

Trams from Granton to BioQuarter and Beyond

Strategic Business Case Technical Summary Report

The City of Edinburgh Council

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Trams from Granton to BioQuarter and Beyond Strategic Business Case - Technical Summary Report

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1. Introduction

1.1 Purpose of this Report

This Technical Report summarises the analysis undertaken to support the Strategic Business Case (SBC) for proposed Trams from Granton to BioQuarter and Beyond project (hereafter referred to as North-South Tram). It is underpinned by a series of project reports and technical notes prepared during summer 2025 to support a stakeholder and public consultation exercise undertaken between August and November 2025.

As part of the above, an Options Assessment Report was prepared, including a Multi-criteria Appraisal Framework. This report refreshes that appraisal with further detail provided summarising:

- an appraisal of the South East corridor
- phasing options to inform any decisions on proceeding with the full route or the north or south section as a Phase 1
- other north and south route options considered as part of the study, but ruled out due to geometry/topography constraints (Appendix A)

Comprehensive Appraisal Summary Tables (ASTs) are provided for north and south corridor options.

A summary of capital costs is given, also disaggregated by north and south corridor section. The cost of an Outline Business Case (OBC) is then provided for each.

A Risk Register summarises key risks and potential mitigation strategies (Appendix B).

A Monitoring and Evaluation Plan highlights the key areas for consideration (Appendix C).

1.2 Background and Scheme Development

Several studies over multiple years have established the need to extend the tram network across the city and into the region. A review of policy objectives, transport problems and opportunities, and potential viability resulted in a recommendation to prioritise a North-South corridor extension from Granton to the South East via the city centre.

Between Granton and the city centre, two alternative options have been assessed:

- **Roseburn** - Granton to Haymarket via Waterfront Avenue, West Granton Access, Crewe Toll, Roseburn Path, connecting with the existing tram route near Russell Road
- **Orchard Brae** - Granton to Princes Street via Waterfront Avenue, West Granton Access, Crewe Toll, Crewe Road South, Orchard Brae, Queensferry Road, Queensferry Street, connecting with the existing tram route at Princes Street

South of the city centre, a single route has been considered:

- **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 of Edinburgh and BioQuarter)
 - Beyond the BioQuarter, future extensions to Shawfair Station in Midlothian and Queen Margaret University/ Musselburgh Station in East Lothian are possible. SEStransit will examine the opportunities for mass transit across the South East Scotland region.

Tram alignment options are shown in Figure 1.1.

Figure 1.1: Trams to Granton, Edinburgh BioQuarter and Beyond Route



2. Approach to Scheme Appraisal

2.1 Appraisal Criteria

2.1.1 Transport Planning Objectives

Scottish Transport Appraisal Guidance (STAG) requires options to be assessed against study specific Transport Planning Objectives (TPOs), standard STAG criteria and the anticipated cost to government. The methodology adopted in undertaking the Detailed Appraisal of the tram options is outlined in this chapter alongside the approach to reporting the outcomes from the analysis.

TPOs should be specific, measurable, achievable, realistic and timebound (SMART) and must capture the essence of the evidence-based problem to be addressed or opportunity being undertaken.

The STAG TPOs for North-South Tram are listed in Table 2.1 on the following page, and reflect the policy outcomes based on national, city and regional objectives.

Table 2.2 illustrates how these are SMART – Specific, Measurable, Achievable, Relevant and Timed.

Sub-objectives are shown in Table 2.3. They have been developed to capture both the positive contribution that tram can make to achieving desired outcomes, and also areas where there are 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

2.2 STAG Criteria

In addition to the project specific TPOs, corridor options have also been appraised against the core STAG and implementability criteria, as presented in the full Appraisal Summary Tables. The five core STAG and implementability criteria are:

STAG Criteria

- Environment
- Climate Change
- Health, Safety and Wellbeing
- Economy
- Equality and Accessibility

Implementability

- Feasibility
- Affordability
- Public Acceptance

Table 2.1: Tram SBC Transport Planning Objectives Mapped against National, Regional and Local Policy Outcomes

NTS2	STPR2 TPOs	City Plan 2030	City Mobility Plan	SEStransit	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	Provide emerging economic growth areas with access to a supply of appropriately skilled labour	To support inclusive and sustainable economic growth
				Reduce journey times, improve journey time reliability and increase capacity for travel by public transport to, and on, key radial corridors within Edinburgh and the functional urban area	
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		Provide a step-change in the quality of public transport, so that it positively influences development patterns in the region and drives the long-term spatial strategy	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	Address inequality of opportunity across the region by enabling access to a range of employment education and training opportunities	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	Improve cross-boundary public transport connectivity between larger settlements within and beyond our region.	To improve health, wellbeing & safety
	A reliable and resilient strategic transport system that is safe and secure for users			Improve the competitiveness of public transport for orbital movements around Edinburgh and the functional urban area	To protect and enhance our environment

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Table 2.2: SMART Transport Planning Objectives

Tram SBC TPOs	Specific	Measurable	Achievable	Relevant	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 of 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 2.3: 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

2.3 Appraisal Methodology and Reporting

The appraisal methodology is structured as follows:

- options overview including active travel provision
- key option attributes
- impacts in relation to journey time and reliability for tram, bus and road and users
- catchment analysis
- demand and benefits estimation
- estimated tram demand
- tram and public transport benefits
- impact on heritage

3. City Centre to Granton Options Assessment

3.1 Options Overview

The City Centre to Granton corridor connects the existing tram network to Granton in the north of Edinburgh.

Two options are being considered between the city centre and Crewe Toll. These are:

- Option G1: City Centre to Crewe Toll via Roseburn – the route diverges from the existing route at Roseburn junction, east of Haymarket, and runs off-street via the Roseburn Path to Crewe Toll
- Option G2: City Centre to Granton via Orchard Brae – a new junction would be created at Princes Street/ Queensferry Street and the route would run on-street via Queensferry Road, Orchard Brae and Crewe Road South to Crewe Toll

North of Crewe Toll, both options follow the same route via West Granton Access and Waterfront Avenue to Granton Square.

3.2 Option G1: City Centre to Granton via Roseburn

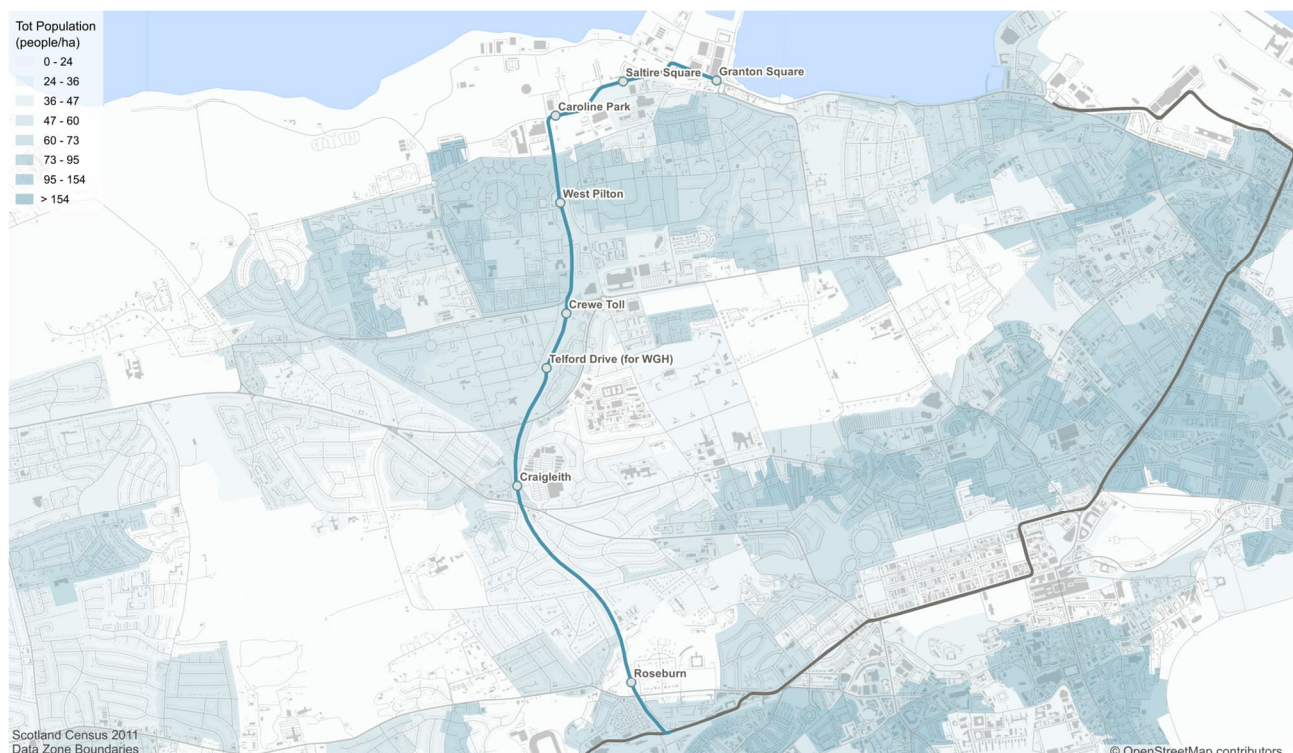
Option G1 makes use of the Roseburn Path. The tram alignment would be fully segregated, following the old railway track bed. The route is as proposed under the Edinburgh Tram (Line One) Act 2006 and as identified in the current City Plan 2030.

The Roseburn Path is now an active travel corridor. It is part of National Cycle Network Route 1 (NCN1) between Balbirnie Place and Craigleith and is designated as part of the secondary cycle network within the city's Our Future Streets (Circulation Plan). The corridor is also a Local Nature Conservation Site (LNCS) and Local Biodiversity Site.

Route development has therefore sought to balance the trade-offs between these policy designations as outlined below.

The Roseburn route option is shown in Figure 3.1.

Figure 3.1: Roseburn Route Option and Indictive Tram Stop Locations



3.2.1 Scheme Design Overview / Properties

Tram alignment

The Option G1 tram route would diverge from the existing tram route via a Delta Junction west of Haymarket at Balbirnie Place. This Delta Junction was partially constructed as part of the first phase of tram (Airport-York Place). It would enable trams to travel between Granton and the city centre, with provision for movements westwards towards the depot and airport.

Optioneering has resulted in single-track alignment being taken forward between Roseburn and Craigleith tram stops, with a previously proposed stop at Ravelston omitted. This reduced land take and environmental impacts, and enables a segregated cycle path to be retained throughout. The alignment transitions back to double track north of Craigleith towards Ferry Road and Granton.

Access to the Western General Hospital would be via the Telford Drive stop with enhanced pedestrian access provided to an improved western entrance on Telford Road, a distance of approximately 300 metres.

Active Travel Provision

The Roseburn Path forms part of a well-used and much-valued linear park, contributing to the character and environmental quality of the corridor.

Walking, wheeling and cycling provision would be retained and enhanced in a largely segregated environment and the design approach seeks to preserve the integrity of the green corridor, with targeted improvements at:

- Murrayfield Railway Station Sidings
- Craigleith
- Drylaw Park, and
- Drylaw Park to the Leonardo car park

Active travel provision along the route would comprise:

- A 3-metre-wide segregated footway/ cycleway (similar to existing) adjacent to the tram alignment along the corridor
 - The section from Russell Road to Roseburn Bridge would be below 3 metres and so an alternative on-street cycle route would be provided via Balbirnie Place
 - In addition, a short section would be reduced in width where constrained by the bridge at Telford Road
- Improved segregated cycling facilities on Queensferry Road, making permanent the existing Spaces for People scheme. Existing cycling infrastructure on Crewe Road South would similarly be retained. Permanent improvements would also be made through Murrayfield to provide improved cycle connectivity towards Roseburn.

Temporary diversions would be required during construction, but post-delivery access for non-motorised users would be fully reinstated.

In order to maintain active travel connectivity during construction, it is proposed that additional provision would be made in advance, supporting wider Our Future Streets (Circulation Plan) network proposals. Options to improve cycle safety across Dean Bridge would be explored, providing a connection with the City Centre West to East Link (CCWEL).

It is recognised that the character of the corridor would be altered as a result of the scheme, as detailed in RC05C Initial Health Impact Assessment Report (July 2025).

Nevertheless, enhancement works would aim to improve the user experience, delivering a net benefit in terms of corridor usability, accessibility and perception of personal safety. Further detail is available in RP05A - Landscape, Streetscape and Heritage Report (August 2025).

Ecology and Biodiversity

RP05B Preliminary Ecological Appraisal (PEA) completed in April 2025 identifies the Roseburn Corridor as a sensitive ecological environment, forming part of Edinburgh's Green-Blue Network and designated as a Local Nature Conservation Site. The corridor comprises mature woodland, scrub, and grassland, providing habitat for a range of species including bats, birds, amphibians, and small mammals. It also acts as a commuting and foraging route for protected species such as pipistrelle and Daubenton's bats.

The Roseburn route would result in the permanent loss of woodland and habitat, especially within the constrained Roseburn to Craigleith section (outlined in the RP05A - Landscape, Streetscape and Heritage Report). In order to mitigate these impacts, a single-track section between Roseburn and Craigleith is proposed. In addition, battery-powered trams would avoid the need for Overhead Line Equipment (OLE). Together, these amendments would reduce environmental and visual impacts, vegetation loss and land take. Other mitigation measures would be proposed, including habitat reinstatement.

Tram would cross the Water of Leith at Coltbridge Viaduct and, while no direct impact on the river environment is envisaged at this stage, construction impacts would need to be carefully managed.

Heritage

Between the A8 and Ravelston Dykes, the Roseburn Path is located within the Coltbridge and Wester Coates Conservation Area.

Given its previous use as a railway corridor, there is no significant archaeology along the Roseburn Path.

While the Roseburn Terraced Railway Bridge is listed, Coltbridge Viaduct is not.

Multiple buildings on West Harbour Road are listed including the Lighthouse and Buoy Depot, and adjacent workshops. The majority of buildings around Granton Square are also listed including Harbourmasters House and the Granton Hotel. Granton Middle Pier is also of interest but is unlikely to be impacted by the scheme.

3.3 Option G2: City Centre to Granton via Orchard Brae

Option G2 is an on-street option utilising Queensferry Street, Dean Bridge, Orchard Brae and Crewe Road South towards Crewe Toll.

3.3.1 Scheme Design Overview / Properties

Tram alignment

Option G2 would comprise an on-street tram alignment utilising Queensferry Street, Dean Bridge, Orchard Brae and Crewe Road South toward Crewe Toll. Beyond, it shares a route with G1 via West Granton Access and Waterfront Avenue to Granton Square.

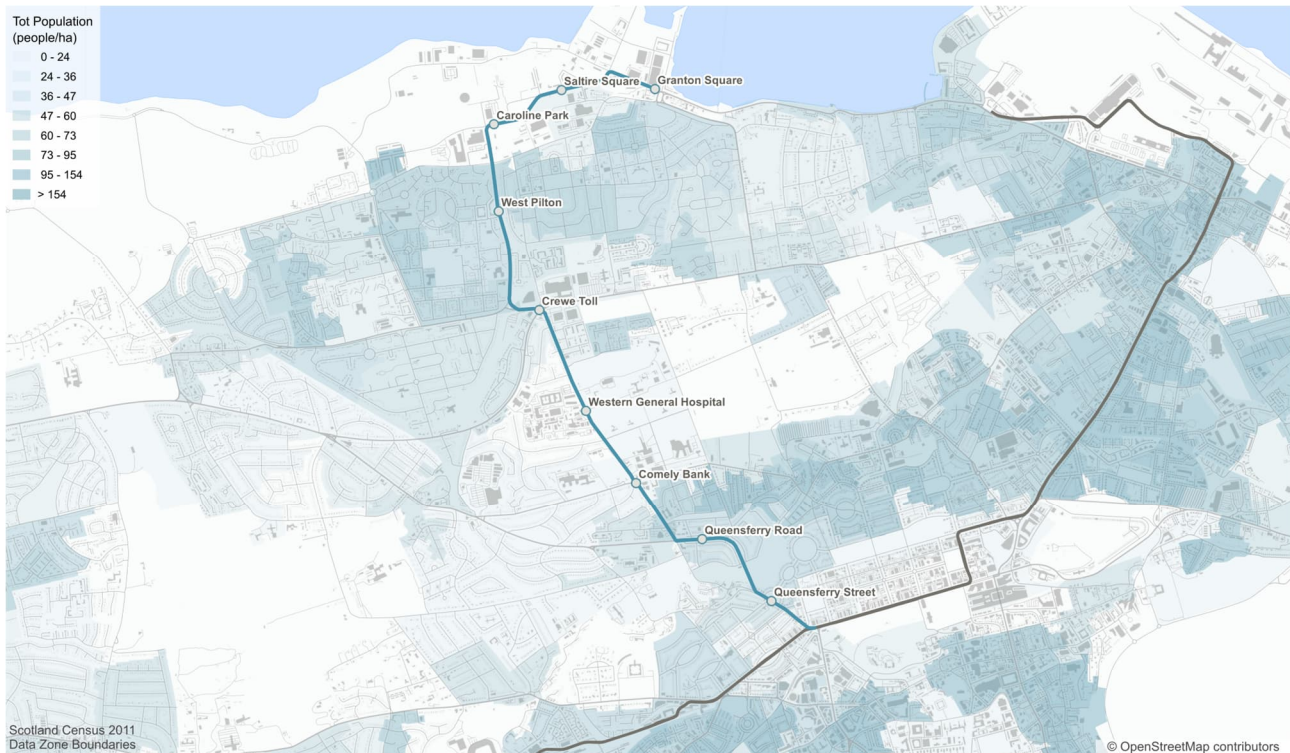
The route would connect to the existing tram corridor at Princes Street / Queensferry Street via an east-facing junction only. As such, travel from Orchard Brae corridor, westwards toward Haymarket, Edinburgh Park and the airport, would require interchange at Princes Street.

