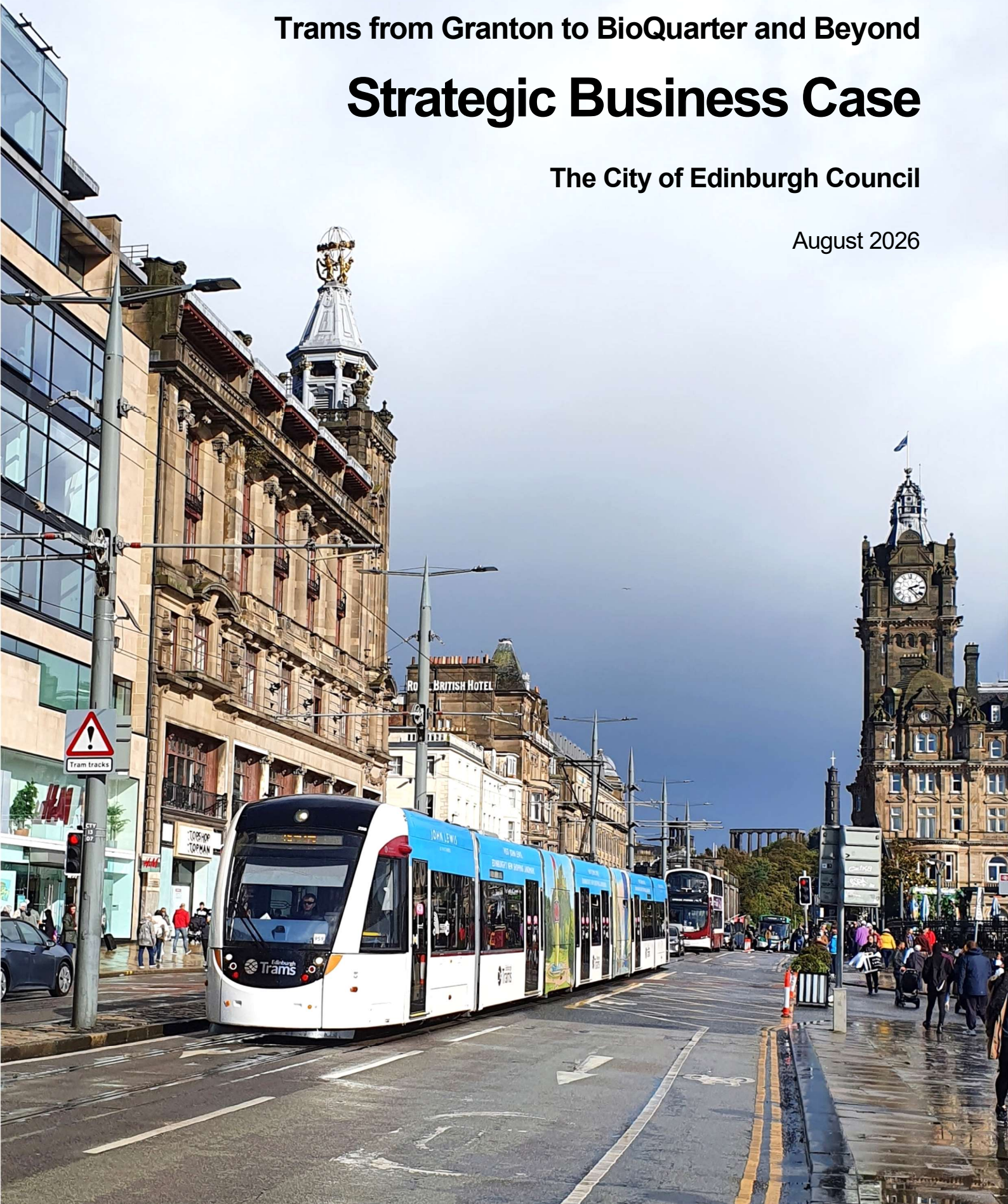


Trams from Granton to BioQuarter and Beyond

Strategic Business Case

The City of Edinburgh Council

August 2026



Trams from Granton to BioQuarter and Beyond Strategic Business Case

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Appendix A: SBC Technical Summary Report

1. Introduction

1.1. Introduction

Edinburgh and the City Region has a strong and varied economy. But population and economic growth, together with UK and international investment and an expanding tourist sector, bring challenges, with road congestion and public transport journey times increasing.

The city's brand is strong in terms of education, culture and heritage, but increasing road congestion, rising housing costs and a constrained employee catchment, combined, have the potential to restrict future growth.

Edinburgh has an established and successful public transport system, including an award winning bus network and the Airport-Newhaven tram line. But as Scotland's fastest growing city, that system must continue to evolve to remain competitive, being fast, efficient, accessible and affordable, while being carbon emissions free.

Investment in tram is integral to the delivery of the city and region's spatial development strategies, supporting growth, addressing inequalities and sustainable economic additionality at the local and national level. Tram will help support the development of Edinburgh's industries of the future, including technology and life sciences. Transport connectivity is a key consideration that companies examine in assessing competing locations to site their business and a major differentiator in attracting a skilled workforce from across the UK and beyond.

Tram is vital to delivering a step-change in public transport provision and significant mode change. It is a key recommendation in delivering national and regional objectives, as identified in the second Strategic Transport Projects Review (STPR2) and forms part of the urban mass transit National Development in National Planning Framework 4 (NPF4).

At a local level, tram is consistent with the aims of the City Mobility Plan (CMP) and supports Circulation Plan and City Plan 2030 delivery.

Edinburgh has set an ambitious target to be a net zero city by 2030. With transport being the single biggest contributor to greenhouse gas emissions, it is clear that action is needed. Around the world, cities are embracing the global challenges of climate change and inequality with action and vision. Transport and the way we move people and goods around, in and out of cities, is being revolutionised.

A summary of the study timeline is shown in Figure 1.1.

Following the stakeholder and public consultation exercise held between August and November 2025, the completion of the Edinburgh Tram from Granton to Edinburgh BioQuarter / Royal Infirmary of Edinburgh and Beyond (TGBB) Strategic Business Case (SBC) commenced in January 2026. Outputs from the consultation and engagement have informed the SBC and the scoping of next steps.

This SBC report establishes the case for investment, summarising the work undertaken to date and key findings from the analysis. Completion follows the previous Edinburgh Strategic Sustainable Transport Study (ESSTS) Phase 1 and 2 studies which reaffirmed the case for mass transit on key corridors, as a means of delivering against city-level regional and national policy priorities and outcomes.

Figure 1.1: Study Timeline



ESSTS Phase 1 had a remit to examine strategic transport corridors within, and potentially beyond, Edinburgh to assess whether, and how, the development of transit-led solutions could deliver against stated transport objectives and support wider policy outcomes.

Phase 2 considered strategic route options in greater detail with a focus on identifying key constraints and barriers to delivery, and options to mitigate these. A review of major structures and known utilities along each corridor was also undertaken.

Since then, further design and stakeholder and public consultation has informed scheme optimisation, as outlined in Section 1.3 below.

An assessment of mode options (Bus, Tram or Bus Rapid Transit (BRT)) has been a key consideration within the SBC. Bus will continue to be the primary public transport mode across the city and region, but it provides insufficient capacity to cater for future demand alone.

The recommendation is that tram is taken forward as the preferred mode. TGBB would create a north-south transit corridor 'spine' which, together with the existing east-west line, would create a range of connectivity options, supporting a range of city and region policy objectives. In combination with ongoing investment in bus and the possibility of a reopened South Suburban Railway (South Sub), the resulting integrated public transport network would deliver enhanced connectivity opportunities across the city and region.

1.2. Background and Context

Edinburgh is a thriving, growing city of over 530,000 people with a wider city-region catchment of 1.4 million people¹.

Edinburgh is the national capital, is one of Europe's leading financial centres and is home to internationally recognised bio-science and ICT clusters. In 2025 the city overtook London in terms of GDP per head for the first time and employment is also expected to grow by 10–15% over the next 20 years, fuelled by investments in knowledge-intensive sectors and public services.

Edinburgh is also the second busiest tourist city in the UK with over 5 million¹ visitors each year.

The city is forecast to grow by a further 12% to a population of nearly 600,000 by 2042. South East Scotland is the fastest growing region in Scotland, accounting for over two thirds of the country's population growth by 2042, with a forecast increase of approximately 215,000 people².

Tram provides an opportunity to enhance regional connectivity, with potential extensions beyond the BioQuarter connecting to the rail network at Shawfair (Midlothian) and Musselburgh (East Lothian). Rail to tram interchange would provide connectivity to employment and health services at the BioQuarter and the Royal Infirmary, and wider access to southeast Edinburgh. Tram supports the delivery of multi-modal hubs; it also complements SEStransit objectives, including enhanced and new regional and orbital bus services.

High-quality transport links, providing connectivity between where people live, work, learn, shop, access health and take part in leisure activities, is fundamental in enabling the city and region to grow in an economically, environmentally sustainable and socially equitable way.

Edinburgh already has a successful bus and tram network. Although bus patronage across Scotland has been falling over a sustained period, bus patronage in Edinburgh has remained strong with over 119 million journeys on Lothian Buses in 2025 (a 2.6% increase on 2024) and 12.5 million journeys by tram³.

In the medium term, it is expected that incremental public transport growth will continue. Longer term, the continued success and growth of the Edinburgh Region, in an inclusive and sustainable manner, will require the development and implementation of a coordinated approach to economic development, spatial planning and transport.

¹ <https://www.edinburgh.gov.uk/downloads/file/30669/edinburgh-by-numbers-2025>

² <https://www.statista.com/statistics/865968/scottish-regional-population-estimates/>

³ <https://www.lothianbuses.com/news/2026/01/public-transport-use-in-the-capital-continues-to-grow/>

1.3. SBC Scope

The SBC workstream has involved:

- Further option development and assessment towards the identification of a Preferred Option or shortlist of options that are feasible, deliverable and have the potential to meet the objectives of the scheme
- Stakeholder engagement and a public consultation exercise
- The development of the SBC documentation, setting out the case for investment and supporting evidence-base, to inform CEC decision-makers on whether and how the scheme should be taken forward (i.e. towards Outline Business Case)

Work has gone beyond the scope of a typical SBC in several key areas. Examples include feasibility design of the on-street section of route from Dean Bridge to Crewe Toll in the north of the city and on the North and South Bridge corridors to Cameron Toll in the south. These candidate designs have helped demonstrate what the tram concept and associated provision for other modes could look like - how it might interface with active travel and integrate with and support the bus network, together enhancing city and region wide connectivity.

Alignment constraints have been identified, along with work to identify mitigation strategies and necessary safeguards.

Analysis has also included:

- Development of candidate design options for both north and south corridors, including 1:2500 and 1:1250 plans
- A review of Health and Wellbeing impacts
- Ecology and Landscape assessments, including visualisations and cross sections
- Structures assessments – including Dean Bridge, North Bridge and South Bridge
- Geotechnical Assessment
- A review of Heritage Impacts
- Strategic and Microsimulation transport modelling to support patronage forecasts and tram journey times

These workstreams informed a major public consultation and market research exercise undertaken between August and November 2025.

Additional work has been undertaken, to that normally carried out at SBC stage, for example around the financial case for the project, with a key focus on potential funding strategies.

Project governance has ensured that all work is consistent with Transport and Works (Scotland) processes.

1.4. SBC Purpose

The focus of the SBC is to demonstrate the case for the project, with an emphasis on the strategic and economic cases. It also sets key principles for the Financial, Commercial and Management cases that will be developed in more detail in the subsequent Outline Business Case (OBC).

Based on the technical appraisal and consideration of all relevant issues, this report provides:

- a compelling and evidence-led strategic case for investment
- a clear and robust option development and assessment process, ensuring the selection of preferred options that are supported by technical evidence and an auditable decision-making process, to withstand any future challenge
- detailed and robust analysis that demonstrates that the scheme provides value for money and is deliverable

The reporting of this SBC provides a gateway decision milestone on whether to proceed to the next stage (OBC).

2. Why a North South Tram?

2.1. Major Opportunities on the Corridor

A North-South tram corridor will deliver transformational change across the city and region. It supports the delivery of two major development opportunities in the city, it will provide a step-change in access to the city's two major hospitals, it will improve access to multiple tertiary education sites and improve connectivity to areas with some of the highest levels of multiple deprivation, as outlined below.

Figure 2.1: Major Opportunities Along the Route of the North-South Tram Corridor



2.2. Investment in Mass Transit

UK major cities all recognise the vital role of mass transit and tram. All those with initial mass transit lines have either expanded or are seeking to expand, realising network benefits:

- London has benefited from the Elizabeth Line which already accounts for 7% all national rail patronage. In addition, there is the underground, Docklands Light Railway, tram and heavy rail networks, together creating one of the world's premier metro systems
- Manchester has benefitted from a 30-year programme of investment in the Metrolink system, delivering a transformed city and skyline
- Expansion of West Midlands Metro continues with the recent opening of Wolverhampton City Centre and Birmingham Eastside extensions, and ongoing construction between Wednesbury and Dudley (due to open in autumn 2026) and onwards to Brierley Hill (opening in 2028)
- The West Yorkshire Combined Authority is pressing forward with plans for a mass transit system for Leeds and Bradford, with funding of £2.5 billion secured
- The West of England Combined Authority has announced that it will focus on developing a mass transit system between Bristol City Centre and the airport, with a construction start in the early 2030s
- Glasgow already has a relatively large heavy rail network, and the Subway but, together with SPT, is progressing plans for Clyde Metro, which will deliver a step-change in connectivity across the west of Scotland

While funding is challenging, the UK Government and Department for Transport have shown an increased commitment to mass transit, recently setting up a new taskforce⁴ to reshape the future of transport in towns and cities. Currently, factors like planning processes, fragmented funding arrangements and difficulties in acquiring land get in the way of delivering transit systems, and the taskforce will seek to overcome these by identifying practical reforms to planning, financing and delivery models, making targeted recommendations to government.

Given the above level of interest in, and increasing recognition of the need for mass transit, it's important that Edinburgh makes the strongest case for UK and Scottish Government funding to deliver an expansion of the tram network.

A full cost/ benefit appraisal will be undertaken as part of an OBC, in line with Transport Scotland and HM Treasury Green Book guidance, capturing the full range of benefits of the scheme. But current work acknowledges that Edinburgh Trams is already one of the most successful transit schemes in the UK, based on a Number of Passengers per Kilometre metric. Given the strong performance of the existing tram line, and the potential opportunities along the route, as outlined below, an extremely competitive case for investment in a North – South Line can be made. A major added benefit of the North– South line would be its connection with the existing East-West line to provide a city-wide tram network with further potential for expansion into the region.

2.3. Key Opportunities

2.3.1. Addressing Existing Transport Constraints

Edinburgh's strong growth over the last 20 years is increasingly putting pressure on transport networks, resulting in more congested road networks and slowing public transport journeys.

While the city has a comparatively limited suburban rail network, it has a highly successful bus network and a single east-west tram line. An historic and highly constrained city centre however leaves little headroom in terms of space and capacity.

A significant increase in transport demand is forecast (with over 30,000 new peak-hour trips towards the city by 2042) as a result of population, economic and tourism/leisure growth. Investment in improved sustainable, viable and efficient public transport is required to support this and meet wider policy objectives to reduce car dependency.

⁴ <https://www.gov.uk/government/news/new-mass-transit-taskforce-to-reshape-the-future-of-transport-in-towns-and-cities>

An expanded tram network alongside an improved bus network is a key response to this challenge.

The introduction of tram on the South Bridge corridor will create a public transport spine comprising of strengthened bus services and new tram connectivity, the latter potentially crossing into Midlothian and East Lothian (as currently being examined as part of SEStransit).

Strengthening public transport levels on the corridor, supports key city institutions including University of Edinburgh, Royal Infirmary of Edinburgh and major development sites at Cameron Toll and Edinburgh BioQuarter. In addition, it provides new interchange opportunities and delivers public transport resilience at a city and regional level.

2.3.2. Supporting Employment Growth in Strategic Development Areas

Employment growth in Edinburgh and South East Scotland is planned to take place in identified Strategic Development Areas (SDAs) as set out in City Plan 2030 and Edinburgh and South East Scotland Strategic Sites Programme.

The essential role of providing high-quality, attractive and reliable public transport connectivity to and between these SDAs has been rooted in economic and transport policy. City Plan 2030 has identified tram as an essential component of the development and success of SDAs, which at present are located in areas of relatively poor public transport connectivity in the north, west and south of the city.

In the absence of high-quality public transport connectivity, the effective labour market catchment of each SDA will be severely constrained. This will directly affect the attractiveness of these sites to developers and businesses and the ability to attract the best workers from across the City-Region. It both impacts the economic productivity of businesses and limits the opportunity for workers from across the city-region to access jobs.

Potential extensions to Shawfair, Midlothian, and Queen Margaret University, East Lothian will help development sites, enhance sustainability and reduce the need to travel by private vehicle.

2.3.3. Connecting areas of Existing High-Density Demand

Tram demand is already proven and growing. Significant levels of travel demand through the busy, high density, Southside corridor, the South Bridge and the Southside are important local centres and close to the University of Edinburgh central campus and student accommodation.

2.3.4. Improving Access to Health

The corridor will serve three major hospitals:

- Royal Infirmary, Edinburgh
- Western General Hospital, and
- Royal Hospital for Children & Young People

In addition, the new Princess Alexandra Eye Pavilion will be located at the BioQuarter, with enabling work having now commenced.

Enhanced interchange between bus and tram will improve access from across the city. A potential future extension to the Borders Railway at Shawfair will create new public transport journey opportunities between Midlothian, the Scottish Borders and each hospital site.

2.3.5. Improving Access to Education and Jobs

Excellence in education is a stand-out theme in driving forward the city and region's economy. Edinburgh's Universities have a global appeal, with many students choosing to remain in Edinburgh at the end of their studies. A highly educated workforce is key to the regions' competitiveness and future success. The following education sites will be at or close to a tram stop:

- The University of Edinburgh (UoE) central campus served by the Nicholson Square stop
- UoE King's Buildings is an 800m walk from a new stop at Cameron Toll

- UofE Queens Medical Research Institute and Chancellor's Building at the Royal Infirmary stop
- UofE Usher Building served via a stop at the BioQuarter
- Edinburgh College (Granton Campus) located 300m from the Caroline Park stop

In addition, a future extension towards Musselburgh would serve the main Queen Margaret University Campus.

TGBB will improve access to jobs in the city centre and improve connectivity to office developments at the West End and new development around Haymarket. In addition, tram will support the expansion of the BioQuarter at a faster speed and higher density, helping deliver up to 9,000 new jobs, many in life-sciences, generating up to £1.12 bn GVA per annum.

2.3.6. Addressing Areas of Multiple Deprivation

The proposed tram route will connect areas of high deprivation with jobs, education, health and leisure. The corridor will serve Pilton, Muirhouse, The Inch and Moredun, with an extension beyond the BioQuarter potentially serving Craigmillar and Greendykes.

Importantly, a new tram route will combine with the existing corridor (Airport to Newhaven) to connect areas of multiple deprivation with Strategic Development Areas which are the focus of planned employment growth.

2.3.7. Addressing Air Quality and Supporting Net Zero

A North-South Tram route will support the city's Air Quality objectives and Net Zero. The tram will support sustainable land use and higher density development, a mode shift to public transport and complement walking and cycling whilst helping to improve air quality and reduce greenhouse gas emissions.

Tram is integral to the city's target to reduce vehicle kilometres by 30%, as a business as usual approach will not contribute to the long-term ambition for reduced car travel in the city centre, as outlined in the City Mobility Plan and Our Future Streets: A Circulation Plan.

3. Strategic Case

3.1. Policy Context

3.1.1. Introduction

The development of the SBC is grounded on a policy / outcome-led case for investment. Section 3.1 highlights national, regional and local policy priorities. Section 3.2 onwards then provides evidence on scale and nature of existing problems, future challenges and tram is key to addressing problems and challenges and delivering policy outcomes.

At the national level, high-level policy drivers are outlined in both the National Transport Strategy 2 (NTS2), NPF4 and STPR2.

The key themes include the need to improve accessibility, reduce emissions, support inclusive economic growth, and enable healthy travel choices.

3.1.2. National Policies

Carbon Reduction

Scotland's Climate Change Act (2009 and amendment in 2024) sets a legally binding target of net zero greenhouse gas emissions by 2045 through rapid decarbonisation across energy, transport, and heating sectors, supported by ambitious carbon budgets and renewable energy expansion.

Scotland's Draft Climate Change Plan (2026-2040),⁵ sets a draft target to reduce emissions from cars in the first carbon budget by 16% by 2030. This draft target is based on the advice from the Climate Change Committee (CCC) on what is possible with only incentivisation measures for switching to sustainable transport modes, a reduction in overall vehicle kilometres and a rapid transition to widespread use of electric vehicles.⁶

To deliver the Draft Climate Change Plan, regions will be expected to demonstrate a pathway to, and reduction in, vehicle kilometres. The primary indicators to assess these targets are going in the wrong direction, highlighting a step change in public transport is needed to reverse these trends.

National Planning Framework 4

NPF4 has identified Edinburgh Waterfront as a site of national importance. It also recognises the urban mass transit projects in Aberdeen, Glasgow and Edinburgh as being national developments, and the role of an extended Edinburgh Tram network in substantially reducing levels of car-based commuting, congestion and emissions.

Figure 3.1: Key Policies

National	Scotland's Climate Change Act	National Planning Framework 4 (2023)
	National Transport Strategy 2 (2020-2040)	Strategic Transport Projects Review (STPR) (2008-2032)
Regional	SEStran Regional Transport Strategy (2023)	SEStran Regional Bus Strategy (2025)
	SEStran Transit Programme SBC (2026)	Edinburgh & South East Scotland City Region Deal (2019)
	Interim Regional Spatial Strategy (2020)	Strategic Sites Programme (2024)
Local	Edinburgh City Plan 2030	City Centre Transformation (2019)
	Edinburgh City Mobility Plan (2024)	Our Future Streets: a Circulation Plan for Edinburgh (2024)
	Edinburgh Business Plan (2023)	Midlothian Local Plan
	East Lothian Local Plan	

⁵ The Scottish Government (2025) Draft Climate Change Plan (2026-2040). Available at: <https://www.gov.scot/publications/scotlands-climate-change-plan-2026-2040/documents/>

⁶ Transport Scotland (2025) Achieving Car Use Reduction in Scotland: A Renewed Policy Statement. Available at: <https://www.transport.gov.scot/publication/achieving-car-use-reduction-in-scotland-a-renewed-policy-statement/>

National Transport Strategy

Published in 2020, NTS2 provides the national transport policy framework for Scotland's long-term vision for its transport system to 2040. A sustainable, inclusive, safe and accessible transport system which helps deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors. It provides the strategic framework guiding all transport investment and policy decisions, including programmes like STPR2.

Second Strategic Transport Projects Review

In 2022 Transport Scotland published the STPR2 to help inform transport investment in Scotland for the next 20 years. The Review is designed to deliver the four priorities set out in NTS2, ensuring Scotland is greener, fairer, better connected, and more supportive of economic growth.

Recommendation 12 relates to Edinburgh & South East Scotland Mass Transit. It recommends that Transport Scotland works with regional partners to develop and enhance the cross-boundary public transport system for the Edinburgh and South East Scotland region, potentially comprising tram and bus-based transit modes including bus rapid transit (BRT).

STPR2 contained a conceptual plan (Figure 3.3) of Recommendation 12, outlining the combination of existing, planned and proposed infrastructure.

3.1.3. Regional Policy

Edinburgh and South East Scotland City Region Deal

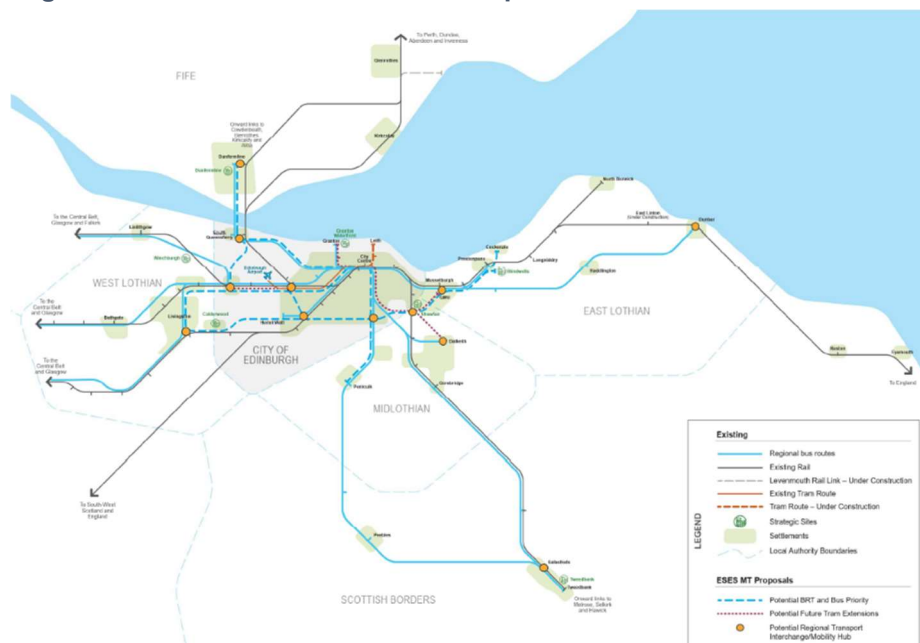
The Edinburgh and South East Scotland City Region Deal is a 15-year, £1.6 billion programme designed to drive economic growth and create opportunities across the region. Now seven years into delivery, the Deal benefits from £600 million of equal investment from the Scottish and UK Governments, with regional partners contributing over £1 billion across five themes:

- Research, development and innovation
- Integrated regional employability and skills programme
- Transport
- Culture, and
- Housing

Figure 3.2: NTS Priorities



Figure 3.3: STPR2 Mass Transit Concept



Trams from Granton to BioQuarter and Beyond Strategic Business Case

The partnership brings together six local authorities, four universities, six colleges and business representatives to deliver transformational investment across innovation, skills, transport, culture and housing – generating the greatest additional investment of any Scottish city region or growth deal.

To-date, over 22,000 job opportunities created, more than 5,500 homes delivered and over £2.8 billion has been contributed in Gross Value Added.

SEStran Regional Transport Strategy

The SEStran Regional Transport Strategy (RTS) provides a strategic framework for transport management and investment for the partnership area over a 10-15 year period. The vision underpinning the strategy is the *'development of a transport system which enables businesses to function effectively, allows all groups in society to share in the region's success through high-quality access to services and opportunities, respects the environment and contributes to better health'*. Key themes include:

- Connectivity - the need for a sustainable approach, supporting the long-term competitive position of the area through resource efficiency, social inclusion and minimum environmental impact.
- Region-wide measures – including influencing travel behaviour, smart ticketing, freight distribution, etc.
- Initiatives for specific groups – relevant to: access to healthcare, employment, public transport in rural areas and the needs of disabled people.
- Regional Transport Corridors - improvements in public transport along the main regional corridors of commuting travel within SEStran and between neighbouring areas.

The supporting RTS Delivery Plan provides a mechanism to assess and prioritise regional projects required over the next ten years to realise the ambitions of the Regional Transport Strategy, supporting the economic and net-zero goals of the Regional Prosperity Framework.

SEStransit – Programme Level SBC for Mass Transit in Edinburgh and South East Scotland

SEStransit is a current study, taking forward and developing the underlying 'case' behind STPR2 Recommendation 12 and additional public transport components within the RTS Delivery Plan. It will set out a Programme SBC for mass transit, adopting a region-wide approach, making the case for improved connectivity between strategic locations, and improved cross-boundary connectivity within the SEStran area.

A Strategic Context Report summarises baseline conditions, strategic development, and existing and planned future infrastructure. The Case for Investment sets out initial Transport Planning Objectives (TPOs) and outlines a framework to steer the subsequent Option Development phase. It identifies the issues and opportunities presented by economic growth in the region, set against current connectivity constraints. In turn, it outlines the case for a step-change in investment in mass transit as a key solution to these issues.

SEStransit aligns with the SEStran Regional Transport Strategy Delivery Plan, and is closely related to the Regional Bus Strategy, with coordination proposed across all workstreams.

SEStran Regional Bus Strategy

The SEStran Regional Bus Strategy (2025) sets out a vision for an affordable, reliable, and inclusive bus network across South East Scotland. The strategy's vision is to provide a high-quality, affordable, accessible, and available bus network for the entire region. One that is fully integrated with other forms of transport and increases both passenger numbers and satisfaction, supporting the social, environmental, and inclusive economic development of the region. It seeks to address declining patronage and service gaps by: improving service levels, enhancing affordability, and raising service quality.

Proposed actions include the introduction of guaranteed minimum connectivity standards, integrated ticketing with fare capping, and measures to improve reliability, safety, and accessibility. The strategy also prioritises decarbonisation, better customer information, and regional governance reforms to enable cross-boundary coordination. The strategy aims to increase bus use, reduce car dependency, delivering a transition to net zero.

Interim Regional Spatial Strategy

The South East Scotland Interim Regional Spatial Strategy (IRSS) has been jointly developed by the City of Edinburgh, East Lothian, West Lothian, Midlothian, Fife and Scottish Borders Councils.

The IRSS provides a long-term framework for growth across South East Scotland, aligning future development with transport, infrastructure and investment priorities. Its objective is to ensure that growth is sustainable, well-connected and supported by the infrastructure required to enable thriving communities and a competitive regional economy.

High-quality public transport will be fundamental to delivering this vision. As the region continues to grow, SEStransit has the potential to become a major driver of future development patterns, shaping where homes, jobs and services are located while supporting a more sustainable and less car-dependent form of growth.

South Suburban Railway Feasibility Study

The Scottish Government and Transport Scotland have confirmed funding for a feasibility study on the future of the South Suburban Railway (South Sub). This will examine reopening Edinburgh's freight-only South Sub as a potential "tram-train" passenger corridor connecting into Edinburgh Trams and national rail networks.

While the study is still to be finalised, it is expected that a number of connectivity options will be considered including integration of TGBB, alongside the examination of potential wider links to Edinburgh Park, Musselburgh and Portobello.

