

Transport and Environment Committee

10.00am, Thursday, 12 November 2020

Trams to Newhaven – COVID-19 Final Business Case Refresh

Executive/routine	Executive
Wards	11, 12, 13
Council Commitments	22

1. Recommendations

- 1.1 Transport and Environment Committee is asked to:
 - 1.1.1 Note the analysis set out in this report;
 - 1.1.2 Note that under all scenarios presented, the economic case for the project remains positive with a benefit to cost ratio above 1;
 - 1.1.3 Note that the impact of COVID-19 on financing costs is uncertain and that the future call on reserves could range from £0m to £93m, but that reserves would be replenished over the longer-term;
 - 1.1.4 Refer the potential use of reserves of up to £93m noted at paragraph 1.1.3 to Council for approval;
 - 1.1.5 Note that in all but one scenario project cancellation has a higher cost to the Council than continuing with the project;
 - 1.1.6 Note that should the Council decide to cancel the project, there would be a £32m call on reserves in the current financial year under all scenarios, this would need to be funded through the cancellation and/or delay of projects in the Council's capital programme;
 - 1.1.7 Note the total cost of cancellation is calculated at £107.4m compared with £207.3 to build the line and that this £107.4m would be incurred with none of the benefits set out in the Final Business Case (FBC) being realised;

- 1.1.8 Note that since the Trams to Newhaven FBC was approved, the emerging policies and strategies only strengthen the case for high capacity, high quality public transport in the city;
- 1.1.9 Note that the emerging policies and strategies will, other things being equal, lead to the development of a transport network where tram would expect to attract higher levels of demand compared to the assumptions made at the time of the FBC; and
- 1.1.10 Approve continuing with the construction of the Trams to Newhaven project which is still projected to be within the budget of £207.3m as set out in the Final Business Case for the project and approved by Council.

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Trams to Newhaven – COVID-19 Final Business Case Refresh

2. Executive Summary

- 2.1 In March 2019 the Council approved the Final Business Case (FBC) for the Trams to Newhaven project, which was structured using HM Treasury standard five case model. The Finance and Economic chapters of the Business Case took account of the projected future patronage of the existing and completed tram line and associated benefits and revenue, and also assumed an extraordinary dividend from Lothian Buses.
- 2.2 Since March 2019 COVID-19 has had a serious impact on society which has resulted in a significant global downturn in public transport patronage. Public transport demand in Edinburgh has reduced considerably since March and while some restrictions were lifted, there are likely longer term consequences that will impact the economic and financial analysis presented in the FBC.
- 2.3 Steer, the Council's transport economic advisors, in consultation with the project team, have developed a range of possible scenarios to stress test the findings in the FBC. Details of these scenarios, the revised economic and financial assessment and wider policy and strategy considerations are set out in this report.
- 2.4 Under all scenarios tested the economic case for the project remains positive with a benefit to cost ratio above 1. As set out in the Final Business Case in March 2019, this traditional cost benefit analysis needs to be viewed in the context of the wider economic benefits that tram delivers.
- 2.5 The impact of COVID-19 on financing costs is uncertain and the future call on reserves could range from £0m to £93m. In all but one scenario project cancellation has a higher cost to the Council than continuing with the project.
- 2.6 Should the project not proceed there would be a £32m call on reserves in the current financial year under all scenarios, this would need to be funded through the cancellation and/or delay of projects in the Council's capital programme.
- 2.7 To assess the opportunity cost of continuing with the project, the cost of cancellation has been considered, including the costs incurred to date,

compensation payments that may become due to contractors and reinstatement costs.

- 2.8 The total cost of cancellation is calculated at £107.4m compared with £207.3 to build the line. This £107.4m would be incurred with none of the benefits set out in the FBC being realised.
- 2.9 Since the Trams to Newhaven FBC was approved, the emerging policies and strategies only strengthen the case for high capacity, high quality public transport in the city.
- 2.10 There is now strong alignment across national, regional and local objectives around sustainable economic growth; equity and social inclusion; tackling climate change; and health, wellbeing and safety. Trams to Newhaven contributes significantly to these objectives.
- 2.11 It is also important to note that Edinburgh City Centre Transformation (ECCT) recognises the importance of tram in delivering a step-change in public transport provision, and being a fundamental enabler of providing the cross-city connectivity whereby Trams to Newhaven would provide both the service and capacity to enable an associated reduction in bus volumes, especially along Princes St. Indeed, the ECCT proposals also included the potential for a second cross-city route and south-east Edinburgh route.
- 2.12 These emerging policies and strategies will, other things being equal, also lead to the development of a transport network where tram would expect to attract higher levels of demand compared to the assumptions made at the time of the FBC.

3. Background

- 3.1 In March 2019 the Council approved the FBC for the Trams to Newhaven project, which was structured using HM Treasury standard five case model. The Finance and Economic chapters of the Business Case took account of the projected future patronage of the existing and completed tram line and associated benefits and revenue, and also assumed an extraordinary dividend from Lothian Buses.
- 3.2 Since March 2019 COVID-19 has had a serious impact on society which has resulted in a significant global downturn in public transport patronage. The pandemic has also affected the construction of the Trams to Newhaven project and a formal instruction to shut down the construction site was issued to all contractors on 25 March 2020 in accordance with advice given by the Scottish Government.
- 3.3 During this site shutdown the project continued with non-site work, including design, and the project team worked closely with the contractors to mitigate, as far as reasonably practicable, the time and cost impacts from the COVID-19 pandemic.
- 3.4 On 21 May 2020 the Scottish Government issued a phased plan to ease lockdown restrictions. This was then followed by further guidance issued on 28 May 2020 in relation to the construction sector wherein a phased approach to recommencement of construction works was set out. This guidance envisaged a six step approach to

recommencing works and the project re-started strictly in accordance with the guidance.

- 3.5 Despite the COVID-19 shut down and the project incurring additional costs in the region of £5m as a consequence, it is still projected that the project can be delivered within the £207.3 million budget agreed by Council, in March 2019. The project team continues to carry out regular risk reviews on the project and the quantitative risk analysis, that underpinned the FBC risk allowance (excluding optimism bias), is updated quarterly.
- 3.6 Delays as a consequence of COVID-19 and other factors have been minimised in part by the mitigation strategies developed with the contractors and the project is scheduled to be completed by mid-2023.
- 3.7 There are however wider considerations in relation to COVID-19 and this report sets out the project's response to these. Public transport demand in Edinburgh has reduced considerably since March and while some restrictions were lifted, there are likely longer term consequences that will impact the economic and financial analysis presented in the FBC. The team has also re-examined wider policy and strategy considerations in relation to the project and these are presented in this report.
- 3.8 Steer, the Council's transport economic advisors, in consultation with the project team, have developed a range of possible scenarios to stress test the findings in the FBC. Details of these scenarios, the revised economic assessment and wider policy and strategy considerations are set out in Steer report entitled *Edinburgh Tram – C19 Demand Scenarios* at Appendix 1.
- 3.9 The Commercial and Management cases included in the FBC have not been revisited as there are no significant changes as a result of COVID-19.

4. Main report

Methodology

- 4.1 COVID-19 has had a significant negative impact on public transport patronage, with bus and tram patronage in Edinburgh down significantly against expected projections. The recovery of public transport patronage from COVID-19 remains unclear. The speed and strength of recovery will be affected by a number of factors which include:
 - 4.1.1 A medical resolution to COVID-19, for example availability of a vaccine;
 - 4.1.2 Duration and depth of the recession;
 - 4.1.3 Virus management measures and how they will develop over time;
 - 4.1.4 Possibility of further outbreaks and localised or national shut-downs.
- 4.2 In addition, demand drivers have been affected by COVID-19. Notably, airport demand has fallen with a consequential impact on both bus and tram airport services. The impact of working from home on future behaviours is a further issue which may, for example, spread demand outside the peak or reduce demand

altogether. These sit alongside other demand drivers such as land use and speed of future development, and housing and jobs growth which may also be affected by COVID-19 directly, and by the associated recession.

- 4.3 The uncertainty around the impact of COVID-19 on recovery, and the effect this will have on demand drivers, means that it is not possible at this stage to present a primary case for patronage with a series of sensitivities, as was presented in the FBC.

Scenario Development

- 4.4 Instead, Steer, who developed the Economic Chapter in the FBC and provided patronage forecasts for the Economic and Finance Chapters, were commissioned to develop a range of possible scenarios so that the impact of each scenario on both the Economic and Finance Chapters could be modelled. While Steer are unable to give an opinion on which of these scenarios are most likely, they have confirmed that the scenarios are reasonable possibilities, and that the most pessimistic scenario modelled is a grounded and realistic ‘downside’ case.
- 4.5 The approach to developing the scenarios is set out in detail in the Steer report at Appendix 1.
- 4.6 The scenarios presented are set out in Table 1 below.

Table 1 – Scenarios

Scenario	Near-term impact	Medium-term	Notes
Scenario 1: ‘Return to Business as Usual’ (return to full FBC demand)	<ul style="list-style-type: none"> Return to 2019 levels by 2022 for corridor and Newhaven, based on ET analysis. Return to 2019 levels by 2023 for Airport 	<ul style="list-style-type: none"> Return to full FBC level by mid-2020s¹. 	Optimistic view of growth post recovery (i.e. recovering ‘lost’ growth from 2019 – 2023)
Scenario 2: ‘Return to Business as Usual’ (return to FBC growth)	<ul style="list-style-type: none"> As per Scenario 1 	<ul style="list-style-type: none"> FBC growth rates applied post recovery. <ul style="list-style-type: none"> c 3% p.a. for airport segment c 3% p.a. for ‘existing’ corridor & c 1.4% p.a. for Newhaven 	<p>Better proxy for economic impact, i.e. recessionary effect to early 2020s then recovery.</p> <p>Implicitly assumes same relationship between economic and demand growth as FBC.</p>

¹ The FBC growth assumptions for each market segment are set out in Chapter 3 of the Steer report at Appendix 1, alongside those for each of the scenarios.

Scenario	Near-term impact	Medium-term	Notes
Scenario 3: 'Lower future Growth'	<ul style="list-style-type: none"> As per Scenario 1 	Lower medium-term growth: <ul style="list-style-type: none"> 1% p.a. for corridor and Newhaven 2% p.a. for Airport 	Lower growth reflects a permanent change in travel behaviour, moderating future growth.
Scenario 4: 'Permanent Reduction in Demand'	<ul style="list-style-type: none"> 80% of ET's central case near-term forecast. 	<ul style="list-style-type: none"> Ramp up of demand but to reach 80% of BAU by mid-2020s Long-term demand growth rate at FBC level (at 80% demand of Scenario 2) 	Reflects a 'what if' scenarios. Implicitly reflects fundamental shift in behaviour.

- 4.7 It should be noted that none of the scenarios are 'forecasts', but are grounded/informed by previous forecasts e.g. on future growth linked to planned development etc. The scenarios consider a combination of short-term COVID-19 impacts (framed by when market segments would return to pre-pandemic demand levels) and views on future growth based on returning to or a tempering of previously assumed growth.
- 4.8 It remains the case that due to the uncertainty surrounding future recovery it is not possible to single out a most likely scenario. Steer's view is that they will not be in a position to advise on likely recovery scenarios until more data becomes available. In this regard Steer have started to collate data from a number of cities around the world using available datasets from transit authorities and Google Mobility, at present the trend analysis is not sufficiently robust to draw any conclusions.
- 4.9 In an early draft of the Steer report a fifth 'no growth' scenario was considered assuming that 2019 demand would, from the early 2020s onwards, remain constant over the full period of the financial and economic appraisal (30 and 60-years respectively).
- 4.10 The 'no growth' scenario was developed as an illustrative 'what if' scenario, and the only one not informed by previous forecasts, or supported by evidence of long-term growth (specifically for the air passenger market). While it was developed to be a pessimistic case, it was deemed by Steer to be unrealistic, insofar that no growth at all over an extended period is considered to be highly unlikely. The scenario was therefore not taken forward and scenario 4 is included to represent a grounded and realistic 'downside' case. Further details are included in the Steer report at Appendix 1.

Downside Sensitivity Scenarios

- 4.11 Steer note in their report that some uncertainty remains about the timing of the recovery from COVID-19, and of when social distancing measures will no longer be necessary. The scenarios presented take a current view, informed by the industry, of when this could occur.
- 4.12 However, recognising the uncertainty about the duration of the pandemic and therefore the point at which 'recovery to 2019 demand levels' is reached, Steer have undertaken two 'downside' sensitivities which show demand by year on the assumption that 2019 demand levels are not reached until 2025, for all segments. These downsides are variants of Scenarios 2 and 3, so have been named 2a and 3a in the Steer report.
- 4.13 It should be noted that there is no equivalent sensitivity presented on Scenario 4, as under Scenario 4 demand does not recover to 2019 levels until 2030.
- 4.14 Scenarios 2a and 3a are presented as downside sensitivities in the financial analysis below.

Economic Assessment

- 4.15 This section of the report considers the impact on the economic performance of the project against each of the demand reduction scenarios set out above. The numbers are presented including sunk costs (costs that have already been spent and are unrecoverable) in Table 2 and excluding sunk costs in Table 3.

Table 2 – Economic appraisal of FBC and scenarios (Including sunk costs)

	FBC	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Benefits factor:	1.00	1.00	0.96	0.92	0.77
Total Benefits (£000)	£395,000	£395,000	£379,000	£364,000	£303,000
Total Costs and Financial Impacts (£000)	- £282,000	-£283,000	-£284,000	-£285,000	-£291,000
Economic performance:					
Net Present Value (£000)	£113,000	£113,000	£95,000	£79,000	£12,000
Benefit Cost Ratio (BCR)	1.40	1.40	1.33	1.28	1.04

Note. Figures have been rounded to nearest 1,000.

- 4.16 The table shows that:
- 4.16.1 The FBC economic appraisal of the project, as presented in the 2019 FBC, shows a benefit cost ratio of 1.40 : 1.
- 4.16.2 The Newhaven opening date of 2023 means that the short-term impact of COVID-19 is limited in the overall assessment results. This means that under Scenario 1 the economic case for the project remains unchanged from the FBC level.

4.16.3 The BCR reduces to around 1.3 : 1 under Scenarios 2 and 3 – a modest reduction from the FBC level of 1.4.

4.16.4 The ‘permanent reduction in demand’ scenario (Scenario 4) results in loss of just under a quarter of benefits (factor of 0.77). Under this scenario the BCR remains above 1.0 : 1.

4.17 It should also be noted that scenarios 2a and 3a would demonstrate a positive benefit to cost ratio.

4.18 The FBC was based on total cost of £207.3m, of which £5.5m had been spent at time of FBC. The FBC costs within the economic appraisal was therefore £201.9m, which excluded the £5.5m ‘sunk’ costs.

4.19 Costs to date (sunk costs), as of June 2020, were £32m. The economic appraisal was therefore updated in June to reflect this sunk cost total, as presented in Table 3. This is presented for the FBC case and each of the demand scenarios.

Table 3 – Economic appraisal of FBC and scenarios (excluding sunk costs)

	FBC	Scenario 1	Scenario 2	Scenario 3	Scenario 4
FBC Costs (FBC & demand scenarios)	1.40	1.40	1.33	1.28	1.04
FBC minus sunk costs (as of June 2020), for each demand scenario	1.51	1.50	1.43	1.37	1.12

4.20 The comparison of the economic appraisal results from the FBC and with the capital cost updated to reflect sunk costs in June 2020 show that excluding current sunk costs of £32m would increase the FBC equivalent BCR to 1.51 : 1, and the BCR would improve under each of the demand scenarios considered.

4.21 Steer have not updated the sunk costs since June 2020. However, as the inclusion of further sunk costs, reflecting spend between June 2020 and September 2020, would have the effect of increasing the BCR’s for the ‘FBC minus sunk costs’ under each of the scenarios presented in the table above, it was not considered necessary.

Financial Assessment

Introduction

4.22 The financial case assesses the project’s affordability. As set out above it is still projected that the project can be delivered within the £207.3 million budget agreed by Council, in March 2019. However, due to COVID-19’s impact on public transport patronage, the affordability of the project is more challenging. To support the updated analysis in relation to the economic and financial case the following work has been undertaken.

4.22.1 Cost assumptions underpinning the 2019 FBC have been reviewed and updated where required;

- 4.22.2 The ongoing assessment and quantification of risk has been factored into the forecast cost to completion;
- 4.22.3 Lifecycle, operating and maintenance costs have been updated in discussion with Edinburgh Trams;
- 4.22.4 Sunk costs have been updated to reflect expenditure on the project to date;
- 4.22.5 Estimated costs to terminate the project have been calculated by Turner & Townsend; and
- 4.22.6 Financing assumptions have been reviewed.

4.23 In addition, the financial impact of cancelling the project has been considered to provide an informed basis for decision-making.

