEM).

In producing forecasts based on the National Transport models, this gives STEP an advantage over similar tools as it incorporates 'Scotland specific' data. STEP also includes a good representation of base year (2007) trip ends as they have been calibrated to reflect observed data collected across Scotland as part of the development of the National Models.

STEP has been prepared for transport planning purposes. Specific uses include informing on the formulation of policy, obtaining indicators on predicted changes in transport use over time, an indication of modelled trip ends and growth rates to assist in the development and forecasting of other regional and local demand models.

#### Functionality

STEP can provide outputs based on a selection of user-defined attributes including:

- **Geographic Region-** STEP can allow the interrogation of data by National Model Zones, Local Authorities and/or Scottish Development Partnership Agency (SDPA) regions.

- Years- the available years are currently 2007 through to 2032.
- Mode of Transport- the modes of transport are Walk, Cycle, Car, or Public Transport.
- Travel Purpose- there are currently 8 travel purposes available within STEP including:
  - Home-Based Work;
  - Home-Based Employer's Business;
  - Home-Based School or Education;
  - Home-Based Personal Business;
  - Home-Based Shopping;
  - Home-Based Recreation;
  - Home-Based Visit; and
  - Home-Based Holiday.
- Time Period- the selectable time periods are AM period, IP period, PM period, off peak and overnight, Saturday, Sunday, average weekday and average day.
- Car Ownership- available car ownership categories are:
  - No car available;
  - One adult, one car available;
  - Two or more adults, one car available; and
  - Two or more cars available.

These stratifications of data outputs can be used in combination with each other to provide a wide range of outputs for the user. All outputs from STEP are provided in a simple, consistent spreadsheet format which allows you to do easy cross-examination, comparison and further analysis.

#### Availability and guidance on use

Following registration on the LATIS website, the STEP software and datasets are available free of charge. An online help manual as well as a streamlined user interface, enables the user to operate the application quickly and efficiently, as well as providing details on the forecasting assumptions and methods employed in the program.



## **Supporting Regional Models**

The LATIS Team has continued to support the development and application of Regional Transport Models.

### Moray Firth Transportation Model

The Moray Firth Transportation Model (MFTM) is a multi-modal transport model of the Inverness travel-to-work catchment area. The model, which has been developed by AECOM in 2010 (see 2009-10 Annual Report) is prepared using the PTV software VISUM. The LATIS Commission Consultant undertook a review of the model to advise on requirements to ensure the model could be used to appraise enhancements to the A96.

In addition, the LATIS Commission Consultant developed a forecasting capability for the MFTM before releasing the model to Jacobs Consultancy for the DMRB Stage 2 Appraisal of the A96 and AECOM for their continued development and application on behalf of the Highland Council.

### SEStran Regional Model

The SEStran Regional Model has been enhanced to better appraise the A720 Edinburgh City Bypass. This includes an expanded simulation area and improved junction modeling.

The SEStran Model has also benefited from the implementation of the P&R modeling improvements introduced into the TMfS:07 National Model.

## 6 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 National Indicators and serving its Purpose. This chapter will review applications of LATIS during the Annual Report period of 1 September 2010 to the end of August 2011.

There have been a wide range of applications of LATIS throughout 2010 and 2011, including several studies of national importance. Of particular importance has been the role of LATIS in supporting the planning reform process – the modelling capability has been used to provide evidence for a large number of baseline assessments to support strategic and local plan preparation.

### Transport Applications – National Models

This section provides an overview of applications undertaken using the new TMfS:07 National Model.

#### EGIP Sensitivity Tests

- **Applicant:** Transport Scotland
- **Model User:** MVA Consultancy
- **Ultimate Client:** Transport Scotland
- **Model Version:** TMfS:05a

LATIS was used extensively between 2008 and 2010 to test the proposed package of interventions that represent the Edinburgh – Glasgow Improvement Programme. During 2011, TMfS:05a was again applied to undertake a number of sensitivity tests which considered a range of refinements to timetable and a phased implementation of this large and complex improvement project.

