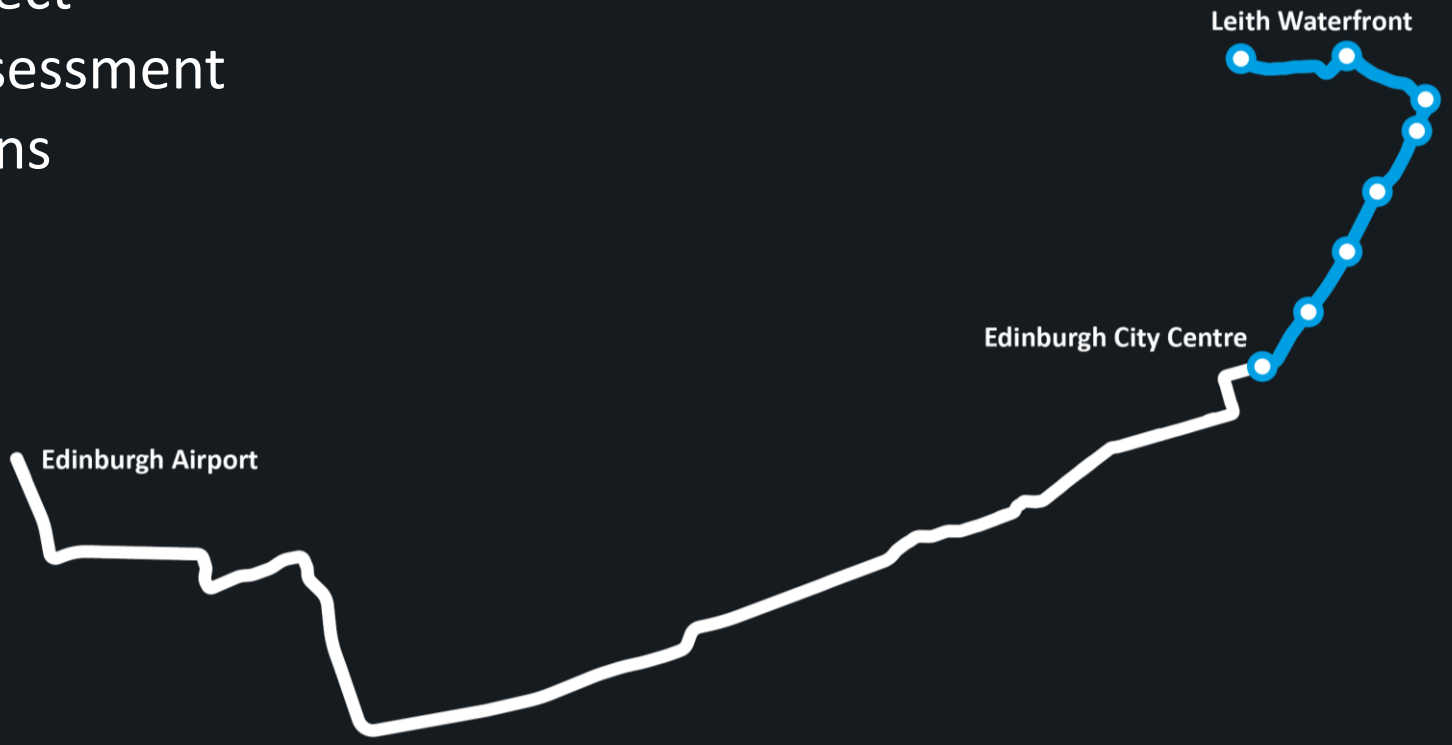
Edinburgh Tram
Newhaven Project
STAG-based Assessment of Modal Options



Client: City of Edinburgh Council
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steer

Content

1. Background & Requirement

Background & Requirement

Background

City of Edinburgh Council (CEC) is preparing a Final Business Case (FBC) for the Newhaven Project. This will inform a CEC decision on whether to proceed with the implementation of tram between York Place and Newhaven (as part of the Waterfront development – see Map 1).

An Annual Audit Report to the Council and the Controller of Audit (by Scott-Moncrieff) has recommended that a high-level options assessment should be carried out to validate the conclusions reached in the 2006 STAG 2 appraisal, which formed the basis for the Edinburgh Tram (Line One) Act 2006. This work should include the assessment of viable modal options against assessment criteria and objectives derived from the original STAG appraisal in light of current policy.

CEC has therefore requested further assistance from Steer to help further validate the mode choice decision from St Andrew Square to Newhaven.

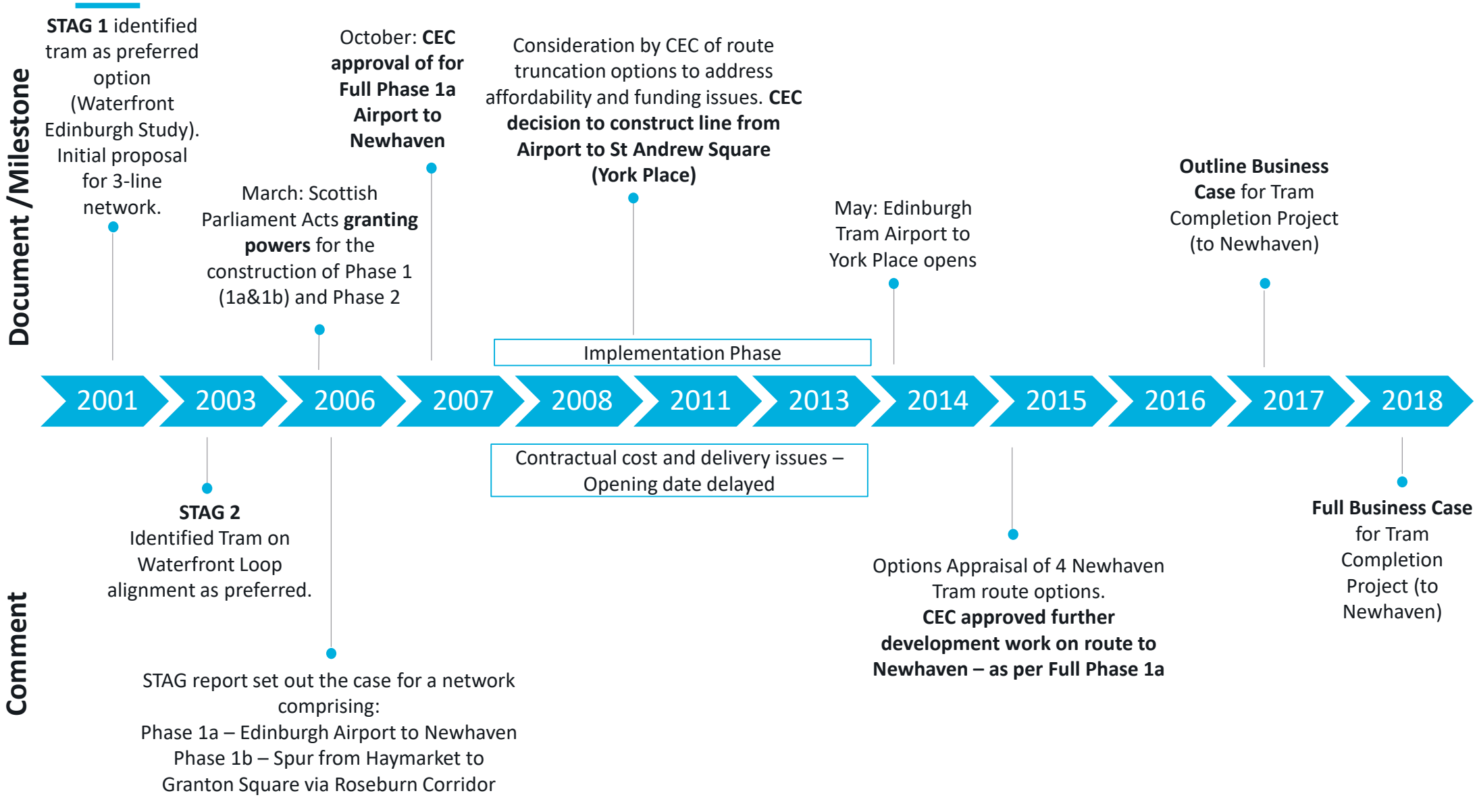
Requirement

The requirement of this piece of work is:

- To provide a STAG-based assessment of modal options for the Newhaven project and validate the mode choice decisions taken.
- The assessment is based on a high-level Options Assessment Framework (OAF) grounded by the five dimensions of a Business Case.

