

MODELLING SUITE GUIDE FOR APPLICANTS



SYSTRA

SUB REGIONAL TRANSPORT MODEL (SRTM)

MODELLING SUITE GUIDE FOR APPLICANTS

IDENTIFICATION TABLE

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- Appendix A - SRTM Request for Use Form;
- Appendix B - Committed Schemes included in the Reference Case Models
- Appendix C – Model Update Log; and
- Appendix D - SRTM User Satisfaction Form.

1. INTRODUCTION

- 1.1.1 The Solent Transport Sub-Regional Transport Model (SRTM) is an evidence based Land-Use and Transport Interaction model. It contains a suite of transport models and an associated Local Economic Impact Model (LEIM).
- 1.1.2 The SRTM provides a robust tool that provides a consistent and evidenced approach to the identification of transport needs and an objective analysis of the impact of both transport and land-use interventions across the sub-region.
- 1.1.3 The model suite can assist in the investigation and assessment of different policies and strategies on land-use and transport provision, use, management and investment. It provides Solent Transport with the ability to respond to transport funding opportunities as they arise (for example through the Regional Growth Fund, the Local Sustainable Transport Fund, or funding associated with the Local Enterprise Partnership).
- 1.1.4 The potential uses of the model could be development-driven, policy-driven or infrastructure-driven. For each of the potential model drivers a consistent set of model outputs can be produced for the user.
- 1.1.5 This guide contains details on what applications can be undertaken with the SRTM, along with details of the process for applying to use the model output. These processes are designed to standardise the request procedure, and help ensure widespread, cost-effective and consistent use of the model, to assist effective decision making relating to a wide range of policies and measures.
- 1.1.6 The guide is structured as follows:
- Chapter 2 - Definition of Parties and Contact Details;
 - Chapter 3 - SRTM Modelling Suite;
 - Chapter 4 – Application for Model Runs and Output;
 - Chapter 5 - Costing;
 - Chapter 6 - Model Outputs; and
 - Chapter 7 – Terms of Use.
- 1.1.7 The appendices to this guide provide the following forms and information for use in applying for model runs and output:
- Appendix A - Solent Transport Request for Use Form;
 - Appendix B - Committed Schemes included in the Reference Case Models
 - Appendix C – Model Update Log; and
 - Appendix D - Solent Transport User Satisfaction Form.

2. DEFINITION OF PARTIES AND CONTACT DETAILS

2.1 Solent Transport

2.1.1 Solent Transport (formerly Transport for South Hampshire & Isle of Wight) is an enabling and delivery body formed in 2007 for the South Hampshire sub-region, bringing together local transport authorities, transport operators, business interests and government agencies to deliver change. The organisation is a partnership made up of the highway authorities of Hampshire, Southampton, Portsmouth, and Isle of Wight.

2.1.2 The Solent Transport Vision seeks to develop improved transport for the sub-region to address current shortcomings and to support long term economic growth objectives.

2.2 Solent Transport Evidence Base Steering Group

2.2.1 The SRTM is administered by the Solent Transport Senior Management Board, which acts as the SRTM Steering Group. This includes representatives from Solent Transport, Hampshire County Council, Southampton City Council, Portsmouth City Council, Isle of Wight Council, Department for Transport, Highways England, Network Rail, Solent Local Enterprise Partnership and the Partnership for Urban South Hampshire (PUSH).

2.2.2 The aim of the Steering Group is to develop and maintain an Evidence Base, consisting of WebTag compliant analysis and forecasting tools providing a shared resource for partners to define current and future challenges and develop practical solutions and transport interventions to solve them, in order to achieve local, regional and national objectives.

2.3 Solent Transport Modelling Consultants

2.3.1 SYSTRA was commissioned, as part of a wider team, to support Solent Transport with the development and application of the Sub-Regional Transport Model Suite.

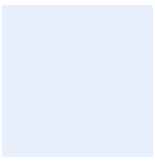
2.3.2 Full details of the scope of the contract between Solent Transport and the modelling consultancy team are given in Section 1 of the Solent Transport tender document¹.

