Decision Session
– Executive Member for City Strategy

6 July 2010

Report of the Director of City Strategy

York Transport Model Upgrade

Summary

1. This report considers options for the updating and upgrading of York's transport model.

2. The York transport model is currently maintained by Halcrow under the consultancy framework contract and managed by the transport planning modelling team. The data that underpins the model is getting out of date and some of the methodologies applied in the model no longer fully comply with the latest national advice and guidance.

3. It is proposed that whilst updating the model data and methods, necessary to maintain compliance with national guidance, the opportunity is taken to upgrade the model by migrating it to an integrated modelling platform (CUBE).

4. This will:

   - Simplify the model and make it portable, to enable the model to be further developed and used more effectively in-house. This will reduce costs and reduce development time.

   - Provide a more robust model for use in analysis of schemes. It is of increasing importance as capital budgets become limited that effective testing of schemes through modelling is carried out to maximise the realisation of benefits.

   - Increase confidence in the model to ensure that the model can continue to be used in the assessment of future planning applications to maximise transport benefits.

5. It is acknowledged that the recent government announcements on budget cuts is likely to be replicated more severely in future years which will enable fewer capital schemes to be delivered. However, under these circumstances it is anticipated that the robust justification of schemes using transport modelling will become even more important. The cost of not undertaking the model update/refresh could have a more significant impact in the longer term if the model is not compliant with DfT guidance and cannot be used with any

confidence to determine planning applications and effects on the highway. The DfT have already commented negatively on the age of the data used in the existing model when they assessed the Access York Phase 1 project. A number of large development sites and schemes are currently progressing or are under discussion which could potentially have a far greater influence on the city if the full impacts of traffic are not identified.

6. With an anticipated reduction in capital funding in future years it becomes more critical that private developer funding can be captured. Accurate modelling and confidence in the model will be critical to securing contributions.

7. Subject to the approval of the overall programme at the 6 July 2010 Decision Session it is proposed to use existing Section 106 developer contributions to finance the update. This mechanism is proposed so that the budget cuts on the overall funding levels of the programme do not impact on this essential longer-term project.

8. The update of the model and purchase of additional software will enable more of the modelling work required for planning applications and integrated transport schemes to be undertaken in-house. This will reduce the need for consultants undertaking the work.

Recommendations

9. The Executive Member is asked to note the contents of this report and:

   1) Agree to the commissioning of transport surveys to take place in autumn 2010 and spring 2011 and the refresh and update of the model.

   2) Authorise the proposed upgrade to the software platform with model validation and calibration late 2010 and delivery of new model spring 2011.

   Reason: To ensure that the model remains 'fit for purpose', can be bought back 'in-house' to provide improved outputs.

Background

10. York's current strategic transport model has been developed over a number of years, with recent upgrades being completed on an ad hoc basis.

11. The model was last refreshed in 2008 and used in the preparation of the business case for the successful major scheme bid for three new park and rides in 2009. It has also been used recently to provide evidence for master planning of the Foss Basin, Hungate, Germany Beck, Terry's, University campus 3, LTP2 and the capital programme development.

12. The model consists of a SATURN highway model, EMME2 public transport model, bespoke trip assignment, distribution and model choice models. Data is passed between the various elements of the model with outputs from one fed into the inputs to another. Outputs can be displayed graphically using the SATURN interface or exported to GIS package (MapInfo). Whilst the model has

some weaknesses it is currently compliant with the DfT transport advice guidance.

13. The model is currently being used to provide evidence for Nestle South, LDF, York Northwest, LTP3 and the Community Stadium.

14. Future uses include analysing proposals arising from LTP3 and the capital programme, City centre review, LDF, core strategy and analysis of development proposals.

15. Recent government announcements on budget cuts will impact on the number of infrastructure schemes that can be delivered in this and future years. The proposal to allocate funds to update the city's transport model will reduce funds available for other capital schemes in future years. However the benefits of funding the model update this year include the reduction in ongoing revenue costs for undertaking modelling work, the reduced risk of the model not being compliant for future funding bids, a better understanding of the impact of transport schemes across the city and the improved confidence in the quality of the information when considering future development sites/applications.

