LAND-USE AND TRANSPORT INTEGRATION IN SCOTLAND

ANNUAL REPORT 2009

CONTENTS

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 was launched in November 2008 and brings together all elements of what was previously known as the Transport Model for Scotland (TMfS) into a single service. These elements are:

- The Transport and Land use modelling capability;
- A user (customer) engagement programme;
- A data collection facility; and
- Project management.

The two overarching aims of LATIS are:

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

Throughout the last year, the work undertaken for each element of LATIS has focused on further enhancing confidence in the technical excellence offered by Transport Scotland's principal modelling capabilities.

As part of Transport Scotland's commitment to performance evaluation, this Annual Report aims to explain the extent to which the LATIS Team, supported by our appointed Term Consultants, the LATIS Steering Group, the Data Collection Consultants and the Auditor have achieved these two aims throughout 2009. It will also explain how LATIS contributes towards the Scottish Government's Purpose and Transport Scotland's corporate objectives and policy-making.

Table A: LATIS Roles and Responsibilities

Role	Organisation
Client	Transport Scotland
Transport Model Consultant	MVA Consultancy
Land use Modelling Sub-Consultant to MVA Consultancy	David Simmonds Consultancy
Auditor	SIAS Limited and WSP Group
Data Collection Contractors	Amey, Colin Buchanan and Count-on-Us
Steering Group	Scottish Government, Transport Scotland, Regional Transport Partnerships and Key Stakeholders
User Group	All Key Stakeholders

What has been achieved in 2009?

User engagement efforts in 2009 have focused on communicating the potential uses of LATIS to the wider User Group and emphasising that the capabilities of the LATIS service are much more than the use of transport and land use models.

A concerted effort has been made by us to promote awareness of LATIS through a variety of mediums, including:

- User workshops, a new brochure, and a new website;
- Close interaction with the Key Agencies1 in the delivery of Transport Scotland's commitments in the Common Statement on Planning Reform;
- LATIS User Group Days were held in November 2008 and May 2009, with the May event having a new workshop format, based on delegate feedback;

[1] The 'Key Agencies' were identified in Cabinet Secretary for Finance and Sustainable Growth John Swinney's Common Statement on Planning Reform. Transport Scotland will work in partnership with the Scottish Government and the defined Key Agencies to make Scotland's planning system leaner and fitter. The other Key Agencies are: the Convention of Scottish Local Authorities (COSLA), Scottish Natural Heritage, the Scottish Environment Protection Agency (SEPA), Scottish Water, Architecture and Design Scotland, Historic Scotland, the Scottish Property Federation and Homes for Scotland.

- Transport Scotland has continued to work in partnership with the Department for Transport on issues such as modelling guidance and the representation of Scotland in UK models;
- LATIS documentation has been updated to reflect the launch of Transport Model for Scotland: Version 2007 (TMfS:07), the Transport, Economic, and Land use Model of Scotland: Version 2007 (TELMoS:07) and the Forth Replacement Crossing Model (FRCM); and
- Presentations at the Transport Practitioners' Meeting and European Transport Conference.

The results of the user engagement programme have been very encouraging, with increasing recognition of the potential role that LATIS can play in supporting wider policy appraisal and policy development, environmental assessment and research.

The Common Statement on Planning Reform (October 2008) set out the Scottish Government's proposed approach to the reform of development planning policy in Scotland. It declared Transport Scotland as one of the "Key Agencies" of the Scottish Government. In support of this, LATIS allows Transport Scotland to appraise the impact of land use policies on the transport network and vice versa. Transport Scotland has engaged extensively with planning authorities and provided information to assist in identifying how proposed changes to land use or the introduction of development plans may impact on the transport system. The Annual Report 2009 commits Transport Scotland to fulfil its Key Agency responsibilities in the coming year.

With respect to promoting technical excellence and continuous improvement, 2009 represented an important year in terms of model development. 2009 saw the completion of independent model audits of TMfS:07, TELMoS:07 and the Forth Replacement Crossing Model (FRCM), making recommendations which have been incorporated in the final release version of the models, while also identifying ways in which the models can be improved in the future. Comprehensive TMfS:07 model documentation is now available on the LATIS Website.

The LATIS Data Collection Commission continues to provide high quality data to support modelling work across Transport Scotland and Scottish Government Directorates. It also undertakes data collection in support of monitoring of the National Concessionary Fares Scheme and the Scottish Government Ferries Review. With the base year model of TMfS:07 and the Forth Replacement Crossing Model now developed, data collection for LATIS itself has been relatively limited in 2009.

LATIS has been applied to a wide range of national, regional and local transport and land use studies and other areas of the policy agenda.

Key achievements have included:

- Continued involvement in headline transport and land use applications, such as; the Forth Replacement Crossing, Strategic Transport Projects Review, Edinburgh to Glasgow Improvement Programme, Edinburgh to Glasgow Rail Improvements and the West Edinburgh Transport Assessment; and
- Pro-active involvement in land use planning – significant steps have been taken in delivering Transport Scotland's Common Statement responsibilities and we are currently discussing how we can support the planning reform process within the SESplan and TAYplan areas, Aberdeen / Aberdeenshire and Highland Council.

The Value of LATIS

A key part of the Annual Report is an assessment of the added value that LATIS services bring to the work of Transport Scotland - how has our investment been rewarded? The Annual Report reviews the value of LATIS in policy terms, qualitatively and quantitatively.

LATIS is an essential component of Transport Scotland's strategic transport and land use modelling toolkit. It provides a means of appraising and prioritising potential transport interventions and assists in identifying their impact on a range of areas, such as land use, the economy and the environment. The LATIS modelling capability provides a robust, consistent framework by which scheme and policy interventions can be assessed. LATIS modelling also permits consistent application of the Scottish Transport Appraisal Guidance (STAG).

The quantitative assessment of the value of LATIS considers estimates of the cost to Transport Scotland of developing and applying an alternative modelling strategy at national, regional and local levels. It is demonstrated that the costs of developing and applying bespoke models, in real terms and qualitative terms (potential inconsistency of results and lower quality outcomes), would exceed those of LATIS.

The 2009 Annual Report finds that, consistent with the findings of the previous Annual Report, LATIS offers value for money to Transport Scotland over the three year investment cycle.

The management of LATIS in 2009

In 2009, Transport Scotland has intensified the management of the commission in order to ensure continued delivery of technical excellence and to sustain user engagement.

The Client Progress Meeting is now held on a fortnightly basis and focuses on the strategic direction of the commission and other key items such as resourcing. The Client Progress Meeting is now supplemented by a monthly Commission Progress Meeting that considers areas such as user engagement, model development, audit and model applications.

The Client and Commission Progress Meetings continue to be supplemented by quarterly Steering Group Meetings and bi-annual Directors' Meetings to ensure that the commission is strategically focused and continues to serve the requirements of the Scottish Ministers.

Looking to the future

LATIS will continue to deliver added value to Transport Scotland through ongoing support for model applications and the consistent appraisal of a wide range of transport and land use interventions.

To guide the work of LATIS in the coming year, a number of objectives have been identified to be taken forward, including:

- identify and act upon opportunities to assist in the assessment of policy initiatives to further advance the Government's Purpose, including the strengthening of key networking opportunities, both internally and externally;
- ongoing liaison with the Key Agencies and stakeholders and ongoing customer engagement, with a continued focus on supporting the Scottish Government's policy commitments;
- liaison with the Regional Transport Partnerships and other key stakeholders to identify the scope for the development of sub-area models to compliment the TMfS:07 National Model;
- 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 for supporting the Scottish Government's targets, both in the transport field and other areas (planning and environmental policy);
- continued contribution to the planning reform agenda and supporting Transport Scotland's role as a Key Agency;
- analytical support in taking forward the STPR outcomes;
- close engagement with the Department for Transport on High Speed Rail;
- application and further refinement of TMfS:07 and the FRCM;
- continued data collection support for the Scottish Government and Transport Scotland Directorates; and
- User Group Days for land use planners, key decision-makers and the holding of a second Technical User Group Day.

1 Introduction

2009 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."

The Transport Scotland Annual Report 2007/08 outlines the means by which we will support the delivery of the 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"2.

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 through a pursuit of technical excellence in integrated transport and land use planning and an intensive user (customer) engagement programme.

Following a review of the background and objectives of LATIS and how it sits within the wider policy context, Chapter 2 outlines how the 2008 Annual Report objectives have been met in 2009. Chapter 3 reviews how LATIS has been managed in 2009 and Chapter 4 reviews the progress of the LATIS user engagement programme. Chapter 5 provides a summary of the development of TMfS:07, TELMoS:07 and the Forth Replacement Crossing Model in 2009, highlighting improvements over previous

[2] Transport Scotland Annual Report and Accounts 2007-08, p. 7.

model versions (TMfS:05, TMfS:05a and TELMoS:05) together with details of the audit process and the benefits it brings to LATIS. The work of the final element of LATIS in 2009, the Data Collection Commission, is described in Chapter 6. Chapter 7 reviews LATIS applications in 2009.

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

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

What is LATIS?

Land use and Transport Integration in Scotland, known as LATIS, has four 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.

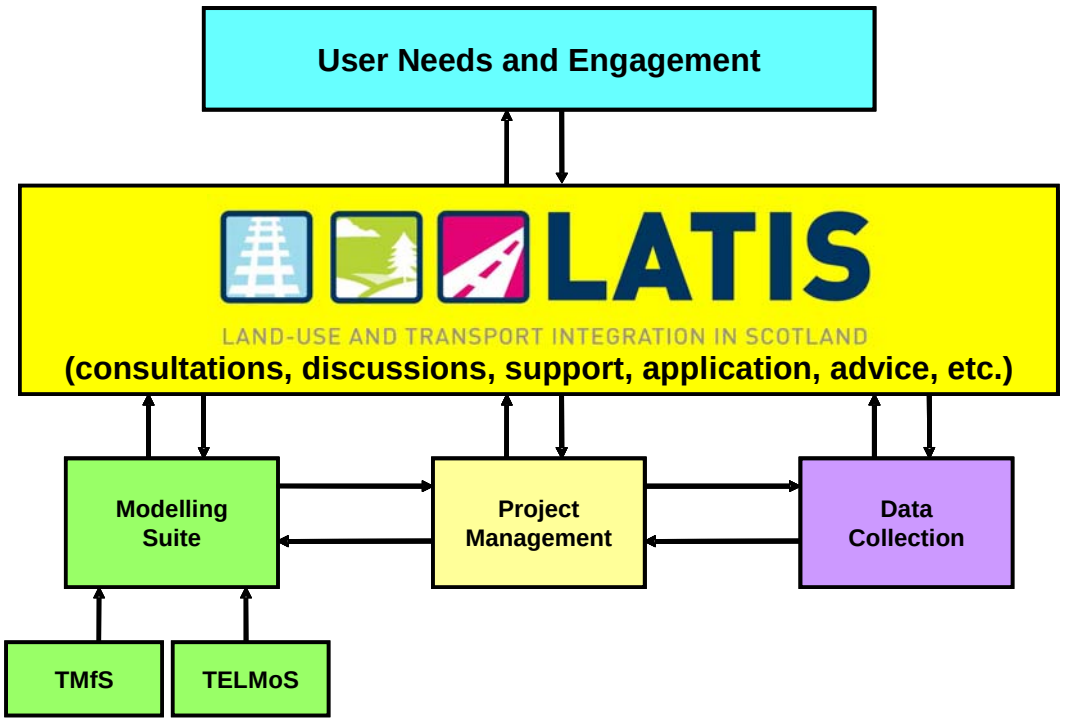

Figure 2.0: Land use and Transport Interaction in Scotland (LATIS)

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 opportunitye 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.

The focus on sustainable economic growth provides a clear rationale for transport and planning policy. The contribution of transport towards the Purpose is measured through the two relevant National Indicators from the National Performance Framework, namely:

- to reduce the proportion of driver journeys delayed due to traffic congestion; and
- to increase the proportion of journeys to work made by public or active transport[3].

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. The analysis provided by LATIS minimises the risks to large scale investment programmes by ensuring that all interventions are appraised in a like-for-like basis.

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.

[3] http://www.scotland.gov.uk/About/scotPerforms/indicators

Background to LATIS

The 2008 Annual Report outlined the wide range of developments of the Transport Model for Scotland Commission up to 2008. A key theme that emerged was the widening scope of TMfS – TMfS had been involved in an increasing number and range of applications, while it had also assumed a more central role in supporting the formulation and delivery of policy.

However, the commission title of "Transport Model for Scotland" underplayed the wider capabilities of the service by restricting attention to its transport modelling component only. Consequently, Transport Scotland worked to refocus the service and the underlying modelling capability of TMfS and TELMoS. This involved consultation with various parties including the TMfS Steering Group and the Term Consultant. The aim of this process was to develop and launch a new name which better reflected the capabilities of the service and the applications to which it was being applied.

It was considered appropriate that the transport and land use models should continue to be called the Transport Model for Scotland (TMfS) and the Transport, Economic and Land use Model of Scotland (TELMoS) respectively. However, a new title was required to act as an umbrella under which both the modelling and service elements of the Commission could sit.

The new name chosen to represent the service was *Land use and Transport Integration in Scotland (LATIS)*.

