

Notice of meeting and agenda

Transport and Environment Committee Additional Meeting

2.00pm, Monday 4 September 2017

Dean of Guild Court Room, City Chambers, High Street, Edinburgh

This is a public meeting and members of the public are welcome to attend

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1. Order of business

- 1.1 Including any notices of motion and any other items of business submitted as urgent for consideration at the meeting.

2. Declaration of interests

- 2.1 Members should declare any financial and non-financial interests they have in the items of business for consideration, identifying the relevant agenda item and the nature of their interest.

3. Deputations

- 3.1 If any

4. Executive decisions

- 4.1 Edinburgh Tram – York Place to Newhaven – Updated Outline Business Case
- (a) Presentation by the Project Director
 - (b) Report by the Executive Director of Place (circulated)

5. Routine decisions

- 5.1 None

6. Motions

- 6.1 If any

Laurence Rockey

Head of Strategy and Insight

Committee Members

Councillors Macinnes (Convener), Doran (Vice-Convener), Arthur, Barrie, Booth, Bruce, Burgess, Cook, Douglas, Gloyer and Key.

Information about the Transport and Environment Committee

The Transport and Environment Committee consists of 11 Councillors and is appointed by the City of Edinburgh Council. The Transport and Environment Committee usually meets every eight weeks.

The Transport and Environment Committee usually meets in the Dean of Guild Court Room in the City Chambers on the High Street in Edinburgh. There is a seated public gallery and the meeting is open to all members of the public.

Further information

If you have any questions about the agenda or meeting arrangements, please contact Veronica Macmillan or Blair Ritchie, Committee Services, City of Edinburgh Council, City Chambers, High Street, Edinburgh EH1 1YJ, Tel [REDACTED], email: veronica.macmillan@edinburgh.gov.uk / blair.ritchie@edinburgh.gov.uk

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2.00pm, Monday, 4 September 2017

Edinburgh Tram – York Place to Newhaven Updated Outline Business Case

Item number	4.1(b)
Report number	
Executive/routine	
Wards	

Executive summary

This report provides a summary of the Updated Outline Business Case for the Edinburgh Tram York Place to Newhaven project. The Updated Outline Business Case concludes that the project:

- Complies with all key strategic regional and city-wide plans and can create employment opportunities by linking priority investment zones. The Edinburgh Local Development Plan strategies direct most of the planned growth of the city to the four strategic development areas identified in the 2013 Strategic Development Plan: West Edinburgh; the City Centre; Edinburgh Waterfront; and South East Edinburgh. The project will result in three of these strategic development areas being directly linked by a fast, frequent and reliable transport service.
- Supports the sustainable development of housing on brownfield sites for a growing population. Over the next decade Edinburgh and its surrounding area is expected to be home to a faster growing population than anywhere else in Scotland. National Records of Scotland projections published in 2016 suggest that the city should be planning for an additional 47,000 people by 2024 and an additional 102,000 by 2039.
- Supports employment growth in the city which is projected to grow by 7.6% between 2013 and 2022.
- Serves a corridor of comparatively high unemployment and deprivation and the tram will provide improved accessibility to residents along the corridor to the range of job opportunities in the city centre and along the existing tram corridor.

- Provides high capacity and high quality public transport which is a key dependency of the spatial strategy

The capital cost of the project is estimated to be £165.2m including risk and inflation through to project completion.

The overall construction programme is estimated to be approximately three years plus four months for testing and commissioning. The line is projected to be open to passengers in the second quarter of 2022.

The project has a positive economic impact on the city with every £1 spent providing a return of £1.64.

There are potentially significant wider benefits associated with continuing the tram line into North Edinburgh and supporting the overall level of economic growth of the city through enhancing the viability and attractiveness of major housing and employment sites identified in the local development plan. The tram can help support economic activity (jobs, development, and housing) at a greater level than would otherwise be the case.

Patronage is forecast to double in opening year to over 13million passenger journeys.

In the short to medium-term, an estimated additional funding gap of £1million exists after utilising £20million of assumed extraordinary dividend from Lothian Buses. In the longer term, tram revenues can fund the extension and provide additional income to the Council.

The project team currently engaged by the Council includes personnel responsible for successfully delivering the first phase of tram following mediation in 2011. The delivery strategy for the project has been developed based on lessons learned on the first phase of tram and from other tram projects in the UK and internationally.

Based on lessons learned, the Updated Outline Business Case concludes that traffic management will need to be deployed which facilitates opening large sections of the work site at any one time. This will involve closing three lanes of Leith Walk for approximately 18 months and diverting south bound traffic via Easter Road and Bonnington Road. Sections of road between Constitution Street and Tower Street will also need to be closed to traffic during construction.

A compensation and support scheme for businesses along the route will be put in place and dedicated pedestrian crossing points will be installed every 150 to 200 metres to provide access to both sides of Leith Walk.

Prior to implementing any traffic management, all proposals will be fully modelled in consultation with Lothian Buses, the emergency services, businesses, residents and elected members.

The Updated Outline Business Case also recommends that a gateway approval process is put in place to ensure all recommendations from the Edinburgh Tram Inquiry will be incorporated into the project plans and governance arrangements before contracts for the main construction works are signed.

Edinburgh Tram – York Place to Newhaven Updated Outline Business Case

1. Recommendations

- 1.1 That the Committee:
- 1.1.1 Notes the findings and recommendations set out in the Updated Outline Business Case;
 - 1.1.2 Notes the estimated costs for Stage 2 of the project up to the award of the main contract is £2million and this can be funded through the Council's Strategic Priorities' Fund;
 - 1.1.3 Agrees in principle to the commencement of Stage 2 activities which will keep the project on programme and:
 - Allow affordability to be tested based on tender prices;
 - Provide a further 12 months of evidence of tram patronage build up; and
 - Allow the project to take cognisance of any recommendations arising from the Edinburgh Tram Inquiry currently underway.
 - 1.1.4 Notes that prior to any contracts being signed for the main construction works further approvals will be sought;
 - 1.1.5 Notes that prior to implementing any traffic management, all proposals will be fully modelled in consultation with Lothian Buses, the emergency services, businesses, residents and elected members;
 - 1.1.6 Notes that a compensation and support scheme for businesses along the route will be put in place prior to any works commencing; and
 - 1.1.7 Refers this report to Council to approve the commencement of Stage 2 activities at its meeting on 21 September 2017.

2. Background

- 2.1 The Edinburgh tram system currently operates between Edinburgh Airport and a temporary terminus at York Place in the city centre. Passenger services commenced on 31 May 2014 and passenger numbers have grown consistently over the first three years of operations, reaching 5.6m in 2016.
- 2.2 The Edinburgh Tram York Place to Newhaven route is 4.6km long and includes a mix of shared and segregated running on-street. The junctions at Picardy Place and London Road are reconfigured to allow for the safe operation of tram and general traffic movements.
- 2.3 The existing temporary terminus at York Place is de-commissioned and replaced by a new tram stop at Picardy Place. A further seven tram stops are provided along the route.
- 2.4 In December 2015, the Council approved in principle the option of completing the existing tram line to Newhaven, and approved the commencement of Stage 1 activities.
- 2.5 A commitment was made to update and refine the project financials during Stage 1, and bring a report back to Council by summer 2017 recommending a way forward.
- 2.6 The Outline Business Case (OBC) included at Appendix 1 has been prepared in accordance with Transport Scotland guidance, which implements the business case development process set out in Office of Government Commerce and HM Treasury guidance. The updated Outline Business Case builds on the work done for the Outline Business Case reported to Council in November 2015.
- 2.7 The work to update the Outline Business Case was overseen by the cross-party Transport Projects Working Group, in conjunction with an officer led Project Board to monitor progress and the approved project budget for Stage 1.
- 2.8 A public inquiry led by the Right Honourable the Lord Hardie is underway into the original Edinburgh Trams project. This inquiry aims to establish why the project incurred delays, cost more than originally budgeted and through reductions in scope delivered significantly less than projected.
- 2.9 Oral hearings are expected to commence in September 2017, and these will be followed by a final report making recommendations as to how major tram and light rail infrastructure projects of a similar nature might avoid such failures in future.
- 2.10 The OBC recommends that a gateway approval process is put in place to ensure all recommendations from the Edinburgh Tram Inquiry will be incorporated into the project plans and governance arrangements before contracts for the main construction works are signed.