3.1.4. Local Policy

Within Edinburgh, transport is the single biggest contributor to greenhouse gas emissions, including carbon. Significant investment is required in order for the city to meet the challenge of becoming carbon Net Zero.

Edinburgh has made significant progress with the completion of a first tram line between the Airport and Newhaven, as well as investment in Park & Ride, bus priority and the development of the active travel network.

Moving forward, Edinburgh needs mobility systems that are zero-emission, efficient, accessible and affordable. These will improve people's quality of life and support the economic vitality of the city by improving its competitiveness and supporting sustainable growth and development.

Tram is an integral part of both the draft City Plan 2030 and City Mobility Plan. The City Plan 2030 is the Local Development Plan for Edinburgh for the period 2022-2032. It sets out policies and proposals to accommodate growth, where new development should take place across the city, and where new infrastructure and community facilities are required. The City Mobility Plan identifies how future growth can be accommodated and sets out the route to achieving sustainable and effective mobility across the city and into the region.

Within City Plan 2030, a North-South Tram corridor supports spatial development proposals including high density development around Granton Waterfront and the BioQuarter. Capacity increases and new connectivity will also support major development in West Edinburgh.

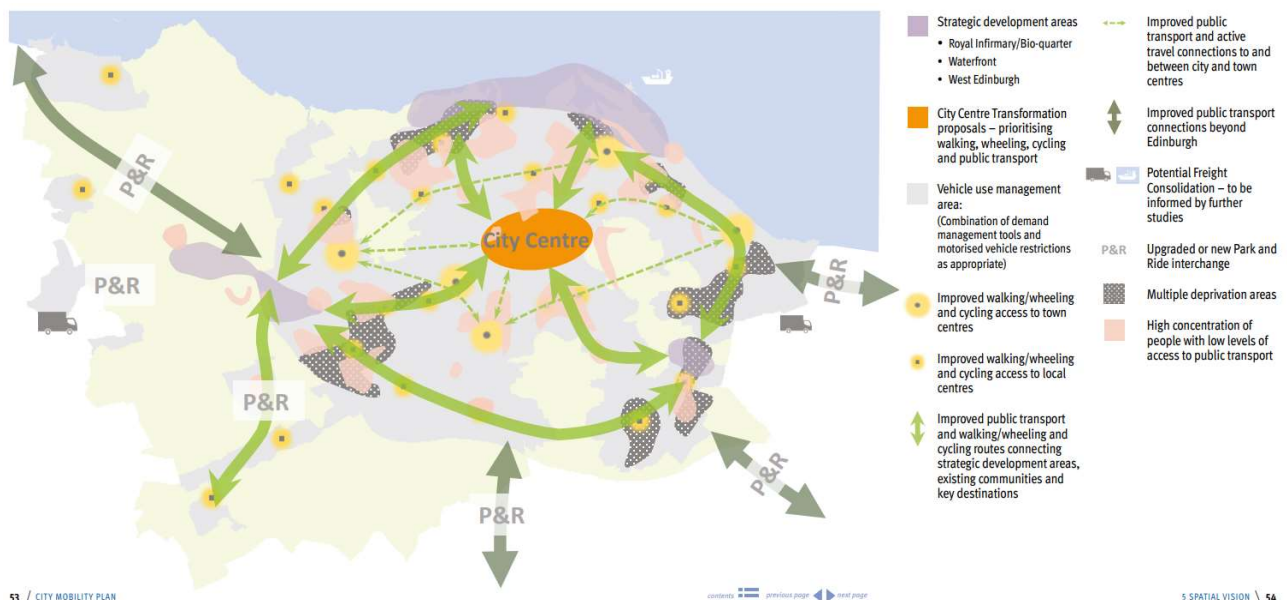
The City Mobility Plan (CMP) (Figure 3.4) envisages a city transformed with a second tram line from the Waterfront in the north to the Royal Infirmary in the south and beyond. This would be supported by enhanced Park & Ride (P&R) / interchange facilities and additional strategic bus lanes. This will give people travelling to the city a better choice to leave their cars and travel around the city on a fast, efficient public transport network.

Edinburgh's City Centre Transformation Strategy plans for a city centre that is for everyone, a space for people to live, work, visit and play. Potential interventions involve:

- removing through vehicle traffic from key city centre streets
- changing some on-street parking and loading/servicing arrangements, with additional blue badge parking, to unlock limited street space and improve safety
- prioritising space for a climate adapted public realm for pedestrians, safe cycling and reliable and efficient public transport, and
- a proposed expansion of the tram network from north to south

Our Future Streets: A Circulation Plan for Edinburgh presents a Streetspace Allocation Framework (SAF). The Framework seeks to ensure that limited space on the city's streets is used to best effect, in line with the aims and objectives of CMP, seeking to address the Climate and Nature Emergencies, with individual projects and initiatives always taking the SAF as the starting point. The framework takes the Edinburgh City Centre Transformation further, with the aim of delivering a thriving, people-friendly, nature positive and climate adapted centre that works better for residents, businesses, shoppers and visitors and facilitates further investment in the expansion of the tram network.

Figure 3.4: City Mobility Plan Spatial Vision



3.2. Transport Problems and Opportunities

3.2.1. Introduction

Edinburgh and the Lothians' public transport network is strong in many respects but there are a number of urgent issues that require addressing. This has resulted in a transport network that does not provide the level of connectivity commensurate with sustainable growth or the transition to net zero.

These can be summarised as follows:

- Edinburgh's bus network is operating close to capacity in the city centre, with over 130 buses per hour per direction using Princes Street
- Limited city centre bus stop capacity (in places like Princes Street) leaves limited room for growth, with key stops already optimised to reduce delay and highly sensitive to small increases in passenger boarding and alighting times.
- Edinburgh's public transport network carries over 130 million annual bus and tram journeys, but limited suburban rail provision within the city and overcrowded peak-hour services constrain connectivity.

- Edinburgh has a small 30-minute public transport catchment compared to other major UK cities (see Section 3.2.2 below), reflecting the absence of a comprehensive mass transit network and limiting access to jobs, services and wider economic opportunities
- The Edinburgh and South East Scotland region is forecast to grow by 15% by 2042 (equivalent to adding a city almost the size of Aberdeen)
- Forecast growth across Edinburgh and the wider city region is expected to generate substantial additional travel demand, with over 30,000 new peak-hour trips towards the city by 2042.
- Edinburgh continues to experience significant social and economic inequalities, with around 17% of residents being economically inactive.
- Transport poverty remains a significant challenge across Edinburgh and South East Scotland, limiting access to employment, education, healthcare and other essential services for many communities.
- Achieving ambitions to reduce through-traffic and move towards a more pedestrian focused city centre will require a high-capacity, attractive public transport network

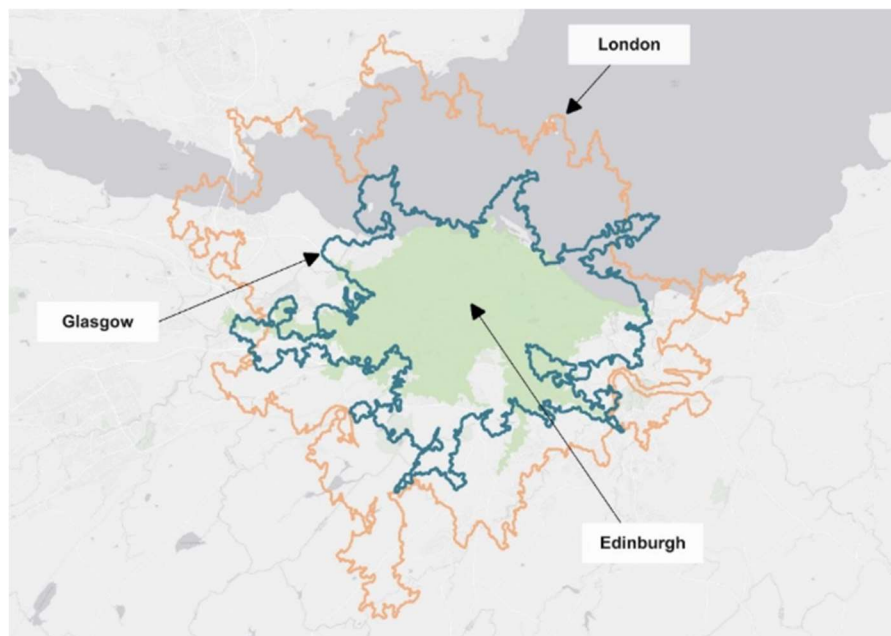
These problems and opportunities demonstrate that a business-as-usual approach will not deliver the city's future operational, growth and environmental ambitions.

3.2.2. Public Transport Journey Times and Relative Competitiveness

Bus is the primary public transport mode in Edinburgh, but journey times can be slow at peak times and have increased by 10% over 10 years due to traffic congestion. As a result, journey times are increasingly uncompetitive against the car, and also against competitor UK and European cities.

Mass transit has the potential to significantly improve journey times and connectivity. Figure 3.5 illustrates the current 45-minute journey time isochrone from Edinburgh, Glasgow and London city centres if travelling by public transport. The isochrone area for Glasgow is twice the size of Edinburgh and the isochrone size of London is 350% larger than Edinburgh, meaning that residents of these cities have better access to significantly more opportunities and amenities (employment, education, health, etc.) by public transport.

Figure 3.5: 45 Minute Public Transport Isochrone Analysis



Parameters:

- London – includes tube and Docklands Light Railway; maximum access distance of 1km; maximum interchange set to 1; Tuesday 08:00
- Glasgow – includes bus, rail and subway; maximum access distance of 1km; maximum interchange set to 1; Tuesday 08:00
- Edinburgh – includes bus and tram; maximum access distance of 1km; maximum interchange set to 1; Tuesday 08:00

Within Edinburgh, tram has already significantly reduced journey times for some key origin-destination pairs. Journey times between the City Centre and Edinburgh Park have reduced from approximately 50 to 20 minutes; the travel time from Foot of the Walk to Picardy Place has been reduced from 10-15 minutes in the morning and evening peaks, depending on congestion, to 8 minutes (Figure 3.6).

3.2.3. Network and Stop Capacity Constraints

Over 130 buses per hour serve Princes Street in each direction during the morning and evening peaks, with only a slight reduction during the day. As such, it is one of the busiest bus corridors in the UK.

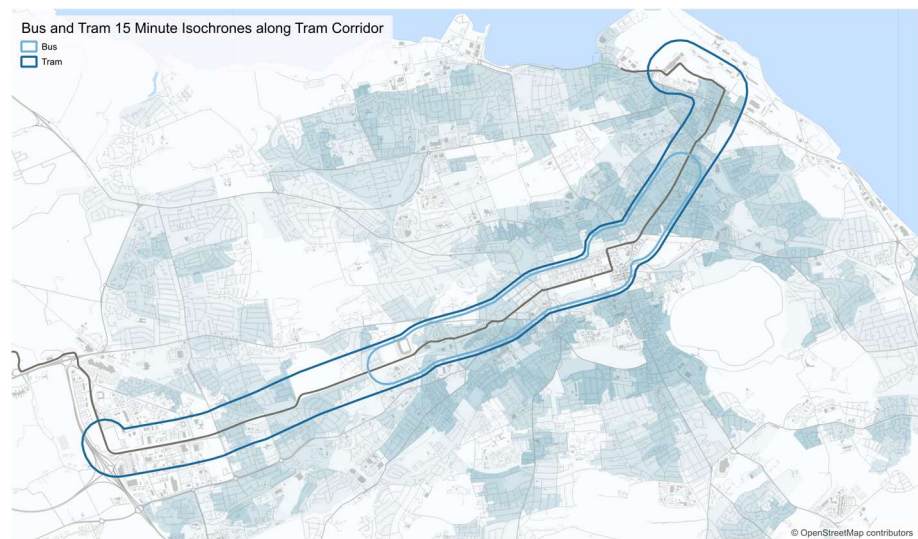
Princes Street is shared with tram and, as a result, there is a need to keep the tracks clear. This requirement, together with the tram stop on the Frederick Street-Hanover Street block means that space for bus stops is at a premium.

Lothian Buses and other operators have already made considerable effort in debussing stops and simplifying fare systems to reduce transaction times, congestion and delay. Most city services stop at only two locations in each direction. Regional services, which tend to experience longer transaction times due to more complex fare systems, have been moved by operators to stops with greater capacity or off Princes Street to lessen their impact.

Nevertheless, despite these changes, many stops in the city centre cater for a larger number of services than is typically recommended. TfL Guidance⁷ suggests that a standard stop can accommodate up to 15 buses per hour before queues and delays start to result in stop congestion. At 45 buses per hour, space should be provided for more than one bus to access and serve the stop at the same time.

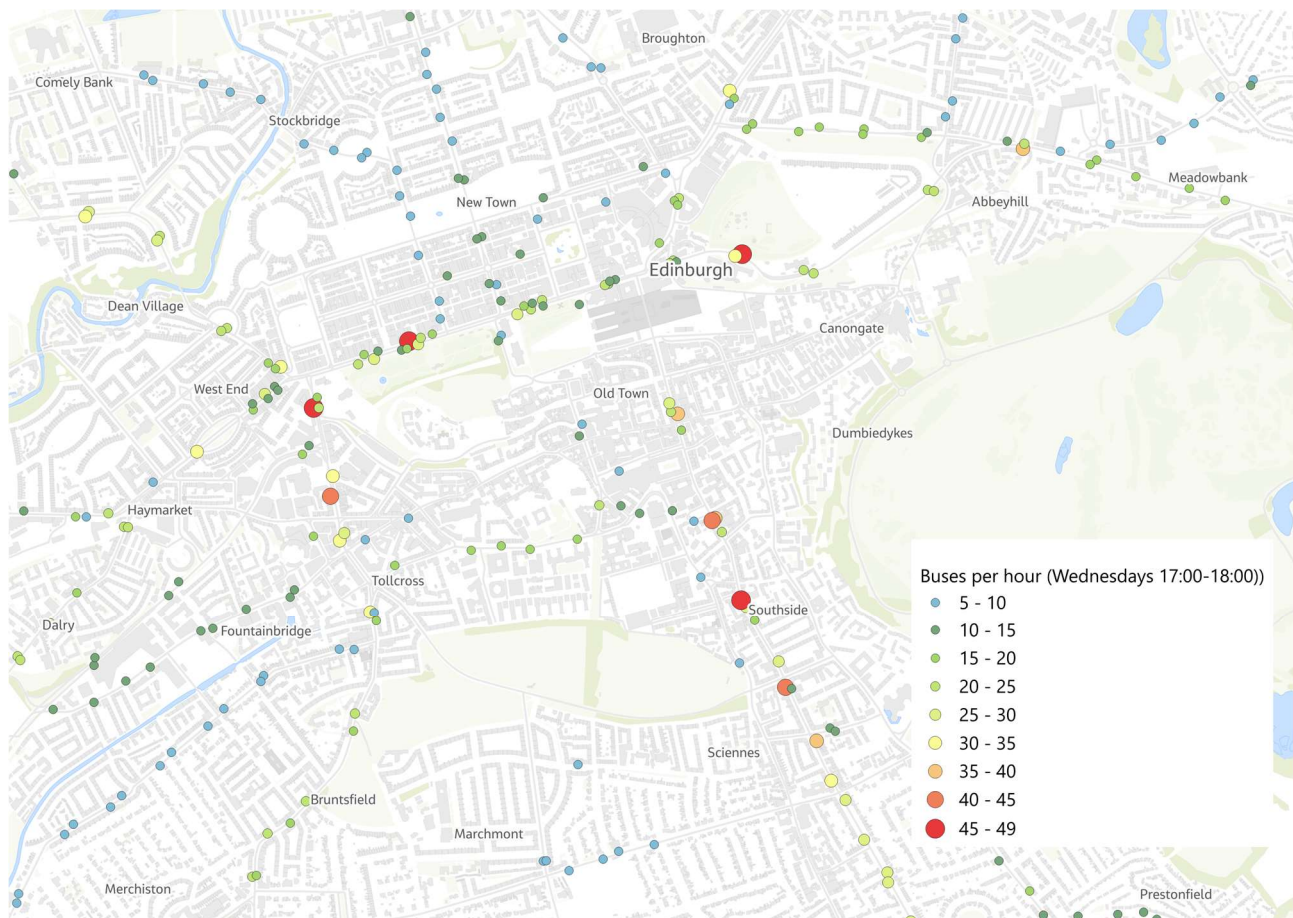
A summary of current city bus stop demand is given in Figure 3.7. Analysis takes account of services already being split on Princes Street, Lothian Road, and The Bridges by destination. Nevertheless, it shows that many stops support a service frequency significantly higher than guidance recommends.

Figure 3.6: 20 Minute Bus and Tram Isochrone Along the Tram Corridor



⁷ TfL Accessible Bus Stop Design Guidance (2017)

Figure 3.7: City Centre Bus Stop Demand (Weekday 17:00-18:00)



With many city centre stops already operating close to or at capacity, this limits the bus network's ability to respond to future development growth, which is potentially significant, as outlined in Section 3.2.4.

Policy objectives, to reduce car kilometres and encourage a shift to sustainable modes will further increase public transport demand.

In the context of the above, tram is a key enabler in delivering the necessary step change in public transport capacity, while supporting the transformation of the city centre in line with wider council aims.

3.2.4. Future Growth and Travel Demand

City Growth

Edinburgh's population is estimated at 530,000 people⁸ (2024) having grown by 9.4% in 10 years. National Records of Scotland project further growth of 7.8%⁹ between 2024 and 2032 given a total city population of over 570,000.

City Plan 2030 plans up to 40,000 new homes across a combination of:

- brownfield development sites, where good public transport and active transport links already exist, and
- major development sites at West Edinburgh, the Waterfront and the South East where public transport connectivity and capacity will require to be enhanced

⁸ <https://www.edinburgh.gov.uk/council-democracy/edinburgh-home/2>

⁹ <https://www.nrscotland.gov.uk/publications/subnational-population-projections-2022-based/> 7.8% = 0.8 * 9.6% 2022-2032 estimate

Trams from Granton to BioQuarter and Beyond Strategic Business Case

In addition, employment growth is focused on Edinburgh Park / Gyle, Leith Docks, the BioQuarter, Heriot-Watt and Newbridge.

Nearly 20,000 new homes are proposed in West Edinburgh alone. Table 3.1 summarises the resulting morning peak hour public demand based on available Transport Assessment information.

Table 3.1: West Edinburgh Developments

Development	No. of Homes	Occupancy (Homes * 2.1)	Trip Rate (Out) 08:00-09:00	PT mode Share	PT Pax
West Craigs	1,780	3,756	0.707	26%	679
IBG	400	840	0.393	46%	152
West Town	7,000	14,770	0.393	35%	2,032
Elements	2,500	5,275	0.393	35%	726
SAICA	1,000	2,110	0.393	35%	290
East of Milburn Tower	1,320	2,785	1.000	23%	641
Garden District	3,500	7,385	1.000	23%	1,699
Edinburgh Park	1,800	3,798	0.393	42%	627
Total	19,300				6,844

Assuming 50% of passengers travel by tram and that 50% travel to destinations other than the city centre, this leaves approximately 1,700 passengers to be accommodated by bus towards the city centre. Assuming a capacity of 80 passengers per bus, over 20 additional buses would be required in the morning peak hour towards Princes Street from West Edinburgh alone.

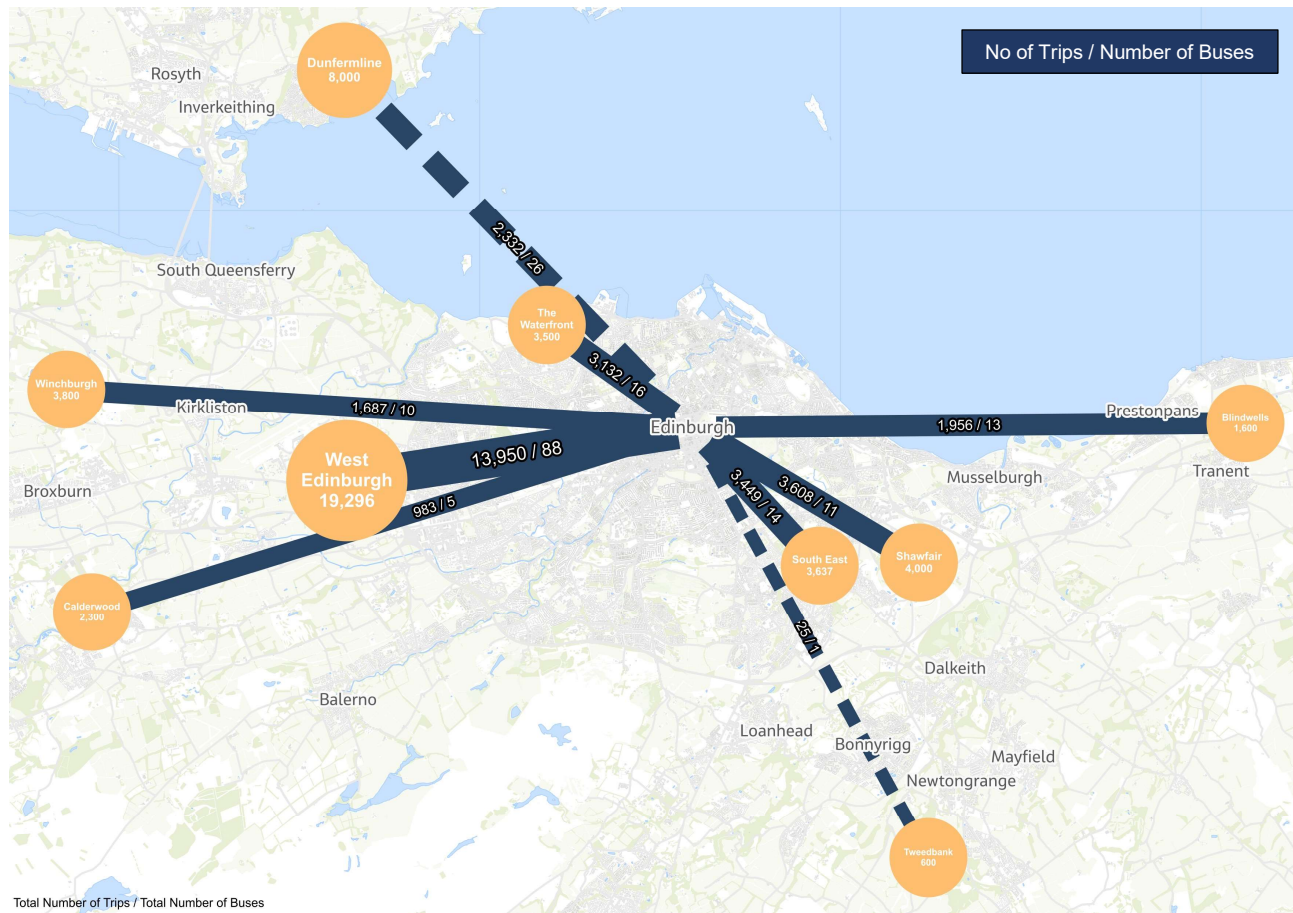
Twenty buses per hour to Princes Street, from one housing development area, highlights the challenge delivering the region's future public transport needs solely by bus.

Regional Growth

Population forecasts suggest a 15% increase across the region by 2042, with areas such as Midlothian and East Lothian seeing particularly rapid rises. Put into context, the additional population of approximately 215,000 is almost the current population of Aberdeen (228,000). Employment is also expected to grow by 10–15% over the next 20 years, fuelled by investments in knowledge-intensive sectors and public services. These trends need a proactive policy to increase public transport capacity and deliver enhanced connectivity, serving new travel markets and supporting an expanding economy.

Seven regional strategic sites have been identified for future development, as shown in Figure 3.8. Around 41,000 new homes will be constructed, of which around 10,000 will be affordable, 8,000 jobs created, and wider benefits amounting to £30bn GVA.

Figure 3.8: ESES Seven Strategic Development Sites, Travel Demand (Housing Units)



Sites offer a mix of residential, commercial, and mixed-use development opportunities and have the potential to act as hubs of innovation, employment, and high-density living. Together, they have the potential to generate up to 14,000 new public transport trips. Assuming bus has a 100% public transport mode share where rail is not present, and a 50% mode share where rail is present, then over 150 additional buses would be required in the peak hour. These would serve a range of local and regional services, with a significant proportion serving Edinburgh city centre.

West Edinburgh is already served by existing tram and Granton Waterfront will be served by the North-South corridor (therefore both would be connected by tram in future), consequently, this tram network will have a direct role in supporting high density, sustainable development, and net zero, as promoted within NPF4.

3.2.5. The Cost of Doing Nothing

There are multiple sites throughout South East Scotland identified for development as outlined in Edinburgh's and the surrounding region's local development plans. Three major strategic development areas that will be served by North-South tram are:

Trams from Granton to BioQuarter and Beyond Strategic Business Case

Granton:

- **Development value £1.3 bn**
- Over 3,500 new homes (approximately a third will be affordable)
- Business start-up space and commercial opportunities
- Europe's largest coastal park through creating new and enhanced green spaces
- Creative arts, culture and leisure space
- Key services including a school and health centre



BioQuarter:

- **Development value £1.0bn**
- Currently 8,000 people work and study within its boundary
- Proposals for 1,500 new dwellings (35% affordable)
- 9,000 additional jobs in longer term
- Potential to support a community of over 20,000 people
- 90,000 sqm of floor space safeguarded for life sciences, to be delivered over 20 years



Cameron Toll

- **Development value £350m**
- Proposal for a vibrant mixed-use centre
- Up to 260 build to rent homes
- 600 purpose-built student accommodation units
- New and reorganised retail
- New residential options
- New leisure
- New transport hub
- Placemaking and urban realm improvements



These strategic development areas are in their infancy and mass transit would be an integral component to unlock their full potential. Tram plays a fundamental role in helping bring forward development sooner and delivering greater economic value.

A recent study by ESPC highlighted that property prices on the Leith Walk corridor have increased by up to 37% since the completion of the extension to Newhaven. Although not all of this increase can be attributed to tram, evidence of tram benefits on house prices is supported by research from Manchester that showed average house price premiums within 1km of tram stops was +6.3% (+4.9% post-covid), with some lines significantly higher (Airport line +20%, South Manchester +10%). In London, the uplift was +10% (+8% post-covid) reflecting the importance of mass transit in congested city road networks.

Construction inflation has made the delivery of new housing challenging, particularly high-density developments which require more expensive steel and concrete frame solutions. A 10% premium (or higher) on each housing unit has the potential to make higher density development deliverable.

Assuming a 10% increase in house prices as a result of tram, and an initial unit value of £250,000, Table 3.2 highlights the potential financial benefits of tram at Granton and the BioQuarter.

Table 3.2: Potential Housing Financial Uplift of Tram

Housing Units	Without Tram	With Tram (+10%)	Additional Value
Granton – 3,500 units	£875 million	£962.5 million	+£87.5 million
BioQuarter – 1,500 units	£375 million	£412.5 million	+£37.5 million

These benefits consider housing only and there would be equivalent uplifts expected for the development as a whole, including office and leisure. Without tram, there is a risk that masterplans are compromised to reduce the viability gap, or that projects do not proceed at all.

With tram having the potential to reduce the vitality gap and/or attract investment it can be an influential factor in residential sites progressing, where many of these sites would have significant proportions of social housing (c25-35%) and some with Key Worker allocations (c10%).

Considering the mixed use BioQuarter site specifically, 90,000 sqm of floor space is also safeguarded for life sciences, which is a growing, high value economic sector and a national priority for investment. The Scottish Government's Life Sciences Strategy sets an ambitious target to grow the sector from its current £10.5 billion contribution to the economy into a £25 billion industry by 2035.

Jobs in life sciences have a GVA per worker of £180,300 – almost three times the national average of £69,809¹⁰. Without tram, there is a risk that the BioQuarter is less competitive internationally and/ or that slower build out rates and a lack of momentum mean that companies choose to invest elsewhere.

Assuming 50% of the 9,000 new jobs proposed at the BioQuarter are in life sciences, this would generate a GVA of £810 million annually. Assuming the remaining 4,500 new jobs are at the national average wage, this would generate a GVA of £310 million. Combined, the GVA is £1.12 billion per annum.

The need to maximise the potential of a life sciences cluster in Edinburgh strongly supports the case for investment in North-South tram.

3.3. Key Policy Challenges

The existing transport problems and intended policy outcomes together frame the key challenges for transport in Edinburgh the wider city-region. Four key challenges are identified, and Sections 3.3.1 to 3.3.4 summarise the relationship between existing transport problems and key policy challenges, and how tram can deliver positive outcomes across city and regional objectives.

Key challenges facing Edinburgh and the South East Edinburgh Region include:

- Challenge 1 – Supporting Sustainable Economic Growth
- Challenge 2 – Supporting Equity and Inclusion
- Challenge 3 – Enhancing Health and Wellbeing
- Challenge 4 – Improving the Built Environment and Quality of Place

The challenges above are inter-related and tram is a fundamental element in helping address them as outlined below.

3.3.1. Challenge 1 - Supporting Sustainable Economic Growth

Economic Context - Recent Growth and Success

As above, Edinburgh's population is now 530,000, with a key driver of growth being a strong jobs market. Edinburgh's employment rate is 82.6% (greater than the UK's eight major cities excluding London) with the city region currently contributing 30% of Scotland total Gross Value Added (GVA). Between 2015 and 2024, the number of jobs in the city grew by 16% or approximately 57,000, much stronger than the UK or Scottish average¹¹.

¹⁰ <https://www.lifesciencesscotland.com/wp-content/uploads/2026/03/2025-11-20-Life-Sciences-Strategy-final-web.pdf>

¹¹ <https://www.nomisweb.co.uk/>

Edinburgh's economy employs over 410,000 people, 14% of all jobs in Scotland. The city records productivity (GDP per capita) rates amongst the highest in the UK, and median earnings are significantly higher than the average. Edinburgh is home to high-value clusters and sectors in areas including financial services, technology (ICT) and bio-science and is supported by a strong higher education sector. Approximately 3,000 businesses start up in Edinburgh every year, a rate per capita higher than any other area in Scotland.

