4.4.3 Appraisal Data Sources

The high-level appraisal made use of the following available data sources:

- Observed traffic information to determine tram, bus, and general traffic volumes. Supplemented by traffic model information if no direct traffic count was available.
- Less readily available, observed traffic information to determine cycle and pedestrian volumes. Supplemented by perceived key desire lines.
- Shop and crossing locations/types throughout Edinburgh to help determine local centres and existing crossing facilities.
- Known Air Quality Management Areas (AQMA) and key environment/heritage receptors to establish impacts on the surrounding environment.
- Scottish Index of Multiple Deprivation (SIMD) to understand the communities most likely using the corridors.
- Edinburgh's Local Development Plan (LDP) and Action Programme (LDPAP) which identifies areas for future development and the developer or council led infrastructure needed to support these, and a list of proposed infrastructure projects to identify where and what type of developments and major network changes are forecast for Edinburgh.
- Proposals for West Edinburgh, Granton, and the City Plan 2030 to understand the impact of new developments.

Where appropriate, the information listed above and used in this appraisal is contained in Appendix B.

4.4.4 High-Level Appraisal Summary

It is important for the corridors to demonstrate a positive contribution towards delivering against the previously defined criteria. The stronger the performance against the criteria indicates a corridor as being better suited for sustainable transport investment.

A summary of the corridor appraisal results is presented in Table 4.4 and additional details on the appraisal for each corridor are given in Appendix C. The summary of the different options uses the five-point-scale previously described in this report to compare the corridors in a consistent manner. Indicative assumptions for cost and deliverability have also been included to enable comparison.

The A8 corridor is identified as the strongest performing corridor against the criteria identified, and as such should be prioritised for investment. As described later in this chapter, there is also a strong case for delivering these improvements as a full-corridor investment.

Five other corridors have been identified as performing strongly overall against the appraisal criteria. These are the A71, A70, A7, A6095 Niddrie Mains Road and A903 Granton - Stockbridge. Some of these corridors already have design development projects underway, either for the corridor as a whole or for sections of it. The means for delivering these investment priorities will therefore differ by corridor, which again is described later in this chapter.

Table 4.4: High-Level Corridor Appraisal

Corridor / Corridor appraisal criteria	WEST				SOUTH				EAST		NORTH		
	A90	A8	A71	A70	A702	A701	A772	A7	A6095: Niddrie Mains Road	A1	A199	A903: Granton - Stock-bridge	A902: Ferry Road
Opportunity to enhance a high street or local centre	0	+2	+2	+1	+2	0	+1	+1	+2	+1	+2	+2	+1
Opportunity to improve pedestrian accessibility including overcoming severance	+2	+2	+2	+1	+2	-1	-1	-1	+1	+1	-1	+1	+1
Opportunity to deliver enhanced cycling catering for an important cycle flow	+1	+2	+2	+1	+1	+1	+1	+1	+2	+1	+2	+1	+1
Modest traffic volumes, present opportunity for reallocation of space without wider intervention	-2	-1	-1	+1	-1	+1	+2	-1	-1	-1	-1	+2	-2
Opportunity to improve public transport journey times by reducing delays / increasing reliability	+1	+2	+1	+1	+1	+2	0	+2	+2	+1	0	0	+1
Opportunity to reduce transport poverty and inequality	0	0	+2	+1	0	+1	+1	+2	+2	-1	-1	+1	+1
Opportunity to mitigate negative traffic impacts on air quality	0	+2	+1	0	0	0	0	+1	0	0	+2	0	+2
Ability of investment in the corridor to support new development and/or regeneration	0	+2	+1	0	0	+2	+1	+2	+1	+2	+2	+2	+1
Integration with objectives of existing projects	0	+2	+1	+1	+1	0	0	+2	+2	0	+1	+2	0
Impact on general traffic and likely displacement	-2	-1	0	0	0	0	0	0	-1	0	-1	0	-1
Impacts on parking and loading	0	-1	-1	0	-1	-1	-1	-1	-1	0	+2	-1	-1
Cumulative corridor score (Opportunity):	**0**	**+11**	**+10**	**+7**	**+5**	**+5**	**+4**	**+8**	**+9**	**+4**	**+7**	**+10**	**+4**
Indicative cost assumption													
Feasibility / deliverability													

Key

Indicative cost assumption	High	Medium	Low
Feasibility / deliverability	Complex	Intermediate	Feasible

4.5 Corridor Deficiencies, Opportunities and Feasibility

Preferred corridors have been further assessed in terms of:

- Deficiencies - in the current level of service for walking, wheeling, cycling and public transport
- Opportunities - for improving infrastructure (informed by the SAF space allocations in Chapter 3)
- Feasibility - of implementation, including cost

This analysis supports the need to prioritise investment in these corridors, and also helps to inform how improvement measures should be delivered on each corridor.

A8 Newbridge to Roseburn

Deficiencies:

- Drumbrae roundabout is a barrier to pedestrian, wheeling and cycling movements, and particularly impacts the safe movement of the young and the elderly accessing Corstorphine from the west.
- Corstorphine is an important local centre, but road space currently prioritises vehicles over people and place, seriously impacting the quality of the environment.

Opportunities:

- West Edinburgh development will deliver 10,000 new dwellings between Maybury and the Airport, with high non-car mode shares being encouraged. Proposals will significantly increase the number of buses on the corridor, from approximately 40 to 60 per hour, per direction. Improved bus priority is critical in helping move the large number of new residents (up to 30,000) sustainably to and from the city centre along the corridor.
- Similarly, provision of safe cycling infrastructure is key in encouraging sustainable travel from West Edinburgh, around the city. Segregated cycling infrastructure will help connect existing proposals in the west of the city with the new infrastructure in the city centre (e.g. City Centre West East Link and Roseburn to Union Canal schemes).

Feasibility:

- Construction of a new signalised junction at Drumbrae will deliver improved bus priority and pedestrian and cycling provision. Nevertheless, general traffic capacity will be reduced with some likely redistribution of traffic onto the A90 and A71 corridors.
- Place could be prioritised within Corstorphine local town centre. Elsewhere, the outline concept for the A8 corridor is similar in approach to that for A6065 Niddrie Mains Road, albeit on a larger scale. As above, the project is key to delivering the sustainable expansion of the city into West Edinburgh, and the need to cater for up to 50,000 new residents. With the right level of ambition, the scheme has the potential to be an exemplar project for the city and beyond, unlocking further investment in sustainable travel.
- No work has yet commenced on the detail of the proposals. Nevertheless, subject to funding this could start soon and, subject to funding and the Traffic Regulation Order (TRO) process, the project could be delivered in a similar timeframe to A6065 Niddrie Mains Road.

A71 Dalmahoy to Dalry

Deficiencies:

- There are notable delays to bus services at Chesser Avenue and through Gorgie.
- The 1960s dual carriageway layout of Calder Road prioritises general traffic. The lack of building frontages results in the corridor lacking urban character and impacts on the sense of place.
- Major roundabouts make cycling difficult and pedestrian routes via underpass crossings are unattractive.

Opportunities:

- There is an opportunity to reimagine Calder Road, a smaller footprint, constructed to modern design standards, which could accommodate improved walking, wheeling, and cycling infrastructure, and improved bus stops and priority.

- High Scottish Index of Multiple Deprivation (SIMD) scoring in neighbouring residential areas provide a catchment to affordable and sustainable transport options for those most in need.
- Signalised junctions would reduce severance and enable improved traffic control under the Urban Traffic Control (UTC) system.
- A reduced road footprint may provide space for new housing development and place infrastructure, including green-blue space.
- Reducing vehicle movements through Gorgie / Dalry (with the possible use of modal filters) will improve the sense of place within each local centre and reduce emissions.

Feasibility:

- Reconstruction of Calder Road will have a high cost and create significant disruption during construction. Nevertheless, some of the cost could be offset against the sale of any remaining land and / or the construction of new housing.
- A masterplan for the corridor is required to fully explore the above opportunity.
- Three corridors to the west of the city identified as performing strongly in the appraisal. It is unlikely that all three could be progressed at the same time due to significant levels of general traffic redistribution.

Given the high cost of this corridor, and the greater short-term opportunities elsewhere, it is recommended that this corridor is not prioritised for early investment along its full length. However, there is a significant opportunity to take forward a similar town centre project in Gorgie to that currently being developed in Dalry, associated with better cycling connections to and through the area, measures to reduce bus delays, and diversion of car traffic on to the West Approach Road. Furthermore, work to explore in detail a longer term design vision for the western section of the route would be worthwhile in the medium term.

A70 Balerno to Haymarket

Deficiencies:

- Between Balerno and Juniper Green, the corridor is narrow with no opportunity to provide bus lanes or segregated cycle infrastructure.
- Public transport delays are frequent on this corridor. The Bus Partnership Fund (BPF) is considering options to improve journey times through Inglis Green Road / Craiglockhart Avenue / Hutchison Terrace.
- The Travelling Safely programme has delivered segregated cycling between Gillespie Crossroads and Slateford. A combination of segregated cycling and cycling in bus lane is provided between Hutchison Terrace and Robertson Avenue. A westbound cycle lane is also provided between Ardmillan Terrace and Shandon Place. However, upgrading cycle connections along the corridor and into the Dalry and Fountainbridge projects will require careful consideration to integrate with reducing bus journey times and improving reliability.

Opportunities:

- Regional traffic volumes are relatively low, with most traffic originating within the city boundary. Therefore, potential impacts of scheme proposals on wider regional connectivity will be minor.
- The corridor is an important public transport route and has been selected on several occasions as a route to trial interventions that could help speed up bus services. Implementing this trial could inform a roll out of interventions across the city in line with Bus Priority Fund objectives.
- There is the potential to build upon the active travel plans for Dalry Road and Fountainbridge that are currently in development.

Feasibility:

- Proposals for this corridor should build upon the Travelling Safely programme which has delivered cycling improvements on the inner section of the corridor from Gillespie Crossroads.
- Prioritising the A70 corridor capitalises on investment already made or underway (BPF Travelling Safely).
- The corridor has been identified by Lothian Buses and the Council as a route to trial the delivery of faster bus services.

- Required interventions are relatively low cost and can be quickly delivered. They include Urban Traffic Control / Automatic Vehicle Location (UTC/AVL) connectivity, 7/7/7 bus lanes, and appropriate bus stop realignment.
- Roll-out is dependent on Lothian Buses completing their tracker upgrade but work could commence from mid-2024 onwards, subject to stakeholder agreement and funding availability.
- Subject to the development of a robust business case for a preferred intervention, it may be possible that proposals can be delivered as an accelerated scheme through a further BPF award.

A7 Sheriffhall to Melville Drive

Deficiencies:

- The corridor is located close to major university campuses, and the Royal Infirmary and BioQuarter. The propensity to cycle to these locations is high but the infrastructure available to do so is limited.
- Cameron Toll is a key local centre and interchange point for public transport, but facilities are poor.
- There is an opportunity for local place and walking improvements at the local shops on Dalkeith Road.

Opportunities:

- There is a commitment from the council to make early improvements to the pedestrian environment on South Bridge.
- There is an opportunity to remove intrusive through traffic ahead of proposed tram timescales to improve bus journey times and reliability, improve walking/wheeling and place conditions in the shorter term. The Cameron Toll to BioQuarter Active Travel Route will improve cycle facilities on the southern section of the corridor.
- Future tram is proposed for the A7 corridor and will include significant placemaking and active travel improvements.
- The A7 is a key regional corridor, connecting not only the southern neighbourhoods of Edinburgh but also to key towns in Midlothian. Strengthening the corridor will therefore contribute positively the regional as well as city economy.

Feasibility:

- Proposals for the A7 corridor reflect the emerging ambition to deliver future tram.
- Subject to funding, it is very unlikely that tram could be delivered before the early 2030s. Nevertheless, high level design work (supporting the Strategic Business Case) has already commenced. Track alignment design is complex and alignment requirements will need to take priority if a successful scheme is to be delivered. Other design aspects will take full cognisance of the Circulation Plan, including the need to improve Place and wider public transport, walking, wheeling, and cycling provision. While limiting abortive work, key projects can be delivered in advance of tram, including the Cameron Toll to BioQuarter Active Travel Route. The design for this has already been optimised (design changes and a revised materials specification) to minimise necessary rework and cost if a future tram is delivered.

A6095 Niddrie Mains Road

Deficiencies:

- There is significant congestion for public transport during the peaks and at weekends. The latter driven by shopping demand to/from Fort Kinnaird.
- The environment in the important Craigmillar local centre is poor.
- Conditions for cycling along the corridor are unsatisfactory, the relatively narrow mixed use main road makes cycling uncomfortable.

Opportunities:

- This corridor runs through several areas identified in SIMD's lowest 20 and 40 percentiles. Significant efforts should be made to reduce transport inequalities and to improve health, safety and wellbeing, equality, and inclusion.

- Expanding on the above, this corridor provides key links between SIMD lowest 20% and 40% to regeneration and new development in the Queen Margaret University area.
- Along much of the corridor there is space available to allow a combination of more focus on place in the local centre, introduction of bus priority, and protected cycling.
- The quality of the environment at Craigmillar local centre is poor and currently prioritises vehicles over people and place. A project to improve Niddrie Mains Road has already commenced, with proposals seeking to improve walking, wheeling, and cycling opportunities while also improving public transport reliability.