Fundamental to establishing LATIS was the development of a distinctive logo that communicated the key messages of this culture change.

The pictures within the logo highlight the key messages of LATIS, as they show transport infrastructure (ie the rail line and road) and the landscape, which emphasises land use and the environment.

The change in focus was embodied within three main aims:

- to broaden the focus of TMfS from transport alone;
- to promote the use of TMfS amongst a wider range of stakeholders; and
- to highlight that TMfS is not 'just about models'.

The LATIS logo has since been applied to all public documentation, reports and presentations, although all documentation related to both the transport and land use models also carries the TMfS logo. It was felt that this would allow a continued acknowledgement of the importance of strategic modelling within the overall framework.

In order to foster the development of LATIS and communicate its importance to users, a new LATIS Website (www.latis.org.uk) was developed and a new LATIS Brochure was launched. Finally, the LATIS team embarked on an extensive engagement with key stakeholders, including the User Group, Regional Transport Partnerships, Local Authorities, the planning authorities and the Key Agencies[4] to set the way forward.

What has LATIS achieved to date?

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

[4] The 'Key Agencies' were identified in Cabinet Secretary for Finance and Sustainable Growth John Swinney's Common Statement on Planning Reform. Transport Scotland will work in partnership with the Scottish Government and the defined Key Agencies to make Scotland's planning system leaner and fitter. The other Key Agencies are: the Convention of Scottish Local Authorities (COSLA), Scottish Natural Heritage, the Scottish Environment Protection Agency (SEPA), Scottish Water, Architecture and Design Scotland, Historic Scotland, the Scottish Property Federation and Homes for Scotland.

Table 2.1 LATIS User Engagement Objectives

2008 Annual Report Objective	Summary of Actions Undertaken
Establishment of LATIS.	New LATIS logo, documentation and website, www.latis.org
Development of relations with Key Agencies and stakeholders and ongoing customer engagement, with a particular focus on promoting the culture change coming from the modernisation of the planning agenda, in keeping with the Common Statement.	Close liaison and joint working with Key Agencies and communication of our ability to support the planning reform process
Ongoing liaisons with colleagues engaged in the planning process to assist in light of Cabinet Secretary John Swinney's announcement on 28 October 2008.[5]	Partnership working with Local Authorities and regional planning authorities
Ongoing liaisons with the Scottish Government with regard to DfT carbon comparisons. In particular, we will contribute towards the Scottish Government's work on climate change, as well as our own initiatives in this area.	Continued support for modelling the impact of transport on carbon emissions at scheme or national levels
In line with the Common Statement, we will continue to work with Scottish Water, SEPA and the planning authorities to agree a common methodology for collecting and collating planning data.	Met with Key Agencies to discuss data collection approaches and joint working opportunities
Provision of assistance to the DfT in the development of their modelling guidance.	Continued liaison with DfT on a range of issues

[5] The Common Statement on Planning Reform introduced a package of measures designed to ensure that planning is geared towards sustainable economic growth. As one of the Key Agencies, Transport Scotland are tasked with ensuring that the transport impacts of planning applications are assessed early in the process, thus ensuring that planning is quicker and more proportionate. LATIS can play a key role in this process by assessing and forecasting the strategic transport impacts of major land use interventions.
http://www.scotland.gov.uk/News/Releases/2008/10/28100001

2008 Annual Report Objective	Summary of Actions Undertaken
Continued user engagement through LATIS User Group Days.	Two User Group Days held
Identify and act upon opportunities to assist in the assessment of policy initiatives to further advance the Government's Purpose, including the strengthening of key networking opportunities both internally and externally.	Proactive interaction with other directorates of TS and SG to identify where LATIS can support their aims

Table 2.2 LATIS Model Development Objectives

2008 Annual Report Objective	Summary of Actions Undertaken
Delivery of the Forth Replacement Crossing Model (FRCM).	Delivered
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 for supporting the Scottish Government's targets, both in the transport field and in other areas.	Continued direct and indirect communication with users through User Group Days, meetings and documentation. These liaisons were invaluable in the design of TMfS:07 and the FRCM
Audit of the LATIS modelling capability by the Auditor.	Audit of TMfS:07 and TELMoS:07 completed in mid 2009

Table 2.3 LATIS Data Collection Objectives

2008 Annual Report Objective	Summary of Actions Undertaken
Ongoing data collection that supports model development and validation requirements.	Undertaken.

Table 2.1 LATIS Model Support Commitments

2008 Annual Report Objective	Summary of Actions Undertaken
Support for all reasonable ongoing applications.	Continued support for applications across a range of policy areas
Analytical support for the conclusions of the STPR.	Ongoing
Support for the Scottish Government in carbon comparisons with the DfT and in support of the climate change agenda.	Ongoing

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 and Transport Scotland has continually worked to improve our project management approach.

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.

Developing our Communications

The 2007 and 2008 Annual Reports highlighted the growing role of LATIS in supporting and advising policy across a range of areas. It quickly became apparent to Transport Scotland's Project Management Team that the expanding scope of LATIS had to be met with a step-change in both the depth and quality of project management so as to ensure that the aims of LATIS are successfully delivered.

Central to this process has been developing communications with LATIS stakeholders. Throughout 2009, the use of both the LATIS modelling capability and databank has expanded, and it is this growing use that has encouraged improvements in our communications. LATIS is inherently technical in nature and it is essential that Transport Scotland explains how it can and should be used to both current and potential users.

LATIS Client Progress Meetings

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.

LATIS Commission Progress Meetings

2009 has seen the introduction of LATIS Commission Progress Meetings. These meetings involve a detailed discussion of more immediate issues such as model development and current model applications, providing a forum for the immediate management of LATIS.

The Commission Progress Meetings have been 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. In particular, the meetings have been central to the development of LATIS through the planning of key events such as User Group Days.

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

Table 3.1 LATIS Commission Progress Meetings – Key Discussions

Month	Model Development Discussions	Support to Planning Reform
September	Proposal for paper discussing sensitivity tests on TMfS:05a and TMfS:07.	Preparation for move to LATIS.
October	Discussion of TMfS:07 calibration. Discussion of ongoing data collection needs.	Discussion of how to support the 'Common Statement'. Proposal to test Aberdeen Structure Plan in TMfS.
November	TMfS:07 and FRCM updates. Launch of LATIS.	Reflection on first 'Key Agencies' meeting.
December	STPR outcomes – implications for Do Minimum and Reference Cases.	Discussion on progressing with Common Statement commitments.

Month	Model Development Discussions	Support to Planning Reform
	FRCM – training, sensitivity testing and forecasting.	
January	TMfS:07 – Forecasting and sensitivity. tests. Do Minimum and Reference Case scenarios. Potential comparison of TMfS:05a and TMfS:07 travel forecasts.	SESplan information and meeting.
February	FRCM - sensitivity testing and forecasting. STPR outcome support.	Support for SESplan and Aberdeen on planning reform.
March	Discussion of updated TMfS:07 calibration.	Discussing the wider release of model traffic forecasts and future planning data to Local Authorities.
April	FRCM AM peak traffic distribution.	
May	Future regional modelling proposal. TMfS:07 Updated Calibration Results. Comparison of TMfS:05a and FRCM results.	SESplan information and meeting.
June	TMfS:07 PT model calibration proposal. TMfS:07 Do-min Scenario update. FRCM base model calibration update. TMfS:07 Audit.	Data supply to AECOM A96 model. TMfS:07/TELMoS:07 data in GIS proposal.
July	TMfS:07 PT model calibration update. West Edinburgh Transport Assessment (WETA reference case development. National Rail Travel Survey	Planning Data Note. A96 Model Surveys update.

Month	Model Development Discussions	Support to Planning Reform
	(NRTS) Data and access issues. TMfS:07 Audit.	
August	TELMoS:07 Audit update. Annual Report update. End of Commission Report update.	TMfS:07/TELMoS:07 data in GIS.

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. Strathclyde Partnership for Transport (SPT) also holds a permanent place on the Steering Group, so as to ensure good communication between LATIS and the Strathclyde Integrated Transport Model (SITM) teams. Steering Group meetings are held on a quarterly basis. 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 Client.

The role of the Steering Group has taken on increased significance during 2009. With the completion of both TMfS:07 and the FRCM, the Steering Group are required to guide the future development of LATIS, ensuring that further enhancements and initiatives are in keeping with the requirements of key stakeholders. It is also an opportunity for sharing experience in model development and application, with SPT, in particular, providing valuable inputs to this.

Table 3.2 provides an overview of the key discussions from Steering Group meetings over the previous year:

Table 3.2: LATIS Steering Group Meetings – Key Discussions

Month	Key Areas of Discussion
September	- Moving to LATIS - TMfS:07 and FRCM model development progress - 2008 Annual Report - 6 November User Group Day
January	- The launch and implementation of LATIS - TMfS:07 and FRCM Audit - Planning reform support - Data collection support for the Ferries Review
May	- TMfS:07 and FRCM Audit - Data collection priorities - Technical User Group - Progressing STPR outcomes
August	- Support to Planning Reform through creation of a new TMfS:07 Do-Minimum scenarios - Sensitivity testing using alternative future economic scenarios - Future User Group Days

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 key areas of 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.

There have been two such meetings during 2009 and each has been important in ensuring that LATIS is operating in an effective manner. The meetings have also provided an important opportunity to review the value for money of LATIS.

LATIS Audit Meetings

TMfS:07 and TELMoS:07 were audited by Transport Scotland's Traffic and Transportation Adviser and Auditor. Regular Audit Meetings were held to ensure that any issues arising from model development and calibration / validation (in the case of TMfS:07) were fully understood and resolved in a focused and effective manner.

Data Collection 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.

The Annual Report

The Annual Report is central to LATIS as it provides a means of reflecting on what has been achieved over the course of a year. It allows us to assess progress, record the achievements of the team and to communicate the future direction of LATIS, setting forward objectives for the coming year. The structure and content of the Annual Report has evolved significantly for this 2009 report, providing additional transparency and detail to users.

4 User Engagement

Key Achievements

- LATIS has been more firmly established in the transport planning community and beyond through the use of user workshops, a new brochure and a new website;
- Close interaction with the Key Agencies in the delivery of Transport Scotland's commitments in the Common Statement on planning reform;
- LATIS User Group Days have been successfully held in November 2008 and April 2009, with the April event having a new workshop format, based on delegate feedback;
- Transport Scotland has continued to work in partnership with the Department for Transport on issues such as modelling guidance and the representation of Scotland in UK models;
- LATIS documentation has been updated to reflect the launch of TMfS:07 and the FRCM; and
- Presentations at the Transport Practitioners' Meeting and European Transport Conference.

Overview

Effective user engagement is one of the twin aims of LATIS. Transport Scotland's user engagement commitments in the 2008 Annual Report were focused on continuing to foster the links we have developed, whilst also actively seeking to expand into other policy areas. We have pursued a range of user engagement activities in 2009 aimed at continuing to enhance confidence in LATIS.

Direct Communication

External LATIS Liaisons

Encouraging the culture change brought about by the introduction of LATIS has necessitated frequent and in-depth consultation between Transport Scotland, the User Group and the Key Agencies. Transport Scotland has ensured that the User Group has had an input into the development of LATIS going forward, as this is essential in ensuring a central role for LATIS in responding to the policy context and shaping future policy.

The 2008 Annual Report recognised that both transport and land use policies are dependent variables. Effectively coordinating both areas of policy is essential in ensuring the delivery of the Scottish Government's Strategic Priority of "Infrastructure, Development and Place". This was acknowledged by Cabinet Secretary John Swinney MSP in his announcement of the Common Statement on "Delivering Planning Reform" on 28 October 2008. The Common Statement recognises Transport Scotland as one of the Key Agencies responsible for supporting the planning reform process. LATIS is a central tool in delivering our commitments as it allows us to appraise the impact of land use policies on the transport network and vice versa.

Transport Scotland has engaged extensively with the planning authorities and provided information (for example, to SESplan and Aberdeen City Council / Aberdeenshire Council) to assist in identifying how proposed changes to land use or the introduction of development plans may impact on the regional transport system. Transport Scotland will continue to work closely with the Convention of Scottish Local Authorities (COSLA) partners to ensure that LATIS fulfils a fundamental role in delivering our Key Agency commitments.

Transport Scotland's commitment to planning reform extends beyond providing modelling support. As part of our Key Agency role, we are working with Scottish Water, SEPA and the planning authorities to agree a common methodology for collecting and collating planning data. We have also worked with the Key Agencies to explore available datasets and identify potential synergies. This process has already demonstrated positive results, with an agreement on the coordination and sharing of planning data collection between LATIS and Scottish Water.

In parallel to our planning reform efforts, Transport Scotland are now investigating the requirement and resources to develop regional travel demand models, the next level of modelling hierarchy envisaged for LATIS below the existing National Model, TMfS:07. Transport Scotland is working closely with the Regional Transport Partnerships (initially SEStran and SWESTRANS) to discuss how these models could be taken forward. Through the LATIS Steering Group, Transport Scotland is continuing to work closely with Strathclyde Partnership for Transport (SPT) to understand their knowledge and experiences of modelling using the Strathclyde

Integrated Transport Model (SITM) and the Strathclyde Integrated Transport and Land use Model (SITLUM).