In addition to a strong jobs market, Edinburgh is a thriving tourism destination. It is the largest UK tourist destination outside London and an international centre for festivals and culture. In 2024, the city attracted approximately 5 million tourist visits with a total expenditure estimated at £2.6bn. Edinburgh's festivals alone are worth over £675m to the Scottish economy and attract audiences of 3.9m people (including domestic) each year.

Alongside these positive trends, the growth of tourism has been associated with negative impacts too, with unmanaged growth perceived as a risk to both quality of life for residents and to the natural environment of the city.

The NOMIS (National Official Census and Labour Market Statistics) employment and unemployment Survey 2025-2026 shows that, in the ESES region, 81.5% of the working age population (aged 16 to 64 years) were economically active. The mean unemployment rate in the region is 3.4%, and within the City of Edinburgh the mean unemployment rate is 3.3%, which is 1.4 percentage points lower than the Scottish city benchmark.

In practice, the above rates mean that Edinburgh is close to full employment, resulting in pressure on wages and increased business costs. Together with a constrained travel to work catchment, these factors have the potential to impact on the city's ability to attract inward investment.

To address this, there is a need to improve public transport networks, addressing connectivity gaps, and reducing journey times, to expand the region's employee base and increase competitiveness.

The Future Challenge – Accommodating Growth in a Sustainable Manner (within Edinburgh)

Accommodating future growth in a sustainable manner is at the heart of City Plan 2030 and the City Mobility Plan. These strategies aim to fundamentally change how the city grows and how people move around the city. Tram is a key element of a strategy to improve connectivity, supporting growth, while helping decarbonise public transport and delivering the Council's commitment to net-zero by 2030.

3.3.2. City Plan 2030 / Spatial Priorities

City Plan 2030 aims to ensure that the planning of housing, employment and services address the need for net-zero development, resilience to climate change, quality places and green spaces, delivery of community infrastructure and job opportunities. The plan supports delivering a network of 20-minute walkable neighbourhoods and embeds a 'place-based' approach to the creation of high quality, high density, mixed-use and walkable communities, linked by better active travel and public transport infrastructure.

New development will be directed to, and maximise the use of, brownfield rather than greenfield land, improving and re-imaging Edinburgh's neighbourhoods, and delivering new communities in Edinburgh Waterfront, BioQuarter, West Edinburgh, and other major development sites across the city.

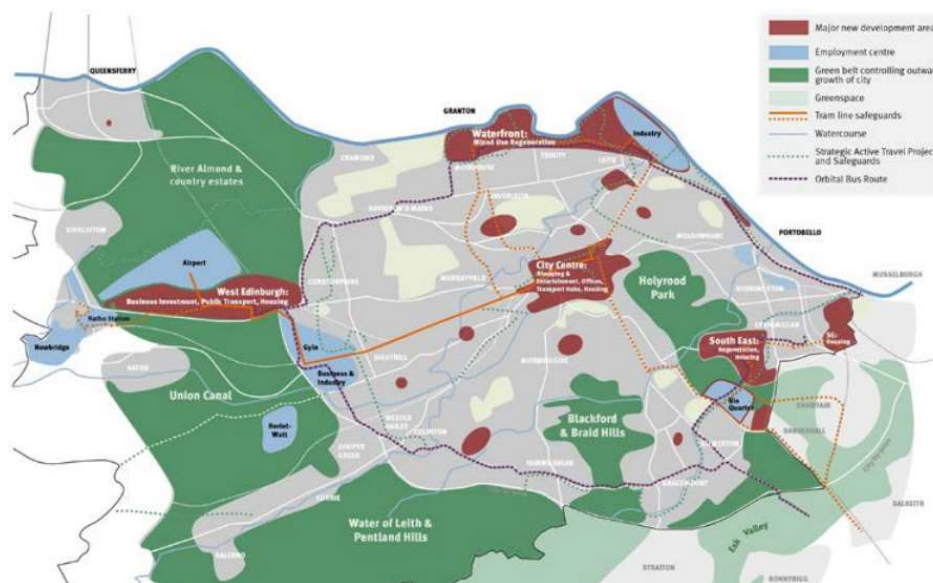
The City Plan 2030 Spatial Strategy is illustrated in Figure 3.9.

The Role of Tram Within Edinburgh

Within Edinburgh, tram will increase land values adjacent to the corridor, helping bring forward employment and commercial development, at higher densities.

Tram will increase the labour market catchment, enhancing strategic connectivity to key gateways such as Edinburgh Airport and Waverley, Haymarket and Edinburgh Park Stations.

Figure 3.9: City Plan 2030 Spatial Strategy



For businesses and workers, especially in high-value sectors, quality of life is a major determinant of the attractiveness of a city as a place to locate or work. Tram is an integral component of a wider transport strategy that seeks to transform the quality of the city centre environment and enhance neighbourhoods and place across the city through reducing dependence upon, and the adverse impacts of, car use and traffic.

For tourism, tram will improve connectivity across the city and support the delivery of new venues including the Dunard Centre in the city centre and the 8,500 capacity Edinburgh Park arena.

Tram has a key role in enhancing regional connectivity. A potential extension to Shawfair Station would deliver an interchange with the Borders Railway, creating a range of new public transport journey opportunities. It would link Midlothian and the Scottish Borders with the employment and health services at the BioQuarter and the Royal Infirmary and wider access to southeast Edinburgh.

A potential extension to Musselburgh Station would enhance access to Queen Margaret University and provide connectivity to local east coast services towards North Berwick and Dunbar.

Both locations would support interchange with local bus services, strengthening connectivity with future orbital bus services, as part of a regional transit network being considered by SEStransit and local authority partners.

A second tram depot will be required, improving service resilience during disruption. Work to finalise a location will be undertaken as part of the OBC (and there could be further opportunities for the second depot to be multiuse).

3.3.3. Challenge 2 - Supporting Equity and Inclusion

Current Levels of Inequality¹²

An estimated 17% of people in Edinburgh were living in poverty in the period to spring 2023, accounting for 87,000 individuals¹³. These included over 17,200 children, or 20% of all children in the city. Poverty rates by ward are illustrated in Figure 3.10.

Approximately 10% of all residents (including 14% of all children) had been living in poverty for three of the past four years.

¹² <https://edinburghpovertycommission.org.uk/wp-content/uploads/2025/02/End-Poverty-Edinburgh-Annual-Report-2024.pdf>

¹³ https://edinburghpovertycommission.org.uk/wp-content/uploads/2020/09/20200930_Poverty_in_Edinburgh-Data_and_evidence.pdf

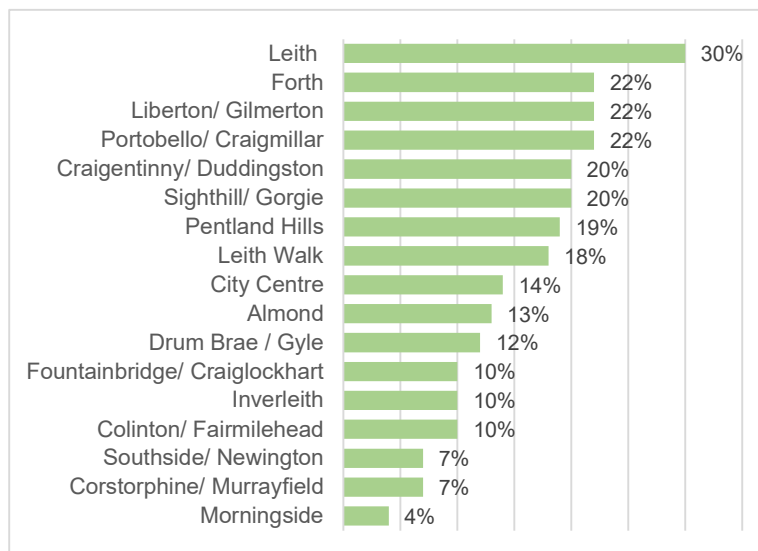
Levels of inequality are unacceptably high and are a constraint on productivity and in delivering a successful and prosperous city economy.

To meet the headline targets set by Scottish Government and the Edinburgh Poverty Commission, requires 36,000 people, including 8,600 children to be lifted out of poverty over the seven years from 2023-30 in Edinburgh alone.

Transport Poverty

Transport poverty has a direct impact on 'equity and inclusion', limiting access to employment, education and health. This creates a cycle of exclusion within communities where it is difficult to overcome poverty, health inequality, and wider social issues.

Figure 3.10: Child Poverty Rates by Edinburgh Ward



Across Scotland, 27% of households do not have access to a car, and this rises to over [40% of households in Edinburgh](#). This increases to 53% of households on low incomes (less than £15,000 per annum)¹⁴.

Transport poverty has an immediate economic impact:

- Edinburgh is constrained by a limited and effective labour market catchment
- the southeast Scotland region is constrained by having lower access to employment opportunities and facilities. This in turn leads to a lower standard of living for residents and a reduced spend across the economy.

The Role of Tram

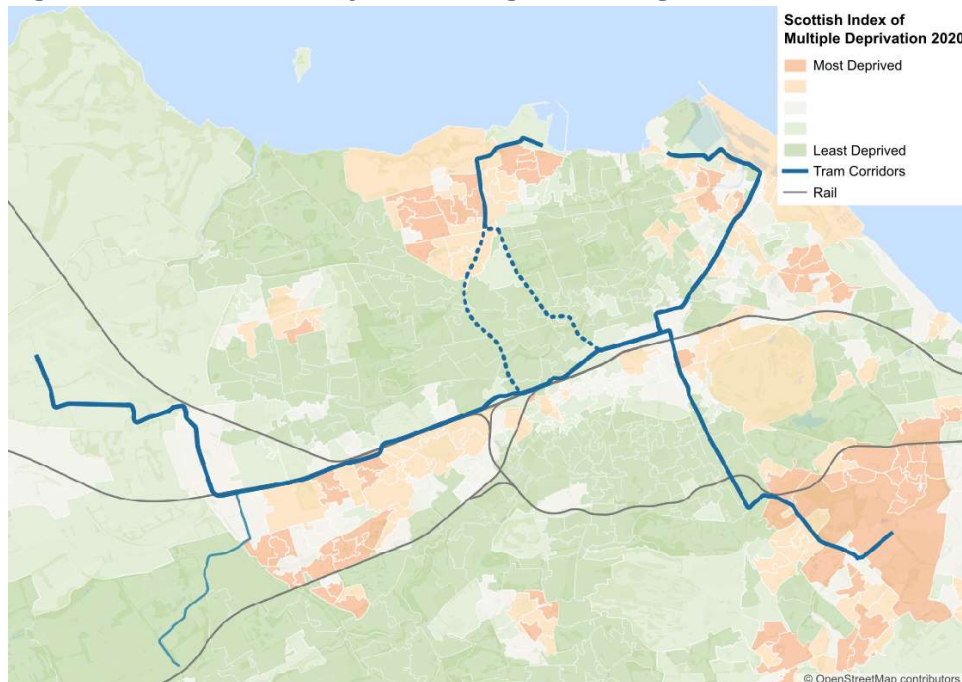
A high percentage of the '20% Most Deprived' Scottish Index of Multiple Deprivation (SIMD) data zones are located in areas of Edinburgh. Many of these would be connected by the proposed tram corridor, including Granton, Muirhouse / Drylaw, The Inch / Moredun, and Craigmillar/ Greendykes.

Nearly all locations suffer from relatively poor public transport accessibility, and with no suburban rail offering in these areas there is a reliance on bus. The introduction of new tram links would provide a significant improvement in access to employment, educational, health, and open space and leisure facilities from deprived communities and disadvantaged households.

Figure 3.11 shows how well tram has the potential to improve accessibility to areas of deprivation across Edinburgh.

¹⁴ <https://www.transport.gov.scot/media/15dglody/pdf-version-transport-and-travel-in-scotland-2024.pdf>

Figure 3.11: SIMD 2020, City of Edinburgh + Existing and Future Tram



Tram fares would be the same as for bus and therefore affordable, particularly for longer distance / cross-city movements which are charged at a flat fare.

Young people would benefit from improved access to employment, educational, health, and open space and leisure facilities. The positive impact tram is likely to have on air quality would have a specific beneficial impact on children as they are more vulnerable to the adverse health effects of traffic pollution.

Low-floor trams feature step-free access, and level boarding making travel more accessible for all users. Fixed networks make travel easier for those unfamiliar with public transport in an area.

3.3.4. Challenge 3 - The Need to Enhance Health and Wellbeing

Promoting Active Travel

TGBB is more than just a tram project. It will deliver improved public realm, active travel and social investments too. Increased public transport use promotes exercise, helping address obesity and poor health outcomes.

Improved walking connectivity, and new cycling infrastructure will promote active travel, which is a simple, low-cost and effective way to incorporate physical activity into daily life. A network of safe routes, linking open spaces, will help create an attractive network for commuting, local travel, exercise and other recreational purposes.

When people walk and cycle around their neighbourhood, they are much more likely to meet and interact, creating community cohesion. In addition, increased numbers of people walking and cycling provide 'social supervision', helping making streets safer and more inviting.

Access to Health and Education

As noted previously, the city and region has seen an increasing centralisation of many services, including healthcare and tertiary education. While centralisation of facilities has improved the range and quality of care, the transport and access implications are increasingly challenging. The trend has led to longer journey distances and the requirement for more journeys to edge-of-town locations, less suited to public transport. As a result, there is a need to increase sustainable transport choices to meet the needs of a diverse population with a range of healthcare, education and wider accessibility needs.

The Role of Tram

Tram has the potential to improve physical and mental health, and social connection and wellbeing. Investment will be a catalyst for change within these areas, supporting wider area regeneration and

placemaking. Tram can also help encourage local investment, support and enhanced urban centres (e.g. regeneration of Granton).

Tram networks are fast and accessible. They are more legible than typical bus routes making them attractive to infrequent users. Fixed networks, with bespoke branding, aid spatial perception of the users' environment, and are particularly important to the elderly and passengers with a disability who might otherwise find the perceived complexity of public transport a barrier to use.

New stations/ stops and access will require to be fully compliant with the Equality Act (2010) and there will be an opportunity with new infrastructure to design-in level access from the outset. New walking, wheeling and cycling links to station stops will connect local communities, encouraging greater active travel.

With faster, more reliable journeys, tram can help encourage mode shift away from the car, reducing traffic volumes and improving air quality. Tram has zero emissions at point of use further improving the local environment.

On the Granton corridor, four new public spaces will be created or enhanced, at the former Murrayfield Station goods yard, Craighleith, Drylaw Park, and an extension northwards of Drylaw.

On the South East corridor, the Council's Our Future Streets (Circulation Plan) has prioritised the Bridges corridor route for public transport and pedestrians, with segregated cycling delivered on parallel routes. Nevertheless, between North Bridge and Salisbury Place, the tram design will seek to incorporate safer cycling features. These may include cycle bypasses at tram stops, avoiding the need to cross tram tracks, and advanced stop lines and early release signals at key junctions.

South of Cameron Toll towards the Royal Infirmary, the Old Dalkeith Road cycling scheme is currently in development. Tram would retain or replace this to a similar standard. Beyond the Royal Infirmary, tram would be off-street, with ample space to deliver segregated cycling as part of any further tram extension(s).

3.3.5. Challenge 4 - Improving the Built Environment and Quality of Place

The Importance of Place

Edinburgh scores highly in terms of quality of life, with the built environment a key driver in encouraging people to live and work in the city. Announced in the Houses of Parliament, the city was ranked in the Top 50 2026 Happy Cities Index¹⁵. Covering 251 cities and based on 64 indicators across six dimensions, the Index highlights cities that combine quality of life, sustainability and long-term development strategies

A number of attributes help make great places including, the quality of space (including size, comfort, image) access and connections and uses and activities. There is an increased recognition that the nature of streets within towns and cities needs to change with priority given to public transport and active travel modes, at the expense of general traffic. Reallocating space, including widened footways and landscaping, helps deliver a cohesive street network, reducing conflicts and helping those with reduced mobility. It gives more space to local businesses, which in turn helps create local character areas.

City Centre and Our Future Streets: A Circulation Plan for Edinburgh

Trams to Granton, BioQuarter and Beyond is consistent with the Circulation Plan and the City Centre Transformation Plan.

In developing the Circulation Plan, a north-south tram corridor was a key consideration throughout. Proposals to remove through general traffic from North and South Bridge are consistent with tram requirements, and support pedestrian and placemaking improvements, reinforcing the corridors role as an important local centre, as well as a key transport corridor. Outline cycling provision within the candidate design is also consistent with Circulation Plan proposals.

¹⁵ <https://happy-city-index.com/>

The Role of Tram

A second tram line would deliver a step-change in public transport provision, delivering significant mode shift. It would help the Council deliver against vehicle kilometre reduction, Net Zero and emissions targets.

Tram is an attractive and modern mode, which can integrate within a historic city centre environment. Tram has a low visual impact, and because its direction of travel is fixed, it enables an improved public realm and streetscape. New attractive and distinctive spaces, with appropriate planting and wayfinding, would be created, supporting local shops and enterprise.

Tram provides the catalyst for investment in communities which might otherwise have been overlooked and, as a result, supports local economic growth and regeneration.

3.4. Transport Planning Objectives

Scottish Transport Appraisal Guidance (STAG) requires the setting of Specific, Measurable, Achievable, Realistic and Timebound (SMART) Transport Planning Objectives (TPOs) which must capture the essence of the evidence-based problem to be addressed or opportunity being undertaken.

The STAG TPOs for TGBB are given in Table 3.3 and reflect the policy outcomes based on national, city and regional objectives.

Table 3.4 illustrates how these are SMART.

Additional sub-objectives are shown in Table 3.5. They have been developed to capture both the positive contribution that tram can make to achieving desired outcomes, and also areas where there likely to be key policy related trade-offs, and choices between:

- The development of a tram route which delivers against the critical success factors (CSFs) which would underpin the delivery of successful outcomes. These include achieving fast and reliable journey times to deliver strong operational and financial performance, and the wider connectivity that would drive tram demand, mode shift and positive economic, social and environmental outcomes
- Trade-offs between tram and other modes/ road-users on on-street sections of route
- Trade-off between tram and other priorities on route sections identified as supporting biodiversity, of ecological importance, part of the Green-Blue Network, open space or of heritage value

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Table 3.3: N-S Tram SBC Transport Planning Objectives

NTS2	STPR2 TPOs	City Plan 2030	City Mobility Plan	Tram SBC TPOs
Helps our economy prosper • Will get us where we need to get to • Will be reliable, efficient and high quality • Will use beneficial innovation	An integrated strategic transport system that contributes towards sustainable inclusive growth in Scotland	A city where everyone shares in its economic success	Movement: To support inclusive and sustainable economic growth and respond to climate change	To support inclusive and sustainable economic growth
Takes climate action • Will adapt to the effects of climate change • Will help deliver our net-zero target • Will promote greener, cleaner choices	A sustainable strategic transport system that contributes significantly to the Scottish Government's net zero emissions target	A city where you don't need to own a car to move around		To respond to climate change, delivering net-zero
Promotes equality • Will be affordable for all • Will be easy to use for all • Will provide fair access to the services we need	An inclusive strategic transport system that improves the affordability and accessibility of public transport	A city in which everyone lives in a home which they can afford	People: To improve health, wellbeing, equality and inclusion	To promote equality and inclusion and help tackle the city's housing emergency
Improves our Health and wellbeing • Will be safe and secure for all • Will enable us to make healthy travel choices • Will help make our communities great places to live	A cohesive strategic transport system that enhances communities as places, supporting health and wellbeing	A sustainable city which supports everyone's physical and mental wellbeing	Place: To protect and enhance our environment	To improve health, wellbeing & safety
	A reliable and resilient strategic transport system that is safe and secure for users			To protect and enhance our environment

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Table 3.4: SMART Transport Planning Objectives

Tram SBC TPOs	Specific	Measurable	Achievable	Realistic	Timed
To support inclusive and sustainable economic growth	Targets a problem: public transport capacity And targets an outcome: economic growth	Will assess accessibility between key economic centres with SIMD's most deprived areas, major transport hubs and population centres	Proposed routes would connect key economic hotspots, population centres, SIMD's most deprived areas and transport hubs	Linked to the opportunity to grow the South East region's strong economic performance	To align with City Plan 2040's vision (but open for review)
To respond to climate change, delivering net-zero	Targets a problem: climate change And targets an outcome: reduced car mode share	Will assess mode share on relevant transport corridor	Tram offers a step change in public transport provision that should help to promote the usage of public transport over private vehicle	Linked to the problem of transport being a significant contributor to greenhouse gas emissions as well as national, regional and local climate change policies	To align with City Plan 2040's vision (but open for review)
To promote equality and inclusion and help tackle the city's housing emergency	Targets a problem: population growth And targets an outcome: densities and build out rates of developments	Will assess volume and quality of land being regenerated and planned densification of major future developments	Proposed routes would connect to key development sites in the region	Linked to problem the South East's region forecast population growth being the highest in the country	To align with City Plan 2040's vision (but open for review)
To improve health, wellbeing & safety	Targets an opportunity: health, wellbeing and safety And targets an outcome: improved access to healthcare and leisure hotspots	Will assess accessibility between major population centres, SIMD's most deprived and transport hubs with key amenities	Proposed routes would connect to key leisure and healthcare sites across the city	Linked to the opportunity to improve the region's health and wellbeing as outline in NTS2	To align with City Plan 2040's vision (but open for review)
To protect and enhance our environment	Targets an opportunity: enhance our environment and communities And targets an outcome: scale of benefit and access to placemaking and greenspace	Will assess travel times to and size of recreational spaces	Proposed routes would connect to several locations identified as brownfield sites and parks	Linked to the opportunity to protect and create a sense of place within the region as outlined by national, regional and local policy	To align with City Plan 2040's vision (but open for review)

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Table 3.5: Tram SBC Sub-objectives

Tram SBC TPOs	Sub-objectives	Alignment with STAG Appraisal Criteria
To support inclusive and sustainable economic growth	Objectives - To support economic growth at the city, region and national level - To support the development and success of Strategic Development Areas - To ensure growth is inclusive and sustainable	Economy Transport Economic Efficiency (TEE) covers the benefits captured by standard cost-benefit analysis Wider Economic Impacts (WEIs) refer to economic impacts which are additional to transport user benefits. These reflect where tram can help attract new jobs, help existing businesses, deliver land for development
To respond to climate change, delivering net-zero	Objectives - Encourage mode shift to more sustainable modes of transport - Improve the attractiveness of public transport through increased efficiency, journey time reliability and service quality - Support sustainable land-use development, aligned with spatial planning and development policies Key Impacts (Trade-Offs) - Ecology, biodiversity and network resilience	Climate Change - Greenhouse Gas Emissions - Vulnerability to the Effects of Climate Change - Potential to Adapt to the Effects of Climate Change
To promote equality and inclusion and help tackle the city's housing emergency	Objectives - Increase public transport accessibility to jobs, education, healthcare and leisure, especially for disadvantaged and vulnerable users - Improve mobility through improving the physical accessibility of transport Key Impacts (Trade-Offs) - Affordability of public transport	Equality and Accessibility - Public Transport Network Coverage - Active Travel Network Coverage - Comparative Access by People Group - Comparative Access by Geographic Location - Affordability
To improve health, wellbeing & safety	Objectives - Reduce collisions and casualties from road transport through modal-shift to safer public transport and active travel methods - Increase safety and security of the transport network - Increase the attractiveness of the active travel network and increase active travel use - Improve local air quality Key Impacts (Trade-Offs) - Impact on key designations including the Green-Blue Network and LNCS	Health, Safety and Wellbeing - Accidents - Security - Health Outcomes - Access to Health and Wellbeing Infrastructure - Visual Amenity
To protect and enhance our environment	Objectives - To protect and enhance the built and natural environment and support the enhancement of 'place' Key Impacts (Trade-Offs) - Biodiversity and habitats - Heritage	Environment - Biodiversity and Habitats - Geology and Soils - Land Use (including Agriculture and Forestry) - Water, Drainage and Flooding - Air Quality - Historic Environment - Landscape - Noise and Vibration

3.5. Stakeholders and Consultation

Throughout the development of the tram proposals, extensive engagement with stakeholders has been undertaken. In addition, a major public consultation and market research exercise was undertaken over twelve weeks between August and November 2025.

3.5.1. Stakeholder Engagement

Stakeholder engagement has helped ensure inform the development of options, ensuring integration with policy objectives and other major transport and planning interventions, maximising the potential for tram. Discussions assisted in the identification of constraints and issues along each corridor and provided the means for developing wholistic solutions to mitigate against these. A list of stakeholders and the themes discussed are given in Table 3.6.

Table 3.6: Stakeholder Liaison

Stakeholder Organisation	Responsibility	Theme / Topic
The City of Edinburgh Council	Active Travel	- Active travel interface - Interchange - Placemaking
	Network	Network capacity/ traffic signals
	Planning	Key constraints and policy
	Estates	Land ownership
	Finance	Finance
Midlothian Council	Transport	- Shawfair development - Depot locations - Future extensions
East Lothian Council	Planning	- Future development - Transport proposals
Lothian Buses	Operations	- Scheme design (including lessons learned from existing corridor) - Bus and tram integration - Interchange opportunities
Edinburgh Trams	Operations	- Operating costs - Fleet / depot requirements
Transport Scotland	Transport Strategy & Analysis	Scenario planning
Other Stakeholders	NHS Lothian	Health scoping
	Lothian Fire Service	Crewe Toll
	Shawfair LLP	Shawfair
	Hunter REIM	Cameron Toll

3.5.2. Consultation Exercise

Public consultation, in-person drop-in information sessions and market research were undertaken concurrently. A comprehensive review of the findings of these has been undertaken by the Council in a supporting document: "Trams from Granton to the BioQuarter/Royal Infirmary of Edinburgh and Beyond Consultation and Market Research report ". The following sections of the SBC summarise the key outcomes from this report.

3.5.3. Approach to Consultation

Consultation hub and online survey participation

The Public Consultation ran from Monday 25th August to Monday 17th November 2025. The key summary points of the exercise are as follows:

- Consultation was primarily based around an online survey
- More detailed information including all technical reports were hosted on the City of Edinburgh Council's website at www.edinburgh.gov.uk/futuretrams
- A total of 11,425 responses were received to the online survey with 79 responses identifying as organisations (0.7% of total survey responses)
- The top three postcode areas, that accounted for 41% of total responses to the online survey, were:
 - EH4 - Craighleith, Barnton, Comely Bank, Dean Village, Cramond, Silverknowes, Davidsons Mains (19%)
 - EH12 – Murrayfield, Roseburn, Corstorphine, South Gyle (12%)
 - EH6 – Leith, Newhaven, Leith Docks, Western Harbour (10%)
- 44% of respondents were aged between 0 – 44 (this compares to 61% of general Edinburgh population – Census 2022) and 52% were aged between 45 – 75+ (39% of Edinburgh population – Census 2022)
- 76% of respondents commute at least twice a week. The top modes of commuting for respondents were cycle (26%), bus or coach (24%), on foot (14%), and car / van (14%)

Public information drop-in event participation

A series of public information events took place during the consultation period at 19 different locations along the proposed route. In total, 1,460 people attended these drop-in events, at which, information boards summarising key points from the consultation were displayed and officers were on hand to answer questions from attendees.

Market Research

Market Research was undertaken alongside the consultation by Progressive Partnerships. A set of questions, mirroring the consultation questions and accompanied by text to support understanding on the proposals, was put to a representative sample of individuals within Edinburgh and in neighbouring local authority areas. A summary of the exercise is as follows:

- Quotas were set for age, gender, socio-economic group (SEG) and area, reflecting the profile of Edinburgh residents.
- All 17 wards were represented. Given the specific consultation question on alternative route options in the Granton to City Centre section, it was agreed to increase the sample of individuals interviewed in the North-West of the city.
- 1,209 individuals were interviewed (255 commuters, 954 Edinburgh residents across the four localities).
- 79% of respondents were Edinburgh residents, 21% were commuters.

Petitions and Joint Statements

A petition was received from Councillor Kevin Lang with 5,511 signatures stating:

'We the undersigned call on Edinburgh Council to protect Telford / Roseburn path and reject the loss of this important travel / green corridor to the tram extension.'

A statement of support for proposals to expand Edinburgh's Tram Network was submitted by Transform Scotland, which can be viewed online at Cross Society Groups Support Extending Edinburgh's Trams - Transform Scotland. The statement was backed by 18 organisations across the third, public and private sectors:

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Edinburgh Chambers of Commerce – Edinburgh Airport – National Museums Scotland – ScotRail – Spokes – University of Edinburgh – Asthma + Lung UK – Capital Rail Action Group – Chartered Institute of Logistics and Transport – Edinburgh College – Edinburgh Trade Union Council – Essential Edinburgh – Friends of the Earth Scotland – Prosper – Scottish Accessible Transport Alliance – Scottish Association for Public Transport – SEStran – Transform Scotland

3.5.4. Findings of the consultation and market research

Key themes from the consultation

Tables 3.7 and 3.8 highlight specific themes of particular relevance to the SBC. High-level responses are provided as to how negative impacts will be mitigated against and how opportunities can be maximised.