Feasibility:

- The Niddrie Mains Road project is already in the early stages of development.
- The scheme seeks to improve Place within Craigmillar local centre, while delivering improved bus priority on the approaches to Duddingston Road West and The Wisp junctions. Both segregated cycling and new bus lanes are proposed with upgrades to footways to ensure appropriate space is retained for pedestrians. Work also considers changed pedestrian desire lines and the need for revised crossing opportunities as a result of new development across Craigmillar and Greendykes.

A199 Portobello to Granton

Deficiencies:

- Portobello's local centre suffers from poor quality pedestrian facilities and place environment.
- There is limited bus service between Leith and Portobello on this corridor. Significant future need anticipated to cater for development plans on the corridor.
- Poor conditions for cycling on Seafield Road and Salamander Place.

Opportunities:

- It is recognised that the A199 is and will remain an important traffic corridor in north Edinburgh.
- Major developments are proposed at Granton, Leith and Seafield, which are all linked by this route.
- Although bus provision is low on the eastern part of the corridor it will be essential to support new development at Seafield. The route is also key in the delivery of new orbital bus connectivity, as outlined in City Plan 2030.
- Some reallocation of road space is possible:
    - Reducing vehicle movements through Portobello (with the possible use of modal filters) would improve the sense of place within each local centre and reduce emissions.
    - Proposals have been developed for segregated cycling from Lindsay Road to Seafield, and there is space for protected cycle tracks on Seafield Road.
    - A connection eastward to Musselburgh integrates well with East Lothian Council active travel proposals.

Feasibility:

- Work is underway to develop proposals for Portobello High Street, which are in the early stages of development.
- Some sections of the corridor are including under existing projects (e.g. Leith Connections Phase 2).

A903: Granton – Stockbridge

Deficiencies:

- Vehicle movements and parking are prioritised within Stockbridge, over Place, pedestrians, walking and wheeling.
- Continuous kerbside parking within Stockbridge limits pedestrian crossing opportunities and dominates the environment.

- There is no existing cycle infrastructure on this corridor.

Opportunities:

- There is an opportunity to reduce vehicle dominance within Stockbridge, prioritising, pedestrians, wheeling and cycling.
- A comprehensive redesign of Raeburn Place could be considered, to prioritise place functions and improve the walking environment. Measures to reduce through traffic could be considered though alternative routes are limited.
- Removing traffic would significantly increase the walking and place functionality of the corridor. The streetscape could be improved, building upon the high-quality surrounding environment and character uses (e.g. the Stockbridge Sunday market).
- There is space for protected cycling on East Fettes Avenue, and little to no on street parking or loading for most of its length.

Feasibility:

- A potential closure on Raeburn Place could be trialled at weekends initially, when traffic volumes are lower, with suitable alternatives for general traffic to the west (Queensferry Road/Orchard Brae) and to the east (Inverleith Row).
- Trial restrictions within Stockbridge could be delivered relatively quickly, subject to appropriate levels of consultation and engagement. Following a similar approach to the successful Summer Streets programme in the city centre, Stockbridge had a traffic free day on Raeburn Place in 2019. Such a trial could be repeated, building on the successful farmers market and other local initiatives.

4.6 Summary

The recommendation to prioritise the preferred corridors is informed by the following factors:

- the opportunity for improvement
- feasibility and affordability of delivery
- geography, and
- work already in progress, due to identification in ongoing programmes

It is recommended that the A8 corridor is prioritised as a full end-to-end corridor scheme. This corridor performs most strongly against the assessment criteria and will provide significant benefits along the full corridor, due to:

- the significant development in west Edinburgh and the need to move large numbers of people sustainably along this corridor
- the opportunity to enhance bus priority along the full length of this corridor
- the opportunity to provide a key cycling connection to link future development with recently installed cycling infrastructure on the corridor, and take advantage of the relatively low-gradient conditions on the corridor

Five other corridors recommended for priority sustainable transport investment: A70, A7, A6095 Niddrie Mains Road, A903 Granton – Stockbridge and A199 Granton to Portobello. These corridors are shown in Figure 4.3. It is likely that these corridors will be delivered by a combination of existing planned projects on the corridors, and localised improvements to deliver key benefits early (for example via BPF).

In relation to the A71 corridor, different approaches are recommended for the inner and outer sections as discussed above. To maximise potential benefits, across all users and modes, it is recommended that a masterplan for the future of Calder Road should be developed. In the meantime, it is recommended that local centre improvements, similar to those currently under development in Dalry, should be taken forward for Gorgie, delivering benefits for place, walking/wheeling, cycling and public transport.

Figure 4.4 illustrates how investment in priority corridors would link to existing proposals for the city centre, helping deliver an improved core walking, wheeling, and cycling network across the city. Figure 4.4. shows the preferred corridors alongside ongoing projects (note: to be reviewed).

Figure 4.3: High-level Appraisal Priority Corridor Outcomes: A8, A70, A7, A6095 Niddrie Mains Road and A903 Granton- Stockbridge

Figure 4.5: Prioritised Corridors and Projects that will Interact with Delivery

5 City Centre

5.1 Introduction

The city centre is the biggest attractor of trips in Edinburgh and has the densest concentration of users across all modes. Ensuring the city centre is the purpose for trips and minimising its role as a short cut for general traffic to another destination ('to not through') is critical for reducing private vehicle kilometres and helping to achieve climate change targets. Removing unnecessary trips from the city centre will also reduce vehicle dominance on Edinburgh's streets, making it more place and people oriented.

In addition to climate change targets and ambitions to put people first, there are several planned projects competing for space in the city centre. There is a need to understand how these projects impact each other and assess benefits to all users holistically across the city centre rather than potential siloed thinking on individual project's objectives. Assessing options for the city centre should lead to the harmonisation of projects and establish priorities.

5.2 Edinburgh City Centre Transformation (ECCT)

Developed in 2019, the Edinburgh City Centre Transformation (ECCT) strategy outlined a programme to enhance public spaces to better support life in the city, by prioritising movement via walking/wheeling, cycling, bus, and tram in central streets while improving access and opportunity for all.

ECCT vision: '*An exceptional city centre that is for all, a place for people to live, work, visit and play. A place that is for the future, enriched by the legacy of the past.*'

Over a ten year period, the strategy aims to deliver:

- A walkable city centre right at the heart of the World Heritage Site, enabled by a pedestrian priority zone and a network of connected, high-quality, car-free streets
- High-quality streets and public spaces where improvements allow for people to be inspired by the city's unique heritage while they interact, relax or play
- A connected network across the city centre of new segregated and safe cycle routes to link communities and destinations, including the provision of a new walking and cycling bridge connecting the Old Town and the New Town
- Enhanced bus priority measures through the city centre, with improved traffic signal priority and rationalisation of bus stops to reduce bus congestion on key streets
- The creation of public transport interchanges at key nodes of the city centre, to improve connectivity between rail, bus, tram and the new hopper service
- An accessible city centre where people, especially those with mobility restrictions, can overcome the city's steep hills and explore its different street levels through lifts or other forms of vertical connections at key points in the city
- A reallocation of space in the city centre to reduce the impact of vehicles and free up space for other users, through a significant reduction in on-street parking with priority given to residents and blue badge parking where appropriate

The strategy is accompanied by a delivery plan which recommends that the following interventions are rolled out across the city centre:

1-5 Years (from 2019)

- Development of an integrated operations and management plan for the city centre
- Working with transport providers to develop a public transport optimisation plan for the city centre
- Implementation of car free streets in Old Town as identified in the Strategy
- Closure of Waverley Bridge in conjunction with Waverley Masterplan
- Implementation of City Centre West to East Link project

- Implementation of the Meadows to George Street scheme
- Implementation of the George Street and First New Town project
- Monitoring of early operational changes and trials through short term initiatives like Open Street and Festival Summer Streets programmes
- Measures to improve city centre public realm, like seating, lighting, planters, etc.
- Trial of city centre public transport loop hopper bus

6-10 Years (from 2019)

- Permanent public realm improvements to key streets identified in the Strategy
- Implementation of road space reallocation on Lothian Road (over 3 phases)
- A new cycling and walking bridge linking Old Town and New Town
- Investigate business case and alignment for a new tram route
- Integrated ticketing and timetabling across all public transport
- Delivery of city centre transport interchanges
- Implementation of the Princes Street and North Bridge public realm

5.3 Why Take the City Centre Transformation Further?

Conditions for pedestrians on many city centre streets remain unacceptably poor and this was reflected in recent consultation that showed significant support for measures to address this issue (see Chapter 2). The adopted ECCT proposals seek to make big improvements in the centre, but would still leave traffic passing through its core, most notably on the Bridges corridor, the Cowgate and Canongate. On these streets pedestrian numbers are such that for large parts of the year there is crowding and pedestrian congestion.

Following completion of the ECCT strategy, Edinburgh declared a Climate Emergency in 2019 and subsequently set an ambitious target for the city to achieve net zero carbon for all city transport by 2030, with an associated target to reduce private car kilometres driven by 30% by the same year.

For the city to achieve these targets as a whole, the city centre will play a significant part in managing citywide demand. For the city to achieve these targets in just six years' time, the city centre will require a significant reduction in general traffic in the short term. Therefore, there is a strong case to go further than the current ECCT proposals to expedite the changes needed to the city centre transport network and meet the Council's policy objectives.

The current ECCT proposals, once delivered, are expected to bring about a range of economic, wellbeing and wider benefits for the city centre and all those who use its streets and places. As documented in the ECCT strategy, over a ten year period these benefits include:

- £110 million of economic benefits, based on the additional uptake of walking, wheeling and cycling, additional spending generated in the city centre and reduced costs associated with road accidents with less traffic in the city centre
- £310 million of wellbeing benefits, based on decreased traffic congestion and air pollution, a greater sense of local community belonging and increased interaction with green spaces
- Additional, as-yet-unquantified benefits, based on ease of movement, improved health, reduced flood risk and enhanced amenity value
- Wider economic benefits associated with related projects, including the low emission zone and city regeneration projects, that will be enhanced by ECCT implementation

More ambitious plans for the city centre's streets would therefore lead to a strengthening of these benefits, both in terms of improved place value and the monetised value of the benefits contributing to the city centre's economy. This is particularly the case for health, wellbeing and related benefits which would increase if traffic was reduced further in the city centre and space reallocated to place and sustainable travel modes.

As part of Our Future Streets, options have been developed to examine how ECCT proposals could be developed further, where additional benefits would arise, and what resulting operational impacts would need to be managed.

These have been informed by the learning from other cities (see Chapter 2) as well as Edinburgh's own experience of temporary street closures through the Open Streets and Summer Streets programme, as well as the early closures of Waverley Bridge, Cockburn Street and Victoria Street that were implemented during the Travelling Safely programme of 2020/2021 and remain closed as of early 2024.

5.4 Option Development

For the purposes of this assessment, the city centre has been defined as the current Low Emissions Zone (LEZ) boundary. The development of options within this boundary has examined ways in which the city centre's streets can be transformed to meet the policy objectives and benefits described above, and to understand the operational issues of doing so.

The overall aim is to enhance the place value of the city centre and strengthen the size, quality and ease-of-understanding of the Pedestrian Priority Zone (PPZ) that was defined by ECCT, while supporting a reduction in private vehicle trips across the city centre. In doing so, the options examine existing and planned street improvement projects, but identify ways in which these projects can be cast within holistic and intuitive plans for all users of the city centre's streets, rather than at a project-specific level.

The development of the options outlined below should be considered as concepts. Proposals have been checked at a high-level to ensure proposals do not have obvious reasons why they could not be implemented. However, further feasibility studies will be required before exact details of interventions, including changes to routes, can be confirmed. For example, all interventions that impose general traffic restrictions will need to be assessed in terms of accessibility for mobility impaired users and specific times of operation for potential delivery windows.

For clarity Figure 5.1 below outlines the LEZ and PEZ boundaries in Edinburgh City Centre.