#### Edinburgh – Glasgow Collaboration Initiative

- **Applicant:** AECOM
- **Model User:** AECOM

- **Ultimate Client:** Edinburgh – Glasgow Collaboration Initiative / Scottish Enterprise
- **Model Version:** TMfS:07 / TELMoS:07

The Edinburgh – Glasgow Collaboration Initiative (EGCI) is an initiative of Scottish Enterprise to support closer economic linkages between Scotland’s principal cities. The work of AECOM established an analytical framework to identify existing linkages and the evidence for the key relationships between the two cities, then review existing and potential future physical connections and trip making between the conurbations to examine how key sectors might be affected by them.

A quantitative assessment of current and potential future problems, issues, constraints and opportunities was undertaken. As part of this work, transport and planning data was taken from both the National Transport and Land Use Models.

#### Update to TEMPRO

- **Applicant:** WSP Group
- **Model User:** MVA Consultancy
- **Ultimate Client:** Department for Transport for wider distribution via website
- **Model Version:** TMfS:07

TEMPRO is the software used to host the Department for Transport’s National Trip End Model (NTEM). NTEM includes base data and forecasts for population; employment; households by car ownership; trip ends; and traffic growth factors. While a Scottish specific trip-end model (STEP) has been developed, Scotland is still included within NTEM. Scotland-specific planning policy input data collected by LATIS was provided to WSP for this update..

#### Travel-to-Work Analysis

- **Applicant:** Transport Scotland
- **Model User:** OCEA
- **Ultimate Client:** OCEA
- **Model Version:** TMfS:07

The Office of the Chief Economic Advisor requested data from LATIS relating to travel to work areas (TTWA). This included the extraction of population, working age population and number employed for each TTWA.

#### Ravenscraig Transport Assessment

- **Applicant:** SKM Colin Buchanan
- **Model User:** MVA Consultancy
- **Ultimate Client:** Ravenscraig Ltd
- **Model Version:** TMfS:07

The Ravenscraig development is the largest urban regeneration project in Europe. It proposes to transform the former steelworks site into a mixed residential, retail and business area. A key aim of the project is to promote sustainable transport and use of active modes of travel. SKM was commissioned to undertake the Transport Assessment for the site and used retail and office planning data from STEP to support the development of a gravity model.

#### Clyde Tunnel Travel Patterns

- **Applicant:** MVA Consultancy
- **Model User:** MVA Consultancy
- **Ultimate Client:** Transport Scotland
- **Model Version:** TMfS:07

The Clyde Tunnel is a major conduit for traffic through Glasgow between the north and south banks of the River Clyde. LATIS was used to provide an analysis of travel patterns in and around the Clyde Tunnel area.

#### Severe Weather Impacts

- **Applicant:** Transport Scotland
- **Model User:** MVA Consultancy
- **Ultimate Client:** Transport Scotland
- **Model Version:** TMfS:07

The inclement weather in late November and early December 2010 had a significant impact on travel by all modes of transport. Transport Scotland undertook a study to assess the economic impact of the poor weather and used LATIS to inform the assessment and valuation of impacts to the trunk road network.

#### A77 Major Maintenance

- **Applicant:** Amey Infrastructure Services
- **Model User:** MVA Consultancy
- **Ultimate Client:** Transport Scotland
- **Model Version:** TMfS:07

Amey is the roads contractor for the M77 / A77 corridor. A major programme of roadworks was planned during the summer of 2011 and TMfS:07 was used to consider routing / diversion options for traffic typically using the A77 that could be affected by a prolonged period of disruption.

#### Economic Impact of Changes in Maintenance Spend on the Scottish Trunk Road Network

- **Applicant:** TRL
- **Model User:** MVA Consultancy
- **Ultimate Client:** Transport Scotland
- **Model Version:** TMfS:07

TRL made use of TMfS:07 traffic growth forecasts to inform their study on the impact of changes in maintenance spend on the Scottish Trunk Road Network.