Capital Costs

4.24 The capital cost projection remains within the £207.3m as stated above. In carrying out the analysis the assumptions set out in the FBC have been reviewed as follows:

Table 4 – Assumptions Update

FBC Assumptions	Updated Assumptions
The construction phase plan will be as set out in chapter 7 of the FBC, including traffic management arrangements which allow the opening up of large areas of the site to facilitate a one-dig approach and flexibility to deal with unforeseen underground obstructions	Assumption remains valid and has been broadly adhered to including the opening up of large worksites. However, the construction phase plan was reviewed and amended during Early Contractor Involvement (ECI) stage taking account of contractor input, and further amended in discussion with contractors to mitigate COVID-19 impacts.
Utility works will be broadly in line with the desk top assessment underpinning the utility conflicts schedule described in chapter 7 of the FBC	As anticipated, a number of unknown utility conflicts have been encountered and the costs associated with resolving these are included in the cost to completion. An appropriate risk allowance has been made for further unknown utility conflicts.
No bridge replacements will be required	This assumption remains valid
Road reconstruction and public realm improvements will be limited to those necessitated by the tram project and no	Requests have been made for additional general improvements by Council departments. Where it has been possible to accommodate these

FBC Assumptions	Updated Assumptions
allowance is made for additional general improvements	the project has sought to do so with any changes being formally processed through the project change management procedure, the cost of these is included in the forecast to completion.
The supplementary projects to be delivered in parallel, as set out in chapter 7, are funded from the Place capital programme budget	This assumption remains valid.
No land acquisition costs will be incurred	A single land acquisition payment for £30k was paid to Port of Leith Housing Association and this is included in the forecast cost to completion.
The Council will procure an Owner Controlled Insurance Policy (OCIP) for the construction of the works	This assumption remains valid
Inflation is based on current Building Cost Information Services All in Tender indices rate (BCIS) indices and is applied to elements of the prices that are not contractually fixed	This assumption remains valid
The cost plan is based upon the design layouts finalised following the public consultation carried out during 2018	This assumption remains valid albeit the Traffic Regulation Order (TRO) process is due to commence in autumn 2020 that may give rise to requests for change. These are not included in the forecast cost to completion.

Lifecycle costs

- 4.25 Based on high-level analysis carried out by Edinburgh Trams, the cost and timing of lifecycle replacements is largely unchanged from that included in the FBC. However, a detailed review of the tram maintenance contract has revealed that £0.8m of the annual maintenance charge is in fact life cycle works. This has meant that the cost of the mid-life overhaul anticipated in 2033-34 has been reduced by £6.75m (50%).

Operating & Maintenance Costs

- 4.26 There have been no changes to assumed operating frequencies, so operational and maintenance costs remain the same as reported in the FBC. In reality, should income levels decline, adjustments would be made to services to reduce costs, but this has not been modelled. Similarly, opportunities to reduce the cost of maintenance by renegotiation and re-procurement of maintenance contracts are being explored by the management of Edinburgh Trams.

Revenues

- 4.27 The most significant change to the FBC assumptions is the decline in income as a result of reduced patronage. Modelling has been revised to reflect the impact of COVID-19 based on latest projections from Edinburgh Trams for the period up until the new line is operational. This shows a loss of income of £13.3m compared to FBC assumptions. Beyond this, the four patronage scenarios considered by Steer in the Economic Case (above) have been modelled with the most optimistic only returning to FBC levels of income by the mid-2020s.

Scottish Government has announced funding of up to £6m to address tram income shortfalls in 2020-21. £5.5m of this has been included in the modelling, based on what Edinburgh Trams expect to receive.

Taxation and Dividend Policy

- 4.28 Minor changes have been made to corporation tax rates so that they remain at 19%, based on the most recent UK government budget announcement. In addition, the profitability of group companies has been reviewed to determine the level of loss relief that can be applied.

Lothian Buses

- 4.29 COVID-19 is also having a significant impact on the financial position of Lothian Buses. Lothian has indicated that the extraordinary dividend assumed in the FBC will not be available for the foreseeable future and for this update only the £1.2m paid to date is included.

Developer Contributions

- 4.30 Developer contributions in the FBC assumed a sum of £7.8m which was used to offset capital costs. Since the FBC, a further assessment has been carried out and additional contributions from the existing line have now been included. The revised sum is £33.7m. In addition, developer contributions are now used as revenue in the financial modelling to offset the call on reserves in all scenarios.

Financing Costs

- 4.31 The financing costs in the FBC assumed an interest rate of 4.1%. However, at notice to proceed the Council was able to secure £150m of borrowing at an overall rate of 2.37% and it is now estimated that the remaining borrowing can be secured at 2.25%. The effect of this interest rate reduction has reduced the estimated debt servicing costs from £358m to £302m over the 30 year term.

- 4.32 A review has been undertaken on the suitability of the Council’s current accounting policy for interest in light of the advent of large-scale projects, spanning more than one year of construction, and funded from future revenue streams. The Council currently accounts for interest costs in the year in which they arise, unlike the private sector, where the opportunity to capitalise interest costs is adopted more widely. The Council is considering changing its policy to allow for the capitalisation of assets, which would reduce the project’s impact on revenue budgets, saving £12m (£20m when compared to FBC interest rates) during the construction period at a time when the Council has numerous budgetary challenges associated with COVID- 19.
- 4.33 A further change has been made to assumptions regarding the mid-life tram vehicle overhaul anticipated in 2033/34. At FBC it was assumed that this would be funded by in-year surpluses, whereas it is now assumed that this will be capitalised and repaid over a 10-year period.

Cancellation

- 4.34 To assess the opportunity cost of continuing with the project, the cost of cancellation has been considered, including the costs incurred to date, compensation payments that may become due to contractors and reinstatement costs totalling £60.2m. When considered alongside the £47.2m incurred on the project to 30 September 2020, the cost of cancellation would total £107.4m compared with £207.3 to build the line. Advice provided by Dr Stuart Fair to the Edinburgh Tram Inquiry has been reviewed, enabling prior year expenditure and reinstatement costs to be capitalised.
- 4.35 To fund the cancellation costs, revenues from the existing line have been modelled using the same methodology as for the line to Newhaven set out above.

Results

- 4.36 The table below sets out the total call on Council reserves for both continuing with the project and cancellation. It also sets out the year in which these reserves would be fully repaid.

Table 5 – Results

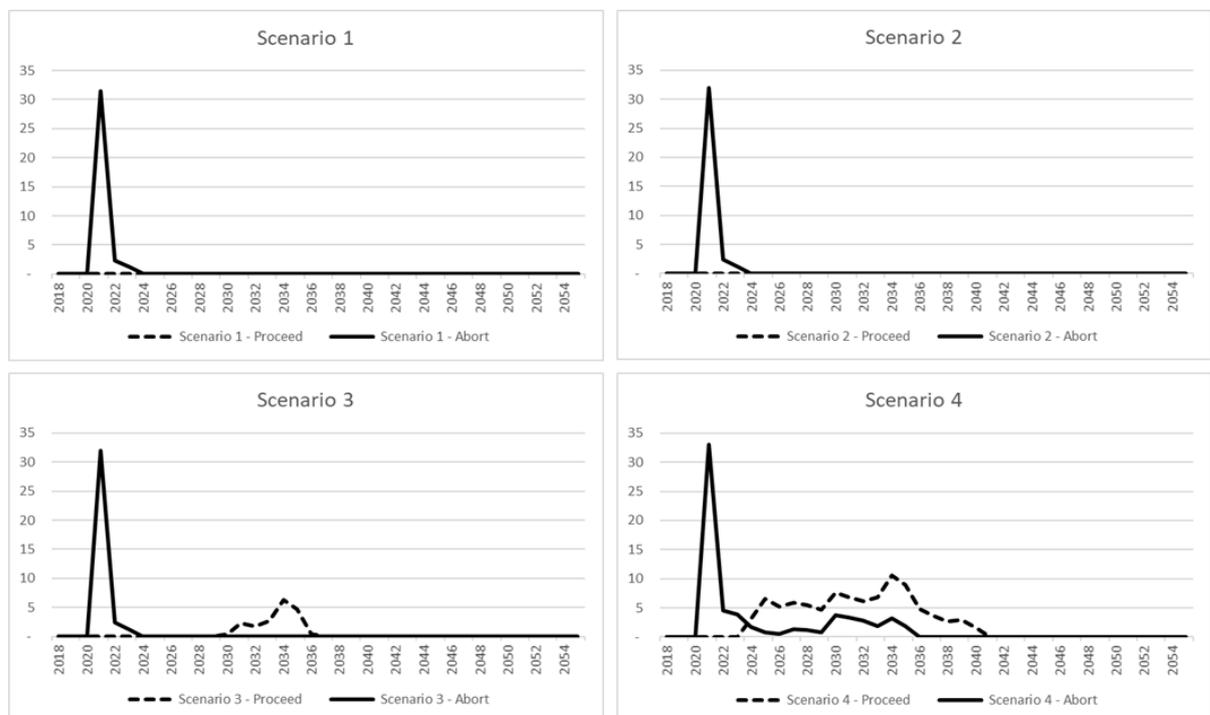
	FBC	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Reserves Requirement (£m)					
Construct to Newhaven	1.9	-	-	18	93
Cancellation	-	35	35	36	65
Year of Payback					
Construct to Newhaven	2027	n/a	n/a	2043	2055 ²

² Estimated date beyond the timeframe of the financial model

	FBC	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Cancellation	n/a	2031	2036	2042	2047

- 4.37 Figure 1 sets out the likely annual call on reserves for each scenario. Under all scenarios there is a £32m requirement in the current financial year, should the Council decide to cancel the project. Should the Council continue with the project there is no call on reserves in any year under scenarios 1 and 2.
- 4.38 Under scenario 3, there is an annual requirement between £2m and £6m in the years between 2030 and 2035. From 2036 onwards, tram revenues are available to replenish reserves.
- 4.39 Under scenario 4, there is an annual requirement of between £6m and £11m in the years between 2024 and 2039. From 2040 onwards, revenues are available to replenish reserves.

Figure 1 – Annual Call of Reserves £m



- 4.40 The result shows that under the first two scenarios, the project continues to be affordable. Moreover, in all but the final scenario project cancellation has a higher cost to the Council than continuing with the project.
- 4.41 Should the Council decide to cancel the project there would be a £32m call on reserves in the current financial year under all scenarios. By contrast, should the Council continue with the project, the annual call on reserves is significantly lower. However, the model is very sensitive to income projections and in the event of a significant fall in demand (scenario 4), the long-term cost of the project would be more costly to the Council than to cancel.

4.42 It should also be highlighted that modelling does not take account of any cost-reduction measures that may be implemented by the management of Edinburgh Trams in the event of reduced patronage, which would reduce the level of reserves required.

Sensitivities

4.43 As all scenarios assessed (other than scenario 4) assume a return to 2019 demand levels by 2023. As described above two further sensitivities have been considered wherein 2019 demand levels are not reached until 2025 (Scenarios 2a & 3a). The results are set out in the table below.

Table 6 – Sensitivity Analysis

	FBC	Scenario 2a	Scenario 3a
Reserves Requirement (£m)			
Construct to Newhaven	1.9	16	47
Cancellation	-	42	38
Year of Payback			
Construct to Newhaven	2027	2039	2048
Cancellation	n/a	2039	2046

4.44 This analysis shows that delay in returning to pre-COVID-19 patronage levels would increase the call on Council reserves.

4.45 In parallel with this downside sensitivity, the potential upside discussed below in relation to policy implementation (paragraphs 4.63 to 4.65) has also been modelled. Rather than showing the full range of possible futures which arise from policy implementation, set out below are examples which give an indication of the impact this may have on the central case.

4.46 Should, for example, patronage increase by 10% beyond that assumed in scenario 4, then the call on reserves would reduce from £93m to £54m. Similarly, if the same upside were applied to scenario 3 this would reduce the call on reserves from £18m to £0m.

Strategic Case

Policy & Strategy

4.47 The FBC noted that the development of transport infrastructure plays a key role in shaping the pattern of future growth and development of the city, and hence in delivering the spatial strategy and the long-term economic growth that this will support.

4.48 The Trams to Newhaven will not only provide a direct link for the people of Leith to the city centre and out to the airport, but also connects residents and visitors to major employment and travel hubs along the route.

- 4.49 Completing the original vision for the first phase of the Edinburgh Trams network unlocks a large swathe of the city for housing development and employment opportunities. It will also help to reduce air pollution by providing an efficient, sustainable transport solution while opening up people-friendly transport links for individuals and communities from all walks of life.
- 4.50 The Strategic Case chapter in the FBC set out the rationale for investment in the Trams to Newhaven project, by reference to existing strategic developments and transport strategies and plans.
- 4.51 Since the FBC, there has been further policy development at the national, regional and city level, specifically the National Transport Strategy 2 (NTS2) was published in February 2020. The overarching vision is to
- “have a sustainable, inclusive, safe and accessible transport system, helping deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors.”*
- 4.52 At a regional level, the Strategic Development Plan 2, will set out the spatial planning priorities across six authorities (Edinburgh, Midlothian, West Lothian, East Lothian, Fife and Scottish Borders). On 16 May 2019 the South East Scotland Strategic Development Plan (SESplan 2) was rejected by Scottish Ministers on the basis that strategic transport infrastructure issues were not properly considered.
- 4.53 At the city level the City Plan 2030 will set out the development framework for the city up to 2031, while the City Mobility Plan sets out key objectives and transport policy priorities in support of the City Plan 2030 and wider national and city policy priorities.
- 4.54 The City Mobility Plan supersedes the Local Transport Strategy for Edinburgh. It provides a strategic framework for proposed interventions aimed at helping the effective movement of people and goods around Edinburgh whilst seeking to address associated environmental and health impacts. It comprises a series of objectives and policy measures under the headings of People, Place and Movement which will, collectively, achieve the vision that
- “Edinburgh will have a greener, safer, inclusive and connected transport system delivering a healthier, thriving, fairer and compact capital city, and a higher quality of life for Edinburgh residents”.*
- 4.55 There are, in parallel, a number of studies and initiatives that aim to further develop and prioritise proposals for interventions that support the achievement of the policy objectives and outcomes. Examples are City Vision 2050, the STPR2 process at the national and sub-regional level and the development of ECCT at the city level.
- 4.56 Since the FBC was approved the emerging policies and strategies only strengthen the case for high capacity, high quality public transport in the city.
- 4.57 There is also strong alignment across national, regional and local objectives. While the terminology and combination or separation of objectives differs slightly between various policy documents, there are nevertheless consistent objectives across the

themes of sustainable economic growth; equity and social inclusion; tackling climate change; and health, wellbeing and safety. As well as supporting national, regional and local policy and strategy, Trams to Newhaven also contributes significantly to the above objectives as set out in Figure 2.

Figure 2 – Meeting the Policy Objectives

<p>Sustainable Economic Growth</p> <ul style="list-style-type: none"> ✓ Supporting strategic development areas where employment will be focused ✓ Supporting the delivery of new housing / mixed-used development in a sustainable manner. ✓ Expanded labour market catchments giving workers greater access to jobs ✓ Providing capacity and connectivity to encouraging new businesses to invest and locate in Edinburgh ✓ Encouraging modal-shift from cars, increasing the efficiency of the overall transport network and reducing the economic costs associated with congestion, accidents and emissions. 	<p>Equity & Social Inclusion</p> <ul style="list-style-type: none"> ✓ Provide improved access to jobs, education, healthcare and leisure by creating further opportunities for cross-city journeys - for example it will significantly improve accessibility between Leith Waterfront (an area of high deprivation) and employment opportunities in West Edinburgh. ✓ Increase access to high quality public transport. A high proportion of lower income / more deprived residents along the corridor do not own or have access to a car; consequently, access to high quality public transport is key to their ability to access jobs and services.
<p>Tackling Climate Change</p> <ul style="list-style-type: none"> ✓ Encouraging modal shift from single occupancy car journeys to public transport. ✓ Supporting sustainable housing and employment development such as increased density in urban areas and the development of brownfield sites. Higher density urban development reduces the need to travel and encourage shorter journeys and more walking, cycling and public transport usage. ✓ The carbon costs associated with providing associated infrastructure and services (electricity, waste, broadband etc) are also lower for higher-density urban development. 	<p>Health, Wellbeing & Safety</p> <ul style="list-style-type: none"> ✓ Complements and ties into the city centre, where the overall CCT strategy is focused on improving facilities for pedestrians and cyclists, hence supporting healthier lifestyles. ✓ Provides a safe means of transport with good levels of security through use of customer service officers and CCTV at stops. ✓ Facilitates accident reduction through modal shift and reduced car kilometres travelled, and through integrated design.