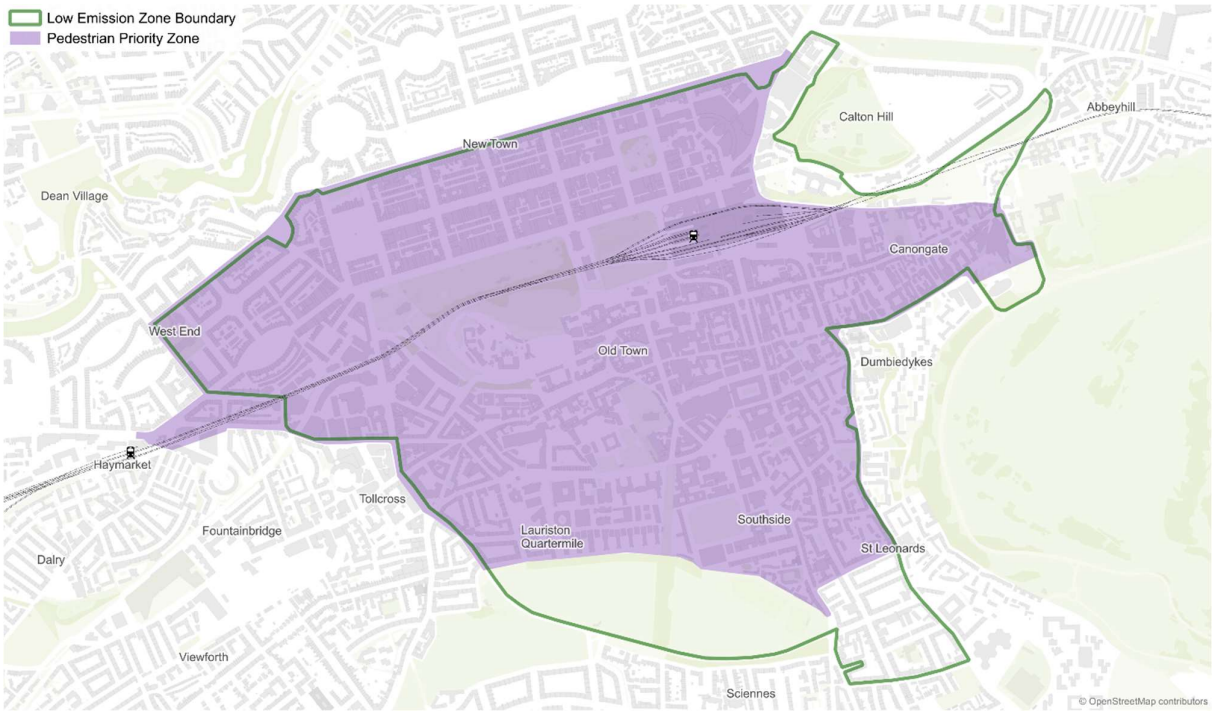


Figure 5.1: LEZ and PEZ Boundaries

5.4.1 Option A

Option A reflects the city centre changes proposed as part of the ECCT strategy. This option is the basis of the PPZ, within which those walking, wheeling, and cycling will have priority through a combination of car-free and traffic-calmed streets, and those driving vehicles treated as 'guests' for the movements that need to be made.

Option 1 has established this by changing access to the Old Town and First New Town areas, where it is only possible for private vehicles to travel between these areas on boundary streets (in this case Lothian Road and North Bridge). To achieve this, a series of traffic filters are proposed, to break the link for through-traffic movements but facilitate local access on residents and servicing on the key streets within each area. Those walking, wheeling, cycling, and using public transport will have the most direct routes across and within the city centre, compared with private cars.

This option is set out in Figure 5.2 below. Notable general traffic filtering/managed access includes:

- Waverley Bridge closure improves the quality of this public space and simplifies the operation of Waverley Bridge junction, improving bus and tram reliability on Princes Street
- General traffic closures at Victoria Street, Cockburn Street and Johnston Terrace enhance the quality of these historic places and improve the level of service for walking, wheeling, and cycling
- The Meadows to George Street scheme enhances the place setting of this route, delivers new segregated cycling infrastructure and improves public transport reliability
- The George Street project improves the quality of Place, walking and cycling

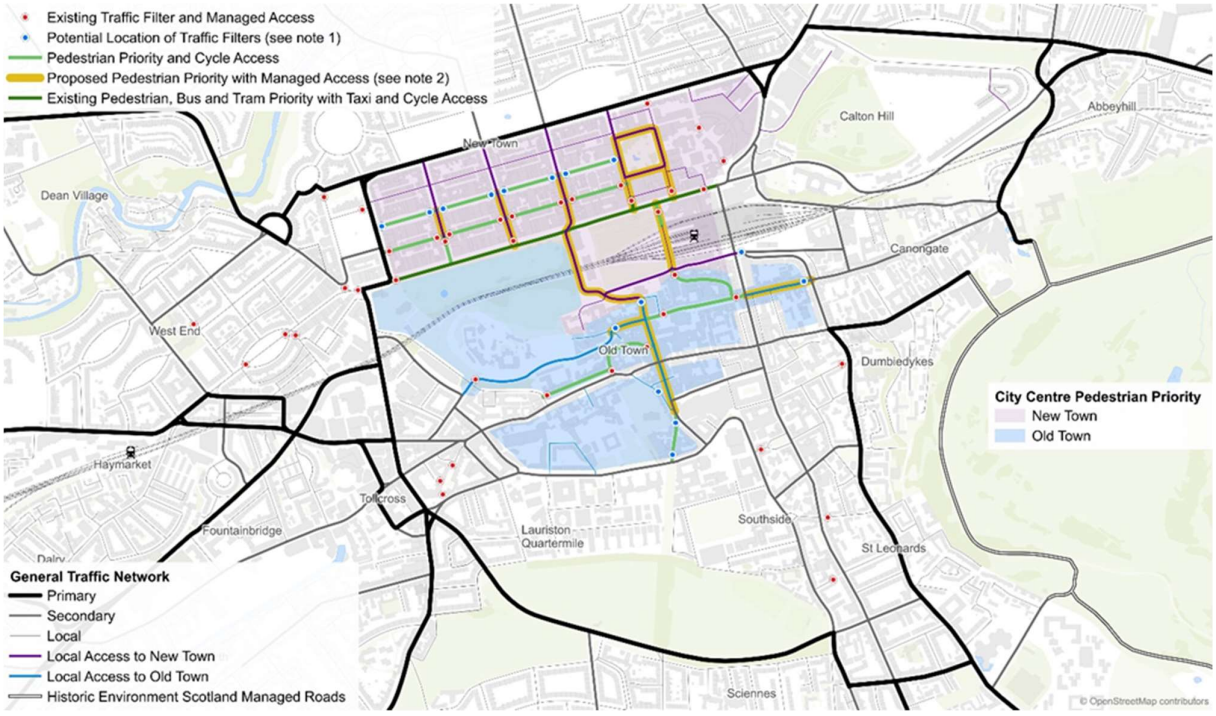


Figure 5.2: Option A

1: Traffic filter locations are indicative. They represent streets that would be subject to restrictions rather than specific locations, which would be subject to further detailed work if the relevant option is approved

2. Categories of vehicle and times of day subject to further detailed work

5.4.2 Option B

Option B builds on the proposals of Option A by strengthening the eastern boundary of the PPZ and the LEZ, seeking to improve on the poor place function and poor conditions for walking and bus movements on this side of the city centre, particularly on the Bridges corridor. The option introduces further traffic restrictions between the Old Town and the New Town and East End areas to the north. In doing so it requires private vehicle movements between these areas to be made further east on the Pleasance corridor (or on Lothian Road to the west, as per option 1), which will create further opportunities on the Bridges corridor and its connecting streets to prioritise sustainable travel connections, ease of pedestrian movement, and place-based enhancements on a wider scale.

Travel across the city centre between Old Town, New Town and East End areas will therefore be prioritised for those walking, wheeling, and cycling and using public transport. Key intervention are:

- Bridges Corridor – no through-traffic movements at North Bridge and East End junction, with new tram connection and cycling connections to compliment the Meadows to George Street corridor already established in Option A
- Lothian Road – further space reallocation on Lothian Road to create space for protected cycle tracks and associated urban realm, to compliment the connections established on parallel corridors

This option is set out in Figure 5.3 below, showing how the measures will expand the area of traffic-restricted streets to the eastern side of the New Town and East End area.

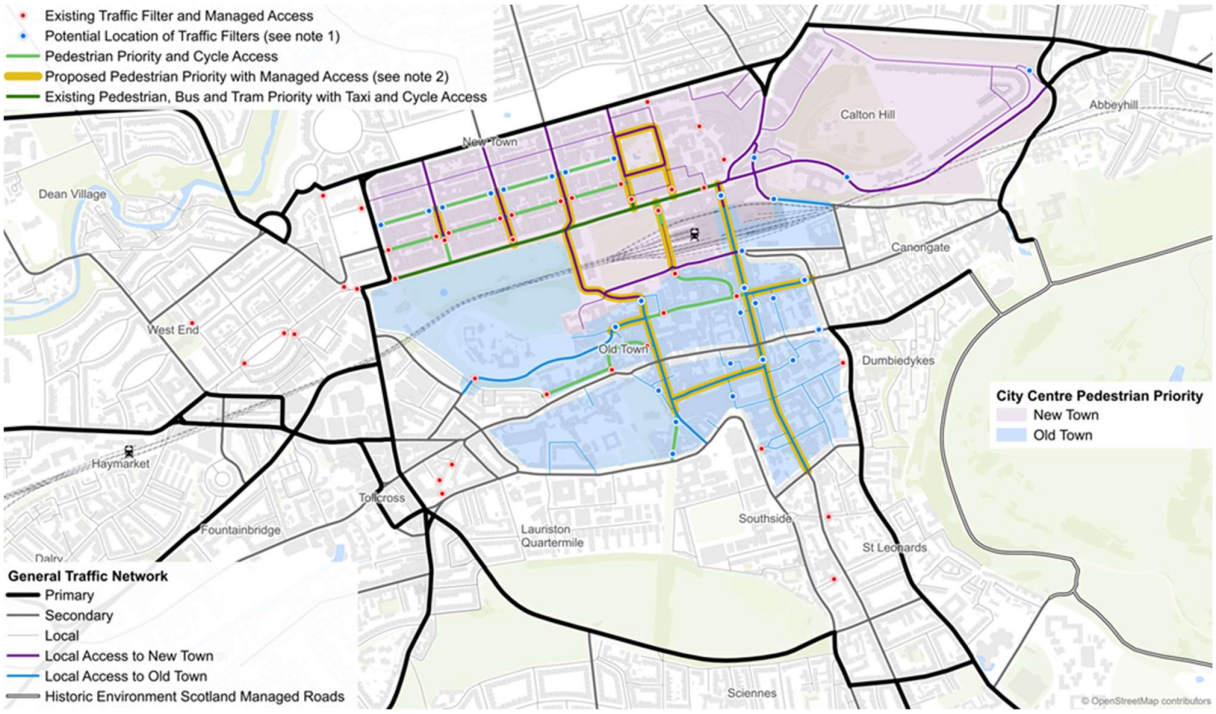


Figure 5.3: Option B

1: Traffic filter locations are indicative. They represent streets that would be subject to restrictions rather than specific locations, which would be subject to further detailed work if the relevant option is approved

2. Categories of vehicle and times of day subject to further detailed work

Development of the business case for future tram is currently in progress. However, work undertaken to date indicates a preference for a route to the south via the Bridges corridor. Construction of tram would be a major step change in public transport provision and would provide a fast and efficient alternative to the car. Tram operation would require a significant reduction in traffic volumes on the Bridges corridor. At this stage, a bus gate/junction layout changes would need to be considered for North Bridge that would restrict through

traffic. Local access would be maintained throughout the day with a connection maintained at Chambers Street.

Ahead of tram delivery timescales, bus journey times and reliability could be improved by introducing filtering and managing access as proposed.

Tram concept designs allow for improved walking/wheeling and place facilities on the Bridges corridor, which suffers from narrow footways and poor public realm. Safer cycling features would be provided; however, segregated cycling would be provided on parallel routes including Buccleuch Street and the Pleasance.

Local and delivery access north of Chambers Street would be based on time of day restrictions and to be developed as part of the next stages of the City Centre Operations Plan. Walking/wheeling, cycling and bus would be prioritised. Car parking would be restricted on North Bridge or South Bridge and considerations would need to be made for those with mobility issues.

The Lothian Road project is also under development and aims to transform the street, significantly improving its streetscape and place function, improving conditions for walking/wheeling and implementing segregated cycling, whilst protecting travelling conditions for buses. Traffic flows would remain significant but re-allocation of part of the street space to place, walking/wheeling and cycling would significantly reduce vehicle dominance.

5.4.3 Option C

Option C proposes a further significant expansion of the PPZ area, forming a coherent and easily understood zone bounded by Lothian Road, Lauriston Place, The Pleasance/Holyrood Park, and Queen Street. It does this by further restricting through traffic from the Old Town, with through traffic removed from several key streets including Cowgate and Canongate. Option C is set out in Figure 5.3 and proposes the following additional measures:

- Additional space and priority given to those walking, wheeling, and cycling on the Cowgate/Grassmarket corridor by introducing traffic restrictions in both directions on the Cowgate. Local access would be retained on the Grassmarket throughout the day. Local access would also be maintained on the Cowgate with the existing roundabout at the foot of Candlemaker Row enabling a viable diversion for traffic to U-turn
- Extension of pedestrian priority on the Royal Mile by closing the Canongate to general traffic extending the network of traffic-free or traffic-limited streets introduced in Option A to provide an improved pedestrian link on this key route with the highest place function
- Removing the through route between New Street/East Market Street and Jeffrey Street/Canongate, while maintaining access to Waverley Station. This would limit throughput on Calton Road from Abbeyhill to some extent
- Potential East and West End bus termini to reduce vehicle dominance on Princes Street, as a step towards the wider transport interchanges envisaged by ECCT

The area of influence where general traffic is restricted from passing through the city centre is shown in Figure 5.4 below. As with the previous options, it is intended that within this area, general traffic will be able to enter these areas (deliveries, servicing, etc.) but cannot pass through, and place, walking/wheeling, cycling, and bus are prioritised.

