AGENDA ITEM 7

TRANSPORT FOR LONDON

ENVIRONMENT, CORPORATE AND PLANNING PANEL

SUBJECT: DEVELOPMENT OF MODELLING CAPABILITY IN TFL

DATE: 6 OCTOBER 2010

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1 PURPOSE AND DECISION REQUIRED

1.1 The purpose of this paper is to brief the Panel on the development of a set of five sub-regional transport models, which are a key component of Planning's remit to enhance modelling capability within TfL, with a focus on building in-house modelling capability.

2 BACKGROUND

2.1 A review of TfL's modelling capabilities identified the need for a significant increase in capability, arising from increased demand for sub-regional transport planning and modelling, the need to provide transport planning inputs to key developments and regeneration areas, and infrastructure projects.

2.2 The review also identified the requirement to enhance existing transport models and develop new models.

2.3 TfL's Policy Analysis function was established in 2008, building on TfL's core modelling expertise at the time to form an effective group capable of co-ordinating modelling and associated data collection initiatives across TfL. The Policy Analysis function acts as a lead on model development best practice and provides a significant analytical capability to support cross-modal planning and policy development.

3 SUB-REGIONAL MODELS

3.1 It was always intended that the sub-regional models would be developed in a phased way. Lessons from the earlier models have been used for subsequent models.

3.2 The Central London and North London sub-regional models were delivered during 2009. The other three are being delivered this year, with South and East London the last two to be completed.

3.3 Development of five new sub-regional models is a key part of the sub-regional programme, alongside better working with boroughs (including lead Directors / Ambassadors) and the development of sub-regional transport plans. TfL has put considerable resource into these. Enhanced analysis, including the new models, is another part of the sub-regional programme.

3.4 The purpose of the sub-regional models is to:

(a) assess the impact of significant developments;

(b) assess schemes and other interventions at a strategic level, and make predictions / projections of the future;

(c) compare schemes in the same sub-region. (This cannot be done by models for individual schemes or developments, which is the usual type of model used); and

(d) form a basis for scheme models where needed (e.g. if a more detailed model is needed, for example to take to Public Inquiry).

3.5 Each model consists of a number of components as listed below. Each component has a geographical coverage over most of the mainland UK, with increasing detail towards to the relevant sub-region. LTS and Railplan are existing London-wide models, though they have been improved during the sub-regional process. There will be different versions of the London Regional Demand Model (LoRDM) and the Highway Assignment Models (HAMs) for each of the five sub-regions.

(a) "LTS" – the London Transportation Studies model. This is TfL's standard demand forecasting tool and provides the forecast capability for the models;

(b) HAM – predicts flow and routing of traffic;

(c) Sub-regional Railplan. Railplan is TfL's standard public transport assignment model. The sub-regional variant has greatly increased detail over the whole of London and will, over time, replace the existing Railplan; and

(d) LoRDM - a local demand model that applies the capability of LTS at a local level.

3.6 Development of the models involves data collection, calibration and validation, with the results tested against criteria set out in Department for Transport guidance. Performance against these tests has improved: sub-regional Railplan passes validation tests better than the previous Railplan; the same is true of LTS.

3.7 The Central London Highway Assignment Model (CLoHAM) performs significantly better against these criteria than other such models for Central London (SALT-C was produced for congestion charging; CRISTAL-H for the now defunct Cross River Tram proposal under the previous Mayor).

3.8 There was no previous Highway Assignment Model for North London.

3.9 On delivery of the models, a series of realism tests are undertaken, in accordance with the DfT's WebTAG. Where possible these tests are augmented with tests of the model's response to known interventions (for instance, the re-routing of traffic during the closure of Battersea Bridge). The models are used to show the transport impact in future years given the current assumptions of the London Plan forecast of population and employment growth, the policies defined in the Mayor's Transport Strategy etc. These "reference cases" will often be useful for future studies, as well as being a test of the model.

3.10 On satisfactory completion of the realism tests, each model is used in a launch study, the purpose of which is to apply as many different aspects of the model as possible, ideally covering changes in land use and the development of multi-modal transport infrastructure. The programme of launch studies is:

Model	Launch Study	Status
Central	White City Opportunity Area Planning Framework transport study	Main study completed 31 July 2010. Further analysis ongoing.
North	Upper Lea Valley Opportunity Area Planning Framework transport study	Underway (August 2010 – January 2011)
West	Harrow Area of Intensification transport study (to be confirmed)	Not yet started. Further discussion with West London boroughs on the preferred launch study
South	Croydon Opportunity Area Planning Framework transport study	Planned January 2011 – June 2011
East	East London River Crossings study	Planned October 2010 – November 2011

3.11 Once the launch study is complete, then the model will be made available to others who wish to use it.

3.12 The model programme was subjected to peer review in January 2010. A panel of leading experts was convened to review the work carried out and to provide comment and advice. Their report was positive. As far as is possible, the recommendations of this panel have been implemented.