- 4.58 The FBC analysis did also not take full account how tram could support the delivery of transport-related policy outcomes in delivering the ECCT.
- 4.59 The vision of the ECCT project is to create a city centre for all, a place for people to live, work, visit and play. The vision also aims for a city centre that is a place that is at the heart of Edinburgh's communities, its cultural life, the focal point for its economy and one of Scotland's most iconic and important locations.
- 4.60 The ECCT strategy proposes a wide range of interventions to provide a more liveable city centre in terms of active travel, public transport, traffic reduction and quality of open space. The strategy is supported by a ten-year delivery plan.
- 4.61 To deliver the emerging strategy, there is a requirement for a mode shift to public transport to help deliver a 10-15% reduction in city centre car traffic in the medium term and a 25-30% reduction in the longer term. The City Mobility Plan and accompanying Action Plans will provide helpful policy / strategy support but won't be sufficiently detailed with regards to individual schemes.
- 4.62 ECCT recognises the importance of tram in delivering a step-change in public transport provision, and being a fundamental enabler of providing the cross-city connectivity whereby Trams to Newhaven would provide both the service and capacity to enable an associated reduction in bus volumes, especially along Princes St. Indeed, the ECCT proposals also included the potential for a second cross-city route and south-east Edinburgh route.

Enhanced Network and Policy Intervention

- 4.63 It is clear that the policy context and the City's stated policy priorities has evolved since the FBC forecasts were prepared. The direction of travel in terms of policy priorities (climate change, sustainable growth, health and wellbeing) and the supporting interventions (better integrated public transport, priority for public transport and walking / cycling, city centre transformation, car demand management measures) will, other things being equal, lead to the development of a transport network where tram would expect to attract higher levels of demand compared to the assumptions made at the time of the FBC.
- 4.64 Steer have therefore undertaken two sensitivities to reflect the potential scale of this impact. These are a 10% demand uplift and a 15% demand uplift, informed by network integration and policy scenario tests undertaken as part of previous Edinburgh Tram work. The uplift has been graduated over time, such that the increase builds up between 2025 and 2030 – this reflect the time taken for interventions and policies to be adopted and implemented, and for the behavioural responses of individuals to manifest themselves.
- 4.65 These tests apply equally to all the scenarios presented, so are not presented in full within the Steer report. Examples of the possible impact these increases in demand may have on the central case have been included in the financial section above.

5. Next Steps

- 5.1 The Transport and Environment Committee notes this report, approves the continuation of the project in line with recommendation 1.1.10 and refers the potential use of reserves to Council for approval.

6. Financial impact

- 6.1 The report recommends continuing with the construction of the Tram to Newhaven project which is still projected to be within the project budget of £207.3m as set out in the Final Business Case for the project and approved by Council.
- 6.2 While at FBC it was assumed that the financing costs associated with the project could be met from tram fares and a one-off extraordinary dividend from Lothian Buses, the impact of COVID-19 has made this more challenging. It is too early to know the long-term impact, but based on scenarios presented herein, the call on Council reserves could range from £0m to £93m.
- 6.3 In the event of a decision to cancel the project, the cost is estimated to total £107.4m, taking in account of expenditure to date and anticipated compensation and reinstatement costs. While the financing of these costs would be met from fare revenues over the longer-term, the call on reserves could range from £35m to £65m based on the scenarios modelled. Moreover, £32m would be required in the current financial year and would need to be funded through the cancellation and/or delay of projects in the Council's capital programme.

7. Stakeholder/Community Impact

- 7.1 The recommendations set out in this report have been discussed with representatives of the Capital Coalition, Opposition Groups, Transport for Edinburgh, Edinburgh Trams, as well as between relevant services within the Council.

8. Background reading/external references

- 8.1 This paper should be read in conjunction with the Trams to Newhaven Final Business Case approved by Council in March 2019.
- 8.2 It should also be read in conjunction with the Steer report entitled *Edinburgh Tram - C19 Demand Scenarios* included at Appendix 1.

9. Appendices

- 9.1 Appendix 1 - Steer Report *Edinburgh Tram - C19 Demand Scenarios*

Edinburgh Tram - C19 Demand Scenarios



Edinburgh Tram - C19 Demand Scenarios

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1 Introduction

Preamble

- 1.1 This report represents an update to the draft report prepared in June 2020 on behalf of the City of Edinburgh Council (CEC).
- 1.2 This report does cite further evidence that provides further context and rationale for the scenarios presented. This evidence is limited, and generally in the form of other industry organisations who have independently set out potential post-covid-19 scenarios. As is the case with the scenarios we have developed, the scenarios developed by others are not forecasts – they are intended to postulate a range of outcomes that could occur as we emerge from the current ‘pandemic’ phase. This evidence suggests that the scenarios we set out in this report are reasonable and provide a plausible range estimate to inform decision-making. The scenarios presented in this report are the same as those in the June 2020 report, but in the light of the further evidence the ‘no growth’ scenario is not presented as it is deemed unrealistic. The reasons for this are explained in more detail later in this report.
- 1.3 Our review of evidence since our June draft does not suggest that the scenario definition (with the exception of the ‘no growth’ scenario) and associated demand estimates should be revisited at this point.

Background and Context

Background

- 1.4 Edinburgh Trams (ET) has been operating successfully since May 2014, running between the Edinburgh International Airport and York Place in the city centre.
- 1.5 In 2019 the City of Edinburgh Council (CEC), herein after referred to as “the Council”, approved funding for the ‘Tram Completion Project’, whereby the route would extend to Newhaven, thereby completing the original Phase 1a section of the planned network. This was subsequently renamed the Trams to Newhaven Project.
- 1.6 The case for the Trams to Newhaven Project. was set out in the Full Business Case (FBC). Within the FBC, the Economic Case set out the economic performance of the Project and the Financial case set out the funding and financing approach. Both the Economic and Financial Cases are informed by forecasts of Edinburgh Tram demand and revenue.
- 1.7 It should be noted that the Economic Case for the Project only takes account of the demand, revenue and benefits on the York Place to Newhaven section. Whereas the demand and revenues from the existing system, between Airport to York Place, do inform the overall Financial / Funding Case, they are treated within the ‘Do Minimum’ within the economic appraisal of the Trams to Newhaven Project.

Context

- 1.8 Earlier this year an outbreak of the virus known as COVID-19 spread throughout the world. It has been defined by the World Health Organization as a “pandemic”. As of the date of distribution of this report, the COVID-19 outbreak and Government responses in the form of ‘lockdown’ and / or restrictions on movement have had material impacts on the global and national economy, including having a significant impact on the transport industry where, in particular, passenger volumes have rapidly fallen.
- 1.9 The situation remains dynamic and rapidly evolving and is subject to further changes, and while the initial lockdown restrictions are being eased and the economy is beginning to ‘re-emerge’, the extent to which the recent increase in infections leads to further restrictions being imposed (locally or nationally) remains uncertain. There remain restrictions on certain activities, guidance to undertake activities locally as much as possible and think carefully whether to use public transport or not, and for public transport passengers to adhere to distancing guidelines, as well as wear face masks when travelling¹. These restrictions affect the demand and effective capacity (supply) of public transport.
- 1.10 Since March, Edinburgh Trams has reduced the service frequency to 4 tph (from 8tph), or one service every 15 minutes, as a result of a significant reduction in demand, while maintaining a level of service that allows to keep one of Scotland’s Critical National Infrastructures operational for key workers and those who need to make essential journeys. Frequency after 7.30pm was reduced in April to a service every 30 minutes and increased back to a service every 15 minutes in June.

Purpose of this Report

- 1.11 The purpose of this report is twofold.
1. To assess the potential impacts on COVID-19 on near, medium and longer-term demand scenarios on the Economic and Financial Cases for the Project.
 2. To use these demand scenarios to inform updates to the Financial and Economic analysis developed as part of the 2019 Full Business Case Trams to Newhaven Project.²
- 1.12 The basis for the analysis by Steer is that it is:
- Relatively high-level and contemporary
 - Guided by emerging insights from the industry across the sectors
 - Based on annual demand forecasts based on original FBC forecasts
 - An analysis of key drivers and the ongoing uncertainty that has led to the development of a number of plausible scenarios

¹ <https://www.transport.gov.scot/coronavirus-covid-19/transport-transition-plan/guidance-on-travelling-within-scotland/>

²

https://democracy.edinburgh.gov.uk/Data/Transport%20and%20Environment%20Committee/20190228/Agenda/item_71_-_edinburgh_tram_-_york_place_to_newhaven_final_business_case.pdf

Disclaimer

The outbreak of the virus known as COVID-19 has spread throughout the world and has been defined by the World Health Organization as a “pandemic”. As of the date of distribution of the Note, the COVID-19 outbreak is having a material impact on global economic and political affairs including having a significant impact on all the transportation industries, including Edinburgh Tram traffic, where in particular passenger volumes have fallen in response to quarantine and self-care measures that governments have imposed including in United Kingdom. The situation remains dynamic and is subject to significant change. In this challenging context, Steer has supplemented the base forecasts (directly produced from the models using a pre-COVID-19 view) with a view on a possible scenario for the demand forecasts based on an assumption of recovery from the COVID-19-related traffic decrease.

However, it is important to note that Steer’s post-COVID-19 analysis is only one view, and there continues to remain uncertainty as to the short-term, intermediate or prolonged effects of and responses to the COVID-19 pandemic on this project. All of these effects could impact the COVID-19-related assessments in this Note. While the COVID-19-related assessments in this Note were prepared in good faith and Steer believes them to be reasonable, no assurance can be provided by Steer that the scenarios and assumptions Steer has identified will prove to be accurate. Given the uncertainty described here and inherent in this unprecedented pandemic, Steer advises that the Council consider the Note in the context of its assessment of the COVID-19 outbreak its likely impact before making final decisions related to this project.

2 Scenario Development

Introduction

2.1 In this chapter we describe and present the scenarios that have been developed as part of this commission.

Potential COVID-19 Impacts

2.2 COVID-19 has and continues to have a profound impact worldwide. It is affecting the way in which our cities work, the way in which people live and travel and the longer-term impacts remain to be seen.

2.3 In the short-term, demand for public transport is a fraction of its previous level during the period of lockdown. Government has insisted that services continue to ensure that key frontline workers can travel to and from work and home during the pandemic.

2.4 In terms of framing the uncertainty, there are many unknowns. For example, we

- do not know whether or when there will be a medical resolution to COVID-19. There is no guarantee of an effective vaccine or treatment in the short-medium term;
- do not know whether surviving COVID-19 grants immunity and thereby whether herd immunity will build in populations;
- do not know whether COVID-19 will be seasonal with potentially stronger waves in e.g. winter months; and
- know most policy/behavioural response will therefore be incremental and tactical as the situation continues to evolve.

2.5 There are two most important and inter-related drivers of future uncertainty as a result of COVID-19. These are:

- **The Economy**, while the economy is now in recession (two quarters of negative growth), the scale and timing of future recovery is uncertain. In broad terms, there is a positive relationship between economic activity and travel demand.
- **Medical COVID-19 Drivers (COVID-19 resolution and social distancing)**, whereby the extent, nature and management of the coronavirus will affect advice and behaviour on who, when, where, for what purpose, how and how often people travel. Scenarios range from 'lockdown' (no effective treatment, no vaccine) to 'unrestricted movement' (e.g. effective treatment and successful vaccine) with mid-range scenarios where more effective treatment / management of coronavirus allows for managed / regulated movement. Any scenario which entails restrictions on, and management of, movements will almost certainly have a disproportionate effect on public transport demand.

- 2.6 Medical scenarios will have a direct bearing on the economic uncertainty, as much transport demand is a 'derived demand' stemming from economic activity (commuting, shopping, business trips etc.). However, as movement is restricted people and businesses will increasingly seek to maintain economic activity by means that avoid travel where possible (working from home, internet shopping, virtual meetings etc.).
- 2.7 There is clearly uncertainty about whether COVID-19 transport demand responses (e.g. home working, video conferencing) are temporary, have accelerated existing trends, or will fundamentally change the nature and location of economic activity.
- 2.8 The timing, scale and nature of societal change (and therefore potential demand responses) will be affected by the success, or otherwise, of the transition to normality.

Implications for Edinburgh Tram – Impact on Key Drivers of Demand

- 2.9 The above will have implications on the drivers of future demand (and revenue) for Edinburgh Tram in the medium to long-term. Specific drivers/ segments we have considered in developing scenarios consider are:
- **Airport demand**, informed by:
 - Industry-wide perspectives on likely impacts on air travel demand
 - Airline capacity and supply
 - Implications for Edinburgh Airport given the specific passenger composition (e.g. significantly higher inbound tourism demand compared to most UK airports, but also strong domestic market).
 - **Future development** – housing and jobs growth, and future land use
 - Planning-led perspective – what is in current pipeline.
 - Response-led perspective, i.e. uncertainty about how COVID-19 will affect business location decisions and people's choice of where to live/ work. This, in turn, could affect the timing and viability of future development.
 - **Future travel patterns / demand** (overall trip rates)
 - Implications of greater home working, on-line shopping etc, and implications for commuting, business and leisure trips.
 - **Future modal preferences**
 - Will temporary increase in cycling and walking translate into a more permanent increase in usage of active modes?
 - Will people view public transport differently in the longer-term?

Approach to Developing Scenarios

2.10 The key steps in the approach to developing scenarios are set out below.

Step 1 – Take FBC Forecasts as starting point

- 2.11 The FBC forecasts formed the basis for the economic and financial case presented for the Trams to Newhaven Project FBC. The FBC forecasts were underpinned by an established modelling and forecasting framework. This framework was used to forecast demand for the existing system, where actual (out-turn) demand closely reflects forecast demand. The forecasting framework and FBC forecasts were independently audited on behalf of CEC, and the approach found to be appropriate and consistent with guidance, and the forecasts to be plausible and reasonable.
- 2.12 The FBC forecasts therefore represent, and remain, the appropriate forecasts for a ‘business as usual’ scenario. The emergence of COVID-19 clearly means the ‘business as usual’ has been superseded in the near-term with potential longer-term implications.
- 2.13 The FBC forecasting framework includes a representation of the key drivers of demand outlined from paragraph 2.9. The ‘base year’ forecast includes representation of existing land uses, transport network and trip patterns and trips by mode, while ‘future year’ forecasts represent planned / assumed future development and population growth and changes to the transport network and forecast future transport demand.
- 2.14 The FBC forecasts therefore reflect how the combination of key drivers interact to inform future demand. From this, we have derived the overall demand growth rate (expressed as percentage increase in annual demand) from the demand forecasts and used these as the key input variables for the demand scenario analysis. The relative importance of different drivers varies by demand segment such that, for example, the annual growth in airport demand within the FBC is higher (being underpinned by forecast airport passenger demand) than for the Newhaven extension.

Step 2 – Establish Key Parameters for Scenario Development

- 2.15 The construction of scenarios is based on looking at annual demand over a period of 60-years (this is the length of the economic appraisal). Within this, each scenario is constructed based on a consideration of:
- **Key Demand segments**, comprising:
 - Airport demand – demand to / from Edinburgh Airport
 - Corridor demand – demand on the remainder of the existing system (i.e. Ingliston P&R to York Place).
 - Newhaven demand – demand on the Newhaven extension, from its planned opening in 2023.
 - **Near, medium and long-term growth assumptions**
 - Near-term, is broadly defined as the period affected by COVID-19 and recovery from COVID-19. This covers the period from 2020 to between 2022 and 2025 (depending on the assumed recovery period). The near-term assumptions were informed by Edinburgh Trams’ assumptions and expectations about how demand would recover, under different scenario assumptions, in the period from 2020 to 2022.
 - Medium-term covers the time horizon that is consistent with the ‘planning horizons’ that informed the FBC demand forecasts. For the Airport the FBC forecasts were

- informed by the Airport Masterplan (to 2045), and those for the corridor and Newhaven up to 2032 (aligned with the City’s Development Planning assumptions).
- Longer-term growth covers the period though to the end of the economic appraisal.

Step 3 – Develop Scenario Definition

- 2.16 We have used our understanding of the potential impacts that COVID-19 has on demand drivers, and an appreciation of Edinburgh context to inform our thinking on scenario development. The scenarios developed are intended to provide a range of possible outcomes related to the short and longer-term impacts of, and demand response to COVID-19.
- 2.17 The key principles of the scenarios were proposed by Steer and agreed with the client during the study definition phase. The application of the scenarios within the study has used the growth rates derived from the FBC forecasts (which reflect the combination of underlying demand drivers) and flexed or tempered these growth rates to align with the principles of the scenario definition.

Status of Scenarios

- 2.18 While the scenarios should not be considered as ‘forecasts’ the confidence in the FBC forecasts (as a reasonable business as usual ‘comparator’ case), and the derivation of implied FBC growth rates for specific demand segments does provide internal consistency within and across the scenarios and is therefore considered a sound and reasonable basis upon which to develop and apply scenarios.