#### Strathclyde Police New Headquarters

- **Applicant:** Halcrow
- **Model User:** Halcrow
- **Ultimate Client:** Transport Scotland
- **Model Version:** TMfS:05a (Clyde Gateway Version)

Halcrow undertook a Transport Assessment for the potential location of Strathclyde Police Headquarters. As part of this process, they applied to use the Clyde Gateway Version of TMFS:05a to assist in providing baseline traffic data for their study.

#### Commonwealth Games Spectator Demand

- **Applicant:** AECOM
- **Model User:** AECOM
- **Ultimate Client:** Glasgow City Council
- **Model Version:** TMfS:05a (Clyde Gateway Version)

AECOM made use of LATIS population and employment forecasts for 2012 and 2017 within a gravity model to forecast the likely origins and distribution of trips made by spectators travelling to the Commonwealth Games. As part of this process, they applied to use the Clyde Gateway Version of TMFS:05a to assist in providing baseline traffic data for their study.

#### Advice on Journey Purpose combinations

- **Applicant:** Jacobs Consultancy
- **Model User:** MVA Consultancy
- **Ultimate Client:** Transport Scotland
- **Model Version:** TMfS:07

MVA provided advice to Jacobs regarding journey purpose combinations to allow for more direct comparisons between historic RSI data and travel purpose data used by TMfS:07.

### **Transport Applications – Regional Models**

#### Highland Local Plan – East Inverness Development appraisal

- **Applicant:** Transport Scotland
- **Model User:** MVA Consultancy
- **Ultimate Client:** Transport Scotland
- **Model Version:** Moray Firth Transportation Model

There are significant development proposals for the area East of Inverness. Such development would put additional pressure on the A96 Trunk Road and other surrounding local roads. MVA Consultancy were given access to the MFTM model and prepared future year forecasts covering a range of scheme and development plan options. This work has allowed decision makers to understand the potential impacts of these developments on key road and public transport routes in the area.

Building on this, MVA Consultancy is currently applying the MFTM to consider the possible timing and phasing for the A96 route upgrade, including a junction strategy for Nairn bypass.

### M9 J3 – SEStran Model

- **Applicant:** SKM Colin Buchanan
- **Model User:** MVA Consultancy
- **Ultimate Client:** SKM Colin Buchanan
- **Model Version:** SEStran Regional Model

The SEStran Regional Model was used to support the transport assessment of a potential development near Junction 3 of the M9.

### **Support to Planning Reform**

Building on our initial support for DPMTAG and the assessment of Strategic Development Plans during 2010, LATIS was used to provide baseline data reports for a number of local authorities, whilst also assessing the potential impact of Local Development Plans. An overview of these applications is provided below.

### Baseline Assessments

- **Applicant:** Transport Scotland
- **Model User:** MVA Consultancy
- **Ultimate Clients:** East Ayrshire Council, East Lothian Council, Falkirk Council and Midlothian Council
- **Model Version:** TMfS:07

TMfS:07 has been used to provide baseline planning reports for each of the above local authorities. These baseline assessments have included such information as:

- an introduction to the model, coverage of key routes and transport issues within each local authority;
- an overview of planning policy data for each forecast year;
- road network operational forecasts;
- road traffic volumes;
- travel pattern information;
- public transport patronage and mode share forecasts;
- predicted changes in road and public transport travel time and accessibility;
- predicted changes in carbon emissions; and.
- a list of observed data held in the LATIS databank for the respective area.

The provision of these data has allowed each local authority to identify potential transport pressures arising from planned and future developments and thus assist in developing mitigation strategies.

#### Stirling Council Local Development Plan Assessment

- **Applicant:** Transport Scotland
- **Model User:** MVA Consultancy
- **Ultimate Client:** Stirling Council
- **Model Version:** TMfS:07

Stirling Council made use of TMfS:07 to assess the impact of their Local Development Plans on the strategic transport network. The analysis undertaken will be used to inform the assessment of site allocations in the Council's Local Development Plan (LDP) and also to compliment the transport and access monitoring database which informs the LDP and Local Transport Strategy (LTS) development.

