Committees: Corporate Projects Board - f*or information* Projects Sub *[for decision]* Streets and Walkways *[for decision}*	**Dates:** 28 June 2019 19 July 2019 22 July 2019
Subject: City-Wide Pedestrian Model **Unique Project Identifier:** 11354	**Gateway 6:** **Outcome Report** Regular **Public**
Report of: Director of the Built Environment **Report Author:** Jon Wallace	**For Decision**

Summary

1. Status update	**Project Description:** The purpose of this project was to develop a digital model capable of forecasting pedestrian movement throughout the City of London. **RAG Status:** Green **Risk Status:** Low **Costed Risk Provision Utilised:** N/A **Final Outturn Cost:** £370k
2. Next steps and requested decisions	**Requested Decisions:** It is requested that the Members authorise the closure of this project.
3. Key conclusions	The pedestrian model has been developed and successfully utilised in a number of specific applications, including: • Provision of outputs which have fed into both the Local Plan and the Transport Strategy; • Information from the model has informed the City Cluster area strategy; • Information from the model is currently informing decisions about when CoL should require developers to provide new pedestrian routes through new building sites; and • Findings from the model have been used to evaluate the pedestrian movement implications of a potential major development site to the east of the City. Whilst it has been demonstrated that the model is extremely useful as a strategic modelling tool, it is of less value when considering local level impacts.

	All stages of the project have been delivered to the agreed budgets. Lessons Learnt 1. The model provides a useful tool for understanding both current and future strategic-level pedestrian flows throughout the City of London. 2. It would be theoretically possible to improve the accuracy of the model through further data collection. This would allow the model to be used to assess local-level impacts, thus increasing the range of potential uses for the model. Using the City's Wifi network as a data collection source could be a relatively inexpensive means of collecting pedestrian flow data, but unfortunately the data collected via Wifi is currently unreliable owing to a range of technical issues. It is recommended that the roll-out of future Wifi or sensor applications should be monitored, as these could, at some stage, provide a reliable and inexpensive method of data collection. **3.** Any future iteration of model development should be managed by a cross-departmental team. The project team is aware that many other departments in the City could find the model to be a useful resource; and that some of these departments may have resources to commit to model development. Future model development should seek to capture the needs of other potential users of the model.

Main Report

Design & Delivery Review

4. Design into delivery	N/A
5. Options appraisal	In the context of this project, the main options available related to which modelling software/approach was procured. In that regards, we remain satisfied that the model which was procured (based on the Space Syntax platform) is a reliable model which can be updated in future if required.
6. Procurement route	The initial procurement was undertaken through an open tender, a process which was managed by City Procurement. Further phases of work were awarded directly to the consultant that built the model, as no other organisation would have had the technical knowledge to undertake that work.
7. Skills base	Management of the project was conducted by CoL staff who had extensive knowledge of pedestrian movement patterns in the City, plus previous experience with pedestrian modelling. This meant that officers were able to critically assess the outputs of the model and to establish its strengths and its weaknesses.

8. Stakeholders	A Senior Officer Group, comprising various senior officers from DBE, was responsible for overseeing the development of the model and determining future model development phases.

Variation Review

9. Assessment of project against key milestones	All project phases were completed on-time and in-budget, as set out in Section 10 below.
10. Assessment of project against Scope	The project has run continuously over five years, with a different scope each year (as set out by the Senior Officer Group). These were as follows: • Year 1 (2014/15): Procurement (Budget - £21k) • Year 2 (2015/16): Build model and evaluate next steps (Budget - £150k) • Year 3 (2016/17): Separate studies of: i) Footway congestion throughout the City; ii) Evaluation of pedestrian movement in Eastern City Cluster area; iii) Evaluation of building block sizes throughout the City; and iv) Assessment of pedestrian data collection methods (Budget - £137k) • Year 4 (2017/18): Based upon the findings of the Assessment of pedestrian data methods (from the Year 3 work) provide a proof of concept for use of City Wifi to collect pedestrian data and convert it to pedestrian movement volumes. In addition, a separate study was commissioned to evaluate the pedestrian movement implications of a potential major development site to the east of the City. (Budget - £55k) All of the objectives identified for Years 1-3 of the study were satisfied. However, the results of the Year 4 study yielded a less than satisfactory result – whereby it was found that there were a variety of technical issues that prevented the Wifi detectors from being used to generate pedestrian movement statistics.
11. Risks and issues	Given the innovative nature of the project as a whole, the project faced a wide range of risks. However, none of the key risks which would have prevented delivery of the first three years of the project materialised. At the beginning of the Wifi study in the fourth year of the project, it was recognised that the objectives of the project may well be undeliverable as no one had attempted to harness Wifi data in this way before. Hence, the fourth year of the project did not seek to actually update the model using the Wifi data; instead, we chose to explore a proof of concept. This meant that this stage of the project could be brought to a close when we realised that the concept was not currently viable.