2. Decision Timeline and Basis for Assessment

Overall Timeline



Timeline – 2001 to 2011

2001 STAG 1

- In 2001, Waterfront Edinburgh Limited (WEL) commissioned a preliminary technical and economic Feasibility Study of a rapid transit system in north Edinburgh, led by a Steering Group involving the City Council. The study investigated whether a feasible scheme existed which met the objectives of the study Steering Group and the Local Transport Strategy (essentially the aims set out above).
- Long-List (including rail, monorail, cables car) developed and sifted based on STAG-based SWOT criteria.
- Shortlist of technology options – **bus based systems, guided bus and tram –** assessed based on technical, operational, patronage and cost analysis. This process resulted in the Preferred option being full Northern Loop using LRT (tram) technology.
- A STAG 1 appraisal was produced for this scheme and was accepted by CEC and the Scottish Executive; funding made available to further develop scheme.

2003 STAG Part 2 Appraisal

- Considered tram route options and identified Waterfront Loop as preferred option.

2006 STAG Report

- Update supported by detailed scheme development, technical work and consultation. Set out case report set out the case for a network comprising: Phase 1a – Edinburgh Airport to Newhaven, Phase 1b – Spur from Haymarket to Granton Square via Roseburn Corridor

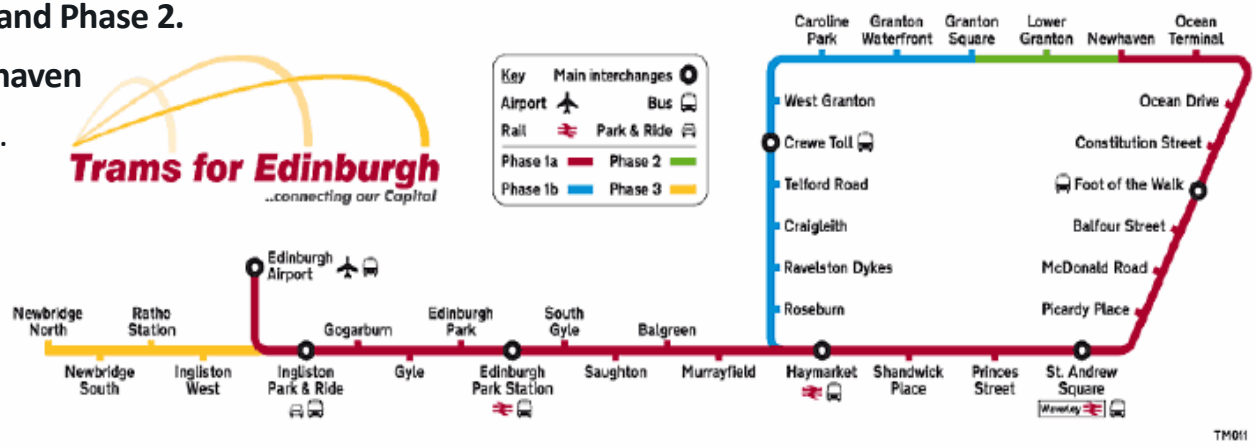
2006, Parliamentary Powers Granted for Phase 1a, 1b and Phase 2.

2007 CEC approval of for Full Phase 1a Airport to Newhaven

- Funding of £500m granted by Scottish Government.
- Line 1b would be taken forward as a later Phase.

2011 Decision to Truncate 1b Route at York Place

- Decision based on affordability grounds.



Timeline – 2011 to 2018

2011 – 2013 – Construction

- The construction involved new bridges, retaining walls, viaducts, the depot and control centre, electricity sub stations, track laying, and tram stops
- Edinburgh Airport to York Place consists of 13.4km of double line track with a small additional siding between Murrayfield & Haymarket
- Construction completed October 2013 and commissioning (testing) off street in October and on street in December

2014 – Edinburgh Tram opens

- Passenger service commenced end of May
- Public inquiry to scrutinise the delivery of the project announced

2015 - Options Assessment

- Consideration of 4 options of extending tram (McDonald Road, Foot of the Walk, Ocean Terminal and Newhaven)
- Tram route options based on the route alignment for which Powers existed

2017- Outline Business Case Approved

- CEC approved the Outline Business Case for taking Edinburgh Trams to Newhaven

2018- Stakeholder Consultation and Full Business Case under development

- Public Consultation "Taking trams to Newhaven" providing stakeholders the opportunity to review the proposals and feedback views and opinions. Option 3b announced as preferred, with shared lanes for transport and trams, dedicated cycle lanes on each side of the road, a central reservation with overhead tram wires and wider footways either side of the road
- Further consultation on latest proposals ongoing in October
- Full Business Case to be considered by the CEC by end of Year

Basis for Option Selection and Approval of Preferred Option - STAG Objectives

STAG Part 1 Appraisal used for Options Appraisal. Five key STAG criteria:

- Environment (maximising the quality of the built and natural environment for enjoyment by all);
- Safety (reducing the risk and incidence of accidents and improving the security of all transport users);
- Economy (saving people's and business's time and money and facilitating desired economic development);
- Integration (fitting the transport network together and ensuring a rational relationship between transport, land-use and wider policy);
- Accessibility (providing everyone, not just users but also non-users, with the means to travel to opportunities of all kinds).

STAG Part 2 Appraisal of Preferred Option. Scheme specific transport objectives which are grounded by relevant local, regional and national policy objectives and by the problems and issues which provide the need for change. The following objectives were established in the 2007 Business Case for the Tram:

- To **support the local economy** by improving accessibility, by
  - Improved access to the public transport network
  - Improved access to employment opportunities
- To **promote sustainability** and reduce environmental damage caused by traffic, by
  - Increasing proportion of journeys made by public transport, cycling and walking
  - Reducing local and global emissions
- To **reduce traffic congestion**, by
  - Reducing number of trips by car
  - Reducing traffic volume on key routes
- To **make the transport system safer and more secure**, by
  - Reducing traffic accidents
- To **promote social benefits**, by
  - Improving liveability of streets, maximising their role as the focal point
  - Reducing social exclusion, by improving the ability of people with low incomes, no access to car, the elderly or those with mobility impairments to use the transport system.

3. Review of STAG Criteria and Development of Options Assessment

Overview

This section provides information on the Evaluation of the Phase 1a Tram scheme from York Place to Edinburgh Airport.

The Evaluation of the project has provided a number of outcomes, aligned to the objectives for Phase 1a. These provide a basis to understand how the project has performed.

The Options Assessment Framework is built around the outlook of each of the five cases required by a Business Case: Strategic, Economic, Commercial, Financial, Management.

The objectives and outcome form the 'Strategic' element of the Options Assessment Framework. The objectives and outcome will be the basis to evaluating the Newhaven Project once delivered.

The remaining part of the Options Assessment Framework considers the relative deliverability of the modal options and scale of costs against benefits.

These are aligned to the main outlook of each Economic, Commercial, Financial and Management Cases.