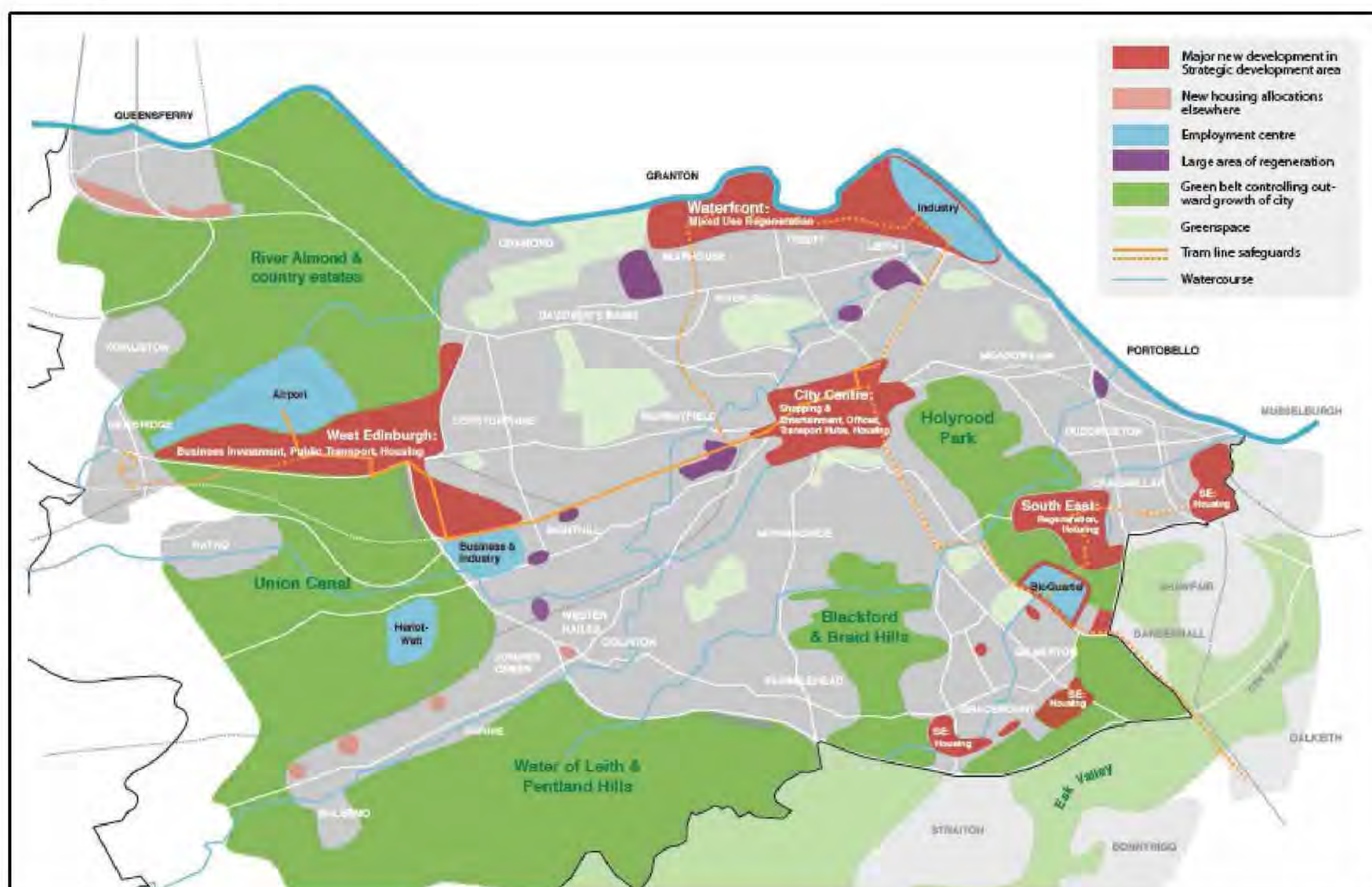
3. Main report

The Strategic Case

- 3.1 The development of transport infrastructure plays a key role in shaping the pattern of future growth and development, and hence in delivering the spatial strategy and the long-term economic growth that this will support.
- 3.2 The project supports the spatial development strategy and the wider economic objective of supporting the planned population and jobs growth within Edinburgh in a sustainable manner.
- 3.3 The OBC sets out the rationale for investment in the Edinburgh Tram York Place to Newhaven project, by reference to existing strategic developments and transport strategies and plans including:
 - The Edinburgh City Region Strategic Development Plan;
 - The Edinburgh Local Development Plan;
 - A Strategy for Jobs;
 - Edinburgh Local Transport Strategy 2014 – 2019;
 - Transport 2030 Vision; and
 - Transport for Edinburgh’s Strategy for Delivery 2017 – 2021.
- 3.4 The proposed Strategic Development Plan (SDP) sets out a vision for a city region where it is easier to move around, and where there are better public transport options. It proposes a spatial strategy focused on growth corridors with good public transport options.
- 3.5 Edinburgh Waterfront is a high priority location for growth under the proposed SDP, which notes that the tram is fundamental to achieving a thriving low carbon waterfront community connected to the city.
- 3.6 The proposed SDP identifies significant business clusters as key areas for investment based on their potential contribution to the city region’s economy, and identifies opportunities for continued growth associated with redevelopment of the city centre and expansion in Leith supported by the tram project.
- 3.7 Over the next decade Edinburgh and its surrounding area is expected to be home to a faster growing population than anywhere else in Scotland. National Records of Scotland projections published in 2016 suggest that the city should be planning for an additional 47,000 people by 2024 and an additional 102,000 by 2039, taking the total population from 492,610 to 594,712 over the 25-year period from 2014 to 2039.
- 3.8 Edinburgh is a major employment hub which attracts a workforce from both within the city and surrounding areas. The city’s economy has been relatively resilient during the economic downturn and is set to grow strongly as economic conditions improve. The latest ‘central’ forecast from Oxford Economics predicts

that total employment in the city will grow by 7.6% between 2013 and 2022 (from 324,900 to 349,700).

3.9 The Edinburgh Local Development Plan (LDP) strategies direct most of the planned growth of the city to the four strategic development areas identified in the 2013 Strategic Development Plan: West Edinburgh; the City Centre; Edinburgh Waterfront; and South East Edinburgh, as shown below. The Edinburgh Tram York Place to Newhaven project will result in three of these strategic development areas being directly linked by a fast, frequent and reliable transport service.



3.10 The LDP prioritises housing delivery on brownfield sites, particularly in the waterfront areas of Leith and Granton. Completion of the tram connection to these areas would help boost that delivery. In addition, Leith is one of the defined strategic business centres to which major office development is directed, and a location with significant employment land potential.

3.11 The LDP strategy for retail centres prioritises the city centre, including Edinburgh St James and Leith Walk, as well as defined commercial centres including Ocean Terminal.

3.12 The tram line to Ocean Terminal and Newhaven offers the potential to:

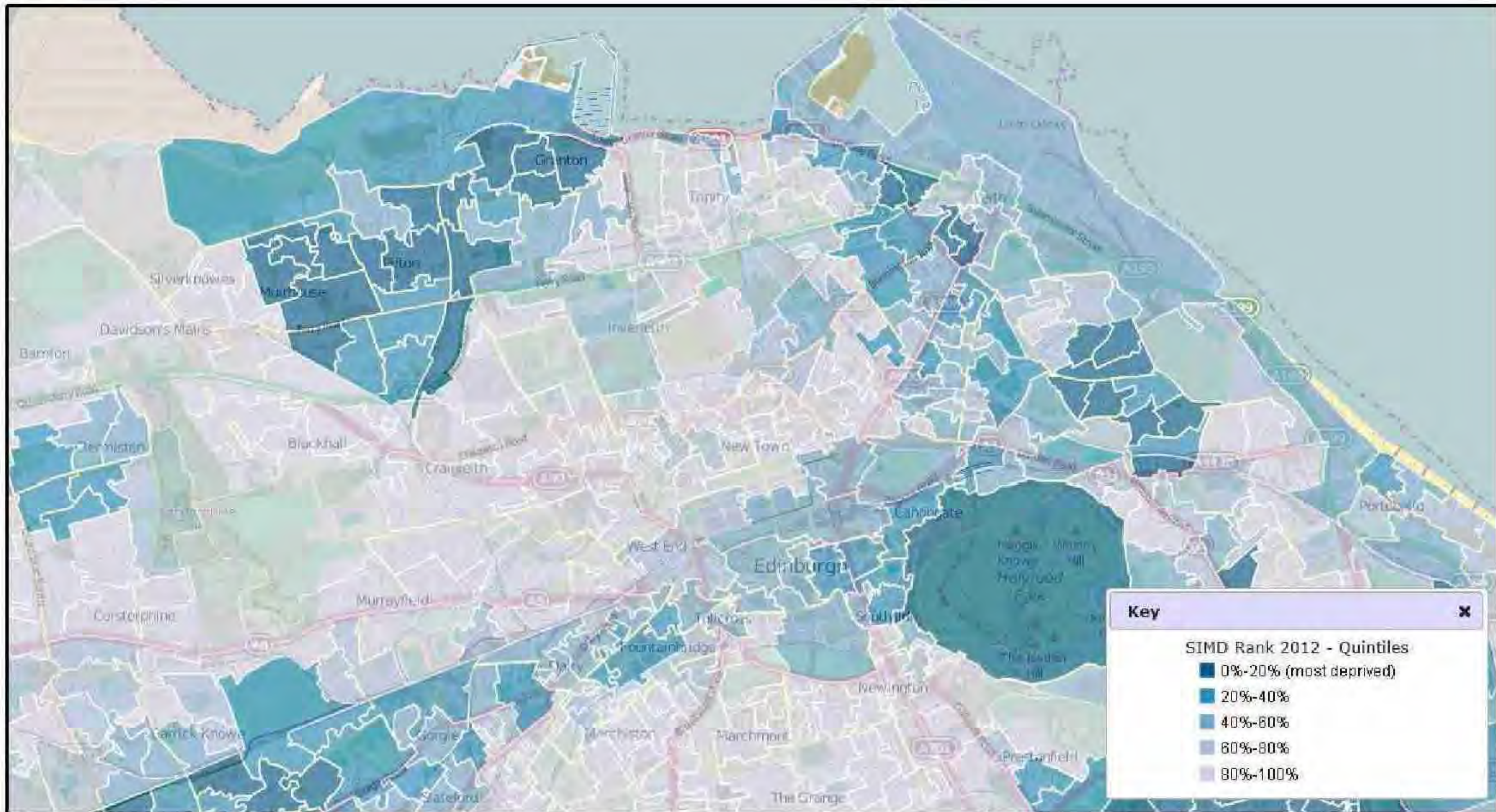
- Increase the attractiveness of major development sites, enhancing their overall viability and potentially bringing them forward at a faster rate than would otherwise be the case; and
- Support the nature and scale of development, by supporting higher density development with a lesser requirement for parking than would be the case without tram.

- 3.13 The City of Edinburgh Council's Economic Strategy for 2012-17 notes that high quality infrastructure and public spaces are vital to Edinburgh's continuing competitiveness.
- 3.14 The Strategy notes that successful completion of the tram project is important for the transport benefits it will bring and is also vital to the city's confidence and its reputation with potential investors:
- "the tram project is transformational and will benefit the city's image, unlock new development, and raise property values along the planned routes. Integration with other transport modes will be the key to realising these benefits."*
- 3.15 Completing the Edinburgh Tram York Place to Newhaven project will link Edinburgh Airport, the city centre and the Waterfront area: three of the Council's four priority investment zones under its strategy for jobs.
- 3.16 The Edinburgh Local Transport Strategy 2014 to 2019 sets the policy context for the completion of the tram route to Newhaven.
- 3.17 The Strategy notes that Edinburgh City Centre forms the commercial heart of south east Scotland and indeed the entire country. It is a centre for finance and business, retail, entertainment, tourism and Leisure. Its World Heritage Site status provides unique opportunities and challenges.
- 3.18 The Strategy notes that one of the key challenges facing Edinburgh is that city centre streets are dominated by motor traffic, and recognises that completion of the first phase of the tram project presents a great opportunity to change this.
- 3.19 The project will facilitate the Council's plans to:
- improve the pedestrian experience in the core city centre area and increase space for pedestrians;
 - improve access to the city centre;
 - increase space for other uses (e.g. street cafes, entertainment, markets);
 - offer dedicated cycle provision in the area; and
 - reduce the detrimental impact of motor vehicles on the city centre environment.
- 3.20 Out-with the city centre, the Strategy notes that Edinburgh's growth is focussed in three areas, West Edinburgh (including Edinburgh Park/Gyle and the Airport area), South East Edinburgh and the Waterfront. The Strategy concludes that to grow in a way that protects the city's environment, these areas need supporting transport investment focussed on public transport, walking and cycling.