#### North Ayrshire Council Local Development Plan Assessment

- **Applicant:** Transport Scotland
- **Model User:** MVA Consultancy
- **Ultimate Client:** North Ayrshire Council
- **Model Version:** TMfS:07

North Ayrshire Council used the LATIS service to obtain baseline planning data to feed into their Local Development Plan. The objectives of the study were to assess how future land-use plans may affect mode and destination choice in the wider context of the West of Scotland area.

## **Other Applications**

### Greenhouse Gas Emissions Quantification Tool for Spatial Planning

- **Applicant:** MVA Consultancy, Savills & AEA
- **Model User:** MVA Consultancy
- **Ultimate Client:** Scottish Government
- **Model Version:** TMfS:07

This study was a two-stage process to develop a tool to assess the greenhouse gas impacts of Scottish spatial planning policy. The first stage of this project involved undertaking a feasibility and scoping exercise to define the approach and functionality of a tool to be developed at the second stage of the work.

The resulting tool that was developed and has recently been launched (Spatial Planning Assessment for Emissions (SPACE) tool) allows Scottish planners to compare the relative greenhouse gas impacts of different spatial strategies at the national, regional and local levels. The tool covers quantifies greenhouse gas emissions arising from the energy requirements of the specified developments, from trips to and from the developments, from the change in land-use classification (e.g. from agricultural to residential) and the corresponding waste-related impacts.

LATIS provides travel demand and accessibility forecasts which form the basis for the prediction of transport-related emissions impacts of developments within the spatial strategies being tested.

## 7 DATA COLLECTION COMMISSION

### Background

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 collection requirements of Transport Scotland.

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 Application Form should be completed and submitted to Transport Scotland prior to any data being released. A charge may be incurred for data requiring model runs to be undertaken.

### 2010-2011 Data Collection

The need for data collection in building and maintaining strategic transport models is somewhat cyclical. There was a large scale data collection exercise during 2008 to support the development of TMfS:07, followed by more local data collection in 2009 and 2010 to support the development of early LATIS Regional Models and to improve the calibration of the National Model following experience in applying it. 2010-11 has, by comparison, been a relatively quiet year in terms of collecting data for the specific purpose of LATIS.

The DCC provides support for general Transport Scotland data collection requirements including such data as ad hoc junction surveys, road traffic counts, concessionary fares information. 2010-2011 costs in table 8.3 reflect this work.

## External Requests for Data

While there has been limited data collection during the last year, there is an increasing use of the LATIS observed databank. Requests for access to LATIS observed data are summarised in Table 6.1 below:

**Table 7.1: LATIS Databank Requests**

<b>Application</b>	<b>Applicant</b>
Road Maintenance Review	Halcrow
High Speed Rail Extension to Inverness	Steer Davies Gleave
Nairn Housing Development	WSP
Cross-border traffic flows	Scottish Government
Scottish Transport Statistics data provision	Scottish Government

## **8 DEMONSTRATING VALUE FOR MONEY**

### **Overview**

2010-11 has been a challenging year for LATIS with a combination of increasingly tight fiscal conditions for public sector organisations coupled with the ongoing malaise in the private sector. Despite this, LATIS has continued to make a very strong contribution to the Scottish Government's purpose in 2010-11. This Annual Report period has witnessed an expansion in the use of TMfS:07, the SEStran Model and the Moray Firth Transportation Model. In addition, model developments such as STEP, alternative forecast scenarios and enhanced modelling of Park and Ride have been introduced.

In terms of application, LATIS has continued to offer support for both high profile transport applications like EGIP and more local or short-term projects like the appraisal of alternative plans for road works on the A77 trunk road. The service has also assumed a more central role in supporting the planning reform process, through the preparation of baseline forecasts for local authorities and assessments of the impact of Local Development Plans. LATIS also continues to be used to support private development projects.

Transport Scotland continues to strive 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.