2.4 Contact Details

SRTM CONSULTANT PROJECT MANAGER(S):	SOLENT TRANSPORT SRTM PROJECT OFFICER
Ian Burden or Chris Whitehead SYSTRA Dukes Court Duke Street Woking Surrey GU21 5BH 01483 742906 (or 742949) iburden@systra.com cwhitehead@systra.com	Richard Pemberton Solent Transport Hampshire County Council EII Court West The Castle Winchester SO23 8UJ 07517 988207 richard.pemberton2@hants.gov.uk

¹ Solent Transport Tender for the Development and Use of a Sub-Regional Transport Model Suite

Sub Regional Transport Model (SRTM)	
Modelling Suite Guide for Applicants	C39344
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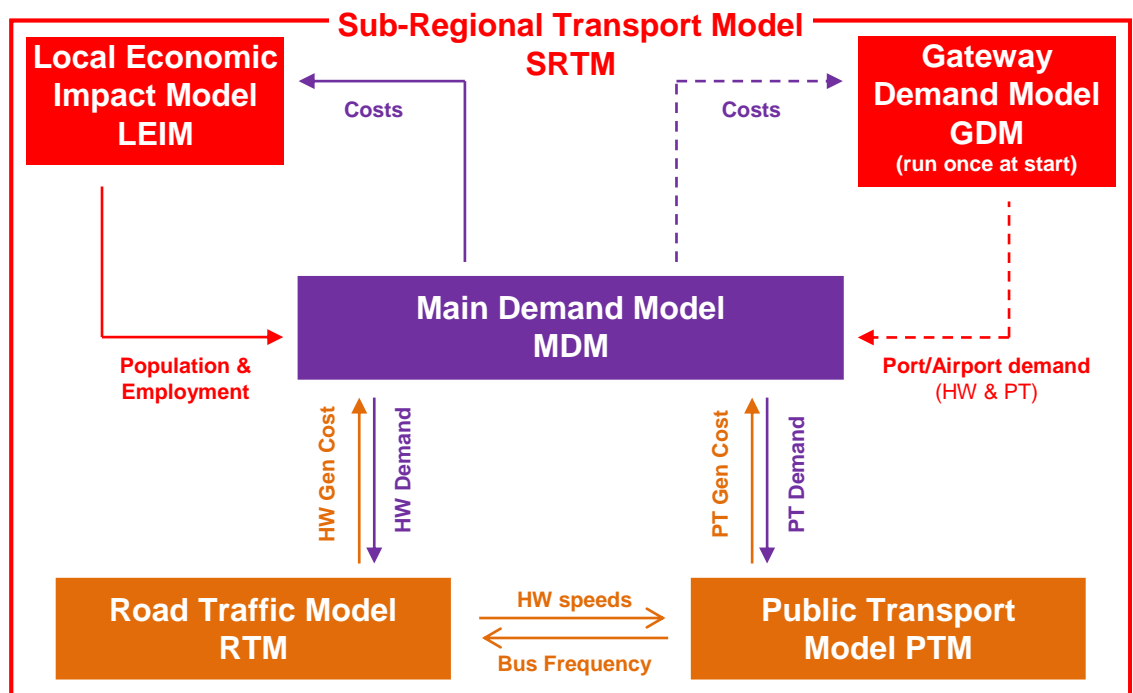
3. SRTM MODELLING SUITE

3.1 Introduction

3.1.1 The Solent Transport Sub-Regional Transport Model (SRTM) is an evidence based Land-Use and Transport Interaction model. It contains a suite of transport models and an associated Local Economic Impact Model (LEIM). The suite of transport models comprises the Main Demand Model (MDM), the Gateway Demand Model (GDM), Road Traffic Model (RTM) and Public Transport Model (PTM).

3.1.2 Figure 1 shows the interaction of the various models within the SRTM. The LEIM takes transport costs from a converged run of the MDM and feeds back population and employment data, which is converted into demand matrices. The public transport and road traffic demand are assigned to the public transport and road traffic networks to estimate travel costs, which are then passed back to the MDM to re-estimate demand. The demand and cost calculations are run iteratively, until convergence.

Figure 1. Solent Transport Sub-Regional Transport Model Structure



Model Regions

3.1.3 The model has the four model regions shown Figure 2. In the Core and Marginal Fully Modelled Areas (FMA), the zones are defined as groups of Census Output Areas and include a full set of information on the population, employment and land use associated with these zones. Outside the FMA, the buffer area and beyond external area zones are based on Districts and, farther away, on Counties. These areas do not use full data about, nor forecast, population, employment and land use information.