Transport Scotland has continued to liaise with the UK Department for Transport on a wide range of issues, including:

- comparison of CO_2 projections from the National Transport Model (NTM) and the LATIS modelling capability;
- analytical support for the development of modelling methodology and standards; and
- ensuring that Scotland is well represented in wider UK models, including the NTM and Great British Freight Model (GBFM).

In addition to our liaisons with the Department for Transport, Transport Scotland has continued to play an active role in the Four Nations Forum on Transport Modelling and Appraisal. We have continued to lead the dialogue with the Department for Transport, Transport Wales and the Department for Regional Development Northern Ireland to discuss common approaches to transport modelling and appraisal. The Forum continues to meet on a bi-annual basis.

Transport Scotland has also continued to formally and informally liaise with external stakeholders throughout 2009, including:

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

Internal Liaisons

The Scottish Government has committed to an ambitious set of targets designed to tackle climate change. These targets are wide ranging, covering specific sectors and, clearly, transport has a positive role to play in achieving them. LATIS can play an important part in this as it provides an environmental assessment tool which can forecast changes in road-based carbon dioxide emissions over time. The modelling suite can also be applied to assess the changes in carbon dioxide emissions

associated with strategic transport and land use interventions. The LATIS modelling capability was used in late 2008 to support the Scottish climate change programme, appraising the forecast car-based emissions up until 2022, with the pattern being extrapolated to 2050. In 2009, LATIS has continued to support carbon appraisal of policies and schemes.

The LATIS DCC has been used to provide extensive support to the Transport Scotland Concessionary Fares project. The DCC was used to conduct on-bus surveys to verify the reimbursement claims of the operators. The use of LATIS yielded better value and provided time savings. The value of this support, coupled with other data collection initiatives, is fully explored in Chapter 8.

Transport Scotland has also provided support to the Scottish Government's review of public sector ferry services within Scotland. Support and advice were provided on the preparation of a detailed Household Survey for all Scottish islands and peninsular communities. The use of the LATIS DCC reduced the cost of procurement and considerably assisted Ferries Division's timescales.

Stakeholder Liaisons

Transport Scotland's key forum for direct communication with actual and potential model users is 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.

There have been two User Group Days since the publication of the 2008 Annual Report. User Groups Days provide an excellent opportunity for Transport Scotland to gauge opinion on LATIS and canvass actual and potential users on their current modelling requirements and future aspirations.

There has been a strong emphasis in trying to make the User Group Days attractive to transport planners, land use planners and other potential users. It has been suggested by existing stakeholders that future User Group Days could target land use planners (in line with our commitment to support planning reform) and, separately, investment decision-makers.

LATIS User Group Day – 6 November 2008

The fifth LATIS User Group Day was held on 6 November 2008 in Edinburgh. The event marked the launch of TMfS:07. The day consisted of a series of presentations introducing the new model and discussing its capabilities and key policy areas to which it is currently contributing, such as the modernisation of the development planning agenda.

The day also introduced the refocusing of what was previously thought of as TMfS by introducing 'LATIS' to the User Group. LATIS was introduced during a series of presentations, which unveiled the new logo and explained the numerous aspects of the service. Presentations included an overview of TMfS:07 and explanations as to its potential use. In addition, the Auditor introduced the forthcoming audit of the model, while we also presented on the Development Planning Reform in Scotland, including the use of LATIS for baseline appraisal of planning developments.

The event recorded one of the highest attendances at a User Group Day, with over one hundred delegates present. Findings from an exit questionnaire undertaken at the event highlighted a positive response from delegates, of which there was a good balance between Local Authorities and consultancies. The day was a success with over 90% of delegates indicating an interest in attending future LATIS events.

LATIS User Group Day – 21 April 2009

The sixth User Group Day for LATIS was held on 21 April 2009. The event took place in Edinburgh and 81 delegates attended. This event included an alternative format for a User Group Day with the introduction of technical workshops. The format and content of the event was designed by demand from previous User Group Day exit questionnaires and encouraged interaction and discussions between delegates and the LATIS Team. Two workshops were established catering for different levels of technical knowledge of the LATIS modelling capability.

Workshop A was presented by the LATIS Management Team and provided a technical overview for delegates on the development and application of the modelling capability. Workshop B was presented by the LATIS Technical Team and explained the various model stages from land use inputs to transport outputs.

Results from the exit questionnaires indicated a positive response from delegates, with many commending the introduction of the technical format, in particular the ability for extended interaction with presenters on a whole range of topics. 90% of delegates found the inclusion of interactive sessions valuable, clarifying information given in the presentations. 85% of delegates said they would like interactive sessions presented at future events. Overall feedback indicated that the majority of delegates found the day valuable and are interested in attending future LATIS events.

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. In recognition of this, the User Group Day exit questionnaire asks users for suggestions on what delegates would like to see improved. A sample of comments from the previous two events is provided in the Table below:

Table 4.1 User Group Day – User Feedback Comments

Comment	Actions
"Need for further information on how LATIS can assist development planning."	A future User Group Day for development planners and local authorities is suggested for 2010
"Technical User Group Days would be valuable."	A Technical User Group Day was held on 21 April 2009
"Development of appropriate sub-area models with the possibility of use in local development planning."	Ongoing liaison with key stakeholders discussing the potential development of sub-area models
"Ensure that more Government policies, programmes and proposals benefit from LATIS, e.g. Hospitals, Prisons, Waste Management."	It is intended to seek opportunities for work with other policy areas

Steering Group Workshop

A workshop was held with the LATIS Steering Group on 3 March 2009. The aim of the presentation was to provide an analytical overview of the role and capabilities of the tools offered by LATIS. Topics covered included; forecasting changes in land use, road traffic and public transport patronage; appraising the effects of interventions on journey times, congestion, accessibility and road capacity; accident appraisal; carbon emissions appraisal, economic appraisal and land use impacts. The workshop also outlined further potential uses of LATIS, such as economic sensitivity testing, ongoing support for the Strategic Transport Projects Review and continued involvement in the planning reform process.

Feedback suggested that seeing the models 'in action', whilst also learning about their capabilities, was a valuable experience.

Planning Reform Workshop

A Planning Reform Workshop was held on 15 April 2009, with delegates from various Local Authorities and Regional Transport Partnerships in attendance. The aim of the workshop was to discuss the role of LATIS in supporting the planning reform process, particularly with regard to the current issues facing local and national planning authorities. The presentation outlined how the LATIS modelling capability works, the main assumptions, the risks involved, and what additional tools and data are required to support this process going forward.

Model Request and User Satisfaction Forms

Prospective users of LATIS must fill in a Model Request Form 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.

LATIS 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 or the FRCM.

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.

Table 4.2 outlines the LATIS training events provided during 2009:

Table 4.2 LATIS Training

Company	Project	Model	Project Scope
SIAS	LATIS Audit	TMfS:07	Audit of TMfS:07
Scott Wilson	Edinburgh Orbital Bus	TMfS:05a	Assessment of demand for an orbital bus service around Edinburgh
Halcrow	West Edinburgh Transport Assessment	TMfS:05a	Appraisal of transport and landuse developments in the West Edinburgh area
Aecom	Kincardine Bridge Refurbishment	TMfS:05a	Modelling of the impact of closure of Kincardine Bridge for refurbishment

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

Conferences

The presentation of LATIS at conferences is an effective method of publicising Transport Scotland's strategic modelling capabilities, whilst also providing an opportunity to share in best practice. During 2009, LATIS presentations were given at:

- the Transport Practitioners' Meeting, which gathers together transport professionals from across the UK for a three day conference; and
- the 2009 European Transport Conference, which offers a forum for European wide discussion of transport policy and practice.

The presentation at the Transport Practitioners' Meeting was focused on how LATIS can be used to calculate a national 'carbon footprint'. Reducing CO_2 emissions is a key policy aim of the Scottish Government and Transport Scotland are eager to demonstrate how LATIS can play a role in facilitating policy in this area.

The paper for the European Transport Conference demonstrated Transport Scotland's new and more integrated approach to transport and land use planning. The presentation explained how the LATIS Team have worked with regional authorities to develop a consistent and more pragmatic approach in preparing strategic land use plans. It also demonstrates how the interaction between land use, demographic change and the transport system are used to forecast potential changes to Scottish land use patterns over time.

LATIS was further publicised at the 2009 STAR Conference in Glasgow, with the launch of the new LATIS Brochure and direct reference to the service was made in a number of presentations at the event.

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. These meetings are extremely useful as they allow potential users to best understand how to use LATIS and appropriately interpret its outputs.

LATIS Newsletters

LATIS Newsletters have continued to be issued at three monthly intervals and 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.

Indirect Communication

LATIS Website

With the launch of the new LATIS service, Transport Scotland has developed and introduced a new website that reflects the evolving scope of the project, www.latis.org.uk. Key features of the new LATIS Website include:

- examples of LATIS applications;
- information on how to apply for the use of the LATIS modelling capability or any of its components;
- links to relevant organisations (such as the Scottish Government) and important guidance (such as the Scottish Transport Appraisal Guidance);
- key LATIS documents, such as the Annual Reports, the Non-Technical Guide, User Group Day information, brochures etc;
- access to the modelling portal; and
- the data collection portal.

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, and, as such, we would like to encourage those who visit the website to provide their feedback.

Since the launch of the LATIS Website in November 2008, it has recorded a monthly average of around 20,000 hits and over 2,200 visits. There is a degree of uncertainty surrounding the number of unique / genuine visits to the website. However, even if two thirds of visits each month are unique / genuine, this would infer a monthly average of 1,634 visits per month, or 55 visits per day.

The website continues to be a well used source of information. As expected, peaks in its usage can be seen around User Group Days. The majority of entry pages are via the modelling portal of the LATIS Website. The ‘Kbytes’ download figures are dominated by data downloads from the secure area of the website. Overall 'the model' and 'library' tabs, which are contained within the modelling portal, are the most accessed areas of the website.

The Transport Scotland Website at http://www.transportscotland.gov.uk/reports/scottish-transport-analysis-guidance/LATIS also hosts high level information about LATIS and links to and the main LATIS website.

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

LATIS Brochure and LATIS Non-Technical Guide

The new LATIS Brochure was unveiled on 1 May 2009 at the annual Scottish Transport Applications and Research (STAR) Conference. The brochure introduces the modelling capabilities of LATIS and explains some of the uses for LATIS. The brochure is largely aimed at those who are either unaware of LATIS or those who know little about it. The specific capabilities of the modelling capability are now largely contained within the Non-Technical Guide to LATIS (see below).

The Non-Technical Guide to LATIS is designed to enhance users' and potential users' understanding of LATIS. The document can also act as a companion document for those who do have a basic understanding of modelling but require additional details on specific techniques, terms or areas of modelling. Furthermore, the guide can be used to provide a foundation for analysing more 'technical' documentation.

The Non-Technical Guide is available on the LATIS Website and has been re-branded for LATIS and updated for TMfS:07. It continues to be presented as a series of web-based chapters with links to a stand-alone glossary to explain technical terms.

Protocol for the Use of LATIS Report

In 2008, a report detailing the protocol (best practice) for using LATIS, its outputs and the various support services was produced. The Protocol Report is available on the LATIS Website and is currently being updated to take account of the new TMfS:07 model. The updated TMfS:07 Protocol Report is expected to be published in the near future.

TMfS:05a and TMfS:07 User Manuals

While the LATIS training days meet the immediate needs of potential users, a comprehensive User Manual has been developed to provide guidance to the user throughout their model application. The User Manual is aimed at users of a more technical disposition and provides a dialogue on the actual processes involved in preparing and running the modelling capability.

LATIS Model Development Reports and Calibration and Validation Reports

The LATIS Model Development Reports and Calibration and Validation Reports for TMfS:02, TMfS:05, TMfS:05a and TMfS:07 are available on the LATIS website. These reports outline the technical development of the model and demonstrate how well the model performs against nationally defined calibration and validation targets. A list of these documents, together with links to their location on the website can be found in **Appendix B** of this report.

5 Model Development

Key Achievements

- TMfS:07, TELMoS:07 and FRCM were completed and are now in use;
- Audits of TMfS:07, TELMoS:07 and the FRCM have been undertaken; and
- The Model Development, Calibration and Validation Reports have been published.

TMfS:07

The core development of TMfS:07 and TELMoS:07 was completed in August 2008. A series of modifications were made to the models and software throughout the remainder of 2008, with the calibration and validation process concluding in mid-2009. TMfS:07 is now the standard version of the national model being utilised for appropriate new applications. Transport Scotland will continue to support ongoing applications of all previous versions of TMfS and TELMoS as required.

Key features of TMfS:07 include:

- it is a strategic model containing all trunk roads and A-Roads, some B-roads and minor roads;
- the model uses CUBE Voyager software;
- the demand model includes macro time of day choice, trip frequency and High Occupancy Vehicle modelling and Park and Ride modelling;
- a long-distance trip model (trips over 100km in length);
- zones are collections of Census data zones and are nested within Local Authority boundaries; and
- the network is GIS compliant and includes automated environmental and accident analysis.

Each element of TMfS:07 – the Demand, Road and Public Transport Models - along with the land use planning model TELMoS:07, have been fully audited. Relevant documentation is available on the LATIS website.