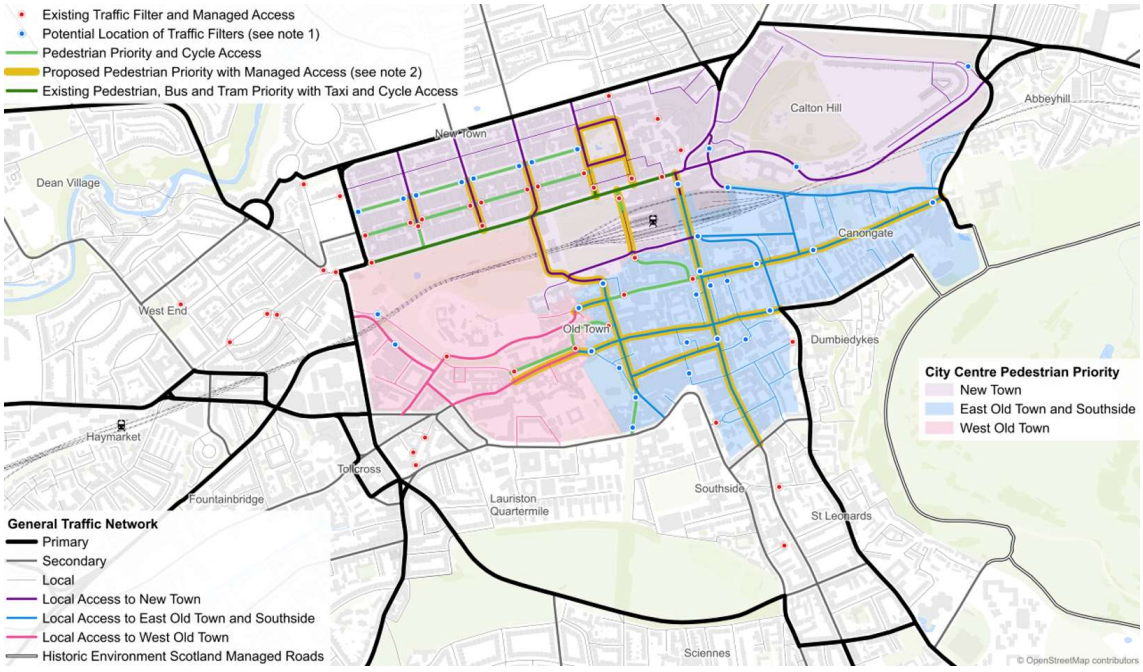


Figure 5.4: Option C

1: Traffic filter locations are indicative. They represent streets that would be subject to restrictions rather than specific locations, which would be subject to further detailed work if the relevant option is approved

2. Categories of vehicle and times of day subject to further detailed work

The Cowgate and Grassmarket are densely populated areas and vibrant tourist hotspots in the centre of the Old Town. Removing unnecessary traffic from these streets would allow the walking and place elements to flourish. Furthermore, footways widths on the Cowgate are extremely narrow and pedestrian safety is a key concern. Removing through traffic from this street would enable improved pedestrian and place provision.

Expansion of the Royal Mile pedestrian zone into Canongate would deliver improved place and walking/wheeling opportunities in key residential and tourist areas that experience very high footfall. It would also address in part some of the potential severance impacts noted in the ECCT Integrated Impact Assessment, which noted the reduced public transport accessibility for residents to the east and south of this area.

A closure on Calton Road at Leith Street would help facilitate the place, walking, cycling and public transport ambitions on the Bridges corridor and Canongate. It would prevent through traffic while maintaining access to the rear of Waverley Station and the New Street car park from Abbeyhill.

Princes Street is dominated by buses, significantly reducing the quality of the environment in what is one of the most iconic streets in the city. Terminating some services from the west at Castle Terrace and services from the east at Waterloo Place would reduce the number of buses on Princes Street.

5.4.4 Option D

This option proposes further expanding the level of intervention to the south and west from Option C, further increasing the area of the PPZ and associated urban realm, walking, and cycling improvements. The key additional measure is:

- Removal of through-traffic from Lauriston Place to facilitate safer/easier connections for those walking, wheeling, and cycling between the Old Town and the Meadows. These measures have the potential to simplify traffic operation at Tollcross and may therefore facilitate space reallocation on Lothian Road.

Option D traffic filtering/managed access are illustrated in Figure 5.5. With a few exceptions, through general traffic is restricted on the majority of city centre streets and place, walking, cycling and bus are prioritised.

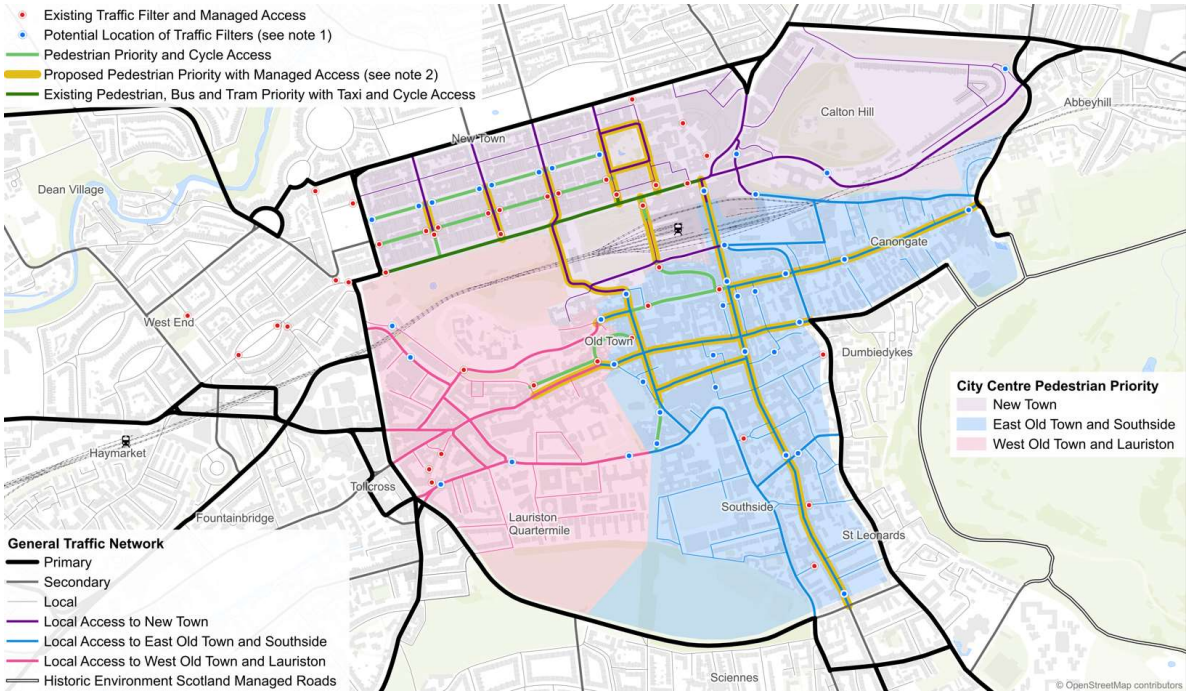


Figure 5.5: Option D

1: Traffic filter locations are indicative. They represent streets that would be subject to restrictions rather than specific locations, which would be subject to further detailed work if the relevant option is approved

2. Categories of vehicle and times of day subject to further detailed work

The potential to extend the area of influence of traffic restrictions further south would allow an improved sense of place on the Lauriston Place corridor and the connections southward to the Meadows.

The removal of through traffic from Lauriston Place would also have the potential to simplify the operation of the Tollcross junction. However, the Lauriston Place arm of the junction would still require to be accessed by local traffic movements and bus movements, meaning that the simplification of junction operation would be limited to reallocation of time to other movements rather than removal of this arm altogether (along with efficiencies that could result from tightening the junction geometry).

5.5 Options Appraisal

5.5.1 Method of Assessment

The city centre options have been assessed according to five main themes which relate to existing policy mandates and principles/objectives developed previously as part of ECCT and CMP. Each theme and linkages to ECCT and CMP are shown in Table 5.1 below:

Table 5.1: City Centre Assessment Themes

CMP theme	Objective	Related ECCT principle	Related CMP objective
Improved place value	1. Maximise opportunities (through Streetspace Allocation Framework) to improve the place value of streets	The unique character of Edinburgh's build and natural environment will be celebrated and enhanced	Place - reduce vehicular dominance and improve the quality of our streets
Sustainable mode share	2. Support and prioritise people walking, wheeling, cycling, and using public transport	Priority will be given to people travelling on foot, by bicycle and by public transport	People – encourage behaviour change to support the use of sustainable travel modes Movement - Improve sustainable travel choices for all travelling into, out of and across the city
Reduce through car trips	3. Reduce number of private car trips across the city centre	A better environment will be created for city centre residents by enhancing local centres and reducing traffic within the city centre, improving air quality	Movement - reduce harmful emissions from road transport Place - Reduce the need to travel and distances travelled
Operational requirements	4. Impacts of displaced traffic	Inclusive design and management of our streets and places will be embedded across all actions	Movement - maximise the efficiency of our streets to better move people and goods
	5. Ensure that operational requirements of residents, businesses and street users are met		

The primary aim of each city centre option is to increasingly prioritise the place value of streets and encourage walking, wheeling, cycling and public transport use, reducing vehicle dominance to improve the quality of experience for people in the city centre. It is also critical that options can work for all users including city centre residents and businesses, enabling the city centre to thrive as a place to live and work.

The appraisal of the options should be considered high-level with options themselves classed as concepts. Although efforts have been made to provide sufficient information on proposals, benefits and impacts, there will be several elements that will require further work before exact details of interventions can be confirmed. For example, an in-depth survey of servicing requirements for residents and businesses would be needed before specific times for delivery windows could be stated. Similarly, the locations of traffic filters/managed access will emerge as part of the detailed design process.

A description of the anticipated performance of each option against each objective has been outlined in the following sections.

5.5.2 Transport Modelling

Supporting transport modelling has been undertaken to identify potential impacts on public transport journey times and general traffic. Modelling has also helped inform each option's ability to meet national climate change targets, and the Council's 30% target to reduce car kilometres driven by 2030. Furthermore, modelling has helped assess traffic redistribution impacts, highlighting potential unintended consequences and informing mitigation measures.

All options have been tested using the council's Strategic and Microsimulation models to understand wider and local impacts. Analysis has considered both current traffic levels and a 30% reduction in demand, reflecting Edinburgh's car kilometre reduction targets. Additional sensitivity testing has been undertaken to assess the implications of potential Holyrood Park restrictions.

Assumptions and Uncertainty

The Council's model suite was originally developed and is currently maintained by Jacobs. It includes a strategic VISUM model and associated VISSIM microsimulation models covering the city centre and key arterial corridors. Originally developed during 2005-8 to support the tram business case, the models have been updated with traffic survey and planning data since. The current model base year is 2016 with a forecast year of 2032.

The strategic model is a 4-stage incremental model, including highway and bus, rail, and tram public transport modes.

The accompanying microsimulation models have been successfully applied on a number of projects throughout the city centre including: delivery of the original tram scheme, Trams to Newhaven, and North Bridge and York Place closures. While the model suite has been successfully applied across a range of projects, it does have limitations. Models do not include walking, wheeling, and cycling modes, and instead focus on public transport and general traffic movements only.

Although mode change between general traffic and bus is captured, potential traffic evaporation effects cannot be estimated as the total number of modelled trips in each base and forecast year is constant. The models predominantly assess potential traffic displacement and rerouting, as well as the impacts of this on travel times and queuing.

Traffic evaporation is potentially in the order of 10% of existing trips (see inset below). Therefore, other policy interventions would be required to deliver a 30% reduction as per the car kilometre target set by the Council, potentially including further parking restrictions, a workplace parking levy and/or road user charging. Given this, careful consideration should be given to the implementation of the preferred option to minimise the impact on public transport. Early messaging and guidance to drivers and other users can help offset the immediate impact of major network changes. Frequently, it is the first weeks of a scheme that have the greatest negative impact on congestion - and there is the potential for the transport model to significantly underestimate this. In the medium term, impacts settle to an as modelled condition (or better) as traffic evaporation and behaviour change takes place.

Finally, the need for good quality traffic survey is important in improving the reliability and accuracy of modelling exercises undertaken. Actual data provides the best indication of policy/project effectiveness and it is recommended that a robust data collection and analysis strategy accompanies proposals to support monitoring/evaluation and complement ongoing modelling.