Review of STAG Objectives

Review of STAG Objectives

As part of JRC's recent study to evaluate the impacts of the existing Tram network (Airport to York Place), the 2007 STAG objectives were reviewed to assess their relevance in the light of the 2018 policy context and their appropriateness for the purposes of evaluation (i.e. how specific and measurable they were).

This was supported by a 'logic-mapping' exercise, which is a standard approach for evaluation studies and is used to relate transport outputs to wider outcomes.

Outcome of Review:

The review of the 2007 STAG Objectives concluded that they remained valid.

The objectives were recast against key outcomes and impacts, as shown overleaf. The four STAG objectives around promoting the economy, sustainability, social impacts and safety were retained as core objectives, and the only change for the STAG objectives was that the original objective 'to reduce traffic congestion' was treated as an transport outcome. This is because reducing congestion is a means to an end (economic efficiency, sustainability), and not an end in itself.

The mapping to outcomes provides a set of criteria against which modal options can be compared.

Broader Policy Rationale:

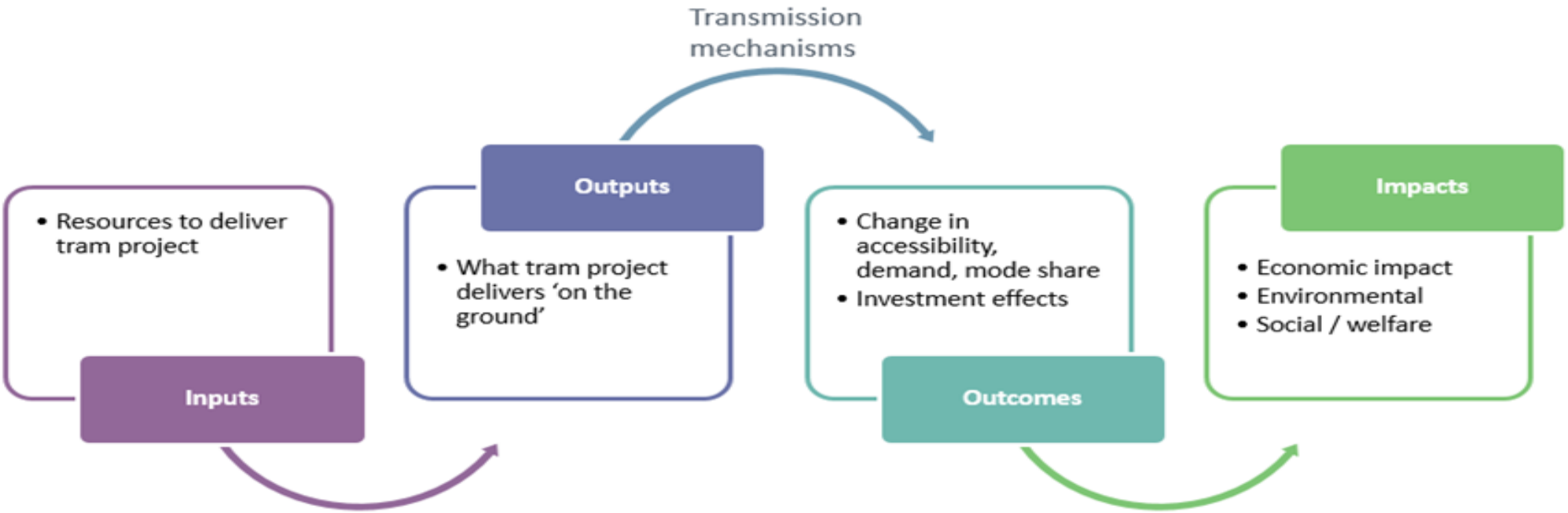
The review also assessed whether the broader spatial planning objectives that the Edinburgh Tram Network was originally planned to support remained valid.

The Local Development Plan shows the Location of Strategic Development Areas in Edinburgh. This clearly shows how Phase 1a (Airport to Newhaven) directly serves and supports the major strategic development areas of West Edinburgh, the City Centre and the Waterfront Area. As such, the original planning-led STAG objectives remain valid.

Edinburgh Tram Logic Map

A Logic Map describes the rationale for a project through linking the project inputs (resources) to its outputs (e.g. what tram delivers on the ground – route coverage, capacity, journey times), Stage 1 outcomes (patronage, mode share, traffic impacts etc.) and wider Stage 2 intended outcomes (economic, social and environmental outcomes).

The Logic Map can be used to inform the degree to which an option meets the criteria within the Options Assessment Framework.



Edinburgh Tram Logic Map - Stage Description

Stage	Description	Key Question for Tram Evaluation
Inputs	The resources employed to deliver the intervention: • Staff resources • Costs	• What was the scheme forecast to cost? • What was the actual cost?
Transport Outputs	What the scheme delivers 'on the ground' in terms of: • Route coverage • Frequency • Operating hours • Journey times • Capacity • Accessibility	• What were the 'planned' transport outputs? • What was delivered / implemented?
Mechanisms	The mechanisms by which the scheme delivers intended outcomes: This reflects the established economic framework (reflected in guidance) that is used to forecast the impact of transport interventions Note: these mechanisms are not the focus of the evaluation - they merely provide the 'link' in the logic change whereby outputs can be related to outcomes	• What are the theoretical linkages between what a transport scheme delivers (outputs) and the forecast behavioural changes that underpin the appraisal? • How to these link to specific project objectives?
Outcomes	The changes that the intervention brings about, for example: • Changes in the connectivity of the public transport network • Behavioural responses – demand for tram and overall change in PT mode share • Investment impacts	What were the forecast outcomes of the project? What are the actual outcomes?
Impacts		Wider outcomes are hard to be measured directly and it can be difficult to attribute any measured changes to the project Through the 'logic map; process and the findings of the evaluation, the impact on wider policy outcomes can be inferred and so assessed.

STAG Objectives

The table below shows the alignment of the Logic Map to STAG Criteria.

Objective (grounded by STAG criteria)	Mechanism	Outcome	Impact
Support the Local Economy	• Improve efficiency of business • Attractiveness of locations as a place for developers to invest in, businesses to locate people to work	• Improved public transport journey times and journey time reliability • Impact on investment (developers) • Impact on businesses (occupiers) • Impact on labour market and accessible jobs	• Support spatial development strategy – where growth takes place • Support overall growth in jobs and output (productivity)
Promote Sustainability	• Increase attractiveness of public transport and sustainable modes • Reduce car traffic and congestion	• Change in public transport connectivity levels • Change in public transport mode share • Change in car trips • Impact on congestion • Impact on air quality	• Support sustainable growth of city by supporting growth in sustainable location, and by sustainable means of transport
Promote Social Benefits	• Improve access to transport system for excluded groups • Improve physical accessibility • Liveability of place through enhancement of urban realm and liveability	• Change in public transport accessibility and connectivity for specific groups • Access to employment • Perceived change in quality of place and change in local activity	• Inclusiveness of society and reduction in social exclusion • Improve quality of life through liveability
Make the Transport System Safer and More Secure	• To reduce road accidents • To increase perceived and actual security	• Change in accidents • Changes in perceived / actual security	• Reduce the human and economic costs of accidents

Spatial Planning Context - LDP Spatial Strategy Summary Map (November 2016)