Scenario Definition

- 2.19 We have developed estimates of future Edinburgh Tram demand based on four scenarios in addition to the FBC baseline. These were each discussed and agreed with the Council and its advisors. The scenarios are:
- **FBC Baseline**
 - Forecasts as per 2018 FBC
 - Provides ‘comparator’ case
 - **Scenario 1: ‘Return to Business as Usual’.** Near-term impact; followed by return to ‘business as usual’ (BAU) level of demand by 2025
 - Short-term demand impact of COVID-19 in 2020 and 2021
 - Return to 2019 demand levels by 2022 (2023 for Airport)
 - Return to FBC forecast by 2025 (recovery from 2022 to 2025)
 - **Scenario 2 ‘Return to Business as Usual’ in terms of FBC growth (post recovery period),** but not a full return to full FBC demand in absolute numbers.
 - Short-term demand impact of COVID-19 in 2020 and 2021
 - Return to 2019 demand levels by 2022 (2023 for Airport)
 - Thereafter, return to BAU growth rates, but from a lower base
 - **Scenario 3: ‘Lower future Growth’.** Near-term impact; long-term demand growth fulfilled but at much slower rate.
 - Short-term impact of COVID-19 in 2020 and 2021
 - Return to 2019 demand levels by 2022 (2023 for Airport)
 - Thereafter Long-term demand growth rate at lower rate than previously assumed level
 - **Scenario 4: ‘Permanent Reduction in Demand’.**
 - Short-term impact of COVID-19 in 2020 and 2021

- Return to only 80% of 2019 demand levels by 2022 (2023 for Airport). Thereafter, return to BAU growth rates. In this scenario long-term demand permanently 20% below that of Scenario 2.

- 2.20 The detail of how these scenarios were developed, based on each demand segment, is outlined in Table 2-2.
- 2.21 In the earlier (June 2020) draft of this report Steer considered a fifth ‘no growth’ scenario. This ‘no growth’ scenario assumed that 2019 demand would, from the early 2020s onwards, remain constant over the full period of the financial and economic appraisal (30 and 60-years respectively).
- 2.22 The ‘no growth’ scenario was developed as an illustrative ‘what if’ scenario, and the only one not informed by previous forecasts, or supported by evidence of long-term growth (specifically for the air passenger market). While it was developed to be a pessimistic case, it is also deemed unrealistic, insofar that no growth at all over an extended period is considered highly unlikely.
- 2.23 While none of the scenarios are ‘forecasts’, the four scenarios considered in this report are grounded/ informed by previous forecasts, e.g. on future growth linked to planned development etc. The scenarios considered a combination of short-term COVID-19 impacts (framed by when market segments would return to pre-pandemic demand levels) and industry views on future growth based on returning to or a tempering of previously assumed growth. The No Growth scenario was not grounded in the previous forecasts, nor informed by available views and evidence on potential future demand.
- 2.24 A ‘No Growth’ scenario is not considered realistic for the Airport demand segment, which accounts for almost half of current tram revenue. While short-term impacts on air travel are significant, there is no industry expectation that air travel will not return to pre-pandemic levels and then increase over time.
- 2.25 On this basis, and in with the agreement of the Council, it was decided that the ‘No Growth’ option be removed.
- 2.26 Scenario 4 represents a grounded and realistic ‘downside’ case.

Near-Term Impacts

- 2.27 Near-term impacts reflect the timescale over which the short-term recovery in demand from COVID-19 could take place. We have considered this separately for airport tram demand and other non-airport tram demand, reflecting the fact that there are discrete factors that affect each. The near-term impacts are framed in terms of considering when demand will recover to pre-COVID-19 (i.e. full year 2019) levels.

Edinburgh Trams Near-Term Scenarios

- 2.28 Edinburgh Trams is currently forecasting a recovery of 2019 actual demand figures in 2-3 years’ time, with a central scenario that demand will effectively recover to 2019 levels by 2022. This assumption has been employed in each scenario. The Edinburgh Trams assumptions also include an assessment of the proportion of 2019 demand that is assumed for the current year (2020) and 2021 – which represents around 40% of 2019 demand in 2020 and just under 90% in 2021 (the 2021 figure assumes a resumption of the normal (pre-COVID-19) timetable).

- 2.29 In addition to the core scenario described and shown in the figure above, Edinburgh Trams has also produced additional near-term forecasts, with a 'low' scenario recovering just 80% of 2019 demand levels by 2021 and 2022, which has been used in Scenario 4 (described later in this Chapter).
- 2.30 As part of this updated report Edinburgh Trams has confirmed that the near-term assumptions remain current.

Aviation Demand – Informing Near-Term Aviation Demand Scenarios

- 2.31 In 2019 the total Edinburgh Tram Demand was 7.45 million passengers, which represented a 2.1% increase from 2018 levels. While the demand related to airport accounted for 19% of the trips, the impact in revenue was significantly higher, at 49%, due to the premium fare airport users pay compared to the standard fare for the rest of the corridor. These figures demonstrate the relevance of the airport demand segment for ET.

The Industry Perspective

- 2.32 The industry views on the impacts of the COVID-19 pandemic on air traffic are evolving. The International Air Transport Association (IATA's) latest forecasts suggest that overall passenger volumes will recover to 2019 levels by 2024³. This is a year later than the IATA's view at the time of the June draft.
- 2.33 It is noted that significant capacity has been taken out of the market since spring as a result of the reduction in demand and the travel restrictions imposed worldwide. As an example, British Airways, Virgin Atlantic and easyJet have reduced capacity by 30% while other airlines, like FlyBe, have ceased operations and have gone into administration. In the current context of international impacts to the aviation industry, most airlines will not fly their Summer 2020 schedule, although it is expected that the summer season in 2021, starting from March that year, will be closer to normality.
- 2.34 It is less clear when 'supply' from the airlines come back, with the current views being that in 2021 60% will have returned, with an additional 30 to 40% returning by 2022.

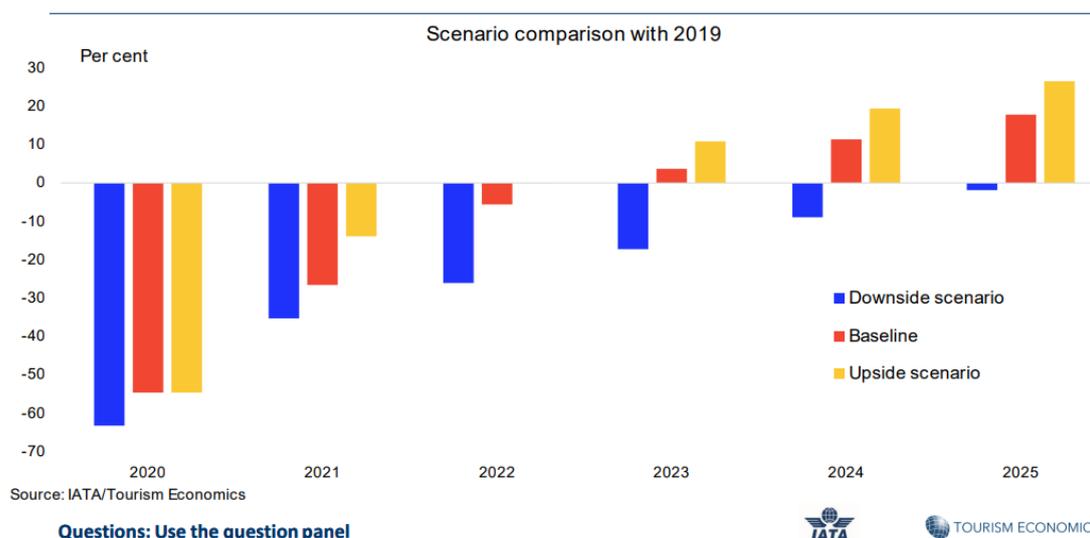
Demand Scenarios

- 2.35 In terms of aviation 'demand' the recovery profile (to 2019 for aviation sectors) is assumed to last 2 to 4 years. The latest available estimates by IATA and Standard & Poor⁴ both suggest that overall passenger demand will return to 2019 levels by 2024. The IATA view (reported in analysis prepared by Tourism Economics and the IATA) is informed by scenario analysis which included both upside and downside scenarios, as shown in Figure 2-1⁵.

³ <https://www.iata.org/en/pressroom/pr/2020-07-28-02/>

⁴ S&P Global Ratings is an American credit rating agency and a division of S&P Global that publishes financial research and analysis on stocks, bonds, and commodities.

⁵ While the 'baseline' estimate shows demand recovery to 2019 levels by 2023, the IATA's stated view that demand recovery is 'expected' by 2024 reflects the fact that the downside risk is greater than the upside risk.

Figure 2-1: Estimates for global air traffic volumes (from IATA/ Tourism Economics)

2.36 The recovery is subject to further uncertainties, such as:

- Duration of or renewed lockdowns due to or related to a potential second infection peak;
- Domestic vs. international travel, where the current view that domestic will recover faster as less impact of quarantine measures and need for bi-lateral protocols;
- Airline capacity and profitability, which affects supply-side (likely to impact smaller and regional airports to greater extent);
- Passenger behaviour. Changes attitudes to business travel and tourism may affect the propensity to travel by air; and
- The economy, as economic growth will affect the underlying drivers of air travel demand.

Aviation Scenario for Edinburgh Airport Tram Demand

2.37 We have not, as part of this study, looked at EDI demand segments (domestic, international, etc.) to inform ‘bottom-up’ scenario development. The current position is too uncertain, and a detailed exercise would be inherently speculative and could deliver spurious results. The scenarios presented in the above figure (industry views) are at an industry-level, and do not reflect the specific nature of EDI or of its market.

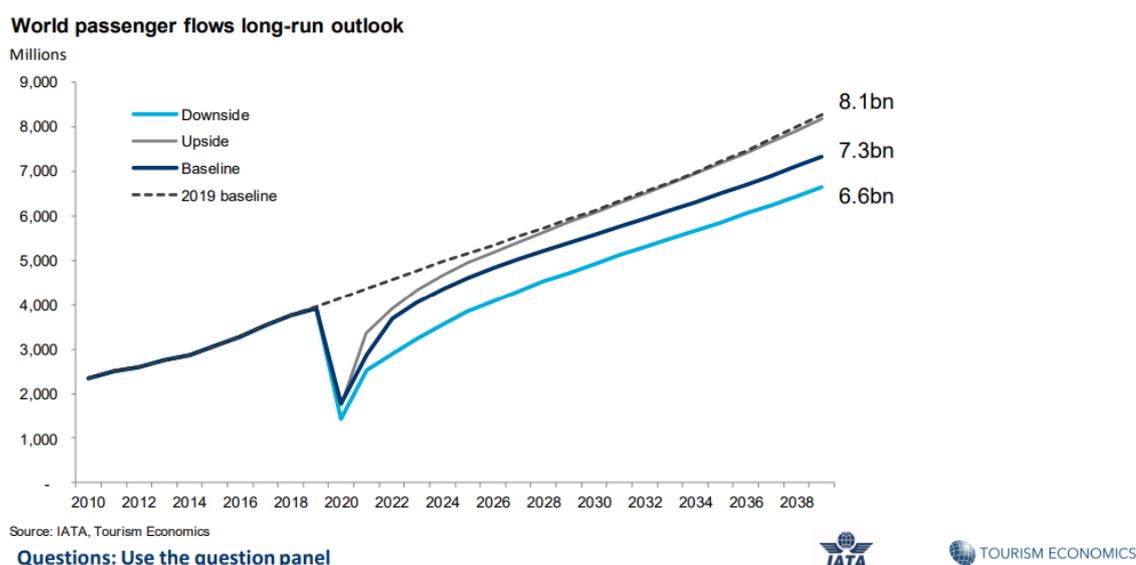
2.38 The FBC included the assumption that Edinburgh Trams airport demand growth would increase in proportion to airport demand growth. This was considered prudent at the time (as tram share had the potential to further increase mode share vs. bus and car over time due to its quality and reliability). COVID-19 may affect users’ modal preferences (e.g. private vs public transport) and / or operators’ response (incl. EDI parking supply / pricing). Our approach is therefore to develop ‘what if’ scenarios that reflect current uncertainty.

2.39 As noted above, since our June draft report the latest industry view is that passenger demand will return to 2019 levels by 2024 rather than 2023. We have not updated the scenarios to reflect this as part of this update, given it represents a relatively marginal change and is implicitly reflected within the scenario ranges presented. Specifically, Scenario 4 (outlined below) represents the effect of Airport passenger demand not returning to 2019 levels until 2030 – implicitly allowing for a further six years to ‘recover’ to 2019 levels above that reflected in the latest IATA view.

Aviation Demand – Longer-Term Demand Scenarios

- 2.40 Tourism Economics / IATA has also prepared a set of air passenger scenarios up to 2039, which comprise both the short-term scenarios (as outlined above and based on the point at which demand recovers to 2019 levels) and scenario projections from that point. Again, the analysis is industry-wide and international so is used to inform our Edinburgh Airport scenarios rather intended to be directly applicable.
- 2.41 That said, the analysis provides useful insight to help frame the Edinburgh Airport scenarios, specifically:
- The IATA downside case represents a return to 2019 levels by 2025, and 2023 in the baseline.
 - The Edinburgh Airport scenarios 1 to 3 assume a return to Edinburgh Airport tram patronage by 2023 (as per the IATA baseline), and Scenario 4 by 2030.
 - In all scenarios, growth post short-term recovery (i.e. beyond the ‘V’ shaped recovery that reflects the sharp dip from early 2020, and sharp rise from the lowest point) is assumed to be robust, at around 3.5% per annum across the scenarios – and essentially a return to trend growth.
 - The Edinburgh Tram growth is around 3% per annum for Scenarios 1, 2 and 4 (representing ‘return to trend’) and 2% per annum for Scenario 3 (low growth).

Figure 2-2 Estimates of long-run global air traffic volumes (from IATA/ Tourism Economics)



- 2.42 While there clearly remains significant uncertainty about future air passenger demand, the analysis above supports the view that Scenarios developed (specifically Scenario 4 where airport demand only recovers by 2030, and Scenario 2 with a prudent longer-term growth assumption) represent prudent downside scenarios.

Public Transport (non-Airport) – Longer-Term Demand Scenarios

- 2.43 There is less evidence or industry views on the longer-term outlook for passenger transport. This reflects two things. First, the focus on immediate commercial and financial impacts (and related negotiations with Government) – whereby the demand reduction due to the pandemic combined with the retention of most passenger transport services at near normal levels,

results in a significant revenue shortfall. Second, that the level of uncertainty is such that it is only sensible to consider broad-based scenarios of the kind we have developed for this study.

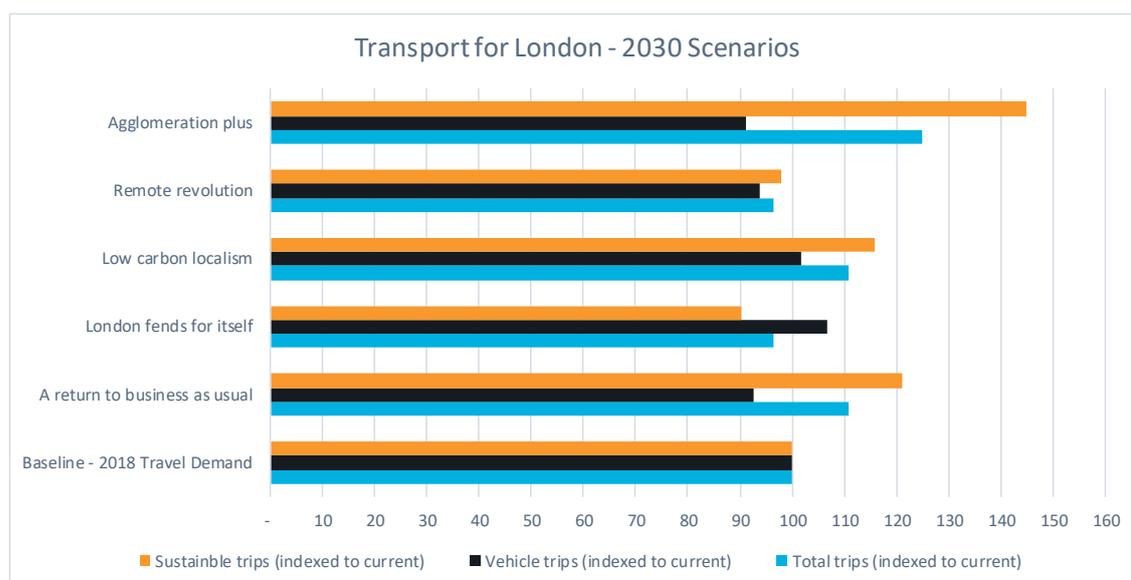
2.44 Transport for London is, as far as we are aware, the only transport authority to have published longer-term demand scenarios⁶. These are explicitly scenarios rather than forecasts but do provide a view on how overall trips and trips by mode could be affected under a range of scenarios.

2.45 The scenario definitions are shown in Table 2-1 and the associated total London-wide trips under each scenario in Figure 2-3.

