



City of Edinburgh Council  
Waverley Court  
4 East Market Street  
Edinburgh  
EH8 8BG

26 February 2019

Our Ref: NBB/KLJ/NYN

FAO: Mr Hugh Dunn – (Head of Finance)

Dear Sir

**City of Edinburgh Council (the "Council")  
Edinburgh Tram – York Place to Newhaven Project  
Review of the financial model**

In accordance with our agreed terms of reference, we have undertaken a review of the integrity of the Edinburgh Tram – York Place to Newhaven Project financial model.

The financial model was built by the Council Accountant, Principal Accountant and Senior Accountant assigned to this project.

**Scope and methodology**

In line with the agreed scoping and assignment plan, we have reviewed the following aspects of the financial model:

1. The competence, capabilities and objectivity of all external specialist parties involved in inputting to the financial model
2. The assumptions and data used to construct the financial model
3. The model's architecture and functionality

In undertaking this review we have not undertaken any audit work on data included within the reports provided by specialist parties.

The scope of our review covered version 24 of the financial model. We have not reviewed other information included within the Full Business Case. In particular we have not considered the strategic case, economic case, commercial case or management case information included within the FBC.

Our findings and conclusions are set out below. We would expect the Council to consider our observations as part of the decision making process around this project.

Exchange Place 3  
Semple Street  
Edinburgh EH3 8BL

T +44 (0)131 473 3500  
F +44 (0)131 473 3535  
DX ED 217

25 Bothwell Street  
Glasgow  
G2 6NL

T +44 (0)141 567 4500  
F +44 (0) 141 567 4535  
DX GW 209

10 Ardross Street  
Inverness  
IV3 5NS

T +44 (0)1463 701940  
F +44 (0)1463 232205

Managing Partner: Stewart MacDonald  
Partners: Nick Bennett, David Boyd,  
Chris Brown, Mhairi Callander, Scott Craig,  
Gary Devlin, Gillian Donald, Allison Gibson,  
Mike Harkness, Bernadette Higgins,  
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**Competence, capabilities and objectivity of all specialist parties and experts involved in inputting to the financial model**

We reviewed the competence, capabilities and objectivity of external specialist parties used by the Council to provide or audit the data and assumptions within the financial model. In particular the following parties were considered.

<b>Specialist/Expert considered</b>	<b>Role in development of the financial model</b>
Turner and Townsend	Project & Commercial Services Advisor
Steer	Passenger demand inputs for model
External advisor to Edinburgh Trams	Expertise of tram extension projects
Faithful and Gould	Audit of work provided by Turner & Townsend
Atkins	Audit of work provided by Steer
Oxford Global Projects (Budzier and Flyvbjerg)	Evaluation of optimism bias

We have satisfied ourselves over the competence, capabilities and objectivity of the specialists used by the Council in the development of the financial model.

**The assumptions and data used to construct the project’s financial model**

In reviewing the financial model we reviewed all material data<sup>1</sup> and input assumptions to supporting evidence provided by either the Council or the experts noted above.

Our work was initially undertaken on version 20 of the financial model. However, we carried out additional work, following receipt of version 24, for material changes.

We have agreed all material assumptions and data to supporting evidence.

**Financial model architecture and functionality**

We reviewed the following in version 24 of the financial model:

- The links between the supporting schedules and how the data within these schedules fed through the financial model and;
- The functionality of key formulae for integrity and appropriateness.

We have not undertaken a review of subsequent model versions. However, we understand that the updated financial model (version 26) has the functionality to model various optimism bias scenarios, including the financial impact of these different scenarios.

We are satisfied with the integrity of the financial model (version 24).

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<sup>1</sup> Materiality has been calculated as £3.3million representing 2% of the estimated capital cost of the project as set out in the outline business case.

## Observations

We have the following observations in relation to the work we carried out:

### 1. Sensitivity Analysis

- Sensitivity analysis involves exploring the sensitivity of expected outcomes of an intervention to potential changes in key input variables. A number of sensitivities were identified within the financial model such as demand, concessionary fares and life cycle costs. However, not all of the sensitivities included within the financial model have been detailed within the Final Business Case (FBC). We understand that the Council consider the impact of variations to these sensitivities not to be material to the overall project funding. These sensitivities include the impact of concessionary fares, RPI and lifecycle costs. In addition, no sensitivity has been built in to the financial model with regard to dividends from Lothian Buses.
- For all sensitivities included within the financial model (some of which were excluded from the FBC), we considered the appropriateness of the range of assumptions. We understand that the ranges that these sensitivities were set to cover were informed by the consideration of the project team.
- The sensitivity analysis which has been included within the 'financial case' section of the FBC includes consideration of a 5% reduction in demand, a 15% reduction in airport demand and an increase in the marginal interest rate of 50 basis points. We note that the FBC analyses the sensitivity of each of these components individually, and does not consider the cumulative impact of more than one of these components.
- There has been no consideration or presentation of the 'worst case scenario' within either the financial model or the FBC. In addition, probabilities have not been assigned to the sensitivities outlined within the FBC. Therefore, there is no assessment of the probability of the impact from the sensitivities output, actually arising. However, we did note that probabilities have been considered and applied to the assessment of construction costs (included within the Turner & Townsend Capital and Life Cycle Cost Update Interim Report).