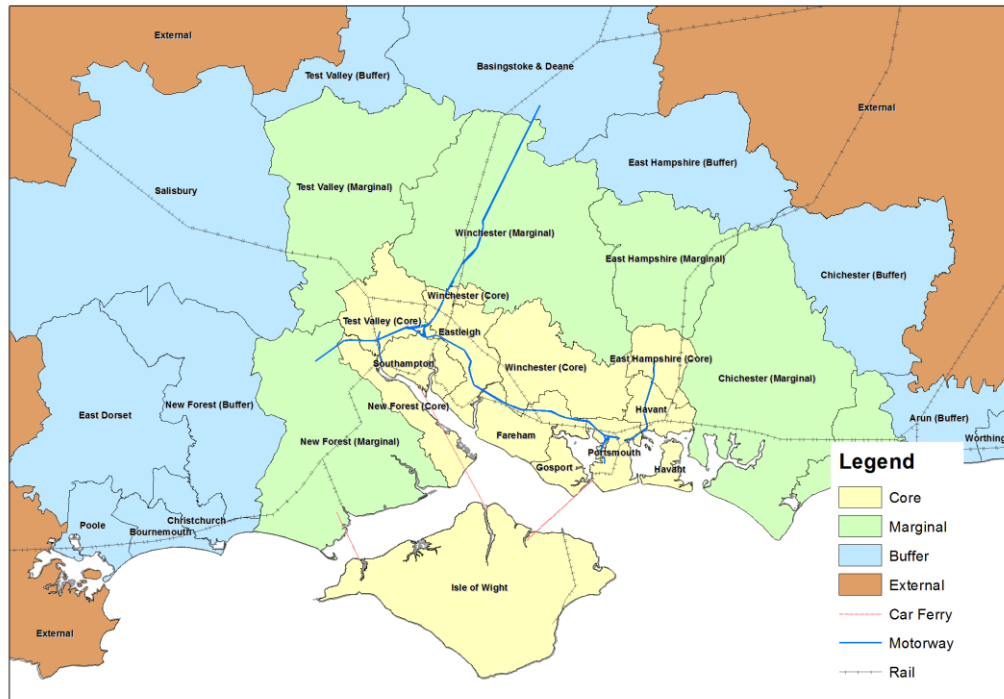


Figure 2. Study Area and Regions

Model Dimensions and Segmentation

3.1.4 The SRTM considers all weekday (Monday to Friday) travel over a 24 hour period. Four distinct travel time periods are modelled:

- morning peak (07:00-10:00);
- inter peak (10:00-1600);
- evening peak (1600-1900); and
- off-peak (1900-0700).

3.1.5 For personal trips, six trip purposes are modelled. These are home-based work, home-based employer’s business, home-based education, home-based other, non home-based employer’s business, and non home-based other.

3.1.6 Three car availability classes and 4 person-types are also defined. The three car availability classes are defined for households: households with no car, households with car competition (fewer cars than adults) and households with no car competition (number of cars is greater or equal to the number of cars). The four person types are: child, working adult, non working adult, retired.

SRTM in Forecasting Mode

3.1.7 In forecasting mode, the SRTM produces demand and cost estimates for 2014, 2019, 2026, 2031 and 2036. From base year (2010)² costs, LEIM produces population and employment forecasts for the next forecast year. Along with the adjusted trip rates, these forecasts are used to

² A model rebasing exercise to update the model base year to 2015 has been commissioned and is due for completion in Autumn 2016. Sub Regional Transport Model (SRTM)

calculate growth factors for the productions and attractions. The trip rates vary by period and mode of transport, for the 12 person-type/household categories.

3.1.8 The SRTM can assist in facilitating decision-making with regard to transport services and investment across a range of policy areas, including land-use planning, the transport-related environment, demographics, along with other development-type policies. The design of the SRTM modelling suite makes it a powerful tool for assessing these policies across the Solent LEP area in a consistent fashion.

3.2 When should the SRTM be used?

3.2.1 The SRTM would be appropriate to assist in the following fields:

- Undertaking the appraisal of various road and public transport improvements (including Park and Ride);
- Undertaking assessment and comparison of impacts of various planning policies such as changes to the housing location and density for new development; and
- Forecasting and testing future land-use and demographic changes and the interaction between future land use and transport provision.

3.2.2 In addition the following outputs can be generated by the SRTM:

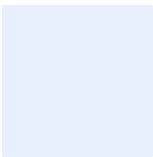
- Environmental analysis, including projection of transport based emissions;
- Accessibility analysis;
- Economic, financial and cost-benefit analysis of schemes; and
- Inputs into micro-simulation models or other models for more detailed local/ junction analysis.