Table 5.1 provides an overview of the key differences between TMfS:05a and TMfS:07:

Table 5.1 TMfS:05a v TMfS:07

Item	Changes Since TMfS:05a
Software	The TMfS:07 model uses the new Cube VOYAGER software, which replaces the TRIPS software previously used.
Run Times	The use of the Citilabs CLUSTER software has reduced run times from 25 hours to less than 15 hours, despite the additional segmentation (depending on hardware used).
Sub-Area Models	Previous sub-area models (such as ASAM) were stand-alone. In contrast, TMfS:07 sits at the top of a modelling hierarchy and can provide strategic outputs to a number of more detailed regional models.
Zone System	In TMfS:05a, zones were made from Census output areas. In some cases, they crossed Local Authority boundaries and in many cases had more than one train station per zone. In TMfS:07, the zone system is more strategic and consists of aggregations of Census data zones. No zones cross a Local Authority boundary. Where possible there is only one train station per zone.
Data	TMfS:05a was mainly based on RSI data but TMfS:07 has improved data sources, including Census Travel-to-Work, the National Rail Travel Survey Data, inter-urban bus surveys etc.
Car Availability Segments	Car availability segments have been increased. TMfS:05a only had two car availability segments, namely: “0 Car” and “1+ Cars”. TMfS:07 has four car availability segments - “No Car”, “One Adult One Car”, “2+ Adults One Car” and “2+ Cars”.
Base Year Trip Rates	The base year trip ends more closely related to the planning data, thus making them more robust.
Networks	The TMfS:05a network was inherited from donor models and was not GIS compatible. The TMfS:07 networks were built from GIS data providing a better representation of link lengths and providing the capability to map outputs.
Demand Model Parameters	Demand model parameters in TMfS:05a were less well calibrated and based on iterative procedures built from TRIPS software. The demand model parameters within TMfS:07 have been developed using the ALOGIT software. This is specific software designed to undertake this type of analysis.
Road Model	TMfS:05a had four Road user classes - “in-work”, “non-

Item	Changes Since TMfS:05a
Assignment User Classes	work", "LGV" and "HGV". In contrast, TMfS:07 has five road user classes - "Commute", "Employer's Business", "Other", "LGV" and "HGV".
PT Model Assignment User Classes	TMfS:05a had only one PT user class, while TMfS:07 has three PT user classes - "Commute", "Employer's Business" and "Other".
Park and Ride Modelling	Park and Ride Modelling now an integral part of the demand model. It is considered as a separate mode within the mode choice module. All significant P&R sites in Scotland are modelled.
High Occupancy Vehicle Lane Modelling	High Occupancy lane modelling is now included in the Demand Model as well as the Road Model.
Macro Time of Day Choice	Macro Time of Day Choice is now fully incorporated into the Demand Model structure and available for use in model runs.
Convergence Statistics	TMfS:05a did not provide convergence statistics from the Demand Model. TMfS:07 includes GAP analysis to allow the user to analyse model run convergence levels.
Post Run Analysis	In TMfS:05a, accident and environmental analysis were separate add-on procedures which had to be run by the user. In TMfS:07, they are automatically undertaken after each model run on request.

TELMoS:07

Key features of TELMoS:07 include:

- new 2007 based planning data collected from Local Authorities. The data relate to Local and Strategic Development Plan timescales;
- the inclusion of a distance deterrence function for household relocations; and
- TELMoS interaction with the transport model can be turned on / off as required.

A number of reports relating to TELMoS:07 were also produced during 2009. The Model Description Report documents the design and coefficients of the model, along with the economic and demographic scenarios which define growth and the planning policy inputs which influence the distribution of that growth.

A TELMoS:07 Model Demonstration Report was also produced. This report documents the TELMoS:07 Reference Case and the Demonstration Tests that have been undertaken in order to assess the response of the model to changes to the model inputs, including the Road Network, changes to planning policy inputs and changes to the demographic scenario. The report identified that the model responded appropriately to the changes tested.

Table 5.2 provides an overview of the key differences between TELMoS:05a and TELMoS:07:

Table 5.2 TELMoS:05a v TELMoS:07

Item	Changes since TELMoS:05a
Model Geography	A new zone system, based upon the Datazone Geography has been introduced. The new system includes 712 zones within Scotland (compared to 1152 in TELMoS:05a). A new system of DELTA Areas, based upon the 2001 Travel-to-Work Areas has been introduced. There are 47 Areas covering Scotland, compared to the 17 in the previous version of TELMoS.
Location Model (ML12) Distance - deterred relocation	The introduction of a distance deterrence function. This provides an explicit effect whereby locally relocating households are more likely to move shorter distances than longer distances; it also allows more relocation movement across Area boundaries, thus reducing the risk of artificial effects in household relocation at those boundaries.
Use of 2001 Census Travel-to-Work data and associated enhancements	2001 Census Travel-to-Work data were used in producing the Travel-to-Work matrices within TELMoS:07. These data had not been made available at the time that the previous version of TELMoS was built. The TELMoS:07 model makes incremental changes to the matrices over time.
Adjustment of	The Regional Economic Model has been adjusted so that

Item	Changes since TELMoS:05a
Regional Economic Model and Employment Location Model	its forecasts are consistent in the period to 2021, at a national level, with the Oxford Economics' Forecasts provided by Transport Scotland. Beyond 2021 the Regional Economic Model has been constrained to rates of growth agreed with Transport Scotland. Reference has also been made to more recently published economic data. In particular, Scottish Economic Statistics 2005, Table 1.7: Aggregate Industry by Industry 2001 (basic prices) has been used to generate the trade matrices. The employment location model has been improved by the introduction of minimum floorspace per worker criteria and the inclusion of non-rent costs of location.
Overall Model Adjustment	The following adjustments have been made: 1) Re-defining the household activities used within the model. TELMoS:05a had 18 different household types modelled. Within TELMoS:07 there are 20. The TELMoS:05a 'Two Adult no children households' subdivision has been further disaggregated to 'Young Two Adult no children households' and 'Older Two Adult no children households'. 2) Within TELMoS:07 the non-household population is broken down into children, manual workers, non-manual workers, non-working adults and retired persons. 3) Residential Quality Model (MQ12); within TELMoS:05a, all new exogenous development was introduced with a quality value of 1.0. This represented the average quality in the model's base year. In TELMoS:07, the quality of new exogenous development within a zone, has been calculated as 10% above the base year quality of that zone. 4) Household Transition Model (MT12); coefficients within the MT12 model have been re-calibrated to ensure consistency with the new demographic scenario, based upon the GRoS 2006-based demographic projections. 5) Location Model (ML12);three changes have been introduced: ■ introduction of minimum floorspace criteria for workspace and residential floorspace ■ introduction of non-rent based costs for workplace floorspace ■ adjustment of model coefficients in light of 2001 Census Migration Statistics

Item	Changes since TELMoS:05a
	6) Migration Model (MM12); the coefficients have been recalculated.
Re-calibration of the Development Model	In previous model versions, the process of calculating the demand for additional floorspace and allocating it to zones was undertaken at the national level. This meant that the take-up of permissive developments was concentrated in the zones that developers would find most profitable to develop within. In TELMoS:07, we have complemented that process with a sub-national calculation that represents the way in which some development will take place in response to local factors rather than because there is national demand. An expected occupier function has been introduced within Edinburgh and Glasgow.
Data Collection – local authority planning data	Planning Policy inputs were collected during 2007 and early 2008 for TELMoS:07.

Forth Replacement Crossing Model

As part of the Forth Replacement Crossing Project, Transport Scotland, a sub-area model of TMfS:07 centred on the Forth Valley, the Forth Replacement Crossing Model (FRCM), was commissioned. The sub-area model was developed in SATURN (Road Model) and Cube Voyager (Public Transport and Demand models).

The FRCM covers an area that extends from the Firth of Tay to the south of Edinburgh and from the east of Edinburgh to Stirling. The TMfS:07 network was used as the base for the development of the FRCM network. Additional road links and zonal definition were added where necessary in order to achieve a more detailed representation of the traffic movements throughout the modelled area. This type of network structure makes it possible not only to model in detail the areas which are key to the scheme being assessed, but also to take into account possible implications on the traffic flow in the study area as a whole.

The full version of the model was released in November 2008. The model was audited and a subsequent model version released taking account experience of application and auditor feedback. Calibration and Validation reports for the FRCM have also been completed.

The FRCM is now being rolled-out for use on other studies within the modelled area. This is a key example of where a model has been developed for a specific purpose but where our long-term commitment and focus ensure that it continues to develop as a robust tool for use in other studies.

Summary

The various modelling developments within LATIS have made an essential contribution towards encouraging model applications. TMfS:07 and TELMoS:07 now form the current standard version of the modelling capability and allow for increasingly detailed and robust analysis. The use of robust models with both recent and comprehensive data is important to Transport Scotland as it improves our ability to forecast and prioritise key investment decisions. As a result, LATIS will play a central role in shaping Scottish transport policy, both now and in the future.

6 Data Collection

Key Achievements

- ongoing and large scale data collection, providing support to project teams within and outwith Transport Scotland;
- support for the Scottish Government Ferries Review; and
- the collection of additional validation data for the FRCM.

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.

A bi-annual progress meeting is held between the DCC and the LATIS Team to discuss progress to date and forthcoming workloads.

2008 Annual Report – Data Collection

2008 was a year of extensive activity in terms of data collection, as Transport Scotland gathered the required information to develop the new strategic transport model TMfS:07 and the FRCM. The data collected included inter-urban bus passenger surveys, Park and Ride surveys and Roadside Interviews (RSIs), each of which filled gaps in existing data provision or refreshed datasets.

2009 Data Collection

<u>LATIS-specific data collection</u>

The only data collection undertaken for LATIS in 2009 was a number of traffic counts carried out to assist in the validation of the FRCM.

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, as the data collection contractors have conducted a rolling programme of onboard bus surveys. The use of the LATIS DCC has reduced procurement costs and allowed enumerators to get into the field more quickly.

Scottish Government Ferries Review

The Scottish Government has recently commissioned a review of all domestic ferry services within Scotland. The Ferries Review will put in place a strategy for the development of the Scottish domestic ferry sector up until 2022. Central to this review has been designing a ferry network that meets the needs of the communities that it serves. In attempting to identify the needs of these communities, the LATIS DCC was used as part of a wide ranging data collection programme.

The key role of the LATIS DCC was to undertake an extensive household survey covering all island and peninsular communities served by the ferry network. The survey was undertaken using the Computer Aided Telephone Interview (CATI) methodology and also included follow-up postal surveys and a web-based questionnaire.

Support for Forth Replacement Crossing

The LATIS DCC was used to collect a wide range of traffic counts and other data to assist the Forth Replacement Crossing project. The DCC allowed for the prompt collection and use of the data, thus meeting the timescales of the project.

External Requests for Data

Throughout 2009, a number of external parties requested the provision of data from LATIS. These data requests are outlined in Table 6.1:

Table 6.1 LATIS Data Requests

Data Item	Applicant
Perth Park and Ride Data	Atkins
Scottish Transport Statistics Update	The Scottish Government
East Ayrshire Commuter Statistics	The Princes Foundation for the Built Environment
Vehicle Occupancy Statistics – A9 RSI	Transport Scotland
RSIs – Freight Data	Transport Scotland
A96 Local Model Development	AECOM and SIAS Ltd.

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

In summary, the DCC has continued to be a well-used and valuable element of the overall LATIS service. While there has been less focus on collecting data for LATIS in 2009, there have been significant data collection efforts to support the Concessionary Fares Team and Ferries Division. The support provided by LATIS has delivered cost and time savings to a number of organisations, whilst also ensuring consistency in the datasets employed.

7 LATIS Applications

Key Achievements

- Continued involvement in headline transport and land use applications, such as the Forth Replacement Crossing, Edinburgh – Glasgow Improvement Programme and Edinburgh – Glasgow Rail Improvements;
- Pro-active involvement in land use planning – significant steps have been taken in delivering Transport Scotland's Common Statement responsibilities and support to the planning reform process in Strategic and Local Authority areas; and
- Increased involvement in environmental studies.

Overview

LATIS provides robust quantitative evidence regarding 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 2009.

In total, there have been 28 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, along with a number of environmental-related applications.

Transport Planning Applications

Strategic Transport Projects Review (STPR) Support

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

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. The schemes identified ranged from major road and rail schemes to measures such as improved road safety and integrated ticketing.

The role of LATIS on this project is now two-fold:

- to support any further required analysis on the outcomes of the process in the short-term; and
- to support the delivery of the STPR outcomes in the medium to long-term.

LATIS will be a particularly valuable tool in assessing the range of impacts associated with schemes of national significance. Outputs from the National Model can also be fed into sub-area models or more local models for more detailed scheme appraisal.

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.

Forth Replacement Crossing

- **Model User(s):** Jacobs Consultancy and Arup;
- **Ultimate Client:** Transport Scotland; and
- **Model Version:** TMfS:05a and the FRCM.

As part of the STPR, TMfS:05a was used to appraise the building of a replacement Forth Crossing. LATIS is being used to assess the expected use of the bridge in light of various economic and demographic scenarios. It will also be used to explore options for the new crossing, such as the potential inclusion of High Occupancy Vehicle lanes.