The Economic Case

- 3.21 The economic appraisal of the Edinburgh Tram York Place to Newhaven project has been revised to take account of updated planning assumptions, scheme design, costs and forecasts.

- 3.22 The economic appraisal has been carried out in accordance with Scottish Government requirements set out in Scottish Transport Appraisal Guidance (STAG).
- 3.23 The forecasting models have been updated to address findings of the independent audit undertaken of the 2015 options assessment business case.
- 3.24 The model has been updated to include calibration to new bus patronage counts in the tram corridor, new traffic count data, observed tram demand, and observed public transport journey times. The forecasting methodology and results have been independently audited.
- 3.25 The annual modelled demand for the existing system is 7.24million for 2022. This compares with observed demand of 5.6million in 2016 and 5.8million for the 12 months from April 2016 to April 2017. With the York Place to Newhaven line the overall demand in the opening year almost doubles to 13.69million, an incremental annual demand of 6.45million trips.
- 3.26 The key findings of the economic appraisal set out in the OBC is that the Edinburgh Tram York Place to Newhaven would deliver a positive economic case, delivering over £1.60 of benefit for each £1 spent. The benefit to cost ratio remains positive under all the sensitivity tests considered.
- 3.27 There are potentially significant wider benefits associated with continuing the tram line into North Edinburgh and supporting the overall level of economic growth of the city through enhancing the viability and attractiveness of major housing and employment sites identified in the local development plan. The tram can help support economic activity (jobs, development, and housing) at a greater level than would otherwise be the case.
- 3.28 In particular the project serves a corridor of comparatively high unemployment and deprivation, as shown below. The tram will provide improved accessibility to residents along the corridor to the range of job opportunities in the city centre and along the existing tram corridor (e.g. Edinburgh Park).



Index of Deprivation (from Scottish Index of Multiple Deprivation Interactive Map)

The Financial Case

- 3.29 The detailed financial model produced for the 2015 OBC has been revised and updated to assess the financial benefits of a tram extension to Newhaven and whether it is affordable to the City of Edinburgh.
- 3.30 The capital cost estimate has been updated by Turner & Townsend for this business case to take into account changes arising from further design development, the latest programme, inflation, and a comprehensive quantitative risk assessment. The capital cost estimate has been independently audited.
- 3.31 The capital cost estimate for the project is based on construction works starting in 2019 and services commencing on the line in Q2 2022.
- 3.32 The results of the updated capital cost estimate are summarised in the table below:

Element	Cost
Construction costs	£114.1m
Risk	£32.8m
Inflation	£18.3m
Projected out-turn capital cost estimate	£165.2m

- 3.33 The financial modelling in the OBC also takes account of projected revenues, operating and maintenance costs and capital replacement costs.
- 3.34 In the short to medium-term, an estimated additional funding gap of £1million exists after utilising £20million of assumed extraordinary dividend from Lothian Buses, compared to the gap if no extension were to be built.
- 3.35 In the longer term, tram revenues can fund the extension and provide additional income to the Council.

3.36 Sensitivity testing has been undertaken on the key assumptions. This shows that increases in capital costs or reductions in passenger numbers of 15% or more would create a significant financial challenge to the Council. The Council has discussed the results of its financial modelling extensively with the management of Edinburgh Trams and is investigating a number of efficiency and income-generating measures which could be implemented to mitigate financial pressures. Further modelling of these actions will be undertaken as part of the next phase of the project and will be reported to Council as part of the next iteration of the business case.

The Commercial Case

3.37 The project team currently engaged by the Council includes personnel responsible for successfully delivering the first phase of tram following mediation in 2011.

3.38 The procurement strategy for the project has been developed based on key procurement objectives and a consideration of the lessons learned on the first phase of tram and from other tram projects in the UK and internationally. These lessons include:

- The use of industry standard contracts to govern the project;
- Rigorous project governance with highly qualified key personnel with experience of delivering light rail projects in the UK and abroad;
- Setting up cross industry networks with other cities including Manchester, Birmingham and Dublin to ensure best practice is being adopted at each stage of project development;
- Adopting traffic management plans that provide the contractor with expanded sites to ensure that works can continue in the event that problems are encountered during construction as well as adopting a strategy of only opening up roads once and completing all works prior to reinstatement - no double-dig;
- Carrying out robust quantitative risk analysis and ensuring the contingencies set aside for unforeseen events;
- Ensuring robust measures are incorporated into the construction contracts to ensure build quality, and a strong client team is present on site to monitor build quality; and
- Carrying out comprehensive formal consultation with the market to road test the overall delivery strategy for the project and encourage strong competition.

3.39 The OBC recommends that the project is delivered under a design and build contract, incorporating tram infrastructure and tram control and communications systems

- 3.40 It also concludes that utility conflicts should be carried out in conjunction with the main infrastructure works, either by the main contractor or under a separate contract.
- 3.41 The suitability of the project for a private finance initiative was examined. There is likely to be little or no market appetite for taking full construction risk which would negate a private finance approach.
- 3.42 Consideration has been given to the appropriate form of contract and the OBC recommends that an industry standard NEC Option C target price contract is adopted.
- 3.43 A comprehensive risk identification and assessment has been carried out, and recommendations are made in the OBC on an appropriate allocation of risks.

The Management Case

- 3.44 The management case in the OBC sets out how the Council plans to deliver the project to ensure the objectives in terms of cost, time and quality are achieved. The key points are set out below.

Traffic Management

- 3.45 The OBC concludes that traffic management will need to be deployed which facilitates opening large sections of the work site at any one time. This will involve closing three lanes of Leith Walk for approximately 18 months and diverting south bound traffic via Easter Road and Bonnington Road. Sections of road between Constitution Street and Tower Street will also need to be closed to traffic during construction.
- 3.46 The advantages of this approach are as follows:
- Overall programme savings;
 - Economies of scale through completing utility diversions in single phase;
 - Fewer traffic management changes allowing all road users adapt to revised arrangements;
 - Allows for fixed logistic points and well planned support including pedestrian crossing points;
 - Savings on traffic management costs;
 - Flexibility to solve site issues as they arise;
 - More efficient construction and testing; and
 - Better quality road surfacing with fewer transverse joints.
- 3.47 Customer and service access to local businesses will be provided at all times and a detailed logistics and access plan will be developed in consultation with business owners and residents.
- 3.48 Logistic points will be located at centres every 150m to 200m along the areas impacted by traffic management and logistic support officers deployed along the route to assist with deliveries.

- 3.49 A compensation and support scheme for businesses along the route will also be put in place and dedicated pedestrian crossing points will be installed every 150 to 200 metres to provide access to both sides of Leith Walk.
- 3.50 Prior to implementing any traffic management, all proposals will be fully modelled in consultation with Lothian Buses, the emergency services, businesses, residents and elected members.

Construction

- 3.51 Based on lessons learned from the first phase of tram a continuous approach to construction will be deployed wherever possible avoiding the need to excavate twice.
- 3.52 During the construction, testing and commissioning of the project there will be a requirement to terminate services at West End Princes Street tram stop to carry out activities to tie-in the new route with the existing line. This curtailment of passenger service however can be kept to a minimum
- 3.53 A programme has been developed based on the recommended construction delivery strategy and procurement strategy. This concludes that the overall design and construction will take approximately three years plus four months to test and commission the line.

Communications & Governance

- 3.54 A stakeholder management and communication plan has been developed that includes measures such as
- Dedicated communications & engagement team for the project;
 - Dedicated points of contact for residents and businesses;
 - Standard weekly updates during construction;
 - Regular drop in sessions; and
 - Partnership working with the Contractor.
- 3.55 Strong project governance and project management arrangements are in place for the project and these will be developed further during Stage 2.

Way Forward

- 3.56 The 2015 Outline Business Case recommended a staged delivery approach to the project. The Stage 1 activities agreed by Council in December 2015 have been completed within budget and the OBC recommends that the project proceeds to Stage 2.
- 3.57 Stage 2, which is scheduled to take approximately 12 months, is the procurement phase. During this phase a formal OJEU prequalification for the main works will be conducted and a tender shortlist drawn up. This will be followed by a formal tender process; the evaluation of tenders; and the updating of the OBC.

- 3.58 Public consultation will also commence during Stage 2 in relation to Traffic Regulation Orders, traffic management proposals and outline designs.
- 3.59 Turner & Townsend have estimated the costs for Stage 2 of the project up to the award of the main contract at £2million. These costs can be accommodated within the allowances for these elements in the estimates set out in the OBC. In the short-term, this can be funded through the Council's Strategic Priorities Fund. Should the project be approved following completion of Stage 2 and the presentation of a Final Business Case, the majority of this cost could be capitalised allowing for the Strategic Priorities Fund to be replenished.
- 3.60 The OBC recommends that the project proceeds to Stage 2. This will keep the project on programme and:
- Allows affordability to be tested based on tender prices; and
 - Provides a further 12 months of evidence of tram patronage build up.
- 3.61 This approach will also allow the project take cognisance of any recommendations arising from the Edinburgh Tram Inquiry currently underway.
- 3.62 Prior to any contracts being signed for the main construction works further approvals will be sought.

4. Measures of success

- 4.1 The findings of the Updated OBC demonstrate that that an economic case for extending the current tram line would accrue positive benefits to the City. These are set out in this report and in more detail in the Updated OBC.

5. Financial impact

Outline Business Case

- 5.1 The estimated cost of the line from York Place to Newhaven is £165.2million. After allowing for developer contributions of £7.8million and costs already incurred in developing the OBC, there is a net capital investment requirement of £156.6million. The associated financing cost of this investment is estimated to be £9.5million per annum over a 30 year period, based on an indicative loans fund interest rate of 4.1%.
- 5.2 The OBC demonstrates that, in the longer-term, tram revenues can fund the cost of financing and operating the extension and provide additional income to the Council. However, in the short to medium-term, the detailed financial model produced for this updated OBC suggests a likely funding gap of £8million, after utilising £20million of assumed extraordinary dividend from Lothian Buses. The Council will need to finance this from its revenue budget. The break-even point occurs in 2029.
- 5.3 It should be noted however, that the majority of this funding gap (£7million) is associated with the operation of the existing Airport to York Place line, and, if all things remain equal in terms of current operation of the tram network, is

projected to arise in any event. The York Place to Newhaven project thus would only have a marginal impact (additional £1million) on the anticipated short to medium term funding gap.

- 5.4 Sensitivity testing has been undertaken on the key assumptions. This shows that increases in capital costs or reductions in passenger numbers of 15% or more would create a significant financial challenge to the Council.