Map 1: Location of Strategic Development Areas in Edinburgh

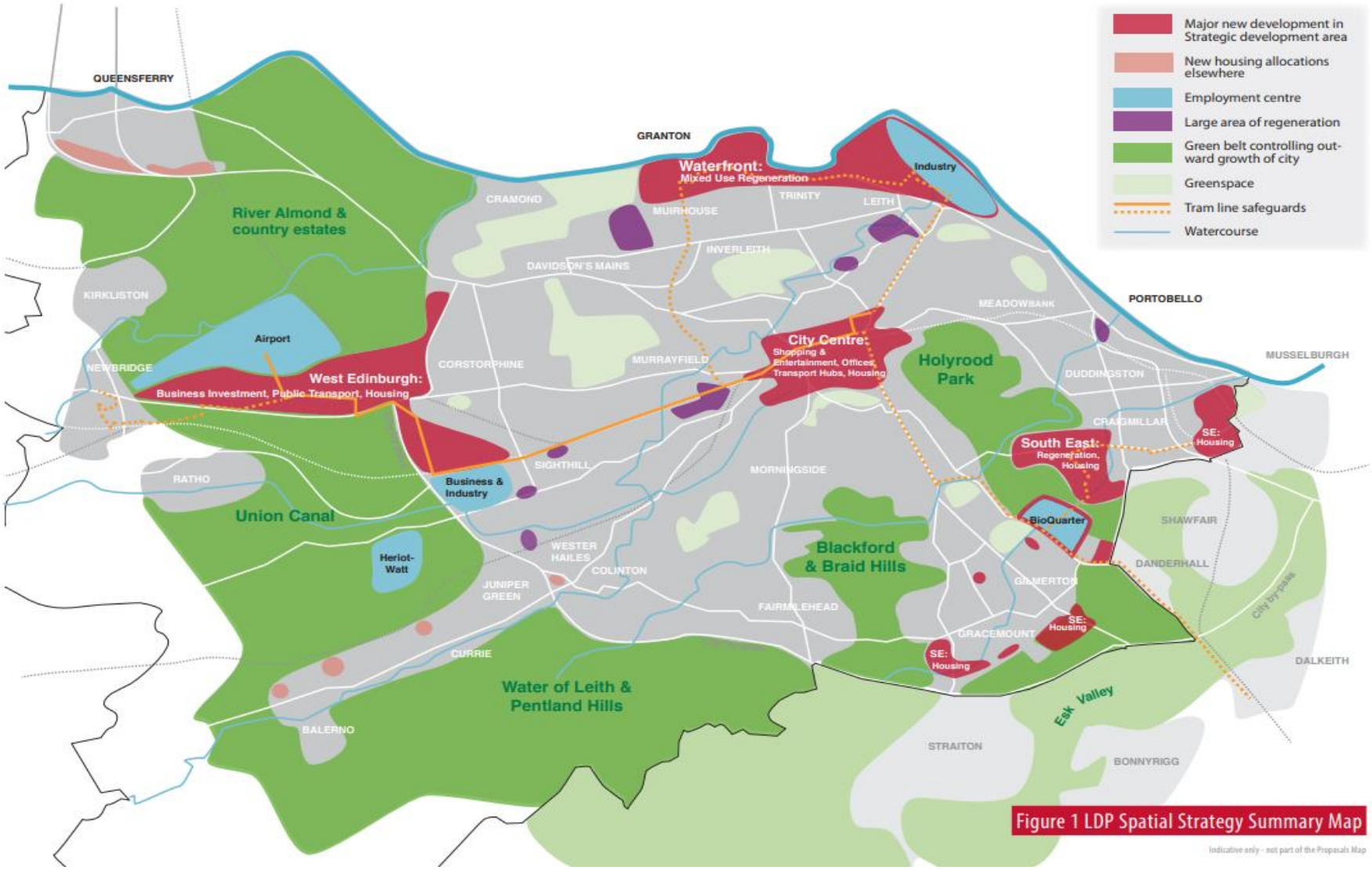


Figure 1 LDP Spatial Strategy Summary Map

Indicative only - not part of the Proposals Map

4. Options Assessment Framework

Options Assessment Framework

Introduction

In this section we present the framework used for the assessment and scoring given to the options considered. Each is presented and discussed in the following slides.

Assessment Framework

We have developed a framework based on the five dimension of a Business Case (Strategic, Economic, Financial, Commercial and Management Cases). For the Strategic Case, the STAG objectives and outcomes are considered. For the other four Cases the STAG outcomes are also considered.

Assessed options are presented in summary in the main body of the report and also in detail in the Appendix found at the rear of the report.

Framework Scoring

For Objective-Related Criteria within Strategic Case a seven point scoring system as per STAG guidance to consider relative size and scale of impacts has been used. These are major, moderate, minor benefits and minor, moderate, major costs or negative impacts.

For Deliverability-Related Criteria a risk-based assessment (for Economic, Financial, Commercial and Management Cases) uses Red, Amber, Green colour coding.

Options Assessment Framework

Option	Strategic													Economic	Financial	Commercial & Management			
	Support the Local Economy				Promote Sustainability					Promote Social Benefits			Make the Transport System Safer and More Secure						
STAG Outcomes	Improved PT Journey Time and Reliability	Impact on Investment (developers)	Impact on Businesses (occupiers)	Impact on Labour Market and Accessible Jobs	Change PT Connectivity	Change PT Mode Share	Change in Car Trips	Impact on Congestion	Impact on Air Quality	Change PT Accessibility/ Connectivity for Specific Groups	Access to Employment	Perceived Change in Quality of Place & Change in Local Activity	Change in Accidents	Changes in Perceived / Actual Security	Value for Money	Affordability	Technical Feasibility	Powers & Consent	Public & Stakeholder Acceptability	Operation
Mode 1																				
Mode 2																				

Option Assessment - Scoring

For Objective-Related Criteria within Strategic Case – Seven point scoring system as per STAG guidance to consider relative size and scale of impacts

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 a option's performance against objectives.
Moderate Benefit (+ +)	The option is anticipated to have only 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.
Small Minor Cost or Negative Impact (-)	The option is anticipated to have only small negative impact.
Moderate Cost or Negative Impact (- -)	The option is anticipated to have only 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 options performance.

For Deliverability-Related Criteria – Risk-based assessment (for Economic, Financial, Commercial and Management Cases)

RAG Rating	Definition
	High risk - ("potential showstopper")
	Medium risk
	Low risk
	No risk / not applicable

5. Option Definition

Option Definition - Modes Not Considered & No Intervention

Introduction

In this section we introduce the different transport modes considered in the assessment. These are referred to as Options and overleaf a brief narrative is presented on each considered in the assessment, outlining key characteristics of each.

Modes Not Considered

It should be noted that for the purposes of this assessment we have not considered other high capacity modes such as rail-based metro on the grounds of affordability, deliverability and the fact that these modes are typically suited to moving much greater volumes of passengers, greater distances and at higher speed. These modes are not considered appropriate for a densely populated, 5km radial corridor in a city such as Edinburgh. A rail-based metro system would also not deliver the level of accessibility that is achieved by tram or bus-based options, through the existing bus and proposed tram stop spacing between York Place and Newhaven Project.

Shortlisted Modes for Comparative Assessment

The shortlist of modal options for the York Place to Newhaven corridor are tram, bus rapid transit (BRT) and bus. These are summarised overleaf.

No Intervention

Within STAG there is a requirement to consider a 'No Intervention' option. We have assessed the three options introduced overleaf against a 'No Intervention' scenario. The 'no intervention' or 'do minimum' scenario is also the comparative scenario considered in both the Outline and Full Business Cases for the Edinburgh Tram Newhaven Project.

Option Definition

Tram

The existing tram in Edinburgh would be completed from Picardy Place (the replacement stop for York Place), down Leith Walk to Newhaven. This would provide seamless end-to-end connectivity for users.

The vehicles would be the same high specification and quality as those used at present and that currently exist.

The tram between York Place and Newhaven would be significantly segregated and traffic signals would provide priority over other road users to deliver improved journey time savings and provide reliable journey times to users.