Based on 2016 observed data and subsequent 2019 validation, which helped develop Edinburgh's suite of traffic models, there are approximately 17,000 vehicle trips (car, LGV and HGV) per hour in the city centre during the peaks, with approximately 30% of these trips not having an origin or destination within the city centre study area. Although this figure aligns with Edinburgh's traffic reduction target, discouraging these trips from the city centre is anticipated to increase kilometres travelled as vehicles navigate around the city centre. A citywide 30% reduction in general traffic would remove approximately 13% of strategic trips from Edinburgh City Centre. At a high-level and including a margin of error and optimism bias, this suggests a maximum figure possible in the city centre for 'traffic evaporation' of around 10%. The remaining traffic reduction required to meet Edinburgh's 30% target for the city centre will have to be delivered through mode shift to public transport and walking, wheeling and cycling. Assuming a typical car occupancy rate of 1.3 people per vehicle, 20% of 17,000 trips would equate to around 1,800 people per hour. To put this volume of people into context, this would fill 23 double decker buses per hour. This highlights that future options for Edinburgh's city centre must discourage unnecessary trips but also provide sufficient high quality public transport and walking, wheeling and cycling provision if the 30% vehicle kilometre target is to be met.

5.5.3 Impacts on General Traffic

All four city centre options were modelled strategically to determine wider impacts and at a microsimulation level to understand localised impacts. The options were modelled using current traffic demands and assuming a 30% reduction in trips through the city centre has been achieved, in line with Edinburgh's targets.

This section of the report outlines the strategic modelling undertaken, which focuses on potential traffic displacement of the four options and provides a summary of the journey time impacts modelled using the microsimulation models. A detailed summary of the general traffic journey time impacts is given in Appendix D.

Option A

A number of interventions outlined under this option are already in place. The key exceptions are the:

- Meadows to George Street, and
- George Street and First New Town

The former restricts general traffic at Bank Street, George Street and Market Street. The Market Street closure to general traffic is located under North Bridge but access to Waverley Station is maintained: from the north via The Mound, from the south via Jeffrey Street, and from the east via Calton Road.

Local traffic would be removed from George Street but, otherwise, the street has limited strategic function for through general traffic.

Proposed street closures would result in a redistribution of traffic and forecast changes are shown in Figure 5.6. Traffic is removed from The Mound and George Street (Green) but is displaced primarily onto Lothian Road / Queen Street but also The Bridges corridor and Broughton Street (Red).

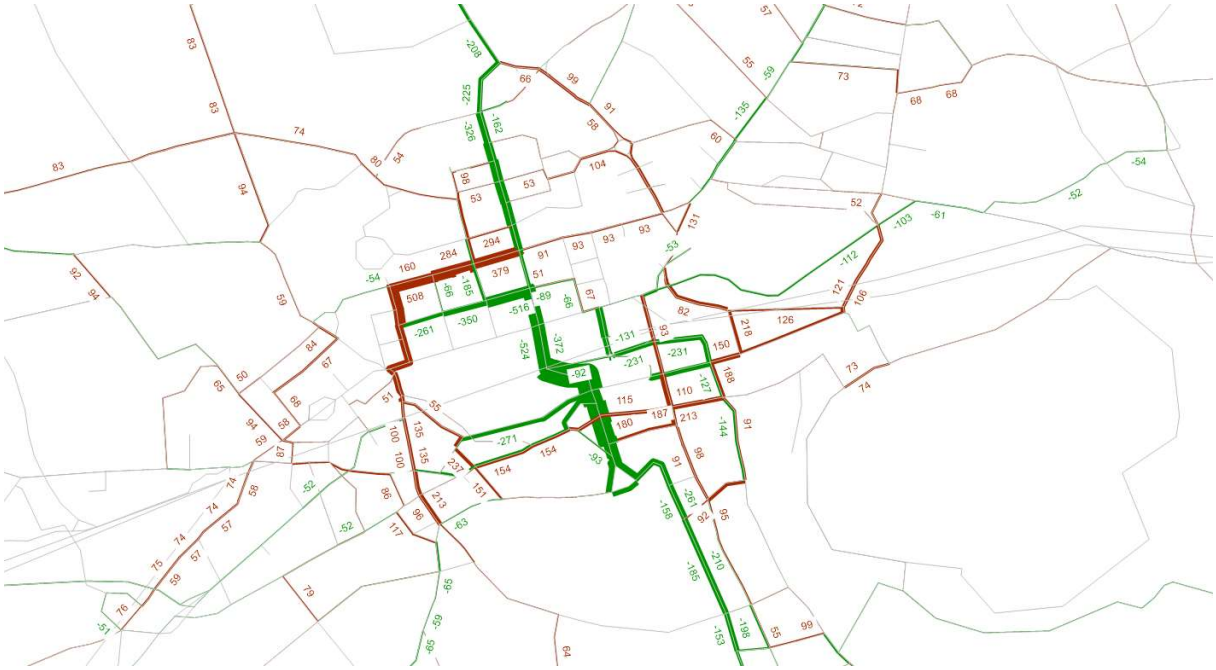


Figure 5.6: Option 1 Traffic Redistribution (Compared with 2016 Baseline) AM 07:00-09:00

Modelling and analysis, acknowledging its uncertainties, has identified the following key outcomes:

- Traffic volumes on George Street and Market Street are relatively low and therefore closing these streets to through traffic does not have a significant impact on the surrounding network
- Approximately 400 vehicles in each direction currently travel on Bank Street during peak hours
- The parallel north/south corridors of Lothian Road and The Bridges can accommodate displaced traffic
- Traffic is also displaced onto The Pleasance/Abbeyhill which would require adjustments to traffic signals throughout the corridor in order to manage the changing traffic demands and patterns
- Minor re-routing of traffic through the second New Town. No through route on the Mound corridor results in traffic travelling on Broughton Street instead of Dundas Street
- Further detailed modelling and an accompanying study is required to review traffic signal performance in order to mitigate congestion impacts throughout the city centre, particularly on the boundary streets

In summary, Option A has a modest impact on city centre streets and redistributed traffic can be accommodated on adjacent streets. Nevertheless, the changes proposed are not sufficiently bold to deliver against wider objectives to reduce through traffic and vehicle trips in the city centre.

Option B

This option assumes The Bridges corridor is closed to general traffic between Princes Street and Hope Park Terrace to prioritise bus and potentially future tram. Local traffic, deliveries and servicing would still be permitted throughout the day on the southern section of the corridor. North Bridge would be a public transport, walking/wheeling and cycling route north of High Street.

The Lothian Road project is still in the development stage but the potential to reduce the number of general traffic lanes to three (across both directions) at some locations is being explored. The purpose of removing traffic lanes is for space to be reallocated to cycles, walking/wheeling, and place.

Figure 5.7 shows the redistribution of traffic resulting from the Option B closures.

Figure 5.7: Option 2 Traffic Redistribution (Compared with 2016 Baseline) AM 07:00-09:00

Modelling and analysis, acknowledging its assumptions and uncertainties, has identified the following key outcomes:

- The Bridges closure distributes an additional 400-500 vehicles per hour in both directions onto the other north/south corridors (Lothian Road and Pleasance/Abbeyhill)
- Segregated cycling is feasible on Lothian Road but delivering the full project ambition is extremely challenging if delivered in combination with Meadows to George Street and The Bridges schemes simultaneously. The restrictions associated with these two schemes increase Lothian Road demand by approximately 50%, based on current traffic levels.
- Option B is anticipated to require a 20-30% reduction in through traffic volumes
- The following infrastructure measures are required to enable this option:
  - Two lanes in each direction on Lothian Road, north of Western Approach Road
  - Minimum two lanes on approach to all other junctions on Lothian Road
  - Restricting the right turn from Lothian Road into Castle Terrace
- Traffic is anticipated to increase on Holyrood Road-Pleasance-West Richmond Street-Potterrow-Lauriston Place

- Operational and signal changes would be required across the city centre, The Pleasance / Holyrood Road and Abbey Mount are key hotspot locations that will require mitigation
- There is a potential 'rat-run' between Leith Street and Canongate via East Market Street / New Street
- The increased traffic volumes on Lothian Road and Queen Street result in traffic avoiding these corridors and travelling on the second New Town, Chester Street/ Palmerston Place

Overall, Option B is expected to require a 20-30% reduction in strategic trips to allow the revised city centre network to operate efficiently, maintaining adequate general traffic capacity at key locations on Lothian Road.

Option C

Closing the Cowgate and Canongate to general traffic in Option C allows for more space to be provided for place, walking/wheeling and cycling in key pedestrian areas of the Old Town. Timed delivery windows are proposed for these streets to maintain access. Supporting restrictions on Jeffrey Street and New Street would prevent 'rat-running' while simplifying key junctions on St Mary's Street.

This option assumes Waterloo Place and Castle Terrace would be used as East and West End termini for selected longer distance bus services. This would help alleviate pressure on Princes Street and reduce vehicle dominance. To enable reliable public transport operation, Waterloo Place would be closed to general traffic; and a one-way loop would be created for buses from Bread Street to Castle Terrace.

Figure 5.7 shows the traffic redistribution impacts of Option C compared with a 2016 baseline. While large parts of the city centre have much reduced traffic, volumes along the boundary are further increased.

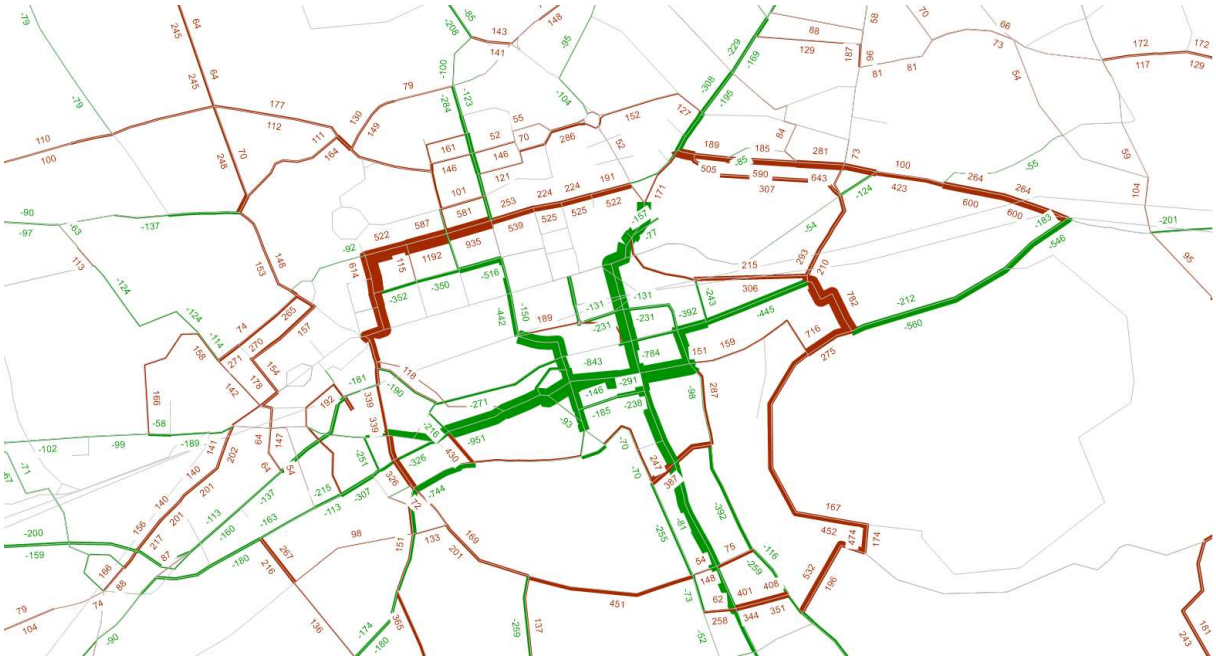


Figure 5.8: Option 3 Traffic Redistribution (Compared with 2016 Baseline) AM 07:00-09:00

Modelling and analysis, acknowledging its assumptions and uncertainties, has identified the following key outcomes:

- Closure of Cowgate is anticipated to place an additional 400-600 vehicles per hour on alternative east/west corridors: Queen Street, Lauriston Place, and Melville Drive
  - Closure of Cowgate simplifies the junction with St Mary's Street supporting the Bridges closure
- Closure of Canongate is anticipated to place an additional 200-300 vehicles per hour on alternative east/west corridors: Queen Street, Holyrood Road, and Melville Drive

- East End bus terminus: relatively low flows on Waterloo Place so a closure to create space for bus is likely deliverable, although bus operation would need to be assessed
- West End bus terminus: potential solution for one-way loop for buses from Bread Street to Castle Terrace is likely deliverable
- Congestion in the city centre anticipated to results in traffic trying to avoid the core of the city centre and increase traffic volumes in the second New Town and Chester Street/ Palmerston Place as in previous options
- The closure of Cowgate/ Grassmarket also puts additional pressures on Abbeyhill and Queen's Drive

Based on the above, Option C is expected to require a 20-30% reduction in strategic trips to allow the revised city centre network to operate efficiently. This is consistent with City Mobility Plan objectives. Nevertheless, to implement the proposed changes, it will be necessary to maintain capacity at key locations on the network, including the locations on Lothian Road highlighted under the Option B recommendation.

Option D

Option D has considered various options for restricting general traffic on Lauriston Place, including: a full closure, a point closure at Tollcross and bus only.

Modelling of this option illustrates that traffic is redistributed as shown in Figure 5.9.