Further work involved developing a Short-Term Response version of the TMfS:05a Demand Model to test the impacts of 'temporary' network conditions (such as roadworks) which are assumed not to affect the underlying pattern of travel-to-work trips. A comparison was carried out between the standard TMfS:05a model and the

'Short-Term Responses' version. This testing of the new variant of the model used a future-year scenario with reduced road capacity across the Forth at Queensferry, to model a scenario involving a prolonged period of lane closures (eg for major roadworks) on the existing Forth Road Bridge, with no additional crossing.

While the model was designed to assess options related to the replacement Forth crossing, it is now used in a range of other studies, which are discussed later in this chapter.

Edinburgh South Orbital Bus

- **Model User:** Scott Wilson;
- **Ultimate Client:** SEStran; and
- **Model Version:** TMfS:05a.

SESTRAN commissioned Scott Wilson to investigate a potential new orbital bus route for Edinburgh. LATIS was used to assess potential patronage for the service and identify the optimum service level / routing. It was also used to provide demand estimates to feed into a STAG Appraisal of the project.

Bishopton Study

- **Model User:** JMP;
- **Ultimate Client:** Redrow Homes; and
- **Model Version:** TMfS:05a.

LATIS was previously used to feed into an appraisal of a potential new junction on the M8 at the former Royal Ordnance site at Bishopton in Renfrewshire. The modelling capability was then re-used to inform and provide an initial modelling phase in the development of a Paramics microsimulation model for the M8 Corridor (Junctions 26 - 31).

Edinburgh - Glasgow Rail Options

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

TMfS:05a was used to appraise the economic benefits of various rail enhancements between Edinburgh and Glasgow, covering: time savings, highway effects, carbon impacts, wider economic benefits, and the impact on the subsidy for any existing services (ie their revenue and operating costs) between Edinburgh and Glasgow.

This work is a good example of how LATIS will be used to support the outcomes of the STPR.

Edinburgh to Glasgow Improvements Programme (EGIP)

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

EGIP proposes improvements to rail services and infrastructure in central Scotland, including: faster and more frequent services between Edinburgh and Glasgow; faster services and improved accessibility to and from Stirling, Dunblane and Fife improved accessibility to and from Edinburgh Airport with a new station at Gogar.

TMfS:05a was used to assist in the appraisal of EGIP in the following areas: appraisal of Transport Economic Efficiency (TEE) benefits of the interventions; appraising environmental and road safety benefits (emissions and road traffic accidents); assessment of Wider Economic Benefits (WEBs) including agglomeration, increased output and labour market effects (zonal method using l-land use model) assessment of the spatial impacts of employment effects.

This is a key policy area and the ability of LATIS to compare the impact of different rail options on a like-for-like basis is of considerable value in advising policy.

Clyde Gateway Transportation Strategy

- **Model User:** Aecom;
- **Ultimate Client:** Transport Scotland; and
- **Model Version:** TMfS:05a.

TMfS:05a (using TMfS:07 planning data) was used to assist in the development of a transportation strategy for the Clyde Gateway Regeneration Project. The modelling capability was run for Do Minimum and Reference Case scenarios to appraise the impact of various options in the Clyde Gateway area.

A73 Corridor STAG Appraisal

- **Model User:** JMP;
- **Ultimate Client:** North Lanarkshire Council; and
- **Model Version:** TMfS:05a.

TMfS:05a was used to examine the implications of a proposed re-alignment of the A73 in the Airdrie area. Sub-area matrices were produced for four potential route alignments and used to inform the development of an existing Paramics model, the outputs of which were used in a STAG Appraisal of options for the route.

Clackmannanshire – Fife – Edinburgh (CFE) STAG

- **Model User:** Scott Wilson;
- **Ultimate Client:** SEStran; and
- **Model Version:** TMfS:05a.

The CFE STAG was commissioned by SEStran to test options for improving accessibility for Clackmannanshire, through Fife, to Edinburgh. The two main options were an express bus or an extension of the Stirling-Alloa railway line to link into the Fife Circle at Rosyth. TMfS:05a was used to test the impact of each scheme against the reference case. The model was also installed at Scott Wilson who used it to carry out further testing.

A801 River Avon Gorge

- **Model User:** MVA Consultancy;
- **Ultimate Client:** SEStran; and
- **Model Version:** TMfS:05a.

Falkirk Council previously carried out transportation modelling and an economic appraisal for the A801 River Avon Gorge Scheme. The proposed scheme involves the construction of 3.2km of new road and a bridge over the River Avon. The original modelling and economic appraisal was carried out in 2000/2001 and this was subsequently updated using the modelling capability. Modelling and economic appraisal was required, using up-to-date traffic data, economic appraisal methodology and parameters including vehicle operating costs and accident rates and costs. The cost of environmental impacts such as CO_2 was also provided.

Kincardine Bridge Maintenance Plan

- **Model User:** Aecom;
- **Ultimate Client:** Transport Scotland; and
- **Model Version:** TMfS:05a.

Following the recent opening of the Clackmannanshire Bridge, the current Kincardine Bridge will now undergo and extensive programme of maintenance. The closure of the bridge will require the diversion of traffic onto the Clackmannanshire Bridge. TMfS:05a was used to aid Transport Scotland in the development of an appropriate temporary diversion strategy.

M8 Bridges Maintenance Route Strategy

- **Model User:** SIAS;
- **Ultimate Client:** Transport Scotland; and
- **Model Version:** TMfS:05a.

The M8 is Scotland's busiest motorway and there is currently a strategy in place to assess the impact of bridge maintenance up until 2019. Clearly, any maintenance on this route is likely to cause disruption and TMfS:05a was used to assess the impact of the various different maintenance scenarios on traffic patterns.

Kessock Bridge Resurfacing

- **Model User:** SIAS;
- **Ultimate Client:** Transport Scotland; and
- **Model Version:** TMfS:05a.

The Kessock Bridge is the trunk road link between Inverness and the Black Isle. A programme of roadworks was planned to allow for the resurfacing of the bridge and the modelling capability was used to assess the potential delays resulting from these roadworks.

A82 Kilbowie Roundabout STAG Appraisal

- **Model User(s):** MVA Consultancy;
- **Ultimate Client:** Transport Scotland; and
- **Model Version:** TMfS:05a.

Kilbowie Roundabout in Clydebank is a key pinch point on the A82, the road linking Glasgow with Clydebank, Dumbarton and the West Highlands. The LATIS modelling capability was used as part of a study to investigate the congestion problems in the Kilbowie and Hardgate areas, identify the causes of the problems and propose potential solutions.

Dalmarnock Station Redevelopment

- **Model User:** Aecom;
- **Ultimate Client:** SPT; and
- **Model Version:** TMfS:05a.

Dalmarnock Station in the East End of Glasgow is to be redeveloped as a new public transport hub. This application of LATIS involved the assessment of appropriate deliverable redevelopment options for the station.

Elgin Traffic Review

- **Model User:** SIAS;
- **Ultimate Client:** Transport Scotland; and
- **Model Version:** TMfS:05a.

The A96, the key trunk road between Aberdeen and Inverness, passes through Elgin and LATIS was used to establish strategic traffic flows through the town and in the surrounding area.

Cross-Forth Ferry

- **Model User:** Hyder;
- **Ultimate Client:** SEStran; and
- **Model Version:** TMfS:05a.

During 2008, TMfS was used to assess the viability of options for a potential cross-Forth ferry. This application built on the previous work by testing a different package of services and also using the more up-to-date model (TMfS:05a).

M74 Interventions

- **Model User:** Amey;
- **Ultimate Client:** Transport Scotland; and
- **Model Version:** TMfS:05a.

Temporary alterations to motorway arrangements west of the Kingston Bridge are required as part of the M74 Completion. Amey requested traffic flows from TMfS:05a to assess the impact of several temporary traffic measures.

M74 Completion – Local Area Models Update

- **Model User:** SIAS;
- **Ultimate Client:** Transport Scotland; and
- **Model Version:** TMfS:05a.

Strategic traffic flows from TMfS:05a were fed into local area models to assess any changes required to junctions remote to the M74 Scheme as a result of changes in traffic patterns.

Strategic Transport Issues in East Renfrewshire

- **Model User:** JMP;
- **Ultimate Client:** East Renfrewshire Council; and
- **Model Version:** TMfS:05a.

Updated traffic flows were provided from TMfS:05a for the East Renfrewshire Transport Model (ERTM). The aim of the study is to provide additional junction modelling on the A726 / A727 corridor and to provide a link to LATIS for wider area

transport forecasts to be included. This will ultimately feed into STAG appraisals for a range of options for East Renfrewshire.

Planning and Land use Applications

Planning Reform – SESplan, Aberdeen, Aberdeenshire and Highland

- **Model User:** MVA Consultancy;
- **Ultimate Client:** Various; and
- **Model Version:** Use of TMfS:07 inputs.

The LATIS modelling capability was used to produce a range of measures and indicators to inform land use planning in the SESplan, Aberdeen, Aberdeenshire and Highland areas. This is perhaps the key example of how LATIS is being used to support Transport Scotland's planning reform commitments.

Current and future year planning data (in terms of housing and employment land allocations) was input to the model for all Scottish local authorities, along with national economic and population forecasts. These were used to calculate future year socio-economic outputs which were then input into the transport model and used to forecast changes in road and public transport trip making and travel patterns.

West Edinburgh Transport Assessment

- **Model User:** Halcrow;
- **Ultimate Client:** West Edinburgh Planning Framework Board; and
- **Model Version:** FRCM.

The West Edinburgh Planning Framework was published jointly by the Scottish Government, Scottish Enterprise and City of Edinburgh Council in 2003, and was subsequently updated in 2008 to provide a more detailed basis for future investment in the area. The Framework sets out a long-term strategic vision for West Edinburgh as an area considered to be nationally important in terms of economic development, global connectivity, transport and the environment.[6]

[6] http://www.scotland.gov.uk/Resource/Doc/222655/0059965.pdf

The developments included within the framework would have significant impacts on the transport infrastructure in West Edinburgh and further afield. Halcrow are using the FRCM, complete with TMfS:07 planning data, to appraise the impact of these developments on the strategic transport network. Halcrow and MVA have enhanced the FRCM and agreed a new reference case including the STPR outcomes influencing the West Edinburgh area.

A96 Corridor

- **Model User:** Aecom;
- **Ultimate Client:** Transport Scotland; and
- **Model Version:** TMfS:07.

Inverness is one of Europe's fastest growing cities and significant growth is planned for the A96 corridor between Inverness and Nairn.[7] Aecom are currently investigating the development of a local traffic model which would be used to appraise the detailed impact of specific proposals. LATIS is being applied to provide information relating to longer distance strategic traffic movements for input to the local model.

Winchburgh Development Initiative

- **Model User:** Grontmij;
- **Ultimate Client:** LXB3 (Winchburgh Limited); and
- **Model Version:** TMfS:05a and the FRCM.

The Winchburgh Development Initiative is a further good example of the increasingly active role of LATIS in the development of the planning process. This project involved using the LATIS to assess the impact of a significant development on the surrounding transport infrastructure.

Wallyford Development Study

- **Model User:** WSP;
- **Ultimate Client:** Transport Scotland; and
- **Model Version:** TMfS:05a.

[7] http://www.highland.gov.uk/NR/rdonlyres/7297B608-64F3-478C-AC10-4CEABF3595C1/0/A96DevelopmentFramework.pdf

Transport Scotland's key role in the modernisation of the planning agenda is to become more proactively involved in appraising the impact of land use developments on the transport network. This application is another good example of such developments, where LATIS was used to assess the potential impact of a new development at Wallyford on the surrounding transport network.

Environmental Applications

'Mitigating transport's climate change impact in Scotland: Assessment of Policy Options'

- **Model User(s):** MVA Consultancy;
- **Ultimate Client:** Scottish Government; and
- **Model Version:** TMfS:05a.

The Scottish Government have committed to an ambitious programme of reducing carbon emissions by 80% by 2050. Transport must play its part in this and the aim of this project was to identify, analyse and report on the policy options available to the Scottish Government.

TMfS:05a was used to provide forecast year projections of traffic growth and speed changes, which subsequently fed into the wider carbon balance sheet. Such analysis is important in determining where policy can best be targeted to reduce the overall impact of transport on the environment. LATIS offers the only Scotland-wide modelling capability and was thus the best tool available to undertake this assessment.

Low Emission Zone Feasibility Study

- **Model User:** Aecom;
- **Ultimate Client:** DfT; and
- **Model Version:** TMfS:05a.

The modelling capability was used by Aecom as part of a wider analysis to determine if a Low Emission Zone for Glasgow is feasible and practical and what will be the likely cost-benefit ratio of various options in terms of improvements in local air quality.

“Smarter Choices, Smarter Places” – East End Accessibility

- **Model User:** Halcrow;
- **Ultimate Client:** Glasgow City Council; and
- **Model Version:** TMfS:05a.

“Smarter Choices Smarter Places” is a Scottish Government partnership project with COSLA, which is designed to increase active travel and public transport use and tackle transport emissions. The modelling capability was used to assess how accessibility could be improved for sustainable modes, including walking and cycling, along two corridors in the East End of Glasgow.