Stage 2

- 5.5 Turner & Townsend have estimated the costs for Stage 2 of the project up to the award of the main contract at £2million. These costs can be accommodated within the allowances for these elements in the estimates set out in the OBC. In the short-term, this can be funded through the Council's Strategic Priorities Fund. Should the project be approved following completion of Stage 2 and the presentation of a Final Business Case, the majority of this cost could be capitalised allowing for the Strategic Priorities Fund to be replenished.

6. Risk, policy, compliance and governance impact

- 6.1 The recommendations set out in this report are in alignment with all key strategic regional and city wide plans.
- 6.2 Although there are a number of risks which require careful management through the project lifecycle, including risks associated with traffic management and design, the capital cost estimate includes a substantial allowance for risk. This has been calculated using a quantitative risk modelling tool.
- 6.3 The cost plan and economic appraisal and patronage forecasts have been independently audited by Atkins and Faithful & Gould and are thus considered robust at this stage of project development.
- 6.4 Robust governance arrangements are required if the project were to proceed. A key lesson learned from the first phase of tram delivery related to the project governance and contract management structures. The OBC sets out proposal dealing with these issues

7. Equalities impact

- 7.1 The proposals and recommendations described in this report could contribute to the public sector general equality duty to: (i) advance equality of opportunity. There is no distinct relevance in respect of the general duties to; (ii) eliminate unlawful discrimination, harassment and victimisation, or; (iii) foster good relations.
- 7.2 An Equalities and Rights Impact Assessment has been prepared and is available as background reference. There are no direct negative equalities or human rights impacts anticipated.

8. Sustainability impact

- 8.1 The project will be undertaken in consideration of the three elements of the Climate Change (Scotland) Act 2009 Public Bodies Duties. This aligns with the requirements of the Local Transport Strategy. The potential to expand the tram network aligns with and is cognisant of the requirement to reduce carbon emissions and the need to travel. In doing so, this will promote a shift to more sustainable modes of transport that will bring reduced carbon dioxide and nitrogen oxide emissions.
- 8.2 The promotion of a high capacity, high quality public transport system aligns with the LTS and draft Local Development Plan and will help achieve a sustainable Edinburgh, as both documents' actions include improving the extent of the public transport offered in Edinburgh, thus enhancing social inclusion and equality of opportunity.
- 8.3 The proposals to integrate with the St James Quarter redevelopment and Leith Programme initiatives aim to improve facilities for cyclists and pedestrians, thus promoting personal wellbeing.

9. Consultation and engagement

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

10. Background reading/external references

- 10.1 Please refer to November 2015 and December 2015 Council papers.

Paul Lawrence

Executive Director of Place

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Appendices

- 1 – Updated Outline Business Case (June 2017)

Edinburgh Tram York Place to Newhaven Project

Updated Business Case

June 2017

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1 Introduction

Chapter summary

- The Edinburgh Tram York Place to Newhaven project completes the originally envisaged Phase 1a of the Edinburgh tram network
- Edinburgh tram has performed well since its opening, carrying 5.6 million passengers in 2016
- This updated Outline Business Case builds on the work done for the Outline Business Case reported to Council in November 2015, and takes into account the outputs of the Stage 1 design and site investigation activities, and market consultation
- The Outline Business Case has been prepared in accordance with Transport Scotland guidance
- The Council has the powers under the Edinburgh Tram (Line One) Act to complete the Edinburgh Tram York Place to Newhaven project

Project description

- 1.1 The Edinburgh Tram York Place to Newhaven project is a continuation of the tram line, commencing at the current York Place temporary stop and running along Leith Walk, Constitution Street and through the Port of Leith via Ocean Terminal to Newhaven. The project completes the originally envisaged Phase 1a of the Edinburgh tram network.
- 1.2 The route is 4.6km long and includes a mix of shared and segregated running on-street. The junctions at Picardy Place and London Road are reconfigured to allow for the safe operation of tram and general traffic movements.
- 1.3 The existing temporary terminus at York Place is de-commissioned and replaced by a new tram stop at Picardy Place. A further seven tram stops are provided along the route at the following locations:
 - McDonald Road
 - Balfour Street
 - Foot of the Walk
 - Constitution Street/Bernard Street
 - Port of Leith
 - Ocean Terminal
 - Newhaven
- 1.4 The design of the tram alignment takes cognisance of other current and planned projects on the corridor, including the Edinburgh St James development, the Leith Programme and Places for People at Shrubhill.
- 1.5 The route alignment and tram stop locations are illustrated in Figure 1. The alignment is consistent with the route defined in the Edinburgh Tram (Line One) Act, which was developed after consideration of several alternatives. The alignment was reviewed as part of the work to prepare this updated business case and is still considered appropriate.

Edinburgh Tram system

- 1.6 The Edinburgh tram system currently operates between Edinburgh Airport and a temporary terminus at York Place in the city centre. Passenger services commenced on 31 May 2014 and passenger numbers have grown consistently over the first three years of operations, reaching 5.6 million in 2016.
- 1.7 The performance to date in terms of patronage and revenues is shown in Figure 2. This performance is in line with projections made in 2013 prior to the opening of the system, which forecast 5.6 million passenger journeys and revenue of £10.1m for 2016.



Figure 1: Existing tram route and York Place to Newhaven route (blue)

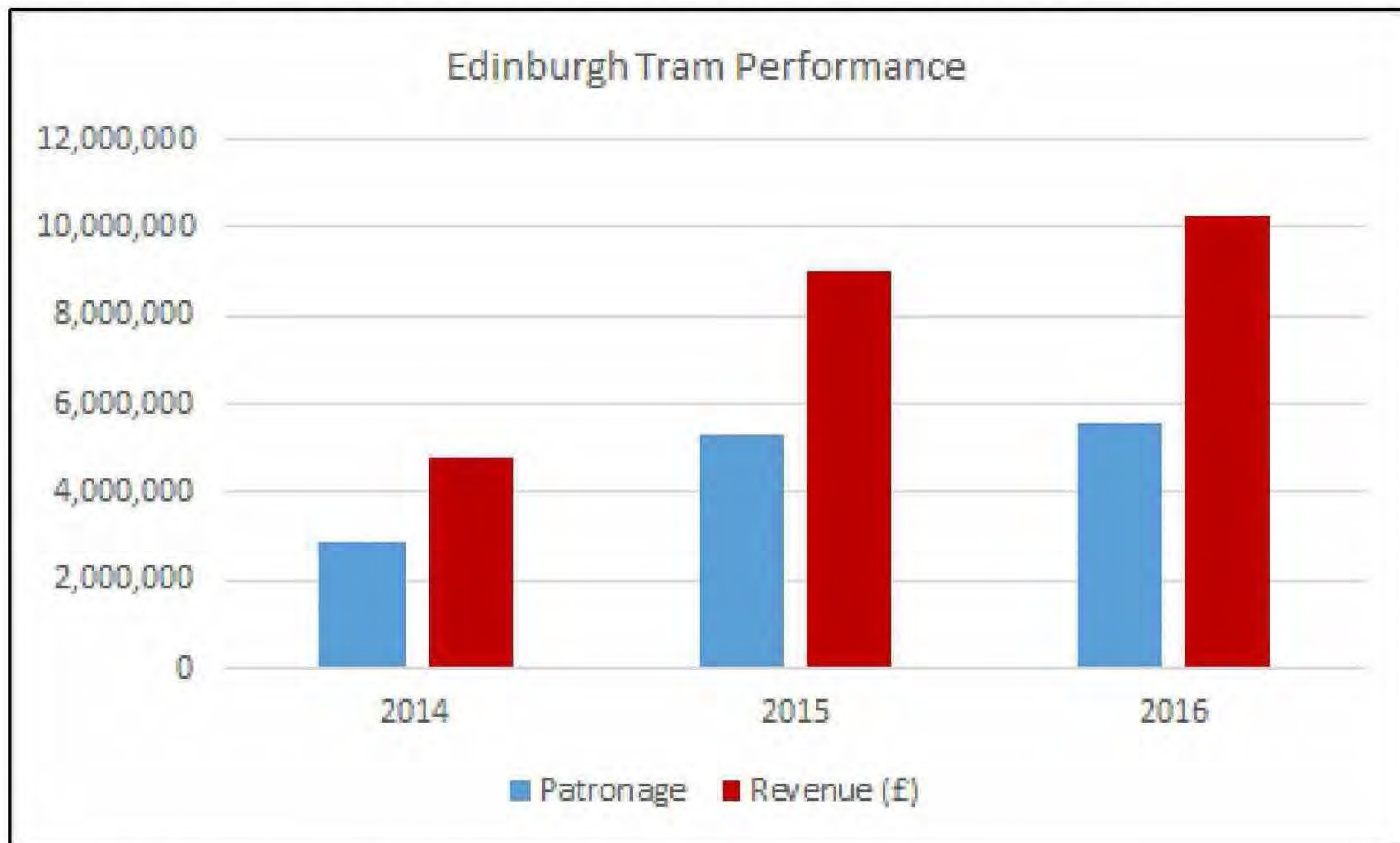


Figure 2: Performance of Edinburgh Trams since opening

- 1.8 The success of the tram to date has seen the introduction of a new timetable in January 2017, with additional peak hour services being provided to meet the growing demand.

Project history

- 1.9 On 11 December 2014, the Council approved the recommendations presented in the report 'Future Investment in Public Transport – Potential Tram Extension', which were that the Council:
- noted that investment in public transport and active travel is a key enabler in supporting and sustaining the anticipated growth in the capital city, and is a catalyst in driving economic development and employment opportunities in Edinburgh
 - noted against this background and context that it may be appropriate at this time to consider the implications of extensions to the current Edinburgh Tram network and further integration opportunities with other public transport companies, including bus and rail operators
 - noted the expiry dates associated with certain powers as set out in the Edinburgh Tram (Line One) and (Line Two) Acts (2006); and
 - acknowledged the requirement for further design work and ground investigation survey work to integrate any future extensions to the tram network with the St James Quarter redevelopment and the Leith Programme projects.
- 1.10 The Council authorised officers to prepare a detailed assessment of the economic, financial, business case, procurement and programme implications of extending the tram network. This work was completed and the findings were set out in an Outline Business Case, which was considered by Council at its meetings in November and December 2015.
- 1.11 In December 2015, the Council approved in principle the option of extending the existing tram line to Newhaven, and approved the commencement of Stage 1 of the project, including the mobilisation of internal and external resources, the carrying out of site investigations and the preparation of procurement documentation for the project.
- 1.12 A commitment was made to update and refine the project financials during Stage 1, and bring a report back to Council by summer 2017 recommending a way forward.