Table 2-1 Transport for London Future Demand Scenarios - Definition

Scenarios	Scenario Definition
Baseline - 2018 Travel Demand	Current
A return to business as usual	The story of a London which has bounced back quickly from the crisis and looks quite similar to the Draft London Plan.
London fends for itself	The story of a lower growth London, having to cope with the fallout from the virus and a diminished status in the UK and the wider world
Low carbon localism	The story of a more sustainable London, which has been impacted significantly by the virus and become more local as a result
Remote revolution	The story of a successful but quite different city, where technology has changed how people live, work and travel
Agglomeration plus	The story of an expanding but still unequal London, where virus related changes to the economy enhance its global competitive advantage

Figure 2-3 Transport for London Future Demand Scenarios – Trips (indexed to 2018)



⁶ <http://content.tfl.gov.uk/board-20200729-agenda-papers.pdf>

2.46 The scenarios are based on London, but they also capture some of the potential uncertainties and impacts that are germane to Edinburgh. By expressing the demand in future scenarios to the base level (indexing to 2018, where 2018 = 100), it allows for easier comparison.

2.47 Some key points from the scenarios are:

- Sustainable trips (which include public transport and active modes) vary from between a reduction of 10% compared to 2018 levels (under the worst case) to an increase of over 40% in the best case – with the return to business as usual having an increase of around 20%.
 - The level of increase to 2030 under the TfL BAU scenario is similar to that for Edinburgh (Scenario 2 ‘Return to Business As Usual’).
 - The level of demand under the two worst case scenarios (‘London fends for itself’ and ‘remote revolution’) is, at between 90% to 100% of 2018 demand by 2030, comparable with the demand under the Edinburgh Tram Scenario 4 (represents around 94% based on composite ‘corridor’ and Newhaven demand).

2.48 While the TfL and Edinburgh scenarios have been developed wholly independently, and will differ in several respects (reflecting city and modal focus), they do suggest that there is a degree of comparability in terms of both the thinking used to inform the scenarios and the scenario outputs in terms of the implied change in future public transport demand.

Scenario Assumptions

2.49 As part of the study we developed the scenario assumptions and forecasts based on the agreed scenario definition (the key principles of each scenario) and the application of those principles based on the approach outlined earlier in the Chapter. The assumptions for each Scenario are presented in the Table below.

Table 2-2: Scenario Near-term and Medium-Term impacts

Scenario	Near-term impact	Medium-term	Notes
Scenario 1: 'Return to Business as Usual' (return to full FBC demand)	<ul style="list-style-type: none"> Return to 2019 levels by 2022 for corridor and Newhaven, based on ET analysis. Return to 2019 levels by 2023 for Airport 	<ul style="list-style-type: none"> Return to full FBC level by mid-2020s⁷. 	Optimistic view of growth post recovery (i.e. recovering 'lost' growth from 2019 – 2023)
Scenario 2: 'Return to Business as Usual' (return to FBC growth)	<ul style="list-style-type: none"> As per Sc 1 	<ul style="list-style-type: none"> FBC growth rates applied post recovery. <ul style="list-style-type: none"> c 3% p.a. for airport segment c 3% p.a. for 'existing' corridor & c 1.4% p.a. for Newhaven 	<p>Better proxy for economic impact, i.e. recessionary effect to early 2020s then recovery.</p> <p>Implicitly assumes same relationship between economic and demand growth as FBC.</p>
Scenario 3: 'Lower future Growth'	<ul style="list-style-type: none"> As per Sc 1 	<p>Lower medium-term growth:</p> <ul style="list-style-type: none"> 1% p.a. for corridor and Newhaven 2% p.a. for Airport 	Lower growth reflects a permanent change in travel behaviour, moderating future growth.
Scenario 4: 'Permanent Reduction in Demand'	<ul style="list-style-type: none"> 80% of ET's central case near-term forecast. 	<ul style="list-style-type: none"> Ramp up of demand but to reach 80% of BAU by mid-2020s Long-term demand growth rate at FBC level (at 80% demand of Scenario 2) 	Reflects a 'what if' scenarios. Implicitly reflects fundamental shift in behaviour.

2.50 All scenarios assume that the service frequency assumed in the FBC forecasts would be maintained. Scenarios also implicitly assume that, beyond the near-term impacts, there would be a return to normal in that social distancing and its impacts on effective capacity would not constrain future demand.

⁷ The FBC growth assumptions for each market segment are set out in Chapter 3, alongside those for each of the scenarios.

3 Scenario Analysis - Tram Demand

Introduction

- 3.1 In this Chapter we present the Edinburgh Tram demand, by demand segment, for the scenarios presented in the previous Chapter. We deal with each demand segment in turn and consider the FBC demand and scenario demand. The assumptions made in each are also presented and discussed.

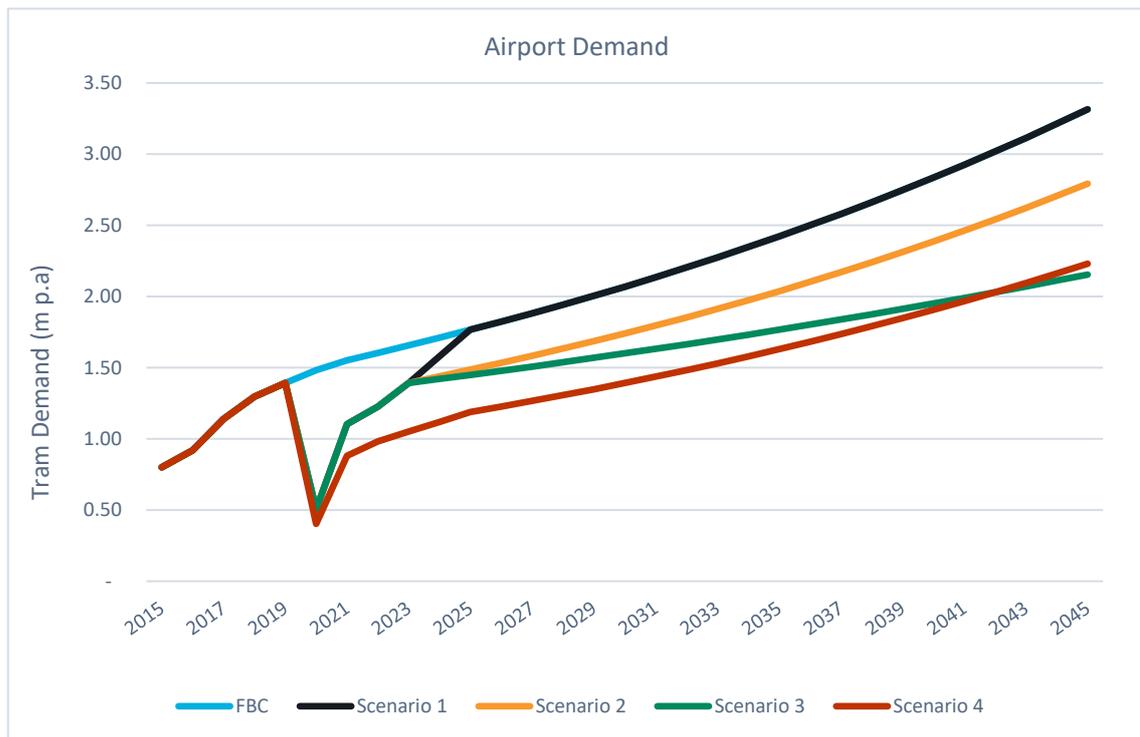
Airport Demand

FBC Demand

- 3.2 The tram demand forecasts for the FBC were based on:
- Actual airport tram demand (2019 estimate based on part year demand)
 - Growth in demand consistent with the growth assumptions underpinning the Edinburgh Airport Masterplan up to 2045. The Masterplan assumes air passenger growth of 6.9%, 5.8% and 4.5% in the years 2019, 2020 and 2021, before reducing to a growth rate of around 3% thereafter.
 - Demand growth of 1% per annum was assumed from 2045 up to a 'demand cap' year of 2049.
- 3.3 Full year 2019 actual airport tram demand was slightly higher than the 2019 estimated figure. For the purposes of our Scenario analysis, we have constrained scenario demand for future years such that it doesn't exceed the FBC level (i.e. by applying FBC growth to a higher actual base).

Scenario Demand

- 3.4 The demand for each of the Scenarios is presented in Figure 3-1.

Figure 3-1: Airport demand segment forecasts

3.5 The key points from the Airport demand scenarios are:

- All scenarios except Scenario 4 (and the FBC comparator case) assume a dip in demand such that recovery to 2019 levels occur in 2023.
- Scenario 1 assumes that all 'lost' growth (from FBC) is recovered in full, by 2025, with demand forecasts equal to FBC from that point onwards.
- Scenario 2 assumes FBC growth rates from 2023, the point from which 2019 demand levels are assumed to be recovered. This is considered a more reasonable view than Scenario 1 given the recessionary effect will mean economic activity may be lower than that implicit within FBC.
- Scenario 3 takes a more conservative view of future Airport growth, assuming a growth of 2% p.a. (closer to GDP and lower than historic / pre-COVID-19 industry forecasts).
- Scenario 4 assumes that short-term impacts result in a long-term shift in behaviour such demand is 20% lower than that previously forecast over the short and longer-term.

Existing Corridor (non-airport) Demand

FBC Demand

3.6 The tram demand forecasts for the FBC were based on:

- Actual corridor tram demand (2019 estimate based on part year demand)
- Growth of just over 3% per annum to 2032. This was consistent with Edinburgh Trams business plan to 2022, and the forecast demand growth from 2022 to 2032 based on the JRC⁸ demand modelling.
- Demand growth of 1% per annum was assumed up to a ‘demand cap’ year of 2049.

Scenario Demand

3.7 The demand for each of the scenarios is presented in Figure 3-2.

Figure 3-2: Existing Corridor (non-airport) demand segment forecasts



3.8 The key points from the corridor (non-airport) demand scenarios are:

- The demand forecast for the scenarios is based on the same principles as for the airport demand segment.
- All scenarios except Scenario 4 return to 2019 levels by 2022 (a year sooner than the airport demand).

⁸ JRC (Joint Revenue Committee) was the previous entity that provided technical support to the Council on Matters related to the development of Edinburgh Tram. The JRC work was undertaken by a team comprising Steer and Jacobs. The JRC contract expired in June 2019, but the Jacobs-Steer team are currently providing advice through the ongoing transport planning and modelling framework, which covers tram-related advice.

- Scenario 1 returns to actual FBC demand by 2025, whereas Scenario 2 assumes a return to FBC annual growth rates from 2022.
- Scenario 3 assumes a growth rate of 1% per annum from 2022. This is much lower than historic demand or FBC forecast to 2032.
- Scenario 4 assumes that short-term impacts result in a long-term shift in behaviour such demand is 20% lower than that previously forecast over the short and longer-term. At this level, demand only recovers to 2019 levels by 2030.

Newhaven Demand

FBC Demand

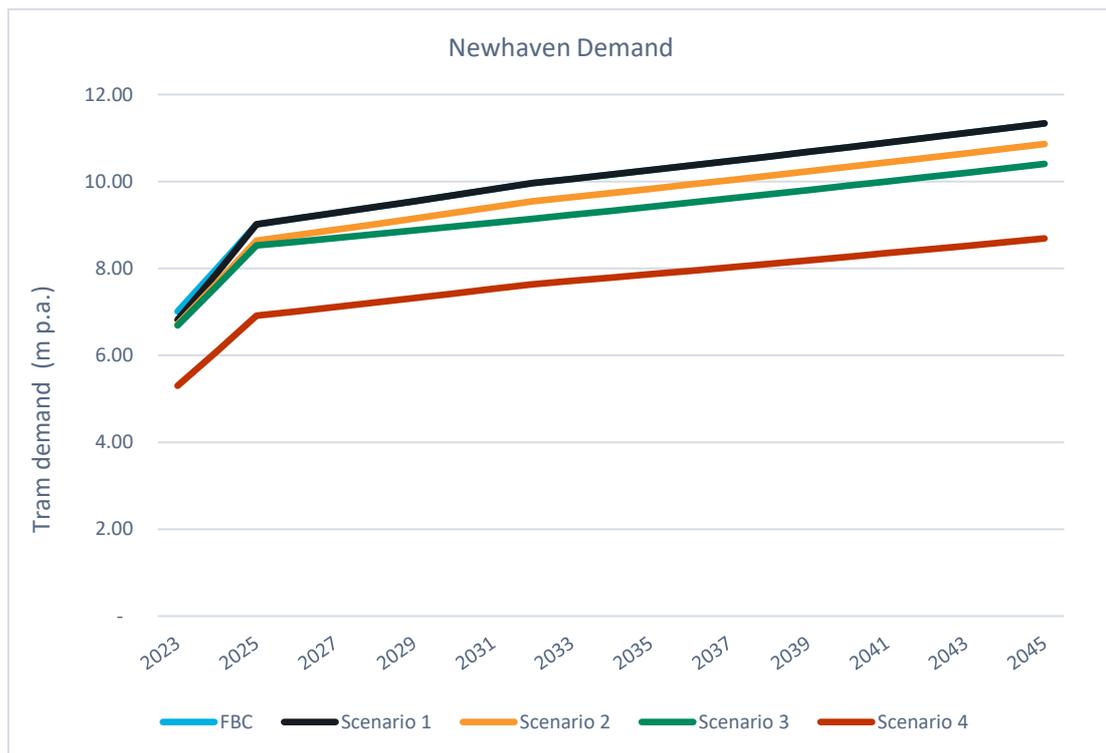
3.9 FBC forecasts of demand for the Newhaven section were based on the JRC modelling suite.⁹

- The FBC demand forecasts for the Newhaven corridor showed a forecast demand of 7.0m in 2023 (this includes an 80% build-up factor) increasing to 9.9m by 2032. After accounting for build-up, the implied annual growth over the period was 1.4% per annum.
- Further demand growth of 1% per annum was assumed up to a 'demand cap' year of 2049, with no growth assumed thereafter.

Scenario Demand

3.10 The demand for each of the scenarios is presented in Figure 3-3.

Figure 3-3: Newhaven demand segment forecasts



⁹ The key model inputs related to demand, network, journey times and planning assumptions were reviewed and, where appropriate, updated as part of the FBC. The model inputs, assumptions and outputs were also subject to independent audit and deemed reasonable and plausible. The fact that the modelling suite that has been shown to forecasts demand for the existing system at levels very close to actual (pre-COVID-19) also lends confidence the its application for the Newhaven section.

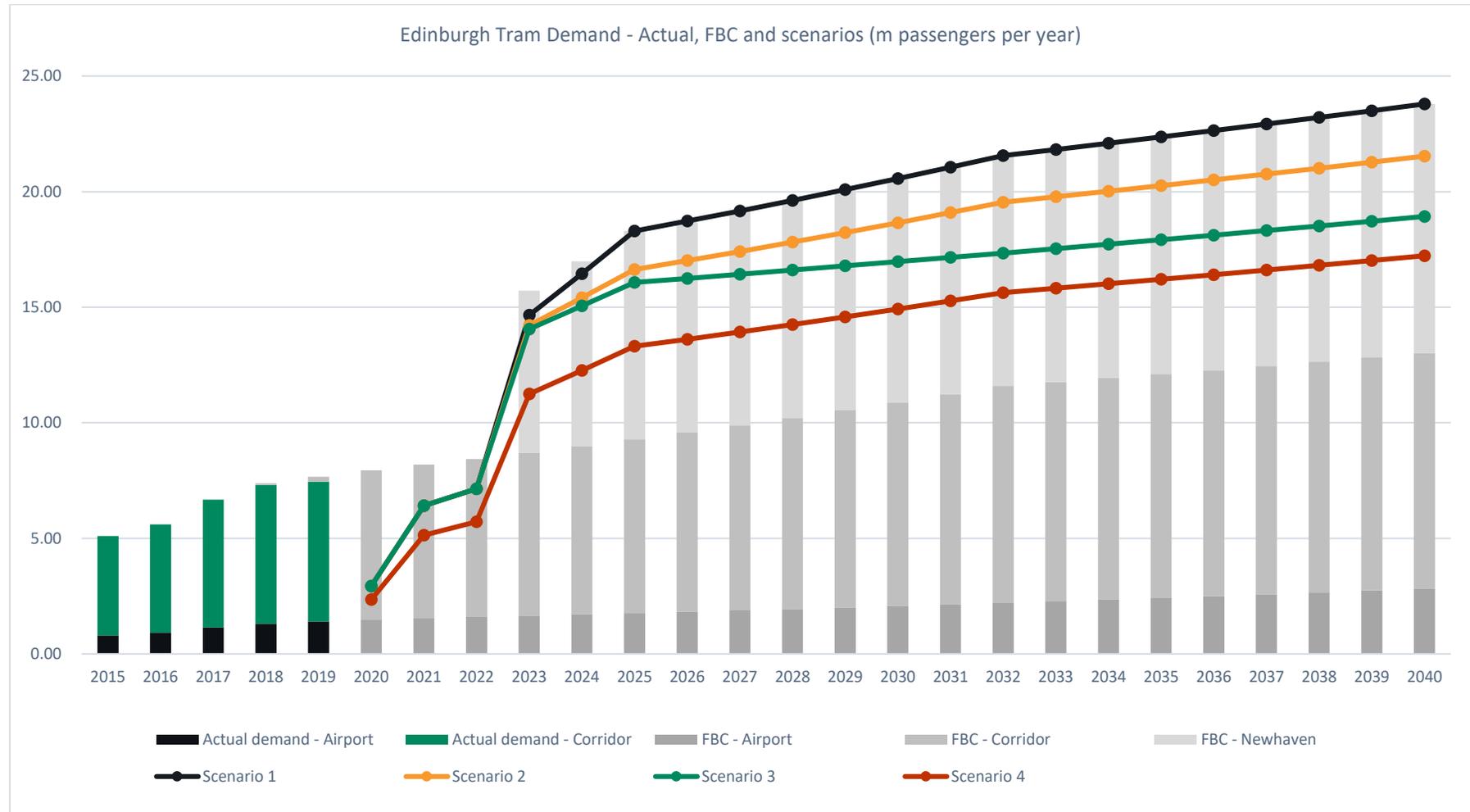
3.11 The key points from the Newhaven demand scenarios are:

- The demand forecast for the scenarios is based on the same principles as for the Airport and corridor demand segments.
- The Newhaven opening date of 2023 means that the impact of COVID-19 is more limited than for the Airport and corridor segments.
- We have 'backcast' FBC forecast demand to proxy 2019 demand, to enact the assumption that demand recovers to 2019 levels. All scenarios therefore have a lower starting point demand than the FBC.
- All scenarios assume a 'build-up' (80% in Year 1, 90% Year 2, 100% Year 3)
- The lower annual growth (within FBC forecasts) mean that the range of outcomes under the scenarios considered is narrower than for other demand segments.