8 Valuing LATIS

Key Achievements – 2008-2009

- LATIS continues to offer significant economies of scale and scope in terms of both model use and knowledge transfer, leading to lower appraisal costs;
- Transport Scotland's significant investment in LATIS to-date has allowed the various components of the LATIS model and its data to be used on over 40 applications which have considered interventions worth in excess of £6bn;
- The LATIS modelling capability has improved and allows the assessment of a wider range of transport and land use interventions than ever before;
- A release version of TMfS:07 has been prepared and delivered; and
- Completion and use of the Forth Replacement Crossing Model (FRCM).

Overview of 2009

2009 has been an important year for the LATIS Commission, with the release of TMfS:07 and the completion and use of the Forth Replacement Crossing Model (FRCM), as well as greater involvement of LATIS in the development planning sector.

The current term commission from August 2006 to August 2009 saw the LATIS modelling capability enhanced through the development of several models and model versions. These models have also been applied to a very wide range of policy and scheme appraisals. A list of these applications, the ultimate client and the likely value of the transport interventions modelled, can be found in Appendix C.

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.

Figure 8.1 provides an illustration of this life cycle.

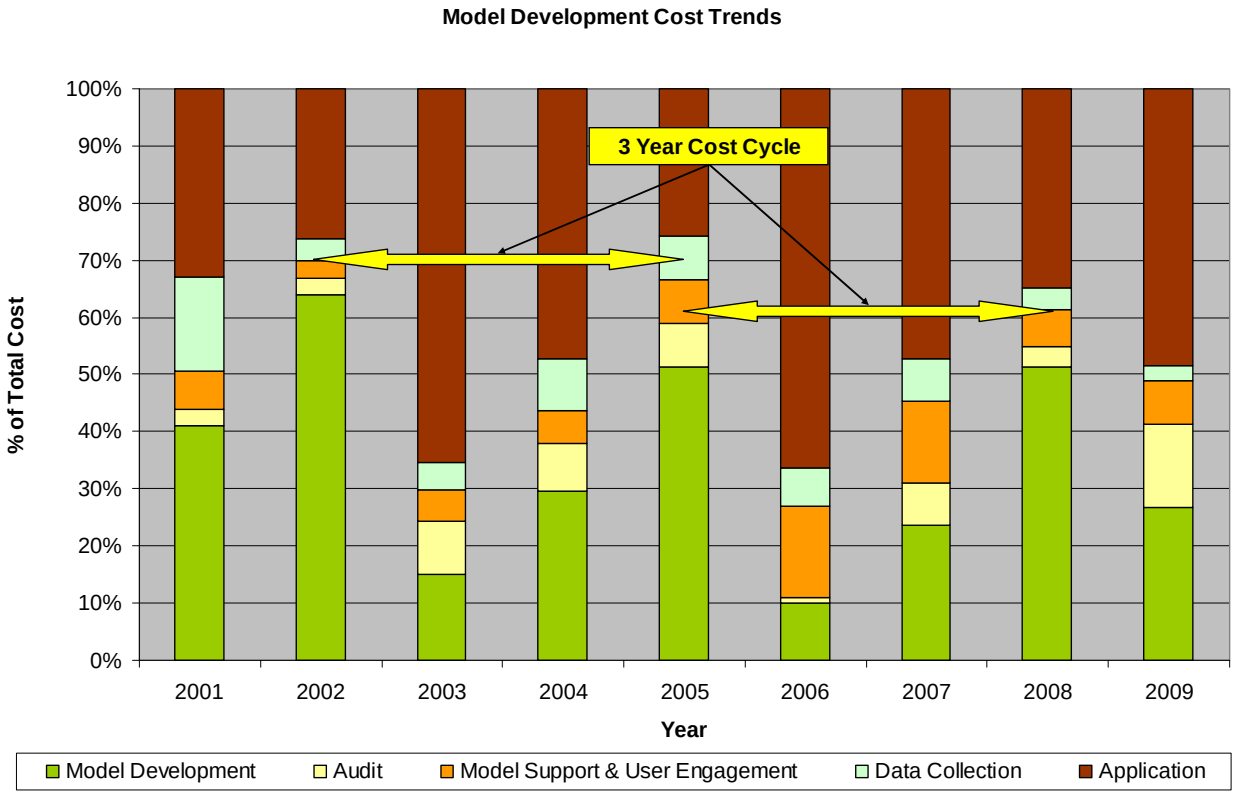

Figure 8.1 Illustrative Life Cycle Spend Profile

2009 saw considerable model development costs and, following that, associated audit costs, while model application amounted to over 65% of costs.

It can be seen from the above profile that the LATIS model life cycle has a duration of 3 or 4 years in line with the Commission itself and significant model updates (including calibration and validation).

Our Approach to the Valuation of the LATIS Commission

There are six components of the LATIS Commission whose costs and benefits can be valued, either quantitatively or qualitatively. These are as follows:

1. Developing and maintaining the LATIS modelling capability;
2. LATIS Data Collection Commission repository;
3. User Training;
4. Provision of ad hoc advice to Transport Scotland, Scottish Government and others;
5. User Engagement; and
6. Model Application.

The associated costs and benefits of these components are considered in the following sections, in quantitative or qualitative terms.

Developing and maintaining the LATIS modelling capability

The LATIS Model Application Form asks applicants how they would carry out their project in the absence of LATIS. The responses are presented in Table 8.1 below.

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

Application	Model User	What would be undertaken in the absence of LATIS?
STPR Support	Jacobs Consultancy	Would have developed a bespoke model.
Replacement Forth Crossing	Jacobs Consultancy and Arup	Would have developed a bespoke model.
Edinburgh South Orbital Bus	Scott Wilson	Possible use of Edinburgh VISUM Model or older TRIPS models.
Bishopton Inter-Peak Model	JMP	The PM peak sub-area matrices would have been factored accordingly.
Edinburgh - Glasgow Rail Options	MVA Consultancy	Would have developed a bespoke model.

Application	Model User	What would be undertaken in the absence of LATIS?
Clyde Gateway Transportation Study	Aecom	The most current available version of SITM4 would have to be used, with adjustments made to reflect the effect of the M74 completion.
A73 Corridor STAG Appraisal	JMP	Would have undertaken a range of sensitivity tests in the Paramics model.
Clackmannanshire – Fife – Edinburgh (CFE) STAG	Scott Wilson	Would have tried to use CEC/tie old LUTI model and/or created a spreadsheet-based mode choice model.
A801 River Avon Gorge	MVA Consultancy	Would have built a simple journey time savings spreadsheet and ignored rerouting effects.
Kincardine Bridge Maintenance Plan	Aecom	Not specified
M8 Bridges Maintenance Route Strategy	SIAS	The other data sources would form the basic coverage for existing observed traffic data. Matrix development and future year modelling would have been carried out using the observed data available and most recent trends in traffic growth.
Edinburgh to Glasgow Improvements Programme (EGIP)	MVA Consultancy	Would have used the Network Modelling Framework (NMF) and the single-zone APARC methodology, WB3 using NMF output.
Kessock Bridge Resurfacing	SIAS	Assumptions drawn from RSI data if provided.
A82 Kilbowie Roundabout STAG Appraisal	MVA Consultancy	Would have used SITM4 or a desk-based study.
A90 (East of Perth), Park and Ride	Atkins	Would have needed to rely mainly on output from a previous PRIDE demand model.
Dalmarnock Station Redevelopment	Aecom	By approaching other authorities for these datasets.
Scottish Transport	MVA Consultancy	Not specified

Application	Model User	What would be undertaken in the absence of LATIS?
Statistics – Data Provision		
Elgin Traffic Review	SIAS	Would have used ATC Link counts, Moray Council Data and Raw Census Data
Cross-Forth Ferry	Hyder	Use of previous logit model of patronage developed by Halcrow.
M74 Interventions	Amey	Not specified
M74 Completion	SIAS	Use of CSTM3a, which was used in the original project
Strategic Issues in East Renfrewshire	JMP	Would have updated the matrices using available count information for trips external to East Renfrewshire, with assumptions regarding the trip pattern.
Planning Reform – SESplan, Aberdeen, Aberdeenshire and Highland	MVA Consultancy	Not specified
West Edinburgh Transport Assessment	Halcrow	Investigated the suitability of the Edinburgh VISUM models, which may have been updated and enhanced
Winchburgh Development Initiative	Grontmij	Would have used the most appropriate model of West Lothian that was available.
Wallyford Development Study	WSP	Not specified
Climate Change Policy Options Support	MVA Consultancy	The Scottish Government would possibly have used a linear projection from Scottish car km data. This would probably have been coupled with assumptions regarding expected growth (eg trend growth to 2025 and flat thereafter).
Low Emission Zone Feasibility Study	Aecom	Not specified

Application	Model User	What would be undertaken in the absence of LATIS?
"Smarter Choices, Smarter Places" – East End Accessibility	Halcrow	Issues with sourcing the data from Glasgow City Council (GCC) had led to exploration of further options, however they would have pursued GCC further had the need be.

The user responses summarised in Table 8.1 indicates that the most likely alternative to the use of LATIS models would have been the development and/or update of a number of bespoke models, using a combination of existing and newly collected data. To ensure a like-for-like comparison with the LATIS-based alternative, it is reasonable to assume that these bespoke models would also be audited.

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 ad hoc/bespoke modelling approach for each relevant application of LATIS and associated data collection requirements between 2007 and 2009.

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. The costs associated with the modelling and appraisal of multiple "National" and "Regional" schemes in the development of Transport Scotland's Strategic Transport Projects Review is considered an exception; a cost of £320,000 has been assumed for the development and application of bespoke models which could fulfil this role.

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 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 (see Appendix C) by model version and year (in 2009 prices) is summarised in Table 8.2 below. A table outlining the estimated costs of each application by model version and year can be found in Appendix D.

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

Year	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
Total (2007-09)	£3,420,000	£831,400	£342,000	£4,593,400

A comparison of the cost of developing and applying LATIS against the alternative modelling strategy is shown in Table 8.3 below.

Further details of the source of these estimates (by year and LATIS model) are provided in Appendix D).

Table 8.3 LATIS development costs vs estimated costs of an alternative modelling strategy 2007-09

LATIS component	Estimated costs of LATIS	Estimated costs of alternative modelling strategy	Saving over alternative modelling strategy
Model Development			
FRCM	£65,000		
TMfS:05\TELMoS:05	£180,000		
TMfS:05a\TELMoS:05a	£120,000		
TMfS:07\TELMOS:07	£700,000		
Total Model Development Costs	£1,065,000	£3,420,000	£2,355,000
Data Collection (for model development only)	£600,000†	£831,400	£231,400
Model Audits	£280,000	£342,000	£62,000
Total	£1,945,000	£4,593,400	£2,648,400

Table 8.3 demonstrates that Transport Scotland's investment in LATIS model development and application represents an estimated saving of £2,600,000 over an alternative modelling strategy for the period 2007- 2009. This may represent an over-estimate as the costs of the alternative modelling strategy are in 2009 prices while LATIS costs are actual prices (they have not been converted to a 2009 price base). Furthermore, not all applications of the LATIS model might have been undertaken in the alternative modelling strategy for a number of policy, technical or cost reasons.

In addition to the quantified costs of LATIS and estimated savings over the alternative modelling strategy reported above, there are a number of additional qualitative benefits which arise from having the LATIS models available 'on-the-shelf'. These are as follows:

- the avoidance of delay waiting for a new bespoke model to be developed for each new application;
- Transport Scotland's long-term commitment to LATIS encourages innovation and longer-term enhancements to be included within the model development, which would not be possible if the equivalent funding was used to develop a series of short-lived bespoke models;
- the availability of LATIS ensures a certain level of consistency within Transport Scotland's scheme appraisals and other Government decision-making processes based on the model's outputs; and
- regular use of a single model is likely to be more efficient and less error-prone that the development and use of a number of different ad hoc/bespoke models.

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 8.4 below.

Table 8.4 Data Collection Commission summary table

Year	No. of DCC uses	Total value of DCC work
2007	26	£444,592
2008	55	£431,343
2009	45	£574,315
Total		**£1,450,251**

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 is used once and has no subsequent residual value. In reality, data collected in support of the LATIS modelling capability is available for use by the wider user group towards a number of applications.

The LATIS Commission holders have collated, cleaned and stored data in a user-friendly database, from where it can easily be retrieved and re-used in other applications or model development. This data is frequently requested by the wider user group.

User Training

This investment in training users of the model provides the following qualitative benefits:

- improving the capacity for credible and robust use of the LATIS models among the wider user group, in turn reducing the costs of future application of the model through competition;
- ensuring consistent application of the LATIS models and a high quality of output to inform decision-making; and,
- reducing the likelihood of costly mistakes or incorrect decisions on the basis of poor information.

It is not straightforward to establish these benefits in quantitative terms.

Provision of ad hoc advice to Transport Scotland, Scottish Government and others

In addition to the models themselves, the LATIS commission provides Transport Scotland, Scottish Government and the wider user group with advice and expertise with respect to a wide range of issues including land use and transport modelling, strategy development and scheme appraisal.

It has not been possible to quantify the benefits of this advice within the valuation of LATIS except to say that the derived benefits are at least equal to the cost of that advice.