4 SUB-REGIONAL MODELS – APPLICATION

4.1 The completed Central and North Sub-regional models are being used in a number of studies:

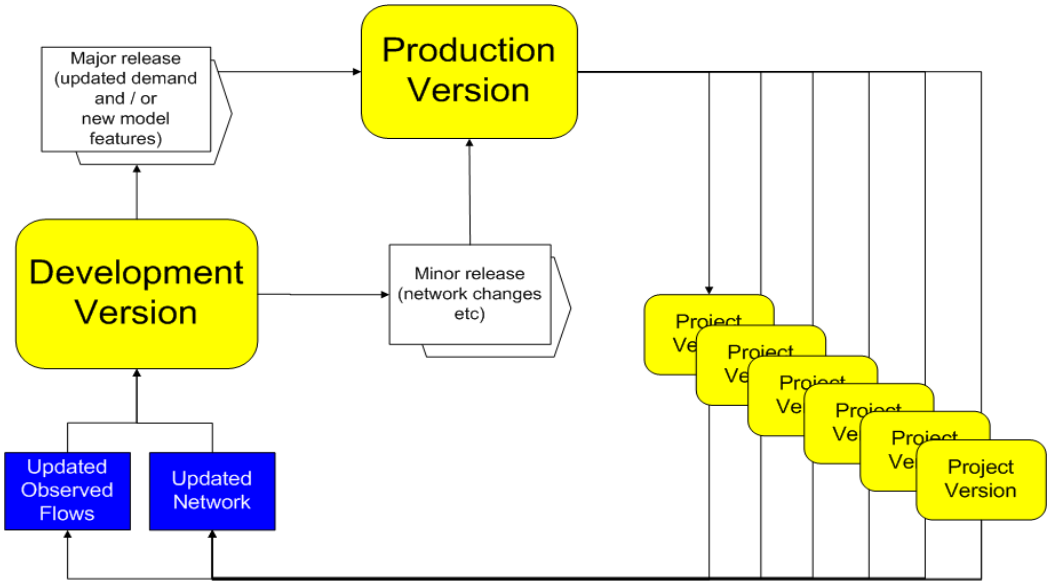
Study Name	Model Components Used	Sponsor	Other stakeholders
White City Opportunity Area Planning Framework	LTS[I], CLoHAM[II], Railplan	TfL Planning/GLA	London Borough of Hammersmith and Fulham, Private land owners
Earl's Court Transport Assessment	LTS, CLoHAM, Railplan, LoRDM [III]	Liberty International	
Removal of the Congestion Charging Western Extension Zone	CLoHAM	TfL Surface Transport	TfL Planning
Piccadilly two-way operation	LTS, CLoHAM	TfL Surface Transport	City of Westminster
Fulham Riverside	CLoHAM	London Borough of Hammersmith and Fulham	-
CORNETTO[IV]	CLoHAM, OPAL[V]	Olympic Delivery Authority	TfL Surface Transport, TfL Planning
Bankside OAPF	LTS, CLoHAM, Railplan, LoRDM	TfL Planning/GLA	-
Goldhawk Road	CLoHAM, White City VISSIM[VI]	London Borough of Hammersmith and Fulham	-
Borehamwood	NoLHAM[VII]	Hertfordshire County Council	-
Wood Green Bus Priority	NoLHAM	TfL Bus Priority	London Borough of Haringey, TfL Streets
Upper Lea Valley OAPF	LTS, NoLHAM, Railplan, LoRDM	TfL Planning/GLA	Homes and Communities Agency, Lee Valley Park Authority, London Boroughs of Enfield, Haringey, and Waltham Forest
A406 Roadworks	NoLHAM	TfL Surface Transport	-
A1010	NoLHAM	London Borough of Enfield	-
Waltham Forest Area Action Plans	NoLHAM	London Borough of Waltham Forest	-