Combined Scenarios

3.12 The combined demand for all segments presented by scenarios is shown in Figure 3-4.

Figure 3-4: Edinburgh Tram Demand- Actual, FBC and Scenario



Sensitivity Testing – Extended COVID-19 Recovery

- 3.13 There remains some uncertainty about the timing of the recovery from COVID-19, and of when social distancing measures will no longer be necessary. Our scenarios take a current view, informed by the industry, of when this could occur.

Downside Sensitivities

- 3.14 However, recognising the uncertainty about the duration of the pandemic and therefore the point at which ‘recovery to 2019 demand levels’ is reached, we have undertaken two ‘downside’ sensitivities which show demand by year on the assumption that 2019 demand levels are not reached until 2025, for all segments. These downsides are variants of Scenarios 2 and 3, so have been named 2a and 3a, with the scenario specification as set out in Table 2-2.

Table 3-1: Sensitivity Analysis – Scenario Description

Scenario	Near-term impact	Medium-term
Scenario 2: ‘Return to Business as Usual’ (return to FBC growth)	<ul style="list-style-type: none"> Return to 2019 levels by 2022 for corridor and Newhaven, based on ET analysis. Return to 2019 levels by 2023 for Airport 	<ul style="list-style-type: none"> FBC growth rates applied post recovery. <ul style="list-style-type: none"> c 3% p.a. for airport segment c 3% p.a. for ‘existing’ corridor & c 1.4% p.a. for Newhaven
Scenario 2a: Extended Recovery, then ‘Return to Business as Usual’ (return to FBC growth)	<ul style="list-style-type: none"> Return to 2019 levels by 2025 	<ul style="list-style-type: none"> As per scenario 2
Scenario 3: ‘Lower future Growth’	<ul style="list-style-type: none"> As per Sc 1 	Lower medium-term growth: <ul style="list-style-type: none"> 1% p.a. for corridor and Newhaven 2% p.a. for Airport
Scenario 3a: Extended Recovery, then ‘Lower future Growth’	<ul style="list-style-type: none"> Return to 2019 levels by 2025 	<ul style="list-style-type: none"> As per scenario 3

- 3.15 There is no equivalent sensitivity presented on Scenario 4, as under Scenario 4 demand doesn’t not recover to 2019 levels until 2030.
- 3.16 The results of Scenarios 2a and 3a, presented alongside those of Scenario 2, 3 and the FBC scenarios are presented in Figure 3-5 (Airport segment) Figure 3-6 (Existing corridor) Figure 3-7 (Newhaven) and Figure 3-8 (combined).

Figure 3-5: Airport demand scenarios – Sensitivity

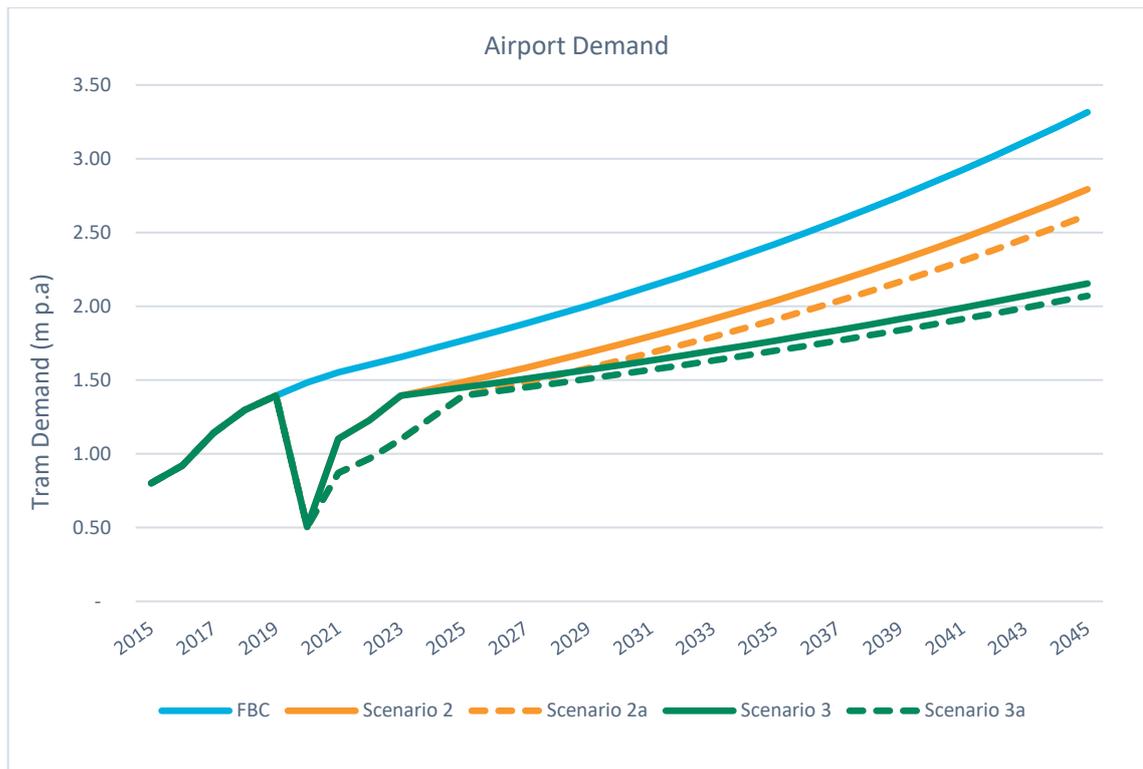


Figure 3-6: Existing Corridor (non-airport) demand scenarios – Sensitivity



Figure 3-7: Newhaven demand scenarios – Sensitivity

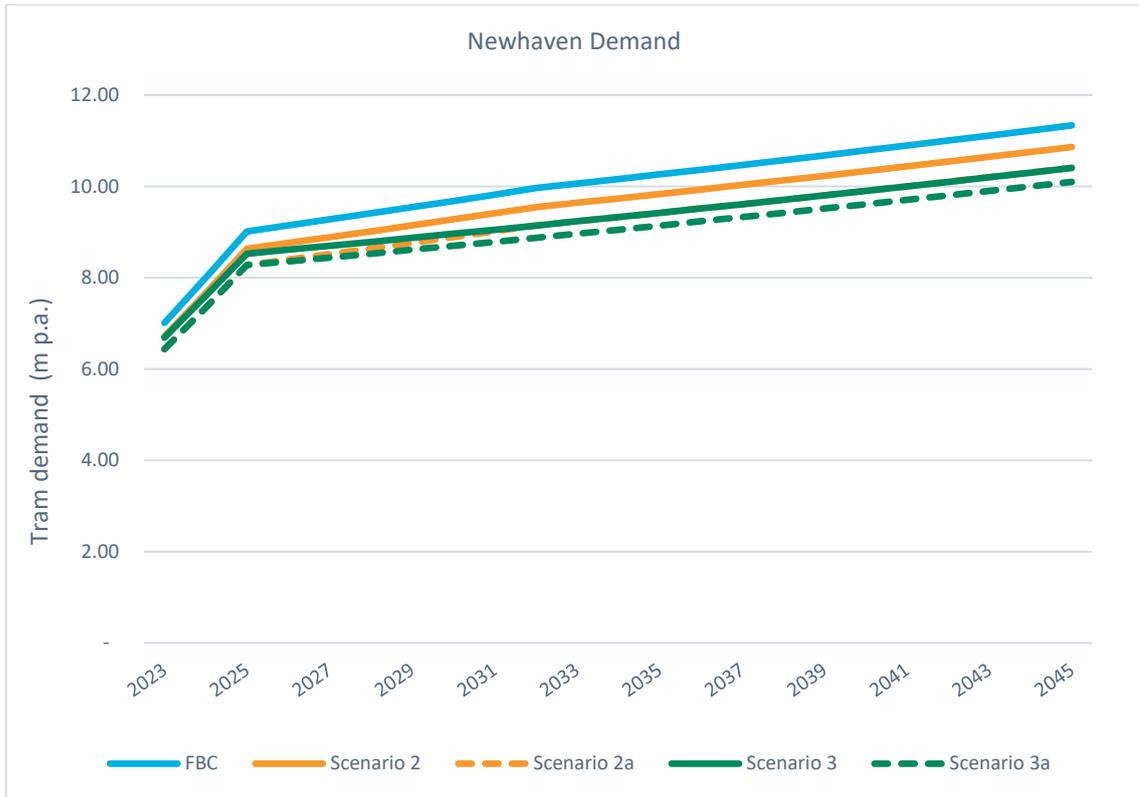
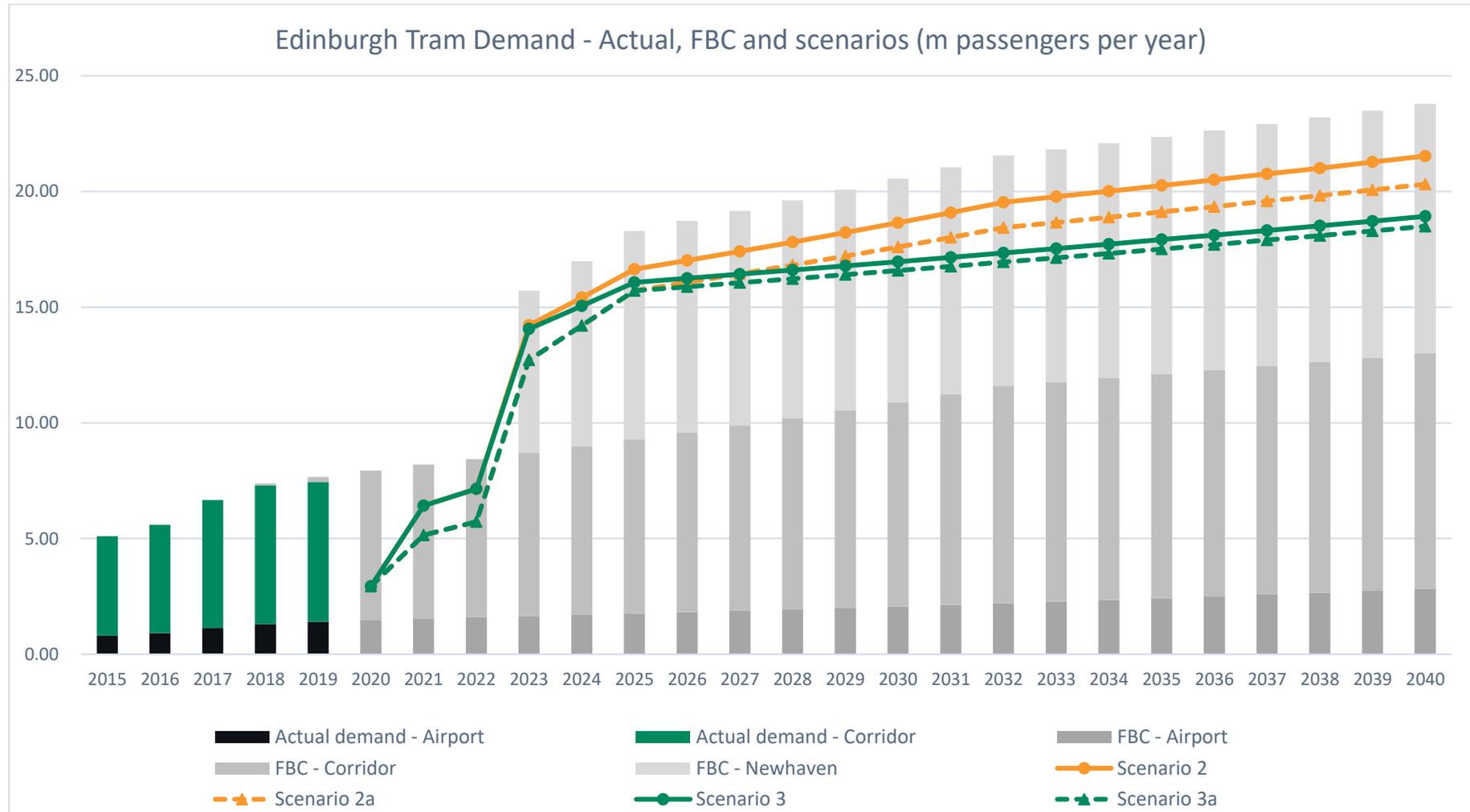


Figure 3-8: Edinburgh Tram Demand- Actual, FBC and Scenarios 2, 2a, 3 and 3a



Policy-Based Sensitivities

- 3.17 The policy context and the City's stated policy priorities has evolved since the FBC forecasts were prepared. This context is described further in Chapter 5.
- 3.18 What is evident, however, is that the direction of travel in terms of policy priorities (climate change, sustainable growth, health and wellbeing) and the supporting interventions (better integrated public transport, priority for public transport and walking / cycling, city centre transformation, car demand management measures) will, *other things equal*, lead to the development of a transport network where tram would expect to attract higher levels of demand compared to the assumptions made at the time of the FBC.
- 3.19 We have therefore undertaken two sensitivities to reflect the potential scale of this impact. These are a 10% demand uplift and a 15% demand uplift, informed by network integration and policy scenario tests undertaken as part of previous Edinburgh Tram work. The uplift has been graduated over time, such that the increase builds up between 2025 & 2030 – this reflect the time taken to interventions and policies to be adopted and implemented, and for the behavioural responses of individuals to manifest themselves.
- 3.20 These tests apply equally to all the scenarios presented, so these are not present in full within this report. The figures have, however, been supplied to CEC to inform their financial analysis.

4 Scenario Analysis – Economic Performance of Trams to Newhaven Project

Introduction

- 4.1 This chapter considers the impact upon the Trams to Newhaven Project, taking account of two separate effects:
- First, the impact on the economic case of the demand reduction scenarios set out in the preceding Chapters.
 - Second, to update the economic case to take account of the additional sunk costs (costs that have already been spent and are irrecoverable) incurred since the FBC.
- 4.2 The economic appraisal of the Trams to Newhaven Project only takes account of the incremental demand / revenue / benefits on the Newhaven section. Whereas the revenues from the existing system (Airport to York Place) do inform the overall financial / funding case, they are treated as within the ‘Do Minimum’ within the economic appraisal.

Economic Case under Demand Scenarios

Approach

- 4.3 We have represented the impact on the economic case through the following:
- Using the Trams to Newhaven Project demand for each demand scenario as presented in Figure 3.4.
 - Assuming that tram revenues and benefits change in direct proportion with annual demand – this is a logical and reasonable assumption.
 - Applying appropriate economic appraisal assumptions to the annual demand over the 60-year appraisal period. This includes the application of a discounting factors and value of time growth applied to annual demand to represent how appraisal treats demand and benefits over time.
 - The steps above are used to develop a ‘demand / benefits’ factor (representing the ratio of demand and benefits over 60-years for each scenario, compared to that of the FBC case), that is applied to the overall FBC benefits, and the benefits are scaled accordingly.

Scenario Results

- 4.4 The results of the economic appraisal for the FBC, alongside the demand scenarios, are presented in Table 4-1.