Access to the Western General Hospital is via the existing entrance on Crewe Road South; Option G2 also serves Comely Bank and the western end of Stockbridge.

The tram alignment would be fully on-street and would share road space with general traffic, cycles and buses. The Queensferry Road corridor is a key strategic route from Fife into Edinburgh, and a primary bus and traffic corridor, as designated in the city's Circulation Plan.

The Orchard Brae route option is illustrated in Figure 3.2.

Figure 3.2: Orchard Brae Route Option and Inductive Tram Stop Locations



The corridor requires several complex transport issues to be resolved:

- **Princes Street / Queensferry Street:** This junction is already constrained by existing tram and high bus volumes, and any redesign to accommodate the Orchard Brae alignment would further impact capacity and reliability for all modes. It would also present challenges for pedestrian and cycle safety improvements at a location where a cycle fatality has occurred.
- **Queensferry Street:** No satisfactory location has yet been identified for a tram stop at this critical node. This is one of the most popular locations for bus stops in the city, any solution would reduce existing and future bus stop capacity on a corridor already operating near capacity. There are limited viable options available to relocate bus stops and services (including regional services) at this heavily used interchange.
- The route provides direct access to the main entrance of the Western General Hospital via a proposed stop on Crewe Road South. While this offers a closer connection to the hospital's current primary access than the Roseburn option, it comes with associated land, cost and operational constraints (such as a need to consider interaction with emergency service vehicles).
- Access to residential driveways will need to be provided on Crewe Road South, potentially requiring right turn crossing movements across the tracks.

Active Travel Provision

A key benefit of the Orchard Brae option is that the Roseburn Path / NCN1 would be retained in its present form, as a dedicated active travel corridor with the environment and ecology unchanged.

Nevertheless, on the Orchard Brae corridor itself, opportunities to integrate segregated cycling with the tram scheme are limited. On Crewe Road South, space constraints and driveway accesses limit the feasibility of segregated cycling facilities. On Queensferry Road, between Orchard Brae and Dean Bridge, existing cycle segregation would need to be removed. On Dean Bridge, it would not be possible to provide segregated cycle lanes alongside tram within the existing Category A listed structure. Instead, a new structure across the Water of Leith would be required, a significant intervention in heritage and landscape terms.

In summary, while the route avoids direct interference with the existing Roseburn off-street active travel corridor, it would not support strategic cycling improvements along the Orchard Brae corridor itself.

Ecology and Biodiversity

The Orchard Brae alignment avoids the LNCS and would not intersect with a continuous green corridor. However, it passes through areas with mature trees, many of which are protected by Tree Preservation Orders, particularly along Crewe Road South. Tree pruning would be required to accommodate tram infrastructure.

While the ecological impact is lower than Roseburn in terms of biodiversity corridor disruption, the route offers limited scope for enhancement due to space constraints and proximity to urban development.

Opportunities for ecological mitigation or betterment within this corridor are also restricted.

Tram would cross the Water of Leith at Dean Bridge. A new bridge deck would be required, and foundation strengthening may also be needed, directly impacting the riverbed. A mitigation strategy to address potential construction impacts would be developed in consultation with the Scottish Environment Protection Agency (SEPA) and stakeholders.

Heritage

The alignment crosses Dean Bridge, a Category A listed structure designed by Thomas Telford.

Queensferry Street, Dean Bridge and Queensferry Road are all located within the World Heritage Site (WHS) and New Town Conservation Area. The Queensferry Road/ Orchard Brae junction is also bounded by the Dean Conservation Area. Inverleith Conservation Area is located on the east side of Crewe Road South.

There are a number of listed buildings in the vicinity of Comely Bank, including 177 Comely Bank Road, Flora Stevenson Primary School and Avenue Villas.

3.4 Key Option Attributes (Transport Outputs)

The key attributes of each route option are summarised in Table 3.1. The junction of Shandwick Place/ Queensferry Street junction has been taken as the common starting point to the route to Granton in both options to aid direct comparability.

Table 3.1: Granton to City Centre Options: Key Attributes

Transport Outputs (between Shandwick Place/Queensferry Street and Granton)	Roseburn	Orchard Brae
Total route length	7,200m	5,500m
Route length of new infrastructure ¹	5,700m	5,500m
% of full route fully segregated from general traffic	94%	57%
Number of total stops	10 total (8 new)	9 total (9 new)
Segregated cycle provision	- Shared use active travel path maintained at 3m throughout most of the Roseburn corridor. - Where it drops below 3m alternative routes for cycles are being explored, e.g. Balbirnie PI to connect into the A8 cycle infrastructure already in place and farther north at South Groathill Avenue.	- Maintained on Roseburn as per current. - Tram alignment on Orchard Brae would preclude Active Travel provision on Orchard Brae.

¹ Additional to existing Airport to Newhaven route infrastructure

The Roseburn route is 7.2 km in length compared to 5.5 km for the Orchard Brae option. The two options are broadly comparable in terms of the length of new route infrastructure required, with Roseburn requiring approximately 5.7 km of new infrastructure (from its divergence near Haymarket), compared to 5.5 km for Orchard Brae.

The Roseburn option is largely off-street, offering a high degree of route segregation. The route would be fully segregated between Haymarket and Crewe Toll. By contrast, the Orchard Brae alignment is fully on-street between its connection with the existing line at Shandwick Place and Crewe Toll. North of Crewe Toll both corridors share the same largely off-street alignment resulting in only 57% of Option G2 being segregated from general traffic.

3.5 Impact on Tram Users: Journey Times and Journey Time Reliability

3.5.1 Tram Journey Times Estimates

Tram journey times have been estimated using a VISSIM micro-simulation model as detailed in the Microsimulation Modelling Report Trams to Granton: BioQuarter and Beyond Report (August 2025). The VISSIM model represents the existing network in terms of traffic, road lane configurations and junction layouts.

Tram route options have been coded in the model, including proposed tram routes, stops and associated junction and lane configurations. Junction layouts have been designed to deliver sufficient general traffic capacity while providing stop-to-stop priority for tram.

The tram journey times estimated for each option are summarised in Table 3 2.

Table 3.2: Public Transport Journey Time & Journey Time Reliability (Average times for AM Peak and Inter-peak)

Criterion	Roseburn	Orchard Brae
Tram journey time: AM peak (inbound between Granton Sq. and Princes Street)	26 mins	34 mins
Tram journey time: off peak (inbound between Granton Square. and Princes Street)	25 mins	27 mins
Tram reliability	Roseburn provides greater journey time reliability, reflecting high degree of route segregation.	Reliability is impacted by on-street Congestion at Crewe Toll, Comely Bank and Queensferry Street.
Bus journey times & reliability	As a new public transport corridor, options would provide additional network capacity for tram without constraining existing bus capacity. Mode shift to tram would also reduce road traffic, in turn resulting in faster journey times and better journey time reliability for bus	Tram would operate on bus corridor. Capacity constraints would result in slower journey times and worse journey time reliability for bus.

The higher level of segregation on the Roseburn corridor is forecast to deliver significantly shorter journey times compared with Orchard Brae, particularly in the AM peak where the difference exceeds 7 minutes. Off peak journey times are approximately 2 minutes shorter for the Roseburn option. Journey times are slower via Orchard Brae due to lower speed limits and general traffic congestion.

In addition, the greater level of segregation on the Roseburn corridor would result in improved journey time reliability compared with Orchard Brae. In turn, this provides an enhanced passenger experience and better service operational performance and resilience.

3.6 Impact on Bus Users: Journey Times and Journey Time Reliability

Roseburn

The Roseburn option has no direct impact on the bus network. Instead, it complements existing services by providing new public transport connectivity options between Granton and Haymarket and the West End.

Existing capacity on Queensferry Road and Queensferry Street is unchanged benefiting regional and long distance bus and coach services from Fife and beyond, and the local north west Edinburgh network.

Orchard Brae

In contrast, the introduction of tram on-street, via Orchard Brae, would have a significant impact on overall road capacity and the bus network, with a resulting adverse effect on bus journey times. Being the strategic route to Fife, with limited diversion alternatives, tram is likely to result in increased congestion, extended public transport journey times and reduced operational reliability.

Queensferry Street would be a major constraint. Bus stops would need to be relocated, with resulting heritage impacts. Local and regional bus service capacity would be adversely impacted, with limited opportunities to support future growth in the north west of the city and beyond.

3.7 Impact on/ Interaction with Cycling, Walking & Wheeling

Roseburn

The Roseburn option would provide walking, wheeling and cycling connectivity by:

- Maintaining the ability for walking and cycling along the Roseburn Path through maintaining a 3-metre-wide footway/cycleway along the route, with two exceptions:
 - a 20m section under Telford Road bridge where the active travel width reduces to 2.17m, and
 - south of Roseburn bridge where a parallel route via Balbirnie Place provides a connection to link into Russell Road
- Providing additional capacity with an enhanced active travel route on Queensferry Road between Craigleith and Queensferry Street, together with additional improvements through Murrayfield towards Roseburn

Tram would result in some tree and canopy loss with the character of the corridor changing to be more open compared to now. It is possible that this may have a positive impact on some user groups who are more likely to avoid enclosed greenspaces due to fear of crime. New lighting and safety features may encourage greater use of the Roseburn Path at night and during winter months. For others, the character of the path will be changed negatively, with a more urban form and structured planting.

The Roseburn option provides for four areas of enhanced greenspace and placemaking which will include places for children to play, areas of seating and places for improved social interaction.

Orchard Brae

As above, a key benefit of the Orchard Brae option is that the Roseburn Path / NCN1 would be retained in its present form, with the environment and ecology unchanged.

Nevertheless, due to space constraints, existing cycling infrastructure would require to be removed from the Orchard Brae/ Queensferry Road corridor, adjacent to tram. While new junctions and crossings would enhance local connectivity, no new strategic walking or cycling connections are proposed. Instead, it is assumed that the Roseburn Path would provide this alternative.

In terms of journey ambience, there could be a reduction in perceived walking and cycling quality due to the pruning or removal of existing street trees, and increased vehicle activity within urban streets, although evidence from Trams to Newhaven is that there has been a reduction in traffic across a significant local area. A loss of verge space and greenery on the southern section of Crewe Road South could make this section of

the corridor less appealing. Nevertheless, in general, users will benefit from new higher-quality footway surfacing, lighting, and a more consistent urban design that would accompany tram implementation.

3.8 Tram Accessibility (Catchment Analysis)

The accessibility analysis considers the 'in-scope' population and jobs that would be served by the respective route options.

The analysis considers the 750m catchment of stops along each route. The catchment is reported in terms of:

- The total catchment of each route between Granton and Princes Street at Shandwick Place. The total catchment includes overlap with the existing Airport-Newhaven route as shown in Figure 3.3 for Roseburn and Orchard Brae.
- The additional catchment analysis for new infrastructure only removes the existing section of tram network between Roseburn and Princes Street from the Roseburn option.

3.8.1 Population and Employment Catchment

The population and employment catchment results (based on 750m stop catchments) are shown in Table 3.3 and Table 3.4.

Table 3.3: Population Catchment

	Roseburn	Orchard Brae
Total catchment of service	78,000	62,000
Additional catchment of new infrastructure only	62,000	62,000

Table 3.4: Employment Catchment

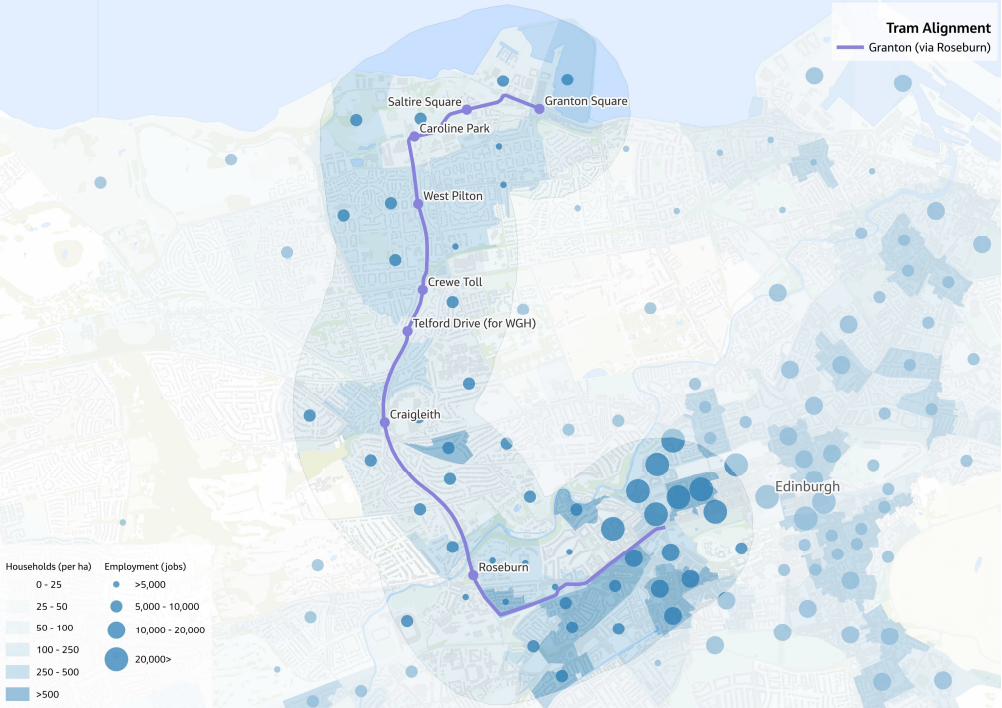
	Roseburn	Orchard Brae
Total catchment	72,000	65,000
Additional catchment of new infrastructure only	24,000	65,000

When only the incremental catchment (new infrastructure only) is considered, Roseburn and Orchard Brae have similar population catchments (62,000) but Orchard Brae has more jobs (65,000 vs 24,000). This is primarily driven by the employment catchment surrounding the Queensferry Street area.

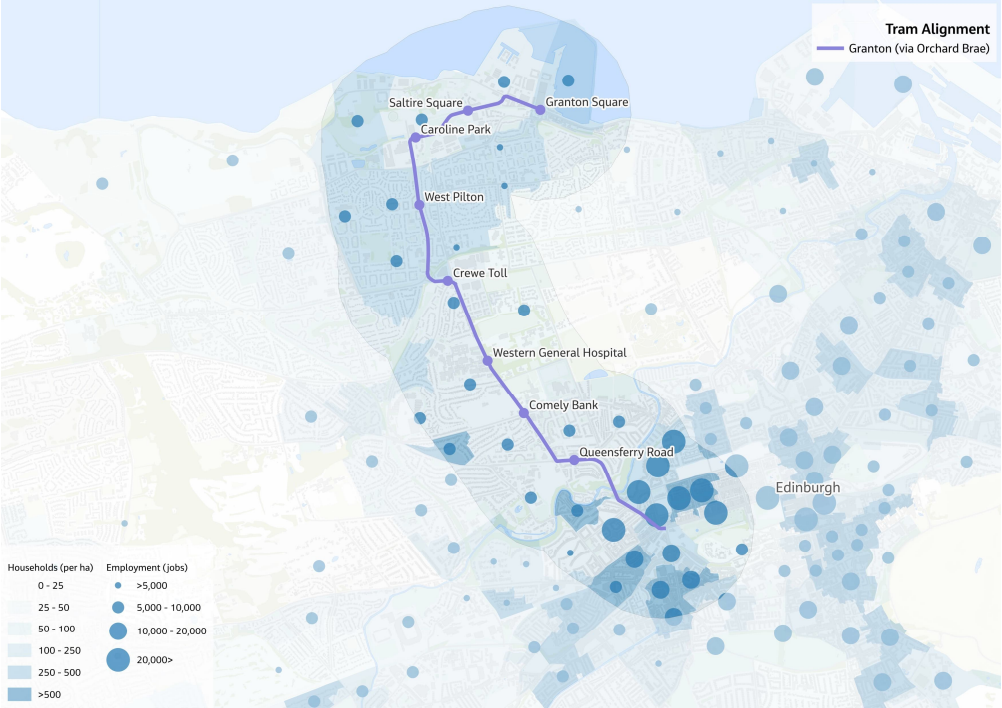
However, comparing the overall catchment of options between a common start and end point (Princes Street and Granton), the Roseburn options have a larger overall population (78,000) and jobs catchments (72,000) compared to Orchard Brae (62,000 and 65,000 respectively). This reflects the fact that the section of 'common' route on the Roseburn option (which includes the existing tram stops at Haymarket and West End) is characterised by a high population and employment density.

Figure 3.3: Population and Employment Catchment – Granton to Princes Street

Via Roseburn



Via Orchard Brae



3.8.2 Implications for Option Performance: Population and Employment

Overall, the Roseburn option has a greater population catchment between Granton and Princes Street, and so performs better in terms of increased tram accessibility. Analysis of the Roseburn corridor includes a section of the existing line between Haymarket and Princes Street, whereas the Orchard Brae catchment is all 'new' via Queensferry Road to a junction at Princes Street/ Queensferry Street.