The frequency of the vehicles on the extension would mirror that on the rest of the tram network.

Bus Rapid Transit (BRT)

BRT would be provided from the top of Leith Walk to Newhaven with the option to operate further into the City Centre where feasible.

BRT would require interchange with tram to complete the journey from/to the Airport and therefore be unable to deliver the same seamless end-to-end journey as tram.

The BRT options could provide segregation for vehicles where appropriate and could use traffic signal priority to deliver a journey time benefit over the equivalent bus journey. An additional segregated mode in the city centre would reduce road space for other users further.

BRT options would exist in the city centre to stop either at the Top of Leith Walk, St Andrew Square or further into the city centre.

Bus

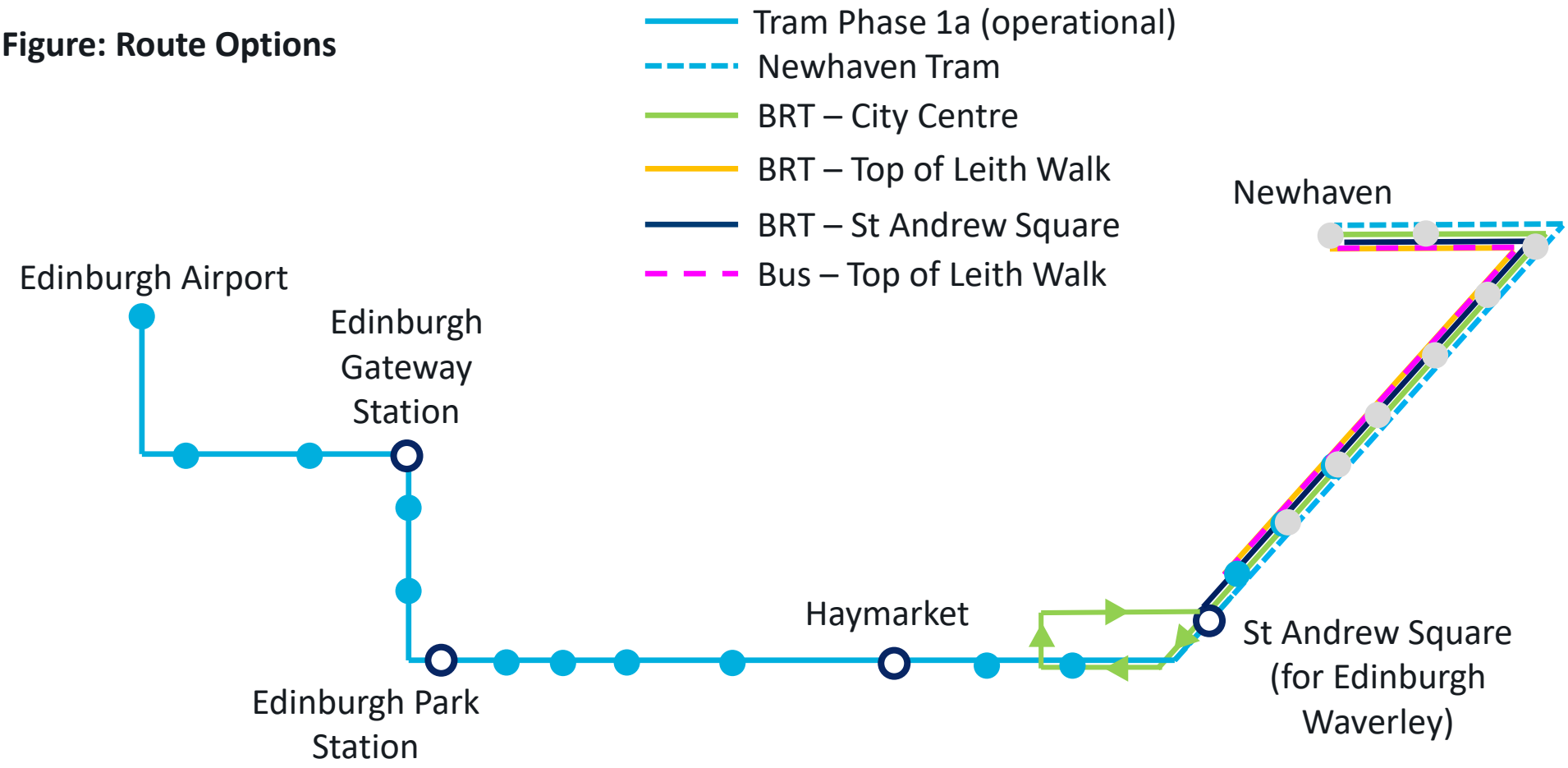
Vehicles could either be those used on the current bus network or improved via a partnership arrangement.

The option for bus would to provide incremental improvements above those already planned or delivered on the route from the top of Leith Walk to Newhaven. For example, enhancements to signal priorities or Real Time Information may be used to improve the user experience. This would help to deliver improvements for journey time and journey time reliability for bus passengers.

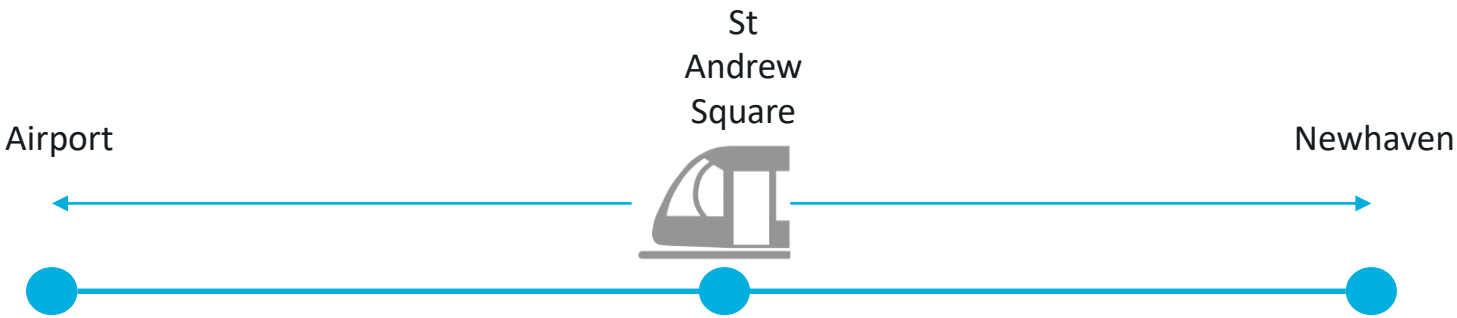
There would no significant change in quality, capacity and frequency compared with the present service due to the already heavily congested corridor.