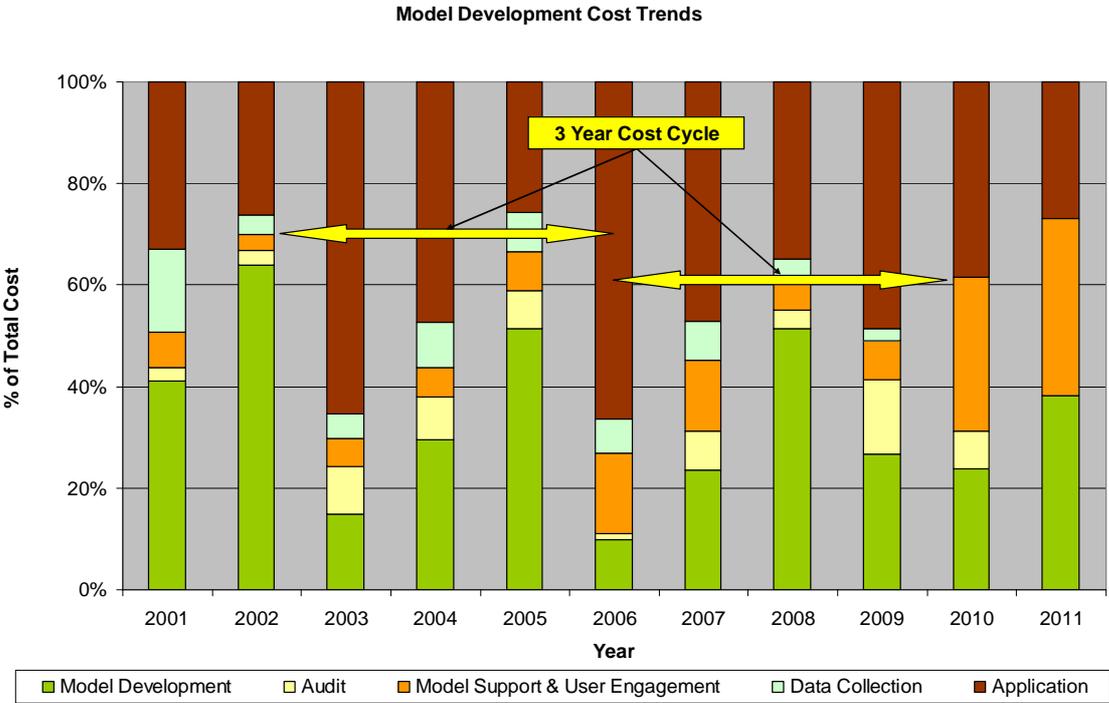
### **The LATIS Model Lifecycle**

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 product lifecycle; data collection, model calibration and validation, audit, release, and model application.

The LATIS national model lifecycle is between three and five years in duration, depending on the time taken to develop or upgrade the model. Like 2010, 2011 lies towards the end of a LATIS national model lifecycle; the base model relies heavily upon data collected in 2006/2007 and future forecast years become "current year",

demanding calibration and validation to maintain the credibility of outputs. The subsequent development of LATIS regional models in 2009 and 2010 means that LATIS product lifecycles are overlapping. 2011 has seen intensive application of the LATIS National Model and increasing application of completed Regional Models.

The LATIS cycle is illustrated in Figure 8.1 below:



**Figure 8.1 LATIS Transport Model Lifecycle**

It should be noted that the model development spend outlined in Figure 8.1 is proportionally higher than would be expected for this stage of the lifecycle. This reflects Transport Scotland’s investment in regional models and enhancements to the national model including STEP, alternative forecast scenarios and the Park & Ride sub-model.

This Annual Report will focus primarily on the costs of LATIS in 2010-11 but it is important to keep in mind the longer-term investment lifecycle. Note that the data collection not associated with LATIS model development or application and 3<sup>rd</sup> party model application costs have been excluded from the above chart.

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

- Economics; and
- Efficiency and Effectiveness.

The analysis of the value of LATIS is based on a comparison of LATIS commission costs against the costs of the next best alternative (ie the opportunity cost). LATIS has typically shown a monetary saving over the next best alternative.