Table 3.7: Opposition Response Themes

Opposition Theme	Response
Questions over how the scheme would be funded, the impact on public finances, and the overall economic case for further tram extensions	- Details on funding requirements and streams will be outlined as part of the OBC. Initial work by the National Wealth Fund provides illustrative models as to how the scheme could potentially be funded to help strategic thinking. - Construction of tram will be a multi-year project and costs will be spread across this period
Concerns about impact of a tram line on active travel / non-motorised users (NMUs) on Roseburn Path, including safety of NMUs interacting with a tram line and trams, inadequate space for walking, wheeling and cycling & potential for conflict / lack of space at pinch points	- Single track running is proposed on the narrowest section of the Roseburn Path to ensure sufficient space is provided for NMUs. - A safety buffer of 0.5m between tram and NMUs is proposed throughout the corridor
Concerns about environmental / ecological impact and permanent loss of amenity as a result of tram provision on the Roseburn Path (Roseburn Corridor), Dean Bridge (Orchard Brae Corridor) and surrounding areas, including the impact on Water of Leith	- Extensive work has been undertaken to develop a feasible single track running solution on the narrowest section of the Roseburn Path to minimise environmental / ecological impacts - Battery powered trams are proposed that produce no tailpipe emissions and will not require overhead line equipment - The Roseburn tram corridor crosses the Water of Leith at Coltbridge Viaduct. Bridge works will affect the deck only with no direct impact on the Water of Leith - The Orchard Brae tram corridor crosses Dean Bridge. The bridge was designed as a non-conventional arch to address an underlying founding weakness. As part of an OBC, a full Geotechnical Investigation would be undertaken. If strengthening works are required, these would have a direct impact on the Water of Leith, with a mitigation strategy developed in consultation with the Scottish Environment Protection Agency (SEPA) and stakeholders.
Questions over the need to expand the tram network instead of investing in bus provision / electric buses or BRT / Very Light Rail	An in-depth appraisal has been undertaken as part of the SBC which established that tram is the most appropriate mode for delivering against the core objectives
That the South Suburban rail project should be pursued instead / tram-trains on South Suburban	Tram-train on the South Suburban railway is potentially an attractive addition to Edinburgh's future tram network (particularly with a South East tram line) but as a standalone scheme it serves a different market. Tram / trains are also more expensive to purchase/retrofit than standard vehicles

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Table 3.8: Support Response Themes

Support Theme	Response
The need for better integration with buses to be built into tram proposals (e.g. at Royal Infirmary of Edinburgh), and support for tram extensions as part of an integrated public transport network in Edinburgh	Discussions have taken place with bus operators concerning locations to maximise integration, which will be developed in more detail during the OBC (to maximise opportunities for both bus and tram as required to respond to regional growth)
Support for Roseburn corridor proposal as more efficient / less disruptive / more cost-effective tram corridor option to Orchard Brae, potential to improve personal safety for non-motorised users	- Tram designs are at an early stage and will be developed to maximise efficiencies and minimise negative impacts as part of the OBC - Designers will work with tram safety experts to ensure safe systems are delivered
Support for network benefits of tram extensions and potential for modal shift, reducing congestion, achieving Council net zero targets	- Confirmation of tram will provide assurances to planners and developers that developments can be built out without needing to cater for extensive provision for private car. - During the OBC tram and development proposals can work in tandem to maximise sustainable travel mode share
Support for tram extensions due to improving connectivity in particular to parts of the city with higher levels of deprivation and supporting better public transport access to hospitals in particular	- The proposed tram routes directly serve multiple areas identified as 'most deprived' in SIMD. - During the OBC tram and planners can work in tandem to help realise investment opportunities for these communities
Support for benefits of tram extensions for economic development, regeneration, housing growth for the city and region, supporting growing visitor economy	- North-South Tram directly serves key areas of future development, providing assurances that sites can be built out at higher densities without the need to travel unsustainably - During the OBC tram and planners can work to maximise opportunities for growth and regeneration of communities
Support for cross-boundary tram extensions to support sustainable growth, improve access to hospitals for staff and visitors and patients, improve connectivity for students, support sustainable movements for housing growth areas and reduce congestion	- University and hospital demand is one of the key reasons why the proposed routes perform strongly - As part of the SEStransit and a future OBC, opportunities to maximise delivery for these users will be sought

4. Socio-Economic Case

4.1. Introduction

The Socio-Economic Case has two key purposes: to demonstrate how options were generated, sifted, refined and appraised, and to summarise the performance of shortlisted options against scheme-specific Transport Planning Objectives (TPOs), STAG criteria and an economic appraisal.

The socio-economic case:

- Summarises the option development process, building on previous studies including the strategic reassessment of mass transit through the 2019 Edinburgh Strategic Sustainable Transport Study (ESSTS), which identified transit investment in the Granton and South East corridors as the first priority critical to delivering the city's transport and growth objectives.
- Presents the modal appraisal, which concluded that a tram extension between Granton and the South East, via the city centre, is the preferred solution compared with Bus Rapid Transit (BRT).
- Assesses viable alternative tram route options:
 - between Granton and the City Centre, via either Orchard Brae or Roseburn, and
 - from the City Centre to the BioQuarter, with a potential extension to Shawfair and/ or Musselburgh
- Confirms that all feasible route options continue to be considered and further assessment, engagement and consultation is planned before selecting a preferred route for OBC.
- Sets out the high-level cost, demand and economic appraisal findings, supported by scenario and sensitivity testing.

4.2. Option Generation / Development

The development, assessment and shortlisting of transit corridor options has been considered through several strategic studies. These sought to assess the role of transit within the city, in the context of policies and priorities, problems and opportunities, and existing and forecast transport network and demand characteristics. Studies included:

- ESSTS Phase 1 considered ten strategic corridors and identified four candidate corridors for future mass transit (Tram or BRT). Of these, two corridors, Granton and the South East, were singled out as priorities for further development
- ESSTS Phase 2 explored the viability and deliverability of these corridors, considering major structures, alignment constraints and potential utility conflicts

Subsequent work to support the development of the SBC has considered:

- the viability of a Lothian Road / Melville Drive tram alignment, in terms of alignment constraints, route performance and environmental impact
- Modal options, including the potential for BRT
- alternative tram alignment options including Belford Road, Stockbridge and Broughton Street corridors to the north, and The Pleasance, Mound and Dalkeith Road corridors to the south

Significant additional concept design and environmental assessment analysis has been undertaken to identify key constraints and design choices, supporting a major public consultation exercise, undertaken between August and November 2025.

A concise background of the option generation process is provided in the following sections.

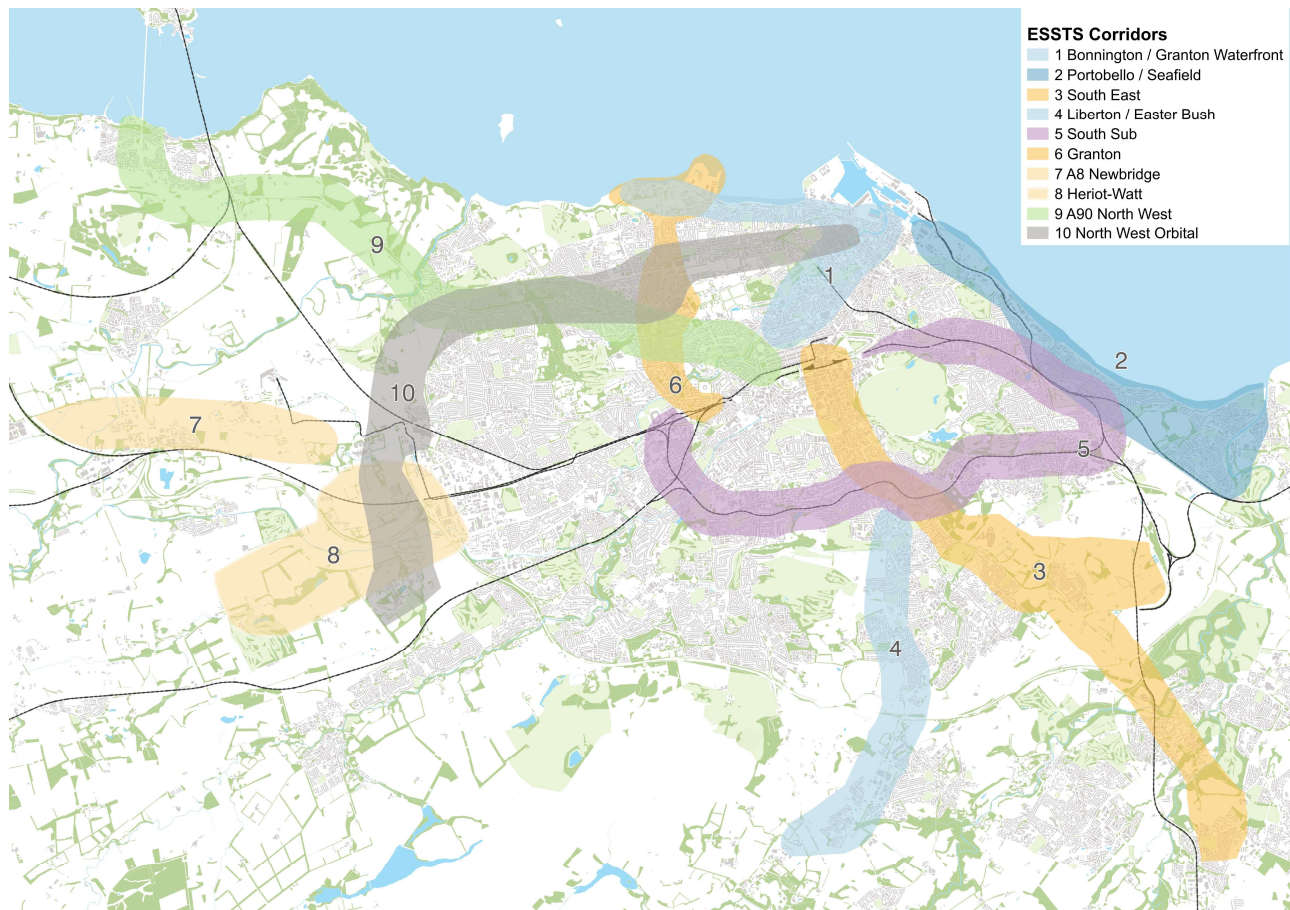
4.2.1. Edinburgh Strategic Sustainable Transport Study (ESSTS) Phase 1

Phase 1 of ESSTS considered the case for enhanced public transport, in the form of transit-based solutions (tram or bus rapid transit) across ten key corridors in Edinburgh, as illustrated in Figure 4.1.

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A baseline analysis considered a range of sources to establish a baseline for demand and capacity. Transit corridors were then considered and sifted to identify those most suited to strategic transit interventions; the role of strategic active travel was also considered. Those corridors identified as a priority for strategic transit interventions were then further developed with greater consideration of engineering, technological, environmental, complexity, cost-benefit, planning and legal risk factors.

Figure 4.1: ESSTS Study Corridors



The study considered a range of parameters, including:

- Population and employment density;
- SIMD;
- Existing public transport network and accessibility;
- Planned major development; and
- Potential transit attractiveness.

It identified four candidate corridors for future mass transit. Of these, two corridors – Granton and the South East were singled out as priorities for further development.

4.2.2. ESSTS Phase 2

The purpose of ESSTS Phase 2 was fivefold:

- to establish and confirm objectives and ensure continued alignment to existing and emerging national, regional and local policy
- consider the Granton and South East corridors in greater detail, taking initial feasibility considerations made during Phase 1 and exploring these in greater detail in terms of viability and deliverability – with a specific focus on North and South Bridge structures, alignment constraints and utilities

- consider how an integrated solution could be developed for strategic transit and active travel and how current best practice approaches to design and implementation could be utilised to facilitate this integration
- to define what extension of the transit system in Edinburgh would look like in terms of high-quality tram or bus based rapid transit options; and
- provide recommendations for next steps in the development of the transit business case

4.2.3. Lothian Road and Melville Drive Study

Previous work has considered Lothian Road and Melville Drive in detail, as an alternative to The Bridge corridor alignment.

While Lothian Road is wider than The Bridges corridor, and there is more available road space to accommodate tram, five complex junctions which make construction and operation significantly more difficult.

At Princes Street / Lothian Road, the necessary physical changes to accommodate all tram movements would reduce general traffic capacity by over 50% and have a direct impact on bus reliability. The junction design would negatively impact pedestrian and cycle provision and create key safety risks. Crucially, the key pedestrian crossing across Princes Street, between The Caledonian Hotel and the Johnnie Walker Building would require to be relocated westwards into Shandwick Place, a significant distance from the desire line. In addition, the complex track layout, including switches and crossovers, would pose a significant risk to cyclists and motorcyclists, particularly in the wet.

Patronage on the Lothian Road / Melville Drive corridor would be up to 2 million lower than via the Bridges:

- A tram route via Lothian Road and Melville Drive would not directly serve the busy Newhaven – Bridges corridor
- Journey times by tram between Leith Walk and South Clerk Street would be uncompetitive compared with bus, limiting demand
- Key destinations, including Waverley Station and many major tourist attractions, would also be omitted

A desktop Environmental Assessment rated the Lothian Road / Melville Drive corridor as 'Amber'. The impacts of the alignment include:

- the potential requirement to fell trees under TPOs within the Meadows
- potential disruption to protected species, and
- impacts to the numerous designated assets along the proposed route that may require listed building consent.

Land-take extents are unknown; however, it should be noted that The Meadows is Common Land and any necessary land acquisition would be extremely complex.

4.3. Modal Option Sifting

An initial sifting of modal alternatives has been undertaken to identify a preferred mode for Trams to Granton, BioQuarter and Beyond.

A sift of route options has then been undertaken, based on geometric and topographical constraints.

4.3.1. Modal Alternatives

A short summary of mass transit mode characteristics and capacities, suitable for implementation within the Edinburgh City Region is given below.

Mode Capacities and Characteristics

The capacity of an individual mode varies significantly depending on implementation. A brief summary is provided in Table 4.1 and Figure 4.2 below.

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Table 4.1: Mass Transit Capacities, Per Hour, Per Direction

Mode	Capacity	Notes
Rail	4,000-20,000 or higher	1,700 pax16 * 12 trains per hour = 20,400
Tram-Train	1,500-6000	Capacity assumed to be constrained by mainline/ station capacity =500 pax * 8 tram-trains per hour = 4,000
Light Rapid Transit	1,800-7,500, potentially up to 10,000 or higher if fully segregated	250 pax17 * 817 trams per hour = 2,000; * 30 trams per hour = 7,500
Very Light Rail	330-1,600	56 pax18 * 6 vehicles per hour = 336, * 30 vehicles per hour = 1,680
Bus Rapid Transit	1,200-4,800, but potentially significantly higher if fully segregated ⁹	80 pax * 15 buses per hour = 1,200; 150 pax19 * 30 buses per hour = 4,500
Conventional Bus	0-1,200, but up to 3,600 or higher with increased stop congestion and delay	80 pax * 15 buses per hour =1,200; * 45 buses per hour =3,600

Figure 4.2: Typical Mode Capacities Example



For reference, current public transport demand on the South Bridge corridor is 4,300 in the base year model. 2032 future year models capture the impact of new development with demand forecast to increase to over 5,100 passengers (+20%). Tram provides capacity to meet 2032 (and beyond) demands.

The general characteristics of the most common mass transit modes is outlined below:

Rail typically accommodates between 4,000 and 20,000 passengers. Complex networks, particularly at major stations, mean that a typically minimum headway on a high frequency corridor is approximately 5 minutes. Rail primarily serves a national/ regional role, moving people over longer distances. Vehicles are typically heavy, with relatively poor acceleration, making the less suited to local urban networks.

Tram-train is usually implemented where there is an existing underused rail line. The Sheffield-Rotherham tram-train and Metro extension to Sunderland are two examples. Capacity can be constrained however by

¹⁶ <https://assets.new.siemens.com/siemens/assets/api/uuid:420af201-8083-4760-b161-43792d246a23/factsheet-desiro-trains-e.pdf>

¹⁷ Edinburgh Tram capacity and service frequency

¹⁸ <https://www.coventry.gov.uk/coventry-light-rail/technical-specifications>

¹⁹ <https://a660.org/wp-content/uploads/2014/01/Citro.pdf>

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mainline/ station capacity, limiting the frequency of service. A capacity of 4,000 passengers per hour is based on a frequency of 8 trains per hour, but higher capacities could be achieved in specific applications.

Tram-train on the south suburban line is being considered through the Transport Scotland and Network Rail South Suburban Tram Train feasibility study and as part of SEStransit. Trams to Granton, BioQuarter and Beyond could compliment South Sub proposals and provide integrated network and interchange opportunities. Both serve different roles, with tram directly connecting the Cameron Toll and the BioQuarter with the city centre and the South Sub improving orbital connectivity.

LRT (Light Rapid Transit - Tram) would expand the existing network creating a range of service options in addition to the core Granton to BioQuarter route. Route assumptions are summarised in Section 4.4 and include direct services between the airport and the BioQuarter and Granton and Newhaven.

Tram capacity is typically in the range of 1,800-7,500 passengers per direction per hour but can operate at higher capacities with greater segregation. Edinburgh Trams existing service frequency is 16 trams per hour giving a total capacity of 4,000 passengers per hour per direction.

VLR (Very Light Rail) is currently being trialled in Coventry. The key advantage of the technology is that light weight vehicles require only a relatively lightweight track, which being shallow (typically 300mm deep), enables it to be laid over existing utilities. These factors should make VLR quicker and cheaper to install – although the technology is currently unproven beyond a test application.

Coventry vehicles can accommodate up to 56 passengers (20 seated). A two-minute service frequency would deliver a capacity of up to 1,680 passengers per hour per direction – considerably lower than existing demand on the South Bridge corridor. As such, VLR is better suited to smaller towns and cities where patronage is lower.

BRT (Bus Rapid Transit) covers a range of solutions from:

- BRT-Light, with targeted bus priority enhancements, higher quality vehicles, improved stop infrastructure, and dedicated branding, to
- Full BRT, with significant sections of segregated running, guided sections (kerb, optical, GPS), enhanced infrastructure, priority at traffic signals, LRT style vehicles and stop infrastructure

As such, it is a flexible solution, providing high levels of capacity in urban centres, and on arterial corridors. It is also able to leave dedicated alignments to serve a range of lower density peripheral destinations.

BRT's flexibility however also means that it is a less permanent solution than LRT. Routes can be diverted, replaced or withdrawn at any time. As such, the long-term benefits of BRT are less certain; its ability to support major development along the route of a transit corridor is much less than for a tram-based solution.

In Europe, BRT typically incorporates only partial segregation, limiting maximum capacity. Assuming an articulated vehicle, and a two-minute headway, a capacity of up to 4,000 passengers per direction per hour can be achieved. But much higher capacities are possible on fully segregated systems:

- Up to 10,000 pax per hour per direction - double articulated buses on an exclusive right of way with a 60 second headway
- Up to 30,000 pax per hour per direction - exclusive-right-of-way with double lanes (2x2), overtaking facilities, 30 second headway, no crossings possible, loading greater than 4pax/m2.

In the UK, successful BRT systems include Cambridge-Huntingdon, Kent Thameside and East London Transit. Schemes are either semi-urban or connect local medium sized towns and Dartford-Gravesend-Ebbsfleet and Ilford-Barking-Dagenham where capacity is sufficient to match demand. In larger cities, including Edinburgh, space is limited, making segregation difficult, and larger articulated vehicles are unsuited to city centre streets and stops.

Conventional Bus will continue to have a primary role in delivering public transport across Edinburgh and the region, even with completion of the full north-south route. Conventional bus on its own however does not provide the step change in public transport capacity and connectivity that is required to support deliver mode change policy objectives and support sustainable economic growth. Many bus stops, within or close to the city centre, are already operating with bus frequencies above maximum efficiency, resulting in stop delay and congestion (Figure 3.7).

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As given in Section 3.2.3, TfL assume that 15 buses per hour can be accommodated at single stop without delay, giving a total capacity of approximately 1,200 passengers per hour per direction. At a frequency of 45 buses per hour, stops should be doubled up to accommodate the higher frequency and a capacity of 3,600 passengers per hour.

Key Considerations – Tram v BRT

A summary of key considerations by route section is given in Table 4.2.

Table 4.2: BRT Option – Key Considerations

Strengths of BRT	Strengths of Tram
Cost Efficiency: BRT systems generally require lower capital investment compared to trams. The construction of dedicated bus lanes and stations is less expensive than laying tram tracks and installing overhead electric lines.	High capacity: Trams can carry more passengers per vehicle, making them suitable for high-demand and high population density routes.
Flexibility: BRT systems offer greater operational flexibility. Buses can be rerouted or adjusted to meet changing demand patterns or to accommodate roadworks and other disruptions.	Comfort and Perception: Trams are considered to offer a higher quality of ride, and perceived as more comfortable and prestigious, providing a sense of permanence.
Implementation Time: BRT systems can be implemented more quickly than tram systems, though high-end performance BRT requires similar statutory processes. Using existing road networks allows for faster deployment with less invasive construction work.	Environmental Benefits: Trams are electrically powered with no tyre wear, producing zero emissions at the point of use, which improves local air quality.
Scalability: BRT systems can be scaled up incrementally, adding more buses or extending routes as needed without significant infrastructure changes.	Economic Development: Fixed tram routes can stimulate significant economic development and increase property values along the corridors. Their permanence supports large-scale third-party investment.
Weaknesses of BRT	Weaknesses of Tram
Lack of Permanency: BRT's flexibility is also a weakness. Routes can be altered or vehicles replaced with lower cost alternatives, weakening the brand. As a result, BRT's ability to encourage development and regeneration is less certain.	Route Constraints: Geometry and topography mean that tram is not suitable for all routes. This is particularly true in Edinburgh where a number of corridors are unsuitable due to historic street layouts and gradients. In addition, tram requires higher population densities to justify the capacity and cost.
Capacity Limitations: In Europe, BRT systems generally have lower passenger capacity compared to trams. Trams can carry more passengers per vehicle, making them more suitable for high-demand routes.	Less Operational Flexibility: Trams are much less flexible in terms of route changes and adjustments compared to BRT/ buses. On-street, trams cannot bypass congestion or incidents.
Road Space Competition: Tracked BRT systems require dedicated lanes. Physical guidance is raised, making it difficult to integrate within an urban environment. Obtaining approval for the use of optical guidance on UK roads could be complex.	High Capital Cost: Trams require substantial upfront investment for utilities, track installation (including traffic management), overhead lines, and vehicles. Costs can be reduced as part of a rolling programme of delivery.
Journey Time Savings/ Priority: More, smaller vehicles make it more difficult to prioritise BRT compared with tram. Belfast Glider journey time savings are driven by off-bus ticketing rather than priority. But there are higher levels of fare evasion than with driver payment.	Long Implementation Time: The construction of tram systems is time-consuming and can be disruptive.

A high-level summary across TPOs, STAG Objectives and Deliverability criteria concluded the following:

- TPOs:** From the perspective of assessment against all the TPOs tram would perform significantly better than BRT. Tram also performs better against each sub objective. Differences are most pronounced in terms of sustainable economic growth and development and contribution to contribution to the City of Edinburgh's zero emissions target.

- **STAG Criteria:** A comparative assessment against STAG Objectives also indicated tram would perform better against each sub criteria than BRT. Most notably in terms of accessibility and integration.
- **Deliverability:** Comparative tram and BRT performance against the deliverability objectives is more balanced. Both options have a range of similar delivery challenges. However, operationally, tram is more deliverable than BRT but would have a greater impact on land take.

An Options Assessment concludes that tram is a better modal solution than BRT in terms of delivering against the scheme objectives. Tram is an established and successful mode within the city and a North-South line expands the network, creating a range of new direct service opportunities. Tram has broad business representative and major employer support, with greater potential to attract investment and deliver new development. It better integrates with urban streets; BRT by comparison requires raised kerbs in guided sections and takes up more space in general. Tram is more comfortable and better supports mode shift from the car and, overall, is a more acceptable and deliverable option than BRT.

Based on the above, tram has been assumed to be the preferred modal solution within the SBC.

4.3.2. Route Options Sifting

While the ESSTS identified the Granton and the South East as preferred corridor, there are a number of potential route sub options within each.

A sift of potential routes has been undertaken, based on their suitability as a tram corridor, informed by alignment constraints and topography. A summary is provided in Appendix A.

Granton

Table 4.3 summarises the key alignment constraints between the city centre and Granton.

Table 4.3: Granton Route Options

Corridor	Comment
Roseburn Path	Retained as part of Roseburn Corridor
Belford Road	Not taken forward: ▪ Junction with Athol Place – Potential tram alignment necessitates realignment of the northeastern kerb radii. This would reduce footway width to below 2.0m at an area of high pedestrian demand. In addition, the layout can only accommodate a connection towards the city centre, with a minimum inner track radius of 25m ▪ Approximately 125 m of single track would be required between Belford Terrace and a point 45m north of Belford Park. This would require signal control of both the single-track section and the adjacent Belford Park and Belford Terrace junctions. The resulting lengthy signal cycles and tram waiting times would increase tram journey times and adversely affect service reliability ▪ Ravelston Place to Orchard Brae – A split-route arrangement is required, with northbound movements via Ravelston Terrace and southbound movements via Queensferry Road and Queensferry Terrace. Turning radii at the key junctions, Belford Road/Ravelston Terrace, Queensferry Road / Queensferry Terrace and Orchard Brae / Queensferry Road are 25 m
Queensferry Road	Retained as part of Orchard Brae Corridor
Stockbridge/ Howe Street	Not taken forward: ▪ Between Princes Street and Howe Street - the alignment is characterised by sustained longitudinal gradients of between 5% and 8%, leaving no practicable locations for tram stop provision. Whilst gradients are within the performance range of tram, they are at the upper end, and are undesirable for passenger boarding and alighting due to accessibility, comfort and safety considerations. The absence of sufficiently level track sections would require passengers to board and alight from sloping platforms, creating challenges for wheelchair users and other passengers with reduced mobility. The only level areas are at junctions, but these are not sufficiently long to accommodate a 43m tram. A tram stop at these locations would require street closures and rerouting within the New Town, with resulting heritage impacts. ▪ Initial review of the vertical geometry suggests that the vertical alignment at Heriot Row and Queen Street junctions can be accommodated; however, a further detailed assessment would be required to confirm the adequacy of vertical transitions and compliance.
Broughton Street	Not taken forward: ▪ The proposed geometric arrangement between Broughton Street Junction and York Place is not considered feasible for tram operation. Achieving a compliant horizontal curvature would require land take and demolition.

South East

Table 4.4 summarises the key alignment constraints between the city centre and BioQuarter.

Table 4.4: South East Route Options

Corridor	Comment
Pleasance	Not taken forward: - It would be extremely challenging to connect into the existing alignment at Princes Street. Waverley Bridge is too close to South St Andrew Street to enable all movements. In addition, bus capacity would be adversely impacted - The turn from Waverley Bridge into Market Street is less than 25.0m required by tram - Geometry at Cowgate/ St Mary's St/ Holyrood Rd/ Pleasance is constrained, potentially resulting in significant tram and general traffic delays - A gradient of 10% on the Pleasance exceeds 8% maximum of the Edinburgh Tram vehicles - The Pleasance is identified as a key route for general traffic in the Circulation Plan. Traffic levels could further increase depending on proposals taken forward for Holyrood Park.
North Bridge/ South Bridge/ Nicholson Street	Retained as part of South East Corridor
The Mound	Not taken forward: - Junction with Princes Street – Would require potential realignment of existing east west alignment to achieve a minimum 25.0m turning radii. This is subject to further assessment to confirm the as built alignment. - The curve immediately south of the National Galleries of Scotland would require a minimum turning radius of approximately 25 m. While this radius may be achievable, the curve is also located on a section of route with a maximum longitudinal gradient of approximately 10%. The combination of a tight horizontal radius and a steep uphill gradient would create significant operational and performance constraints. - The curve at St Giles Road would require a single track section extending approximately 60 m west and 80 m south, controlled by signals. Northbound movements would be held at the Bank Street / Lawnmarket junction to allow opposing trams to clear the section. The combination of a 30 m curve radius and a maximum longitudinal gradient of 6.5% would require low operating speeds, while the signal-controlled single-track arrangement would introduce additional delays.
Lothian Road	Not take forward (as outlined in Section 4.2.3): - Complexity of construction and operation of tram through 5 major junctions – West Approach Road, Morrison Street, Fountainbridge, Tollcross - Higher construction costs – a function of complexity and route length - Lower tram patronage than via The Bridges - Environmental Impacts through Melville Drive and The Meadows - Common Land status of The Meadows
South Clerk Street / Minto Street/ Craigmillar Park	Retained as part of South East Corridor
Dalkeith Road	Proposed as an alternative to Minto Street / Craigmillar Park above. Not taken forward: - Alignment would follow Bridges corridor as far as East Crosscauseway or East Preston Street. Route would follow one of those streets to join Dalkeith Road. Both options involve tight turns (radius 25m), increasing tram journey times. Geometric constraints would require a loss of parking on residential streets - At the southern end of Dalkeith Road tram would be on the east side of Cameron Toll roundabout – the wrong side to serve Cameron Toll shopping centre - Tram would be fully on-street through Cameron Toll roundabout and would require to pass under the south suburban railway, in close proximity to the Old Dalkeith Road stop line. This location is already at capacity and weaving tram through this constrained location would significantly increase general traffic congestion - A tram stop would need to be located on Old Dalkeith Road, approximately 300-400m from the shopping centre, rather than adjacent with a route via South Clerk Street, Minto Street and Craigmillar Park.
Old Dalkeith Road	Retained as part of South East Corridor (with the “Beyond BioQuarter” section being further examined via SEStransit)
Gilmerton Road	Proposed as an alternative to Old Dalkeith Road above. Not taken forward: - Longer route, increasing scheme cost - Uncompetitive journey time compared to bus

4.4. Candidate Design Proposals

Candidate Design proposals have been developed for preferred route options to support the SBC. This level of detail is beyond the typical scope of a project at this stage, but work has helped demonstrate the tram concept, concept junction design requirements, levels of possible tram priority, and wider design and policy trade-offs.

Nevertheless, Candidate Designs reflect just one potential option; proposals will be subject to significant further design and refinement during the feasibility and detailed design process, undertaken as part of a future OBC.

Three Candidate Designs have been developed covering the full north-south tram route:

- Roseburn - Granton to Haymarket – the route is shared with the Orchard Brae Option below between Waterfront Avenue and West Granton Access – then via Crewe Toll, Roseburn Path, connecting with the existing tram route near Russell Road
- Orchard Brae - Granton to Princes Street – the route is shared with the Roseburn option above between Waterfront Avenue and West Granton Access - then via Crewe Toll, Crewe Road South, Orchard Brae, Queensferry Road, Queensferry Street, connecting into the existing tram route at Princes Street
- South East - South St Andrew Street Junction, North Bridge, South Bridge, Clerk Street, Minto Street, Craigmillar Park Lady Road (Cameron Toll) Old Dalkeith Road, Little France Drive (Royal, Infirmary, Edinburgh / BioQuarter)
 - Beyond the BioQuarter, a connection to Shawfair railway station is assumed within strategic modelling/ passenger forecasting, although a concept alignment requires to be developed in consultation with Midlothian Council. An additional route / future extension to Queen Margaret University via Craigmillar is also under consideration (via SEStransit).