Option Definition

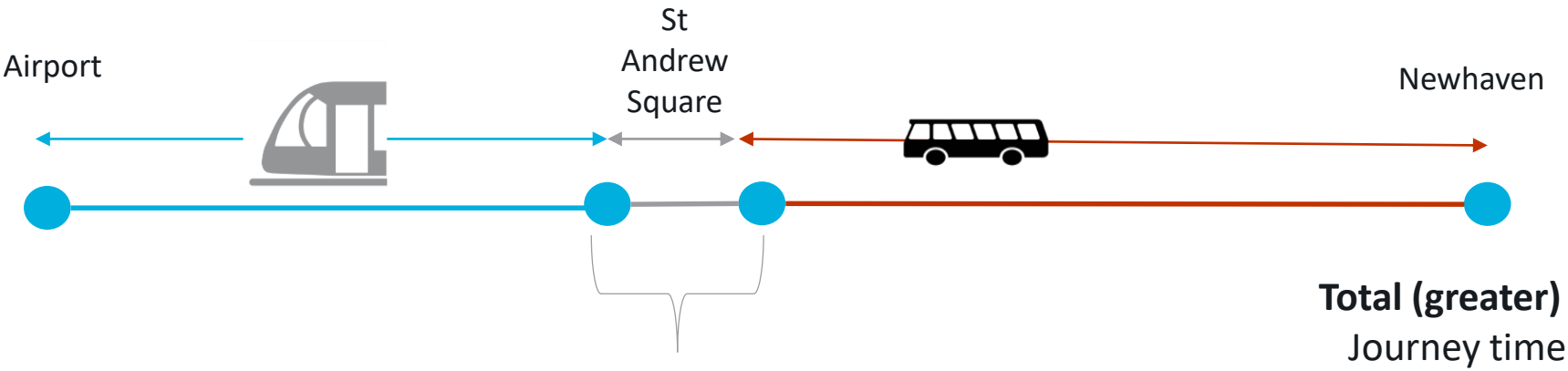
Figure: Route Options



The Impact of Interchange between Modes



Total journey time by tram =
Journey time for tram + no interchange penalty



Total (greater) journey time with BRT =
Journey time for tram + interchange penalty + journey time for BRT

Factors that affect interchange between modes:

- Associated waiting times for the next onward service
- The inconvenience of moving luggage/prams/wheelchairs between modes
- Potential safety and security issues with transferring between modes
- Potential requirement for a new ticket for onward travel

Overall, these result in interchange 'penalties' (additional time) to your journey

6. Options Assessment (Full details in Appendix A)

Modal Options – Key Strengths and Weaknesses

A review of each mode against key transport outputs from the Logic Map to show strengths and weaknesses of each option

Key Transport Output	Tram	BRT	Bus
Capacity	Higher in-vehicle capacity than Bus and BRT.	Marginal capacity improvement with greater segregation, headways can be reduced and better regulated which can increase capacity.	Capacity no more than current bus offer. The bus corridor is currently close to capacity and regularly congested.
Journey time and journey time reliability	Significantly segregated and prioritised option delivers the best journey times and reliability.	Journey times and reliability limited by the amount of segregation and priority that would be feasible along the route.	No significant changes to journey times and reliability.
Connectivity	Provides cross-city connectivity linking the major growth and development areas of the Waterfront, City Centre, West Edinburgh and the Airport.	Would only serve the city centre, and therefore would not provide the wider connectivity to other major development / growth areas.	Provides direct connectivity, but services would be lower quality and less reliable than tram.
Accessibility	Modern vehicles have a very high specification to support mobility impaired.	Accessibility unchanged as uses same bus vehicles as in use currently. Level boarding is possible but floor levels likely to be higher than tram.	Accessibility unchanged as uses same bus vehicle currently used.
Interchange	Seamless end-to-end journey for passengers from Airport to Newhaven.	Airport to Newhaven journey would require interchange at St Andrew Square, resulting in additional time penalties for passengers.	Airport to Newhaven is possible with a single bus service and no interchange at present.

Options Assessment – Outcomes

STAG Outcome	Tram	BRT	Bus	Commentary
Improved PT Journey Time and Reliability	+++	++	+	Tram would deliver improved journey times and journey time reliability, compared to that offered by bus. BRT could seek to provide equivalent segregation (as tram), and improved journey times to the city centre. However, it would not deliver improvements over the network extent of tram.
Impact on Investment (developers)	++	+		The evaluation evidence is that tram has had a positive impact on development on the existing corridor. Tram has been developed to support significant planned development in the Waterfront area. BRT, as a lower quality mode and without direct connectivity to West Edinburgh and the Airport would only have a modest impact on investment and development.
Impact on Businesses (occupiers)	++	+		The lower quality and connectivity offered by BRT would mean its potential impact would be lower than that of tram.
Impact on Labour Market and Accessible Jobs	+++	++	+	Tram would connect an area of major population and designated housing growth to the major employment opportunities in the city centre, West Edinburgh and the planned International Business Gateway (by the Airport). BRT would only directly serve the city centre, where bus access is already good.
Change PT Connectivity	+++	+	+	Tram would transform cross-city connectivity, connecting Leith Waterfront seamlessly with the other major existing and planned development areas of the Airport, West Edinburgh, City Centre. BRT would not provide these linkages.
Change PT Mode Share	++	+		Tram would offer a more attractive and viable alternative to car users as evidenced, and hence achieve the greatest level of modal shift.
Change in Car Trips	++	+		Comparative performance directly related to mode shift.
Impact on Congestion	++	+		Tram would attract more car trips than BRT or bus. Additionally, BRT services would need to operate with both tram and bus in and around central Edinburgh, potentially duplicating service and capacity, with negative potential impacts on congestion.
Impact on Air Quality	++	+		Tram would be zero emission at point of use. Tram would result in fewer vehicular emissions from relatively higher levels of modal shift than either BRT or bus.
Change PT Accessibility / Connectivity for Specific Groups	+++	++	++	Tram improves PT accessibility as it is the only fully accessible mode that would directly serve a wide range of destinations on the corridor. Both BRT and bus can improve connectivity for different users groups but cannot provide the same levels of accessibility as Tram.
Access to Employment	+++	+	+	Tram would seamlessly connect an area of major population and designated housing growth to the major employment opportunities in the city centre, West Edinburgh and the planned International Business Gateway (by the Airport). BRT would only directly serve the city centre, where bus access is already good.
Perceived Change in Quality of Place & Change in Local Activity	++			Tram has greater potential to improve the quality of an area through its modern image, potential positive impact on investment, and its integration with the surrounding public realm. Impacts from BRT are less well understood, while bus impact would be negligible.
Change in Accidents	++	+		Comparative performance directly related to mode shift.
Changes in Perceived / Actual Security	++	+		Tram is perceived strongly by existing users, with the presence of conductors being perceived as of particular benefit. Equivalent benefits could potentially be provided for BRT, but at corresponding cost per vehicle.

Options Assessment – Deliverability

Deliverability	Tram	BRT	Bus	Commentary
Value for Money				The tram proposal has been subject to appraisal to demonstrate and confirm VfM at each key decision point. Benefits of BRT could be lower than tram, so economic case more uncertain and likley to perform worse under the range of VfM criteria that comprise STAG. Incremental bus improvements would be likely to positive in economic terms (costs > benefits) but be marginal against wider STAG objectives.
Affordability				Tram would be operationally affordable, and offers potential for a more efficient and effective overall (tram plus bus) public transport network. Bus improvements also likely to be affordable. There would be uncertainty over whether BRT was operationally affordable. The capital cost for Tram likley to be higher than for BRT and Bus.
Technical Feasibility				All options are technically feasible. BRT would involve more trade-offs with the operation of bus and existing tram services.
Powers and Consent				Tram has secured powers to construct the full line. BRT would, if an equivalent level of quality was sought, require new powers. BRT would be highly unlikely to obtain powers given issues around value for money, acceptability, and to demonstrate that BRT is the best option (a requirement of any Inquiry).
Public and Stakeholder Acceptability				Tram now has the support of the public, politicians and stakeholders. A BRT option would be unlikely to be as supported, due to its inability to provide seamless cross-city connectivity that is core to the tram proposal. The success of the existing tram line, and the fact that the tram route envisaged to Newhaven, as part of an network in due course, means that only tram options have the greater stakeholder buy-in necessary for it to be delivered.
Operations				Tram would operate as a direct through service to the Airport from Newhaven, and would be operated by Edinburgh Trams. Bus improvements would be delivered by Lothian Buses, who would operate the bus network albeit on an already very congested corridor. BRT would not operate as a direct service to/from the airport and Newhaven and it remains unclear how it would be integrated within the current transport network.

7. Conclusions

Conclusions: Tram and BRT

Tram

The completion of the tram to Newhaven would provide a seamless, modern and accessible public transport option directly from the Airport.