The advantages of the Roseburn corridor compared with Orchard Brae are that it:

- provides a direct link between Granton/ North West Edinburgh and major employment sites at Haymarket/ West End
- delivers a higher tram frequency between Princes Street and West End and Haymarket stops, strengthening cross city centre capacity

3.9 Patronage and Benefits Estimation

Tram patronage for both options has been forecast using the Council's strategic transport model. This has previously been used to support the Trams to Newhaven business case and the development of City Plan 2030.

As part of the North-South Tram study, the model has been further updated to include and represent:

- Up-to-date planning assumptions consistent with the local authorities' population and employment forecasts. These inform trip ends and development assumptions
- Latest transport network assumptions including, for example, the representation of the Newhaven extension in the Do-Minimum, the updating of bus routes and frequencies and more detailed representation of zone connectors and parking charges
- Updates to model parameters (values of time, vehicle operating costs, fares)

Demand modelling has been undertaken for the Roseburn and Orchard Brae options, with the modelling based on forecast year of 2032. For the purposes of the modelling assessment, the South East route has been assumed to extend beyond the BioQuarter to Shawfair Station.

3.9.1 Forecasting Assumptions

Do-Minimum (without Tram) and Do-Something (with Tram) Specification

Both options assumed, for the purposes of comparative assessment, a common set of network and service pattern assumptions. These are summarised in Figure 3.4 and Table 3.5.

Figure 3.4: Assumed Do-Something Service Pattern

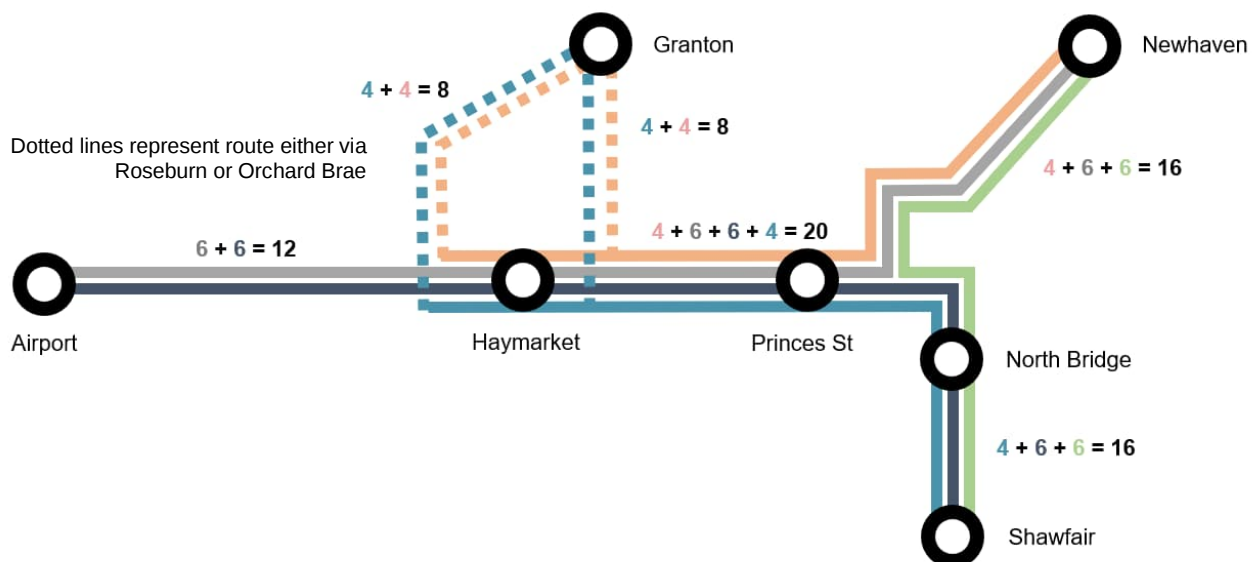


Table 3.5 Specification for Demand Modelling

Assumption	Roseburn	Orchard Brae
Assumed N-S route	▪ Granton to Shawfair via Roseburn	▪ Granton to Shawfair via Orchard
Do-Something service frequency	▪ 6 Airport-Newhaven ▪ +6 Airport-South East ▪ +6 Newhaven-South East ▪ +4 Granton-South East ▪ +4 Newhaven-Granton	▪ 6 Airport-Newhaven ▪ +6 Airport-South East ▪ +6 Newhaven-South East ▪ +4 Granton-South East ▪ +4 Newhaven-Granton
Journey times (Granton to City Centre)	▪ Peak: 26 minutes ▪ Inter-peak: 25 minutes ▪ [As Table 3.2)	▪ Peak: 34 minutes ▪ Inter-peak: 27 minutes ▪ [As Table 3.2)
Future bus network	Same for both options	Same for both options

3.9.2 Estimated Tram Demand

The strategic model has been used to forecast tram demand and benefits. Forecasts are based on the AM Peak (07:00-09:00) and interpeak (10:00-12:00) models, from which annual demand estimates have also been prepared.

Annual Tram Demand

Forecast annual tram passenger demand is summarised in Table 3.6. In addition, the table summarises individual demand for the Granton and South East sections, should either be delivered as first stage.

Table 3.6: Annual Forecast Tram Demand 2032 (million pax per year)

Scenario	Total Demand	Granton-City Centre	South East-City Centre	Airport-Newhaven Uplift
Full Network (Airport-Newhaven + North-South Route)				
Do-Minimum	18.1 million			
Do-Something via Orchard Brae	30.2 million			
Do-Something via Roseburn	32.6 million			
North-South Route Only				
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
Granton-City Centre Only				
Granton-City Centre via Orchard Brae	4.5 million	1.8 million		2.7 million
Granton-City Centre via Roseburn	5.6 million	2.6 million		2.9 million

The Do-Minimum forecast is 18.1m passengers per year by 2032. The Do-Something forecasts, for the full North-South route, are 30.2m passengers per year for Orchard Brae and 32.6m for Roseburn, an increase of approximately 12.1 and 14.5 million respectively.

Roseburn attracts more passengers than Orchard Brae (+2.4 million) due to faster journey times and better connectivity to Haymarket and the West End.

If the Granton to City Centre section of the North-South route was to be delivered first, total additional patronage would be 4.5 million via Orchard Brae and 5.6 million via Roseburn. This includes an uplift on the existing Airport-Newhaven line of 2.7m-2.9m passengers due to the increased travel options on the expanded tram network.

3.10 Impact on Environment: Landscape, Ecology and Biodiversity

3.10.1 Roseburn

The Roseburn alignment runs along the disused railway corridor currently functioning as an active travel route and a linear park. The routes have been evaluated in the Preliminary Ecological Appraisal report (April

2025), Landscape, Streetscape and Heritage Report (July 2025) and Technical Note 04 - Infrastructure Costs, Phasing and Construction (March 2025).

Route Context and Relevant Designations

The corridor lies within a LNCS and forms part of Edinburgh's Green-Blue Network, reflecting its combined ecological, recreational, and placemaking value. It is characterised by mature vegetation, informal access paths, and a sense of retreat from the surrounding urban fabric.

Impact of Tram Scheme and Potential Mitigations

The tram scheme would result in a material change to the visual and functional character of the corridor. Proposed single tracking between Roseburn and Craigmyle seeks to reduce the scheme impact; however, there will still be some vegetation and habitat loss. The proposed reinstatement of active travel facilities and planned environmental improvements aim to mitigate these changes by enhancing biodiversity, ecological connectivity and overall corridor quality.

The natural continuity of the Roseburn corridor supports wildlife habitats and provides a valued community resource. Its transformation into a tram route will alter the landscape from semi-natural green space to a more structured multi-modal corridor (with less vegetation). While this may improve safety and infrastructure quality, the tranquillity and informal ambience of the current corridor may be diminished.

Tram would cross the Water of Leith at Coltbridge Viaduct but no direct impact on the river environment is envisaged at this stage.

Corridor drainage would connect into existing sewer networks with no runoff into the Water of Leith.

Assessment of Impacts

- Landscape: Moderate to major impact during construction, with potential for long-term neutral or positive outcome if enhancements are successfully delivered.
- Biodiversity and Habitats: Localised but significant impacts requiring mitigation, including replanting and landscape integration.
- Geology and Soils: Minimal impacts expected.
- Water, Drainage and Flooding: Standard surface water management systems to be included.
- Noise & Vibration: Temporary construction impacts; low operational noise anticipated due to vehicle technology and segregated route.

3.10.2 Orchard Brae

This assessment draws on on-street route design details and environmental constraints identified in the RP02 Microsimulation Modelling Report (August 2026) and Technical Note 04 - Infrastructure Costs, Phasing and Construction (March 2025).

Route Context and Relevant Designations

The alignment follows a predominantly on-street corridor via Queensferry Street, Dean Bridge, Orchard Brae, and Crewe Road South. While it is not located within a designated LNCS, the route lies within Edinburgh's wider Green-Blue Network and includes multiple Tree Preservation Orders, notably on Crewe Road South near Comely Bank Roundabout. The corridor provides scattered but valuable tree cover and contributes to urban ecosystem functions such as shade, noise buffering, and biodiversity.

Impact of Tram Scheme and Potential Mitigations

The on-street alignment requires significant road space, which would result in the removal of trees and verge vegetation in constrained areas. The scope for replanting or environmental offset within the corridor is limited due to adjacent properties and the operational needs of both tram and general traffic. Unlike Roseburn, the Orchard Brae corridor offers few opportunities within the corridor for ecological enhancement, and any green infrastructure would need to be integrated creatively at a detailed design stage.

Although not a continuous ecological corridor, the existing tree cover plays a local role in urban ecosystem services such as air purification, shading, and noise mitigation. Their removal will impact the local environment. From a placemaking perspective, the current tree-lined avenue character will be disrupted, potentially reducing the perceived environmental quality of the corridor for residents and road users alike.

Tram would cross the Water of Leith at Dean Bridge. The structure was designed and constructed as a non-conventional arch to address an underlying founding weakness. Should Orchard Brae be taken forward, as part of an OBC, a full Geotechnical Investigation would be undertaken. If strengthening works are deemed to be required, these would have a direct impact on the Water of Leith, and a construction mitigation strategy would be developed in consultation with the SEPA and stakeholders.

Corridor drainage would connect into existing sewer networks with no runoff into the Water of Leith.

Assessment of Impacts

- Landscape: Moderate impact due to tree removal and alteration of the street's visual character; mitigations will be constrained by the available space within the corridor.
- Biodiversity and Habitats: Minor to moderate impact, mainly through the loss of street trees and small-scale habitat features; limited opportunity for reinstatement or enhancement.
- Geology and Soils: Minimal anticipated impact, with standard urban construction techniques expected.
- Water, Drainage and Flooding: No major concerns identified; existing drainage infrastructure likely to be retained or upgraded.
- Noise & Vibration: Construction-phase impacts likely to be more noticeable in this built-up corridor; operational impacts expected to be low due to tram design, but closer proximity to dwellings could result in higher perception of noise.

3.11 Impact on Heritage

3.11.1 Roseburn

Impact of Tram Scheme and Potential Mitigations

Between the A8 and Ravelston Dykes, the Roseburn Path is located within the Coltbridge and Wester Coates Conservation Area.

Given its previous use as a railway corridor, there is no significant archaeology along the Roseburn Path. The Roseburn Terrace Railway Bridge is the only listed structure and although this is proposed to be replaced, the existing railings would be restored and reinstalled to retain the original look.

While the Coltbridge Viaduct is a significant structure, it is not listed. Other bridges along the route may be impacted; however, single-tracking between Roseburn and Craighleith tram stops negates the need for demolition and reconstruction over this section, preserving the existing stone-built Victorian structures.

Assessment

The Roseburn alignment presents a low heritage risk. Impacts are limited to setting changes and structural interventions to a non-listed historic structure. With appropriate design treatment, there is an opportunity to integrate interpretive or aesthetic elements that reference the corridor's railway heritage and industrial past.

3.11.2 Orchard Brae

Impact of Tram Scheme and Potential Mitigations

The alignment crosses Dean Bridge, a Category A listed structure designed by Thomas Telford. Analysis has highlighted the unique structural design, which presents significant challenge. Accommodating tram will require substantial structural works, including slab strengthening and potential future reinforcement for long-term resilience. Works on the bridge would need to be carried out with sensitivity to its heritage status and would involve significant planning, engineering and consultation requirements.

Queensferry Street, Dean Bridge and Queensferry Road are all located within the World Heritage Site (WHS) and New Town Conservation Area. As tram has already been delivered within the WHS, the impact of this mode on the site has already been considered and accepted. On the Orchard Brae corridor, it is proposed that the use of battery powered trams would allow there to be no OLE between Queensferry Street and Queensferry Road tram stop. This would reduce the visual impact of the scheme across Dean Bridge and on key protected views.

A proposed tram stop at Queensferry Road will need to be carefully designed to minimise impacts on the Conservation Area. As indicated, the tram stop platform would be in the centre of the road, similar to the West End stop, but further design and consultation is required to develop a design that minimises any possible impact on adjacent walls and vegetation, and has no impact on nearby trees.

There are a number of listed buildings in the vicinity of Comely Bank, including 177 Comely Bank Road, Flora Stevenson Primary School and Avenue Villas. At this stage, there is not considered to be any scheme effect on the properties.

Assessment

The Orchard Brae option would have heritage impacts as summarised below:

- Built Heritage and Structures: Moderate adverse impact anticipated at Dean Bridge due to invasive structural works required within a unique listed structure
- Townscape and Conservation Areas: Minor impact, as tram works would alter the visual character and functional balance of key heritage streets such as Queensferry Street
- Setting and Views: 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
- Mitigation Potential: Structural interventions on listed assets cannot be fully mitigated. Other impacts can be softened through sensitive design and careful material selection. Bus services may require to be relocated to minimise congestion on Queensferry Street. The cumulative impact on setting and townscape is therefore considered Moderate

4. City Centre to South East Option Assessment

4.1 City Centre to South East

The City Centre to South East corridor connects the existing tram network from Princes Street to the BioQuarter (and potentially beyond). The route crosses the Old Town and WHS, it follows the dense Southside corridor, a local town centre with an important high street function, then continues via the residential areas of Newington and Craigmillar Park to Cameron Toll. The route then follows Old Dalkeith Road to the Royal Infirmary and BioQuarter. Beyond the BioQuarter there is potential for extensions to Shawfair Station in Midlothian and Queen Margaret University/ Musselburgh Station in East Lothian.

This connects the city centre to key drivers of demand including the University of Edinburgh's central campus, Cameron Toll shopping centre, the Royal Infirmary of Edinburgh Hospital and the BioQuarter.

A single route is being considered as shown in Figure 4.1; indicative stop locations are also highlighted. The rationale for discounting alternative South East routing options is outlined in Appendix A.

For the purposes of the traffic modelling assessment, an extension from the BioQuarter to Shawfair has been assumed, providing interchange with the Borders Railway. Where the extended route is the focus of the analysis, this is clearly stated.

Figure 4.1: South East Route with Indicative Tram Stop Locations



Proposed tram stops are located at:

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

4.1.1 Tram Alignment

A Candidate Design has been developed for the South East corridor, with the aim of identifying design constraints and challenges at an early stage. Tram is primarily on-street and so junction design has been a major consideration. As with the existing tram route, uncontrolled right-turn movements across the tram

tracks have been avoided where possible. As a result, all significant junctions would be signalised to provide access to residential streets, including:

- Craigmillar Park/ Suffolk Road
- Lady Road/ Cameron Toll car park,
- Old Dalkeith Road/ Cameron Toll Gardens,
- Old Dalkeith Road/ Walter Scott Avenue and
- Old Dalkeith Road/ Kingston Avenue

An all-movements Delta junction at Princes Street/ South St Andrew Street would connect the corridor to the existing network. However, tight turning radii would restrict tram speeds to 10 kph, as for existing movements, and the combination of tram, pedestrian and bus 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 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 access to Waverley Steps and the Balmoral Hotel.

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.

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.

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 - only trams, buses, and taxis would be permitted. General traffic would be restricted to local access and servicing, with egress via Chambers Street and Blair Street. Other traffic reduction measures required to optimise tram performance (on Liberton Road and Old Dalkeith Road) will be explored as part of an OBC.

The proposed route through Cameron Toll has been revised to pass through the central island of 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 (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 Station is assumed within the strategic transport model, although a concept alignment requires to be developed in consultation with Midlothian Council and other stakeholders. A future extension to Queen Margaret University via Craigmillar is also under consideration, with discussions held with East Lothian Council. These extensions will be explored further through the SEStransit project which is examining the case for mass transit across the city region

4.1.2 Active Travel Provision

The Council's Circulation Plan has prioritised the Bridges corridor for public transport and pedestrians, with segregated cycling delivered on parallel routes. However, the design will seek to incorporate safer cycling features throughout, with targeted segregated cycling where space permits.

There is an aspiration for segregated cycling on North Bridge, although design optioneering at OBC stage will confirm the appropriate use of space at this location.

Between South Bridge and Salisbury Place on the Southside corridor, street widths are narrow with no opportunity for segregated cycle provision; widened footways are a priority. Nevertheless, safer cycling

elements 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 the same standard. Beyond the Royal Infirmary, the tram alignment is still to be confirmed, but generally there should be ample space to deliver segregated cycling as part of any future extension.