Scope of the updated Outline Business Case

- 1.13 This updated Outline Business Case has been prepared in accordance with Transport Scotland guidance, which implements the business case development process set out in Office of Government Commerce and HM Treasury guidance.
- 1.14 This updated Outline Business Case builds on the work done for the Outline Business Case reported to Council in November 2015:
- The transport modelling and economic appraisal have been updated in line with Scottish Transport Appraisal Guidance (STAG) to take account of the most up-to-date available travel and planning data, and new transport schemes such as Edinburgh Gateway rail/tram interchange and the 20mph programme
 - The cost estimates have been updated based on the outcome of the Stage 1 design and site investigation activities, and detailed quantitative cost and schedule risk assessments

- The financial modelling has been updated to incorporate the updated cost estimates and the performance of the tram system in 2016, and the funding solutions have been updated following discussions with potential lenders
- The commercial case has been updated following development work on the procurement strategy with the project advisers, and consultations with the market

1.15 As before, the updated Outline Business Case takes cognisance of lessons learned from the previous tram planning and construction phases, and covers the following scope:

- Interfaces with other projects in the area, including integrating the design with the Edinburgh St James development and the Leith Programme to balance the requirements of all road users
- Confirming the extent of utility diversion requirements for interfacing construction works, based on up-to-date site investigations
- Development of key elements of the design to inform updated cost estimates and ensure a complete design package through to procurement
- Updating the capital and life-cycle cost estimates based on the emerging design work, a review of available materials and equipment from the original tram project, and incorporating the results of comprehensive cost and schedule quantitative risk assessments
- Reporting on the governance, contract and risk management strategy options
- Reporting on procurement strategy taking cognisance of the need to ensure compatibility with existing proprietary tram control and communications systems while meeting procurement and best value tests
- Updating the outline construction programme and delivery strategy.

1.16 The work to update the Outline Business Case was overseen by the cross party Transport Projects Working Group, in conjunction with an officer led Project Board to monitor progress and the approved project budget for Stage 1.

Availability of Parliamentary Powers and Land Assembly

1.17 The Edinburgh Tram (Line One) Act defines a route accommodating Princes Street, Leith Walk, Leith Docks, Newhaven and Granton, looping back towards the city via an off-street section following the disused railway line between Granton and Roseburn and joining the existing route at Roseburn delta.

1.18 The (Line Two) Act overlaps Line One from the City Centre and follows a route adjacent to the Edinburgh/Glasgow railway line to Edinburgh Park, then north towards Edinburgh Airport, with a spur line heading west towards Newbridge.

1.19 The Council retains powers under both Tram Acts to acquire land under compulsory purchase powers and to commence construction on new sections of tramway. The expiry dates for these powers are set out in Table 1.

1.20 While the powers to acquire land under the Line One Act have now expired, the Council has acquired, or has entered into binding legal agreements to acquire, all the land needed for Line One, including the Edinburgh Tram York Place to Newhaven project.

Table 1: Powers under Edinburgh Tram Acts

Edinburgh Tram Acts (2006)	Powers to Acquire Land Expiry Date under Section 40(1)	Powers to Commence Construction Expiry Date under Section 74
Line One	May 2016	March 2021
Line Two	April 2021	March 2026

Edinburgh Tram Inquiry

- 1.21 A public inquiry led by the Right Honourable the Lord Hardie is underway into the original Edinburgh Trams project. This inquiry aims to establish why the project incurred delays, cost more than originally budgeted and through reductions in scope delivered significantly less than projected.
- 1.22 Oral hearings are expected to commence in September 2017, and these will be followed by a final report making recommendations as to how major tram and light rail infrastructure projects of a similar nature might avoid such failures in future.
- 1.23 The York Place to Newhaven project team is recommending that a gateway approval process is put in place to ensure all recommendations from the Edinburgh Tram Inquiry will be incorporated into the project plans and governance arrangements before contracts for the main construction works are signed.

2 The Strategic Case

Chapter summary

- The development of transport infrastructure plays a key role in shaping the pattern of future growth and development, and hence in delivering the spatial strategy and the long-term economic growth that this will support
- The Edinburgh Tram York Place to Newhaven project supports the delivery of SESPlan's new Proposed Strategic Development Plan (SDP) for the Edinburgh city region, and is specifically identified in the proposed SDP as a strategic project that is likely to have region-wide benefits
- Over the next decade Edinburgh and its surrounding area is expected to be home to a faster growing population than anywhere else in Scotland. The Edinburgh Local Development Plan (LDP) directs most of the planned growth of the city to strategic development areas directly served by tram
- The project is consistent with, and supports the delivery of, the spatial strategy and the overall growth of Edinburgh in a sustainable manner as set out in the Local Development Plan
- Completing the Edinburgh Tram York Place to Newhaven project will link Edinburgh Airport, the city centre and the Waterfront area: three of the Council's four priority investment zones under its strategy for jobs
- The project is fully consistent with the Edinburgh Local Transport Strategy which recognises that improved connections to the city centre are needed to unlock the sustainable regeneration of Edinburgh Waterfront.
- The project supports all the vision outcomes set out in the Council's transport strategy, Transport 2030 Vision

Strategic context

- 2.1 The development of transport infrastructure plays a key role in shaping the pattern of future growth and development, and hence in delivering the spatial strategy and the long-term economic growth that this will support.
- 2.2 The project supports the spatial development strategy and the wider economic objective of supporting the planned population and jobs growth within Edinburgh in a sustainable manner.
- 2.3 This chapter sets out the rationale for investment in the Edinburgh Tram York Place to Newhaven project, by reference to existing strategic developments and transport strategies and plans.

Edinburgh City Region Strategic Development Plan

- 2.4 The Strategic Development Plan (SDP) for the Edinburgh city region is prepared by SESPlan, the Strategic Development Planning Authority for Edinburgh and South East Scotland. The SDP, last published in 2013, is in the process of being updated, and SESPlan published its new Proposed Strategic Development Plan in October 2016.
- 2.5 The proposed SDP sets out a vision for a city region where it is easier to move around, and where there are better public transport options. It proposes a spatial strategy focused on growth corridors with good public transport options.

- 2.6 Edinburgh Waterfront is a high priority location for growth under the proposed SDP, which notes that the tram is fundamental to achieving a thriving low carbon waterfront community connected to the city.
- 2.7 The proposed SDP identifies significant business clusters as key areas for investment based on their potential contribution to the city region's economy, and identifies opportunities for continued growth associated with redevelopment of the city centre and expansion in Leith supported by the tram project.
- 2.8 The tram line from York Place to Newhaven is specifically identified in the proposed SDP as a strategic project that is likely to have region-wide benefits.

Edinburgh Local Development Plan

- 2.9 There is significant growth planned for Edinburgh over the coming decades. This reflects its status as Scotland's capital city, its quality of life and its role in key economic growth sectors including finance and business services, legal, bio-science and others.
- 2.10 Over the next decade Edinburgh and its surrounding area is expected to be home to a faster growing population than anywhere else in Scotland. National Records of Scotland projections published in 2016 suggest that the city should be planning for an additional 47,000 people by 2024 and an additional 102,000 by 2039, taking the total population from 492,610 to 594,712 over the 25-year period from 2014 to 2039. The LDP sets out the spatial strategy for how this growth should be planned for and accommodated.
- 2.11 Edinburgh is a major employment hub which attracts a workforce from both within the city and surrounding areas. The city's economy has been relatively resilient during the economic downturn and is set to grow strongly as economic conditions improve. The latest 'central' forecast from Oxford Economics predicts that total employment in the city will grow by 7.6% between 2013 and 2022 (from 324,900 to 349,700).
- 2.12 The Edinburgh Local Development Plan (LDP), published in November 2016, sets out sets out the spatial strategy for how this growth should be planned for and accommodated.
- 2.13 The spatial strategies direct most of the planned growth of the city to the four strategic development areas identified in the 2013 Strategic Development Plan: West Edinburgh; the City Centre; Edinburgh Waterfront; and South East Edinburgh, as shown in Figure 3. The Edinburgh Tram York Place to Newhaven project will result in three of these strategic development areas being directly linked by a fast, frequent and reliable transport service.
- 2.14 The LDP prioritises housing delivery on brownfield sites, particularly in the waterfront areas of Leith and Granton. Completion of the tram connection to these areas would help boost that delivery. In addition, Leith is one of the defined strategic business centres to which major office development is directed, and a location with significant employment land potential.
- 2.15 The LDP strategy for retail centres prioritises the city centre, including Edinburgh St James and Leith Walk, as well as defined commercial centres including Ocean Terminal.
- 2.16 The tram line to Ocean Terminal and Newhaven offers the potential to:

- Increase the attractiveness of major development sites, enhancing their overall viability and potentially bringing them forward at a faster rate than would otherwise be the case
- Support the nature and scale of development, by supporting higher density development with a lesser requirement for parking than would be the case without tram.