The tram option out-performs bus and BRT against the range of STAG criteria considered, and is most closely aligned to the STAG objectives.

The tram already has powers and consents for the route to Newhaven and would be open in 2022 subject to the scheme being approved.

Tram would provide the highest levels of segregation of all the options and as a result supports the STAG objectives and, by extension, the City's wider economic, social, sustainability and spatial planning outcomes better than the alternatives.

Summary:

Tram offers the strongest alignment to the STAG objectives. Because the tram already has necessary Powers and is already an established transit mode supported by stakeholders it has the lowest levels of risk in delivery. On this basis, tram is the preferred modal choice for the route to Newhaven.

BRT

While BRT seeks to deliver equivalent benefits to tram, this is not completely possible:

- BRT would likely deliver fewer segregated sections than tram. It would therefore have more journey time and reliability benefits than for bus, but fewer than for tram.
- BRT would be a new mode for public transport in the city. It would not provide a seamless network for travel across the city, it would require interchange with tram at St Andrew Square or beyond.

As a result, BRT would contribute to relatively modest changes in mode share, congestion and air quality. It would also not make a material difference to enhance the labour catchment or to encourage investors/ businesses into the area.

BRT would not be a deliverable solution, as no Powers exist and the potential to secure powers for a alternative to tram would be negligible. To have two different segregated options would open up issues with public/stakeholder acceptability and commercial viability.

BRT will not have the same impact in terms of getting people out of their cars, increasing public transport mode share nor impact on air quality.

Summary:

BRT does not align as strongly to STAG objectives as tram does. The requirement of new Powers to deliver BRT contributes to issues surrounding its deliverability.

Conclusions: Bus & No Intervention

Bus

The bus network and brand is already well-established as part of the public transport offer in Edinburgh.

Congestion is a significant problem for the journey times and reliability of the bus network. This option would not deliver a material difference for bus journey times and reliability to contribute to modal shift in the city or to improve access to employment.

Bus would also not provide the quality or capacity that would encourage investors and businesses to locate in the area. The development of the Waterfront Area would therefore develop at a lower rate, density and value than with an alternative transit option.

Overall, the bus option carries lower levels of risk than the alternative transit options because it is an established and widely used mode. However, only incremental change would be delivered and although the options would be cost-effective to deliver, ultimately it would only provide a small amount of benefit to users.

Summary:

The option is deliverable, but would deliver only incremental improvement and, as such, fails to meet the STAG objectives.

No Intervention

The evaluation of the current tram network has shown that there have been a wide-range of positive socio-economic benefits associated with the delivery of intervention for example, mode change, supported investment and development and changes in congestion.

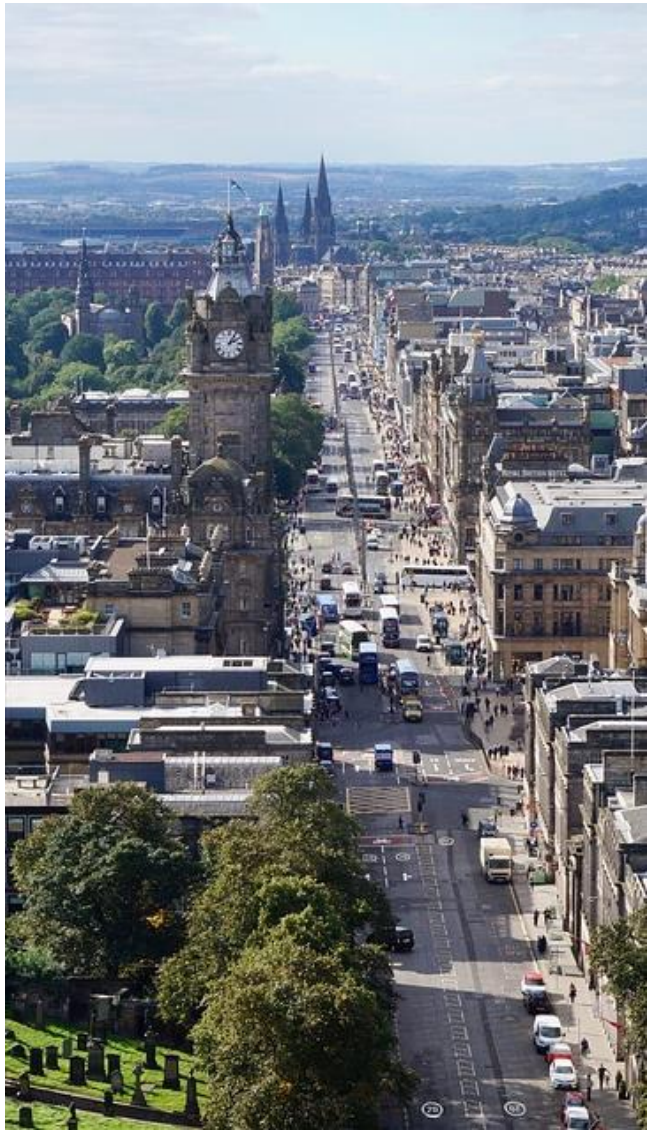
Without intervention, there is no opportunity to continue to provide similar benefits for the city in the future.

Whilst there are negligible risks associated with not delivering an intervention, there could be some issues with the public/stakeholder acceptability of this position particularly from local residents previously disrupted by advance works.

The Full Business Case confirms that there is a financial case to proceed with an Intervention.

Summary:

No Intervention would fail to deliver any improvement in capacity, connectivity, quality, accessibility and hence fail to contribute to the achievement of STAG objectives.



Appendix A

Options Assessment – Tram

Case	Objective	Outcome	Score	Commentary
Strategic	Support the Local Economy	Improved PT Journey Time and Reliability	+ + +	The option would be fully segregated and would extend the current tram network. This would result in material improvements to journey times and reliability for travel between Newhaven and the City Centre but also for the complete end to end journey from Newhaven to the Airport.
		Impact on Investment (developers)	+ +	The evaluation for the current tram network has shown that there is a positive role of the tram in providing direct and reliable connections. The tram has a positive role in location decisions but the scale of the effect on businesses is mixed depending on the business.
		Impact on Businesses (occupiers)	+ +	
		Impact on Labour Market and Accessible Jobs	+ + +	Journey time and reliability benefits will contribute to widening the labour market and enhancing the number of jobs accessible to residents.
	Promote Sustainability	Change PT Connectivity	+ + +	The tram option would complete the tram network into the North of the City. Interchange would not be required for journeys from New Haven to the Airport.
		Change PT Mode Share	+ +	As a result of full segregation, the benefits of tram to journey times and reliability make public transport more attractive resulting in modal shift. This would have a positive impact on congestion and air quality. Additionally, the tram vehicle has zero emissions at source.
		Change in Car Trips	+ +	
		Impact on Congestion	+ +	
		Impact on Air Quality	+ +	
	Promote Social Benefits	Change PT Accessibility / Connectivity for Specific Groups	+ +	The tram will contribute to additional modal choice for specific groups. The vehicles will provide a number of features to benefit the mobility impaired.
		Access to Employment	+ + +	Journey time and reliability benefits will contribute to enhancing the number of jobs accessible to residents.
		Perceived Change in Quality of Place & Change in Local Activity	+ +	The tram will deliver transformational change in PT for this area. It will contribute to an improved sense of place.
	Make the Transport System Safer and More Secure	Change in Accidents	+ +	As a result of modal shift, there will be fewer vehicle km on the highway network, reducing the number of accidents.
		Changes in Perceived / Actual Security	+ +	Conductors and on-board security would be available as it is along the rest of the tram network. Evaluation of the current tram line have shown these to have a moderate benefit for users.
Economic		Value for Money		It is expected that this will be the most costly option to deliver but offers the best user benefits
Financial		Affordability		Tram would be operationally affordable and has lower risk than BRT. Tram capital costs likely to be higher than BRT.
Commercial and Management		Technical Feasibility		Tram has already been delivered in the City. As a result there is inherent knowledge about delivering this type of system.
		Powers and Consent		Powers and consents are already in place therefore there is low risk with this.
		Public and Stakeholder Acceptability		Tram is already supported by the public, stakeholders and politicians.
		Operation		There is inherent knowledge and established approaches to operation of the tram which would be extended to this option.