## **Economics**

In understanding the value of LATIS to Transport Scotland, the first step is to consider what each LATIS user would have done in the absence of the service. This question is asked of prospective LATIS users when they complete a LATIS Model Request Form, which is a mandatory requirement for the release of the models or their data. The majority of responses to this question explain that a bespoke model would have been produced, as shown in Table 8.1.

To provide an indication of the quantitative value of having the LATIS models available for use, we have attempted 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 is 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 lowest 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; 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).

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

Application	What would be undertaken in the absence of LATIS?	Estimated cost of alternative (£)
EGIP Sensitivity Tests	A bespoke central belt model would be required.	£96,000
Edinburgh Glasgow Collaboration Initiative	Combinations of TEMPRO, data trawl through various providers, literature review of economic forecasts, census, NRTS, NTS and SHS.	£22,000
Update to TEMPRO	Data would be sourced from online development plans or sought directly from planning authorities.	£40,000
Economic Impact of Changes in Maintenance Spend on the Scottish Trunk Road Network	Data would be sourced and analysed from a range of other organisations.	£196,000
Travel-to-Work Analysis	Not specified.	£98,000
Ravenscraig Transport Assessment	Manual assessment using existing travel survey and traffic count data.	£24,000
Clyde Tunnel Travel Patterns	Not specified.	£104,000

<b>Application</b>	<b>What would be undertaken in the absence of LATIS?</b>	<b>Estimated cost of alternative (£)</b>
Severe Weather Impacts	Data would be sourced and analysed from a range of other organisations.	£0
A77 Major Maintenance	No other option.	£52,000
Commonwealth Games Spectator Demand Modelling	Population data from 2009 would have been used. Employment data would have been extracted from National Statistics Annual Business Inquiry (ABI).	£100,000
Highland Local Plan – East Inverness Development Appraisal	Not specified.	£108,000
M9 Junction 3	Manual assessment using existing travel survey and traffic count data.	£28,000
East Ayrshire Council Baseline Assessment	Not specified in request form. To prepare all data, a bespoke model would be required.	£56,000
East Lothian Council Baseline Assessment		£56,000
Falkirk Council Baseline Assessment		£56,000
Midlothian Baseline Assessment		£56,000
North Ayrshire Council Local Development Plan		£100,000
Stirling Council Local Development Plan		£100,000
Greenhouse Gas Emissions Tool for Spatial Planning	Data would be sourced and analysed from a range of organisations and publications including transport statistics, transport assessments, TRICS data and TEMPRO.	£54,000

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 is summarised in Table 8.2 below. A full record of 2011 applications is provided in **Appendix B**.

**Table 8.2: Estimated Costs of an Alternative Modelling Approach for all LATIS Applications**

<b>Year</b>	<b>Alternative Model Development Cost (Est)</b>	<b>Data Collection Cost (Est)</b>	<b>Audit Costs (Est)</b>	<b>Total Cost of Alternative Models (Est)</b>
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
2011	£1,020,000	£226,000	£100,000	£1,346,000
<b>Total (2007-11)</b>	<b>£5,380,000</b>	<b>£1,128,400</b>	<b>£526,000</b>	<b>£7,034,000</b>

Over the equivalent period (financial year 2010-2011), Transport Scotland invested approximately £507,500 in LATIS model development (national and regional models), around £233,000 in the application of LATIS models and £45,500 in the audit of those models. No data collection was undertaken to support LATIS model development.

In the period 2007-2011 (end of Commission), Transport Scotland invested a total of £4.3 million in model development, application, user support, user engagement and model audit and at least a further £600,000 in data collection to inform those models.

It can be seen that, compared with the estimated costs of an alternative modelling approach outlined in Table 8.2, LATIS demonstrates value for money during 2011 and for the period 2007-2011. In the 2010-2011 financial year, LATIS has offered cost savings of around £550,000 over the alternative modelling strategy, reflecting the benefits of LATIS model availability and re-use, model familiarity, training and the re-use of observed data. This further demonstrates the position of LATIS within the model lifecycle described in Figure 8.1.