Key Weaknesses of current model

16. Whilst the current model remains an important evidential and investigative tool for use in decision making, planning and the bidding process of transport planning; there are a number of technical weaknesses. Many of these were highlighted by the DfT as areas of concern in the recent P&R Major Scheme Bid:

    i) **Age of data** – mostly over five years old and over ten in some areas. The maximum age in the DfT guidance is five years.
    ii) **Segmentation of demand** - the demand segmentation profiles in our model do not meet the current guidance.
    iii) **Limited** model coverage – the current model does not include all of CYC area for example Dunnington and Elvington are not currently modelled.
    iv) **Detail** – there is a lack of detail in the modelling of the strategic road network on the peripheries of the model at the Authority area boundary and immediately beyond. Redistribution of traffic on this network causing any changes to arise in York will not be picked up.
    v) **Lack of a trip generation and distribution model** – this is currently carried out externally to the model making it difficult to track and audit changes.
    vi) **Poor variable demand modelling capability** - does not comply with current guidance.

17. In addition to the technical weaknesses above there are some practical management difficulties with the current model.

18. The model has in recent years been maintained by the council's framework consultant Halcrow. This arrangement, whilst successful, is expensive. The main issue is that the way that the model has been developed increases

complexity and reduces 'portability'. This means that it is not easy to make use of the model 'in-house' by the councils modelling team, nor can the model be provided for external use. Management version control and auditing of the modelling process is difficult and this is limiting the uses made of the model. Far more could be done in-house with a portable model.

Options

'Do nothing' option:

19. Keeping the existing model under the current management framework is an option. Despite the above weaknesses the model could still be used to provide some indications of future highway impact of more minor schemes and developments.

20. There would however be an increasingly reduced level of confidence in the modelling outputs and the model would be non-compliant. It would not be suitable for presentation to the Highways agency nor the DfT in support of scheme biding purposes. It would be open to challenge and would be difficult to defend in planning appeal or public enquiry.

'Do minimum' option:

21. Keep the existing model as in the do nothing option and undertaking a data refresh to bring the data up to date. Commission Halcrow to effectively 'bolt on' the required upgrades to the public transport, trip generation, distribution and mode choice elements of the model in order to keep the model compliant.

22. Undertake an extensive programme of transport surveys autumn and spring 2010/11, to update and refresh the existing models. The coverage of the model would also require to be expanded. This will go some way to address the weaknesses outlined i), ii) iii) and iv) above.

23. Compliance would require Halcrow to develop 'external' bespoke trip generation and distribution models, as stand-alone models and to include a variable demand modelling package. These three new models would require complex linking to the existing models. This would further reduce the portability increase the complexity and so reduce the ability to audit the model. The resultant suite of models would however be 'fit for purpose' and compliant with the current national guidance. The model could be bought back in-house but this would require the software licences and training.

24. This option would require transport surveys costing £81,400 (for weekdays only) with £143,500 to expand, update and upgrade with additional £20,000 to provide in-house capability. A total of £244,900. There would be additional annual software licence and maintenance fee of £3,000.

Improvement option:

25. There is the opportunity to rationalise the modelling framework whilst undertaking the do minimum option as above. This would involve migration of

elements of the existing model (SATURN) to a single integrated modelling software platform (CUBE). Making use of the trip generation, distribution, mode choice and public transport elements built in to the CUBE package.

26. A single and integrated package would be far more manageable and auditable than the current arrangement. The turnover of modelling scenarios would be improved. The modelling process its self would benefit from becoming more transparent.

27. The surveys would still need to take place tailored to satisfy the data requirements for the new integrated model and the model coverage would be expanded to cover the entire City boundary and linked to strategic road network.

28. Halcrow would be commissioned to build the integrated model in association with York's modellers. A compliant, integrated, portable model would be delivered to the Council in late spring 2011.

29. Migration to the CUBE modelling platform has additional advantages in that it provides enhanced version control and auditing. It also has an embedded graphical interface capabilities based on ArcGIS. ArcGIS is the Councils preferred GIS system so there would be interoperability. The CUBE platform is widely used in the UK by other authorities (including Leeds, Bradford, Newcastle, Manchester and Transport for London.

30. This option would require transport surveys costing £81,400 (weekdays only) with £150,500 to expand, update and upgrade with additional £15,750 to provide in-house CUBE capability. A total of £247,650. There would be additional annual software licence and maintenance fee of £3,750.