4.1.3 Ecology and Biodiversity

The South East route proposal is on-street between the City Centre and the BioQuarter and therefore minimal impact on biodiversity and habitats is anticipated. The widened footways proposed in some locations will create opportunities to include rain garden planting adjacent to the road which, as well as helping to collect and infiltrate rainwater, provide visual interest and create green space running along the edge of the street.

There are a number of tree preservation orders at Cameron Toll and Old Dalkeith Road. Based on current design information, there will be limited impact on these sites, as they are adjacent to, but not on the route.

Beyond the BioQuarter, specific alignment details for possible extensions into Midlothian and/ or East Lothian are yet to be developed in full and so any impacts on ecology or biodiversity are unknown. Nevertheless, based on early engagement, a largely on-street alignment to Shawfair is assumed.

4.1.4 Heritage

The section of tram route between east Princes Street and Cameron Toll passes many heritage buildings and assets.

North and South Bridge lie within the World Heritage Site and are both Category A listed.

It is anticipated that there will be significant archaeology between the Old Town and Salisbury Place, reflecting the historic Portsburgh area, located to the south of the original city walls.

South of Salisbury Place, there are further listed buildings towards Cameron Toll.

On Old Dalkeith Road, Bridgend Farm is of particular significance; parts of the property are believed to be the remains of a 15-16th century royal chapel.

The tram alignment passes the grounds of Craigmillar Castle, a scheduled ancient monument.

4.2 Key Option Attributes (Transport Outputs)

To help understand how the South East option delivers against key performance metrics later in the appraisal, details of the physical specification of the route are summarised in Table 4.1.

Table 4.1: City Centre to BioQuarter: Key Attributes

Attribute	South East: City Centre to BioQuarter/Shawfair
Total route length	To BioQuarter: 5,600m (To Shawfair: 9,500m)
Route length of new infrastructure	To BioQuarter: 5,600m (To Shawfair: 9,500m)
% of full route fully segregated from general traffic	To BioQuarter: 20% (To Shawfair: 43%)
Number of total stops	8 total (8 new)
Segregated cycle provision	- Safe cycling throughout the corridor, including at major junctions and tram stops. Potential for segregated cycling on North Bridge. - Tying into proposals for cycle scheme south of Cameron Toll and scope for segregated cycling beyond the BioQuarter.

4.3 Impact on Tram Users: Journey Times and Journey Time Reliability

The RP02 Microsimulation Modelling report (August 2026) detailed the tram journey times for the South East route estimated using a VISSIM micro-simulation model. The estimated tram journey times are listed in

Table 4.2. The Candidate Design was modelled to Shawfair and included tram stops, junction layouts/signalling and lane configurations.

Table 4.2: Public Transport Journey Time & Journey Time Reliability (Average times for AM Peak and Inter-peak)

Criterion	South East: City Centre to Shawfair
Tram journey time: AM peak (inbound between Shawfair and Princes Street)	38 mins
Tram journey time: off peak (inbound between Shawfair and Princes Street)	34 mins
Tram reliability	Modelling of the two peaks in both directions suggests this would be a relatively reliable public transport route. The primary reliability risk being towards the city centre in the morning peak where tram journey times may vary more significantly as a result of greater general traffic congestion.
Bus journey times & reliability	As a new public transport corridor, options would provide additional network capacity for tram without constraining existing bus capacity. Mode shift to tram would also reduce road traffic, in turn resulting in faster journey times and better journey time reliability for bus.

4.4 Impact on Bus Users: Journey Times and Journey Time Reliability

A combination of tram and bus on The Bridges corridor would create a public transport priority route that would integrate both modes. A proposed modal filter at North Bridge would restrict general through traffic, improving journey times and reliability.

Tram will provide an opportunity to optimise the public transport network as a whole, improving interchange and connectivity across a range of destinations. The magnitude of new housing and employment proposed along the South East corridor means there is a significant opportunity to grow patronage across both bus and tram modes.

Kerb space is at a premium on The Bridges corridor, and stakeholder engagement will be required to inform detailed scheme design, ensuring that appropriate bus stop capacity is provided, together with other uses including waiting and loading, and refuse requirements.

Traffic signal design will seek to prioritise both bus and tram, building on lessons learned on the existing corridor.

Overall, the creation of a public transport priority corridor is anticipated to have a positive impact on bus journey times and reliability.

4.5 Impact on/ Interaction with Walking, Wheeling and Cycling

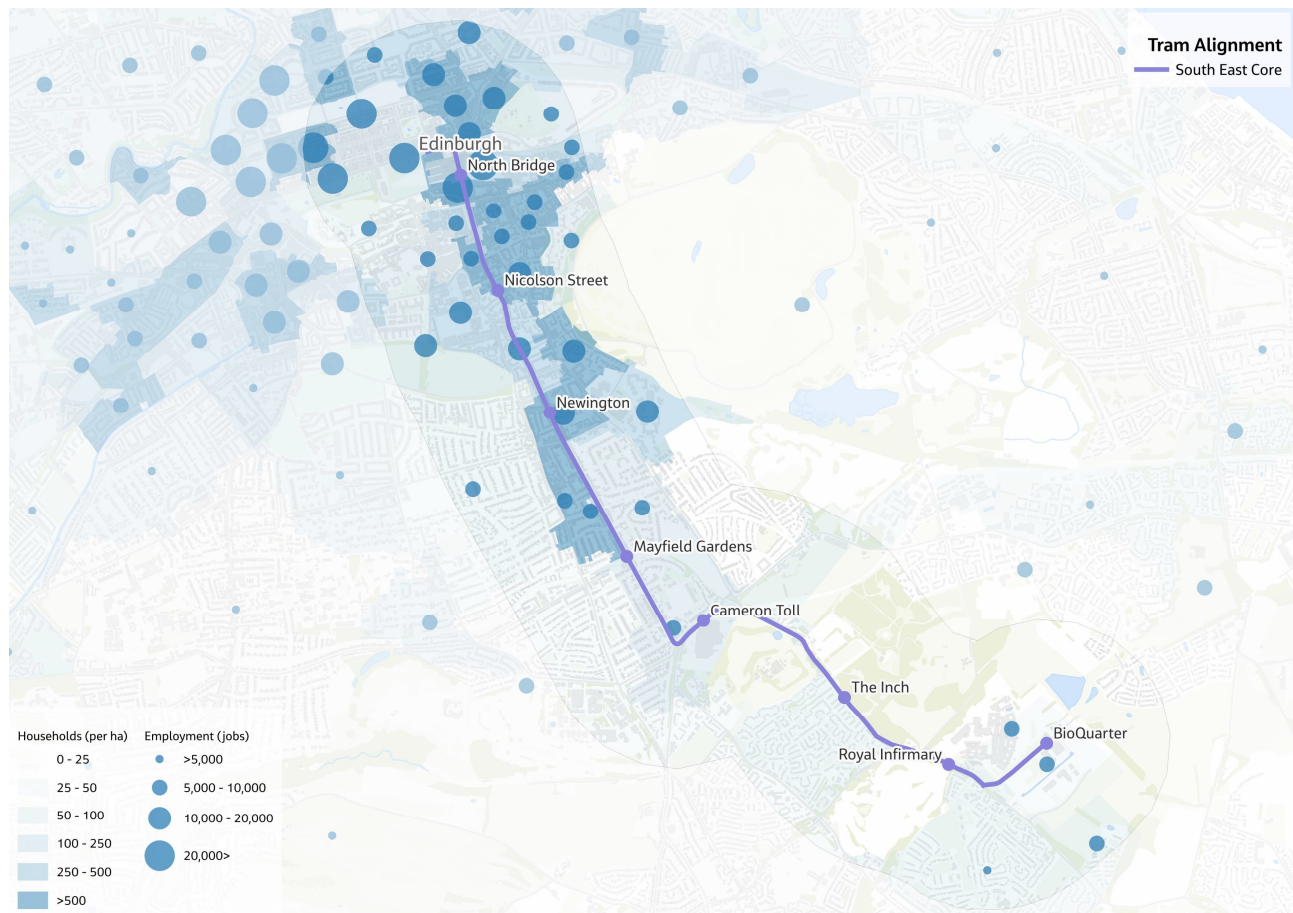
The South East tram route would seek to enhance active travel journey accessibility and connectivity. On South Bridge and the Southside, footways would be widened to address current narrow widths which, at bus stops and bottlenecks, frequently force pedestrians on to the road. Traffic signals and pedestrian crossings would all be upgraded to improve the user experience.

As above, due to space constraints between Princes Street and Cameron Toll, new segregated cycling infrastructure would be delivered on parallel corridors. Nevertheless, safer cycling measures would be provided on the tram corridor, building on lessons learned from the existing line and best practice elsewhere.

4.6 Tram Accessibility (Catchment Analysis)

Accessibility to the South East tram stops considers 'in-scope' population and jobs between east of Princes Street (from the existing line) to the BioQuarter, as shown in Figure 4.2.

Figure 4.2: Population and Employment Catchment - Crewe Toll to Princes Street



4.6.1 Population and Employment Catchment

The population and employment catchment results (based on 750m stop catchments) are shown in Table 4.3 for the South East route.

Table 4.3: Population and Employment Catchment

	South East: City Centre to BioQuarter
Population catchment	58,000
Employment catchment	69,000

4.7 Demand and Benefits Estimation

As with the assessment of the Granton options, tram demand for the South East has been established using the Council's Strategic Model of Edinburgh that was updated for the SBC with the latest planning and land-use assumptions as well as revised model parameters.

4.7.1 Forecasting Assumptions

Do-Minimum (without Tram) and Do-Something (with Tram) Specification

A tram extension to the South East has the flexibility to serve the Airport, Granton and Newhaven directly. Due to this, the review of the South East modelled demand in 2032 included an 'optimised' service pattern which connects directly to these three destinations. This results in more trams on the network but never more than 20 in the city centre along Princes Street.

This is shown diagrammatically in Figure 3.4 above and summarised in Table 4.4.

Table 4.4 Specification for Demand Modelling

Assumption	South East: City Centre to Shawfair
Do-Minimum tram service frequency (Airport to Newhaven)	10 trams per hour
Do-Something service frequency	6 Airport-Newhaven +6 Airport-South East +6 Newhaven-South East +4 Granton-South East +4 Newhaven-Granton
Journey times (South East to City)	- Peak: 38 minutes - Inter-peak: 34 minutes [As Table 4.2]

4.7.2 Estimated Tram Demand

The strategic model has been used to forecast tram demand and benefits. Forecasts are based on the morning peak (07:00-09:00) and interpeak (10:00-12:00) models, from which annual demand estimates have also been prepared.

Annual Tram Demand

Annual modelled tram patronage is shown in Table 4.5 for both the Do-Minimum and Do-Something scenarios. As with the Granton demand analysis, a standalone South East option (i.e. without either extension to Granton) has also been modelled.

Table 4.5: Annual Forecast Tram Demand 2032 (million pax per year)

Scenario	Total Demand	Granton-City Centre	South East-City Centre	Airport-Newhaven Uplift
Full Network (Airport-Newhaven + North-South Route)				
Do-Minimum	18.1 million			
Do-Something via Orchard Brae	30.2 million			
Do-Something via Roseburn	32.6 million			
North-South Route Only				
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
South East-City Centre Only				
South East-City Centre	9.6 million		6.8 million	2.8 million

The South East option performs more strongly as a standalone route than the Granton options with a total patronage of 9.6 million. This is due to the increased travel connectivity the corridor provides, with Airport-South East and Newhaven-South East movements both possible.

4.8 Impact on Environment: Landscape, Ecology and Biodiversity

The streetscape along the North Bridge / South Bridge corridor route consists of hard landscape with narrow footways and roads. Proposals will widen footways, improving pedestrian safety, with only targeted opportunities for new landscaping where space permits .

From Nicolson Street southwards, tram provides opportunities for additional streetscape improvements. With the exception of Nicolson Square and St Patrick Square, there is currently no soft landscaping adjacent to the route until south of Salisbury Place. Within the tram scheme, there is an opportunity to include rain garden planting which, as well as helping to collect and infiltrate rainwater, will provide visual interest and greenery running along the edge of the street.

Tram is proposed to be battery powered between the east end of Princes Street and the Newington tram stop, removing the need for OLE.

South of West Preston Street, buildings are set farther back from the road edge. From Salisbury Place, gardens with low walls and hedges front the footway edge, becoming greener with more trees adjacent to the road closer to the Cameron Toll junction.

The route at Cameron Toll shopping centre may impact some trees; however, future development at the centre itself is likely to have a greater impact. As the tram passes through Cameron Toll roundabout there will be additional impacts on the soft landscape; the full extent of this will be determined as the tram design is developed.

Vegetation on Old Dalkeith Road is located outside of the road corridor behind walls. Some overhanging branches may need to be removed but as tram is on-street, in general, trees should not be impacted.

There is a pinch point as the road bends around the corner at Craigmillar Castle. Nevertheless, the existing boundary wall is in poor repair, and there is an opportunity for full restoration as part of this project.

As the route reaches the BioQuarter and the Edinburgh Royal Infirmary Hospital, Liberton Golf Club banks up on the western side and the hospital spans out to the east. Overhanging branches may need to be pruned along the perimeter of the golf club, but existing walls will be retained.

The route turns a corner along Little France Drive with green space, including Burdiehouse Burn, on the east of the road. This greenspace is due to be retained with the route remaining on-road. The route then follows Little France Drive to a tram stop serving The Royal Infirmary and BioQuarter.

Assessment

The South East tram route is predominately on-street. This limits the impact on landscape, biodiversity and ecology. Nevertheless, proposals will seek to enhance the surrounding environment by creating more footway space, improving placemaking and acting as a catalyst for a general investment along the corridor.

4.9 Impact on Heritage

The section of tram route between Princes Street and Cameron Toll passes many heritage buildings and assets. It has been assumed that trams would be battery powered between Princes Street and Newington tram stop. As a result, the impact on the World Heritage Site and nearby buildings is minimised.

There are multiple Conservation Areas along the corridor, each with a unique character. These are:

- New Town;
- Old Town;
- South side;
- Blasket;
- Waverley Park; and
- Craigmillar Park.

North and South Bridge are both category A listed. Construction impacts across these structures are discussed in a separate report: TN04 Costs Phasing and Construction (August 2025).

There is likely to be significant archaeology between the Old Town and Salisbury Place, reflecting the historic Portsburgh area. While it will take time to assess the site, there are no known substantive issues impacting project construction. South of Salisbury Place, there are further listed buildings towards Cameron Toll. OLE equipment is proposed to be in the centre of the road and so there will be no impact on these properties.

On Old Dalkeith Road, Bridgend Farm is of particular significance, now a community space, parts of the property are believed to be the remains of a 15-16th century royal chapel. The tram alignment avoids these buildings, before passing the grounds of Craigmillar Castle.

Assessment

In the city centre, the proposed route travels through a World Heritage Site and in the vicinity of several heritage buildings. However, tram impacts are mitigated by the use of battery-operated trams which do not require OLE. As a result, the impact on heritage is low.

Between Salisbury Plance and Cameron Toll, the risk of negatively affecting culturally significant landmarks is low. On Old Dalkeith Road, tram is proposed to be on-street, minimising impacts at Bridgend Farm and Craigmillar Castle.

Archaeological finds are anticipated although the exact location and status of these finds are unknown.

5. Appraisal Summary Tables

5.1 Appraisal Scoring

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 project TPOs and STAG objectives.

The scoring assessment have been undertaken using a scoring range of +3 to -3 in line with Transport Scotland STAG guidance², as outlined in Table 5.1.

Table 5.1: Appraisal 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

² <https://www.transport.gov.scot/media/50895/scottish-transport-appraisal-guidance-managers-guide.pdf>

5.2 Granton Corridor

Proposal Details	Roseburn	Orchard Brae	
Length	7,200m (5,700m new track)	5,500m	
Stops	10 total (8 new)	9 total (9 new)	
Construction Estimate	£0.8 billion (inc. OB and risk)	£1.2 billion (inc. OB and risk)	
Travel Time to City Centre	26mins AM peak 25mins interpeak	34mins AM peak 27mins interpeak	
Patronage (million passengers)	14.5 with South East 5.5 standalone	12.1 with South East 4.5 standalone	
Geographic Context	Majority of the route would be off-street via the Roseburn Path – a disused railway that now serves as an active travel route and green corridor for the north of the city	Majority of the route would be on-street, crossing over or near grade listed buildings and structures as well as protected views. Tram segregated on the northern section (same as Roseburn option).	
Social Context	Characterised by established residential areas such as Pilton, Muirhouse and Ravelston. The areas around Pilton and Muirhouse are some of the most deprived in Edinburgh. Conversely, the Orchard Brae and Ravelston communities are some of the most affluent in the city. Both options would provide a link to the Western General Hospital.		
Economic Context	Major residential development is underway at Granton Harbour and a £1.3 billion development is proposed around Granton Waterfront. Delivering over 3,500 new homes, commercial opportunities Europe's largest coastal park, school and health centre, etc.		