3.2.3 In general due to their size and strategic nature, land use and transport models are focused towards investigating the effects of significant policy changes and/or major interventions, rather than individual minor changes to the transport system. Also, the model can be used to provide input to more detailed analysis of, for example, detailed junction modeling and design tasks associated with a development.

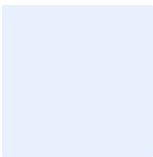
3.3 Who can apply for SRTM runs and output?

3.3.1 Output from the SRTM is available to a wide range of existing and potential users, including:

- Hampshire County Council, Southampton City Council, Portsmouth City Council, Isle of Wight Council, and District and Borough Councils within Hampshire;
- Highways England;
- Department for Transport (DfT) and other government departments;
- Network Rail;
- Public Transport Operators;
- Partnership for Urban South Hampshire (PUSH);
- The Solent Local Enterprise Partnership (LEP);
- Chambers of Commerce;
- Other interested organisations, including academia, developers and health boards; and
- Consultancies working on behalf of any of the above.



3.3.2 It should be noted that at present the model will only be available to use on a bureau basis, run by the Solent Transport modelling consultants.

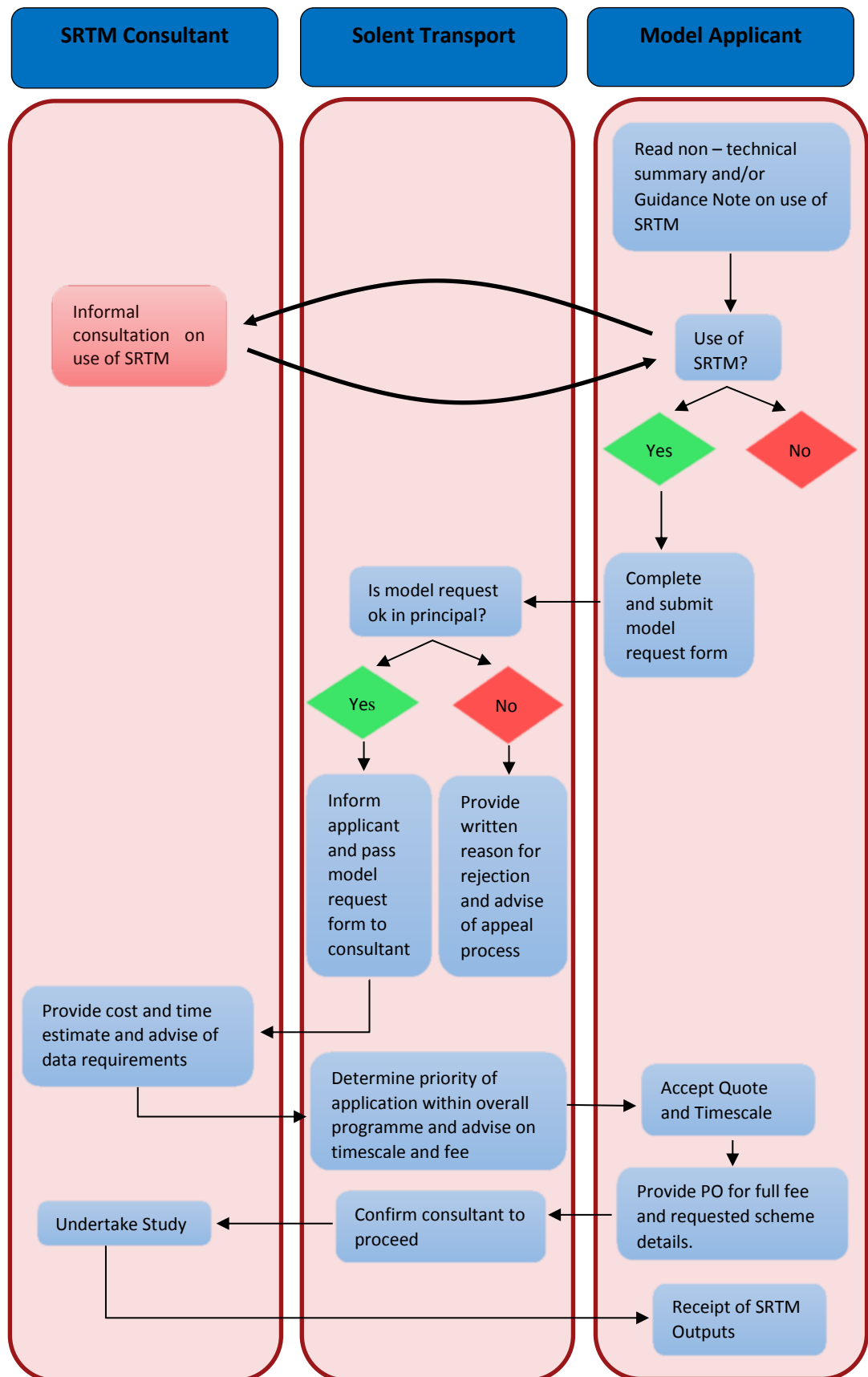


4. APPLICATION FOR MODEL RUNS AND OUTPUT

4.1 Process Overview

4.1.1 The application process for SRTM runs and output is detailed in Figure 3. The flow diagram shows the key components in the application process.

Figure 3. SRTM application to use process



4.2 Initial Stages

- 4.2.1 The initial stages in the process of applying for model runs and output are to firstly to read this guidance document and the non-technical pamphlet, to determine if the SRTM can assist with your specific requirements.
- 4.2.2 If it is decided that the SRTM is the appropriate tool to use, then it is strongly recommended that the potential user contacts the Solent Transport modelling consultants to discuss their requirements. The consultants will be able to advise on the technical aspects of the model and whether or not it is indeed the appropriate tool for the proposed application.
- 4.2.3 At this stage it is useful to discuss as much of the technical detail as possible with the Solent Transport modelling consultants, for example forecast year, scenario assumptions etc., however it should be noted that this does not constitute any form of contractual agreement. The application can only be approved by the Solent Transport Evidence Base Progress Group / Steering Group following submission of the Request for Use Form, described below.

4.3 Request for Use Form