Table 4-1 Economic appraisal of FBC and scenarios

	FBC	Scenario 1 - return to BAU (to full FBC demand)	Scenario 2 - return to BAU (to FBC growth)	Scenario 3 - Lower future growth	Scenario 4 - permanent reduction in demand
Benefits factor:	1.00	1.00	0.96	0.92	0.77
Total Benefits (£000)	£395,000	£395,000	£379,000	£364,000	£303,000
Total Costs and Financial Impacts (£000)	-£282,000	-£283,000	-£284,000	-£285,000	-£291,000
Economic performance:					
Net Present Value (£000)	£113,000	£113,000	£95,000	£79,000	£12,000
Benefit Cost Ratio	1.40	1.40	1.33	1.28	1.04

Note. Figures have been rounded to nearest 1,000.

4.5 The table shows that:

- The FBC economic appraisal of the Trams to Newhaven Project., as presented in the 2019 FBC, shows a benefit cost ratio of 1.40 : 1.
- Under each of the scenarios, the benefits have been scaled by the demand / benefits factor shown in the table, and described above. The adjustment has also been applied to scheme revenues, which are included within the 'costs and financial impacts'.
- The Newhaven opening date of 2023 means that the short-term impact of COVID-19 is limited in the overall assessment results. This means that under Scenario 1 the economic case for the project remains unchanged from the FBC level.
- The BCR reduces to around 1.3 : 1 under Scenarios 2 and 3 – a modest reduction from the FBC level of 1.4.
- The 'permanent reduction in demand' scenario (Scenario 4) results in loss of just under a quarter of benefits (factor of 0.77). Under this scenario the BCR remains above 1.0 : 1.

Economic Case Excluding Sunk Costs

4.6 The FBC was based on total cost of £207.3m, of which £5.5m had been spent at time of FBC. The FBC costs within the economic appraisal was therefore £201.9m, which excluded the £5.5m 'sunk' costs.

4.7 Costs to date (sunk costs), as of June 2020, are £32m. The economic appraisal has therefore been updated to reflect the current sunk cost total, as presented in Table 4-2. This is presented for the FBC case and each of the demand scenarios, in Figure 3.4.

Table 4-2: Benefit Cost Ratio with cost sensitivities

	FBC	Scenario 1	Scenario 2	Scenario 3	Scenario 4
FBC Costs (FBC & demand scenarios)	1.40	1.40	1.33	1.28	1.04
FBC minus sunk costs (as of June 2020), for each demand scenario	1.51	1.50	1.43	1.37	1.12

4.8 The comparison of the economic appraisal results from the FBC and with the capital cost updated to reflect sunk costs show that excluding current sunk costs of £32m would increase the FBC equivalent BCR to 1.51 : 1, and the BCR would improve under each of the demand scenarios considered.

4.9 We have not updated the sunk costs from the June draft of this report. The inclusion of further sunk costs, reflecting spend between June 2020 and September 2020, would have the effect of increasing the BCR's for the 'FBC minus sunk costs' under each of the scenarios presented in Table 4-2.

Costs of Termination

4.10 In addition to £32m sunk costs (non-recoverable costs already incurred), if the scheme were not progressed there would be additional costs of termination and reinstatement of around £50m.

4.11 In economic terms, the decision to proceed or terminate would be assessed by comparing:

- A termination option, whereby a cost of £50m would be incurred and none of the economic benefits (or ongoing costs of operation etc.) would accrue¹⁰.
- A proceed option, at a capital cost of £175m, delivering appraisal benefits and costs, and a BCR as per Table 4-2.

4.12 The economic case would consider the incremental case for proceeding (incurring the remaining £175m capital costs, and delivering all future appraisal benefits, and future costs) against the termination option incurring £50m costs. Under this construction, the incremental economic case for proceeding (compared to a termination option) would improve to around 1.6 : 1 for the FBC / Scenario 1 cases, to around 1.5 : 1 for Scenarios 2 and 3, and to around 1.2 : 1 for Scenario 4.

¹⁰ As there are no 'benefits' associated with the termination option, there is no associated benefit cost ratio for this option. The termination option is compared to the 'proceed' option – whereby the BCRs presented represents the benefits of proceeding, against the incremental costs (i.e. capital costs minus termination) of proceeding.

5 Strategic Considerations / Wider Narrative

Introduction

- 5.1 Edinburgh Tram was developed in the 2000s as a network concept to meet the wider policy objectives of the City, and to align with national policy priorities. Through the development of the existing line and the Trams to Newhaven project the role of tram in meeting wider policy objectives has been reassessed and validated to ensure alignment with the prevailing policy position. In this vein, the strategic case for the Full Business Case for the Trams to Newhaven Project articulated how tram would support economic, environmental and social objectives.

Current Policy Framework

- 5.2 Since the FBC, there has been further policy development at the national, regional and city level, specifically:

- The National Transport Strategy 2 (NTS2) was published in February 2020.¹¹ The overarching vision is that:

“We will have a sustainable, inclusive, safe and accessible transport system, helping deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors.”

- At a regional level, the Strategic Development Plan 2, will set out the spatial planning priorities across six authorities (Edinburgh, Midlothian, West Lothian, East Lothian, Fife and Scottish Borders). On 16 May 2019 the South East Scotland Strategic Development Plan (SESplan 2) was rejected by Scottish Ministers on the basis that strategic transport infrastructure issues were not properly considered.
 - At the city level, the City Plan 2030¹² (Choices for City Plan consultation took place January to April 2020) will set out the development framework for the city up to 2031, while the City Mobility Plan¹³ sets out key objectives and transport policy priorities in support of the City Plan 2030 and wider national and city policy priorities.
- 5.3 The City Mobility Plan supersedes the Local Transport Strategy for Edinburgh. It provides a strategic framework for proposed interventions aimed at helping the effective movement of

¹¹ <https://www.transport.gov.scot/media/47052/national-transport-strategy.pdf>

¹² <https://www.edinburgh.gov.uk/cityplan2030>

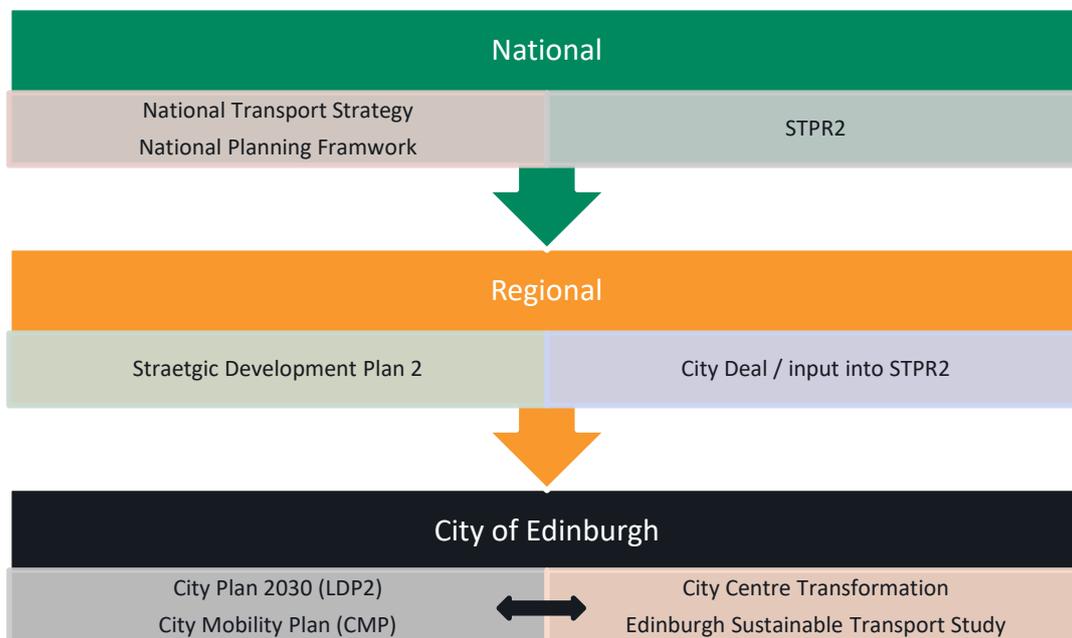
¹³ https://consultationhub.edinburgh.gov.uk/sfc/city-mobility-plan/user_uploads/city-mobility-plan-february-2020.pdf

people and goods around Edinburgh whilst seeking to address associated environmental and health impacts. It comprises a series of objectives and policy measures under the headings of People, Place and Movement which will, collectively, achieve the Vision for the Plan:

"Edinburgh will have a greener, safer, inclusive and connected transport system delivering a healthier, thriving, fairer and compact capital city, and a higher quality of life for Edinburgh residents".

5.4 There are, in parallel, a number of studies and initiatives that aim to further develop and prioritise proposals for interventions that support the achievement of the policy objectives and outcomes. Examples are the STPR2 process at the national and sub-regional level and the development of City Centre Transformation (CCT) at the city level. The current policy framework is summarised in Figure 5-1.

Figure 5-1 Policy Framework



5.5 The Trams to Newhaven Project was, following the Council’s 2019 decision to approve the project, assumed to be committed and an integral component within the development of the City’s spatial development and transport policies.

Policy Objectives and Outcomes

5.6 There is strong alignment across national, regional and local objectives. While the terminology and combination or separation of objectives differs slightly between various policy documents, there are nevertheless consistent objectives across the themes of:

- Sustainable economic growth;
- Equity and social inclusion;
- Tackling climate change; and
- Health, wellbeing and safety.

5.7 This is illustrated by Table 5 1.

Table 5-1: Objective Mapping

NTS 2019	STPR 'Themes'	City Plan 2030	City Mobility Plan
<p>Helps our economy prosper</p> <ul style="list-style-type: none"> • Will get us where we need to get to • Will be reliable, efficient and high quality • Will use beneficial innovation 	<ul style="list-style-type: none"> • Enabling Economic Growth 	<ul style="list-style-type: none"> • A city where everyone shares in its economic success 	<ul style="list-style-type: none"> • to support inclusive and sustainable economic growth
<p>Promotes equality</p> <ul style="list-style-type: none"> • Will be affordable for all • Will be easy to use for all • Will provide fair access to the services we need 	<ul style="list-style-type: none"> • Tackling Inequality 	<ul style="list-style-type: none"> • A city in which everyone lives in a home which they can afford • A city where you don't need to own a car to move around 	<ul style="list-style-type: none"> • Improved equity & social inclusion
<p>Takes climate action</p> <ul style="list-style-type: none"> • Will adapt to the effects of climate change • Will help deliver our net-zero target • Will promote greener, cleaner choices 	<ul style="list-style-type: none"> • Greener and Healthier 		<ul style="list-style-type: none"> • to protect and enhance our environment and respond to climate change
<p>Improves our Health and wellbeing</p> <ul style="list-style-type: none"> • Will be safe and secure for all • Will enable us to make healthy travel choices • Will help make our communities great places to live 	<ul style="list-style-type: none"> • Delivering Safe and Resilient Transport 	<ul style="list-style-type: none"> • A sustainable city which supports everyone's physical and mental wellbeing 	<ul style="list-style-type: none"> • Improved health, wellbeing & safety

Alignment of Trams to Newhaven Project with Objectives

Sustainable Growth and Development

- 5.8 The concept of tram (initially as a 3-line network) was developed explicitly to support the city's spatial planning policies. The City Plan 2030 reaffirms the **established spatial priority areas** such of the city centre, West Edinburgh, South East Edinburgh and the Waterfront. These are shown in Figure 5-2.
- 5.9 Support **sustainable development** through:
- **Supporting Edinburgh's strategic development areas** where employment will be focused, including – the city centre, West Edinburgh, and Newhaven / Waterfront.
 - Supporting the delivery of **new housing / mixed-used development in a sustainable manner**. Tram can increase the scale, rate, density and value (and hence viability) of development, by providing the accessibility, connectivity and capacity for growth.
- 5.10 Supporting **sustainable economic growth** through:
- **Expanded labour market catchments**, enabling businesses to recruit from a larger labour pool and giving workers greater access to jobs.
 - **Increasing the clustering effects of key sectors** (e.g. banking and finance, bio-science, legal and business services). Providing capacity and connectivity to encouraging new forms to invest and locate, further support the success of Edinburgh's high-value economy.
 - Encouraging **modal-shift from cars**, increasing the efficiency of the overall transport network and reducing the economic costs associated with congestion, accidents and emissions.

Figure 5-2: Spatial Vision (from City Mobility Plan draft, 2020)



Equity and social inclusion

5.11 The Trams to Newhaven Project would:

- Provide improved access to jobs, education, healthcare and leisure by creating further opportunities for cross-city journeys - for example it will significantly improve accessibility between Leith Waterfront (an area of high deprivation) and employment opportunities in West Edinburgh.
- A high proportion of lower income / more deprived residents in the Newhaven corridor do not own or have access to a car; consequently, access to public transport is key to their ability to access jobs and services.
- The affordability of public transport is an issue for many. Alongside future development of transit, consideration of a more integrated ticketing system which operates across public transport modes will support social inclusion.

Tackling climate change

5.12 The Trams to Newhaven Project can assist in tackling the causes of climate change by:

- Encouraging modal shift from single occupancy car journeys to public transport.
- Supporting sustainable housing and employment development such as increased density in urban areas and the development of brownfield sites. Higher density urban development reduces the need to travel and encourage shorter journeys and more walking, cycling and public transport usage. The carbon costs associated with providing associated infrastructure and services (electricity, waste, broadband etc) are also lower for higher-density urban development.

Health, wellbeing and safety

5.13 The Trams to Newhaven Project has been developed as part of a corridor solution delivering enhanced public realm and active mode provision.

- The city centre, where the overall City Centre Transformation (CCT) strategy is focused on improving facilities for pedestrians and cyclists, hence supporting healthier lifestyles.
- Safety and security through use of conductors and CCTV at stations.
- Accident reduction through modal shift and reduced car kilometres travelled, and through integrated design.

Network Integration and the Role of Tram in the Delivery of Policy Outcomes

- 5.14 The FBC analysis did not take full account of how tram could support the delivery of transport-related policy outcomes through enhanced network integration and support for delivering the City Centre Transformation (CCT).
- 5.15 Enhanced network integration, as described below and which reflects existing and emerging policy, would have a positive impact on tram demand and revenue, support a more efficient overall transport network, and combine to deliver against key objectives.

City Centre Transformation

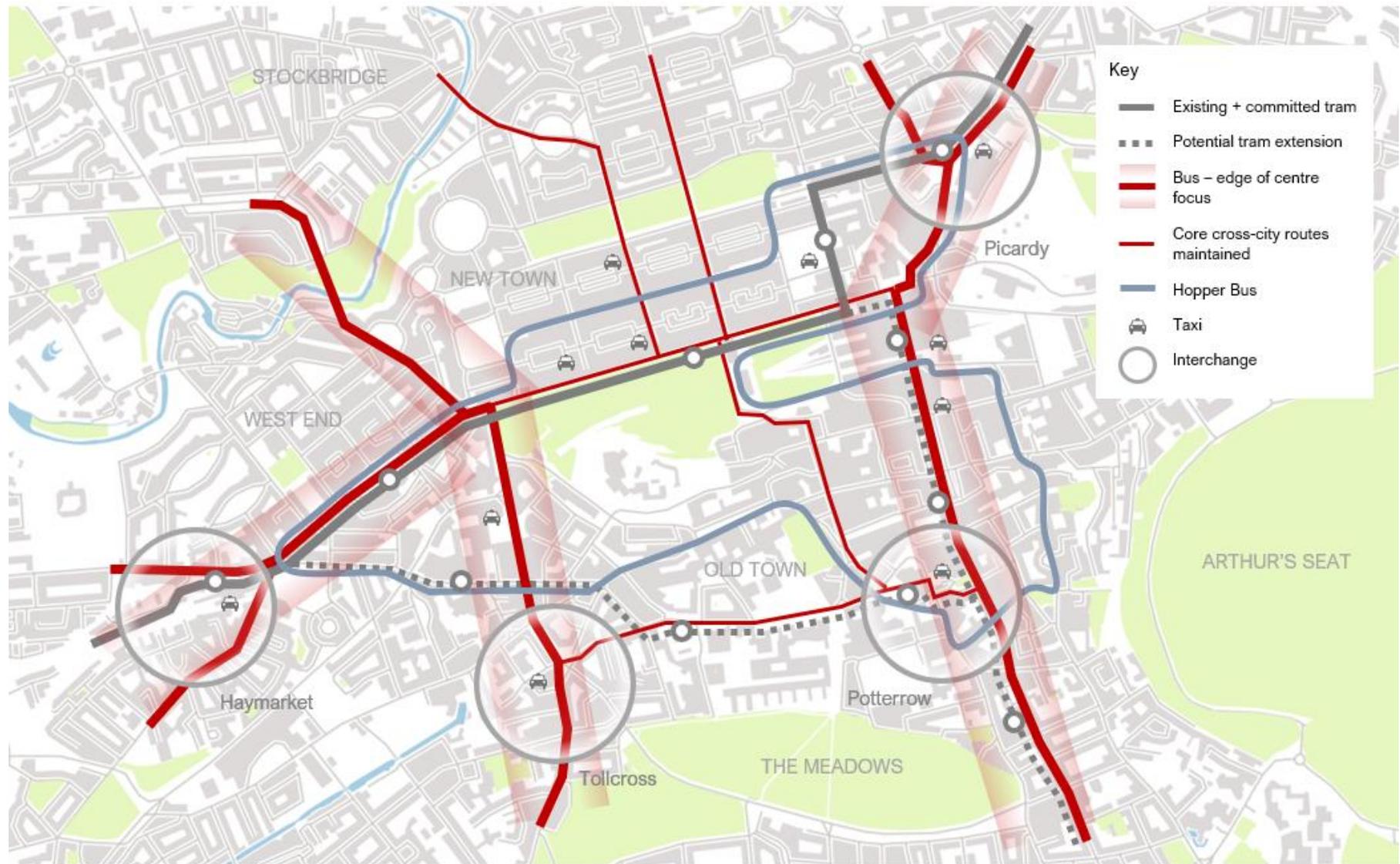
- 5.16 The vision of the City Centre Transformation Project has been to create a city centre for all, a place for people to live, work, visit and play. The vision also aims for a city centre that is a place that is at the heart of Edinburgh's communities, its cultural life, the focal point for its economy and one of Scotland's most iconic and important locations.
- 5.17 The CCT strategy proposes a wide range of interventions to provide a more liveable city centre in terms of active travel, public transport, traffic reduction and quality of open space. The strategy is supported by a ten-year delivery plan.
- 5.18 Across the whole of the city centre, the strategy will seek to deliver:
- A **walkable city centre** core right at the heart of the World Heritage Site, enabled by a **pedestrian priority zone** and a network of connected, high-quality, car-free streets;
 - **High-quality streets and public spaces** where improvements allow for people to be inspired by the city's unique heritage while they interact, relax or play;
 - A connected network across the city centre of **new segregated and safe cycle routes** to link communities and destinations, including the potential provision of a **new walking and cycling bridge connecting the Old Town and the New Town**; and
 - A **free city centre hopper bus** to support people moving around a city without a car, linking city centre communities.
- 5.19 The strategy seeks to promote public transport through improved journey times and service reliability. Options explored include limited bus stop rationalisation, improved traffic signal sequencing and the rerouting of selected bus routes to improve core performance. Instead of all routes crossing the city centre via Princes St, some would instead 'kiss' the centre as shown in Figure 5-3.