Trams from Granton to BioQuarter and Beyond

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Table 5.2: Appraisal Against Transport Planning Objectives

TPOs / Sub-objective	Supporting Information	Roseburn	Orchard Brae
To support inclusive and sustainable economic growth			
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 much 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			
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 better supports City Plan 2030 and spatial development at Granton.	++	+
Ecology, biodiversity and network resilience	- 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.	--	0
To promote equality and inclusion and help tackle the city's housing emergency			
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.	++	++

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TPOs / Sub-objective	Supporting Information	Roseburn	Orchard Brae
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.	++	++
Affordability of public transport	Mass transit fares are currently the same as for bus with interchange permitted between each. Both options serve areas of high deprivation.	++	++
To improve health, wellbeing & safety			
Reduce collisions and casualties from road transport through modal-shift to safer public transport and active travel methods.	- Roseburn avoids road conflicts via off-street design. - Orchard Brae adds on-street tram alignment in congested areas, with higher risk exposure.	++	0
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.	- 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.	+	0
Improve local air quality	- Roseburn encourages modal shift and avoids congestion. - Orchard Brae adds to congestion and lacks scope for emissions benefits.	+	-
Impact on key designations including the Green-Blue Network and Local Nature Conservation Area	The Roseburn 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.	--	0
To protect and enhance our environment			
To protect and enhance the built and natural environment and support the enhancement of 'place'.	- 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 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.	-	0
Biodiversity and Habitats	The Roseburn 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.	--	0
Heritage	- 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	-

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Table 5.3: Appraisal 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 significantly 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.	--	0
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 a higher perception of noise.	0	-
Climate Change			
Greenhouse Gas Emission	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 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	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

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STAG Criteria	Supporting Information	Roseburn	Orchard Brae
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 Tram 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 times 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 Network Coverage	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.	+++	++

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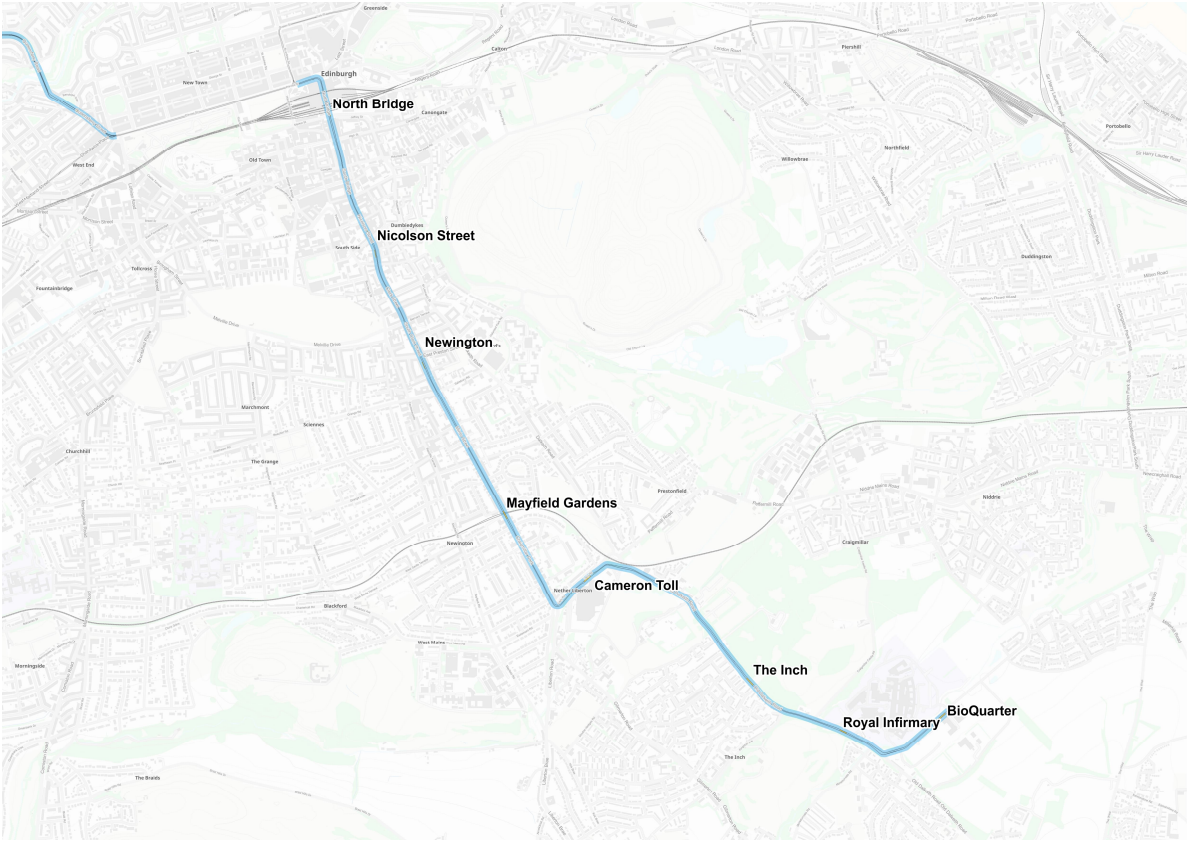
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STAG Criteria	Supporting Information	Roseburn	Orchard Brae
Active Travel Network Coverage	Roseburn integrates walking and wheeling in a green corridor but would change the amenity setting within which people would walk and cycle. Temporary diversions 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 involve the removal of some cycling infrastructure due to space constraints. Orchard Brae is flatter but lacks room for cycling upgrades.	+	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, with reduced levels of 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 the Western General and Comely Bank, supporting inclusion differently.	++	++
Affordability	Mass transit fares would be the same for each corridor. 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 5.4: Appraisal Against Implementability

Implementability	Supporting Information	Roseburn	Orchard Brae
Feasibility	- Design work has gone beyond the typical scope 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, which has been reflected by negative feedback from the public consultation. - Public consultation also included negative feedback on the Orchard Brae route In contrast to the public consultation, market research on the two routes highlighted more positive than negative support for both routes, together with a sizeable neither support nor oppose response.	--	-

5.3 South East Corridor

Proposal Details	South East (to BioQuarter)	South East (to Shawfair)	
Length	5,600m	9,500m	
Stops	8 total (8 new)	10 total (10 new)	
Construction Estimate	£1.7 billion (inc. optimism bias and risk)		
Travel Time to City Centre	33mins AM peak 29mins interpeak	38mins AM peak 34mins interpeak	
Patronage (million passengers)	14.5 with Granton (via Roseburn) 9.6 standalone		
Geographic Context	Majority of the route would be on-street, through Edinburgh's Old Town with several listed buildings, structures and protected views. South of Cameron Toll the tram would be largely segregated, with any future extension beyond the BioQuarter likely to have ample space to deliver segregated cycling.		
Social Context	The route passes through the busy tourist and high street hotspot along North and South Bridge before entering a residential area between Newington and Craigmillar Park. The route connects the city centre to key drivers of demand such as the University of Edinburgh, Cameron Toll, the Royal Infirmary of Edinburgh Hospital and the BioQuarter. Beyond the BioQuarter there is potential for route extensions to East Lothian, Midlothian and the new residential development at Shawfair which is currently being built out.		
Economic Context	If developed to Shawfair, the South East route would tie into Waverley and Shawfair Stations, opening up significant regional connectivity. In addition to opportunities to provide links for tourism, the hospital and the University of Edinburgh, the route would help realise the potential of over £1.3 billions worth of development investment at Cameron Toll and the BioQuarter: 3,000 new homes; retail, new leisure and 9,000 new jobs with potential to support a community of over 20,000 people		

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Table 5.5: Appraisal Against Transport Planning Objectives

TPOs / Sub-objective	Supporting Information	South East
To support inclusive and sustainable economic growth		
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.	++
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 and major employment zones, supporting inclusion. - 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 respond to climate change, delivering net-zero		
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.	++
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.	++
Ecology, biodiversity 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		
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 Equality Act guidance.	++
Affordability of public transport	Mass Transit fares are currently 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.	++

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TPOs / Sub-objective	Supporting Information	South East
To improve health, wellbeing & safety		
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 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.	+
Impact on key designations including the Green-Blue Network and Local Nature Conservation Area	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		
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.	+
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	Heritage impacts would 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.	0

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Table 5.6: Appraisal 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 the BioQuarter, 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 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 harmoniously into historic city centres.	0
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.	+

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Criteria	Supporting Information	South East
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. - 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. 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. 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	++

Trams from Granton to BioQuarter and Beyond

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Criteria	Supporting Information	South East
	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 are currently 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	++

Table 5.7: Appraisal against Implementability

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 route (with potential extensions to East Lothian and Midlothian) received more positive support than opposition during both the public consultation and market research.	++

6. Statutory Impact Assessments

To ensure tram proposals do not cause unintended social, environmental, or economic disadvantages, statutory impact assessments are required as listed below.

- Strategic Environmental Assessment (SEA)
- Equality Impact Assessment (EqIA)
- Island Communities (ICIA)
- Child Rights and Wellbeing (CRWIA)
- Fairer Scotland Duty (FSDA)

There is overlap between these assessments and the STAG process and impacts will be evaluated in greater depth during the OBC stage once more detail is known. A summary of the intended impacts of the tram proposals at the SBC stage are outlined in the following sections.

6.1 Strategic Environmental Assessment (SEA)

A Strategic Environmental Assessment was undertaken in 2021 to support the City Mobility Plan (CMP).

Sufficient spatial information was included in the draft CMP on tram extensions to enable a policy specific assessment to be undertaken. In addition, the Edinburgh Strategic Sustainable Transport Study– Phase 1 report, identified four corridors which could accommodate trams, including expansion to Granton (north of the city centre), the south-east (past the University and the BioQuarter), towards Newbridge and west of Hermiston.

The SEA concluded that a tram/ mass rapid transport network to the north and south of the city would reduce vehicle dominance and emissions and improve the overall public transport infrastructure across the city, benefiting tourists, residents and commuters.

As part of a future OBC, a statutory Environmental Impact Assessment will be undertaken in accordance with TAWS consenting requirements, demonstrating compliance with all appropriate legislation.

6.2 Equalities Impact Assessment (EqIA)

An initial Integrated Impact Assessment has been undertaken to support the project. A full Equalities Impact Assessment will be undertaken as part of an OBC. Key considerations are outlined below.

North-South Tram would improve access to key destinations and services including employment, education, healthcare and shopping for people living close to the corridor. This would have a major positive impact on certain protected characteristic groups who are less likely to have access to a car and more likely to depend on public transport and active travel to make their journeys. This includes women, children and young people, older people, disabled people and people from certain ethnic minority groups.

By encouraging modal shift to more sustainable modes, this package could also contribute to improving local air quality. Improved health outcomes as a result of better air quality are of particular benefit to those who are more vulnerable to air pollution, including children, older people, disabled people and pregnant women.

The package would reduce the severity of accidents through targeted infrastructure improvements and by encouraging modal shift away from private car, resulting in reduced accident risk due to reduced conflicts. Some protected characteristic groups are more likely to be involved in road accidents, for example, children as pedestrian casualties and young males involved as car drivers and as such would have positive impacts on these groups.

Mode shift to sustainable modes would make paths, stops, stations and services less isolated and this, accompanied by improved quality of facilities would improve perceived security. This is likely to provide some benefit to those for whom security is of particular concern including women and younger and older people.

6.3 Island Communities Impact Assessment (ICIA)

North-South Tram is not relevant to islands communities, and therefore, an Island Communities Impact Assessment is not required.

6.4 Child Rights and Wellbeing Impact Assessment (CRWIA)

A full Child Rights and Wellbeing Impact Assessment will be undertaken at OBC stage. An initial assessment of potential impacts is included below.

By encouraging modal shift to more sustainable modes, tram could contribute to improving local air quality. Improved health outcomes as a result of better air quality are of particular benefit to those who are more vulnerable to air pollution, including children.

Tram would improve public transport and active travel accessibility to higher education institutions and employment opportunities for young people. Safety is a key issue for children with regards to transport with child pedestrian casualties recorded in Scotland in 2025, accounting for 28% of all pedestrian casualties. In particular, children from deprived areas and certain ethnic groups are more at risk.

Tram would reduce the severity of accidents through careful design, and by encouraging modal shift away from private car, result in reduced accident risk due to reduced conflicts.

6.5 Fairer Scotland Duty Assessment (FSDA)

A Fairer Scotland Duty Assessment will be undertaken at OBC stage; key impacts are as follows.

The North-South Tram corridor is home to some of the most deprived areas in Scotland. Tram would improve public transport connectivity, with supporting walking, wheeling and cycling improvements, and support regeneration and economic development, reducing inequalities.

Tram would improve access to employment, with a combined tram network linking the Airport, Granton, Leith/ Newhaven, and the south east to the BioQuarter, via the city centre. The total job catchment (in 2032) within a 750 metre of the North-South corridor is approximately 136,000 and of the full tram network is ~200,000.

7. Capital Costs

7.1 Approach to Costings

Capital costs have been estimated at a high-level, which is appropriate and in line with guidance at an SBC stage, for the Granton to Shawfair routes via Roseburn and Orchard Brae respectively at 2025/26 prices.

The costs have been developed for each route section, reflecting the route length and characteristics of each section, and also for 'system-wide' costs which are assumed, at this stage, to be the same irrespective of the route option.

The application of risk has been applied differentially by item, with total benchmarked to overall optimism bias allowance as per guidance. This application therefore reflects the absolute risk (at a system level) and the relative risk between options (at a route section level).

The approach to costing of each element is presented in Table 7.1.

Table 7.1: Capital Cost Elements

Cost element	Cost driver	Estimation approach
Route specific costs		
Track infrastructure	Km route.	Unit rate cost per route km based on route section type e.g. within a development area or suburban or urban context, and segregated or on street arrangement.
Utilities diversions	Utilities required to be diverted.	Captured in differential unit rates by section.
Major structures	Costs associated with major structures not covered within infrastructure unit rate.	Bespoke assessment.
Vehicles	Number of additional vehicles required.	Cost per additional vehicle required.
System-wide costs		
Project development & CEC costs	Costs associated with development to SBC, OBC and FBC business case stages, including detailed design and assessment. TAWS Inquiry costs. Procurement.	High-level cost estimate at system level (i.e. overall cost would not be materially different between route options).
Land and depot costs	Land purchase required to accommodate route or depot infrastructure. Depot/ stabling build and fit-out costs.	Land and depot costs assumed to be similar for both options.
Complementary measures		
Measures not required to deliver core tram scheme, but that would complement and enhance the overall performance of tram.	Active travel corridor Pleasance <> Cameron Toll and beyond Interchange/ Inter-modal Hub at Edinburgh Bio-Quarter (Bus - Tram) Waverley Lift Access (Waverly station to tram stop)	High-level indicative estimate.

7.2 Scheme Capital Costs, 2025/ 2026 Prices

7.2.1 Base Cost Estimates

Base cost estimates have been estimated based on:

- Route infrastructure costs at unit rates per km. The unit rates have been informed by benchmarking of Edinburgh Tram to Newhaven costs and benchmarking of out-turn costs for other UK tram systems including Manchester and Birmingham. Differential unit rates have been developed and applied based

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on six different route types ranging from higher rates applying to 'Urban, historic, on-street' to lower rates for 'suburban segregated running'.

- Structures costs 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 Costs Phasing and Construction report (August 2025).
- In addition to infrastructure 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.

Route Infrastructure Costs

Benchmark tram construction scheme costs are summarised in Table 7.2, resulting costs by location type are given in Table 7.3.

Table 7.2: Benchmarking of Scheme Costs

Project	Year	Length (km)	Cost £m (at 2025/26 prices)*	Cost £m per km (at 2025/26 prices)
Edinburgh Tram – Trams to Newhaven	2023	4.7	252**3	53.6**
Manchester Metrolink – Trafford Park Extension	2017	5.5	494 ⁴	89.8
Edinburgh Tram – Airport to York Place	2014	14	1290 ⁵	92.1
Manchester Metrolink – Phase 3b Airport section only	2014	14.5	661 ⁶	45.6
Manchester Metrolink – Phase 3a Rochdale / Oldham / Droylsden	2011/2013	32.4	971 ⁷	30.0
Nottingham Express Transit – Line 1	2004	14.4	481 ⁸	33.4
Manchester Metrolink – Phase 2 Eccles	2000	6.4	431 ⁹	67.3

* this uses construction price index to standardise prices at 2025/26 levels for comparison

** this figure does not include some of the utilities works that were undertaken as part of the previous (2014) tram works

Table 7.3: Route Infrastructure Costs by Section Type (per Km)

Name	Description	Rate per km (2025/26)
Development Area – segregated running	Area of major redevelopment/modern development, segregated tram operation in planned location with limited or no interaction with other traffic	£32m
Development Area – on-street	Area of major redevelopment/modern development, tram operation mixed with or high degree of interaction with other traffic	£39m
Suburban on-street	Lower density, tram operation mixed with or high degree of interaction with other traffic	£45m
Urban – historic, on-street	High density, historic streets, high degree of constraint, city centre or edge-of-centre location	£71m
Urban – on-street	High/Medium density, city street, less constrained than edge-of-centre	£58m
Suburban - segregated running	Lower density, segregated tram operation with limited or no interaction with other traffic	£32m

³ <https://www.edinburgh.gov.uk/tramstonewhaven/faqs/full-business-case-questions-answered>

⁴ <https://www.eib.org/en/projects/pipelines/all/20180016>

⁵ https://www.edinburghtraminquiry.org/final_report/the-inquiry-report/

⁶ <https://www.manchestereveningnews.co.uk/news/video-manchester-airport-metrolink-line-7300833>

⁷ "Metrolink Phase 3, Monitoring and Evaluation Early Findings Report", TfGM 2016

⁸ <https://hansard.parliament.uk/%E2%80%8C8CCommons/2007-06-19/debates/07061962000031/NottinghamExpressTransitTramway>

⁹ <https://lta.info/archive/Manchester/funding.html>

Major Structures

There are three structures that come under this category, that are all significantly different in their structural form and design:

- Dean Bridge
- North Bridge, and
- South Bridge

Dean Bridge is part of the Orchard Brae option alignment on the north-west part of the route. The bridge was designed by Thomas Telford and constructed in the late 1820s. This historic Category A listed structure has a unique form of construction with principal internal elements designed hollow (piers and arch spans), by Telford to reduce the total mass of the structure, relative to the bearing capacity of the underlying strata layers. The proposal to increase the mass of Dean Bridge by various options to accommodate tram loading, may well affect the structural viability of the original design, which was not designed for rail loading. Given the Category A status and setting, replacement of the bridge is not considered to be a viable option.