- 4.3.1 The next stage in the application process is to complete a request form. The request form is included in the appendix to this document, and is also available from TfSH@hants.gov.uk. Prospective users must complete and return the form to Solent Transport.
- 4.3.2 The form is designed to obtain sufficient information from the potential user to enable the Solent Transport Support Team to fully assess any application. The form should be completed by a senior member of the potential user's project team (preferably the modelling leader or project manager) and returned to TfSH@hants.gov.uk.
- 4.3.3 The applicant should answer each of the questions in the form, providing:
- the aims, objectives and scope of their project and what they plan to use the model outputs for;
 - a detailed specification of any required changes to the model assumptions and the schemes to be included;
 - details of the final deliverables from the Solent Transport consultants;
 - the timescales for the application, both the desired completion date and the latest acceptable completion date; and
 - an acknowledgement that the terms and conditions are agreed to and that upon provision of the final deliverable a satisfaction form will be completed.
- 4.3.4 It is vital that the user provides as much detail as possible to allow the Solent Transport Support Team to consider fully whether the SRTM is suitable for the specific application. The information provided in the request form provides the basis for quotations of likely timescales and costs. The information provided also forms the basis of the prioritisation of different applications.
- 4.3.5 The standard turnaround, from formal commissioning to reporting on the model outputs, for a package of model runs is 4-6 weeks. Any significant variance to this timescale will be communicated as part of the fee quote for the model runs.
- 4.3.6 It is important that as much detail as possible is provided with the scheme brief regarding scheme detail. This includes:

- Development quantum by land use type (B1, C3 etc.)
- Site access arrangements (preferably drawings)
- Highway, PT, Active mode mitigation proposals (preferably drawings) as appropriate

4.3.7 Lack of appropriate scheme detail may lead to delays in the modelling process whilst assumptions are confirmed. Changes to scheme details once modelling has commenced may result in additional fees being requested to cover abortive/ additional work.

4.3.8 Requests for a series of model runs can be segmented into a number of packages, where the selection of later packages can be dependent on the outcomes of earlier work. It is essential for programming purposes that this is fully specified as far as possible at this stage, and the information will also feed into the payment plan. Payment for later packages can be deferred until earlier packages are complete.