LATIS makes an important contribution to the appraisal of potential transport interventions worth many billions of pounds over the next 20 years. In this context, the costs of LATIS are a small price to pay to ensure the identification of effective, proportionate and targeted interventions which ameliorate identified transport problems and avoid wasted investment in ineffective interventions.

**LATIS Data Collection Commission**

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

**Table 8.3: LATIS Data Collection Commission costs**

<b>Year</b>	<b>No. of DCC Uses</b>	<b>Total Costs of DCC Work</b>
2007	26	£444,592
2008	55	£431,343
2009	64	£807,765
2010 <sup>3</sup>	42	£378,404
2011	24	£224,011
<b>Total</b>	<b>211</b>	<b>£2,286,115</b>

The DCC has provided support across various Directorates of Transport Scotland during 2011, although none of these were in direct support of LATIS applications. A total of 24 task orders were issued prior to the conclusion of the Data Collection Commission Contract in early September. More generally, over the five year life of the commission, the LATIS DCC has supported 211 separate data collection tasks, with a value of almost £2.3 million in total.

<sup>3</sup> Updated 2010 figure to reflect full calendar year costs.

## Efficiency and Effectiveness

LATIS offers Transport Scotland a range of benefits in terms of efficiency and effectiveness. The holistic approach of the LATIS service ensures that activities are coordinated, applied across a range of different projects, giving rise to economies of scale and scope.

LATIS offers time savings to Transport Scotland and other stakeholders in the application of transport models since the strategic models and data repository are available “off-the-shelf”. 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 or project without a robust evidence base.

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 of ad hoc or bespoke models built in different software platforms with different constituent input data.

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 also supports efficiency by ensuring that enhancements are focused on meeting the needs of users and prospective users and by facilitating evaluation of the Commission more generally.

## Summary

This chapter has demonstrated that LATIS delivers value for money to Transport Scotland and also offers a range of benefits to model users, throughout 2011 and over the duration of the Commission. LATIS provides users with consistent, best practice, off-the-shelf modelling and appraisal tools, readily accessible data and a data collection facility and project advisory services.

## 9 THE YEAR AHEAD

### Overview

This Annual Report forms the final report under the Term Commission for the Maintenance and Enhancement of the Transport Model for Scotland (July 2006) now known as LATIS.

After providing background to the structure, objectives and management of the Commission, this report reviews the work of the service under the key elements of Model Development, Model Application, User Engagement and Data Collection. It discusses the extent to which objectives set out in the Annual Report 2010 have been met and the projects which have contributed to that performance.

The Commission contractual agreement concluded on 31<sup>st</sup> August 2011. At the time of writing, the procurement of consultancy services to support the provision of the LATIS service and further development, maintenance and application of the LATIS transport and land use models was ongoing.

Following consultation of users at the Joint STAG – LATIS User Group event in February 2011, outlined in Chapter 4 of this report (User Engagement), the LATIS Commission Steering Group and a range of LATIS users and project managers within Transport Scotland and the Scottish Government were asked to contribute to the setting of objectives for a future Commission. The following objectives were identified for the work of a future LATIS Commission pending successful procurement.

### User Engagement Objectives

Objective	
1	Hold a joint LATIS/STAG user group to consider the links between appraisal and modelling in more detail.
2	Build on the relationships with stakeholders by introducing a LATIS support network.

## Model Development Objectives

Objective	
1	Update the LATIS national and regional models to reflect changes to the transport network and updated planning policies and allocations.
2	Continue to develop national and regional models to support the Scottish Government's Infrastructure Investment Plan (IIP)
3	Develop alternative forecasts of travel demand and trip-making for application to project appraisal and design.

## 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.
3	To promote the use of LATIS for the appraisal of projects contained within the Scottish Government's Infrastructure Investment Plan (IIP).

## Data Collection Objectives

Objective	
1	Prepare a data collection programme that supports the appraisal work required by the IIP.
2	Ongoing data collection that supports specific model applications and other Transport Scotland Directorates.