Based upon the considered information, it is strongly recommended that an alternative route be taken forward in lieu of the Dean Bridge routing proposal, as this would mitigate the concerns pertaining to modifying the structure to accommodate trams and their operation.

It is difficult to overstate the level of potential risks inherent in modifying this structure to be capable of safely accommodating tram operations. Uppermost, there are significant risks in relation to confirming and implementing a design solution, and it is unclear whether contractors would be willing to take on such risks without a significant cost premium. Recent experience on North Bridge has demonstrated how cost escalation can occur when dealing with historic structures. Given these uncertainties, the use of standard optimism bias (OB) of +60% is not appropriate, and a bespoke figure of +100% has been applied to the cost estimates for Dean Bridge. These comprise two elements, (i) works associated with the installation of the track slab (£25m), and (ii) works required to support the longer-term viability of the structure in safely and effectively supporting tram operations across it (£100m).

North Bridge has had significant works undertaken over the past few years as part of a major renovation programme to this 130-year old Category A listed structure that links the Old and New Towns. The historic nature of the three-span bridge, the setting and emerging issues during the programme have caused a significant cost and programme overrun. Work is now complete but an allowance of £20m has been made, in addition to the standard track infrastructure costs already accounted for. Given the cost overrun issues and inherent risks associated with works on historic structures, the use of standard OB of +60% is not appropriate, and a bespoke figure of +150% has been applied to the cost estimate.

South Bridge dates back to the 1780s and is a multi-span masonry arch viaduct where the arches have been fully enclosed by buildings on either side, and where the high spans have been further subdivided into a series of vaults; some of which are used as social/entertainment venues. The structure is largely hidden from view, apart from the span that crosses the Cowgate. It is fair to describe the structure as complex due to its (i) age, (ii) compound relationship with neighbouring buildings, and (iii) lack of definitive information on the full extents of the structure, however it fundamentally remains a masonry arch viaduct. It is well established that such structures can accommodate the actions arising from the combination of light rail and vehicle use. Notwithstanding that, significant work will be required to determine the exact capacity and any defect rectification, it is reasonable to anticipate that the structure can safely be repurposed for use within the south-east part of the proposed tram route. In addition to the standard track infrastructure costs, a budget of £70m has been identified for works to the structure, but due to the uncertainties from a desktop study, and in line with the approach taken for North Bridge, OB has been set at +150% for this element.

7.2.2 Risk and Optimism Bias

In line with guidance, initial costing appraisal of the shortlisted routes options has costed risk through the application of O. At SBC stage, 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, additional levels of OB have been applied to sections of infrastructure with higher degrees of cost uncertainty (for example at major structures as outlined above).

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 risk, uncertainty and contingency.

7.2.3 Scheme Capital Costs, 2025/2026 Prices

The overall scheme costs, in 2025/26 prices are presented in Table 7.4 for routes between Granton and BioQuarter/Shawfair 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 North-South Tram extension is estimated to be between £2bn to £2.5bn, for the option via Roseburn. This includes an overall indicative cost of just over £100m covering the complementary active travel, placemaking 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.

Table 7.4: Tram Scheme Costs (2025/26 prices)

	Shawfair, BioQuarter to Granton via Orchard Brae	Shawfair, 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%

7.2.4 Scheme Capital Costs – Out-Turn

The delivery of North-South Tram would require a period of around five years of further scheme development. Though outline and final business case, 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.

There are options to phase North-South Tram, prioritising either:

- the northern section from the city centre to Granton, supporting development at Granton Waterfront, or
- the southern section from the city centre to the BioQuarter as an initial phase, improving connectivity to the Royal Infirmary and the Royal Hospital for Children & Young People and supporting investment in life sciences and housing at the BioQuarter campus.

The indicative cost of Phased options would be up to:

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

8. Risk and Uncertainty

8.1 Risk and Uncertainty Log

An initial log of risks and uncertainties was compiled at the Preliminary Appraisal stage and has been expanded on as part of this Detailed Appraisal. The risks and uncertainties associated with the delivery of the Tram SBC are presented in Appendix B.

The Risk and Uncertainty log document the steps to be taken to prevent and mitigate both risks and uncertainties.

8.2 Risk Management

Risks have been identified as potential improvement measures were developed and appraised, based on the collective knowledge and experience of the project team and wider Council partners in delivering similar projects.

Each risk identified has been allocated an owner (an individual or organisation) who is responsible for the day-to-day management of the risk and making sure that it is mitigated where possible. Risks have been scored on their potential likelihood of occurring and level of impact to inform prioritisation based on Red-Amber-Green (RAG) ratings.

Risk registers are live documents and will be continuously reviewed across the breadth of programme and scheme delivery stages to ensure they are accurate and effective at all times. In line with Council's established Risk Management Policy and Framework, the project manager will be responsible for taking forward the risk management strategy and ensuring reporting requirements are met.

9. Monitoring and Evaluation

9.1 Introduction

Monitoring and Evaluation is used to determine the success of an implemented intervention. It is undertaken at agreed intervals pre- and post-implementation to identify whether the intervention is performing as originally intended.

9.2 Monitoring and Evaluation Plan

An outline of how the outcomes of the implemented option will be monitored and evaluated is presented in a Monitoring and Evaluation Plan.

The Monitoring element of the Plan sets out how and when the indicators, identified to measure the success of the Transport Planning Objectives will be measured. The Plan includes details of the baseline, based on:

- a consolidation of the information presented in the Case for Change, together with
- details of the proposed data collection programme to obtain pre and post scheme monitoring data.

The outputs of the monitoring and evaluation are envisaged to include:

- A baseline report;
- An initial evaluation report – 1 year after construction; and
- A follow-up 'Detailed' evaluation report – 5 years after construction

An initial Monitoring and Evaluation Plan, developed for the project, can be found in Appendix C.

Appendix A. Alternative Tram Alignment Options

A.1 Introduction

This note outlines the key geometric constraints associated with alternative route options considered for the North-South Tram corridor.

The following three northern alternative routes have been assessed:

- via **Belford Road** – from the existing tram alignment at its junction with Atholl Street, via Belford Road and Queensferry Road, to Orchard Brae, continuing north
- via **Stockbridge** – from the existing tram alignment at the Princes Street / Frederick Street junction and ties into the Orchard Brae alignment from Crew Road South continuing north
- via **Broughton Street** – tie-in to the existing tram alignment at the York Place / Broughton Street / Leith Walk junction

The following three southern alternative routes have been assessed:

- via **Waverley Bridge/ Pleasance** - from the existing east-west corridor at the Princes Street / Waverley Bridge junction and ties-in to the proposed south east alignment south of Cameron Toll. The route goes via, Market Street, Jeffrey Street, St Mary's Street, The Pleasance and Dalkeith Road
- via **The Mound** – consideration of a route from Princes Street to George IV Bridge
- via **East Preston Street** – alternative east-west connection options from the South Bridge/ Southside to Dalkeith Road

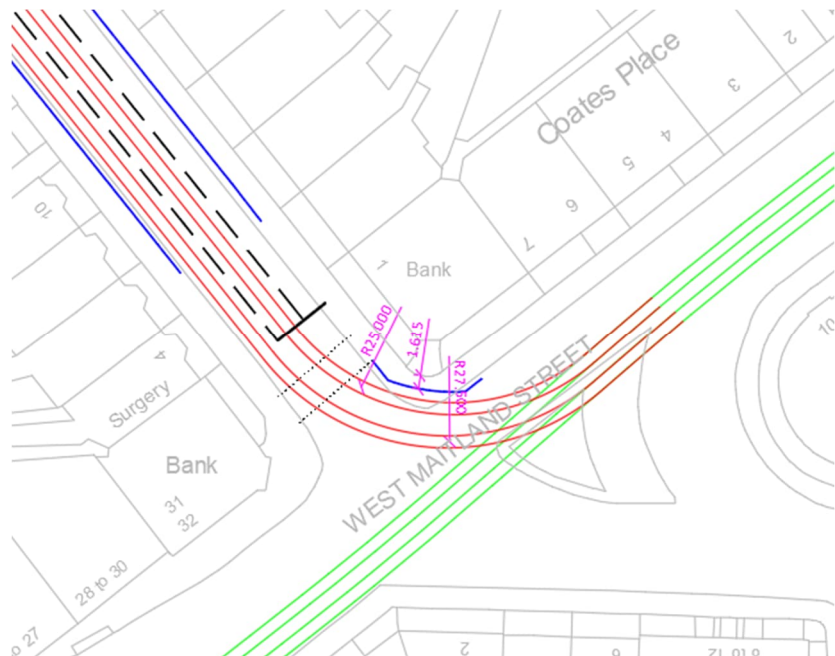
A.2 Alternative Granton Route Options

A.2.1 Belford Road

Junction with West Maitland Street

The tram alignment necessitates realignment of the northeastern kerb radii. This would reduce footway width to below 2.0m, which is unsuitable given existing pedestrian demand. In addition, the layout can only accommodate city centre connections, with an absolute minimum inner track radius of 25m. This is shown in Figure A.1.

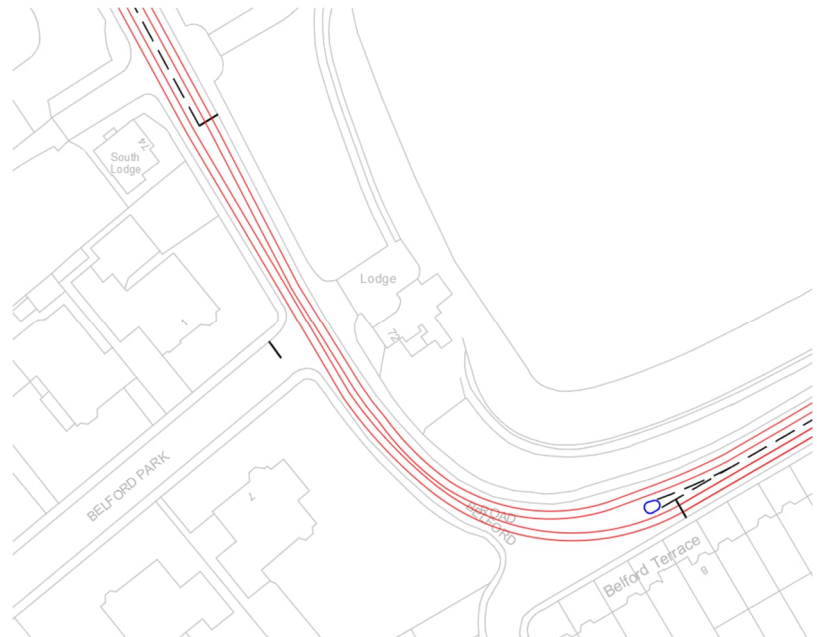
Figure A.1: Layout at West Maitland Street / Palmerston Place



Belford Terrace to Belford Park

Approximately 125m of shuttle signalling would be required between Belford Terrace and a point approximately 45m north of Belford Park due to overlap between the dynamic kinematic envelopes of opposing tram movements. The resulting requirement for single operation would result in lengthy traffic signal cycle times and increased tram waiting periods. This would adversely affect operational performance, reduce service reliability and increase overall tram journey times along the corridor. This is shown in Figure A.2.

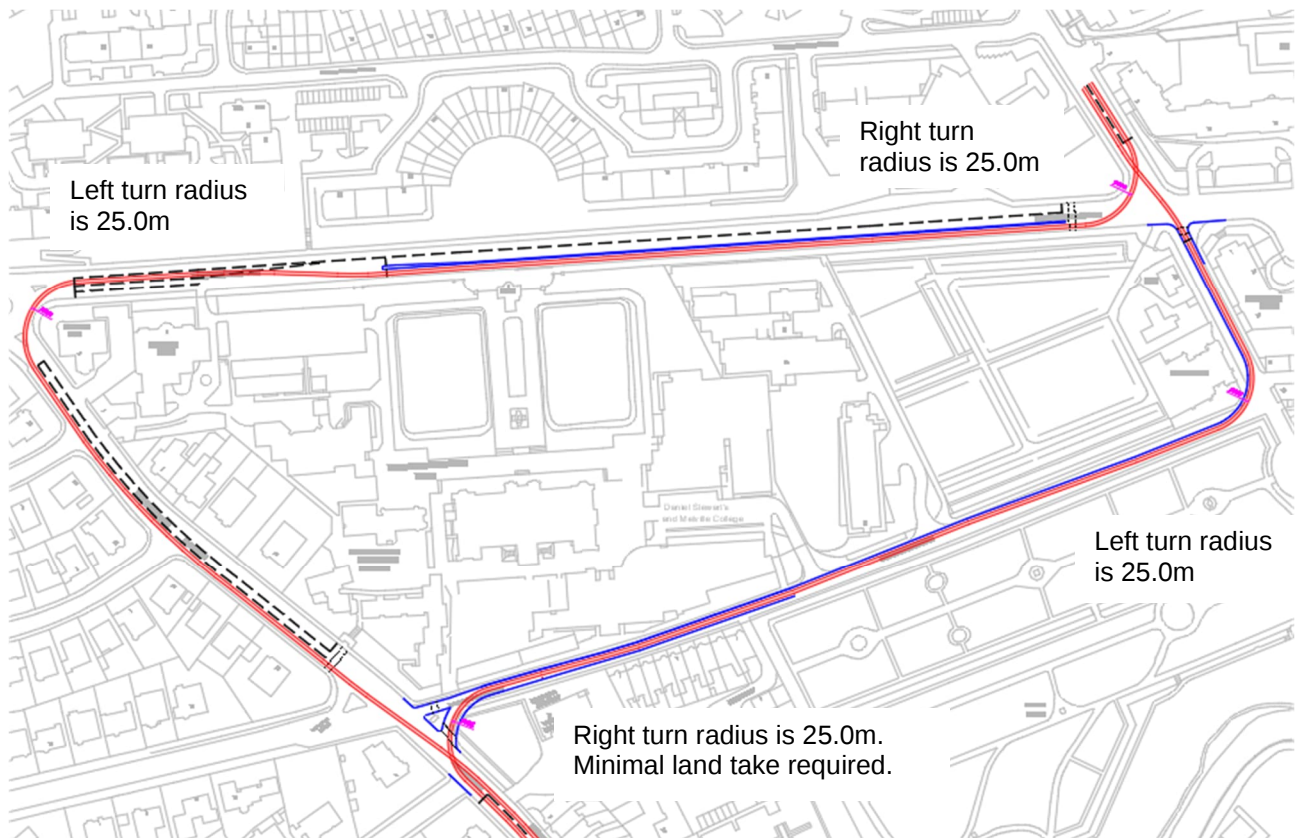
Figure A.2: Layout between Belford Terrace and Belford Park



Ravelston Place to Orchard Brae

A split-routing arrangement is required, with northbound movements via Ravelston Terrace and southbound movements via Queensferry Road and Queensferry Terrace. The turning radii at the key junctions, Belford Road / Ravelston Terrace, Queensferry Road / Queensferry Terrace and Orchard Brae / Queensferry Road are 25m. This is shown below in Figure A.3.

Figure A.3: Belford Road to Orchard Brae Layout



A.2.2 Stockbridge

Between Howe Street and Princes Street

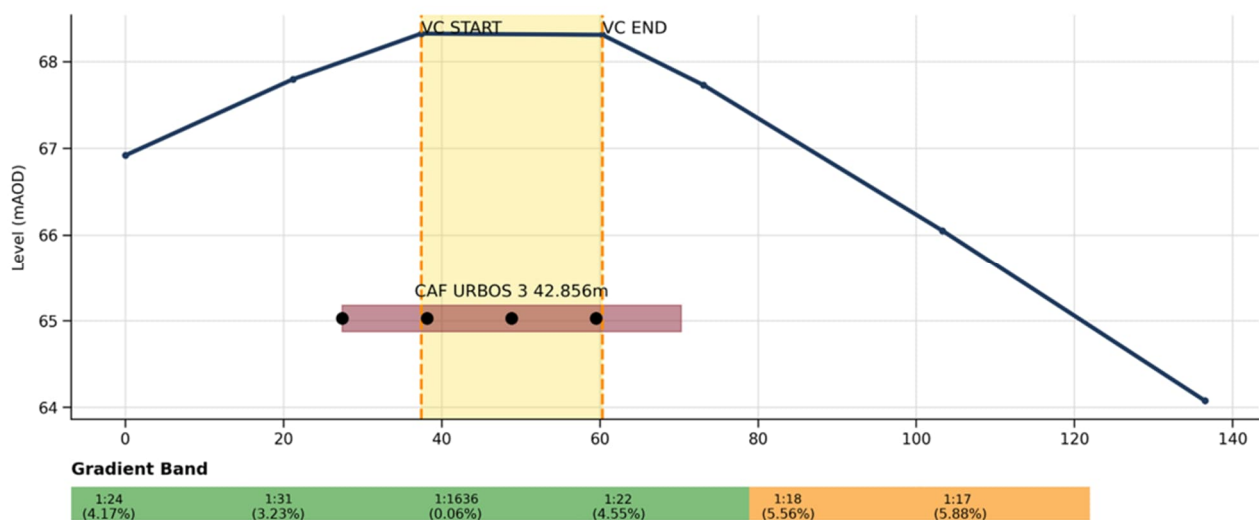
An initial review of the vertical alignment suggests that the stepped vertical alignment at Heriot Row and Queen Street junctions is not sufficiently pronounced to prevent tram operation. However, further detailed assessment would be required to confirm the adequacy of vertical transitions and compliancy.