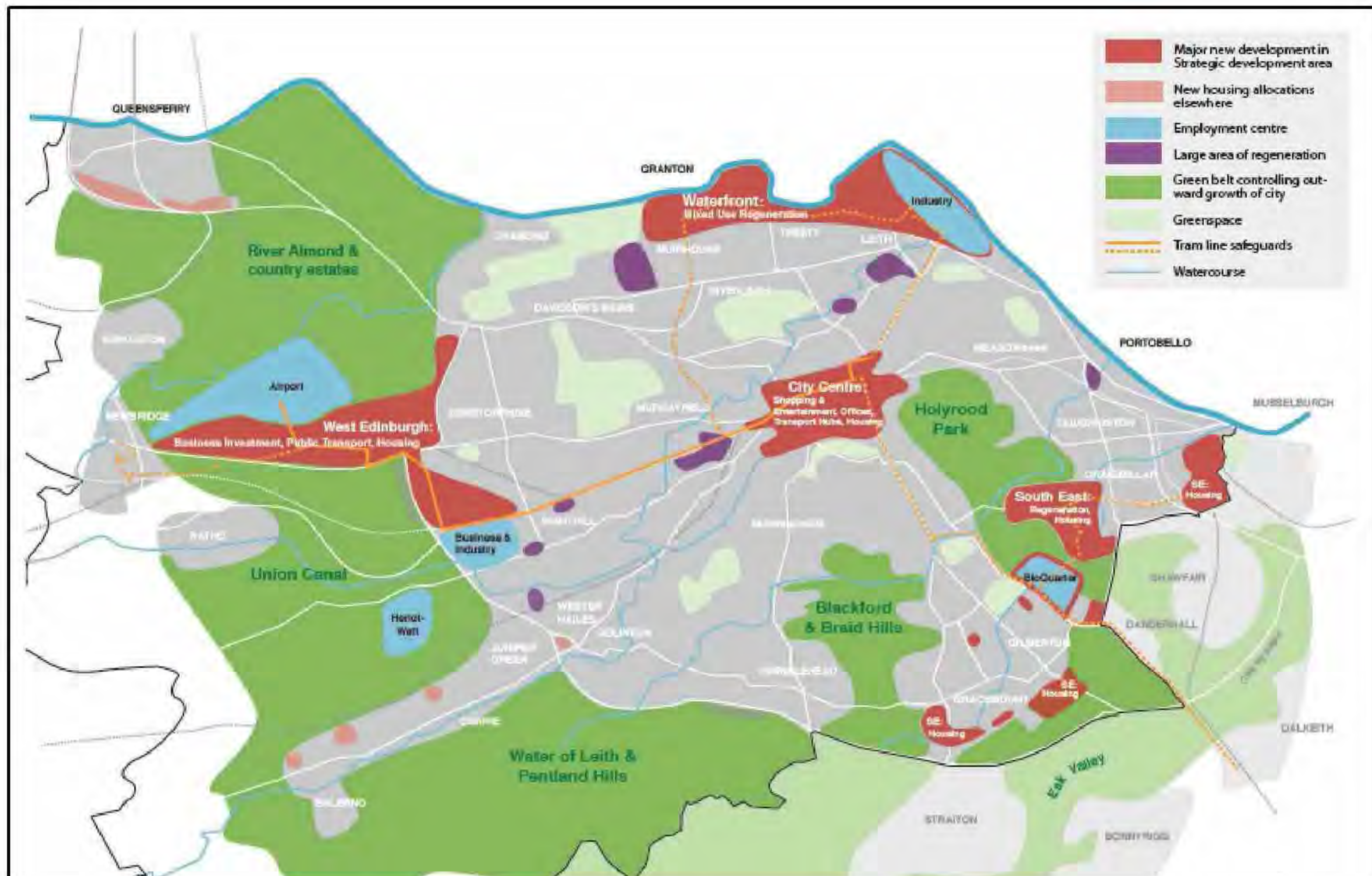


Figure 3: Edinburgh LDP Spatial Strategy Summary Map

- 2.17 Through each of the above, the wider economic objective of supporting the planned population and jobs growth within Edinburgh in a sustainable manner may be realised.
- 2.18 The proposed project is thus consistent with, and supports the delivery of, the spatial strategy and the overall growth of Edinburgh in a sustainable manner as set out in the Local Development Plan.

A Strategy for Jobs

- 2.19 The City of Edinburgh Council's Economic Strategy for 2012-17 notes that high quality infrastructure and public spaces are vital to Edinburgh's continuing competitiveness.
- 2.20 The Strategy notes that successful completion of the tram project is important for the transport benefits it will bring and is also vital to the city's confidence and its reputation with potential investors: "the tram project is transformational and will benefit the city's image, unlock new development, and raise property values along the planned routes. Integration with other transport modes will be the key to realising these benefits."
- 2.21 Completing the Edinburgh Tram York Place to Newhaven project will link Edinburgh Airport, the city centre and the Waterfront area: three of the Council's four priority investment zones under its strategy for jobs.

Edinburgh Local Transport Strategy 2014-19

- 2.22 The Edinburgh Local Transport Strategy 2014 to 2019 sets the policy context for the completion of the tram route to Newhaven.
- 2.23 The Strategy notes that Edinburgh City Centre forms the commercial heart of south east Scotland and indeed the entire country. It is a centre for finance and business, retail, entertainment, tourism and Leisure. Its World Heritage Site status provides unique opportunities and challenges.
- 2.24 The Strategy notes that one of the key challenges facing Edinburgh is that city centre streets are dominated by motor traffic, and recognises that completion of the first phase of the tram project presents a great opportunity to change this.
- 2.25 The project will facilitate the Council's plans to:
- improve the pedestrian experience in the core city centre area and increase space for pedestrians;
 - improve access to the city centre;
 - increase space for other uses (e.g. street cafes, entertainment, markets);
 - offer dedicated cycle provision in the area; and
 - reduce the detrimental impact of motor vehicles on the city centre environment.
- 2.26 Out-with the city centre, the Strategy notes that Edinburgh's growth is focussed in three areas, West Edinburgh (including Edinburgh Park/Gyle and the Airport area), South East Edinburgh and the Waterfront. The Strategy concludes that to grow in a way that protects the city's environment, these areas need supporting transport investment focussed on public transport, walking and cycling.
- 2.27 The Strategy also notes that improved transport connections will drive the renewal of Edinburgh's waterfront and that while much of the required urban infrastructure is already in place, improved connections to the city centre are needed to unlock the area's sustainable regeneration.
- 2.28 The completion of the tram to Newhaven thus is fully consistent with, and is key to the delivery of the Edinburgh Local Transport Strategy.

Transport 2030 Vision

- 2.29 The development of transport infrastructure will play a key role in shaping the pattern of future growth and development, and hence in delivering the spatial strategy and the long-term economic growth that this will support.
- 2.30 The Edinburgh Tram York Place to Newhaven project supports all the vision outcomes set out in the Council's transport strategy, Transport 2030 Vision, shown in Table 2.

Table 2: Transport 2030 Vision Outcomes

Vision Outcome	Tram impact
By 2030 Edinburgh's transport system will be environmentally friendly - reducing the impacts of transport, in particular playing its full part in reducing greenhouse gas emissions	Tram supports this outcome by encouraging modal shift to more sustainable transport modes.
By 2030 Edinburgh's transport system will be healthy - promoting Active Travel with streets appropriately designed for their functions, with an emphasis on encouraging walking, cycling and public transport use and a high quality public realm; improving local air quality.	Tram supports this outcome by providing accessible public transport, public realm improvements along the route, and improvements in local air quality through reduced emissions. Bicycles are carried on trams, opening up wider transport choices for cyclists.
By 2030 Edinburgh's transport system will be accessible and connected, supporting the economy and providing access to employment, amenities and services.	Tram supports this outcome by connecting the large population in the Victoria Quay and Leith areas to centres of employment in the city centre and in South Gyle Business Park with a fast and frequent transport link.
By 2030 Edinburgh's transport system will be smart and efficient providing reliable journey times for people, goods and services.	Tram supports this outcome through delivery of reduced journey times and less journey time variability, and providing increased public transport capacity.
By 2030 Edinburgh's transport system will be part of a well planned, physically accessible, sustainable city that reduces dependency on car travel, with a public transport system and walking and cycling conditions to be proud of.	Tram supports this outcome by offering an attractive and accessible alternative to the private car, encouraging modal shift to public transport modes.
By 2030 Edinburgh's transport system will be safe, secure and comfortable.	Trams have an excellent safety record compared to other road vehicles. The tram offers a high level of security, through the presence of Ticketing Sales Assistants and on board and on street CCTV and passenger emergency help points. The fixed rail guideway offers significant levels of comfort compared to tired vehicles.
By 2030 Edinburgh's transport system will be inclusive and integrated.	Tram supports this outcome by providing accessible public transport for people with no car access, and improving quality and availability of public transport information for elderly and visually impaired customers. High quality interchanges will be provided with bus at key locations along the route.
By 2030 Edinburgh's transport system will be customer focussed and innovative.	Studies have shown that people are more likely to transfer from cars to tram than to other modes of public transport.
By 2030 Edinburgh's transport system will be responsibly and effectively maintained.	The Outline Business Case includes all short, medium and long term maintenance and lifecycle costs. Tram maintenance is carried out under a competitively tendered contract with appropriate performance measures.

Strategy for Delivery 2017-2021

- 2.31 The project is consistent with Transport for Edinburgh's *Strategy for Delivery 2017 – 2021* to extend, adapt and develop an integrated public transport network that is reliable and convenient throughout the City Region throughout the day, and week

Measuring the Strategic Benefits

- 2.32 A post-project review will be carried out to demonstrate the achievement of the strategic benefits of the project. This review will include an appraisal of how the project has performed in terms of delivering the following benefits:
- Build out of strategic development areas
 - Population and employment growth on tram corridor
 - Accessibility to employment for socially disadvantaged areas
 - Journey time savings
 - Journey time reliability
 - Modal shift
 - Reduction in accidents
 - Cost efficiency (cost per passenger kilometre)
- 2.33 As many of these benefits will take time to be realised following the opening of the tram route to Newhaven, it is recommended that this review is carried out at least 24 months after the opening of the new route.

Conclusions

- 2.34 The development of transport infrastructure plays a key role in shaping the pattern of future growth and development, and hence in delivering the spatial strategy and the long-term economic growth that this will support.
- 2.35 The York Place to Newhaven project is fully consistent with, and supports the delivery of the key strategies that will shape the future development of Edinburgh, including:
- The Edinburgh City Region Strategic Development Plan
 - Edinburgh Local Development Plan
 - A Strategy for Jobs
 - Edinburgh Local Transport Strategy 2014 to 2019
 - Transport 2030 Vision
 - TfE Strategy for Delivery 2017 to 2021

3 The Economic Case

Chapter summary

- The economic appraisal of the Edinburgh Tram York Place to Newhaven project has been revised to take account of updated planning assumptions, scheme design, costs and forecasts
- The economic appraisal has been carried out in accordance with Scottish Government requirements set out in Scottish Transport Appraisal Guidance (STAG) and WebTAG
- The forecasting models have been updated to address findings of the independent audit undertaken of the 2015 options assessment business case
- The model has been updated to include calibration to new bus patronage counts in the tram corridor, new traffic count data, observed tram demand, and observed public transport journey times. The forecasting methodology and results have been independently audited
- The project is forecast to generate an incremental demand of 6.45m passenger journeys in its opening year
- The project has a positive economic case, delivering over £1.60 of benefit for each £1 spent
- The benefit to cost ratio remains positive under all the sensitivity tests considered
- There are potentially significant wider benefits associated with continuing the tram line into North Edinburgh and supporting the overall level of economic growth of the city through enhancing the viability and attractiveness of major housing and employment sites identified in the local development plan. The tram can help support economic activity (jobs, development, and housing) at a greater level than would otherwise be the case.