12. Transition to BAU	The model outputs have been uploaded to the City Corporation's internal GIS and can be easily accessed by any officer with GIS knowledge. Manipulation of the model – in terms of changing characteristics of the model's base data – can only be done by a trained member of staff. The cost of this training could only be justified if it was our intention to manipulate the model on a regular, on-going basis; this is not currently the intention. Consequently, it is considered better value for money to commission specialist consultants whenever the model needs to be manipulated/analysed. This approach has already been successfully used to conduct an analysis of a major potential development site in the City. Ownership of the model now sits with the Strategic Transportation Team in DBE. This is an ideal location for the model as this team is also responsible for the development of the City's Future Transport Programme, part of which involves researching innovative data collection methods.

Value Review

13. Budget	The original estimated project budgets at G2 were as follows: Staff: £60k Fees: £340k Total: £400k. The outturn costs were as follows: **Approved Budget** / **Expenditure** / **Balance** Staff: £78,500 / £71,123 / £7,377 Fees – Space Syntax: £268,326 / £268,326 Fees – Telefonica: £30,000 / £30,000 **Total: £376,826 / £369,449 / £7,377** These accounts have been verified by the Chamberlain's Department.
14. Investment	Although no revenue generation predictions were produced, it was recognised that the model had the potential to generate revenues by selling some of the model's predictions to developers etc. However, given the strategic nature of the model, it is not felt that the predictions would currently be of financial value to developers.

	In order to turn the model into a tool which could be used to generate revenue, a considerable amount of additional information would need to be collected and incorporated into the model. Given current technologies, the collection of this data would be prohibitively expensive. However, it is recommended that officers keep abreast of developments in both Wifi, 5g and sensor technology, as these technologies may be able to overcome the difficulties encountered during this study, thus holding out the possibility that a much more detailed model (capable of producing marketable data) could be produced.
15. Assessment of project against SMART objectives	Given that the project commenced five years ago, it was not common practice in the City to assign SMART objectives to projects at that stage. Sections 10 above have covered the project's performance against objectives, and Section 13 covers its performance against budget.
16. Key benefits realised	Given that the project commenced in 2014, the associated Committee reporting did not follow the current reporting formats and templates. Consequently, rather than focussing on outcomes and benefits, previous reporting focussed on defining the desired deliverables from each stage of the project. Section 10 above sets out the project's performance against these deliverables.

Lessons Learned and Recommendations

17. Positive reflections	• The model has provided data which have fed into both the Local Plan and the Transport Strategy; • Information from the model has informed the Eastern City Cluster area strategy; • Information from the model is currently informing decisions about when CoL should require developers to provide new pedestrian routes through new building sites; • Information from the model is currently being used to assess the pedestrian movement impacts of options for a major redevelopment site in the City; • The consultants building the model (Space Syntax) were extremely knowledgeable about how pedestrian movement works in the City, so should be considered for use in an advisory capacity on projects/area studies; and • Additionally, whilst the model has demonstrated its use as a stand-alone data source, we have seen that expert analysis of the model's outputs adds significant value to the basic results.
18. Improvement reflections	The main challenge facing the study has been that the model has proven to be difficult to utilise at anything other than a strategic level. This has limited the number of potential applications for the model. It

	was identified that the reason for this was the lack of observed movement data on which the model is based. The Wifi project was identified as potentially being a relatively low-cost means of collecting very large volumes of data, which ultimately could have been used to improve the model's predictions. Although the current study has demonstrated the technology is currently unsuitable for the purposes of collecting reliable pedestrian movement data, it is noted that there are already on-going workstreams looking at the future of data collection in the City. Part of this work involves assessing how future technologies could provide cheaper, automated ways to collect movement data. Ownership of the pedestrian model will sit with the team responsible for these workstreams, meaning that any opportunities will be more easily identified. A fundamental problem with the way in which the project was governed was that it was entirely based within DBE. Over the course of the project, the project team became aware that many other departments in the City could find the model to be a useful resource; and that some of these departments may have resources to commit to model development. However, the project never really captured the potential aspirations of other potential users. It is recommended that before initiating any further model development stages, officers should consult with other departments to establish a broad base of potential model applications, which would guide further development of the model.
19. Sharing best practice	Ownership of the model now sits with the Strategic Transportation Team in DBE. Officers from the Strategic Transportation team have been briefed on the lessons that were learned during this project, and on our recommendations for how the model could be further developed.
20. AOB	

Appendices

N/A

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