4.3.9 Upon receipt of the request form:

- the request will be reviewed by Solent Transport and passed to the Solent Transport Support Team;
- potential risks in the application, along with a proposed solution, will be identified and communicated to the applicant;
- the applicant will be provided with feedback and additional information will be requested if required; and
- if the application is approved by Solent Transport, the Solent Transport Support Team’s response will include confirmation of the main deliverables, timescales, and the cost of the required support or advice. Work will be carried out on a fixed fee basis, and as described in Section 10 of this document.

4.3.10 The Request for Use Form is included in the appendix to this document, and is also available from TfSH@hants.gov.uk.

4.4 Successful Application

4.4.1 Once the application process has been completed, and assuming it has been successful, the application will be progressed to the agreed timescales. Each application will be assigned a Project Manager by the Solent Transport modelling consultants, who will be able to provide support on the application and will keep the user regularly informed as to the progress of the project.

4.4.2 The required outputs will be made available to the applicant upon the completion of the work. If there are a number of deliverables then these will be released at pre-agreed stages throughout the application.

4.4.3 Any issues or problems which are encountered during the application, be they technical or contractual, will be communicated to the user by the Solent Transport project manager as soon as they arise.

4.5 Model and Reference Case Updates

4.5.1 Information regarding updates or revisions to the models, associated data and procedures will be disseminated and discussed, and changes to reference cases approved by the Evidence Base

Steering Group / Progress Group. A list of currently approved reference case scenarios is included as part of the 'Request to Use Form' contained within Appendix B to this user guide.

4.6 User Satisfaction Form

- 4.6.1 While ongoing user monitoring and support occurs throughout any application, a specific User Satisfaction Form has been designed, which must be filled in upon completion of each application.
- 4.6.2 Constructive suggestions for the improvement of the model(s) are welcome and where relevant, the modelling team will endeavour to implement practical enhancements based on these suggestions following consultation with Solent Transport. Priority would be given to those enhancement items required by upcoming applications of the modelling suite.
- 4.6.3 In the case where a form is returned with consistently low scores or particularly negative comments, the Solent Transport Consultant Project Manager or Project Director will follow up these results by contacting the form respondent and establishing the detailed reasons for their dissatisfaction. Any comments made will be recorded and reported to Solent Transport and the team will attempt to rectify any areas of poor performance during future applications.
- 4.6.4 For applications that occur over a long time frame, a User Satisfaction Form will be requested at a predefined set of points throughout the applications, in order to monitor the ongoing levels of satisfaction with how the application is being undertaken.
- 4.6.5 The user will be expected to provide draft copies of any technical reports describing their use of the model outputs on a regular basis throughout each application. This will assist in minimising misuse or misunderstanding of the modelling capability.
- 4.6.6 Any requirement for the Solent Transport Support Team to review any documentation that is produced must be identified in advance of the application being undertaken and should be included in the request form.

4.7 Solent Transport Support Team Feedback

- 4.7.1 Where necessary the Solent Transport Support Team will provide feedback to User Satisfaction Forms received from users. This feedback will be prepared by the Project Manager or Project Director and will be circulated to both the user and the Solent Transport Management team within Hampshire County Council.
- 4.7.2 The User Satisfaction Form is included in the appendix to this document, and is also available from TfSH@hants.gov.uk.

5. COSTING

5.1 Introduction

- 5.1.1 This section of the guide describes the fees associated with the different tests possible using the SRTM, and is designed to assist potential applicants assess a budget cost of their application before proceeding with the model application phase. The possible fees associated with the different types of test that can be undertaken through these models are detailed in Table 1.
- 5.1.2 Differential charge rates will be used for the various types of applicants in order to reflect the financial contributions to model development.. All fee rates include a ring fenced contribution, which is used to keep the Model up to date and to cover administration costs incurred by HCC in managing the contract on behalf of Solent Transport.
- 5.1.3 Private sector organisations will pay the full fee rate on any commissions.
- 5.1.4 Public sector organisations will have a 25% discount on the full fee rate on any commissions.
- 5.1.5 The Solent Transport authorities will have a 45% discount on the full fee rate on any commissions.
- 5.1.6 The fees shown are simply illustrative estimates of what a user can expect to pay for the types of tests listed. The actual cost will depend on the exact nature and complexity of the application being undertaken. For example, simple infrastructure changes may be straight forward to code in the model, but detailed extensive changes would potentially cost considerably more than the costs in Table 1.
- 5.1.7 Combinations of tests can also be run using the model, for example it would be possible to undertake a full Land Use and Transport Interaction run for a number of different years, with infrastructure and / or policy changes in certain years. It is not possible to cost every combination of tests within this User Guide and in this case an initial consultation with the SRTM team would be required to get an idea of potential costs. It is also likely that economies of scale would be achievable if for example a significant series of tests covering all five model years were to be commissioned.
- 5.1.8 In addition to variations in the type of test there is also scope for variation in the amount of analysis undertaken and indeed the extent of model results extracted. The estimates in Table 1 assume a reasonable set of “standard” model outputs with potential simple follow-up queries. However, it may be necessary to augment the data extracted with a series of more detailed results acquired by drilling into the model detail using any number of analysis techniques. Standard model outputs and examples of additional more advanced model outputs are described in Chapter 6.