Introduction

- 3.1 In 2015 a comparative business case assessment was undertaken of four options for continuing Phase 1a of the Edinburgh Tram network (to Newhaven, Ocean Terminal, Foot of the Walk and McDonald Road respectively). This assessment showed that continuing the route to Newhaven performed best in terms of meeting the overall strategic and economic rationale for the corridor. On the basis of this assessment, the Council approved the further development of the Edinburgh Tram York Place to Newhaven project.
- 3.2 This chapter sets out the economic case for the project, taking account of updated planning assumptions, scheme design, costs and forecasts. Its focus is on the economic analysis (the benefit-cost ratio based on the present value of costs and benefits), but also includes a high-level assessment of wider appraisal criteria in line with Scottish Transport Appraisal Guidance (STAG).
- 3.3 The modelling and appraisal work has been carried out by JRC, a joint venture of Jacobs and Steer Davies Gleave¹.

¹ Reported in Edinburgh Tram York Place to Newhaven Project Outline Business Case, *Steer Davies Gleave/Jacobs*, May 2017

Modelling inputs

3.4 The forecasts are based on the following set of modelling inputs, which have been agreed with the Council's project board, and Edinburgh Trams.

Table 3: Modelling inputs

Factor	Input	Source
Opening year	2022	Turner & Townsend
Peak service pattern in opening year	8 trams per hour between Edinburgh Airport and Newhaven, overlapping with 4 trams per hour between Haymarket and Newhaven.	Edinburgh Trams
Peak service pattern in future forecast year -2032	8 trams per hour between Edinburgh Airport and Newhaven, overlapping with 8 trams per hour between Haymarket and Newhaven.	Edinburgh Trams
Tram journey times	Airport to York Place – 37 minutes York Place to Newhaven (peak) – 17 minutes York Place to Newhaven (off-peak) – 19 minutes	Measured actuals and VISSIM model
Tram peak vehicle requirement	Opening year – 20 Future year – 23 Current fleet is 27 trams, so no additional trams are required.	Edinburgh Trams
Capital costs	Updated capital costs as shown in chapter 4.	Turner & Townsend
Operating and maintenance costs	Actual costs scaled up for additional services being operated as shown in chapter 4.	Edinburgh Trams and CEC Finance
Life cycle costs	Updated life cycle costs as shown in chapter 4.	Turner & Townsend
Bus peak vehicle requirement	Reduction of 6 buses	Lothian Buses
Future year network assumptions	The modelled future year transport network includes: <ul style="list-style-type: none"> Edinburgh Gateway Edinburgh-Glasgow Improvement Programme Queensferry Crossing Leith Programme City-wide 20mph zones 	

Forecasting approach

3.5 The JRC forecasting framework has been used to support the preparation of demand, revenue and benefit forecasts for tram since the mid-2000s. The models are updated and enhanced on a periodic basis to ensure the models are up-to-date and fit-for-purpose.

3.6 The models have been updated to support this outline business case, and these updates address specific points made as part of the independent audit undertaken of the 2015 options assessment business case work. The updates include:

- Calibration to new bus patronage counts in the tram corridor

- Calibration of highway demand to new count data in both the existing tram and Newhaven corridors.
- Validation of model to observed tram demand data for 2016 and 2017
- Updating of tram journey times
- Updating of bus journey times
- Revised forecast years of 2022 and 2032 with updated planning data assumptions

3.7 The forecasting methodology and results have been independently audited by Atkins.

Population and Employment Projections

3.8 Within Edinburgh, growth and development have been included in the model in line with the Council's development plans. Outside of Edinburgh, future year forecasts of background demand growth are based upon the latest available Transport Model for Scotland (TMfS) data. There is a high degree of consistency between TMfS and the Council's assumptions.

3.9 In Edinburgh as a whole, the number of households are forecast to increase by over 38,000 (16%) from 2016 to the future forecast year of 2032. Almost a quarter of this growth is predicted to occur in the Leith Docks and Western Harbour area.

3.10 There is significant employment growth forecast across Edinburgh, of 34,000 city-wide by 2032. Edinburgh Park is forecast to expand significantly by 11,000 jobs between 2016 and 2032. The city centre will also experience a significant increase in employment of 6,000 jobs over the same period.

3.11 The development of Leith Waterfront therefore has a strategically important role to play in mitigating the increase in in-commuting, by providing new dwellings on brownfield sites within the city with good public transport access to the city centre and Edinburgh Park. This role would be enhanced through the development of the York Place to Newhaven tram by improving public transport accessibility and helping to bring forward developments at a potentially faster rate and higher density than would otherwise be the case.

Demand, revenue and benefits forecasts

3.12 The modelled demand is prepared for two forecasts years – 2022 (the opening year), and a second forecast year of 2032. The annual forecasts are based on:

- The application of annualisation factors to grow modelled period demand to annual demand. The annualisation factors reflect the usage profile on the existing tram route
- A straight-line interpolation between 2022 and 2032 to obtain annual 'modelled' demand
- Adjustment to the modelled demand to reflect demand ramp-up on the line, representing the period in the early years when people get accustomed to the tram, and demand builds up to its potential level. Demand build-up is assumed to be 80% in year of opening, increasing to 90% in year 2 and 100% by year 3.
- Patronage growth beyond 2032 is assumed to be 1.5% per annum to 2042, and 1% between then and 2052. No demand growth is assumed beyond 2052 (i.e. demand over the second half of the 60-year appraisal period is assumed to be constant).
- Real increase in revenues over time at a rate of 1% per annum.

3.13 The current and modelled annual demand is shown in Table 4.

Table 4: Demand forecasts

	2016	2022	2032
Existing system	5.60m	7.24m	10.41m
System including York Place to Newhaven	-	13.69m	21.05m
Incremental demand	-	6.45m	10.64m

3.14 Annual modelled demand for the existing system is 7.24m for 2022. This compares with observed demand of 5.6m in 2016, and 5.8m for the 12 months from April 2016 to April 2017.

3.15 With the York Place to Newhaven line the overall demand almost doubles to 13.69m, an incremental annual demand of 6.45m trips.

Capital costs, operating costs, lifecycle costs and revenues

Capital costs

3.16 The capital costs have been prepared by Turner & Townsend, and are presented as out-turn costs in Chapter 4. These are converted into 2010 discounted cashflows through:

- Developing a cost profile based on the Turner & Townsend monthly construction spend schedule
- Deflating the out-turn costs into 2010 prices using a GDP deflator
- Discounting the costs for a 2010 discount year based on the standard appraisal discount rate of 3.5%

3.17 The Turner & Townsend cost estimates include risk allowance based on a Quantitative Risk Assessment as summarised in Chapter 4. In addition, an optimism bias level of 20% has been applied in the economic appraisal. This is lower than the standard optimism bias level of 44%, reflecting the fact that many of the areas of cost uncertainty do not apply to the project costs, in particular:

- Full powers have been secured to build the project, reducing the risk of delay or re-scoping
- There are no land costs, and therefore no associated risks around land purchase
- Some utilities have already been diverted along the Leith corridor as part of tram enabling work already undertaken during first phase of tram
- A detailed design for the York Place to Newhaven corridor was developed during the original project, reducing the design risk.

Lifecycle costs

3.18 Lifecycle costs have been estimated by Turner & Townsend. This includes renewal and replacement of all system elements.

3.19 Lifecycle and operating costs have been prepared in 2016 prices, and the estimates include a profiling of these costs over the 60-year economic appraisal period, as detailed within the T&T cost report. A real increase (i.e. increase above inflation) in lifecycle costs of 1% per annum has been applied throughout the appraisal period.

Operating and maintenance costs

- 3.20 Operating and maintenance costs for the York Place to Newhaven route have been calculated by CEC Finance, based on the costs of the existing tram system. These costs are summarised in Table 5 and represent the incremental operating and maintenance costs over those for the existing tram system.
- 3.21 The calculations take account of all costs required to operate, manage and maintain the tram system, taking account of costs incurred by Edinburgh Trams as well as those incurred directly by CEC.
- 3.22 The costs also include payments made by CEC to Edinburgh Trams for concessionary travel on the tram. Within the economic appraisal these are taken to be the net costs from additional public transport usage, as the concessionary payments from former bus users are included in the Do Minimum and, in economic terms, are transfer payments rather than costs.

Table 5: Incremental operating and maintenance costs

Service pattern	Incremental operating and maintenance cost (£m per annum, 2016 prices)
12 tph operating between Haymarket & Newhaven (2022 opening year assumptions)	5.73
16 tph operating between Haymarket & Newhaven (2032 second forecast year assumptions)	6.94

Summary

- 3.23 For the purposes of the economic appraisal all costs are converted to 2010 prices (the price base in which guidance suggests appraisal be conducted in). The cost profile for the project over the appraisal period is shown in Figure 4.