User Engagement

The User Engagement programme informs model development, ensuring that any enhancements we undertake are focused on the needs of the User Group and add value. LATIS provides good opportunities for knowledge sharing and wider user interaction through User Group Days, technical documentation and newsletters. Attendees at events, stakeholders and users consistently report that the user engagement events are helpful, that both written and aural media enhances their understanding and helps them perform their work more efficiently.

The benefits of user engagement are seen in the long-term, as more potential users are made aware of the model and its functionality, and choose to use it in their work.

The total cost of LATIS User Engagement Activities (excluding training and support given via specific applications) is shown in Table 8.5.

Table 8.5 User Engagement summary table

Year	Total value of User Engagement work
2007	£30,000
2008	£25,000
2009	£20,000
Total	**£75,000**

Model application

The costs and benefits of model application have not been included in the appraisal of the value of LATIS as they fall to Transport Scotland and other organisations within the wider user group. Within the life cycle costs model at the start of this chapter, model application costs relate to those which fall to the current Commission holder only.

For the purposes of comparison, the estimated costs of the alternative modelling strategy relate to the development and auditing of bespoke models only, not their application.

Summary

The value of LATIS has been reviewed and presented in qualitative and quantitative terms (where appropriate) and in terms of a model life cycle.

Transport Scotland has made a significant investment in LATIS to assist decision-making relating to policies and transport interventions. While this investment is not insubstantial, it has been shown that it offers considerable economies in terms of model development and maintenance relative to an alternative modelling strategy which would require development of bespoke models for every application. The estimated saving over the alternative modelling strategy, amounts to £2,648,400 between 2007 and 2009.

While harder to quantify, the LATIS commission offers significant qualitative benefits through the creation and use of the LATIS data collection commission repository, user training, provision of ad hoc advise to users and user engagement activities. LATIS also demonstrates its value through the diverse range of model applications.

9 The Year Ahead

Overview

2009 has been a highly successful year for LATIS and has built on the strong foundations laid in previous years. The establishment of the LATIS service coupled with the launch of the new modelling capability, TMfS:07 and TELMoS:07, have been key achievements during 2009. This chapter introduces the key objectives for LATIS in the coming year (2010).

User Engagement

This report has explained how Transport Scotland has expanded the scope of user engagement throughout 2009 in order to meet the needs of users and to encourage model applications. It is vital that we continue to build on this platform by liaising closely with users and explaining how LATIS can support their needs. Table 9.1 outlines the key tasks associated with user engagement over the next year:

Table 9.1 User Engagement Objectives

	Objective
1	Ongoing liaison with the Key Agencies and stakeholders and ongoing customer engagement, with a continued focus on supporting the Scottish Government's policy commitments.
2	Close engagement with the Department for Transport on High Speed Rail and Network Rail in the production of the future Rail Utilisation Strategy
3	A future User Group Day aimed at a particular subset of the wider User Group.
4	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.
5	Publication of full model documentation and audit findings, to reflect the launch of the new National Model.

Model Development

Transport Scotland have invested significant resources in the development of both TMfS:07 and the FRCM. With the development of these models now complete, the focus is now on identifying and capturing opportunities to apply these models to scheme planning and appraisal in support of decision-making. Table 9.2 outlines model development objectives for the coming year:

Table 9.2 Model Development Objectives

	Objective
1	Application and further refinement of TMfS:07 and the FRCM. Undertaking of sensitivity testing which permits more diverse applications.
2	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.
3	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).

It should be noted that recommendations for specific technical enhancements to the LATIS modelling capability will be included within the Term Consultants' End of Term Report. These recommendations will be considered by the Transport Scotland LATIS Management Team and the wider LATIS Steering Group. They will in turn be discussed with all key stakeholders during the course of any future model development.

Data Collection

Now that the main phase of model development is complete, data collection is more likely to be tailored towards supporting specific applications of LATIS and facilitating the needs of the Scottish Government and other Directorates of Transport Scotland. Table 9.3 outlines key data collection objectives for the coming year:

Table 9.3 Data Collection Objectives

	Objective
1	Ongoing data collection that supports specific model applications.
2	Continued data collection support for the Scottish Government and Transport Scotland Directorates.

As with model development, the Term Consultants' End of Term Report will provide specific data collection recommendations.

Model Support

The provision of model support is likely to become the central element of LATIS in the coming year. With public expenditure becoming increasingly constrained, LATIS will be an important tool in identifying the strategic transport and land use projects that offer best value. Coupled with this is the need to take the STPR outcomes forward and support the Scottish Government's other headline transport projects.

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 9.4 outlines key model support objectives for the coming year:

Table 9.4 Model Support Objectives

	Objective
1	Ongoing application support to all live applications.
2	Support for approved future applications.
3	Analytical support in taking forward the STPR outcomes.
4	Continued contribution to the planning reform agenda and supporting Transport Scotland's role as a Key Agency.

Appendix A –Glossary

- CATI – Computer Aided Telephone Interview
- COSLA – Convention of Scottish Local Authorities
- CPM – Client Progress Meeting
- DCC – Date Collection Commission
- DfT – Department for Transport
- EGIP – Edinburgh Glasgow Improvement Programme
- ERTM – East Renfrewshire Transport Model
- FRCM – Forth Replacement Crossing Model
- GBFM – Great British Freight Model
- GIS – Geographical Information Systems
- HGV – Heavy Goods Vehicle
- HOV – High Occupancy Vehicle
- LATIS – Land use and Transport Integration in Scotland
- LGV – Light Goods Vehicle
- LMC – LATIS Modelling Capability
- NTM – National Transport Model
- P&R – Park and Ride
- PT – Public Transport
- RSI – Roadside Interview
- RTP – Regional Transport Partnership
- SEPA – Scottish Environment Protection Agency
- SESplan – South-East Scotland Strategic Development Authority
- SESTRAN – South-East Scotland Regional Transport Partnership
- SG – Scottish Government
- SITLUM – Strathclyde Integrated Transport and Land use Model
- SITM – Strathclyde Integrated Transport Model
- SPT – Strathclyde Partnership for Transport
- STAG – Scottish Transport Appraisal Guidance
- STAR – Scottish Transport Applications and Research Conference
- STPR – Strategic Transport Projects Review
- SWESTRANS – South-West of Scotland Transport Partnership
- TACTRAN – Tayside and Central Regional Transport Partnership

- TEE – Transport Economic Efficiency
- TELMoS – Transport, Economic and Land use Model of Scotland
- TMfS – Transport Model for Scotland
- WEBS – Wider Economic Benefits

Appendix B – Model Documentation

Tables B1 – B5 provide an overview of, and links to the documentation for each version of the model:

Table B1 TMfS:02 Model Documentation

Report	Description
TMfS:02 Inception Report	Overview of commitments for the TMfS:02 Commission.
TMfS:02 Road Assignment Model Calibration and Validation Report	Details the calibration and validation of TMfS:02 Road Model.
TMfS:02 Public Transport Assignment Model Calibration and Validation Report	Details the calibration and validation of TMfS:02 Public Transport Model.
TMfS:02 Demand Model Development Report	Details the development of the TMfS:02 Demand Model.
TMfS:02 Model Development Audit Report	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.
TMfS:02 End of Term Report	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

Report	Description
Model Enhancements Note	Report detailing the enhancements implemented in the 2005 rebase
TMfS:05 Road Assignment Model Calibration and Validation Report	Details the calibration and validation of TMfS:05 Road Model
TMfS:05 Road Assignment Model Calibration and Validation Report Appendices	Key statistics underlying the TMfS:05 RAM Calibration and Validation Report
TMfS:05 Public Transport Assignment Model Calibration and Validation Report	Details the calibration and validation of TMfS:05 Public Transport Model
TMfS:05 Demand Model Development Report	Details the development of the TMfS:05 Demand Model
TELMoS:05 Model Description	This report documents the implementation of the land use/economic components of TELMoS, and their interactions with the transport components
TMfS:05 Model Development Audit Report	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
TMfS:05 Model Development Audit Report Summary	Summary of the main Audit Report

Table B3: TMfS:05a Model Documentation

Report	Description
TMfS:05a Road Assignment Model Calibration and Validation Report	Details the calibration and validation of TMfS:05a Road Model
TMfS:05a Road Assignment Model Calibration and Validation Report Appendices	Key statistics underlying the TMfS:05a RAM Calibration and Validation Report
TMfS:05a Public Transport Assignment Model Calibration and Validation Report	Details the calibration and validation of TMfS:05a Public Transport Model
TMfS:05a Public Transport Assignment Model Calibration and Validation Report Appendices	Key statistics underlying the TMfS:05a PTAM Calibration and Validation Report
TMfS:05a Park and Ride Model Calibration and Validation Report	Details the calibration and validation of TMfS:05a Park and Ride Model
TMfS:05a Reference Case and Do Minimum Schemes	Do Minimum and Reference case schemes codes in the TMfS:05a base and future year networks
TMfS:05a Model Development Audit Report	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
TMfS:05a Model Development Audit Report Summary	Summary of the main Audit Report

Table B4: TMfS:07 Model Documentation

Report	Description
TMfS:07 National Road Model Development Report	Details the development of the TMfS:07 National Road Model
TMfS:07 National Demand Model Development Report	Details the development of the TMfS:07 National Demand Model
TMfS:07 Public Transport Model Development Report	Details the development of the TMfS:07 National Public Transport Model
TMfS:07 National Road Model Calibration and Validation Report	Details the calibration and validation of TMfS:07 National Road Model
TMfS:07 National Public Transport Model Calibration and Validation Report	Details the calibration and validation of TMfS:07 National Public Transport Model
TMfS:07 National Public Transport Model Calibration and Validation Report Appendices	Key statistics underlying the TMfS:07 National Public Transport Model Calibration and Validation Report
TMfS:07 National Model Development Audit Report	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
TMfS:07 National Model Development Audit Report Executive Summary	Summary of the main Audit Report
TMfS:07 Enhancement Report Summary	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.
TMfS:07 Model Enhancements Option Note	This note outlines the initial list of enhancement options that will be addressed within the Enhancement Report for TMfS.

Report	Description
TMfS:07 High Occupancy Vehicle Lane Stated Preference Study	Summary of results from the High Occupancy Vehicle stated preference study

Table B5: Other Documentation

Report	Description
Non-Technical Guide to TMfS	A non-technical introduction to each element of TMfS
ENEVAL User Manual	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- LATIS Applications by model version and year

Model	Year	Project	Ultimate Client	Intervention Value (Estimated)
TMfS:05	**2007**	M8 Bothwell Street	Transport Scotland	£1m - 10m
		Sheriffhall	Transport Scotland	£10m - £50m
		Trunk Road Hierarchy	Transport Scotland	N/A
		STPR Forth Crossing	Transport Scotland	£1 bn +
		Glasgow Crossrail	SPT	500m +
		Edinburgh and Lothian Structure Plan	ELSP Joint Committee	£100m - £500m
		Cross Forth Passenger Ferry	SEStran	£1m - 10m
		Strategic Transport Projects Review (STPR)	Transport Scotland	500m +
		National Transport Strategy	The Scottish Government	500m +
		DfT PT Demand	Department for Transport	N/A
		Noise Mapping	Transport Scotland	N/A
		TACTRAN Regional Transport Strategy	TACTRAN	£100m - £500m
		Glasgow - Edinburgh Rail	Transport Scotland	£1 bn +
		Toll Impact Study	Transport Scotland	£10m - £50m
		M8 Bailiieston - Newhouse	Transport Scotland	£100m - £500m
		Forth Estuary Transport Authority- Main Cable study	Transport Scotland	£10m - £50m
		A73 STAG Appraisal	North Lanarkshire Council	£1m - 10m

Model	Year	Project	Ultimate Client	Intervention Value (Estimated)
		South Lanarkshire Local Plan	South Lanarkshire Council	£1m - 10m
	Total			**Over £2 bn**
TMfS:05a	**2008**	Forth Replacement Crossing (FRC)	Transport Scotland	£2.3 bn
		Scottish Climate Change Programme	The Scottish Government	£1m - 10m
		Lothian Development Plan	ELSP Joint Committee	£50m-100m
		South Lanarkshire links to the East	South Lanarkshire Council	£10m-50m
		Perth Tay Crossing	Perth and Kinross Council	£10m-50m
		Edinburgh Air Quality	City of Edinburgh Council	£1m - 10m
		TACTRAN P&R Study	TACTRAN	£1m - 10m
		Edinburgh South Orbital Bus	SEStran	£10m-50m
		South Lanarkshire Bus Based P&R	South Lanarkshire Council	£1m - 10m
		Hairmyres P&R	South Lanarkshire Council	£1m - 10m
		Edinburgh Park - Additional Stops on E&G Services	Transport Scotland	£10m-50m
		Glasgow City Plan II	Glasgow City Council	£50m-100m
		Kilbowie P&R	West Dunbartonshire Council	£1m - 10m
		Clyde Waterbus	Glasgow City Council	£1m - 10m