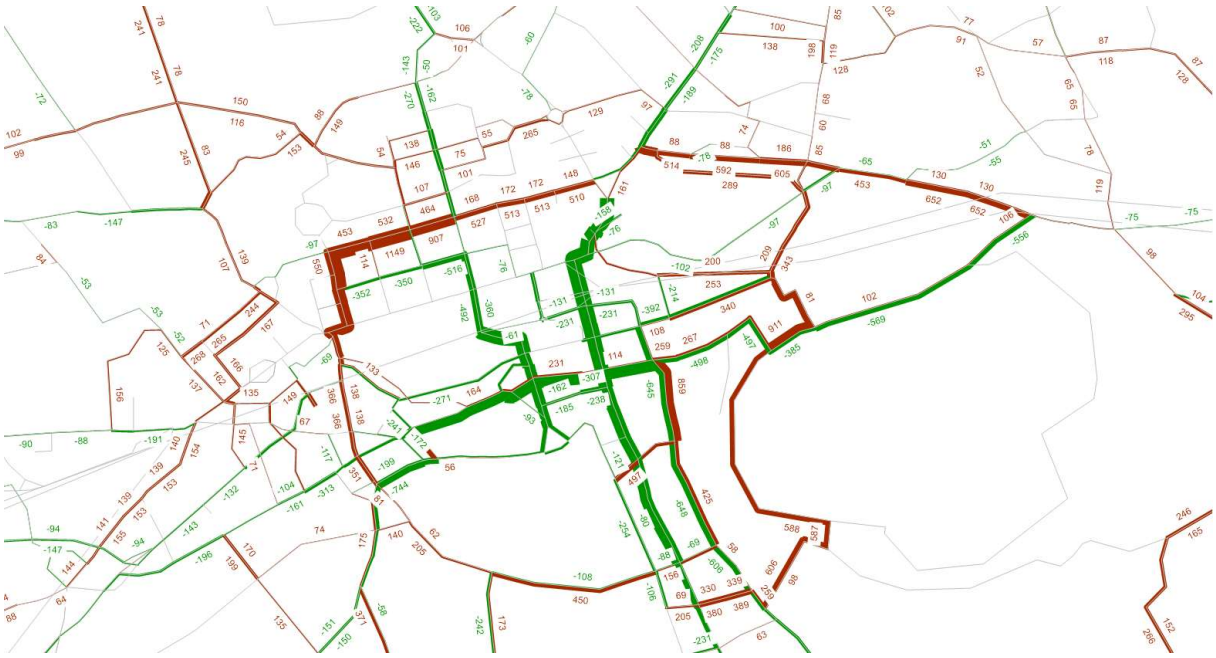


Figure 5.9: Option 4 Traffic Redistribution (Compared with 2016 Baseline) AM 07:00-09:00

Modelling and analysis, acknowledging its assumptions and uncertainties, has identified the following key outcomes:

- Restricting traffic on Lauriston Place at the same time as imposing restrictions on Cowgate/Grassmarket redirects all east/west traffic in the south of the city centre onto Melville Drive. Significant queuing throughout Melville Drive and major delays at junctions were modelled impacting general traffic and buses on this corridor and adjoining streets.
- A Lauriston Place closure/bus gate is anticipated to be feasible but not in conjunction with Cowgate, based on current traffic levels. The general traffic closure of Cowgate is therefore the preferred option for the following reasons:

- There are significant safety risks on Cowgate due narrow footway widths and high pedestrian volumes, particularly in the evening and at weekends
- Resulting place, walking/wheeling and cycling benefits are higher on Cowgate
- Cowgate is simpler to deliver
- A Cowgate westbound closure simplifies the Pleasance junction and supports the delivery of traffic restrictions on The Bridges
- It would be more difficult to maintain servicing on Lauriston Place
- Lauriston Place would need to remain open for public transport, limiting options to simplify and improve the layout of Tollcross junction
- There are negative re-routing impacts around Lothian Road (Castle Terrace, Ponton Street, Semple Street, Lady Lawson Street, etc.)

In summary, Option D is expected to result in significant traffic operational problems which could impact other users on the revised network , even assuming a 30% reduction in vehicle trips across the city centre.

Journey Time Impacts

In addition to the strategic modelling summarised above, journey times for all vehicle types were extracted from the four microsimulation option models. Modelling of the four city centre options was undertaken under two scenarios: one assuming no reduction in general traffic demand and a second that assumed Edinburgh's 30% reduction in general traffic vehicle kilometre target has been achieved.

More detailed analysis of the general traffic journey time impacts is given in Appendix D. However, a brief overview of the findings highlights that all options are likely to lead to an increase in general traffic journey times at the current level of traffic demand.

Assuming a 30% reduction has been achieved, faster journey times were modelled under Option A suggesting this option does not do enough to discourage private use. Almost all diversion routes assessed under Options B-D were modelled as having increased journey times indicating these options will help disincentivise private vehicle use but will also have implications for those that require to travel by car in the city centre.

Motorised traffic is one of the UK and Edinburgh's biggest contributors to harmful emissions, including CO2, with cars generating 63% of all carbon emissions in Edinburgh in 2020. The Council and Scottish Government have ambitious targets to reduce car kilometres. Provision for private vehicles in terms of street space and car parking is also seen as a key factor reducing the amount and quality of space available for public realm and sustainable modes. Therefore, it could be assumed that all increases in general traffic travel times modelled as part of this assessment should be considered positive. However, quick and direct access to key amenities is vital for stimulating economies and revenue is also generated from parking charges. Furthermore, significant delays and more difficulty servicing (deliveries, taxis, emergency services, etc.) could be a major negative for a vibrant city centre in addition to reducing the accessibility of the city centre for those that need to drive (mobility impaired, etc.). The result of this is there needs to be a balance between discouraging private vehicle use while also maintaining an acceptable level of service for general traffic.

Figure 5.10 for the AM and Figure 5.11 for the PM below, show some of the journey time routes assessed in the city centre and the modelled change in travel time from the Base model in minutes:seconds and as a percentage for all four options.

	100% Demands	70% Demands
Option 1:	+00:29 (4%)	-00:49 (-7%)
Option 2:	+13:01 (115%)	+02:24 (21%)
Option 3:	+15:39 (139%)	+03:20 (29%)
Option 4:	+04:10 (37%)	+01:27 (13%)
Option 1:	-00:53 (-8%)	-02:17 (-20%)
Option 2:	+07:32 (65%)	+06:53 (60%)
Option 3:	+08:41 (75%)	+05:39 (49%)
Option 4:	+07:38 (66%)	+01:37 (14%)
Option 1:	+01:49 (18%)	-02:28 (-24%)
Option 2:	+01:23 (13%)	-01:28 (-14%)
Option 3:	+09:18 (90%)	+02:29 (24%)
Option 4:	+09:29 (92%)	+03:23 (33%)
Option 1:	+02:43 (32%)	+02:00 (23%)
Option 2-4:	-	-
Option 1:	+00:18 (9%)	-00:02 (-1%)
Option 2:	+00:14 (7%)	+00:00 (0%)
Option 3-4:	-	-
Option 1:	+00:58 (14%)	-02:15 (-33%)
Option 2:	+00:55 (13%)	-02:02 (-30%)
Option 3:	+07:02 (104%)	+01:27 (21%)
Option 4:	+08:03 (119%)	+02:43 (40%)
Option 1:	+00:49 (17%)	-00:38 (-13%)
Option 2-4:	-	-
Option 1:	+00:33 (10%)	-00:13 (-4%)
Option 2:	+01:59 (36%)	+01:49 (33%)
Option 3:	+07:20 (134%)	+01:45 (32%)
Option 4:	+04:41 (86%)	+00:34 (10%)

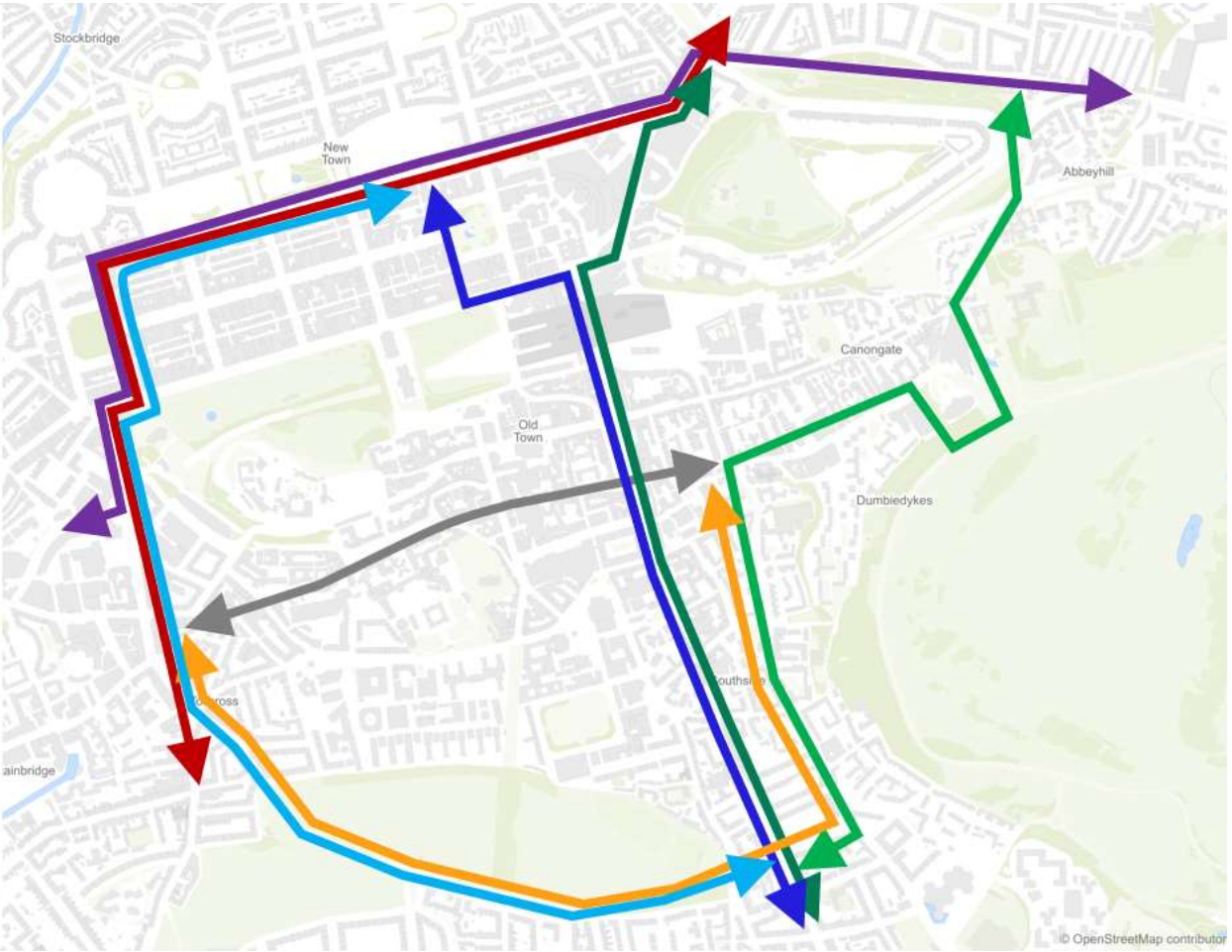


Figure 5.10: Modelled AM General Traffic Journey Time Impacts on Key Routes

	100% Demands	70% Demands
Option 1:	+04:43 (35%)	+01:14 (-9%)
Option 2:	+14:22 (107%)	+01:00 (8%)
Option 3:	+23:14 (173%)	+02:45 (21%)
Option 4:	+23:18 (174%)	+05:08 (38%)
Option 1:	+01:05 (10%)	+00:29 (-4%)
Option 2:	+15:11 (140%)	+10:44 (99%)
Option 3:	+15:59 (147%)	+10:07 (93%)
Option 4:	+16:29 (152%)	+10:00 (92%)
Option 1:	+00:44 (7%)	-00:57 (-9%)
Option 2:	+04:13 (42%)	+00:25 (4%)
Option 3:	+06:34 (66%)	+01:19 (13%)
Option 4:	+05:26 (54%)	+02:43 (27%)
Option 1:	+04:03 (45%)	+03:29 (39%)
Option 2-4:	-	-
Option 1:	+00:32 (16%)	+00:05 (-2%)
Option 2:	+01:37 (49%)	+05:49 (176%)
Option 3-4:	-	-
Option 1:	+00:15 (5%)	-00:36 (-12%)
Option 2:	-00:23 (-7%)	-00:29 (-9%)
Option 3:	+07:45 (152%)	+01:19 (26%)
Option 4:	+05:18 (104%)	+03:07 (61%)
Option 1:	+00:35 (4%)	-01:06 (-20%)
Option 2-4:	-	-
Option 1:	+00:01 (1%)	-00:36 (-11%)
Option 2:	+02:47 (52%)	+02:04 (38%)
Option 3:	+04:12 (78%)	+01:06 (20%)
Option 4:	+04:24 (82%)	+00:37 (11%)