A map of the route sections is given in Figure 4.3.

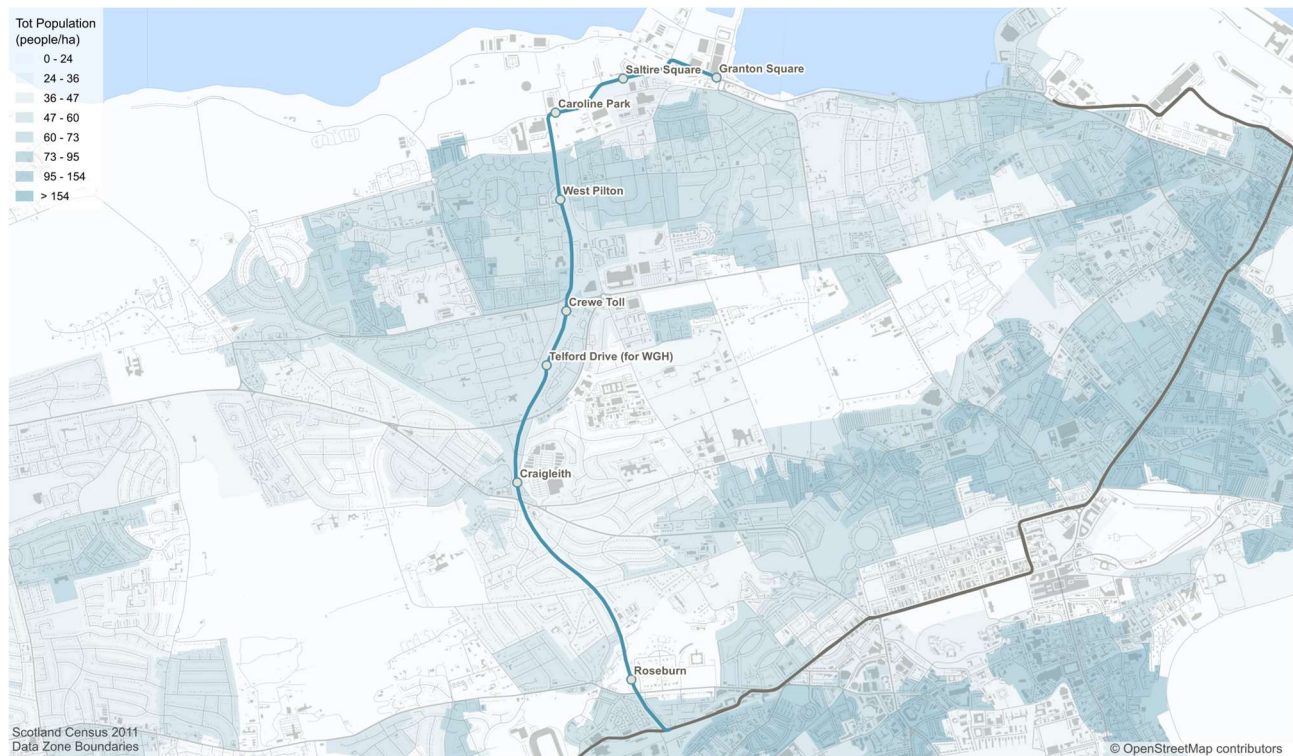
Figure 4.3: Corridor Options



4.4.1. Roseburn

The Roseburn route option is shown in Figure 4.4. The tram route diverges from the existing line at Roseburn, to the west of Haymarket. It then runs via the Roseburn Path, West Granton Access and Waterfront Avenue to Granton Square.

Figure 4.4: Roseburn Route Option and Indicative Tram Stop Locations



Proposed tram stops are located at:

- Roseburn
- Craigleith
- Telford Drive (for Western General Hospital)
- Crewe Toll (at Ferry Road)
- West Pilton
- Caroline Park
- Saltire Square
- Granton Square

The Roseburn alignment serves the existing Haymarket and West End tram stops, providing strong integration with the existing network and interchange at Haymarket for journeys to and from Edinburgh Park, The Gyle and Airport. It also offers excellent access to the major employment areas around Haymarket and the West End.

To minimise land take and environmental impacts, the Roseburn Path section would be double track between Roseburn Junction and the Roseburn stop, reducing to a single track between Roseburn and Craigleith. A previously proposed stop at Ravelston Dykes has been omitted for this reason. In addition, the removal of this stop simplifies operation over the single line working section and reduces the journey time between the existing line and Granton.

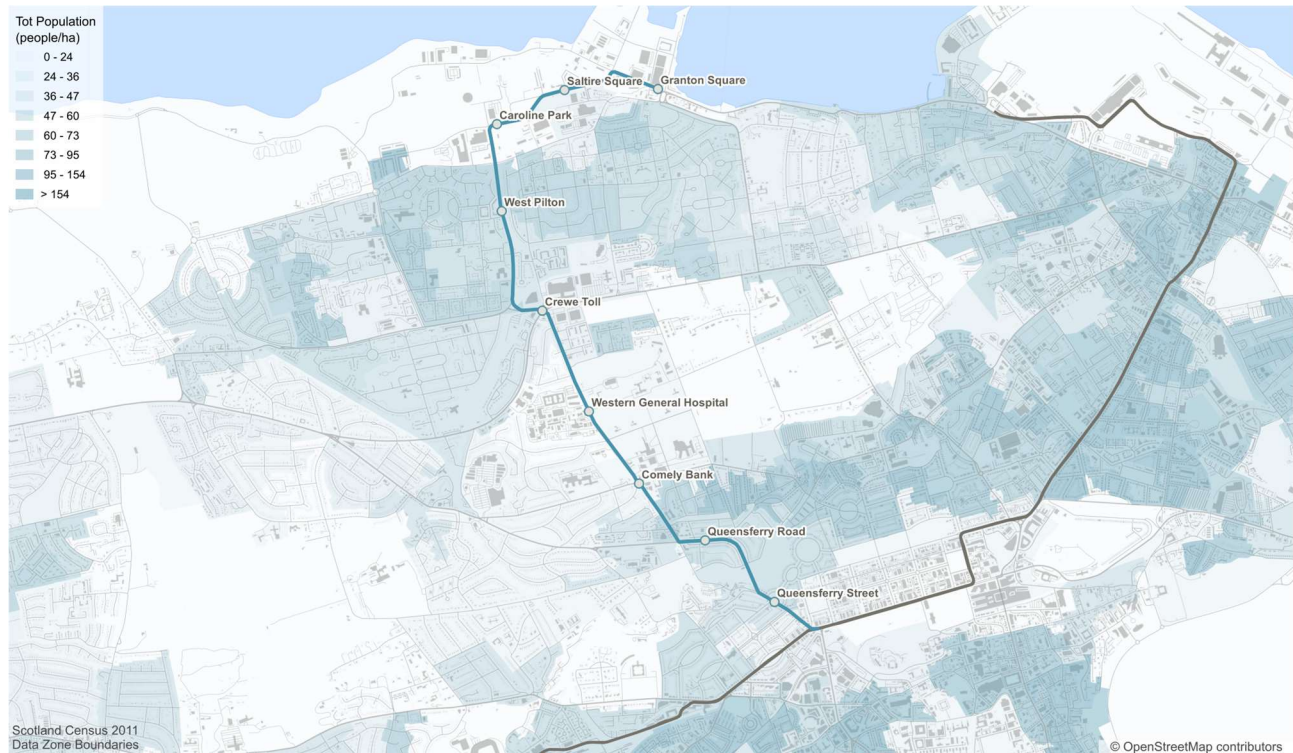
North of Craigleith, the route is again double track, crossing Ferry Road to join the West Granton Access.

Beyond Ferry Road, the alignment is common to the Orchard Brae option below, following the safeguarded 2008 corridor largely off-street alongside West Granton Access and Waterfront Avenue.

4.4.2. Orchard Brae

The Orchard Brae route option is shown in Figure 4.5.

Figure 4.5: Orchard Brae Route Option and Indicative Tram Stop Locations



Starting from the city centre, the tram route diverges from the existing line at Shandwick Place, west of Princes Street and Lothian Road. Travelling northwards, proposed tram stops are located at:

- | | | |
|----------------------|----------------------------|------------------|
| ▪ Queensferry Street | ▪ Western General Hospital | ▪ Caroline Park |
| ▪ Queensferry Road | ▪ Crewe Toll | ▪ Saltire Square |
| ▪ Comely Bank | ▪ West Pilton | ▪ Granton Square |

Geometric constraints mean that only an east-facing junction can be provided between Queensferry Street and Princes Street, with no direct connection possible to Shandwick Place. As a result, passengers travelling between Granton and Haymarket, the West End or the Airport corridor would be required to interchange at Princes Street.

The route also introduces operational challenges at the Princes Street/ Lothian Road/ South Charlotte Street junction, where two tram routes would converge. Initial assessment indicates that accommodating these movements without significant impacts on buses and general traffic would be difficult.

A tram stop on Queensferry Street would require the relocation of existing bus stops serving regional and express services. Given existing capacity constraints on the corridor and forecast growth in bus services from Fife, West Edinburgh and the Waterfront, this could create a significant operational constraint, increasing bus delays and potentially affecting tram reliability.

Alternative bus stop locations, including Charlotte Square and Melville Street, have been considered but are constrained by streetscape and heritage considerations. In developing a concept design for the Orchard Brae route, maintaining adequate bus stop capacity on the Queensferry Road corridor and within the city centre will be a key area of focus for the OBC.

Trams would then continue via Drumsheugh Place, Lynedoch Place and Dean Bridge towards Queensferry Road, Orchard Brae and Crewe Road South. Due to the constrained width of Dean Bridge, segregated cycling infrastructure cannot be accommodated alongside tram.

4.4.3. South East Route and Indicative Tram Stop Locations

A Candidate Design has been developed for the South East tram corridor. Figure 4.6 illustrates the route corridor and proposed stop locations.

Figure 4.6: South East Route



Proposed tram stops are located at:

- North Bridge
- Nicolson Street
- Newington
- Mayfield Gardens
- Cameron Toll
- The Inch
- Royal Infirmary
- BioQuarter

The design assumes that uncontrolled right-turn movements across the tram tracks are avoided where possible. Accordingly, all major junctions would be signalised, consistent with the operational approach used on the existing on-street tram network.

An all-movements delta junction at Princes Street/ South St Andrew Street would connect the route to the existing network. However, tight turning radii would restrict tram speeds to around 10 kph, and the combination of tram, pedestrian and traffic movements will constrain junction capacity.

A further tight-radius movement is required between Princes Street and North Bridge, necessitating a northward shift of the tracks and a corresponding minor reduction in footway width on the north side of Princes Street.

These geometric constraints mean segregated cycling infrastructure cannot be accommodated on the north side of east Princes Street. While provision on the south side may be possible, this would create conflicts with bus stops and access to Waverley Steps and the Balmoral Hotel.

On North and South Bridge, widened footways are proposed through a reduction in traffic lanes, improving pedestrian comfort and accessibility, particularly around bus stops where overcrowding currently forces pedestrians into the carriageway.

A tram stop is proposed on North Bridge. Offset platforms would minimise the required corridor width and maximise footway space. Direct lift access between the stop and Waverley Station is assumed, creating a high-quality interchange and significantly improving accessibility between the station and the Old Town, particularly for passengers with luggage or reduced mobility.

Consistent with the Council's Circulation Plan, the corridor between North Bridge and Cameron Toll is assumed to prioritise public transport. Supporting this strategy, a modal filter is proposed at North Bridge, restricting through movements to buses, trams and taxis. General traffic would be limited to local access and servicing, with egress via Chambers Street and Blair Street.

Tram stops at Mayfield Gardens and Cameron Toll would provide potential interchange opportunities with the South Suburban Railway (for example east-west orbital services on South Suburban via high quality Interchange with tram at Cameron Toll would have access to Edinburgh BioQuarter and the Royal Infirmary of Edinburgh to the south, and in the opposite direction, links to Edinburgh University and South Bridge to north).

The proposed route through Cameron Toll has been revised to pass through the roundabout, rather than skirting the junction to the south, providing a simpler alignment. Beyond Cameron Toll, tram would be on-street on Old Dalkeith Road, minimising environmental impacts and integrating with planned active travel infrastructure.

Concept design options terminate at the BioQuarter (at Little France Drive). Here, there is an opportunity to improve placemaking and provide high quality interchange between tram and bus, significantly improving existing bus facilities.

Beyond the BioQuarter, a connection to Shawfair railway station is preferred, although a concept alignment requires to be developed in consultation with Midlothian Council. A future extension to Queen Margaret University via Craigmillar is also under consideration, with discussions held with East Lothian Council. Options will be explored further through SETransit.

All signalised junctions are assumed to operate on a 112.5-second cycle, providing capacity for up to 32 tram movements per hour in each direction. This is consistent with the existing tram corridor between Haymarket and Foot of the Walk.

4.5. Option Assessment - Performance Against TPOs and STAG Criteria

It is important to understand how the proposed tram extensions to Granton and the South East would perform against the established Transport Planning Objectives for the study. The TPOs are listed below (insert reference to tables 3.4 etc as previously discussed in detail there) and incorporate the existing transport problems and key policy challenges for the city, region and country.

- To support inclusive and sustainable economic growth
- To respond to climate change towards delivering net-zero
- To promote equality and inclusion and help tackle the city's housing emergency
- To improve health, wellbeing & safety
- To protect and enhance our environment

An assessment of scheme benefits and disbenefits is provided in Report RP07, Trams to Granton BioQuarter and Beyond: Options Assessment. A summary is given in the following sections, and Tables 4.6 and 4.7 which follow.

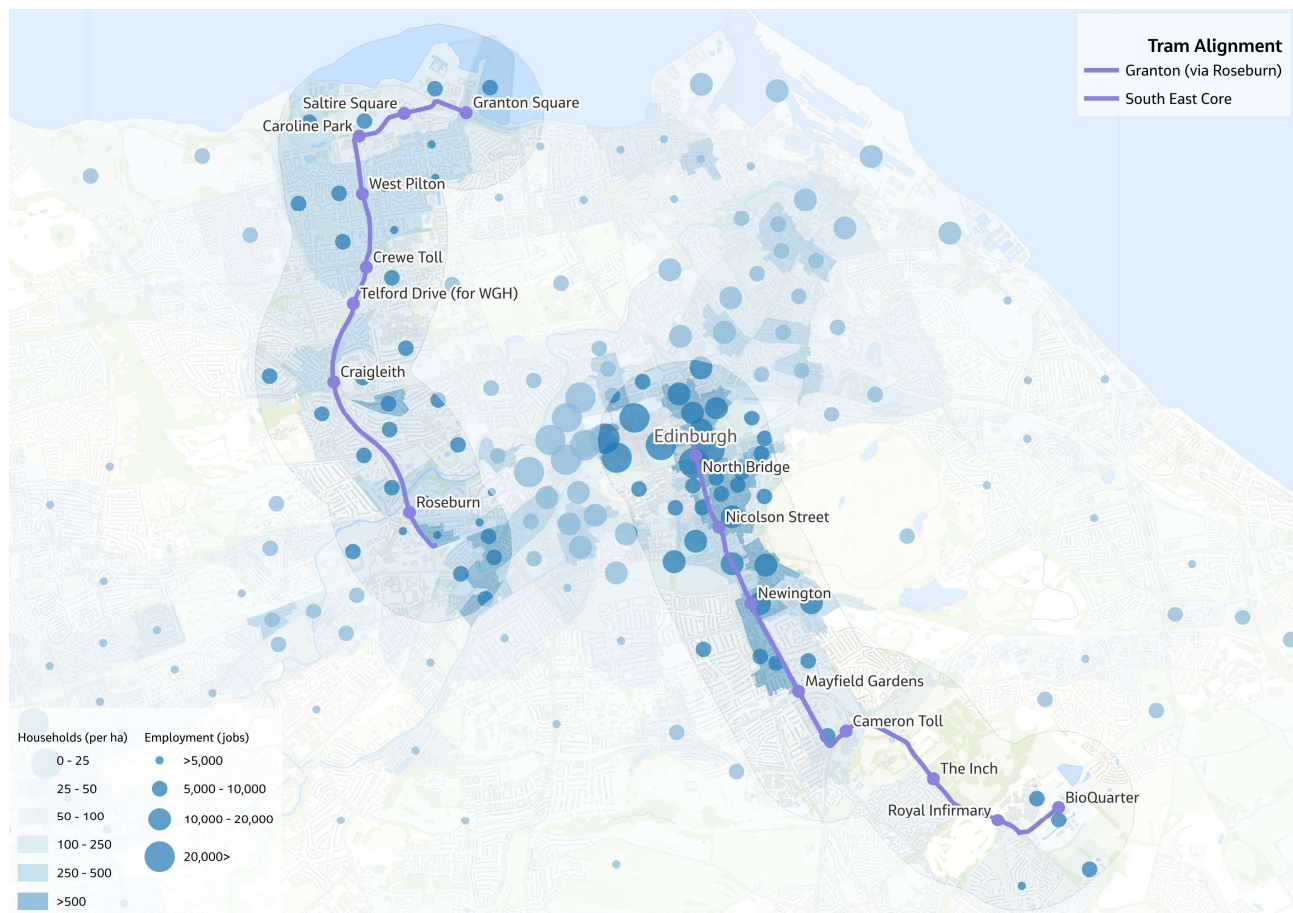
4.5.1. TPO1 - To support inclusive and sustainable economic growth

For businesses and workers, especially in high-value sectors, quality of life is a major determinant of the attractiveness of a city as a place to live or work.

TGBB would increase the labour market catchment, enhancing strategic connectivity to key gateways such as Edinburgh Airport and Waverley, Haymarket and Edinburgh Park Stations. The population and employment catchments within a 750m buffer of the proposed extensions to Granton and the South East (Figure 4.7) are forecast to be approximately 120K people and 93K jobs by 2032.

Figure 4.7: Population and Employment within 750m of the Tram Corridor

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Tram proposals also have a key role in enhancing regional connectivity. A potential tram/ rail interchange at Shawfair and a new tram/ bus interchange at the Royal Infirmary/ BioQuarter creates a range of public transport journey opportunities. Tram links Midlothian and the Scottish Borders with the employment and health services at the BioQuarter and the Royal Infirmary, and wider access to southeast Edinburgh.

4.5.2. TPO2 - To respond to climate change, delivering net-zero

A new North-South tram route would positively impact climate and air quality by providing a zero-emission public transport option, reducing greenhouse gas emissions and supporting the Council's target to cut vehicle kilometres by 30%.

Evidence from STPR2 highlights strong reliance on private car travel for non-city centre trips due to limited public transport choices and uncompetitive journey times. Tram would address this by serving key cross-city destinations and encouraging significant mode shift, building on the success of the existing tram route in increasing public transport mode share at locations such as Edinburgh Airport, Edinburgh Park and Leith.

The route could support new Park & Ride (being looked at via SEStranist) and multi-modal hubs, capturing longer-distance trips before they enter the city. Combined with expansion of the Controlled Parking Zone (particularly around West Edinburgh), this would reduce car-based commuting, lower emissions and strengthen integration with feeder bus and future orbital bus services.

Potential extensions to Shawfair and Queen Margaret University would improve sustainable access, connecting into enhanced walking and cycling networks.

4.5.3. TPO3 - To promote equality and inclusion and help tackle the city's housing emergency

Tram can act as a catalyst for regeneration and investment, supporting economic growth in areas of high multiple deprivation. The corridor would serve several of Edinburgh's most deprived communities, including

Pilton and Muirhouse in the north, and the Inch and Moredun in the south, many of which currently have limited direct public transport options.

By improving connectivity to employment, education, healthcare, leisure and open space, tram would enhance accessibility and social mobility for disadvantaged communities. Affordable, bus-equivalent fares, combined with integrated ticketing, would make tram particularly attractive for cross-city journeys.

Improved air quality resulting from reduced car use would also deliver health benefits, particularly for children and other vulnerable groups.

The scheme is expected to generate positive outcomes for equality, health and the environment through increased access to essential services and opportunities. In addition, tram investment can stimulate higher-density residential and commercial development along the corridor. Experience from the existing network demonstrates this effect, with significant property value growth and accelerated development along the Leith Walk and Ocean Terminal corridor:

4.5.4. TPO4 - To improve health, wellbeing & safety

Tram has the potential to improve physical and mental health, and social connection and wellbeing. Investment will be a catalyst for change within the areas, supporting wider area regeneration and placemaking, such as the opportunity for enhancements at Easter Drylaw Park.

The proposed route would directly serve the Royal Infirmary of Edinburgh and Western General Hospital, improving access to healthcare for patients, visitors and staff. Enhanced connectivity between tram, rail and bus, together with potential extensions into East and Midlothian, will provide attractive alternatives to car travel and improve access to these key regional destinations.

Tram networks are fast and accessible. They are more legible than typical bus routes making them attractive to less frequent users. Fixed networks, with bespoke branding, aid spatial perception of the users' environment, and are particularly important to the elderly and passengers with a disability who might otherwise find the perceived complexity of public transport a barrier to use.

New stations/ stops and access will require to be fully compliant with the Equality Act and there will be an opportunity with new infrastructure to design-in level access from the outset. New walking and cycling links to tram stops will connect into local communities, encouraging greater active travel.

The scheme will also support active travel through improved walking and cycling links to stops and a parallel active travel corridor, enabling both local and longer-distance journeys. By encouraging mode shift from private car use, tram would help reduce congestion, improve air quality and deliver wider health benefits through its zero-emission operation.

With faster, more reliable journeys, tram can help encourage mode shift away from the car, reducing traffic volumes and improving air quality. Tram has zero emissions at point of use further improving the local environment.

4.5.5. TPO5 - To protect and enhance our environment

Tram is an integral component of a wider transport strategy that seeks to transform the quality of the city's environment and enhance neighbourhoods and place across the city through reducing dependence upon, and the adverse impacts of, car use and traffic.

Across the region, outside Edinburgh, housing developments tend to be at lower densities and heavily reliant on car. New tram connections, either served directly, via Park & Rides, active travel or public transport interchange, would not only allow higher density build out, but would also help relieve congestion on the road network. Reduced car demand means less land is required for roads and car parking, allowing more space to be allocated for placemaking, nature and recreation.

Tram is an attractive and modern mode, which integrates within a historic city centre environment. It provides an opportunity to deliver improved public realm, supported by traffic and demand management measures.

Tram would enable wider footways, providing more pedestrian space, particularly around major junctions. New attractive and distinctive spaces, with appropriate planting and wayfinding, could be created, supporting local shops and enterprise.

4.5.6. TPO Performance by Corridor

Multi-Criteria Assessment Framework

The previous analysis highlighted the benefits of a new north-south tram line for Edinburgh and South East region. The following tables outline the performance of each section of the tram corridor against the established TPOs.

The scoring assessment have been undertaken using a scoring range of +3 to -3 in line with Transport Scotland STAG guidance²⁰, as outlined in Table 4.5.

Table 4.5: STAG Scoring Framework

Benefit/ Impact	Justification
Major benefit (+++)	These are benefits or positive impacts which, depending on the scale of benefit or severity of impact, the practitioner feels should be a principal consideration when assessing an option's performance against objectives
Moderate benefit (++)	The option is anticipated to have a moderate benefit or positive impact
Minor benefit (+)	The option is anticipated to have only a small benefit or positive impact
No benefit or impact (0)	The option is anticipated to have no or negligible benefit or negative impact
Minor cost or negative impact (-)	The option is anticipated to have only a small negative impact
Moderate cost or negative impact (--)	The option is anticipated to have a moderate cost or negative impact
Major cost or negative impact (---)	These are costs or negative impacts which are significant and a material consideration when assessing an option's performance

The Multi-Criteria Assessment Framework summaries for Roseburn / Orchard Brae and the South East corridor are given in Tables 4.6 and 4.7 below.

²⁰ <https://www.transport.gov.scot/media/50895/scottish-transport-appraisal-guidance-managers-guide.pdf>

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Table 4.6: Roseburn / Orchard Brae Corridor Performance Against TPOs

Objectives	Sub-objectives	Roseburn STAG Assessment	Orchard Brae STAG Assessment	Rationale behind STAG Assessment
To support inclusive and sustainable economic growth	Objectives			
	To support economic growth at the city, region and national level	+++	++	Roseburn offers faster peak journey times, higher demand, and direct access to Haymarket, boosting city-wide economic performance. Orchard Brae provides good central access but with slower and less reliable travel and no option for a direct route to the airport.
	To support the development and success of Strategic Development Areas	++	+	Both options would directly serve the Granton, City Centre and the Edinburgh BioQuarter SDAs, and provide a tram connection to the West Edinburgh and Leith Waterfront SDAs. The better journey times and reliability mean that Roseburn would better support the development and success of the Granton SDA. Though at smaller scale, Orchard Brae would support housing or opportunity sites around Comely Bank and Orchard Brae.
	To ensure growth is inclusive and sustainable	+++	++	Roseburn supports access for deprived communities and integrates well with active travel. Analysis of a 750m buffer around the tram corridors shows Roseburn has a higher employment catchment (72K jobs) compared to Orchard Brae (65K jobs). Orchard Brae improves access to Western General and job-rich zones, supporting inclusion differently.
To respond to climate change, delivering net-zero	Objectives			
	Encourage mode shift to more sustainable modes of transport	++	+	High segregation and journey time reliability on Roseburn strongly promote modal shift. Orchard Brae's on-street design limits attractiveness.
	Improve the attractiveness of public transport through increased efficiency, journey time reliability and service quality	++	+	Roseburn's off-street design improves operational efficiency and resilience. Orchard Brae faces delays from traffic interaction.
	Support sustainable land-use development, aligned with spatial planning and development policies	++	+	Roseburn aligns with City Plan 2030 and spatial development at Granton. Orchard Brae does not directly support new planned growth.
	Key Impacts (Trade-Offs)			
	Ecology, biodiversity and network resilience	--	0	Roseburn runs through an LNCS and Green-Blue Network, impacting continuous habitat for bats, badgers, birds, and amphibians. Despite proposed mitigation, it would weaken ecological connectivity and resilience. Orchard Brae affects isolated street trees with limited habitat value and no strategic ecological designations.

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Objectives	Sub-objectives	Roseburn STAG Assessment	Orchard Brae STAG Assessment	Rationale behind STAG Assessment
To promote equality and inclusion and help tackle the city's housing emergency	Objectives			
	Increase public transport accessibility to jobs, education, healthcare and leisure, especially for disadvantaged and vulnerable users.	++	++	Both options provide a high-quality and fully accessible transport option serving employment, health and leisure opportunities. Roseburn provides better accessibility to a wider range of destinations whereas Orchard Brae serves a larger in-scope catchment. Both options offer strong benefits but different focus.
	Improve mobility through improving the physical accessibility of transport.	++	++	Roseburn would provide for high-quality segregated active travel. Orchard Brae is flatter but lacks room for cycling upgrades.
	Key Impacts (Trade-Offs)			
	Affordability of public transport	++	++	Fares would be the same for both options, and would be the same as bus fares. Both options serve areas of high deprivation.
To improve health, wellbeing & safety	Objectives			
	Reduce collisions and casualties from road transport through modal-shift to safer public transport and active travel methods.	++	0	Roseburn avoids road conflicts via off-street design. Orchard Brae adds on-street tram alignment in congested areas, with higher risk exposure.
	Increase safety and security of the transport network.	++	++	Both options include safety features on-board and at stops and would include the presence of conductors.
	Increase the attractiveness of the active travel network and increase active travel use.	+	0	Roseburn integrates walking and wheeling in a green corridor but would change the amenity setting within which people would walk and cycle. Orchard Brae would involve the removal of some cycling infrastructure due to space constraints.
	Improve local air quality	+	-	Roseburn encourages modal shift and avoids congestion. Orchard Brae adds to congestion and lacks scope for emissions benefits.
	Key Impacts (Trade-Offs)			
	Impact on key designations including the Green-Blue Network and Local Nature Conservation Area	--	0	The alignment runs through a LNCS and Edinburgh's Green-Blue Network. While mitigation and habitat enhancements are planned, the loss of habitat connectivity and tree cover would significantly affect biodiversity and the ecological character of the corridor.
To protect and enhance our environment	Objectives			
	To protect and enhance the built and natural environment and support the enhancement of 'place'.	-	0	Roseburn would transform a calm natural corridor into a formally designed corridor including tram and active travel provision. Environmental mitigation includes improvements at Murrayfield Station tram stop and Drylaw Park. Orchard Brae maintains an urban character. Potential local impacts at Crewe Road South. Subject to a geotechnical survey, foundation

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Objectives	Sub-objectives	Roseburn STAG Assessment	Orchard Brae STAG Assessment	Rationale behind STAG Assessment
				strengthening may be required at Dean Bridge under the Orchard Brae option. Impacts would be temporary, with a mitigation strategy developed with SEPA and stakeholders.
	Key Impacts (Trade-Offs)			
	Biodiversity and habitats	--	0	The route impacts woodland supporting foraging bats, birds, badgers, and amphibians. Though replanting and ecological design would be planned, continuity of habitat and corridor function would be significantly reduced.
	Heritage	0	-	Roseburn avoids listed structures and sensitive townscape. Orchard Brae requires structural works on Dean Bridge with inherent technical and conservation risks. Potential impact on conservation areas and the World Heritage Site, including possible rerouting of buses away from Queensferry Street. Impact of both options mitigated by use of battery-powered trams.