### 2. Optimism bias

- The Scottish Transport Appraisal Guidance is based upon HM Treasury's Green Book. The Green Book defines optimism bias as "*the proven tendency for appraisers to be too optimistic about key project parameters, including capital costs, operating costs, project duration and benefits delivery.*" We note that whilst optimism bias on capital costs has been built into the financial model, this has not been applied to operational costs and revenues.
- The Council has used an optimism bias for this project of 6%<sup>2</sup> in line with the 'STAG Technical Database.' This was taken from the '*recommended risk and optimism bias adjustments for rail projects*' for a project in the design/development stage. Oxford Global Projects (Budzier and Flyvbjerg), used as an expert adviser for this project, has

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<sup>2</sup> A 6% uplift has been applied to the estimated capital cost plus a risk allowance of £31.9million based on a quantitative cost and schedule risk assessment, as set out in the FBC.

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equated this to an optimism bias level of P61, meaning that the project team considers that across a reference group of light rail transport extension projects there is a 39% chance of a cost overrun and a 61% chance that costs would be in line with the cost envelope. At the P61 level, the financial model calculates that total project costs for the project are £207million with a funding gap of £1.9million to break even.

- An alternative level of optimism bias of P80 has also been noted by Oxford Global Projects (Budzier and Flyvbjerg). This assumes that there is a 20% chance of cost overrun, and an 80% chance that costs are in line with the cost envelope. We understand that a P80 output represents a realistic assessment for a project with similar characteristics to the Edinburgh Tram – York Place to Newhaven Project. At a P80 level, project costs are modelled at £257million with a call on reserves of £14.8million to break-even. At a P80 level, there is an increase in project costs of £50million and an increase in the funding gap of £12.9million reflecting the additional financing costs incurred on a higher project cost. We understand that this has been included within version 26 of the model which was received after the audit work had been completed.
- At a P80 level of optimism bias there is still a 20% chance of cost overruns. Oxford Global Projects note that to reach a P95 level (5% chance of a cost overrun beyond the cost envelope), total project cost would be modelled at £334.8million. Their analysis sets out the reasons why this position is considered highly unlikely.
- The FBC notes that the base case (P61) is considered robust due to the extensive work undertaken by the Council to date to mitigate risk in the project. However, in line with the findings arising from the work done by Oxford Global Projects the Council considers it appropriate to make contingency plans for higher project costs of £257million. The Council notes within the FBC that it has investigated a number of options to address the increased funding challenge of £14.8million including *"forward borrowing to lower the cost of funding, reviewing fare strategy, maximising tram advertising income and bringing forward operational efficiencies including potential savings on tram and infrastructure maintenance."*

### 3. Financial Model

Work on the construction of the financial model commenced in late 2017 and the model has been refined a number of times since then. Many of the assumptions are based on 2017 data, including, for example, RPI indexation.

### 4. Indexation Rates

The Council has used a number of indexation rates such as CPI, RPI and RPIx throughout the financial model to bring future cashflows to present value. We have relied upon the assumptions made by the Council as to which index is the most appropriate for a particular class of income or expenditure. We can confirm that the same indices have been used consistently across similar streams.

### 5. Edinburgh Tram Inquiry

The Edinburgh Tram Inquiry led by the Right Honourable Lord Hardie has yet to report on its findings in relation to the original Edinburgh Tram project. Within the FBC, the Council notes that they will consider further recommendations arising from the Tram Inquiry when these are available. As referred to within the draft covering paper to the Transport and Environment Committee on 28 February 2019, *"whilst the FBC incorporates a number of*

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*lessons learned from the first phase of tram, there remains a risk that the findings of the inquiry could result in the Council resolving to take additional action which may have expenditure implications".* The Council has not attempted to quantify what these expenditure implications may be.

## **6. Withdrawal of the United Kingdom (UK) from the European Union**

Whilst it is difficult to forecast the impact on the financial model of different Brexit scenarios, it is clear that significant financial uncertainty exists. Turner & Townsend has excluded uncertainty surrounding Brexit from its Quantitative Risk Analysis over the construction costs and the potential impact of Brexit has not specifically been referred to within the FBC or financial model.

### **Disclaimer**

This letter may not be provided to third parties without our prior written consent. Such consent will be granted only on the basis that any such report is not prepared with the interests of anyone other than the Council in mind and that we accept no duty or responsibility to any other party as concerns the report.

The output from the financial model provided by the Council is necessarily dependent on subjective judgement and is subject to substantial inherent uncertainties. Because of the test nature and other inherent limitations of an audit, together with the inherent limitations of any accounting and internal control system, there is an unavoidable risk that some material misstatements may remain undiscovered.

**Yours faithfully**  
**Scott-Moncrieff**



**Partner**