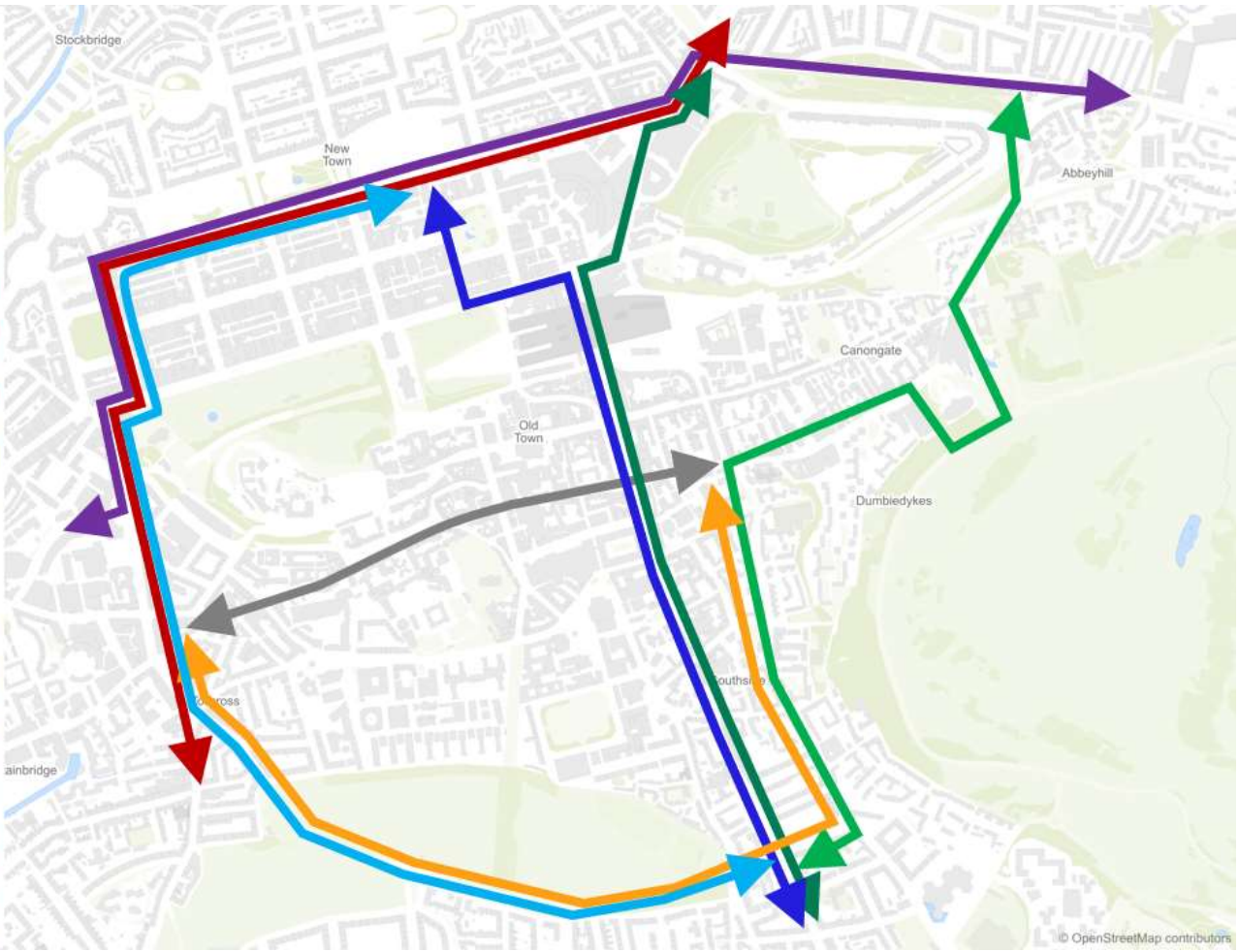


Figure 5.11: Modelled PM General Traffic Journey Time Impacts on Key Routes

Summary

Key outcomes are summarised in Table 5.2 below, highlighting the relative impacts of each option, and the resulting potential to encourage traffic reduction /evaporation and mode change.

Table 5.2: City Centre Modelling Summary

	Option A	Option B	Option C	Option D
Key issues	Traffic volumes on George Street and Market Street are anticipated to be relatively low Parallel north/south corridors (Lothian Road/The Bridges) could accommodate displaced traffic volumes Anticipated traffic also displaced onto The Pleasance/ Abbeyhill.	Segregated cycling is achievable on Lothian Road but accommodating the expected traffic volumes whilst delivering the full project ambitions is anticipated to be challenging Meadows to George Street and The Bridges schemes are anticipated to increase Lothian Road demand by approximately 50%, based on current traffic levels Anticipated traffic increases on Holyrood Road-Pleasance-West Richmond Street-Potterrow-Lauriston Place	Closure of Cowgate anticipated to place additional pressures on: Queen Street, Lauriston Place and Melville Drive Closure of Canongate anticipated to place pressure on: Queen Street, Holyrood Road and Melville Drive	Traffic restrictions on Lauriston Place anticipated to not be implementable at the same time as restrictions on Cowgate/ Grassmarket, due to impacts identified Cowgate option preferred over Lauriston Place
Summary	Modest impact on city centre streets and redistributed traffic can be accommodated on adjacent streets	A 20-30% reduction in strategic trips is anticipated to be required to allow the remaining traffic network to operate suitably, with adequate general traffic capacity maintained at key locations on Lothian Rd	A 20-30% reduction in strategic trips is anticipated to to be required to allow the remaining traffic network to operate suitably, with adequate general traffic capacity maintained at key locations on Lothian Road	Anticipated to require a reduction in vehicle trips greater than 30% across the city centre to allow the remaining traffic network to operate suitably

5.5.4 Impacts on Public Transport

All options for the city centre will have both positive and negative impacts for public transport. Many interventions that form the city centre options have been specifically designed to improve public transport, whereas others are anticipated to potentially displace general traffic onto public transport corridors, causing additional delay.

Traffic modelling of the four city centre options assessed bus journey times under two scenarios: one assuming no reduction in general traffic demand and a second that assumed Edinburgh's 30% reduction in general traffic target has been achieved. The analysis has focused on key bus corridors through the city centre to understand the impact on services if options were implemented immediately with an assumption for no mode shift (100% demands) or with a phased approach over the longer term with 30% mode shift (70% demands).

Tables 5.3 and 5.4 below summarise the percentage change in AM and PM journey times from the existing base model for each option over the two demand scenarios. The average base journey time for the bus routes is provided for reference with modelled increases in bus journey times shown in red and decreases in green.

The bus journey time data contained in Tables 5.3 and 5.4 is also summarised in Figures 5.12 and 5.13 for the AM and PM, respectively.

Table 5.3: Modelled AM Public Transport Journey Times

Route	Lothian Services	Base Average Journey Times	100% Traffic Demands				70% Traffic Demands			
			Opt A	Opt B	Opt C	Opt D	Opt A	Opt B	Opt C	Opt D
Tollcross - Leith Walk	10, 11, 16	19:21	28%	19%	32%	17%	-1%	0%	3%	9%
Leith Walk - Tollcross	10, 11, 16	16:37	24%	49%	56%	43%	12%	51%	43%	27%
A8 - A1	26	22:31	14%	16%	26%	13%	-1%	0%	-2%	3%
A1 - A8	26	18:55	7%	23%	28%	36%	4%	11%	21%	13%
A7 - Leith St	5, 7, 8, 49	10:56	57%	-30%	-23%	-28%	-9%	-30%	-26%	-28%
Leith St - A7	5, 7, 8, 49	08:05	7%	-20%	-17%	-18%	-15%	-19%	-17%	-13%
A90 - A7	37, 47	16:35	-15%	-34%	-3%	-8%	-12%	-5%	-8%	-11%
A7 - A90	37, 47	15:10	36%	7%	16%	4%	-6%	0%	8%	5%
Tollcross - Dundas St	23, 27	12:21	10%	14%	13%	40%	12%	11%	11%	35%
Dundas St - Tollcross	23, 27	13:03	3%	-2%	2%	17%	4%	1%	17%	16%
A7 - Howe St	29	15:52	4%	-6%	-3%	-23%	-21%	-7%	-12%	-21%
Howe St - A7	29	14:21	5%	-6%	-1%	-8%	-8%	-7%	-7%	-7%
W Approach Rd - A7	30	20:01	-16%	-7%	-14%	-21%	-21%	-22%	-22%	-15%
A7 - W Approach Rd	30	20:34	34%	16%	7%	-6%	-13%	16%	7%	-2%
Haymarket - A7	2, 3, 33	16:32	10%	9%	0%	4%	4%	1%	0%	5%
A7 - Haymarket	2, 3, 33	21:03	15%	-18%	-14%	-17%	-17%	-18%	-16%	-15%
Marchmont - A90	41	22:32	-10%	-7%	23%	1%	-7%	-14%	0%	-5%
A90 - Marchmont	41	23:34	11%	-3%	-2%	5%	-7%	-3%	0%	-10%
Marchmont - Howe St	24	16:36	-9%	2%	20%	5%	-25%	-28%	-6%	-3%
Howe St - Marchmont	24	11:26	18%	53%	58%	52%	18%	53%	43%	16%

Table 5.4: Modelled PM Public Transport Journey Times

Route	Lothian Services	Base Average Journey Times	100% Traffic Demands				70% Traffic Demands			
			Opt A	Opt B	Opt C	Opt D	Opt A	Opt B	Opt C	Opt D
Tollcross - Leith Walk	10, 11, 16	22:47	31%	-5%	36%	21%	-10%	-16%	-8%	-9%
Leith Walk - Tollcross	10, 11, 16	18:06	36%	44%	44%	46%	33%	36%	41%	41%
A8 - A1	26	23:21	40%	1%	31%	35%	8%	-1%	1%	2%
A1 - A8	26	20:40	11%	18%	11%	36%	0%	3%	4%	11%
A7 - Leith St	5, 7, 8, 49	14:45	32%	-39%	-32%	-42%	-42%	-41%	-40%	-42%
Leith St - A7	5, 7, 8, 49	08:16	-9%	-10%	-13%	-11%	-6%	-9%	-8%	-8%
A90 - A7	37, 47	15:52	-2%	-5%	-16%	14%	-4%	-4%	6%	-4%
A7 - A90	37, 47	19:37	4%	-18%	-23%	-11%	-24%	-23%	-18%	-12%
Tollcross - Dundas St	23, 27	12:01	11%	22%	21%	48%	8%	7%	9%	28%
Dundas St - Tollcross	23, 27	13:11	17%	46%	13%	37%	12%	0%	14%	26%
A7 - Howe St	29	15:32	19%	21%	26%	29%	-20%	-22%	-16%	-7%
Howe St - A7	29	12:50	9%	19%	13%	7%	5%	14%	2%	1%
W Approach Rd - A7	30	19:52	-7%	-17%	-13%	-15%	-15%	-21%	-19%	-15%
A7 - W Approach Rd	30	25:38	15%	-16%	-12%	-8%	-17%	-10%	-3%	-3%
Haymarket - A7	2, 3, 33	17:31	2%	-2%	5%	3%	4%	2%	-5%	-3%
A7 - Haymarket	2, 3, 33	27:56	-16%	-29%	-34%	-29%	-35%	-34%	-37%	-36%
Marchmont - A90	41	21:18	-3%	2%	10%	2%	-9%	-6%	-4%	-3%
A90 - Marchmont	41	24:17	20%	34%	-100%	16%	7%	1%	1%	-5%
Marchmont - Howe St	24	16:19	-6%	-16%	38%	6%	-11%	-16%	-10%	6%
Howe St - Marchmont	24	20:01	-20%	-1%	-25%	0%	-22%	-24%	-20%	-13%