Table 4.7: South East Performance Against TPOs

Objectives	Sub-objectives	South East STAG Assessment	Rationale behind STAG Assessment
To support inclusive and sustainable economic growth	Objectives		
	To support economic growth at the city, region and national level	+++	Mass transit link connects the city centre to Cameron Toll, the Royal Infirmary, the BioQuarter, and Beyond. At the BioQuarter, mass transit delivers the high- quality public transport required to support investment by major life-science industries and employers, and compete with other UK and European locations.
	To support the development and success of Strategic Development Areas	++	The south east corridor would directly serve the City Centre and Edinburgh BioQuarter SDAs, and provide a tram connection to the West Edinburgh and Leith Waterfront SDAs. As above, At the BioQuarter, mass transit delivers the high quality public transport required to support investment. Mass transit would support housing or opportunity sites around the corridor, with the potential for significant additional housing, at higher densities, in East and Midlothian.
	To ensure growth is inclusive and sustainable	+++	The corridor supports access for deprived communities and integrates well with active travel. GIS analysis shows a 750m employment catchment of 69K jobs). Mass transit improves connectivity to the Royal Infirmary Edinburgh, the Western General Hospital and major employment zones, supporting inclusion.
To respond to climate change, delivering net-zero	Objectives		
	Encourage mode shift to more sustainable modes of transport	++	Improved journey quality and reliability, and new and improved interchange opportunities, will help promote modal shift.

Trams from Granton to BioQuarter and Beyond Strategic Business Case

Objectives	Sub-objectives	South East STAG Assessment	Rationale behind STAG Assessment
	Improve the attractiveness of public transport through increased efficiency, journey time reliability and service quality	++	Mass Transit will help improve public transport operational efficiency and resilience. In-vehicle experience, stop and interchange facilities will enhance service quality.
	Support sustainable land-use development, aligned with spatial planning and development policies	++	The South East corridor aligns with City Plan 2030 and spatial development at Cameron Toll and the BioQuarter.
	Key Impacts (Trade-Offs)		
	Traffic congestion and network resilience	-	While Mass Transit will encourage mode shift, careful design will be required to minimise congestion impacts. The closure of North and South Bridge to through traffic will result in displacement; the impacts of this will require to be mitigated. The junction of Craigmillar Park/ Lady Road/ Liberton Road will need to minimise possible adverse impacts on bus journey times.
To promote equality and inclusion and help tackle the city's housing emergency	Objectives		
	Increase public transport accessibility to jobs, education, healthcare and leisure, especially for disadvantaged and vulnerable users.	++	Mass Transit would provide a high-quality and fully accessible transport option serving employment, health and leisure opportunities. The proposed route directly serves the Royal Infirmary Edinburgh, improving connectivity from across the city and region.
	Improve mobility through improving the physical accessibility of transport.	++	Level boarding would be provided at all transit stops, improving access for all. Safety features would be provided on-board and at stops; conductors would be present on a majority of services. All street and pedestrian crossing designs would be consistent with DDA guidance.
	Key Impacts (Trade-Offs)		
	Affordability of public transport	++	Mass Transit fares would be the same as for bus with interchange permitted between each. Maximum daily and weekly charges would continue to be capped. The corridor serves areas of high deprivation including The Inch and Moredun, and beyond the BioQuarter potentially Craigmillar and Greendykes.
To improve health, wellbeing & safety	Objectives		
	Reduce collisions and casualties from road transport through modal-shift to safer public transport and active travel methods.	+	Proposals will seek to encourage modal shift, reducing road casualties. The design will incorporate best practice walking, wheeling and cycling facilities. The scheme also proposes the closure of North Bridge / South Bridge to through traffic, reducing volumes through this busy local centre area.
	Increase safety and security of the transport network.	++	Mass Transit would include safety features on-board and at stops and would include the presence of conductors.
	Increase the attractiveness of the active travel network and increase active travel use.	++	A parallel active travel corridor will be provided. North of Cameron Toll, space is restricted and so active travel facilities will be provided on parallel routes. South of Cameron Toll, the scheme is integrated with existing active travel proposals

Trams from Granton to BioQuarter and Beyond Strategic Business Case

Objectives	Sub-objectives	South East STAG Assessment	Rationale behind STAG Assessment
			including the Old Dalkeith Road cycle scheme, connecting Lady Road with the Royal Infirmary.
	Improve local air quality	+	Proposals will seek to improve air quality by encouraging mode shift from the car.
	Key Impacts (Trade-Offs)		
	Impact on World Heritage Area, North and South Bridge and the Southside	-	Designs will seek to minimise any impact on the city streetscape by minimising the use of OLE where possible. High quality materials will seek to improve placemaking and the urban realm.
To protect and enhance our environment	Objectives		
	To protect and enhance the built and natural environment and support the enhancement of 'place'.	+	Proposals would seek to enhance the built environment. Old Town, Southside, Blacket, Waverley Park and Craigmillar Park are Conservation Areas, each with a unique character. North and South Bridge are both category A listed. On Old Dalkeith Road, Bridgend Farm is of significance; parts of the property are believed to be the remains of a 15-16th century royal chapel. There is an opportunity to integrate with development proposals at Cameron Toll, improving placemaking. At the Royal Infirmary/ BioQuarter a new interchange could form the centrepiece of a new civic area.
	Key Impacts (Trade-Offs)		
	Biodiversity and Habitats	-	The Newington and Bridges section of the corridor maintains an urban character. As a result, there will be only a minor impact on biodiversity and habitats. Beyond Cameron Toll, the tram would largely follow existing road corridors and segregated sections towards the BioQuarter, minimising environmental impact. Future extensions would need to minimise any impact on Little France Park.
	Heritage	0	Heritage impacts largely be mitigated through the city centre, mass transit has already been delivered through the World Heritage Area. Detailed designs will be developed in close cooperation with council officers and appropriate heritage bodies, including Historic Environment Scotland and Edinburgh World Heritage.

4.5.7. STAG Criteria Performance by Corridor

The performance of each section of the tram corridor was also appraisal against the five core STAG criteria of Environment; Climate Change; Economy; Equality and Accessibility; and Health, Safety and Wellbeing.

The performance against the STAG criteria for Roseburn and Orchard Brae are summarised in Table 4.8 and the South East corridor in Table 4.9. The scoring assessment have been undertaken using the same +3 to -3 as the TPOs in line with Transport Scotland STAG guidance.

Table 4.8: Roseburn / Orchard Brae Corridor Performance Against STAG Criteria

STAG Criteria	Supporting Information	Roseburn	Orchard Brae
Environment			
Biodiversity and Habitats	The Roseburn route impacts woodland supporting foraging bats, birds, badgers, and amphibians. While mitigation and habitat enhancements are planned, the loss of habitat connectivity and tree cover would affect biodiversity and the ecological character of the corridor. Orchard Brae maintains an urban character with minor impact, mainly through tree loss and small-scale habitat features, with limited opportunity for reinstatement or enhancement.	--	-
Geology and Soils	Minimal impacts expected with standard urban construction techniques applied.	0	0
Land Use	The scheme is expected to meet or support most local, regional and national policy objectives, related to regeneration, improving access and sustainable travel. No agricultural land affected.	+	+
Water, Drainage and Flooding	Both routes will require changes to existing drainage systems, as well as construction of new surface water systems as part of the scheme. Areas where physical works occur are unlikely to be any more vulnerable to flooding than existing infrastructure. There is potential for short term impacts on the local environment through a loss of containment of construction materials such as fuels and oils; however, standard working practices would minimise the likelihood of a loss of containment occurring. These options would therefore likely have a minor negative impact on impact on water, drainage and flooding. Subject to a geotechnical survey, foundation strengthening may be required at Dean Bridge under the Orchard Brae option. Impacts would be temporary, with a mitigation strategy developed with SEPA and stakeholders.	-	-
Air Quality	The more attractive journey time and journey time reliability of the Roseburn option means that tram would attract greater modal shift from car. Roseburn encourages modal shift and avoids congestion due to its off-street, segregated route. Orchard Brae adds to congestion and lacks scope for emissions benefits.	+	-
Historic Environment	Roseburn avoids listed structures and sensitive townscape. Orchard Brae requires structural works on Dean Bridge with inherent technical and conservation risks and affects conservation areas and the World Heritage Site. Impact of both options mitigated by use of battery-powered trams.	0	--
Landscape	Moderate to major impact during construction on Roseburn route, with potential for long-term neutral or positive outcome if enhancements are successfully delivered. Minor impact for Orchard Brae route due to tree removal and alteration of the street's visual character; mitigations will be constrained by the available space within the corridor.	--	-
Noise and Vibration	Temporary construction impacts on Roseburn route with low operational noise anticipated due to vehicle technology and segregated route. Construction-phase impacts likely to be more noticeable in the built-up Orchard Brae corridor; operational impacts expected to be low due to tram design, but closer proximity to dwellings could result in higher perception of noise.	0	-
Climate Change			
Greenhouse Gas Emission	The corridor has significant scope for modal shift and reduction in car dependency to reduce emissions from transport. Improved connectivity and potentially quicker journey times that tram can provide could encourage more people to switch from car usage to public transport to help reduce	++	+

Trams from Granton to BioQuarter and Beyond Strategic Business Case

STAG Criteria	Supporting Information	Roseburn	Orchard Brae
	carbon emissions within the corridor. High segregation and journey time reliability on Roseburn strongly promote modal shift. Orchard Brae's on-street design limits attractiveness.		
Vulnerability to Effects of Climate Change	These options could be impacted by climate impacts, such as flooding or extreme heat, but are unlikely to be more or less vulnerable than existing infrastructure.	0	0
Climate Change Adaptation	Tram supports the transition to a low-carbon future by encouraging modal shift to public transport and supporting sustainable land-use development, aligned with climate goals.	+	+
Health, Safety and Wellbeing			
Accidents	Public transport, including tram, has significantly lower casualty rates per kilometre travelled compared to private vehicles. Roseburn avoids road conflicts via off-street design. Orchard Brae adds on-street tram alignment in congested areas, with higher risk exposure. Localised positive impacts can be anticipated where lower overall general traffic volumes due to mode shift result in fewer conflicts between motorised traffic. Improvements to pedestrian crossings can be expected to positively impact on perceived safety for pedestrians, wheelers, and cyclists.	++	+
Security	The character of the Roseburn corridor would be changed which could affect the attractiveness / ambience for walkers and wheelers. However, enhancement works are proposed as part of the scheme which would aim to improve user experience for pedestrians and cyclists and deliver a net benefit in terms of corridor usability, accessibility and perception of personal safety. Edinburgh tram offers a high level of security, through the presence of Conductors, CCTV and Help Points both on board and on street.	++	++
Health Outcomes	Trams are efficient and low carbon forms of transport, bringing benefits of reduced air pollution and noise compared to general traffic. By transitioning from car use to public transport use, such as the tram, people will increase their physical activity levels and accrue health benefits associated with regular exercise. During construction there will be noise disturbance, dust, and inconvenience for local communities surrounding the areas of works.	++	++
Access to Health and Wellbeing Infrastructure	Public transport like trams and other mass transit systems, helps to connect people, providing access to work, friends, family, education institutions and health supporting facilities. The proposed routes would directly serve the Western General Hospital, improving access to healthcare for patients, visitors and staff.	+++	+++
Visual Amenity	For Orchard Brae there is potential effects on key views within the Edinburgh World Heritage Site, particularly along the approach to the Dean Bridge and from the city centre westwards.	0	-
Economy			
Transport Economic Efficiency	Transport benefits have been estimated using the Edinburgh Strategic Transport Model. The benefits are based on the difference in generalised journey time between the Do Minimum scenario (without the North-South route) and the Do Something. Roseburn offers faster peak journey times, higher demand, and direct access to Haymarket, boosting city-wide economic performance. Orchard Brae provides good central access but with slower and less reliable travel and no option for a direct route to the airport. The modelling analysis overall suggests that the annual Roseburn demand would be around 25% higher and benefits 50% higher than Orchard Brae.	++	++
Wider Economic Impacts	Granton is one of the Strategic Development Areas in Edinburgh and development is expected to deliver significant increases in homes (~2,800 homes) and employment. Excellent levels of public transport connectivity will be required to support the commercial viability and wider business case for the development. Tram will allow more sustainable and higher-density residential and commercial uses to be developed in place of lower density former industrial users.	++	++
Equality and Accessibility Criteria			
Public Transport	Both options provide a high-quality and fully accessible transport option serving employment, health and leisure opportunities. Roseburn provides	+++	++

Trams from Granton to BioQuarter and Beyond Strategic Business Case

STAG Criteria	Supporting Information	Roseburn	Orchard Brae
Network Coverage	better accessibility to a wider range of destinations whereas Orchard Brae serves a larger in-scope catchment. Both options offer strong benefits but different focus. Evidence from the existing tram line indicates excellent passenger perceptions and strong usage.		
Active Travel Network Coverage	Roseburn integrates walking and wheeling in a green corridor but would change the amenity setting within which people would walk and cycle. Temporary diversions would be required during construction, but post-delivery access for non-motorised users would be fully reinstated. Roseburn would provide for high-quality segregated active travel. Orchard Brae would retain the Roseburn Path but require the removal of some on-street cycling infrastructure due to space constraints. Orchard Brae is flatter but lacks room for cycling upgrades. Tram projects can deliver improvements to the active travel environment.	+	0
Comparative Access by People Group	Significant accessibility benefits can be realised including for households without a car. Areas of North Edinburgh including Muirhouse, West Pilton, Royston Drylaw and Granton, located on the proposed tram corridor are within the top quintile of Scottish Index of Multiple Deprivation (SIMD). For disabled people, public transport can offer a lifeline, allowing them to be independent and connect with the world around them contributing to better mental health and wellbeing outcomes. Older people who frequently use public transport are reported to be more physically active, have stronger lower limb muscles and reduced social isolation.	+++	+++
Comparative Access by Geographic Location	Both options would directly serve the area between Granton and City Centre and provide a tram connection to West Edinburgh and Leith Waterfront. Roseburn supports access for deprived communities and integrates well with active travel. Analysis shows a higher employment catchment compared to Orchard Brae. Orchard Brae improves access to Western General and job-rich zones, supporting inclusion differently.	++	++
Affordability	Fares would be the same for both options and would be the same as bus fares. Both options serve areas of high deprivation. Public transport is generally a cheaper alternative to cars, unlocking connectivity for those who may have cost as a direct barrier	++	++

Table 4.9: South East Corridor Performance Against STAG Criteria

Criteria	Supporting Information	South East
Environment		
Biodiversity and Habitats	The Newington and Bridges section of the corridor maintains an urban character with minor impacts and limited opportunity for enhancement. Beyond Cameron Toll, the tram would largely follow existing road corridors and segregated sections towards Shawfair, minimising environmental impacts and integrating with planned active travel infrastructure while maintaining flexibility for future detailed design. The design will prioritise minimising disruption to wildlife habitats through mitigation and reintroduction strategies	-
Geology and Soils	Minimal impacts expected with standard urban construction techniques applied.	0
Land Use	The scheme is expected to meet or support most local, regional and national policy objectives, related to regeneration, improving access and sustainable travel. No agricultural land affected.	+
Water, Drainage and Flooding	The corridor will require changes to existing drainage systems, as well as construction of new surface water systems as part of the scheme. Areas where physical works occur are unlikely to be any more vulnerable to flooding than existing infrastructure. There is potential for short term impacts on the local environment through a loss of containment of construction materials such as fuels and oils; however, standard working practices would minimise the likelihood of a loss of containment occurring. The proposals would therefore likely have a minor negative impact on impact on water, drainage and flooding	-
Air Quality	Proposals will seek to improve air quality by encouraging mode shift from the car. Introduction of new public transport routes in locations currently not served or poorly served, will make a positive contribution to improved air quality. Additionally, operation of Tram by electric or battery power will help to improve air quality.	+
Historic Environment	North and South Bridge are both category A listed with the route passing through Conservation Areas, each with a unique character. Heritage impacts will largely be	0

Trams from Granton to BioQuarter and Beyond Strategic Business Case

Criteria	Supporting Information	South East
	mitigated through the city centre, mass transit has already been delivered through the World Heritage Area with detailed designs developed in close cooperation with council officers and appropriate heritage bodies, including Historic Environment Scotland and Edinburgh World Heritage. Trams are seen as a modern, attractive transport mode that integrates more harmoniously into historic city centres than buses	
Landscape	Designs will seek to minimise any impact on the city streetscape by minimising the use of overhead line equipment where possible. High-quality materials will seek to improve placemaking and the urban realm.	-
Noise and Vibration	Construction-phase impacts likely to be more noticeable in the built-up Newington and Bridges section of the corridor. The operational impacts are expected to be low due to tram design, but closer proximity to dwellings could result in higher perception of noise.	-
Climate Change		
Greenhouse Gas Emission	The corridor has significant scope for modal shift and reduction in car dependency to reduce emissions from transport through improved connectivity and potentially quicker journey times that tram can provide. Introduction of new public transport routes in locations currently not served or poorly served, will make a further positive contribution to carbon emissions reductions.	+
Vulnerability to Effects of Climate Change	These options could be impacted by climate impacts, such as flooding or extreme heat, but are unlikely to be more or less vulnerable than existing infrastructure.	0
Climate Change Adaptation	Tram supports the transition to a low-carbon future by encouraging modal shift to public transport and supporting sustainable land-use development, aligned with climate goals. The future planned growth cannot be accommodated by expanding bus provision alone, as the volume of buses on the South East corridor and through the city centre is already at effective capacity.	+
Health, Safety and Wellbeing		
Accidents	Public transport, including tram, has significantly lower casualty rates per kilometre travelled compared to private vehicles. By encouraging a shift from car to tram and active travel, the project can reduce overall traffic volumes and associated collisions and casualties. Improvements to pedestrian crossings can be expected to positively impact on perceived safety for pedestrians, wheelers, and cyclists.	+
Security	Edinburgh tram offers a high level of security, through the presence of Conductors, CCTV and Help Points both on board and on street. Conductors enable more vulnerable users such as women, older adults, and minority groups to travel with greater confidence, providing reassurance and improved perception of personal safety onboard.	++
Health Outcomes	Trams are efficient and low carbon forms of transport, bringing benefits of reduced air pollution and noise compared to general traffic. By transitioning from car use to public transport use, such as the tram, people will increase their physical activity levels and accrue health benefits associated with regular exercise. During construction there will be noise disturbance, dust, and inconvenience for local communities surrounding the areas of works.	++
Access to Health and Wellbeing Infrastructure	Public transport like trams and other mass transit systems, helps to connect people, providing access to work, friends, family, education institutions and health supporting facilities. The proposed routes would directly serve the Royal Infirmary of Edinburgh, improving access to healthcare for patients, visitors and staff.	+++
Visual Amenity	There are potential effects on key views within the Edinburgh World Heritage Site, particularly along the approach to the bridges section of the corridor towards the city centre.	-
Economy		
Transport Economic Efficiency	Transport benefits have been estimated using the Edinburgh Strategic Transport Model. The benefits are based on the difference in generalised journey time between the Do Minimum scenario (without the North-South Tram route) and the Do Something. Tram will achieve improved journey times and journey time reliability on the key south east radial corridors. Tram alleviates pressure on the congested bridges section of the corridor where bus journey times have deteriorated over the past decade while increasing the public transport provision providing direct linkage to, from and between key areas of population and housing growth.	++

Trams from Granton to BioQuarter and Beyond Strategic Business Case

Criteria	Supporting Information	South East
	While Mass Transit will encourage mode shift, careful design will be required to minimise congestion impacts. The closure of North and South Bridge to through traffic will result in displacement; the impacts of this will require to be mitigated.	
Wider Economic Impacts	The south east corridor would directly connect the City Centre and key areas for future development at Cameron Toll and Edinburgh BioQuarter including the surrounding area at Shawfair. The network would provide a tram connection to other key areas of development in West Edinburgh and Leith Waterfront. At the BioQuarter, mass transit delivers the high-quality public transport required to support investment. Mass transit would support housing or opportunity sites around the corridor, with the potential for significant additional housing, at higher densities, in East and Midlothian. By improving connectivity, the tram network will enable greater agglomeration – bringing high-value knowledge sectors closer together and increasing the effective density of employment. This is particularly impactful for Edinburgh's professional, scientific, technical, financial, and insurance industries.	+++
Equality and Accessibility Criteria		
Public Transport Network Coverage	The corridor provides a high-quality and fully accessible transport option serving employment, health and leisure opportunities. Tram offers sustainable connectivity to development areas that would otherwise face poor accessibility and high car dependency. The corridor also provides an opportunity for integration with bus services in Edinburgh, where capacity is freed by tram for enhancements to the wider bus network in the city. Evidence from the existing tram line indicates excellent passenger perceptions and strong usage.	++
Active Travel Network Coverage	North of Cameron Toll, space is restricted and so active travel facilities will be provided on parallel routes. South of Cameron Toll, the scheme is integrated with existing active travel proposals including the Old Dalkeith Road cycle scheme, connecting Lady Road with the Royal Infirmary. The expanded network will increase the catchment of Edinburgh Tram's network significantly and thus enable local walking, wheeling and cycling trips between key destinations on the corridor and the associated new stops. Mobility hubs at tram stops would also support mode shift between tram, bus, cycling walking and wheeling. On South Bridge, widened footways are proposed through a reduction in traffic lanes, improving pedestrian comfort and accessibility, particularly around bus stops where overcrowding currently forces pedestrians into the carriageway.	++
Comparative Access by People Group	Through step-free access, level boarding, and integration with other modes, the tram enhances mobility for people with disabilities, older adults, and families. Significant accessibility benefits can be realised including for households without a car. The corridor serves areas of high deprivation including The Inch and Moredun, and beyond the BioQuarter potentially Craigmillar and Greendykes. These locations have relatively poor public transport accessibility, the introduction of tram in these areas would increase public transport accessibility to jobs, education healthcare and leisure. For disabled people, public transport can offer a lifeline, allowing them to be independent and connect with the world around them contributing to better mental health and wellbeing outcomes. Older people who frequently use public transport are reported to be more physically active, have stronger lower limb muscles and reduced social isolation.	+++
Comparative Access by Geographic Location	The corridor supports access for deprived communities and integrates well with active travel. Improved connectivity to the Royal Infirmary Edinburgh, BioQuarter, Cameron Toll, University Buildings and major employment zones, supporting inclusion.	++
Affordability	Mass Transit fares would be the same as for bus. The corridor serves areas of high deprivation. Public transport is generally a cheaper alternative to cars, unlocking connectivity for those who may have cost as a direct barrier	++

4.5.8. Appraisal Against Feasibility, Affordability and Public Acceptability

The performance of each section of the tram corridor has also appraised against Feasibility, Affordability and Public Acceptability criteria as outlined in Table 4.10 for Roseburn and Orchard Brae and Table 4.10 for the South East.

Table 4.10: Roseburn / Orchard Brae Corridor Appraisal Against Feasibility, Affordability and Public Acceptability

Implementability	Supporting Information	Roseburn	Orchard Brae
Feasibility	Design work has gone beyond the typical expectation of an SBC and both options are considered feasible and deliverable. The land required for the Roseburn route is within public ownership but there may be some small pockets of land take required for Orchard Brae. Construction of the Roseburn options is likely to be easier than Orchard Brae as it is predominantly off-street and on the site of a disused railway. Significant TTM and traffic disruption would be anticipated for the Orchard Brae option. Construction over Dean Bridge as part of the Orchard Brae route is anticipated to be more challenging than construction over/under the multiple bridges on the Roseburn Path. Operationally, the short section of single track running on Roseburn is anticipated to cause fewer reliability issues than congestion on-street as part of the Orchard Brae option.	++	+
Affordability	The estimated construction costs for Orchard Brae are approximately 50% higher than Roseburn. Operationally, both options would cost similar to run on a daily basis and maintain. Higher demand potential indicates that the Roseburn option would have higher revenues compared to Orchard Brae.	--	---
Public Acceptance	Roseburn has significant impacts on an established green corridor. Significant negative has been feedback from the public consultation. Further design work, as part of the OBC, will seek to identify mitigation strategies with engagement continuing. Public consultation also included negative feedback on the Orchard Brae route. Market research on the two routes highlighted more positive support than opposition for both corridors, with a sizeable neither support nor oppose response.	--	-

Table 4.11: South East Corridor Appraisal Against Feasibility, Affordability and Public Acceptability

Implementability	Supporting Information	South East
Feasibility	Design work has gone beyond the typical expectation of an SBC and the South East option is considered feasible and deliverable. No land take is expected for the South East route from the city centre to the BioQuarter. Beyond the BioQuarter, details of specific routes are unknown. There are several historic buildings and structures throughout the South East, which will require carefully planning during construction. However, structural analysis work undertaken to date has not identified any major obstacles. During construction significant TMM and congestion is anticipated.	+
Affordability	This route is longer than either of the Granton options and this is reflected in higher construction estimates. There are no major issues anticipated in terms of operational or maintenance costs. The Sout East route has higher demand potential than either of the Granton options and so would generate higher revenues.	--
Public Acceptance	The South East corridor (and potential extensions to East Lothian and Midlothian) received more positive support than opposition across both public consultation and market research responses.	++

4.5.9. Summary

On balance, the Roseburn alignment delivers stronger performance than Orchard Brae on four out of five core objectives, particularly in supporting economic growth, inclusion, net zero, and active travel. However, it carries a notable environmental and ecological cost. This creates a clear policy-level trade-off whereby

Roseburn performs better against transport and economic policy related objectives but would have environmental and ecological impacts. Conversely, Orchard Brae performs better in terms and ecological preservation, but less so on access, connectivity, and climate objectives.

The South East corridor scores positively across all five objectives. Supporting major developments at the BioQuarter and Cameron Toll, it scores positively against the objective to support inclusive and sustainable economic growth. It also performs strongly in terms of delivering Net Zero, promoting equality and inclusion and improving health, wellbeing and safety. Careful design can mitigate potential impacts environmental impacts with an opportunity for improved integration and placemaking on South Bridge and at the BioQuarter.

4.6. Tram Performance - Patronage

Tram proposals have been modelled using microsimulation to provide indicative journey times and to help assess the interaction of tram with other modes: pedestrians, cycles, bus and general traffic.

Tram proposals have then been modelled in the Council's strategic model of Edinburgh, updated with recent land-use assumptions. The strategic model has provided tram patronage forecasts under different assessment scenarios to support an analysis of general tram performance and a comparison of Roseburn and Orchard Brae corridor options.

4.6.1. Future Year Development Assumptions

Future development is a key driver of tram patronage, alongside existing housing and employment. Future forecasts are based on work previously undertaken to support City Plan 2030. In addition, a further Edinburgh-wide review of major development proposals has updated assumptions regarding housing, office/retail, leisure and hotel facilities. A review of neighbouring authorities' Local Development Plans has also been undertaken.

A key focus has been to understand actual build out rates between 2016 and now, taking cognisance of the impact of Covid over previous assumptions.

The 2032 forecast year reflects the Council's then current 2016 Local Development build out, with a focus on development across the City Centre, Waterfront, South East and West Edinburgh.

The 2042 forecast year is as 2032, but with additional City Plan 2030 growth. The City Plan strategy is to focus on brownfield development sites across the city, with targeted greenfield expansion in West Edinburgh.

4.6.2. Strategic Model Enhancements

Reference Case models have been developed from the Do-Minimum, primarily reflecting the introduction of key Circulation Plan interventions.

Do-Something models include proposed tram options, and supporting bus service optimisation, but are otherwise identical to the Reference Case.

4.6.3. Forecast Patronage

Service Pattern

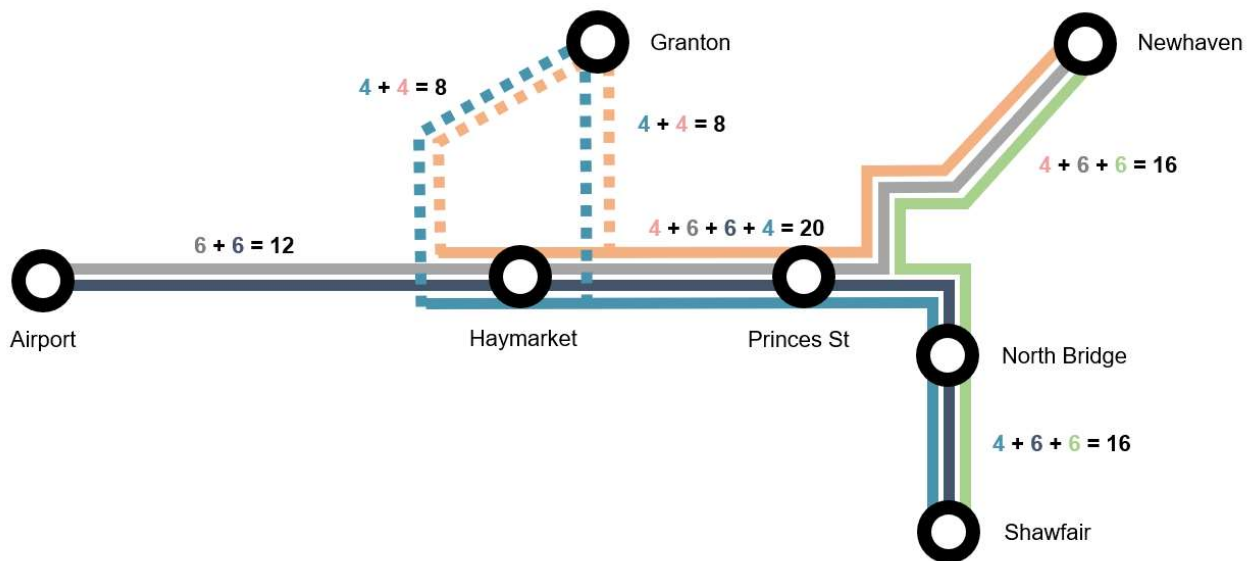
A Do-Minimum tram frequency of 10 trams per hour has been assumed - a six-minute frequency. This and additional forecast growth increases tram patronage from 14.0 million in 2022 (the model strategic model Do-Minimum) to 18.1 million in 2032.

A new North-South tram corridor enables a range of services linking the various origins and destinations on the expanded network. Improved cross-city connectivity has the potential to increase tram patronage by reducing the need for interchange. Nevertheless, options are constrained by capacity on Princes Street which has been assumed to be 20 trams per hour per direction.

An assumed tram service is shown in Figure 4.8.

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Figure 4.8: Expanded Future Tram Network Service Pattern



The service pattern by origin and destination is also given in Table 4.12.