Enhanced improvement option:

31. The above option includes for limited weekday surveys supplemented by data from automatic traffic counters, car park, park and ride, public transport and journey time data. The most costly element of the surveys is the roadside interviews at £5,000 each. These are expensive due to the traffic management and requirement for Police officers to stop the traffic. In setting up the original model 23 roadside sites were used, 10 are proposed for the refresh above. This is the minimum that we can use to give a reasonable level of confidence in the model. To carry out an upgrade with full surveys would cost £354,250 + annual licence fees as above. This option would provide an enhanced level of confidence in the model data although the priority would be to update the Saturday model.

32. An option to update the Saturday model has been priced at an additional £97,000 (with reduced RSI surveys). A Saturday model may be necessary for some schemes having a large potential impact on this day i.e. the Community Stadium or large retail developments. When undertaking an economic assessment the 'value of time' is far less during on non work days so the economic impact is smaller. Other impacts, environmental for instance can be assessed using a weekday model scaled for the Weekend because they do not require the level of detail as the economic assessments. There is no current

budget allocation to develop a Saturday model. A Saturday model is desirable and should be developed if funding becomes available.

33. It should be noted that whilst the new model will be an improvement over the old there are some areas that it is not an appropriate model for land-use traffic interaction nor for detailed modelling of road user charging. These applications would require different types of model to be developed, although they could share data from the transport model.

Analysis of options

34. Doing nothing would incur no new capital costs. Continued revenue expenditure on consultancy fees would be required for each model run. Failure to update the model input data would lead to the model becoming increasingly outdated. Failure to update the modelling methodology would mean that the model would become non-compliant.

35. Do minimum would incur an estimated £81,400 in survey costs and £143,500 in update costs. The model would not be portable and could not easily be run in house without the expenditure of an additional £20,000 on software licences and training. A total of 244,900. There would be additional annual software licence and maintenance fee of £3,000. The increased model complexity would increase the consultancy fees over the do-nothing case and increase the time taken to model scenarios.

36. The recommended improvement option would require the same survey fees of £81,400 and £150,500 for upgrade costs. The licence for CUBE is £15,750 a total of £247,650 with annual software licence and maintenance fees of £3,750.

37. The enhanced improvement and Saturday model updates whilst desirable are not considered affordable, although funding could be sought through future section 106 contributions.

Savings

38. The improvement option has the opportunity to bring about direct revenue savings by bringing the model in-house. Efficiencies in the design time of schemes will also be realised by bringing the model in-house. Larger schemes would still require some consultancy input. However, a portable model would allow this to be open tendered with the potential for cost saving.

39. There are opportunities for revenue generation through charging fees for use of the model by outside bodies. This revenue could be used to help maintain the model.

Consultation

40. Highways Development Control supports the principal of bringing of the model in-house and the proposed improvements to the modelling methodology. They also express their concern over the potential for a challenge to the model outputs at planning should the upgrade not take place and the model become non-compliant.

Corporate Objectives

41. Assessing the future of York's transport network and developing the capital programme contributes towards the corporate objectives of 'Building a Sustainable City' via LTP3 and 'Thriving City' with its assistance in the planning process. A contribution is also made by the model to air quality analysis and the 'Healthy City' objectives.

Implications

42.

- **Financial –**
- Capital cost of £94,900 for surveys and £150,500 to update, upgrade and migrate to the CUBE platform giving a total of £245,400. An allocation of £250k funded from developer contributions is proposed in the overall Integrated Transport Programme which is presented for approval at this Decision Session.
- There will be an increased revenue cost for software support of £3,570 a year.
- The Council spent over £50k in revenue on modelling support with Halcrow last year. This will reduce substantially when the new model is available for use in-house.
- **Human Resources (HR)** - none
- **Equalities** - none
- **Legal** - none
- **Crime and Disorder** - none
- **Information Technology (IT)** - The Council has existing software licences for some of the model elements. It is proposed that the new integrated model and associated software is developed and provided by Halcrow as a package and installed on the existing modelling PCs. There is a minimal impact on IT the only impact is the requirement for additional storage of the GIS outputs on the council servers. The software is not available to run on the CITRIX platform although a browser based interface is being developed.
- **Property** - none

Risk Management

43. Failure to update the transport model would result in the model becoming increasingly non-compliant according to the national guidance (Web-Tag). The risk to the reputation of the Council of this failure is that future use of a non-

compliant model would be open to challenge in a planning appeal or public enquiry.

44. A lack of confidence in the model and its outputs risks undermining Transport Planning and the Highways Development Control process.

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Specialist Implications Officer(s) *List information for all*
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Wards Affected: *List wards or tick box to indicate all* **All** ✓

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