[I] London Transport Survey
[II] CLoHAM = Central London Highway Assignment Model
[III] LoRDM = London Regional Demand Model
[IV] CORNETTO – highway model to assist in the development of the Olympic Route Network
[V] OPAL – highway model developed in support of planning application for the Olympic Park.
[VI] White City VISSIM model – a micro-simulation model developed as part of the White City Opportunity Area Planning Framework Transport study
[VII] North London Highway Assignment Model

5 ENSURING THE MODELS REMAIN VALID – ONGOING MAINTENANCE

5.1 In order for the models to remain valid, it is important that they are maintained. Historically, TfL has not maintained models in a co-ordinated way. Strategic models have been subject to expensive upgrades carried out every 10 years. Between these upgrades, the onus has been on the model owner within TfL to try to keep abreast of enhancements made during the course of studies. Often this is not possible, and as a result different versions become established. The case is even more complicated with large scheme models (the need for which is mitigated by the sub-regional models), as these generally do not have a defined owner once the scheme goes ahead. In these cases, the model is often used as the basis for another scheme model. As part of this process enhancements are applied not only to reflect the passage of time but also to the structure of the model. However, enhancements are not always carried out in such a way as to be of benefit to the original scheme, and indeed enhancements carried out in two later studies may be incompatible with each other.

5.2 The sub-regional models therefore will be maintained according to the diagram below.



5.3 TfL Planning will maintain a Production Version of each model. As and when a study project starts that needs the model, the latest Production Version will be provided. From this a Project Version may be formed, and various enhancements may be made. Some of these will be of benefit only to that study, but some will be of wider benefit. A condition of using the model is that the enhancements that are of a wider benefit are fed back into the model. This will be through a Development Version, again maintained by TfL Planning, where proposed enhancements will be checked prior to release into the Production Version.

5.4 In considering this diagram, it is worth bearing in mind the three roles involved in any modelling study.

(a) Model Owner – TfL Planning, acting as Model Owner, will ensure that the Development and Production Versions of each model are managed so as to provide the most appropriate, up-to-date model to studies;

(b) Study Sponsor – Organisation which requires the outputs of the model. This might be a single organisation or a group acting together, and may be public or private bodies; and

(c) Model User – Organisation who will actually apply the model. This may be a separate entity from the Study Sponsor. TfL Planning will administer an accreditation scheme to ensure that Model Users comply with the latest best practice.

6 USE OF THE MODELS

6.1 The models will be made available for use by boroughs and by developers, as well as TfL. TfL want these models to be well-used. TfL will maintain the models, as set out above. Not to maintain them would be a waste of the considerable investment in the models.

6.2 There is a considerable potential saving from this approach, for developers and for boroughs. Instead of building a model from scratch, they can use these sub-regional models. That will enhance analysis and ensure a consistent approach.

6.3 In order to administer the scheme, and ensure appropriate versions, the Study Sponsor will be required to make a number of commitments:

(a) They will appoint only accredited organisations to run the model;

(b) In certain circumstances, non-TfL users will pay a licence fee. The exact approach is under consideration; and

(c) They will ensure that all enhancements are fed back to TfL in an agreed format, with appropriate reporting. This will help the models to be maintained, which will in turn be valuable to future studies, and is more cost-efficient than losing this information.

7 DEVELOPING CAPABILITY

7.1 TfL Planning Policy Analysis is undertaking a number of steps to improve its in-house modelling capability, leading to cost savings. The purpose of this is to reduce the dependency on external consultants and to ensure that, when it does engage consultants, it is able to act as an intelligent client to review their work.

7.2 TfL is developing a structured set of competencies for users of SATURN, the modelling software underpinning the Highway Assignment Models. Each member of the directorate will be assessed against these competencies to determine their current level and the level required for their role. A training plan for progression through the levels is also being developed. A similar approach will then be developed for each of the other models in Planning.

7.3 The first application of the South and East models, to assess the condition in forecast years, will be carried out by in-house staff. This work has been carried out by consultants for each of the other models.

7.4 TfL has convened a “Pan-HAM Forum” consisting of leading players in the field of transport modelling in the UK. A total of 11 organisations are represented in the forum, which meets periodically to share best practice and advice in the development of the HAMs.

8 RECOMMENDATION

8.1 The Panel is asked to NOTE this paper.

9 CONTACT

9.1 Contact: Michèle Dix, Managing Director, Planning
Number: 020 7126 4213
Email: MicheleDix@tfl.gov.uk

9.2 Contact: Nigel Campbell, Director, Policy Analysis
Number: 020 7126 4252
Email: NigelCampbell@tfl.gov.uk