Table 4.12: Service Pattern by Origin / Destination

Origin \ Destination	Airport	Granton	Newhaven	BioQuarter and Beyond	Total
Airport		-	6	6	12
Granton	-		4	4	8
Newhaven	6	4		6	16
BioQuarter and Beyond	6	4	6		16
Total	12	8	16	16	

Forecast Patronage

Implementation of North-South Tram, via the Roseburn corridor, results in a total of 32.6 million passengers on the tram network, an additional 14.5 million per annum. Routing trams via Orchard Brae results in a total patronage of 30.2 million. Annual patronage on the full new line is 12.1 million, approximately 2.4 million fewer than via Roseburn (~17% lower).

Forecast 2032 patronage is summarised in Table 4.13.

Table 4.13: Annual Tram Patronage – Granton-Shawfair (2032)

Route Section	Do-Minimum	Roseburn	Orchard Brae
Airport-Murrayfield	5,549,000	6,691,000	6,685,000
Granton-City Centre west	-	3,412,000	3,112,000
Haymarket-Newhaven	12,558,000	15,076,000	14,100,000
City Centre east-South East	-	7,443,000	6,309,000
Total	18,107,000	32,622,000	30,206,000
Granton-Shawfair Patronage		14,515,000	12,099,000

The main driver of the increased demand via Roseburn is the enhanced connectivity at Haymarket and West End stops that deliver better connectivity to these areas, and from these areas to Newhaven and South East.

Patronage on the Granton section of the route is between 3.1 million via Orchard Brae and 3.4 via Roseburn and 6.3-7.4 million on the South East corridor. There is also a notable uplift in patronage on the existing route, approximately 2.7-3.7 million, as a result of network expansion.

4.6.4. Factors Impacting Tram Patronage

There are a range of factors that impact tram patronage and these will be explored in greater detail as part of the full OBC. These include:

Positively

- Improved tram journey times on South East corridor
- Improved representation of bus versus tram journey times

Neutral / Unknown

- Updated annualisation factors
- Revised development assumptions (e.g. BioQuarter)

Negatively

- Model overestimation of tram demand

4.6.5. Benchmarking

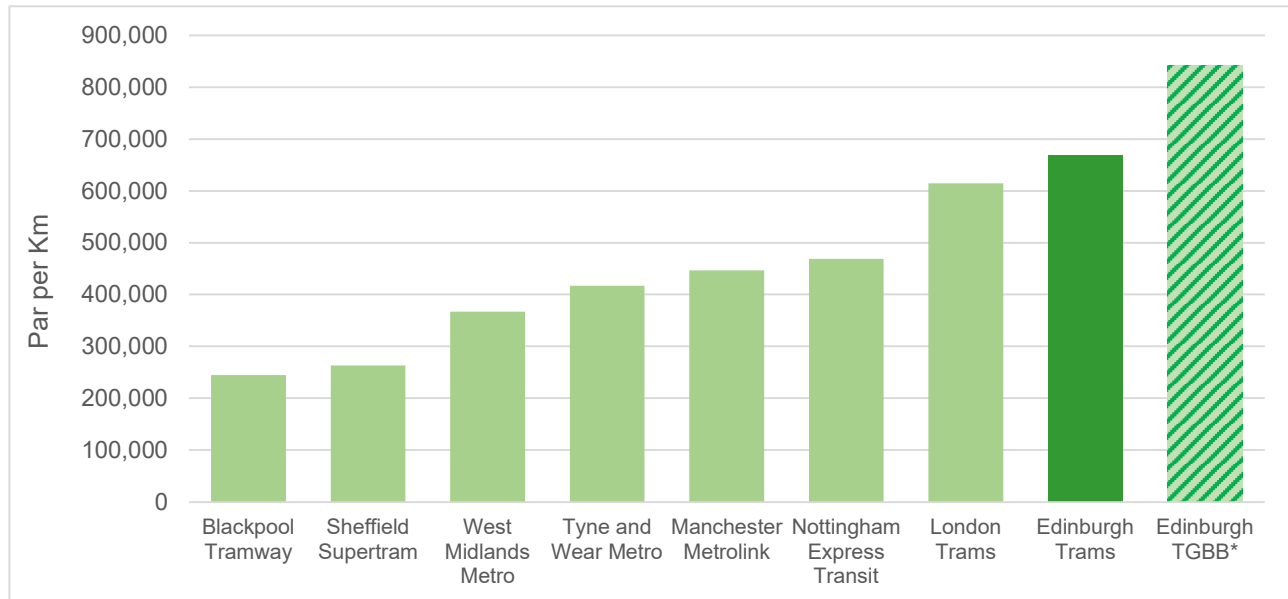
A central patronage forecast of 14.5 million in 2032 compares favourably with other systems based on a passenger per kilometre basis. Table 4.14 lists the length and annual patronage for other UK tram systems and highlights that both the existing route and Trams to Granton, BioQuarter and Beyond perform strongly. Information is also shown graphically in Figure 4.9.

Table 4.14: Annual Tram Patronage Benchmarking²¹

Location	System Length (Km)	Year	Pax (Million)	Pax /Km
Blackpool Tramway	18	2024/25	4.4	244,400
Sheffield Supertram	34.6	2024/25	9.1	263,000
West Midlands Metro	24	2024/25	8.8	366,700
Tyne and Wear Metro	77.5	2024/25	32.3	416,800
Manchester Metrolink	103	2024/25	46	446,600
Nottingham Express Transit	32	2024/25	15	468,800
London Trams	28	2024/25	17.2	614,300
Edinburgh Trams	18.4	2024/25	12.3	668,500
Edinburgh North-South Tram*	17	2032 Forecast	14.5	843,000

²¹ <https://www.gov.uk/government/statistics/light-rail-and-tram-statistics-england-year-ending-march-2025/light-rail-and-tram-statistics-england-year-ending-march-2025>

Figure 4.9: Annual Tram Patronage Benchmarking (Passengers per Km)¹⁹



* 2032 Forecast

4.6.6. Phasing

Construction of a new tram line could be undertaken in phases rather than as one major scheme. Lessons learnt from the construction of the initial tram line (Airport-York Place), and the subsequent successful completion of the extension to Newhaven, indicate the clear benefits to a phased approach.

Informing phasing, Table 4.15 lists the 2032 modelled patronage for the three tram routes if they were to be constructed separately. Patronage for the full 2032 Granton-South East (via Roseburn) corridor is also shown for reference.

Table 4.15: Annual Tram Patronage (2032 Phased)

Route Section	Full Scheme (via Roseburn) (26 trams)	Roseburn only (18 trams)	Orchard Brae only (18 trams)	South East only (24 trams)
Airport-Murrayfield	6,691,000	6,138,000	6,052,000	6,980,000
Granton-City Centre west	3,412,000	2,641,000	1,788,000	NA
Haymarket-Newhaven	15,076,000	14,899,000	14,735,000	13,906,000
City Centre east-South East	7,443,000	NA	NA	6,813,000
Total	32,622,000	23,678,000	22,575,000	27,699,000

As expected, modelling of options independently results in reduced connectivity and patronage on the assigned corridor compared to the full scheme.

The South East only option performs most strongly. As above, this is due to this corridor delivering multiple service options across the tram network: Airport – Newhaven, Airport - South East and Newhaven – South East.

5. Financial Case

5.1. Scheme Costs

At SBC stage, route design is still at an early stage, so cost estimates reflect the limited level of detail and incorporate recognised allowances for uncertainty. More detailed cost estimating is undertaken during later business case stages to refine funding requirements and inform procurement and subsequent construction contracts.

5.1.1. Base Cost Estimates

Base cost estimates have been developed based on:

- Route infrastructure costs based on infrastructure unit rates per km. The unit rates have been informed by benchmarking of Edinburgh Tram to Newhaven costs and reviewing out-turn costs for other UK tram system extension projects including Manchester and Birmingham. Differential unit rates have been developed and applied based on six different route types ranging from higher rates applying to 'Urban, historic, on-street' to lower rates for 'suburban segregated running'. The approach and values used are set out in TN04 – Costs Phasing and Construction (which was produced as supporting material for the schemes recent public consultation).
- Structures costs are based on an assessment of major structures on the corridor including Dean Bridge, South Bridge and structures on the Roseburn Path. The approach is set out in TN04.
- In addition to infrastructure and structure costs, cost estimates have been developed to cover:
 - Rolling stock / vehicle costs;
 - Project development costs through to implementation;
 - Land costs, including for the provision of new depot and stabling facilities; and
 - Inclusion of costs of complementary measures for active travel and interchange provision.

5.1.2. Risk and Optimism Bias

In line with guidance, initial costing appraisal of the shortlisted routes options has costed risk through the application of optimism bias (OB). At SBC stage, an overall level of 60% OB is generally applied to base costs. However, infrastructure risk varies significantly between scheme elements due to differing technical challenges, level of costing uncertainty and site-specific requirements. Consequently, bespoke levels of OB have been applied to sections of infrastructure and cost items with higher degrees of cost uncertainty (for example at major structures along the routes), and lower levels to costs where there is less uncertainty (e.g. vehicles, where there is an established supplier market and fewer uncertainties).

As the scheme develops through the outline and final business cases, the OB allowances will be refined in accordance with best practice. Quantitative Risk Assessment (QRA) will be applied during these later stages to better understand and quantify risk, uncertainty and contingency.

5.1.3. Capital Costs, 2025/ 2026 prices

The overall scheme costs, in 2025/26 prices are presented in Table 5.1 for routes between Granton and BioQuarter/Shawfair with route options via Orchard Brae and Roseburn respectively. For the purposes of costing it has been assumed that the route would run beyond BioQuarter and terminate at Shawfair.

The overall cost for the TGBB tram extension is estimated to be between £2bn to £2.5bn, for the option via Roseburn Path. This includes an overall indicative cost of just over £100m covering the complementary active travel and interchange measures.

The equivalent cost for a route via Orchard Brae is estimated to be between £2.4 to £2.9bn, also inclusive of complementary measures.

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The addition costs of the Orchard Brae corridor reflect:

- an allowance for bridge deck and strengthening works at Dean Bridge, including an additional risk assumptions, and
- a greater percentage of on-street construction, including utilities diversions and traffic management

Capital costs are summarised in Table 5.1.

Table 5.1: Tram Scheme Costs (2025/26 prices)

	BioQuarter to Granton via Orchard Brae	BioQuarter to Granton via Roseburn
Cost excl Risk & OB	£1,730,000,000	£1,520,000,000
Risk & OB	£1,180,000,000	£970,000,000
Total, 2025/26 Prices	£2,910,000,000	£2,490,000,000
% Risk OB	68%	64%

5.1.4. Scheme Capital Costs – Out-Turn

The delivery of TGBB would require a period of around five years of further scheme development (though outline and final business cases, including further consultation and technical work and approvals (funding and powers), followed by a construction period of around five years.

The outturn cost of the scheme would reflect construction and tender price inflation from the current estimate (in 2025/26 prices) through to the years when costs are borne i.e. over the next circa ten years with the majority of spend occurring during the construction period.

A detailed programme would be developed at OBC stage but, based on a reasonable assumption about cost profiling and future inflation, the out-turn costs could be between 25% and 40% higher than estimate in 2025/26 prices.

5.2. Phasing Options – Initial Phase Option

There are options to implement TGBB in phases through either developing and implementing the northern section from the city centre to Granton as an initial phase or implementing the section from the city centre to BioQuarter as an initial phase.

The indicative cost of the Phase options would be:

- Up to £1.2bn for a Northern route to Granton via Orchard Brae, compared to the full TGBB route cost via Orchard Brae of up to £2.9bn (2025/26 prices, inclusive of optimism bias).
- Up to £0.8bn for a Northern route to Granton via Roseburn, compared to the full TGBB route cost via Roseburn of up to £2.5bn (2025/26 prices, inclusive of optimism bias).
- Up to £1.7bn for a Southern section from the city centre to the BioQuarter (2025/26 prices, inclusive of optimism bias).

Once complete, operational costs and income would include:

- Drivers/Staff and Ticket Servicing Agents costs
- Direct Operational costs
- Engineering costs
- Indirect Traffic costs
- Depot overheads
- Company overheads

Revenue would be generated through:

- Service and Ridacard income
- Concessions
- Advertising

In line with how the current service operates, it is expected that operational revenue would be adequate to cover operational costs. It is possible that a small contribution towards capital renewals would also be available. A detailed analysis of operational revenue, costs and capital renewals requirements will be undertaken as part of the Outline Business Case to provide a fuller understanding of affordability.

5.3. Funding and Financing

5.3.1. Funding Requirement (OBC and Construction)

Given that tram revenues are expected to be required to support operational costs separate funding sources will be required to support capital delivery. The potential sources of funding include:

- Central government funding from the Scottish and/or UK Government. This would be direct in the form of grant funding e.g. as part of Infrastructure Investment Plan for Scotland, and/or through future devolution deals.
- Local government funding, though a range of potential options whereby the City of Edinburgh could fund the scheme based on borrowing against future revenues and/or securing direct funding contributions. The £207m Tram Completion Project from Picardy Place to Newhaven was funded by Council borrowing.

Given the overall cost of tram and the scale of funding required the Council would need to secure Central Government funding to implement the scheme, which would be supplemented with local funding contributions.

The Scottish Government's Infrastructure Development Pipeline includes 'Mass Transit schemes in Scotland's three largest cities: Aberdeen; Edinburgh and Glasgow'. Subject to approval of the SBC and completion of SEStranist (a regional Programme SBC for Mass Transit which incorporates TTGB) SEStranist will confirm, a list of regional priorities which will inform the basis of a funding request to Scottish Government to enable the progression of projects to OBC stage.

5.3.2. Financing Options

Given the overall cost of TGBB and the scale of funding required the Council would need to secure Central government funding to implement the scheme, which could be supplemented with a local funding contribution.

This approach of a local contribution to the cost of major transport infrastructure, with the expectation that the majority is covered by Government grants, is in line with comparable mass transit schemes in the UK, as the following examples show:

- Nottingham NET Phase 2: Nottingham's second tram line was delivered through a Private Finance Initiative (PFI) structure. The UK Government committed to a PFI credit (revenue support grant) equivalent to approximately 66% of capital costs, with the remainder funded locally by Nottingham's Workplace Parking Levy, introduced in 2012, and which generates £9-10m annually.
- Manchester Metrolink Expansion (Phase 3): Following a rejected congestion charge referendum in 2008, Greater Manchester created the £1.5 billion Greater Manchester Transport Fund (GMTF). This combined a £520 million Government grant with over £1 billion in local borrowing, repaid through transport levies funded via Council Tax and fare revenues, with all ten Greater Manchester boroughs sharing responsibility. A later earn-back deal allowed Greater Manchester to retain up to £30 million per year in tax revenues if economic growth targets were met.
- London – Crossrail (Elizabeth Line): The £18.9 billion Elizabeth Line was funded through a complex mix of national and local sources. Central government grants contributed around one-third of costs, and Network Rail provided £3bn for surface-level works. A substantial amount was raised through borrowing funded by Transport for London (TfL) and the Greater London Authority (GLA), including loans from the

Department of Transport, to be repaid over several decades. These debts are serviced by London based revenue streams, including a 2% Business Rate Supplement on large firms (expected to raise over £8 billion by 2041) and the Mayoral Community Infrastructure Levy (MCIL). Long-term sustainability now relies on passenger fare revenue, which currently generates an operating surplus (reaching £166m in 2024/25) that is reinvested to cover ongoing debt and maintenance / renewals.

5.3.3. Local Funding Approach

The size of any local contribution will be dependent on the outturn costs of the scheme. This will be able to be estimated with greater confidence once a route is selected and further design development is undertaken allowing the Council to make a more precise assessment of the overall funding and financing package required.

Consideration of options to generate a local funding contribution for the TGBB line needs to consider the strategic and financial context, alongside:

- The scale and nature of the potential funding and financing challenge associated with the project;
- A wide range of potential funding sources that could support a local contribution to the project; and
- How any available funding might translate into borrowing capacity.

5.3.4. Local Funding Options

Advisory support from the UK government's National Wealth Fund (NWF) helped inform thinking around how a local funding contribution could be generated. This advisory work assessed how revenue streams could service borrowing to understand how the Council could potentially finance a significant but minority share of TGBB scheme costs.

The advisory work undertaken with the NWF was:

- Illustrative;
- Intended to inform strategic thinking rather than provide a forecast; and
- Will require detailed modelling if considered as part of the OBC or elsewhere.

However, to help guide the production of a long list of illustrative potential local funding options, the following criteria was used to assess potential local funding sources and frame discussions:

1. Acceptability – the likely degree of public, political and stakeholder support;
2. Quantity – the potential scale of revenue generated;
3. Income risk – predictability, stability, and longevity of the revenue stream;
4. Feasibility - whether the option is deliverable under current or realistically achievable powers and conditions; and
5. Appetite - willingness to pursue the measure.

The Council has worked with the NWF which facilitated a discussion using the framework above to prioritise several funding sources for further investigation at OBC stage. Options which were initially prioritised for further investigation include:

- Element of Council Tax ring-fenced for infrastructure investment
- Developer contributions
- Land value uplift/land sales
- Transport-related fees and charges
- Visitor Levy
- Property tax (e.g. LBTT)
- Business rates retention

Options can be considered into two groups:

1. Options the Council can implement (or begin work on) under existing powers; and
2. Options that would require new powers, policy changes, or external partnership (with Scottish and/or UK Government).

Analysis to understand the potential scale of local contributions was intentionally high-level, reflecting both the early stage of the project and the significant uncertainties around future policy, development patterns, and macroeconomic conditions. Even so, it provided a useful sense of what different options might reasonably contribute to a future funding package and frame options that merit exploration at OBC stage.

During the development of the SBC, a programme of potential regional devolution in Scotland has been posited and subsequently in England the new Prime Minister has identified the intention for fiscal devolution of an element of income tax to English Mayoral Strategic Authorities. Further analysis of potential funding sources will be undertaken at the next stage considering the context around devolution.

5.3.5. Local Financing Capacity

Most of the identified funding sources generated recurring revenue streams which have been assessed to understand linked potential borrowing capacity and support financing assumptions.

There is a range of financing sources that could be explored, including the NWF, Scottish National Investment Bank (SNIB) and the Public Works Loan Board (PWLB). The Council has had initial discussions with NWF and SNIB during the development of the SBC.

As can be seen by Figure 5.1 below, the amount of borrowed capital that a set amount of revenue each year can support is impacted by:

- The cost of capital (interest rate); and
- The length of time over which the borrowing occurs (tenor).

Figure 5.1 Relationship between interest rate, tenor, and serviceable debt:

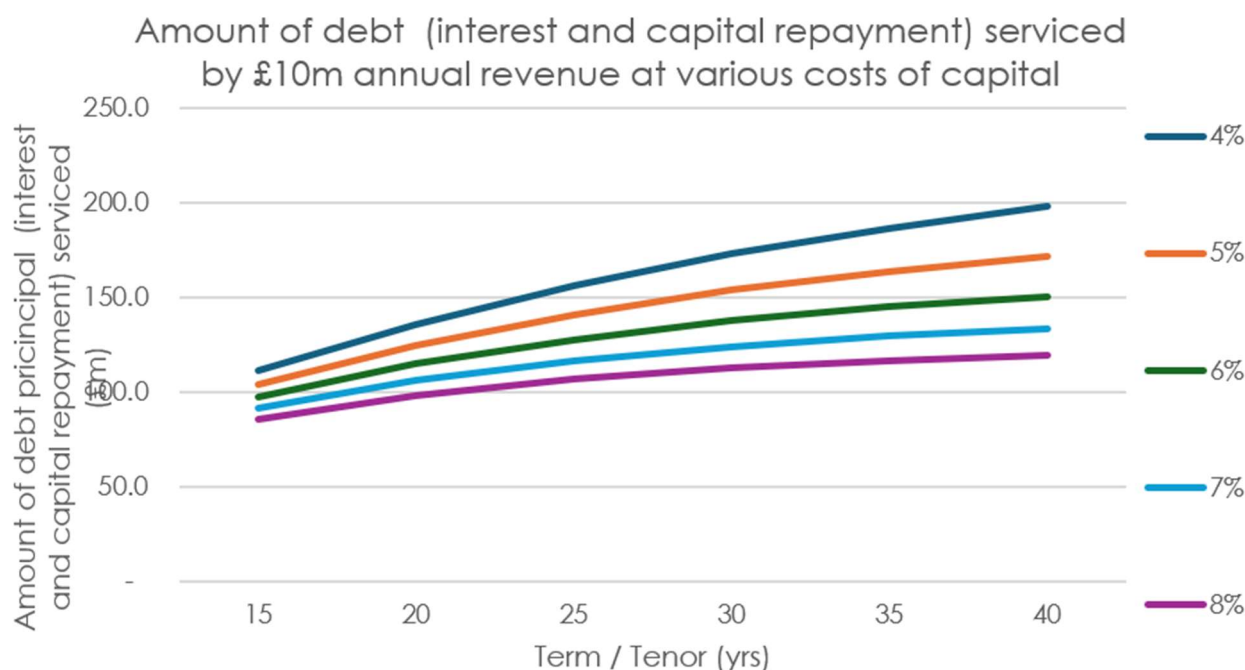


Figure 5.1 assumes that £10m of non-inflating revenue is available for debt service annually, with the range of capital sums it could support varying from £85.6m assuming an interest rate of 8% borrowed over 15 years to £197.9m assuming an interest rate of 4% borrowed over 40 years.

The local funding mix will not be as simple as a flat £10m per annum and so further work and analysis will be undertaken once a more detailed construction programme is developed and further work is undertaken on

the timing, extent and other assumptions relating to potential funding sources. An illustrative assessment was included in NWF's report on the workshops it facilitated.

5.3.6. Requirement for grant funding

Even if a number of the suggested funding options are able to generate local borrowing capacity, Central Government grant funding will still be essential to cover the bulk of the capital spend requirement.

5.3.7. Caveats and sensitivities

This initial SBC analysis is subject to several important caveats:

- **Inflation:** Over recent years construction inflation has been tracking above general inflation meaning that delays in agreeing funding mechanisms and moving into construction have increased capital costs relative to revenues. However, these inflationary pressures affecting build costs have eased to some extent with the Building Cost Information Service (BCIS) forecasting an increase in tender prices of 16% over the next five years.
- **Interest rates:** Borrowing capacity is sensitive to assumptions about interest rates and loan tenor. Lower rates or longer terms would increase the capital that can be supported, and vice versa.
- **Geographic scope:** The analysis is based on a City of Edinburgh only perspective. A regional approach, with contributions from neighbouring authorities or region-wide measures, could increase the available revenue base.
- **Deliverability:** Realising local revenues would depend on political decisions, public acceptance and, in some cases, government legislative changes or partnership.

5.4. Next steps

To progress the funding and financing strategy and to inform development of the next stage, a number of further steps are recommended:

- Engage with Scottish Government and/or UK Government to begin to explore whether any form of grant funding may be available.
- Exploring the relevance of emerging place-based business case models currently being piloted in parts of England and assessing whether similar approaches could be adapted to Scotland's devolved decision-making and funding system as they apply in Edinburgh.
- Developing a clear governance and delivery framework, including options for regional collaboration, the role of neighbouring authorities, any potential future use of devolved or flexible fiscal powers, and consideration of how wider transport funding is allocated both across and between transport modes. To include engagement on any opportunities linked to the potential regional devolution of buoyant taxes such as a proportion of income tax.
- Continuing to assess the balance between local, regional, and national contributions, ensuring that the emerging proposition is credible, durable, and capable of securing external support.
- Undertaking more detailed quantification and sensitivity testing of short-listed local funding mechanisms, including profiling how revenues might evolve over time including the impact of inflation and wider economic assumptions.
- Undertaking detailed forecasting of operational costs and revenues.
- Refining risk and optimism bias assumptions in line with best practice, lessons learned from Tram to Newhaven and the findings of the Edinburgh Tram Inquiry.

6. Commercial Case

6.1. Introduction

The Commercial Case in the SBC identifies possible options relating to the procurement and contracting strategy for the project.

More detailed analysis of the appropriate procurement and contracting strategy will be undertaken at the OBC stage of project development including the development of a procurement plan, risk identification, assessment and apportionment, analysis of potential payment mechanisms and assessment of suitable forms of contract.

It is however important that the SBC sets out an understanding of the procurement objectives and the key issues to be considered at the next stage of development.

Tram projects are all unique, but Edinburgh has experience in delivering tram projects and there are recurring themes on every project that need to be addressed early in the project lifecycle to ensure successful commercial outcomes.

6.2. Procurement Objectives

All projects classically have three objectives against which the success of the project is measured: cost, time and quality. These are shown in Table 6.1 below along with a brief explanation of each one.

Table 6.1: Procurement Objectives

Objective	Description
Cost	There are two aspects to the cost objective: ▪ Value for money - which will be driven by market appetite, competitive tension, contractor innovation and a balanced approach to risk ▪ Cost certainty – which will be driven by the form of contract, and the apportionment of risk Consideration should be given to incentivising whole life and capital cost performance
Time	The strategy should allow the project to be delivered within efficient but realistic timescales. Consideration is given to both preconstruction and construction timescales Consideration should be given to incentivising performance against timescales
Quality	There is a need to ensure that the Council receives a quality finished product for such a significant intervention in the city. Quality encompasses a range of factors, including: ▪ system performance and reliability, which underpin the economic case ▪ construction quality ▪ safety and compliance with statutory obligations, including environmental obligations set out in legislation The procurement strategy needs to balance control with risk apportionment and elements of self-certification

There are a range of sub-objectives that will need to be developed when procurement options are assessed at OBC stage. There will also be a requirement to factor benefits realisation into any assessment ensuring the project selects a delivery option that meets or exceeds a range of outcomes, including requirements relating to sustainability. The strategy should seek to ensure that partners are incentivised as far as possible to deliver the Council's commitments against a range of pre-defined benefits.

6.3. Edinburgh Tram Inquiry and Lessons Learned

A public inquiry led by the Right Honourable the Lord Hardie was published in September 2023 into the original Edinburgh Trams project (Airport-York Place). This inquiry aimed to establish why the project incurred delays, cost more than originally budgeted and through reductions in scope delivered significantly less than projected. In total, the Inquiry made 24 recommendations concerning public inquiries generally and related to light rail projects or similar major projects promoted by public authorities.

The council had separately undertaken a Lessons Learned exercise from Phase 1 and these were successfully applied in the delivery of Trams to Newhaven. A procurement strategy for future expansion of

the tram network in Edinburgh will take account of these recommendations and the lessons learnt from earlier delivery stages.

6.4. Procurement Strategy – Key Considerations

The procurement strategy will need to consider how the project should be divided into different contracts. Figure 6.1 shows the various elements involved in developing and constructing a tram system.

Figure 6.1: Procurement Work Breakdown



In developing the procurement strategy for the project, the following specific questions will need to be addressed:

- How is design risk best apportioned?
- Should enabling works packages be carried out prior to the main track, civil works and tram systems works?
- How should the main works be packaged?
- Should utility diversions be carried out as a separate contract or included with the main works?
- How should the proprietary tram control and communication systems be extended and integrated?
- Who should be responsible for maintenance of the extended infrastructure?
- How should vehicles be procured?
- What considerations should be given to private financed procurement models?
- What is emerging from the latest guidance on project delivery?

A high-level summary for each of the different procurement phases, relevant in detail to this stage of the business case development, is provided below.

6.4.1. Design Responsibility

In broad terms the decision around design responsibility is binary. Either the Client (the Council):

- assumes responsibility for design through the life of the project, or
- responsibility is transferred to a design and build contractor following conclusion of a procurement process

A preliminary assessment of both models has been undertaken, taking account of the primary procurement objectives set out above and any relevant lessons learned from both the first phase of tram and the Trams to Newhaven project. The Design and Build approach performs significantly better than the Client Design approach, which is similar to the approach used for Trams to Newhaven.

The Design and Build model will provide the Council with more opportunity to drive value for money and more opportunity to transfer delay risk and interface risks to the contractor. Both models perform similarly in terms of delivering quality.

6.4.2. Enabling Works

Carrying out site investigations early in the process will help inform the scope of any enabling works packages that may be required ahead of the main construction works commencing. This will be scoped more fully as part of the OBC work. However, there will be a requirement to define early works in relation to:

- Geotechnical Site Investigation
- Topography

- Utility mapping using a range of methods including radar mapping and subsequent ground investigations
- Advanced Archaeological Site Investigation

6.4.3. Utility Diversions

On the Trams to Newhaven project, two options were considered for the utility diversions:

- Award a separate utility diversions contract in advance of the main design and build contract
- Include utility diversions in the scope of the main design and build contract

While there is a good case to adopt the Trams to Newhaven model for utility works, it is recommended that the two models presented are taken forward to the next stage of project development for further assessment and that the principle of no “double dig” is maintained in any analysis.

6.4.4. Main Works

The procurement strategy for the main works will be dependent on a number of inter-related decisions, including:

- | | | |
|---------------------------|-------------------|---------------------------|
| ▪ track | ▪ public realm | ▪ substations |
| ▪ overhead line equipment | ▪ traffic signals | ▪ systems integration |
| ▪ roadworks | ▪ street lighting | ▪ testing & commissioning |

Only when these decisions have been taken will it possible to conclude on the optimal contract structure. The success of Early Contractor Involvement (ECI) on the Trams to Newhaven project however will need to be factored into any procurement strategy together with any analysis around alliancing models, the Construction Playbook and Project 13.

6.4.5. Tram Control and Communications Systems

Tram system owners face a common problem when building on to existing tram networks: how to procure the tram control and communication systems for the new route. The design and integration of these systems is the most technically complex part of the delivery of any tram project. This is an important element of the procurement strategy and will require technical, commercial, programme management and legal support. It is recommended that this work is carried out early in the project lifecycle as it will have a significant impact on the wider structuring of the project.

6.4.6. Infrastructure Maintenance

Any procurement strategy will need to be sufficiently flexible to include for future maintenance although a decision will need to be taken early, and certainly before the publication of any call for competition, if maintenance were to be included within the scope of the procurement. Further analysis will be carried out at OBC stage prior to any decisions being taken as to how maintenance of the existing and future lines will be dealt with.