The indicative levels, gradients, vertical crests and rolling stock envelope are shown below for each of the junctions extending 50.0m either side.

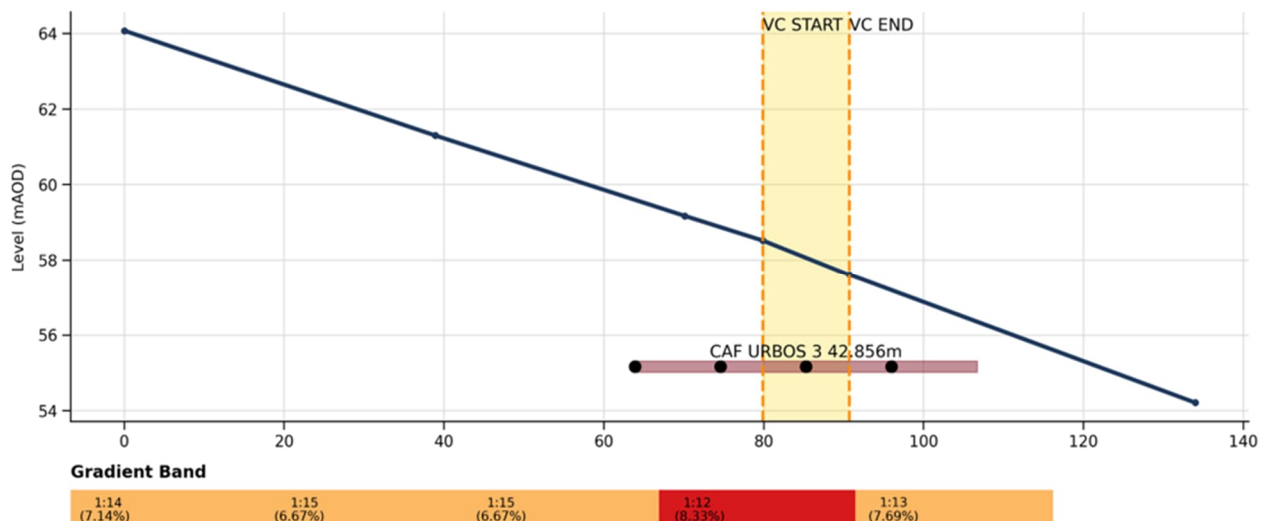
Nevertheless, the alignment between Howe Street and Princes Street is characterised by sustained longitudinal gradients of between 5% and 8% which would be challenging for tram operation. Signal design would need to seek to minimise the requirement for trams to stop on a gradient, either stalling up hill, or sliding downhill.

The absence of sufficient level track sections means that it would be extremely difficult to locate tram stops on the corridor. To fully comply with the Equality Act, new platforms are required to be straight and level. Sloping platforms, creating challenges for wheelchair users and passengers with reduced mobility.

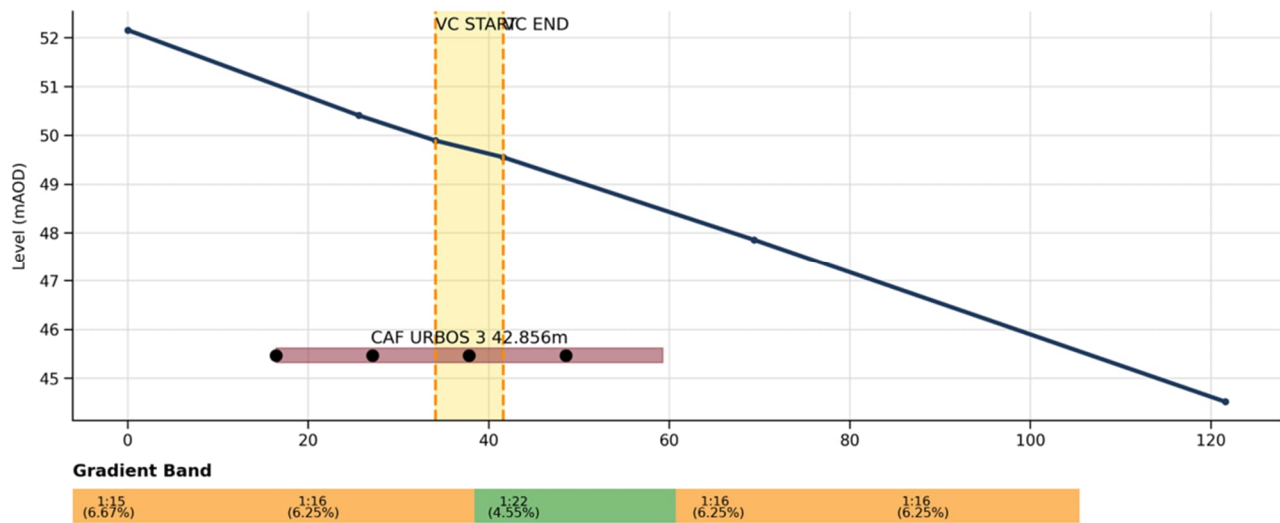
George Street



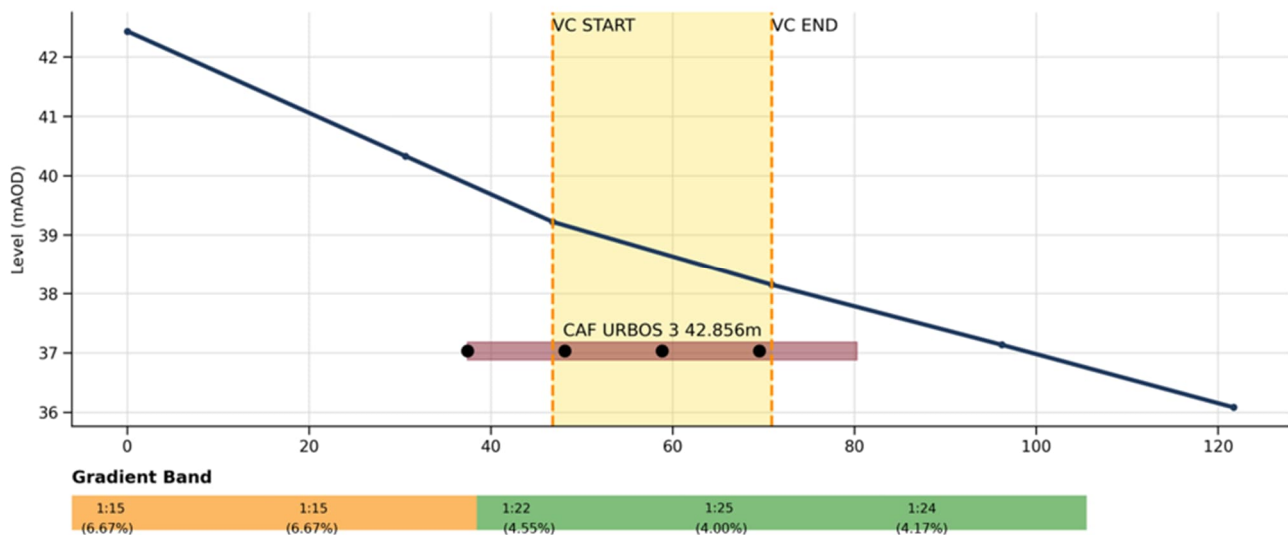
Queen Street



Heriot Row



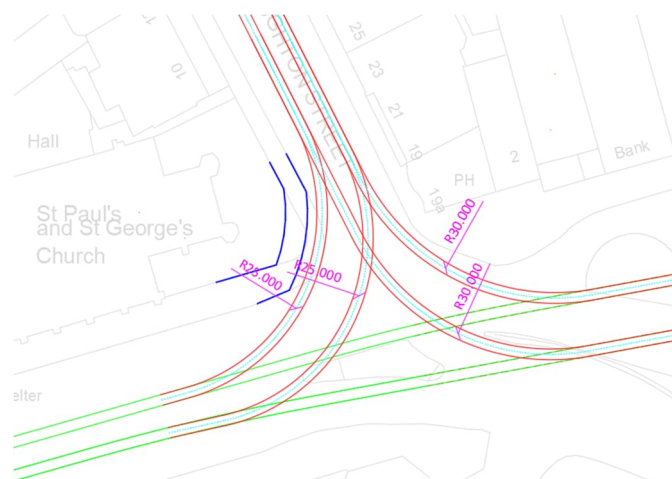
Howe Street



A.2.3 Broughton Street

The proposed geometric arrangement is not considered feasible for tram operation, as achieving a compliant horizontal curvature would require land take. The minimum radii of 25.0m are shown in Figure A.4

Figure A.4: York Place / Broughton Street Layout



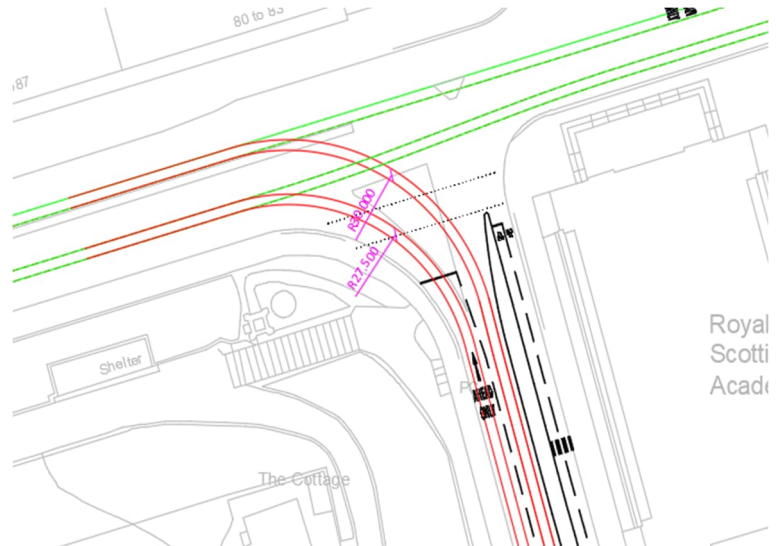
A.3 Alternative South East Routes

A.3.1 The Mound

Junction with Princes Street

This junction may require local realignment of the existing east-west alignment to achieve a minimum horizontal turning radius of 25.0m for movements to and from the eastern section of the route. Further assessment is required to confirm the as-built geometry and determine the extent of any modifications. The alignment can accommodate left turn movements from The Mound and right turn movements into The Mound. However, alterations to the south-western kerb line would be necessary to provide sufficient space for the track alignment. This is shown in Figure A.5.

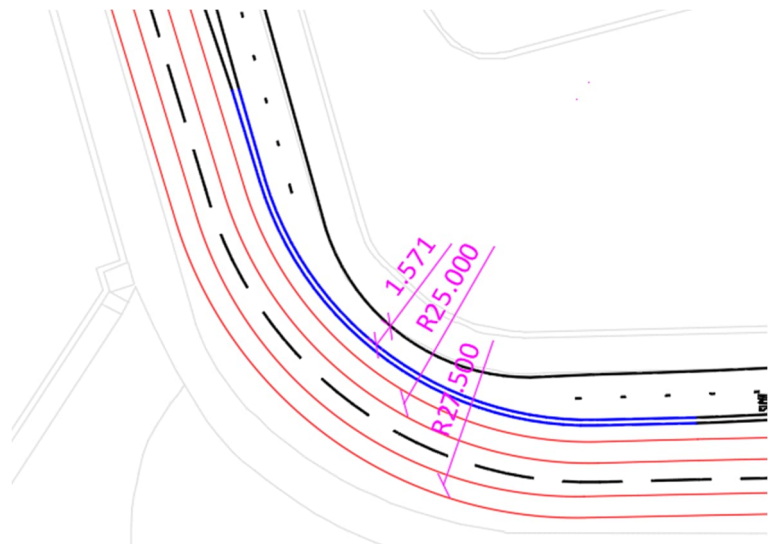
Figure A.5: The Mound / Princes Street Layout



South of National Galleries of Scotland

The curve immediately south of the National Galleries of Scotland would require a minimum turning radius of approximately 25m. 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 proposed cycle track forming the Meadows to George Street route would need to have localised width reduction to accommodate the tram alignment. The alignment is shown in Figure A.6.

Figure A.6 - Layout Immediately South of the National Galleries of Scotland



St Giles Road

The curve at St Giles Road would require a single track section extending approximately 60m west and 80m 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 30m 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. This is shown in Figure A.7.

Figure A.7: Layout at St Giles Road

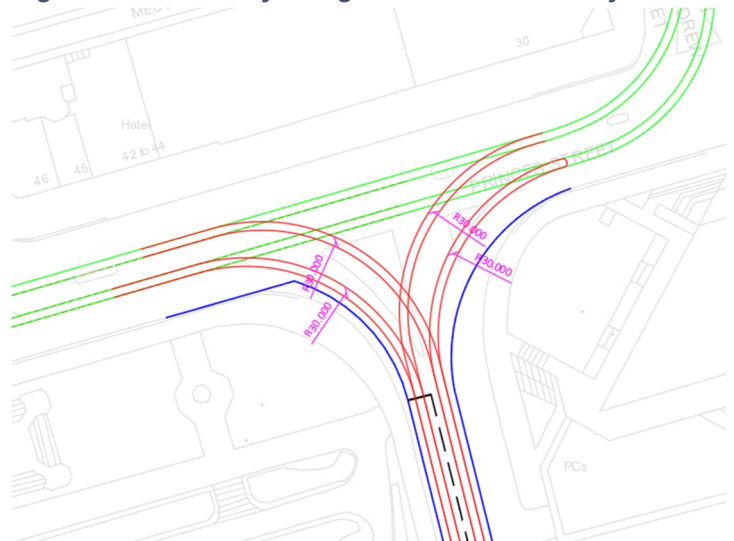


A.3.2 Waverley Bridge / Pleasance

Waverley Bridge / Princes Street

The Waverley Bridge / Princes Street junction can accommodate compliant horizontal curvature to both directions of the existing east west alignment on Princes Street. Ultimately, the connection to South St David Street would introduce reverse curvature and would need to interface with the existing steep gradient on South St David Street. The combination of tight horizontal curvature and challenging vertical geometry presents a significant risk of wheel unloading, potentially resulting in wheel lift and an increased derailment risk. Consequently, detailed assessment of tram track interaction would be required to confirm the feasibility of the alignment, likely making this movement an unfeasible option. Therefore, the Waverley Bridge option can only tie-in to the western existing alignment. This is shown in A.8.

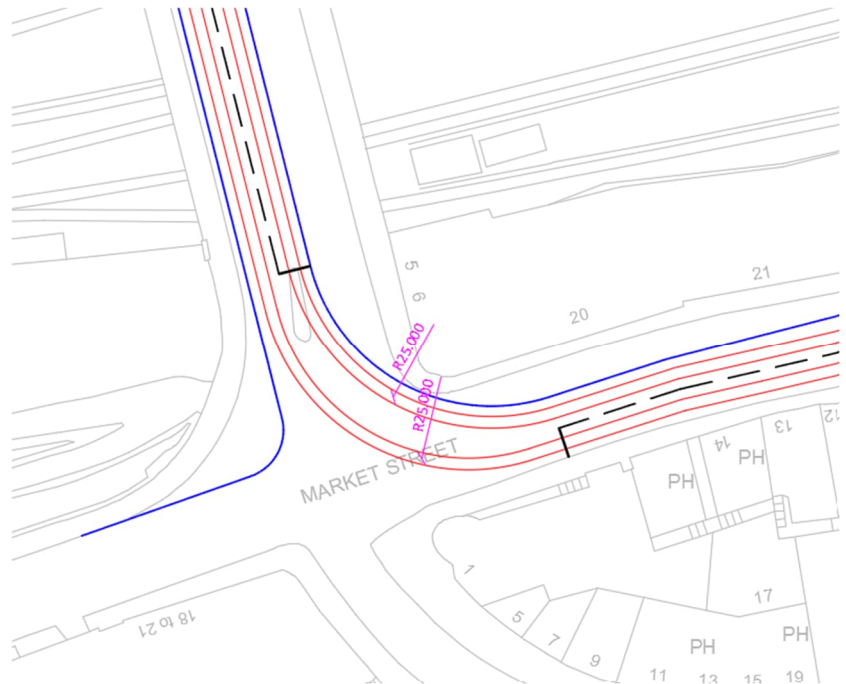
Figure A.8: Waverley Bridge / Princes Street Layout



Waverley Bridge / Market Street

The horizontal alignment between Waverley Bridge and Market Street would require a minimum tram curvature radius of approximately 25.0m. At its narrowest point, the north-eastern footway is approximately 2.5m wide, resulting in a significant spatial constraint on accommodating the required tram geometry whilst maintaining adequate pedestrian provision. It should be noted that this is no different to the existing condition. There is a notable slight gradient change at this location, therefore further vertical assessments may be required. The layout is shown below in Figure A.9.