The Role of Tram

- 5.20 To deliver the emerging strategy, there is a requirement for modal shift to public transport to help deliver a 10-15% reduction in city centre car traffic in the medium term and a 25-30% reduction in the longer term..
- 5.21 City Centre Transformation recognises the importance of tram in delivering a step-change in public transport provision, and being a fundamental enabler of providing the cross-city connectivity whereby the Trams to Newhaven Project would provide both the service and capacity to enable an associated reduction in bus volumes, especially along Princes St. Indeed, the CCT proposals also included the potential for a second cross-city route and south-east Edinburgh route.

- 5.22 Tram vehicle capacity is between two and three times that of bus, which means that tram can provide public transport capacity through the city centre with significantly fewer vehicles which, in turn, enables an improved city centre environment for pedestrians and cyclists.
- 5.23 Under the outline CCT proposals, the Trams to Newhaven Project would serve to provide integration with the proposed 'hopper bus', and other bus services (which would serve the edge of the centre rather than running through the centre) at Picardy Place and Haymarket.
- 5.24 Without the through capacity offered by Trams to Newhaven and the network integration (essential to enable a reduction in through bus services), the CCT strategy may need to be fundamentally reconsidered.

Figure 5-3: CCT Public Transport Map



Bus Network Integration

Principles of Developing an Integrated Tram and Bus Network

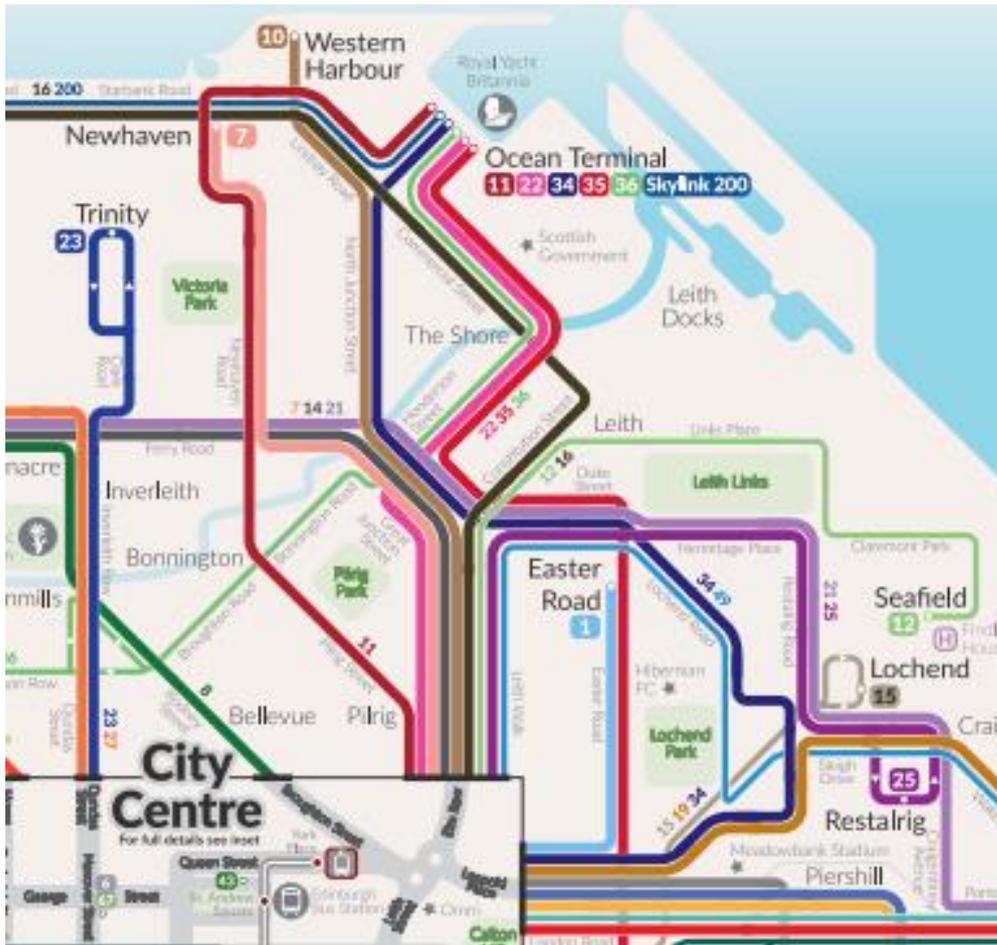
- 5.25 Lothian Buses, though majority owned by CEC, is a commercial entity in a competitive market acting at arms-length from its major shareholder. This has various consequences:
- Any assumed bus changes cannot be guaranteed to take place
 - Another bus operator may commence services in the area, potentially in direct competition with Lothian Bus and/or Edinburgh Tram
 - Lothian Buses has a competitive incentive to provide highly comprehensive services including in the Leith area
- 5.26 With that said, the Project provides an opportunity for Lothian Buses to recast parts of its network to complement and work with Edinburgh Tram.
- 5.27 The Project would provide a new high quality, high capacity public transport service operating on the Leith / Newhaven corridor. As such, this affords the opportunity to reconfigure the bus network to ensure that bus and tram services are better integrated with the aim of:
- Maintaining good overall public transport accessibility throughout the corridor
 - Rationalising bus services where there is a duplication of bus and tram provision
 - Realising bus operating cost savings where services can be rationalised¹⁴.
 - Ensuring the operational efficiency of both bus and tram within the Leith Walk / Newhaven corridor. A reduction in the number of bus services will support the delivery of faster journey times on both bus and tram, compared to those possible at higher frequencies, due to reduced bus congestion. This is achievable while increasing the overall public transport capacity of the corridor, due to the higher passenger capacity of a tram.
- 5.28 The bus network recast options also support the wider objectives of the City in respect of:
- **Promoting the integration of bus, tram and other modes.** The City Mobility Plan (CMP) identifies the role of network and service integration, enhanced and new modal interchange, integrated ticketing and travel information in supporting this.
 - **Enhancing the quality of the environment and public realm within the city centre,** in the manner set out in the CCT proposals.

FBC Bus Network Recast Assumptions

- 5.29 The bus corridor between the city centre and Leith/ Newhaven is shown in Figure 5-4.

¹⁴ For the purposes of the FBC these cost savings are included within the economic appraisal. In practice, the buses 'saved' could be redeployed on other parts of the bus network to provide new routes and services that support the City's wider objectives to support sustainable growth and encourage public transport mode share.

Figure 5-4 Current Bus Route Map



5.30 The peak level of service of bus services towards the southern (busiest section) end of the Leith corridor is shown in Table 5-2.

Table 5-2 Current Peak Bus Route Service Frequencies

Service	7	10	11	12	14	16	22	25	49	Total
Buses per Hour (bph)	5	6	6	3	5	6	8	6	4	49

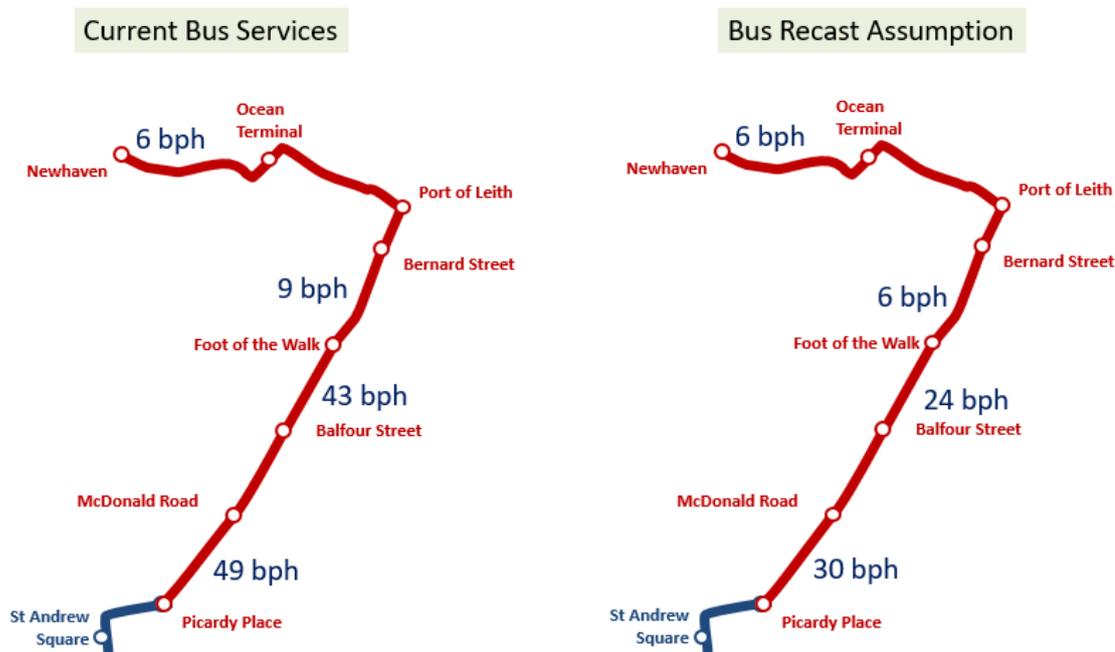
5.31 Within the FBC the 'Central Case' bus recast option was based on Lothian Buses 'with Tram' bus recast proposals, originally supplied as part of our earlier Project Option Assessment work in 2015. There has been no material change to the services provide on Leith corridor. These are shown in Table 5-3.

Table 5-3 FBC 'with Tram' Bus Recast

Central Case Recast	
•	Route 1 extended from Easter Road to Seafield (to replace route 12)
•	Route 10 diverted via MacDonald Rd and Bonnington Rd away from Leith Walk
•	Route 12 cancelled between St Andrew Square and Seafield
•	Route 16 diverted via The Shore and Henderson St away from Constitution St replacing route 22
•	Route 22 cancelled between Leith St and Ocean Terminal
•	Route 25 diverted via Constitution St and The Links part replacing routes 12 and 16

5.32 The resulting changes in bus service frequencies resulting from the assumed recast are summarised in Figure 5-5.

Figure 5-5 Bus Service Frequencies on Project under Bus Recast Scenarios



5.33 Under the recast the service frequency on the section south of Foot of the Walk reduces from 43 bph to 24 bph.

Scope for further Bus Service Review

5.34 Under the FBC recast the overall increase in public transport capacity is in the order of 30% on the section south of Leith Walk (where the most buses are removed) in 2022, and the capacity increase in 2032 (with 16 trams per hour) would be closer to 60%. This suggests that:

- From a capacity perspective there is further potential to consider bus service reductions on the corridor. This would allow services to be reduced through the city centre, aligned with the proposal in the CCT.
- Accessibility and connectivity could be maintained and / or enhanced through integration of ‘feeder’ services serving the tram corridor, and between tram and the city centre ‘Hopper’ proposals suggested in CCT.

5.35 While the FBC recast was based on transport planning-led judgement, there has been no detailed testing, refining and optimisation the bus recast options. As such, it would be reasonable to assume that, with further refinement, the overall performance of the integrated tram and bus network (based on the trade-offs between coverage, frequency, capacity, and cost) could be enhanced through further detailed service planning in advance of opening.

5.36 This has the potential to enhance the overall financial performance of tram (and the public transport network as a whole) and support the wider objectives of CEC through reducing the volume of buses within the city centre.

Integration with Walk and Cycle

5.37 In addition to the CCT, which is focused on improving the quality of provision and the wider environment for cyclists and pedestrians, there are opportunities for further enhancements in active travel provision to integrate with and complement the existing system and Trams to Newhaven Project. For example, key corridors where cycle enhancements are proposed include:

- The Waterfront, starting from Newhaven and along to Portobello / Musselburgh, where enhanced integration with tram at Leith Waterfront could be provided and promoted.
- An active travel corridor serving West Edinburgh and major developments along the Glasgow Road Corridor. Again, West Edinburgh provides a key potential cycle-tram hub.

Demand Management

5.38 The overall policy priority is to promote modal shift from car towards active travel and public transport. The enhancement of active travel and public transport provision can be complemented and reinforced by the adoption of different forms of demand management. Demand management already exists in the form of city centre parking charges, the adoption of city-wide 20mph zones and the allocation of road-space to public transport and cycling in the form of dedicated or shared lanes.

5.39 The CCT proposals include additional forms of physical restraint, where some car movements are restricted or banned to reprioritise space for walking, cycling and public realm.

5.40 The Council also plan to assess the potential for user-charging mechanisms to further encourage modal shift. An example would be a workplace parking levy (WPL), which has been successfully implemented in Nottingham, whereby revenues from the WPL were hypothecated (revenue raised was dedicated to the funding and financing of public transport improvements – mainly tram) towards the development of Nottingham’s tram network.

Summary of Network Integration and Impact on Edinburgh Tram Demand

5.41 Each of the network integration options outlined above reflect current and emerging policy. Each of the measures, on a stand-alone basis, would enhance the potential demand for tram on the existing and planned (Trams to Newhaven Project) network. Moreover, the combined impact of the above measures, developed as an integrated and planned network, would have a further positive impact.

5.42 It is not possible to quantify this impact at this stage, other than that they represent an upside compared to any of the scenarios presented in this report.

5.43 More fundamentally, the Project is part of a long-term strategy which seeks to deliver the key policy outcomes related to sustainable economic development, tackling climate change, promoting equity and supporting health and wellbeing. Tram is integral to delivering this wider strategy through supporting spatial development priorities and integrating with and being a fundamental enabler of city centre transformation.

Policy Levers

- 5.44 The FBC analysis (and by extension the demand scenarios that are based on FBC demand) are based on a 'fixed' set of assumptions across a range of areas including tram service patterns and frequency, fares and equivalent assumptions for all other modes (e.g. bus network and fares).
- 5.45 In practice, the Council (and by extension Edinburgh Tram, Lothian Bus) has a range 'levers' that can be deployed to respond to changes in demand. For example, since opening Edinburgh Trams has increased service levels across the route and provided additional peak services to accommodate demand. In response to COVID-19 services have been reduced.
- 5.46 While there is considerably more uncertainty about future demand related to COVID-19, the demand and economic analysis take account of the range of levers and actions that CEC could deploy to respond to demand change and / or mitigate downside risk. The policy levers available in the shorter term could cover change to tram services/ fares, changes to other modes e.g. improving network integration or scaling services in response to demand. In the longer-term changes to wider planning and transport policy can ensure the potential of tram in delivering wider policy goals is realised, which would also have a positive impact on demand.

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