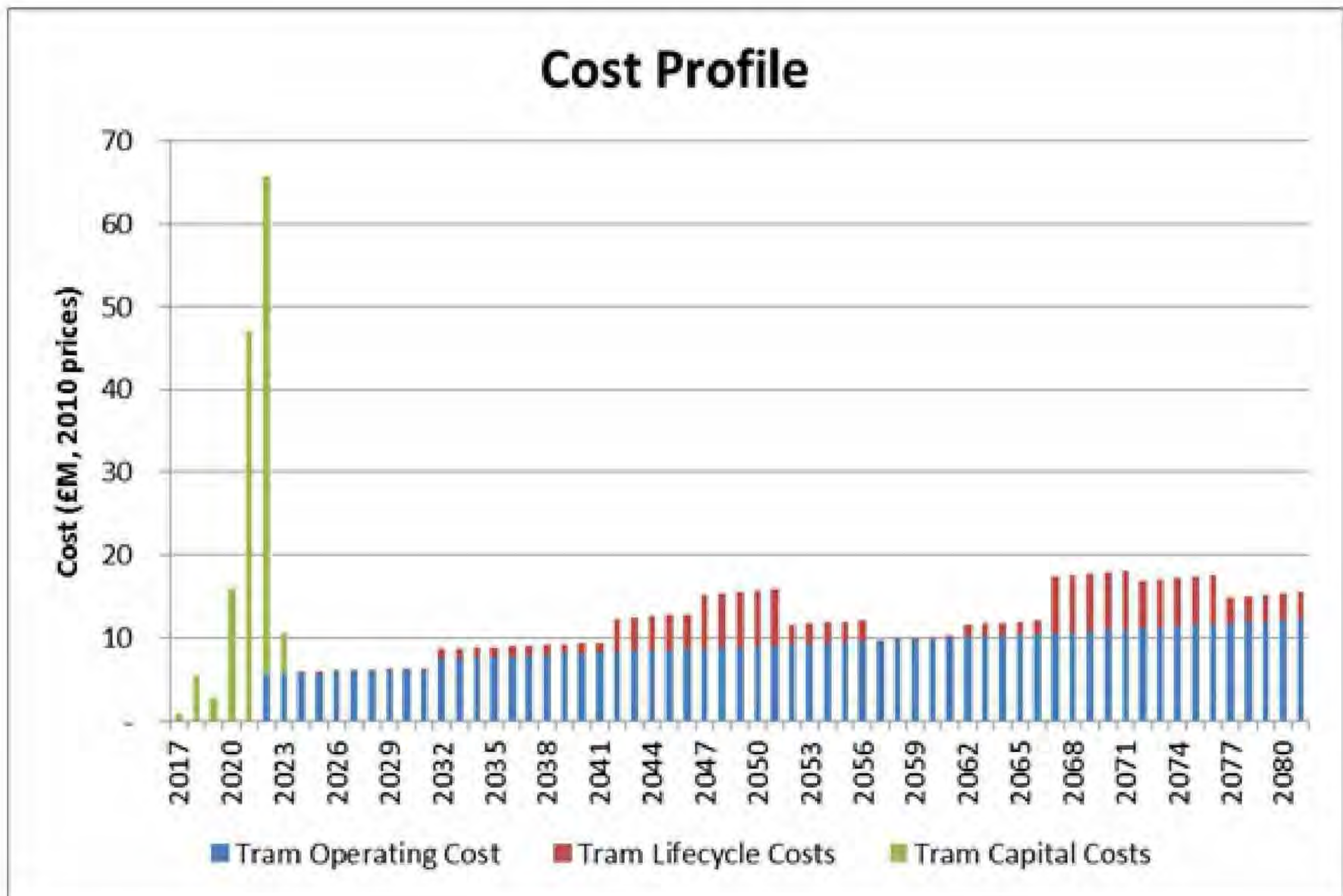


Figure 4: Undiscounted Tram Costs over 60-year appraisal period

Revenues

- 3.24 The forecast tram and bus fare box revenues are estimated based on the modelled tram demand (which also includes an assessment of the modes from which tram demand is transferred), and average yields based on 2016 data provided by Edinburgh Trams. Public transport fares are assumed to increase by 1% per annum in real terms such that the cash fare of £1.60 in 2016 translates to a fare of £1.99 by 2032.
- 3.25 No additional revenues, other than the farebox revenue generated by the new line, are assumed.

Economic Appraisal

- 3.26 The update of the economic appraisal for the project has been prepared in line with Scottish Transport Appraisal Guidance (STAG). The appraisal considers the flows of monetised discounted costs and benefits over the appraisal period, and compares these to provide economic performance metrics including the benefit to cost ratio.
- 3.27 The monetised elements of the appraisal are only part of the wider STAG criteria, and there are additional benefits that need to be considered to support informed decision making. An assessment of the wider STAG benefits follows in later sections.
- 3.28 The key assumptions employed in the appraisal are shown in Table 6.

Table 6: Economic appraisal assumptions

Factor	Assumption
Opening year	2022
Appraisal period	60 years (2022 to 2081)
Discount rate	3.5% per annum, reducing to 3% from 30 years after the current year

- 3.29 The Department for Transport's (DfT's) Transport User Benefits Analysis (TUBA) software has been used to calculate scheme benefits. These include WebTAG default assumptions on parameters such as the value of time.
- 3.30 The appraisal is presented in 2010 prices, and discounted to 2010 (as per DfT guidance and included in TUBA). All other cost and revenues have been converted to 2010 prices.
- 3.31 The results of the economic appraisal are presented in Table 7.

Table 7: Economic appraisal results

EDINBURGH TRAM YORK PLACE TO NEWHAVEN	
BENEFITS (£'000s)	
Public transport user benefits	£544,165
Highway user impacts	-£54,416
Private provider revenue impacts	-£29,302
Tax impacts	-£2,357
Total benefits	£458,089
COSTS AND FINANCIAL IMPACTS (£'000s)	
Capital costs	-£133,103
Net tram and bus operating and maintenance costs	-£148,771
Tram lifecycle costs	-£41,351
Net tram and bus revenues	£44,066
Total costs and financial impacts	-£279,159
ECONOMIC PERFORMANCE	
Net Present Value (NPV)	£178,930
Benefit to Cost Ratio (BCR)	1.64

- 3.32 The key findings of the economic appraisal is that the Edinburgh Tram York Place to Newhaven project would deliver a positive economic performance, delivering over £1.60 of benefit for each £1 spent.

Sensitivity tests

- 3.33 A number of sensitivity tests have been undertaken to test the robustness of the economic performance of the project under a range of scenarios. The sensitivity tests undertaken are:

- Highway impacts tests:
 - An 'optimistic' case where highway impacts are neutral (the central case assumes disbenefits are equivalent to 10% of the level of public transport benefits)
 - A 'pessimistic' case where disbenefits are equivalent to 20% of the level of public transport benefits
- Public transport benefits tests:
 - Upside: +30% in public transport benefits
 - Downside: -30% in public transport benefits
- Growth sensitivity test looking at the impact of future developments on Leith Waterfront not coming forward at the same rate or level as assumed.
- Capital cost sensitivity based on 44% optimism bias.

3.34 The outputs from the sensitivity tests are summarised in Table 8.

Table 8: Sensitivity test results

Sensitivity Test	BCR
Central scenario	1.64
Highway impacts of zero (neutral)	1.84
Highway disbenefits at 20% of PT benefit	1.45
Public transport benefits +30%	2.22
Public transport benefits -30%	1.06
Lower development growth	1.32
Higher capital costs 44% optimism bias	1.50

3.35 The BCR for the project remains positive (above 1:1) under all the sensitivity tests considered.

Wider economic benefits

3.36 Wider economic benefits are productivity benefits that are not captured within a traditional cost benefit analysis based on generalised time savings. This is because other markets impacted by a transport scheme (e.g. labour market, output market) are not operating under conditions of perfect competition. Wider Impacts are completely additional to standard transport user benefits.

3.37 The Department for Transport has published draft guidance on Wider Impacts² which aims to quantify the potential economic impacts of transport improvements upon business and workers' productivity and the resulting increase in output.

3.38 The wider benefits applicable to Edinburgh Tram are agglomeration and labour supply - move to more productive jobs. Each of these is described below.

² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/370532/webtag-tag-Reducing-unit-a2-1-wider-impacts.pdf

Agglomeration

- 3.39 Agglomeration benefits value the productivity benefits of firms being 'effectively' closer together. The concept of 'effective density' is a measure of the employment density of a place and the other places around it, scaled by the distances between them. There is a positive relationship between effective density and productivity. Some sectors and hence locations have higher agglomeration elasticities – meaning that a given improvement in 'effective density' results in a higher productivity benefit. Edinburgh supports a number of specialised clusters in areas such as financial and business services, legal services, technology and bio-science.
- 3.40 Transport investment can increase effective density in two ways:
- First, **by reducing transport costs** and thereby improving accessibility around and between jobs. This, in effect, brings firms closer together. This effect can be measured for all transport investment, and there is a direct linkage between the transport accessibility changes (from transport modelling) and the agglomeration effect.
 - Second, **where transport investment changes the scale or location of employment** in an area or between areas. In this case the change in the number of jobs in an area directly affects the 'effective density'.
- 3.41 The Edinburgh Tram York Place to Newhaven project would reduce the transport costs between a number of key employment locations including:
- Around Leith Waterfront including the Scottish Government
 - The city centre via five stops between Picardy Place and Haymarket.
 - Reduction in travel time via direct tram connection to major employment locations on the Phase 1 line, notably Edinburgh Park and Edinburgh Airport.
 - Reduction in travel times to a range of locations within the city and beyond, via interchange with rail at Waverley, Haymarket and Edinburgh Gateway, and bus (city centre).
- 3.42 The project also supports the change in scale and location of jobs through:
- Directly supporting the bringing forward of employment related development in the Leith Waterfront area.
 - Increasing the attractiveness of the employment locations in the city centre and Edinburgh Park by expanding the effective labour market catchment through reduced travel costs, and through helping bring forward major residential development in Leith Waterfront.
- 3.43 The agglomeration benefits have not been quantified as part of this update of the business case. However, the inclusion of agglomeration benefits for public transport projects in large urban areas (UK outside London) typically adds in the range of 15% to 25% above conventional transport benefits.

Labour Supply

- 3.44 The Edinburgh Tram York Place to Newhaven project connects major existing and planned employment destinations (city centre, Edinburgh Park) with the Leith corridor, which has among the highest population density in the city, and major planned areas for new residential developments along Leith Waterfront towards Newhaven.

- 3.45 Through this the tram will connect existing and new jobs with existing and new residents, ensuring that labour market accessibility is enhanced (businesses will find it easier to recruit, and workers have access to more jobs), and that the economic growth that this support will be delivered in a sustainable manner, though integrated transport and land use planning.
- 3.46 There will be locations that are not served by tram that will, as a result of the scheme, exhibit worse *comparative* accessibility, and this logically will result in some displacement or relocation of activity from elsewhere to the tram corridor, at least in the shorter term.
- 3.47 However, the purpose of the Edinburgh Tram York Place to Newhaven project is to support the overall level of economic growth of Edinburgh through enhancing the viability and attractiveness of major housing and employment sites identified in the spatial strategy. In this context, employment should not be viewed as ‘zero-sum’ (where tram only results in distributional effects). Rather, the tram project can help support economic activity (jobs, development, and housing) at a greater level that would otherwise be the case.

Summary

- 3.48 JRC’s assessment of wider economic benefits is presented in Table 9.

Table 9: Wider economic benefits assessment

Criteria	Assessment
Agglomeration	√√√
Improved labour supply	√√√

Outline STAG Assessment

- 3.49 This section provides an outline assessment against the range of objectives set out in Scottish Transport Appraisal Guidance (STAG). The assessment is a high-level assessment based on informed judgement about likely potential impacts of the project.
- 3.50 A full STAG assessment was undertaken to support the case presented as part of acquiring powers under the Tram Act that forms the basis of securing powers to build the project. The nature of the scheme is largely unchanged and the strategic policy context within which the scheme has been developed has been re-informed by the statutory policy documents adopted since the enactment of the Tram Act.
- 3.51 For this report SDG has therefore updated, at a high-level, the assessment of how the scheme performs against STAG appraisal criteria. This provides a validation that the project remains consistent with, and supportive of, the wider spatial planning and policy objectives that it was originally developed to meet. Performance against planning objectives
- 3.52 The policy context discussed in Chapter 2 sets the context for the assessment of the Edinburgh Tram York Place to Newhaven project against planning objectives, presented in Table 10.