## Model Support Objectives

Objective	
1	Provision of ongoing technical support to those installing and using LATIS models where possible, subject to the outcomes of procurement.

## **Appendix A – Glossary**

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

NTEM – National Trip End 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

SRM – SEStran Regional Model

SRTDb – Scottish Road Traffic Database

STAG – Scottish Transport Appraisal Guidance

STAR – Scottish Transport Applications and Research Conference

STEP – Scottish Trip End Program

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

TTWA – Travel to Work Area

## Appendix B - Estimated costs of an alternative modelling approach for all LATIS applications

Model	Year	Project	Ultimate Client	Alternative Model Development Costs (estimated)	Data Collection Costs (estimated)	Audit Costs (estimated)	Total Cost (estimated)
TMFS:05a	2011	EGIP Sensitivity Tests	Transport Scotland	£80,000	£8,000	£8,000	£96,000
	<b>Sub-total</b>			<b>£80,000</b>	<b>£8,000</b>	<b>£8,000</b>	<b>£96,000</b>
TMFS:07	2011	Edinburgh-Glasgow Collaboration Initiative	Scottish Enterprise	£20,000	£0	£2,000	£22,000
		Update to TEMPRO	Department for Transport	£0	£40,000	£0	£40,000
		Economic Impact of Changes in Maintenance Spend on the Scottish Trunk Road Network	Transport Scotland	£160,000	£20,000	£16,000	£196,000
		Travel to Work Analysis	OCEA	£80,000	£10,000	£8,000	£98,000
		Ravenscraig Transport Assessment	Ravenscraig Ltd	£20,000	£4,000	£0	£24,000
		Clyde Tunnel Travel Patterns	Transport Scotland	£80,000	£16,000	£8,000	£104,000
		Severe Weather Impacts	Transport Scotland	£0	£0	£0	£0
		A77 Major Maintenance	Transport Scotland	£40,000	£8,000	£4,000	£52,000
		Commonwealth Games Spectator Demand Modelling	Glasgow City Council	£80,000	£12,000	£8,000	£100,000
		East Ayrshire Council Baseline Assessment	East Ayrshire Council	£40,000	£12,000	£4,000	£56,000
		East Lothian Council Baseline Assessment	East Lothian Council	£40,000	£12,000	£4,000	£56,000
		Falkirk Council Baseline Assessment	Falkirk Council	£40,000	£12,000	£4,000	£56,000
		Midlothian Council Baseline Assessment	Midlothian Council	£40,000	£12,000	£4,000	£56,000
		Stirling Council Local Development Plan Assessment	Stirling Council	£80,000	£12,000	£8,000	£100,000
		North Ayrshire Council Local Development Plan Assessment	North Ayrshire Council	£80,000	£12,000	£8,000	£100,000
		Greenhouse Gas Emissions Tool for Spatial Planning	Scottish Government	£40,000	£10,000	£4,000	£54,000
<b>Sub-total</b>			<b>£840,000</b>	<b>£192,000</b>	<b>£82,000</b>	<b>£1,114,000</b>	

Model	Year	Project	Ultimate Client	Alternative Model Development Costs (estimated)	Data Collection Costs (estimated)	Audit Costs (estimated)	Total Cost (estimated)
<b>SESTRAN</b>	2011	M9 Junction 3	SKM Buchanan	£20,000	£6,000	£2,000	£28,000
	<b>Sub-total</b>			<b>£20,000</b>	<b>£6,000</b>	<b>£2,000</b>	<b>£28,000</b>
<b>MFTM</b>	2011	Local Development Plan Appraisal	Transport Scotland	£80,000	£20,000	£8,000	£108,000
	<b>Sub-total</b>			<b>£80,000</b>	<b>£20,000</b>	<b>£8,000</b>	<b>£108,000</b>
<b>TOTAL</b>				<b>£1,020,000</b>	<b>£226,000</b>	<b>£100,000</b>	<b>£1,346,000</b>