Options Assessment – BRT

Case	Objective	Outcome	Score	Commentary
Strategic	Support the Local Economy	Improved PT Journey Time and Reliability	+ +	The segregated elements of the scheme will support moderate journey time benefits and reliability benefits for users.
		Impact on Investment (developers)	+	Will result in some improvements to the connectivity and accessibility of the public transport network which will support some improvements in the attractiveness of the area. This may have a small, positive impact for investors and businesses.
		Impact on Businesses (occupiers)	+	
		Impact on Labour Market and Accessible Jobs	+ +	As a result of improvements in PT journey time and reliability, this option would enhance the labour market for employers and improve accessibility to employment.
	Promote Sustainability	Change PT Connectivity	+	The improvements would only affect a small proportion of trips. There will be small improvements to PT connectivity. Would require interchange with the tram once in the City Centre for onward travel.
		Change PT Mode Share	+	Improvements in journey times and reliability will make BRT an attractive PT option. However, it would only support a small number of journeys. As a result, there would be a small change in PT mode share and a corresponding small change in car trips. There would be small benefits to congestion and air quality.
		Change in Car Trips	+	
		Impact on Congestion	+	
		Impact on Air Quality	+	
	Promote Social Benefits	Change PT Accessibility / Connectivity for Specific Groups	+	The improvements would only affect a small proportion of trips. There will be small improvements to PT connectivity for specific groups. As the vehicles would be the same as the current bus offer, there would be no changes to accessibility for the mobility impaired.
		Access to Employment	+ +	The scheme would improve journey time and reliability, having a positive benefit on accessing jobs.
		Perceived Change in Quality of Place & Change in Local Activity	0	This option will not result in a change to the quality of place or local activity
	Make the Transport System Safer and More Secure	Change in Accidents	+	As a result of small amounts of modal shift, there will be fewer vehicle km on the highway network which could slightly reduce the number of accidents.
		Changes in Perceived / Actual Security	+	There would be some scope to improve waiting facilities at stops
Economic		Value for Money		The option is likely to be moderately expensive to deliver with only some user benefits
Financial		Affordability		Will be cost-effective to deliver and but operational affordability uncertain.
Commercial and Management		Technical Feasibility		Some trade-offs where it would operate with bus and tram services
		Powers and Consent		The current powers and consents cover a tram network. New powers would be required for BRT. Getting the powers would be a high risk.
		Public and Stakeholder Acceptability		There would be risk associated with the acceptability of a tram and BRT network running within similar geographies in the City Centre.
		Operation		Some risks associated with operating tram and BRT in similar geographies.

Options Assessment – Bus

Case	Objective	Outcome	Score	Commentary
Strategic	Support the Local Economy	Improved PT Journey Time and Reliability	+	Will deliver small journey time and reliability benefits over and above the current bus offer.
		Impact on Investment (developers)	0	Will result in some very minor improvements to the connectivity and accessibility of the public transport network which would result in only a small improvement in the attractiveness of the area and resultantly, negligible benefits for investors and businesses.
		Impact on Businesses (occupiers)	0	
		Impact on Labour Market and Accessible Jobs	+	Will deliver small benefits in accessibility over and above the current bus offer which will have some benefit to increasing the labour pool for employers along the route.
	Promote Sustainability	Change PT Connectivity	+	Will deliver small benefits in connectivity over and above the current bus offer. Would require interchange with the tram once in the City Centre for onward travel.
		Change PT Mode Share	0	It is unlikely that the changes will contribute to a material change in PT mode share or reduce the use of car. As a result, there will be no impact on congestion and therefore on air quality.
		Change in Car Trips	0	
		Impact on Congestion	- -	
		Impact on Air Quality	-	
	Promote Social Benefits	Change PT Accessibility / Connectivity for Specific Groups	+	The improvements would only affect a small proportion of trips. There will be small improvements to PT connectivity for specific groups. As the vehicles would be the same as the current bus offer, there would be no changes to accessibility for the mobility impaired.
		Access to Employment	+	
		Perceived Change in Quality of Place & Change in Local Activity	0	This option is unlikely to result in a change to the quality of place or local activity.
	Make the Transport System Safer and More Secure	Change in Accidents	0	This option is unlikely to encourage people away from private vehicles, there would be no change to vehicle km and therefore no change to accidents.
		Changes in Perceived / Actual Security	0	There would be little scope to improve waiting facilities at stops.
Economic		Value for Money		The option is likely to be cost-effective to deliver but with limited user benefits.
Financial		Affordability		Will be cost-effective to deliver and therefore has good affordability and low risk.
Commercial and Management		Technical Feasibility		Relatively easy to deliver on the ground as would not require significant construction and disruption. Is therefore low risk.
		Powers & Consent		Could be delivered without the need for significant powers and consent and therefore low risk to deliver.
		Public and Stakeholder Acceptability		High risk of objections due to previous disruptions in the area with the diversion of utilities.
		Operation		The existing highway corridor already suffers from bus congestion and adding more buses will make worse.

Options Assessment – No Intervention

Case	Objective	Outcome	Score	Commentary
Strategic	Support the Local Economy	Improved PT Journey Time and Reliability	0	Doing nothing will make no difference to PT journey times or reliability
		Impact on Investment (developers)	- -	Without intervention, current congestion will worsen and this will make the city less attractive to investors and businesses
		Impact on Businesses (occupiers)	- -	
		Impact on Labour Market and Accessible Jobs	- -	Without intervention, access to employment will continue to be difficult, particularly for certain groups for example, those without access to private vehicles
	Promote Sustainability	Change PT Connectivity	0	Without intervention, PT connectivity will remain as the current situation.
		Change PT Mode Share	- -	Without intervention there is no opportunity to encourage people away from private vehicles and change public transport mode share. This will contribute to the problem of congestion in the City.
		Change in Car Trips	- -	
		Impact on Congestion	- -	
		Impact on Air Quality	- - -	Air quality is a serious consequence of increased congestion and of not encouraging mode shift.
	Promote Social Benefits	Change PT Accessibility / Connectivity for Specific Groups	- -	Without intervention, access to jobs and services will continue to be difficult, particularly for certain groups for example, those without access to private vehicles
		Access to Employment	- -	
		Perceived Change in Quality of Place & Change in Local Activity	-	Doing nothing will not contribute to changes in quality of place or local activity. Moreover, with growing congestion and associated negative air quality issues, it is likely that there will be some minor impacts to these elements.
	Make the Transport System Safer and More Secure	Change in Accidents	0	Without intervention there is no opportunity to encourage people away from private vehicles, there would be no change to vehicle km and therefore no change to accidents.
		Changes in Perceived / Actual Security	0	Doing nothing will make no difference to perceptions or actual security compared to current conditions
Economic		Value for Money		Doing nothing has no associated risk
Financial		Affordability		Doing nothing has no associated risk
Commercial and Management		Technical Feasibility		Doing nothing has no associated risk
		Powers and Consent		Doing nothing has no associated risk
		Public and Stakeholder Acceptability		Doing nothing may result in worsening conditions which may not be acceptable to local residents. There may be some risk associated with this.
		Operation		Doing nothing has no associated risk

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