6.4.7. Vehicle Procurement

There are two broad options for the procurement of vehicles:

- the Council procures the vehicles directly and has the option to transfer its maintenance responsibilities to either the Operator or the vehicle supplier
- the vehicles are procured as part of the design and build contract

Both of these options have their strengths and weaknesses, and further analysis of vehicle procurement is required in the context of the wider strategy for delivery. Consideration will also need to be given to the long-term maintenance strategy for vehicles, which is currently outsourced to Construcciones y Auxiliar de Ferrocarriles (CAF) under a 30-year contract.

6.4.8. Private Finance Considerations

At this early stage of development, no work has been carried out to analyse the suitability of private finance in delivering the project. A PFI/PPP (or similar model) can offer significant advantages over a traditional approach to project delivery but there are also a number of factors that may make privately financed delivery models less attractive in the context of urban rail. There may however be innovative ways to attract private finance into the project and the further analysis at OBC stage will explore this in more detail.

6.4.9. General / Emerging Guidance

As part of the next stage of project development it is recommended that the Construction Playbook and Project 13 are explored further. Both seek to respond to a number of construction challenges around low productivity, poor sustainability and the need to embrace change. In the case of Project 13 it is recommended that a maturity assessment is carried out at the next stage of project development and a decision is taken early in the process as to whether Project 13 should be pursued any further. As well as carrying out the assessment above the OBC will also need to take account of public sector procurement guidance including the Scottish Procurement Policy Notes and Scottish Government Procurement Journey

The Council will require specialist advisory support during the Transport and Works (Scotland) TAWS process, business case development and provide advice through the procurement and construction stages of the project.

7. Management Case

7.1. Introduction

The purpose of the management dimension of the business case is to demonstrate that robust arrangements are in place for the delivery, monitoring and evaluation of the Project.

A Project Management Plan (PMP) will be developed to provide guidance for the next steps and moving towards an OBC for the project forward. The PMP will be a live document and subject to continuous monitoring and updates as the Project progresses and more information is available around design issues, risks, cost estimates or stakeholder views among others. The PMP has the following purpose:

- To ensure that all parties have a common understanding of the purpose of the process, the objectives, the deliverables and the stated success criteria
- To provide an outline of the timeline and the procedures to deliver the required next steps
- To provide a basis against which progress can be managed

7.2. Master Schedule

Section 9.2 contains a comprehensive list of all the activities required to get the SBC through the required approvals, prepare an OBC, achieve statutory powers, and complete the Final Business Case. These are shown at different levels of detail and will be updated at key points during Project development as more detailed information and plans are available.

A Master Schedule for the Project will be included in the PMP. It will be based on the activities outlined in Table 9.3 and will be further developed as each of the dimensions of the business case are progressed and more information is available.

Key milestones from the Master Schedule include:

- T&E Committee Approval of SBC
- Commence OBC Activities
- Commence TAWS Preparation Stage
- Scottish Ministers Determination
- Commence Procurement
- OBC & FBC Approvals

7.3. Project Management and Governance

The Project is at an early stage of development and the governance and organisational structures set out below reflect this. As the Project is developed further, the structures and governance arrangements will be reviewed and updated to reflect the stage the Project is at.

An indicative organisation structure is set out below for information. The approach draws on lessons learned from the first phase of tram in the city and is similar to those utilised successfully on the Trams to Newhaven project, recognising the stage of development that the Project is currently at.

The key principles underpinning the project governance structure are:

- Strong leadership from the top of the client body and key stakeholders
- Strong political support and regular reporting by officers on risks, issues and costs
- Clearly defined roles and responsibilities within the client organisation with clear reporting lines
- Clear management information used to report at all project levels, and
- Professional project management support within the client organisation as appropriate for the stage of development

7.3.1. Organisation Structure

The Council has an internal Project Board, chaired by the Corporate Director of Place, has been established and are accountable to the Council's Transport & Environment Committee as the relevant Executive Committee overseeing the project.

The Project is at a relatively early stage of development, and the governance and project structures will be expanded and enhanced as appropriate to the project stage.

7.4. Stakeholder Management and Engagement

Stakeholder management and engagement is a critical aspect of the management dimension of the Project. Stakeholders have significant influence over both the criteria by which the success of the Project can be judged and the relative values within the Project. Two leading causes of Project failure are insufficient involvement of stakeholders and infrequent communication with sponsors and other key stakeholders.

Stakeholders can be strong advocates for the project, as well as sources of challenge. Results of the recent public consultation have been mixed, but there has been a more positive response to a South East tram line from the city centre to the BioQuarter.

The response from business representatives and major employers has been largely positive with strong support from Edinburgh Chamber of Commerce, Essential Edinburgh, the University of Edinburgh, Edinburgh College, Edinburgh Airport and ScotRail. Building on this support will be important in seeking funding for the next stage of the project.

As highlighted above, there is also an opportunity cost of not proceeding with the scheme. Stakeholder evidence, including economic metrics, development and general market constraints, can continue help strengthen the case for investment.

7.4.1. Ongoing Stakeholder Engagement

TGBB a major project for the city and region, but the timeline for the project is unclear. The scheme has multiple interfaces across other council led projects, and a direct effect on future public and private sector investment. In addition, possible impacts on greenspaces and the built environment will remain of keen interest to stakeholders and the public.

In order to minimise the potential for unnecessary delay to adjacent streetscape and development proposals, and to ensure stakeholders and the public remain fully informed, a programme of ongoing stakeholder communication and engagement will be important. Going forward:

- A communication process with stakeholders including the wider public represents an excellent opportunity to communicate the benefits the project will deliver to the community. This requires that a consistent and cohesive messaging is maintained throughout the whole project development period.
- A well-structured engagement and consultation programme is likely to increase confidence in project deliverability at key approval gateways. However, the process needs to be inclusive and extend beyond the geographical area immediately affected, capturing all the socio-economical, environmental and political aspects the Project will have an impact on.
- Involvement and participation of community councils, local elected members, advocacy and grassroots groups and, more generally citizens, is essential to ensure the engagement and consultation processes reach out to as many people and organisations as possible.
- Project planning needs to ensure that through the process of stakeholder mapping efforts are made to enable engagement across all interested and potentially affected groups, proactively supporting those who have less access or capabilities to get involved.

7.4.2. Aims and Objectives for Engagement and Consultation

Based on the emerging lessons identified above and the specific context of the Project, the key engagement and consultation objectives are set out below:

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- Actively identify and investigate likely socio-distributional, environmental and economic impacts of the proposed infrastructure.
- Where practicable, incorporate the input of affected stakeholders into the design of mitigation pathways for project-related impacts, including addressing risks around the acceptability of the proposals.
- Ensure the planning process is coherent and reflects the outputs of a permanent dialogue with stakeholders and everyone that will likely be affected by or will benefit from the Project.
- Maintain the vision of the City Mobility Plan at the core of the engagement process under which Edinburgh will be connected by a safer and more inclusive net zero carbon transport system delivering a healthier, thriving, fairer and compact capital city and a higher quality of life for all residents.
- Ensure the engagement process complies with current legislation and Council policy including the requirements under the TAWS Order.

8. Summary

8.1. Summary

The TGBB SBC brings together several years' work, undertaken across multiple studies, on the potential to expand Edinburgh's tram network. The SBC has demonstrated a compelling and evidence-led case for investment in tram extensions to Granton in the north of Edinburgh and to the South East to the BioQuarter and potentially beyond to East Lothian and Midlothian.

8.2. Strategic Case

To establish the case for investment, the SBC has focused on the Strategic and Socio-economic cases in addition to outlining the key principles for the Financial, Commercial and Management cases. It also summarises the main outcomes of the work undertaken to date and key findings from the public consultation.

The Strategic Case demonstrates the policy / outcome-led case for investment, supported by strong evidence-led analysis on the scale and nature of existing problems, articulating why the proposed intervention is required and how it helps deliver against key policy outcomes.

Edinburgh cannot achieve its growth, climate and mobility ambitions using the existing tram and bus network alone. By 2042 the region will accommodate over 200,000 additional residents and more than 30,000 additional peak-period trips towards the city centre. The existing public transport network is already approaching capacity in key corridors. A second tram line between Granton and the BioQuarter provides the greatest opportunity to increase transport capacity, support housing delivery, improve access to employment, reduce carbon emissions and connect deprived communities to opportunity.

A second tram line between Granton and the BioQuarter (and beyond) is wholly consistent with national, regional and local policies. At a national level, it supports the key objectives of decarbonising transport, improving air quality and reducing greenhouse gas emissions, and encouraging sustainable travel by non-car modes. Development of an Edinburgh Mass Transit Strategy is a key recommendation of the Strategic Transport Projects Review 2 (STPR2) and part of the urban mass transit National Development in NPF4.

At a regional level, transit supports sustainable connectivity, improved access to healthcare and employment, and wider social inclusion. In terms of local priorities, future tram extensions are an integral part of both the draft City Plan 2030 and City Mobility Plan. Within City Plan, a second north / south corridor supports high density development around Granton Waterfront and the BioQuarter. Capacity increases and new connectivity also help deliver major development across West Edinburgh. The City Mobility Plan envisages a city transformed by a second tram line, supported by an integrated bus network and enhanced Park & Ride (P&R) / interchange.

The Strategic Case highlights that, although successful, the bus network is operating close to capacity across the city centre. Princes Street stop capacity is constrained and unable to accommodate significant future growth. Journey times and reliability continue to decline as a result of increased service frequencies and wider network congestion. A second tram corridor will integrate with existing active travel, tram, bus and rail networks. Integration with bus will ensure that tram complements rather than competes and passengers benefit from new connectivity and faster, more frequent journeys.

Future extensions beyond the BioQuarter, considered as part of SEStransit, would deliver further integration with rail and provide a range of new journey opportunities. A tram/ rail/ bus interchange at Shawfair would enhance connectivity to and from the Midlothian and the Scottish Border. A tram and bus interchange at Musselburgh Station would improve connectivity into East Lothian and the East Coast Mainline. Complementary South Sub proposals could help address orbital movements which are currently poorly served by public transport.

A number of areas of high deprivation would be connected by the proposed tram corridor. Tram has the potential to improve physical and mental health, and social connection and wellbeing. Investment will be a catalyst for change within these areas, supporting wider area regeneration and placemaking.

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The Strategic Case summarises the future challenges facing the city region. While Edinburgh's population and economy continue to grow, unmanaged expansion is perceived as a risk to both the quality of life for residents and to the natural environment of the city. Furthermore, even with a growing economy, not all residents have benefited from the prosperity it provides. Levels of inequality are unacceptably high and are a constraint on productivity and in delivering a successful city economy. Improved accessibility, through investment in public transport and active travel, supports growth, competitiveness and equality.

TTGB SBC TPOs have been developed based on a review of the national, regional and local policy framework and existing transport issues outlined above. These show a clear and explicit alignment to those within NTS2, STPR2, the City Mobility Plan and City Plan 2030. The level of consistency between Edinburgh specific and regional/ national strategies means that study objectives align across all policy levels.

8.3. Socio-Economic Case

The Socio-Economic Case summarises the development of route options and transport solutions best placed to deliver against policy, address identified problems and realise opportunities for betterment. The focus is not solely on transport related issues but also how tram can provide benefits in relation to: the environment, the economy, health & wellbeing, equality and the housing crisis.

Tram's ability to deliver against the TPOs, are summarised in Table 8.1.

Table 8.1: Tram Performance Against Transport Planning Objectives

Tram SBC TPOs	Granton via Roseburn	Granton via Orchard Brae	South East
To support inclusive and sustainable economic growth	- Roseburn offers faster peak journey times, higher demand, and direct access to Haymarket, boosting city-wide economic performance - Supports development and Granton Waterfront	- Orchard Brae provides good central access but with slower and less reliable travel and no option for a direct route to the airport - Supports development and Granton Waterfront	Connects city centre to Cameron Toll and RIE/ BioQuarter. At the BioQuarter, tram delivers the high-quality public transport required to support investment by major life-science industries
To respond to climate change towards delivering net-zero	High segregation and tram journey time reliability strongly supports mode shift	On-street option via Orchard Brae and Queensferry Road/ Street is less reliable, limiting tram attractiveness	Improved journey quality and reliability, and new and improved interchange, help promote mode shift
To promote equality and inclusion and help tackle the city's housing emergency	Provides better access to a wider range of destinations including Haymarket and West End office developments	Larger in-scope catchment	Provides fully accessible transport serving employment, health (RIE) and leisure opportunities. Supports delivery of new housing at Cameron Toll and the BioQuarter
To improve health, wellbeing & safety	Reduces vehicle conflicts due to partly off-street route	Orchard Brae introduces tram to congested Queensferry Street, with higher risk exposure	- Proposal includes removal of through traffic on The Bridges, reducing potential for accidents - A parallel active travel corridor will be provided
To protect and enhance our environment	Existing calm, natural corridor would be replaced by tram with environmental mitigations to lessen impact	Orchard Brae maintains urban character with moderate impact	- Proposals would seek to enhance the built environment - Opportunity for improved placemaking at Cameron Toll and BioQuarter

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In addition to the wider socio-economic benefits the tram proposals are anticipated to deliver, modelling of the two routes estimated that a future tram network to Granton and the South East would deliver up to 14.5 million passengers by 2032. Indicating a strong performance compared to other UK tram systems.

High-level cost estimates have been developed for the full North-South corridor and individual sections. Including risk and optimism bias, a South East route via Orchard Brae would cost approximately £2.9 billion and via Roseburn £2.5 billion.

Construction of any new tram line would be undertaken in phases. There are several options possible in terms of a phased approach that will be explored in more detail during the OBC. However, a high-level summary of construction costs is provided in Table 8.2.

Table 8.2: Tram Construction Costs

	Granton via Roseburn	Granton via Orchard Brae	South East
Construction Cost Estimate (inc. optimism bias and risk)	£0.8 billion	£1.2 billion	£1.7 billion

Forecast total patronage for the full North-South corridor is 14.5 million via Roseburn and 12.1 million via Orchard Brae, as shown in Table 8.3. Patronage by individual section is also given in Table 8.3. In addition to corridor patronage, there is an uplift on the existing route due to an increase in service frequency and improved network connectivity.

Table 8.3: Tram Patronage by Corridor

	Total Demand Increase	Granton-City Centre	South East-City Centre	Airport- Newhaven Uplift
Full North-South Route				
Granton-South East via Orchard Brae	+12.1 million	+3.1 million	+6.3 million	+2.7 million
Granton-South East via Roseburn	+14.5 million	+3.4 million	+7.4 million	+3.7 million
Individual Section				
Granton via Orchard Brae	+4.5 million	+1.8 million	-	+2.7 million
Granton via Roseburn	+5.5 million	+2.6 million	-	+2.9 million
South East	+9.6 million	-	+6.8 million	+2.8 million

8.4. Financial Case

Edinburgh Tram is able to make an operational surplus, while at the same time providing low fares to customers. This is unusual in a UK transit context where schemes typically require an operational subsidy.

The strong performance of the existing Airport-Newhaven line helps make an extremely competitive case for investment in a North-South Line.

The SBC provides an outline of the capital costs, and Next Steps costs to deliver an OBC and the supporting TAWS process. In addition, it presents hypothetical financing models to help explore local contribution options for construction, but this will be revisited in more detail as part of an OBC.

The business case is clear that significant levels of grant support will be required, in addition to the use of a variety of council-controlled income streams. The Scottish Government's Infrastructure Development Pipeline includes 'Mass Transit schemes in Scotland's three largest cities: Aberdeen; Edinburgh and Glasgow, and the Council will continue to engage with Scottish Government and UK Government to explore grant funding. This will be supported by the SEStransit Programme SBC currently in preparation. In addition, the National Wealth Fund continue to provide advisory support.

8.5. Commercial Case

The Commercial Case has explored some of the key considerations that TGBB will need to analyse in developing a robust procurement and contracting strategy during the next stages. This initial work has outlined procurement objectives and future assessment requirements, reflects on lessons learned from the

first phase of tram and from the current Trams to Newhaven project and acknowledges the Hardie Inquiry into the first phase of tram.

Next step recommendations are provided in relation to design; enabling works; main works structuring; utility diversions; tram control and communications systems; infrastructure maintenance; vehicle procurement; private finance; and emerging guidance on project delivery.

8.6. Management Case

The Management Case has set out the principles for successful project delivery, providing the framework for the activities that will be carried out in order to achieve the desired results and benefits. This builds on the council's previous experience in delivering tram infrastructure and the lessons learned.

A Project Management Plan (PMP) will be developed to provide guidance for the next steps and moving towards an OBC for the project forward. The PMP will be a live document and subject to continuous monitoring and updates as the Project progresses and more information is available around design issues, risks, cost estimates or stakeholder views among others.

A Project Board has been established and is accountable to the Council's Transport & Environment Committee. The Project is at a relatively early stage of development, and the governance and project structures will be expanded and enhanced as appropriate to the project stage.

Stakeholder management and engagement is a critical aspect of the management dimension of the Project. It is important to maintain ongoing communication, even during periods of limited progress.

9. Next Steps

9.1. Outline Business Case Mobilisation

A summary of potential next steps is outlined below.

9.1.1. Outline Business Case Cost

The total OBC Cost for the full Granton to BioQuarter and Beyond corridor is estimated at £36.6 million. This is based on an allowance of 3% of Capital Expenditure for all tasks to FBC approval. A further 40% has then been applied to account for Risk. The OBC is assumed to be approximately 30% of this total (Table 9.1).

Table 9.1: OBC Cost – Full Route

	Indicative Cost	3% of Capex for FBC approval	+ 40% Risk	OBC Cost (30% of Total)
Full Granton to BioQuarter and Beyond corridor	£2,900,000,000	£87,000,000	£121,800,000	£36,600,000

The cost for an OBC for an individual section of the scheme (Granton via Orchard Brae, Granton via Roseburn or South East) would be in the range **£23-28 million**.

Assuming that OBC preparation takes 5 years, an illustrative spend profile is given in Table 9.2.

Table 9.2: Illustrative OBC Spend Profile

Year	OBC Spend: Full Route	OBC Spend: North Section Only (Roseburn or Orchard Brae)	OBC Spend: South East Section Only
2027	£4,100,000	£2,577,000	£3,137,000
2028	£7,000,000	£4,399,000	£5,355,000
2029	£8,500,000	£5,342,000	£6,503,000
2030	£8,500,000	£5,342,000	£6,503,000
2031	£8,500,000	£5,342,000	£6,503,000
Total	£36,600,000	£23,000,000	£28,000,000

9.1.2. Traffic and Works (Scotland) Costs

In addition to the OBC, TAWS costs are estimated at approximately £79 million for the full North-South route. These would include:

- Client function including Senior Responsible Office, technical manager, comms, procurement
- Legal advisor for contract drafting & TAWS process
- Set up of programme systems and tools/processes
- Programme office including schedule, risk, reporting, contract administration etc
- Delivery team including Project Management, Commercial Management - including Scope development, drafting etc
- Early operator involvement in development process
- Allowance for miscellaneous items such as consultation event hosting etc

9.1.3. Next Steps

OBC Procurement

An OBC scoping task will be undertaken to set out the organisational and technical resources required to initiate delivery of the OBC and the TAWS Order including an Environmental Impact Assessment Report. The anticipated sub-activities that could be included in this group are as follows:

- Consideration of ongoing council internal project management strategy (including management of interface with other projects and policies)
- Engagement with relevant funding bodies
- Development of a funding strategy for the OBC and consenting stages
- Scoping of advisory support requirements
 - Business case and economics
 - Traffic and Transport Modelling
 - Transport Assessment
 - Design
 - Environment
 - Land
 - Constructability
 - Scheme costs
 - Commercial & Procurement Strategy
 - Funding and Finance Plan – Scheme Delivery

Stakeholder Engagement

Building on existing stakeholder engagement, a mapping exercise should be carried out to align specific internal and external stakeholders with key project milestones and decision gateways.

Stakeholders have significant influence over the criteria by which the success of a project can be judged and the relative values under consideration. It is important to maintain ongoing communication, even during periods of limited progress.

A number of key business representatives and major employers have spoken in favour of TGBB (Section 3.5.3). This continued support can help generate strong advocacy for the project, in conversation with other key stakeholders and decision makers.

It will however be equally important to continue to engage with groups opposed to elements of the project, listening to their concerns and working to address these in a constructive and open manner.

Ongoing engagement with Edinburgh Tram, Lothian Buses (and other operators) will consider bus and tram integration, and the opportunities that would benefit both networks, within the city and into the region.

Environmental Impact Assessment Screening and Scoping

This activity would deliver the first stage of the Environmental Impact Assessment (EIA) setting out and agreeing the scope of further assessment, including:

- Setting out and agreeing the topics to be scoped into the assessment, as well as proposed methodologies including desk-based assessments and survey proposals
- Identifying requirements and developing plans for engagement with Environmental Consultees (SEPA, NatureScot, HES, the Council)
- Scoping out any surveys that may be required including archaeological, scheduled monuments and listed buildings, as well as drafting the tender documents for these surveys if required
- Identifying any environmental aspects of the project that may be subject to specific windows throughout the year to understand potential constraints to the project schedule, such as protected species surveys

TAWS Consenting Strategy

A high-level review of the TAWS Consenting Strategy would help identify and prioritise the activities which need to be undertaken to progress the pre-application phase and mitigate any potential impact on the long-term programme.

9.2. Future Activities

9.2.1. Work Breakdown Structure

Table 9.3 below includes all the activities required to achieve statutory powers and deliver a FBC for the Project. These are shown at different levels of detail and will be updated at key points during project development as more detailed information and plans are available. The “Tier” column indicates the hierarchy of the activities. This way, a Tier 2 activity will be a sub-activity of the Tier 1 activity immediately above it.

Table 9.3: Work Breakdown Structure

Priority	Stakeholder Group	Tier	Commentary
	Strategic Business Case	1	Internal reviewing, consultation and political approvals
	Reviewing	2	The specific sub-activities included in this group are: • Finalise SBC Drafting • Client Review of Draft SBC • Agree Scope of Post-SBC Preparatory Work
	Consultation & Approvals	2	A public consultation exercise around the acceptability of the emerging corridors, options for track and road alignment and tram has been held. ▪ Analysis of consultation outputs has been completed with a report approved by T&E Committee ▪ Transport and Environment (T&E) Committee papers and briefings to Elected Members ▪ SBC approval at T&E Committee
	Post-SBC Preparatory Work	1	Set out the immediate requirements that should be delivered upon finalising the SBC
✓	TAWS Consenting Strategy	2	Identify and prioritise the activities which need to be undertaken to progress the pre-application phase and mitigate any potential impact on the overall programme. It is worth noting that the EIA and Flood Risk elements detailed below will support the TAWS application
✓	EIA Screening and Scoping	2	This activity would deliver the first stage of the EIA setting out and agreeing the scope of the assessment, including: ▪ Setting out and agreeing the topics to be scoped into the assessment, as well as proposed methodologies including desk-based assessments and survey proposals ▪ Identifying requirements and developing plans for engagement with Environmental Consultees (SEPA, NatureScot, HES, the Council) ▪ Scoping out any surveys that may be required including archaeological, scheduled monuments and listed buildings, as well as drafting the tender documents for these surveys if required ▪ Identifying any environmental aspects of the project that may be subject to specific windows throughout the year to understand potential constraints to the project schedule, such as protected species surveys
	Flood Risk and Drainage	2	Desktop study to characterise the flood risk and drainage aspects of the site. This should be developed through engagement with Scottish Water, SEPA and the Council’s Flood Management team. As part of the scope of the study consideration should be given to including aspects around climate change adaptation. It is worth noting that this will form part of the EIA Scoping as set out above.
	Integrated Impact Assessment (IIA) Scoping	2	This activity would deliver the first stage of the Equality Assessment setting out and agreeing the scope, including: ▪ Identification of protected groups. ▪ Capturing lessons learned around the equality aspects of ongoing delivery plans such as ECCT or CMP. ▪ Setting out and agreeing the scope of the assessment.
	Power Distribution	2	Scope out study into emerging technologies for power distribution to the tram system with a view to commencing any work on the actual study as part of the OBC.

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Priority	Stakeholder Group	Tier	Commentary
	Systems	2	This is an aspect of the project that is likely to require a significant effort to be concluded, thus assessment work of the different options should commence as soon as possible in anticipation to the commercial dimension of the OBC. The issues outlined below should be considered as part of any study into this aspect of the Project. ▪ The technical requirements and proprietary nature of some of the control and communication systems. ▪ Risk apportionment, particularly around systems integration. ▪ Market appetite. ▪ Risk of disruption to trams services associated with changing existing technologies. ▪ Future maintenance of the control and communication systems.
	Updates to the Existing Transport Model	2	Scope out the work required and extent of any potential update to the existing transport model.
	Utility Diversions	2	Scope out any investigative work that may be required to inform the cost plan as part of the OBC. This may extend to drafting and issuing the tender documents and, potentially, commencing the works ahead of initiating the OBC stage. Investigative work for utilities may include radar mapping and slit trenching, among others.
✓	Stakeholder Engagement, Comms and Consultation Strategy	2	Building on existing stakeholder engagement, a mapping exercise should be carried out to align specific stakeholders with key project milestones and decision gateways.
	Tram Design Manual (TDM)	2	Consideration should be given to initiating a review of the existing Tram Design Manual to identify changes in context, policy requirements, standards and others. This will also inform the development of the TAWS application. At this stage and building on the outputs of the SBC, the review should focus on: ▪ Setting out the strategic principles and aspirations for the design and implementation of the new tram system. ▪ Establishing the aspirational objectives for the revised TDM including aspects of urban design, integration within the city, safety and security, system identity, perception or design consistency, among others. ▪ Outlining key aspects of delivery including governance structures, key planning and statutory procedures (TAWS) and the role of the TDM as part of these. ▪ Setting out the design programme.
	Candidate Design	2	Draw up the candidate design, currently developed in VISSIM, and issue on file to make it accessible for Council officers going forward.
	Existing Structures	2	Carry out a desktop analysis of existing structures along the proposed alignment options such as Dean Bridge or North Bridge. This will help identify key design constraints and is likely to include detailed structural analysis.
	Design	2	Progress designs at Cameron Toll, Old Dalkeith Road, BioQuarter through Shawfair and Depot.
✓	Future Procurement	2	Development of an advisor strategy for OBC/ TAWS stage and prepare outline scopes of service. This could involve scoping out the organisational and technical resources required to initiate delivery of the OBC and the TAWS Order including the Environmental Impact Assessment Report. The anticipated sub-activities that could be included in this group are as follows: ▪ Develop a funding strategy for the OBC and consenting stages. ▪ Engage with relevant stakeholder to secure the required funding. ▪ Carry out legal review of consenting requirements. ▪ Establish property referencing requirements and develop plan for execution. ▪ Scope out and procure all advisory support for execution of consenting requirements, OBC and future procurement exercises.

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Priority	Stakeholder Group	Tier	Commentary
			- Scope out investigations and surveys to be carried out in support of the consenting requirements and future procurement exercises. - Develop acquisition strategy.
	Project Coordination	2	Manage, integrate and coordinate all these workstreams during the SBC approval processes.
	Advisor Procurement(s)	1	Carry out procurement of advisor(s) - Finalise Procurement Docs - Run Procurement & Evaluate - Committee Approvals - Mobilise Advisory team
	Transport and Works (Scotland) Act	1	
	TAWS Preparation Stage	2	The different workstreams involved in the preparation and pre-application stages of the TAWS Order are outlined below: Need for the Project / Business Case: - Statement of Aims linking back to the development of the business case and the options considered. - Statement of Findings - Cost Estimate Legal and Administrative Documents: - The Draft Order, - Explanatory Memorandum - Statement of Legislative Competence - Book of Reference (details of all land to be acquired) - Declaration of Status of Applicant - Statement of Funding - Any Direction given on a Waiver of Requirements Consultation, Engagement and Publicity - Consultation Report detailing how consultation has been undertaken and how this has influenced the project. - Statement of Compliance on publicity Maps, Plans and Sections - Plans and drawings of the project, together with full details of proposed land acquisition, including the purpose for which it is required (i.e.: related to the Book of Reference) Planning and Consents - List of Consents, Permission or Licenses - Deemed Planning Permission (Planning Statement, list of proposed conditions, matters to be reserved for approval) Environmental Impact - EIA Scoping (finalised under Post-SBC Preparatory Work) - EIA Environmental Report - Statutory Consultee Comments on Draft EIA As the Master Schedule is refined to reflect inputs from the design team, parliamentary agent and stakeholder and comms team the programme for the EIA will need to be updated and linked with the other key design and engagement/consultation deliverables.
	Handling of Objections and Representations	2	The detailed scope of this activity will be defined upon delivery of the TAWS Consenting Strategy. An allowance has been included for a negotiation period with objectors prior to any Public Local Inquiry (PLI).
	Public Local Inquiry	2	An allowance of 72 weeks has been included in the Master Schedule for the completion of the PLI.
	Determination	2	An allowance of 15 weeks has been included in the Master Schedule for the Scottish Ministers to determine the Order.
	Outline Business Case	1	Completion of an OBC for the Project based around the Five Box Model set out in the Green Book. This will include wider public consultation and ongoing engagement with stakeholders.
	Procurement	1	The procurement activities are anticipated to include a 3-month allocation for the preparation of tender documentation, a 3-month period for pre-

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Priority	Stakeholder Group	Tier	Commentary
			qualification, a tender period of 6 months and a 3-month period for evaluation and contract award.
	Final Business Case	1	Completion of an FBC for the Project based around the Five Box Model set out in the Green Book.
	Update OBC	2	Update OBC based on procurement outcomes
	Committee Approvals	2	The specific sub-activities included in this group are outlined below. However, the approvals route and specific requirements will be defined at a later stage. - Committee papers and briefings to Elected Members. - FBC approval at Committee.
	Construction	1	An assumption has been made that the construction stage will commence with an Early Contractor Involvement (ECI) period as per Trams to Newhaven. However, this will be revised as the commercial dimension of the Project progresses.