Table 1. SRTM Approximate Cost Estimates (inc Administration Costs exc VAT)

Model Component	Component Breakdown	Solent Transport Authorities	Public Sector	Private Sector
		45% discount	25% discount	0% discount
A	Test Years (2010, 2014, 2019, 2026, 2031, 2036)			
	1 Year	£3,025	£4,125	£5,500
	2 Years	£3,960	£5,400	£7,200
	3 Years	£4,840	£6,600	£8,800
	4 Years	£5,775	£7,875	£10,500
	5 Years	£6,710	£9,150	£12,200
	6 Years	£7,590	£10,350	£13,800
B	Transport Networks (Highway and PT)			
	No Network Changes (Reference Case Network)	£0	£0	£0
	With Network Changes	£2,915	£3,975	£5,300
C	Land Use			
	No Landuse Changes (Reference Case Landuse)	£0	£0	£0
	With Landuse Changes (assumes additional £1000 DSC Fee)	£2,200	£3,000	£4,000
D	Economic Assessment			
	TUBA (TEE, AMCB, Public Account Tables)	£4,510	£6,150	£8,200

Notes:

1. Each model run must contain components A, B & C
2. All fees are based on a 'standard' sized scheme and adjustments can be made based on scheme complexity
3. Solent Transport Authorities are: HCC, IoWC, PCC, SCC
4. Includes production of a basic modelling report:
 - Modelling Assumptions
 - Localised Flow Change Plots
 - Localised Delay Change Plots
 - Population, Jobs, Households by District
 - Demand (Highway, PT, Active) by District

- 5.1.9 It may be possible to run other types of test with the SRTM, which are not included in the table above. Similarly these would require discussion at the initial consultation stage and then, as with the combination tests, these would be costed up on a case by case basis.
- 5.1.10 All fees, client invoicing details and the corresponding scope of work necessary to produce the agreed deliverables will be clearly defined and agreed at the outset of the contract. As the submission of the formal request must be accompanied by payment it is essential that the initial costing process is as accurate as possible. It should be noted that payment for SRTM commissions is not subject to third party approval/ sign-off of deliverables. Delay of payment may result in rescheduling of model applications and production of deliverables.
- 5.1.11 The estimated fees shown in Table 1 are applicable at the date shown on the first page of this note and may be subject to occasional review. Users are encouraged to confirm the currency of this document through the contacts identified in Chapter 2.
- 5.1.12 It should be noted that all the potential costs quoted do not include VAT, which would be charged at the prevailing rate.

6. MODEL OUTPUTS

6.1.1 Associated with each model are a set of standard model outputs, which are listed in the bullet points below. In addition more advanced model outputs can be provided which require a level of analysis. Examples of these are also provided in the table for each model.

Model and Associated Standard and Additional Outputs

Road Traffic Model (RTM)

- Standard Outputs
 - Flow plots by user class
 - Global statistics by Local Authority area within the SRTM area
- Additional Example Outputs
 - Flows on particular roads by user class
 - Vehicle kms for a defined area
 - Vehicle hours for a defined area
 - Average speed for a defined area
 - Travel times between A and B
 - Plot of travel time bands from a zone
 - Routings between A and B
 - Routings of vehicles using a particular road

Public Transport Model (PTM)

- Standard Outputs
 - Loading plots
 - Total boardings and alightings by area (eg by Local Authority area within the SRTM area)
 - Boardings and alightings for new routes (information for existing bus routes is considered commercially sensitive and can therefore only be reported in an aggregated or indexed format)
 - Passenger distances by area
 - Passenger hours by area
- Additional Example Outputs
 - Loading profile by new route

Park and Ride Model

- Standard Outputs
 - Usage of each park and ride site

Gateway Demand Model (GDM)