Model	Year	Project	Ultimate Client	Intervention Value (Estimated)
		Glasgow City Centre Paramics	Glasgow City Council	£1m - 10m
		Vale Corridor P&R	West Dunbartonshire Council	£1m - 10m
		Bishopton Inter-Peak Model	Redrow Homes	£1m - 10m
		Geography of Poor Skills	Scottish Enterprise	£1m - 10m
	2009	Strategic Transport Projects Review (STPR) Support	Transport Scotland	£1bn +
		Forth Replacement Crossing (FRC)	Transport Scotland	N/A
		Edinburgh South Orbital Bus	SEStran	£1m - 10m
		Bishopton Study	Redrow Homes	£1m - 10m
		Edinburgh - Glasgow Rail Options	Transport Scotland	£1bn +
		Edinburgh - Glasgow Improvement Programme	Transport Scotland	£1bn +
		Clyde Gateway Transportation Strategy	Transport Scotland	500m +
		A73 STAG Appraisal follow-up	North Lanarkshire Council	£1m - 10m
		Clackmannanshire - Fife - Edinburgh STAG	SEStran	£10m - 50m
		A801 River Avon Gorge	SEStran	£10m - 50m
		Kincardine Bridge Maintenance Plan	Transport Scotland	£1m - 10m
		M8 Bridges Route Maintenance Strategy	Transport Scotland	£1m - 10m
		A9 Kessock Bridge Resurfacing	Transport Scotland	£1m - 10m
		A82 Kilbowie Roundabout STAG Appraisal	Transport Scotland	£1m - 10m
		Dalmarnock Station Redevelopment	SPT	£1m - 10m

Model	Year	Project	Ultimate Client	Intervention Value (Estimated)
		Elgin Traffic Review	Transport Scotland	£1m - 10m
		Cross-Forth Ferry	SEStran	£1m - 10m
		M74 Interventions	Transport Scotland	£1m - 10m
		M74 Completion - Local Area Models Update	Transport Scotland	£1m - 10m
		Strategic Transport Issues in East Renfrewshire	East Renfrewshire Council	£1m - 10m
		Winchburgh Development Initiative	LXB3 (Winchburgh Limited)	£1m - 10m
		Wallyford Development Study	Transport Scotland	£1m - 10m
		Transport and Climate Change	The Scottish Government	N/A
		Low Emission Zone Feasibility Study	Department for Transport	£1m - 10m
		"Smarter Choices, Smarter Places" - East End Accessbility	Glasgow City Council	£1m - 10m
	Total			**Over £3.2bn**
FRCM	**2009**	West Edinburgh Transport Assessment	West Edinburgh Planning Framework Board	£500m +
		Replacement Forth Crossing	Transport Scotland	N/A
	Total			**Over £500m**
TMfS:07	**2009**	A96 Corridor	Transport Scotland	£10m - 50m
		Route Utilisation Strategy Development	Network Rail	N/A
	Total			**Unknown**

Model	Year	Project	Ultimate Client	Intervention Value (Estimated)
All Models	***Total***	**All applications**	**All clients**	**Over £5.5bn**

Appendix D - Estimated costs of development and application of alternative models for each LATIS application August 2007 – October 2009

Model	Year	Project	Ultimate Client	Model Devlopment Costs	Data Collection Costs (Estimated)	Audit Costs (Estimated)	Total Cost	Intervention Value (Estimated)
TMfS:05	**2007**	M8 Bothwell Street	Transport Scotland	£40,000	£18,400	£4,000	£62,400	£1m - £10m
		Sheriffhall	Transport Scotland	£40,000	£10,000	£4,000	£54,000	£10m - £50m
		Trunk Road Hierarchy	Transport Scotland	£80,000	£4,000	£8,000	£92,000	N/A
		Forth Replacement Crossing (FRC)STPR Forth Crossing	Transport Scotland	£80,000	£13,200	£8,000	£101,200	£1bn+
		Glasgow Crossrail	SPT	£80,000	£10,800	£8,000	£98,800	500m +
		Edinburgh and Lothian Structure Plan	ELSP Joint Committee	£80,000	£51,000	£8,000	£139,000	£100m- - £500m
		Cross Forth Passenger Ferry	SEStran	£40,000	£10,600	£4,000	£54,600	£1m - £10m
		Strategic Transport Projects Review	Transport Scotland	£160,000	£182,000	£16,000	£358,000	£1bn+

Model	Year	Project	Ultimate Client	Model Devlopment Costs	Data Collection Costs (Estimated)	Audit Costs (Estimated)	Total Cost	Intervention Value (Estimated)
		(STPR)						
		National Transport Strategy	The Scottish Government	£160,000	£15,000	£16,000	£191,000	£1bn+
		DfT PT Demand	Department for Transport	£80,000	£0	£8,000	£88,000	N/A
		Noise Mapping	Transport Scotland	£80,000	£24,000	£8,000	£112,000	N/A
		TACTRAN Regional Transport Strategy	TACTRAN	£80,000	£52,000	£8,000	£140,000	£100m- - £500m
		Glasgow - Edinburgh Rail	Transport Scotland	£80,000	£10,000	£8,000	£98,000	£1bn+
		Toll Impact Study	Transport Scotland	£80,000	£21,000	£8,000	£109,000	£10m - £50m
		M8 Bailiieston - Newhouse	Transport Scotland	£40,000	£12,400	£4,000	£56,400	£100m- - £500m
		Forth Estuary Transport Authority- Main Cable study	Transport Scotland	£40,000	£7,800	£4,000	£51,800	£10m - £50m
		A73 STAG Appraisal	North Lanarkshire Council	£40,000	£8,400	£4,000	£52,400	£1m - £10m

Model	Year	Project	Ultimate Client	Model Devlopment Costs	Data Collection Costs (Estimated)	Audit Costs (Estimated)	Total Cost	Intervention Value (Estimated)
		South Lanarkshire Local Plan	South Lanarkshire Council	£80,000	£12,600	£8,000	£100,600	£1m - £10m
	Total			**£1,360,000**	**£463,200**	**£136,000**	**£1,959,200**	**Over £6bn**
TMfS:05a	**2008**	Forth Replacement Crossing (FRC)	Transport Scotland	£40,000	£7,000	£4,000	£51,000	£1bn+
		Scottish Climate Change Programme	The Scottish Government	£80,000	£5,000	£8,000	£93,000	£1m - £10m
		Lothian Development Plan	ELSP Joint Committee	£80,000	£27,000	£8,000	£115,000	£50m-£100m
		South Lanarkshire links to the East	South Lanarkshire Council	£80,000	£21,000	£8,000	£109,000	£10m-£50m
		Perth Tay Crossing	Perth and Kinross Council	£40,000	£12,400	£4,000	£56,400	£10m-£50m
		Edinburgh Air Quality	City of Edinburgh Council	£40,000	£4,800	£4,000	£48,800	£1m - £10m
		TACTRAN P&R Study	TACTRAN	£80,000	£8,000	£8,000	£96,000	£1m - £10m
		Edinburgh South	SEStran	£80,000	£16,600	£8,000	£104,600	£10m-£50m

Model	Year	Project	Ultimate Client	Model Devlopment Costs	Data Collection Costs (Estimated)	Audit Costs (Estimated)	Total Cost	Intervention Value (Estimated)
		Orbital Bus						
		South Lanarkshire Bus Based P&R	South Lanarkshire Council	£40,000	£13,300	£4,000	£57,300	£1m - £10m
		Hairmyres P&R	South Lanarkshire Council	£40,000	£3,000	£4,000	£47,000	£1m - £10m
		Edinburgh Park - Additional Stops on E&G Services	Transport Scotland	£40,000	£2,400	£4,000	£46,400	£10m-£50m
		Glasgow City Plan II	Glasgow City Council	£20,000	£10,000	£2,000	£32,000	£50m-£100m
		Kilbowie P&R	West Dunbartonshire Council	£40,000	£7,000	£4,000	£51,000	£1m - £10m
		Clyde Waterbus	Glasgow City Council	£80,000	£3,000	£8,000	£91,000	£1m - £10m
		Glasgow City Centre Paramics	Glasgow City Council	£40,000	£13,000	£4,000	£57,000	£1m - £10m
		Vale Corridor P&R	West Dunbartonshire	£40,000	£3,000	£4,000	£47,000	£1m - £10m

Model	Year	Project	Ultimate Client	Model Devlopment Costs	Data Collection Costs (Estimated)	Audit Costs (Estimated)	Total Cost	Intervention Value (Estimated)
			Council					
		Bishopton Inter-Peak Model	Redrow Homes	£40,000	£9,700	£4,000	£53,700	£1m - £10m
		Geography of Poor Skills	Scottish Enterprise	£2,000	£2,000	£200	£4,200	£1m - £10m
	2009	Strategic Transport Projects Review (STPR) Support	Transport Scotland	£16,000	£5,000	£1,600	£22,600	£1bn+
		Forth Replacement Crossing (FRC)	Transport Scotland	£16,000	£3,000	£1,600	£20,600	£1bn+
		Edinburgh South Orbital Bus	SEStran	£8,000	£1,000	£800	£9,800	£1m - £10m
		Bishopton Study	Redrow Homes	£4,000	£1,000	£400	£5,400	£1m - £10m
		Edinburgh - Glasgow Rail Options	Transport Scotland	£16,000	£2,000	£1,600	£19,600	£1bn+
		Edinburgh - Glasgow Improvement Programme	Transport Scotland	£2,000	£0	£200	£2,200	£1bn+
		Clyde Gateway Transportation	Transport Scotland	£80,000	£16,600	£8,000	£104,600	£500m+

Model	Year	Project	Ultimate Client	Model Devlopment Costs	Data Collection Costs (Estimated)	Audit Costs (Estimated)	Total Cost	Intervention Value (Estimated)
		Strategy						
		A73 STAG Appraisal follow-up	North Lanarkshire Council	£4,000	£3,000	£400	£7,400	£1m - £10m
		Clackmannanshire - Fife - Edinburgh STAG	SEStran	£80,000	£12,000	£8,000	£100,000	£10m - £50m
		A801 River Avon Gorge	SEStran	£40,000	£7,600	£4,000	£51,600	£10m - £50m
		Kincardine Bridge Maintenance Plan	Transport Scotland	£80,000	£9,600	£8,000	£97,600	£1m -– £10m
		M8 Bridges Route Maintenance Strategy	Transport Scotland	£80,000	£9,000	£8,000	£97,000	£1m -– £10m
		A9 Kessock Bridge Resurfacing	Transport Scotland	£40,000	£7,600	£4,000	£51,600	£1m - £10m
		A82 Kilbowie Roundabout STAG Appraisal	Transport Scotland	£8,000	£0	£800	£8,800	£1m - £10m
		Dalmarnock Station Redevelopment	SPT	£20,000	£600	£2,000	£22,600	£1m - £10m
		Elgin Traffic Review	Transport Scotland	£40,000	£14,000	£4,000	£58,000	£1m - £10m

Model	Year	Project	Ultimate Client	Model Devlopment Costs	Data Collection Costs (Estimated)	Audit Costs (Estimated)	Total Cost	Intervention Value (Estimated)
		Cross-Forth Ferry	SEStran	£8,000	£1,600	£800	£10,400	£1m - £10m
		M74 Interventions	Transport Scotland	£40,000	£9,200	£4,000	£53,200	£1m - £10m
		M74 Completion - Local Area Models Update	Transport Scotland	£40,000	£13,000	£4,000	£57,000	£1m - £10m
		Strategic Transport Issues in East Renfrewshire	East Renfrewshire Council	£40,000	£14,500	£4,000	£58,500	£1m - £10m
		Winchburgh Development Initiative	LXB3 (Winchburgh Limited)	£40,000	£8,200	£4,000	£52,200	£1m - £10m
		Wallyford Development Study	Transport Scotland	£40,000	£8,200	£4,000	£52,200	£1m - £10m
		Transport and Climate Change	The Scottish Government	£160,000	£10,000	£16,000	£186,000	N/A
		Low Emission Zone Feasibility Study	Department for Transport	£40,000	£0	£4,000	£44,000	£1m - £10m
		"Smarter Choices, Smarter Places" - East	Glasgow City Council	£40,000	£8,000	£4,000	£52,000	£1m - £10m

Model	Year	Project	Ultimate Client	Model Devlopment Costs	Data Collection Costs (Estimated)	Audit Costs (Estimated)	Total Cost	Intervention Value (Estimated)
		End Accessibility						
	Total			**£1,884,000**	**£332,900**	**£188,400**	**£2,405,300**	**Over £6bn**
FRCM	**2009**	West Edinburgh Transport Assessment	West Edinburgh Planning Framework Board	£80,000	£18,000	£8,000	£106,000	£500m+
		Forth Replacement Crossing (FRC)Replacement Forth Crossing	Transport Scotland	£16,000	£3,000	£1,600	£20,600	£1bn+
	Total			**£96,000**	**£21,000**	**£9,600**	**£126,600**	**Over £1.5bn**
TMfS:07	**2009**	A96 Corridor	Transport Scotland	£40,000	£14,300	£4,000	£58,300	£10m - £50m
		Route Utilisation Strategy Development	Network Rail	£40,000	£0	£4,000	£44,000	N/A
	Total			**£80,000**	**£14,300**	**£8,000**	**£102,300**	**Unknown**
All Models	***Total***	**All applications**	**All clients**	**£3,420,000**	**£831,400**	**£342,000**	**£4,593,400**	**Over £6bn**