Figure A.9 - Waverley Bridge / Market Street Layout



A.3.3 Bridges Corridor to Dalkeith Road

This section explores alternative switch over from the Bridges Corridor to Dalkeith Road instead of via Cameron Toll.

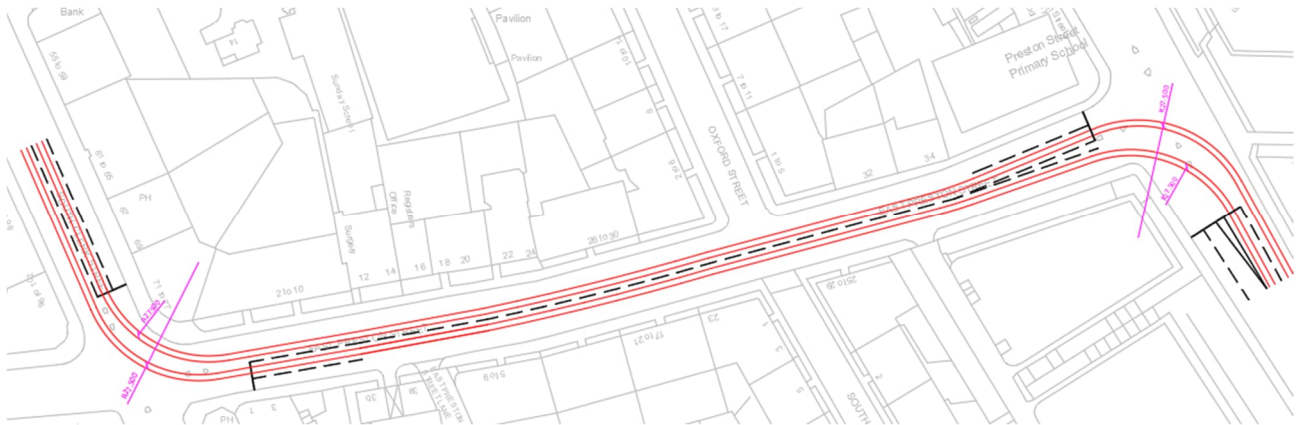
The two locations identified for further consideration as transition points were Bernard Terrace and East Preston Street. Preliminary geometric assessments indicate that both locations are feasible from an alignment perspective. However, further traffic modelling would be required to assess the operational impacts on the surrounding network and to confirm that the proposed arrangements would not have a significant negative impact.

Both options would require a minimum 27.5m horizontal curvature for all turning radii's, which is below the desired minimum. This is shown below in Figures A.10 and A.11 respectively.

Figure A.10 - Bernard Terrace Layout



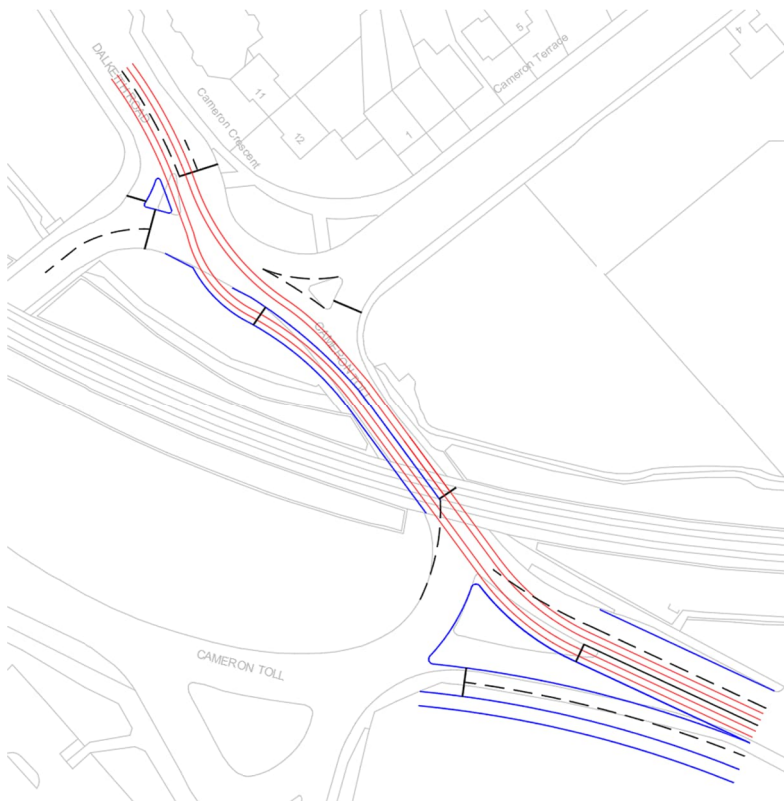
Figure A.11 - East Preston Street Layout



A key constraint along this route option is the ability of the alignment to navigate Cameron Toll Roundabout. The alignment is constrained by the existing railway overbridge abutments, which significantly restrict the available road space. At this location, the road width is effectively narrowed to accommodate only two running traffic lanes, limiting the space available for tram infrastructure. Consequently, any tram alignment through this section would require careful consideration of geometry, traffic operations, and the extent of any necessary localised widening or structural interventions.

An indicative alignment based solely on geometric analysis would require a single circulatory lane through the eastern underbridge, together with a northbound only tram movement. The introduction of multiple stop lines and tighter curvature would reduce tram operating speeds, resulting in longer journey times. These would be exacerbated by increased traffic congestion resulting from the constrained road layout, as shown in Figure A.12 below.

Figure A.12 - Cameron Toll Layout



Appendix B. Risk Register and Uncertainty Log

Trams from Granton to BioQuarter and Beyond Strategic Business Case - Technical Summary Report

Table B.1: Risk and Uncertainty Log

Risk No.	Risk Title	Cause	Risk	Effect / Consequence	Likelihood	Impact	Score	Mitigating Actions
1	Supply Chain Constraints	Higher than anticipated construction cost inflation (materials and labour)	The number of suppliers to deliver the programme may be insufficient due to supply chain constraints.	Lack of competition leads to increased costs meaning project is not affordable. Lack of resources impacts quality. Programme not delivered to time.	4	4	16	Develop a comprehensive procurement and packaging strategy and market test at the appropriate time. Define a clear scope to allow suppliers to tender for works with pricing at an appropriate level of risk. Ongoing market engagement
2	Statutory Consents Objections	Members of the public not supporting proposed routes	Objections could potentially be raised during the Statutory Consents process, possibly triggering the requirement to hold a public enquiry	Extended timescale to secure the necessary Statutory Consents taking up to two years, delaying the commencement of construction (and delaying benefits)	4	4	16	Use the stakeholder engagement and public consultation to identify any potential objections and seek to address prior to commencing any traffic orders application process Early engagement with Traffic Orders team to confirm specific traffic order requirements The Programme schedule currently assumes that it will take two years to acquire the relevant Statutory Consents with construction brought forward if there is no requirement for a public hearing
3	Network Management	Constrained public transport and road network during construction	Temporary Network Management to facilitate works will be challenging.	This could potentially result in an elongated construction programme, affecting the timescales and increasing costs.	4	3	12	Undertake traffic modelling of temporary traffic management measures to develop an optimised strategy Ensure early engagement with Network Management Team Ensure awareness of any planned work or events such as rail strikes Develop a robust construction phasing strategy which mitigates, as much as possible, temporary network management challenges
4	Utilities	Unknown utilities/services could be identified	Utilities/services need to be diverted or removed.	This would impact programme timelines and costs	3	4	12	Agree approach to utilities - consider when best to complete GPR and Site Investigations

Trams from Granton to BioQuarter and Beyond

Strategic Business Case - Technical Summary Report

Risk No.	Risk Title	Cause	Risk	Effect / Consequence	Likelihood	Impact	Score	Mitigating Actions
		during construction						Compile required information to request C3 information
5	Structures	All proposed routes cross over or under grade listed structures	Historic structures could be in a worse condition than site investigation determine	This could impact programme timelines and costs	3	4	12	Undertake extensive site investigations and engage with the Council's structures team to develop an in-depth understanding of the conditions of the structures
6	Archaeology	All proposed routes cross over or near grade listed structures/ buildings and run through areas of archaeological significance	There could be archaeological finds during construction	This could impact programme timelines and costs	2	4	8	Engagement with Archaeological Officer on potential impacts
7	Design Process	Due to potential conflicting design objectives between both local authorities, TS and different teams within both Councils (Active Travel, Traffic Signals)	Risk that design conflicts may arise during the design process	This could impact programme timelines and costs	3	3	9	Design Working Group to be established for next stage of the programme Designs will be reviewed at Steering Group and shared with Programme Board for approval Designs will be reviewed at Steering Group and shared with Programme Board for approval.

Appendix C. Monitoring and Evaluation Plan

C.1 Monitoring and Evaluation

Undertaking an agreed programme of monitoring and evaluation will be an obligation as part of any funding package.

Monitoring and Evaluation Requirements

The purposes of monitoring and evaluation are to:

- Provide accountability for the investment and understand derived benefits
- Provide evidence for future spending decisions
- Learn about which schemes deliver cost effective solutions
- Enhance the operational effectiveness of existing and/or future schemes, and
- Improve future initiatives

The Scottish Government's Scottish Transport Appraisal Guidance (STAG) mandates that a Monitoring and Evaluation Plan be included with Detailed Options Appraisal reporting, with outcomes and their KPIs defined by the Transport Planning Objectives (TPOs) of the scheme.

Timing of Monitoring

The evaluation guidance requires that information is collected on these measures on at least three occasions:

- before construction of the scheme to establish a baseline
- at least one year (but less than two years) after scheme opening (and reported on within two years of scheme opening), and
- approximately five years after scheme opening (and reported on within six years of scheme opening)

Evaluation Approach

There are three elements of the overall evaluation approach. These are:

Process Evaluation

Process evaluation examines the activities involved in an intervention's implementation. Key questions include:

- How was the scheme delivered?
- Was the intervention delivered as planned (i.e., at the point of approval)?
- What worked well and less well, and why?
- What could be improved?

Impact Evaluation

Impact evaluation focuses on the changes caused by an intervention; measurable changes which either directly relate to an objective, or indirectly contribute to measurement of performance against an objective (through establishing the causal mechanisms and linkages) of the intervention. The key questions include:

- What difference did the scheme make?
- What measurable outcomes, both intended and unintended, occurred?
- How much of these outcomes can be attributed to the intervention?
- How has the context influenced outcomes?

Value for Money (or Economic) Evaluation

While impact demonstrates and quantifies outcomes, it cannot on its own assess whether those outcomes are justified. Value-for-money evaluation considers such issues, including:

- Did the benefits justify the costs?
- Did the assumed benefits materialise?

Monitoring and Evaluation Plan

This Monitoring and Evaluation Plan provides details of the inputs, outputs, outcomes and impacts of North-South Tram, how they will be measured, and the costs associated with their monitoring. It is divided into the following sections:

- Approach to Process Evaluation: this sets out how the way in which the scheme is delivered will be evaluated and how lessons learnt from this process will be transferred to the delivery of other projects.
- Impact Evaluation: this explains the causal mechanisms linking scheme outputs to outcomes and outcomes to impacts and reports how outcomes and impacts will be monitored, excluding wider contextual factors.
- Value for money evaluation: this sets out how outturn value for money of the scheme will be assessed.

This Monitoring and Evaluation Plan provides details of the inputs, outputs, outcomes and impacts that the City of Edinburgh Council and other partners will need to own.

C.2 Process Evaluation

Process Evaluation seeks to answer questions regarding the extent to which a project was delivered to plan and the lessons that should be learnt from the way in which it was delivered.

Multiple approaches will be used during delivery and after implementation to ensure that lessons learnt are transferred into the delivery of subsequent projects:

- Monitoring of quantitative and factual inputs and outputs of the scheme, including: capital costs, delivery milestones and infrastructure and service provision improvements that are delivered
- Regular programme team progress meetings at which all delivery partners provide a progress update across the different work areas. This provides a forum for issues regarding cost, programme delivery and risk to be raised and for measures for addressing those issues to be identified
- As the programme moves into the delivery phase, meetings will provide a forum for process monitoring and evaluation. Minutes will help capture process and delivery challenges, issues, risks and lessons learnt as well as being a record of the wider context against which the programme is being delivered
- Risk register and lessons learnt registers will be maintained to inform post process evaluation
- Lesson learnt workshops: on completion of delivery of the programme, informed by the data on outturn inputs and outputs, including principal delivery partners. This workshop will seek to identify the reason for outturn inputs and outputs which did not align with those planned
- Bringing together several different delivery partners and stakeholders into this discussion will ensure that there a range of views on the causes of successes and failures of the programme. This supports a more comprehensive articulation of the lessons learnt from the delivery process
- Programme experience case study: Drawing on these monitoring and evaluation methods, documenting the lessons learnt for use by future scheme promoters

Outputs of the process evaluation will be reported within the 1 year after Monitoring and Evaluation Report.

C.3 Impact Evaluation

Impact Evaluation is focused on determining what difference the intervention made. It seeks to answer key questions, including:

- Were the expected outcomes and impacts achieved?

- To what extent can the outcomes and impacts be attributed to the intervention?
- What factors resulted in the observed outcomes and impacts?
- What was the context for the schemes at the time of delivery? Did this change?
- How much can be attributed to external factors?
- Has the intervention resulted in any unintended outcomes and impacts?
- What lessons have we learned about outcomes and impacts?

Attribution of Outcomes and Impacts to the Scheme

Impact Evaluation must also assess the extent to which the outcomes and impacts can be attributed to the intervention, over and above what would have happened had the intervention not taken place.

A counterfactual transport corridor will be identified on which the current conditions are broadly the same as the current conditions on the proposed tram corridors. This includes broad similarities in:

- Public transport provision
- Highway and public transport infrastructure
- Socioeconomic profile of population
- Proximity to key areas of employment, leisure and retail
- Topography

The identification of a suitable counterfactual corridor (or corridors) will be undertaken upon FBC approval, and suitable data collated accordingly.

Timing of Evaluation

The full realisation of scheme outcomes and impacts is not expected immediately after the scheme. This is due to the time taken for behaviours and trip making patterns to change.

However, monitoring of outcomes and impacts will take place on annual basis. Impact evaluation will be reported in the 1 year and 5 year after Monitoring and Evaluation Reports.

In the next section, the approach to and frequency of monitoring scheme outcomes and impacts in support of the impact evaluation is provided.

C.4 Value for Money (Economic) Evaluation

Introduction

The previous two sections have set out the proposed approach to Process Evaluation and Impact Evaluation. These result in an identification of whether the scheme was delivered to plan in terms of costs and timescales and whether the scheme achieved the outcomes and impacts that were expected.

Value-for-money evaluation combines these two evaluation processes and compares the costs of intervention to the impacts of intervention.

Social Cost Benefit Analysis

Social cost-benefit analysis assesses the impact of different interventions on social welfare with all relevant costs and benefits valued in monetary terms. It is on this basis that detailed transport appraisal based on TPOs and STAG criteria has been developed for the different elements of North-South Tram.

As these appraisals are undertaken in advance of the scheme, the identification of transport and land value uplift benefits are based on forecasts and estimates.

The purpose of the Value for Money evaluation is to

- identify the outturn performance (at what cost was the scheme delivered, and what scale of benefits accrued) allowing the outturn value for money of the scheme to be derived.

- enable comparison of the outturn value for money with the forecast value for money presented in the Full Business Case, upon which the scheme was approved.

Timing of Evaluation

As part of the both the 1 year after and 5 year after report, ex post transport and land value uplift appraisals will be undertaken using data captured through process and impact evaluation. Data used will include:

- Outturn scheme costs
- bus journey time improvements
- increases in bus trips
- performance against other TPOs
- performance against STAG criteria

C.5 Governance, Funding and Risk Management

Overview

This section provides details of the governance and funding of the monitoring and evaluation of the inputs, outputs, outcomes and impacts of North-South Tram.

Governance

A Senior Responsible Owner for Monitoring and Evaluation and Project Manager will be identified by the City of Edinburgh Council.

Updates will be reported via ongoing council meetings (to officers and members), other local authority meetings and reports to funders, i.e., Transport Scotland.

Reporting and Dissemination of Findings

The outputs of monitoring and evaluation will be the Baseline Report, the 1 and 5 years after report, the contents of which are summarised in the table above. These will provide valuable information which will inform:

- how similar types of schemes are delivered
- the likely value for money of similar types of scheme, and
- the effectiveness of the economic appraisal process undertaken

Funding

Confirmation of how the monitoring and evaluation will be funded will be established during Full Business Case.

Table C.1: Monitoring and Evaluation Timescales and Budget

	Baseline Report	1 Year After Fully Opening	5 Years After Fully Opening
Expected year of development	Prior to opening	Opening year +1	Opening year +5
Process monitoring and evaluation	Not included	Included	Not included
Impact monitoring and evaluation	Included	Included	Included
Value for money monitoring and evaluation	Not included	Included	Included

Risk Management

Effective risk management of Monitoring and Evaluation will be provided through the creation and maintenance of a risk register. This will describe the risks their probability, impact, mitigation and owner.