- Standard Outputs
 - Usage of each port by user class and purpose

Main Demand Model (MDM)

- Standard Outputs
 - Mode share by zone
 - Trips to / from zones

Local Economic Impact Model (LEIM)

- Standard Outputs
 - Households and population by zone
 - Employment by zone
 - Property related data by zone (occupancy, vacancy, rents etc)
 - Built floorspace by zone (residential, office, warehousing, retail etc)
- Additional Example Outputs
 - Areas where development is likely to take place
 - Areas that may grow or decline
 - The impact of changes in policy or growth upon an area

Emissions Assessment Tool

- Standard Outputs
 - Regional Emissions data by emission type / time period / link type / sector
 - DELTA file for the Land use model
- Additional Example Outputs
 - Analysis of Greenhouse emissions due to transport schemes
 - Emissions by link or subset of links
 - Analysis of time lost due to congestion
 - Local Air Quality Analysis
 - Health Benefits Analysis

7. TERMS OF USE

7.1 Licences

7.1.1 The Solent Transport Sub-Regional Transport Model (SRTM) outputs are provided with a general agreement that they will only be used for projects authorised by Solent Transport.

7.2 Intellectual Property Rights and Ownership

7.2.1 The Solent Sub-Regional Transport Model (SRTM) is maintained and operated by Systra, under contract to Solent Transport through Hampshire County Council's Strategic Partnership Contract with WS Atkins plc, with SYSTRA acting as a specialist sub-consultant.

7.2.2 The intellectual property rights (and copyright) of the SRTM, associated data, procedures and model outputs remain with Hampshire County Council, on behalf of Solent Transport, under the terms of the Hampshire County Council Strategic Partnership Contract with WS Atkins plc .

7.2.3 The intellectual property rights of the software used to construct the model and to present the output (e.g. CUBE and SATURN) remain with the software developers.

7.2.4 It should be noted that Hampshire County Council, on behalf of Solent Transport, retain intellectual property rights for any outputs from applicant contracts, under the terms of the Hampshire County Council Strategic Partnership Contract with WS Atkins plc, and the agreement between WS Atkins plc & SYSTRA . In particular it should be noted that sometimes scenarios (or elements of scenarios) developed through applicant contracts may be taken forward and incorporated into reference cases or further studies utilising the SRTM.

7.2.5 Users are not permitted to copy any part of the model, data, procedures or outputs without prior agreement from Hampshire County Council on behalf of Solent Transport.

7.3 Restrictions

7.3.1 Hampshire County Council and SYSTRA shall not incur any liability under, or in connection with, the release of SRTM output, to the extent that any failure thereof has been caused by, or contributed to by, any force majeure event or circumstances beyond reasonable control of either SYSTRA or Hampshire County Council.

7.3.2 The provision of SRTM outputs are provided in good faith and the user accepts full responsibility to satisfy themselves of the accuracy, reliability and completeness of the information and no responsibility is accepted to any third party for the whole or any part of its content. No part of the contents nor any reference thereto may be included in any published document, circular or statement, nor published in any way without Hampshire County Council and SYSTRA's prior written agreement of the form and context of such text. Such agreement will not be unreasonably withheld.

7.3.3 Any documentation making use of SRTM outputs must reference SRTM and Solent Transport, and should be reviewed prior to publication by Solent Transport.

7.3.4 Hampshire County Council and SYSTRA will make all reasonable endeavours to provide the agreed deliverables within timescales agreeable to all parties on the condition that Hampshire County Council and SYSTRA have been provided with all necessary information to carry out the agreed tasks. Hampshire County Council and SYSTRA will not be liable for any costs, charges or

losses sustained or incurred by the applicant that arise directly or indirectly from a delay in providing the agreed deliverables in the agreed timescales.

- 7.3.5 If Hampshire County Council, or that if its agents, subcontractors, consultants or employees is prevented or delayed by any act of omission of the applicant, its agents, subcontractors, consultants or employees, Hampshire County Council will not be liable for any costs, charges or losses sustained or incurred by the applicant that arise directly or indirectly from such prevention or delay.

SYSTRA provides advice on transport, to central, regional and local government, agencies, developers, operators and financiers.

A diverse group of results-oriented people, we are part of a strong team of professionals worldwide. Through client business planning, customer research and strategy development we create solutions that work for real people in the real world.

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