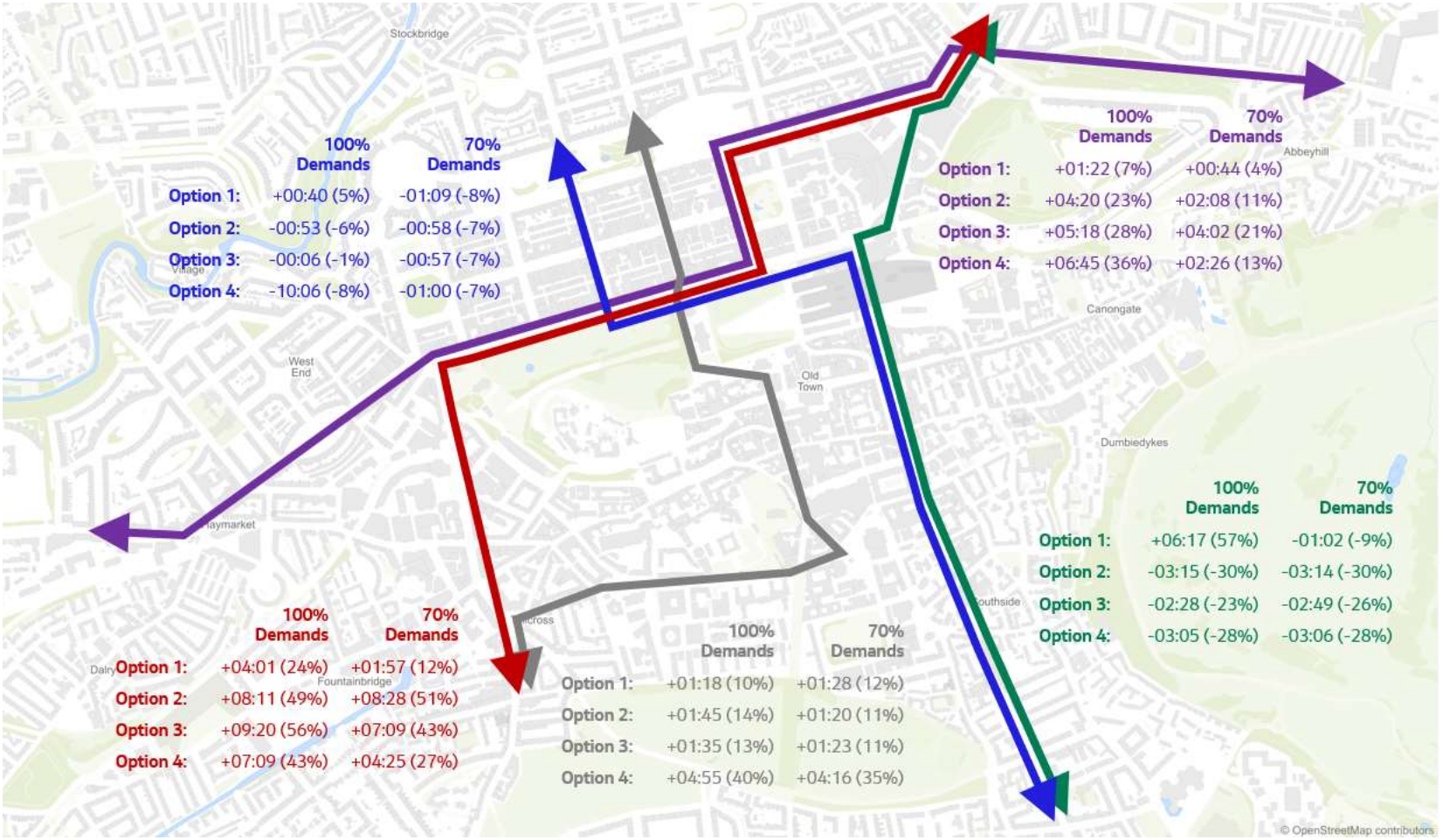


Figure 5.12: Modelled AM Bus Journey Time Impacts on Key Routes

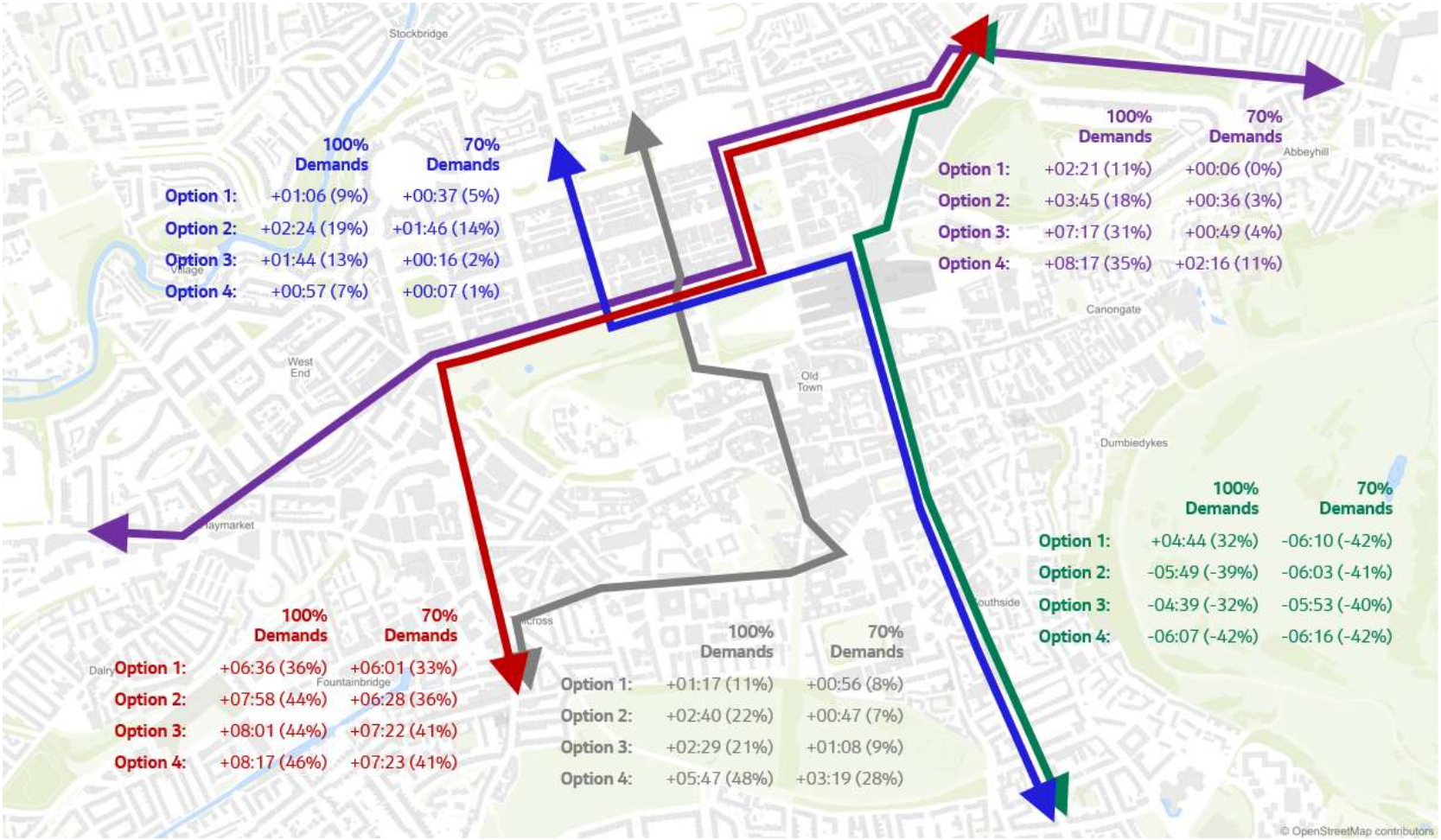


Figure 5.13: Modelled PM Bus Journey Time Impacts on Key Routes

100% Traffic Demands

The primary intervention affecting bus journey times under Option A is the restriction on Bank Street; this is anticipated to displace general traffic onto other north-south routes including The Bridges and Lothian Road. Proposals are anticipated to result in slightly increased journey times on several bus movements across the city centre. Bus journey time savings are not anticipated to occur on the Mound corridor (between Tollcross and Dundas Street), despite reduced general traffic volumes. This is due to proposed shuttle working at Bank Street and the inclusion of new traffic signals at the Chambers Street junction adding a slight delay.

Implementation of a bus gate on the Bridges corridor in Options B-D generally leads to reduced journey times for routes serving the A7 corridor. Nevertheless, significant increases of up eight minutes are anticipated on bus routes via Lothian Road corridor (e.g. Leith Walk-Tollcross, Howe Street-Marchmont).

Across all options, assuming 100% of existing traffic demands, more bus routes are anticipated to encounter increases in journey times through the city centre than decreases, and the magnitude of these delays is likely to be greater than any savings, i.e. a net disbenefit for bus.

70% Traffic Demands

Reducing city centre general traffic demand by 30% is anticipated to lead to more bus journey time savings in terms of the number of routes impacted and the magnitude of the journey time improvement. However, significant delays on Lothian Road remain (up to eight minutes) highlighting the need to maintain capacity on this corridor, so that the impact on bus journey times is not worsened further.

70% Compared With 100% Traffic Demands

Comparison of the two demand scenarios indicates a clear differentiation between the two datasets. At 100% of current demands there is a net disbenefit for buses across the options and at 70% a net benefit. Lothian Road is a key exception to this under both demand scenarios. This suggests the various interventions that form the options should be implemented in stages to allow traffic volumes to reduce over time rather than implementing all interventions at the same time. Figures 5.5 and 5.6 below illustrate the forecast impact on bus journey times in the AM and PM peaks for key routes through the city centre.

Further refinement of the traffic model can be undertaken to understand the extent to which impacts can be mitigated by signal optimisation to improve bus progression on the most affected routes. Nevertheless, the model results help to assess the relative impacts that can be expected between each option, helping inform the assessment of these options. Monitoring of proposals as they are delivered with robust data gathering procedures will complement the modelling undertaken.

5.5.5 Assessment Against Objectives

The expected performance of each option and its contribution to each objective is set out below in turn.

Improved Place Value

The potential to improve the place value of the city centre's streets is largely proportional to the opportunities that can be created by removing or reducing traffic from those streets, but also how well these high-quality places can be linked by calm and convenient pedestrian links to the green and open spaces of the city centre (or at least not severed by through traffic routes). This could be achieved by reallocating space which might include new seating areas, opportunities to dwell as a pedestrian and enjoy the surrounding heritage of the area, and by enhancing blue and green infrastructure on the street. However, this would be achieved in tandem with respecting the key characteristics of the World Heritage Site. Again, the options are therefore expected to contribute an increasing level of benefit against this objective.

Option A has identified key streets where the removal of some through traffic will create a small core network of pedestrian priority streets, which are closely linked to the heritage of the Old Town and First New Town and will provide opportunities for those walking and wheeling to enjoy their surroundings in a more relaxed and safer manner. These streets include George Street, Waverley Bridge, Cockburn Street, High Street and Victoria Street, with many of the initial benefits already achieved through the closures that were put in place during the COVID-19 pandemic. The opportunity exists to enhances this core area further by improving the treatment of junctions linking each of these streets within the core area.

Option B would create the opportunity to expand the area of place-based improvements to key corridors linking Old and New Town, including North Bridge, South Bridge and Lothian Road. For the Bridges corridor in particular, the current place function and conditions for walking and wheeling are poor and would therefore benefit from the measures proposed under this option, including for safety. Through the reallocation of space and the reduction of traffic on the Bridges corridor, the vibrant street-side activity of these streets could be enhanced locally by creating opportunities for people to rest, take in their surroundings with less traffic disturbance and enjoy the amenities available on each street. Whilst expanding the coverage of these opportunities, there would still be further scope to link each of these high-quality places with each other.

Option C takes that opportunity but enabling a more extensive place-making opportunity on the key streets via a larger core network linking the areas already established, particularly on the Royal Mile and Cowgate. By extending these areas already established in previous options, Option C will give city centre users a greater opportunity to meander through these Old Town streets with a greater sense of pedestrian priority and enjoy the surrounding built heritage at leisure, fully connecting this area with the First New Town.

Option D provides an additional opportunity to enhance the place value on the southern end of the city centre, linking this area to the green space of the Meadows. Although this expands the overall opportunities available to designers on this corridor, it is clear that the main benefit from this option comes from the direct links across this corridor, which could be pursued without a full street closure if necessary.

Sustainable Mode Share

It is expected that the measures proposed by ECCT in Option A will improve the sustainable travel connections between different areas of the city centre, and will introduce a 'core' area with no or very limited

traffic that will provide an easy-to-understand sense of pedestrian priority in this area. This will apply to the core streets identified: High Street, Cockburn Street, Victoria Street, Waverley Bridge, providing a fully connected route from Waverley Station to the heart of the Old Town for those walking and wheeling.

However, with through-traffic still permitted on certain city centre streets (notably on North Bridge and Cowgate), priority for those walking and wheeling will be somewhat limited to these core streets. Whilst traffic may be calmed and junctions designed to underline the sense that cars are treated as 'guests' in these areas, the perception of pedestrian priority is still likely to be less across the full city centre than it is in these core areas.

The following outcomes are expected:

- For those walking and wheeling: a safer and more comfortable experience travelling through the full city centre, but with the greatest benefits focussed on the core area of the Old Town.
- For those cycling: much improved connections between Old Town and New Town areas, but with limited route choice for those looking to avoid the gradient issues prevalent on the Meadows to George Street route. Cyclists mixing with traffic on some key streets that may limit modal shift for some cross-city-centre journeys
- For public transport: improvements on some routes - for example reduced congestion on Meadows to George Street, thus improving reliability of some journey times. However, general traffic will remain on the Bridges and greater pedestrian priority at crossings and junctions may limit the ability to reduce absolute bus journey times across the city centre.

Option B is expected to contribute further to the uptake of walking, wheeling, cycling and public transport than Option A due to the specific measures that are introduced on the eastern boundary of the city centre, where current conditions for those modes are poor. Current bus operation and potential future tram operations on the Bridges corridor will be subject to less interaction with general traffic – as well as improving the opportunity for space-reallocation to place resulting from this (see Place objective above), this will also simplify the operation of the Princes Street East End junction for bus and tram, which is a significant benefit given the strategic importance of this part of the network.

Those walking and wheeling in this part of the city centre would also have a greater feeling of priority at key junctions and crossings as traffic limited to local access only on the Bridges corridors and its connecting streets. Removal of through traffic on the Bridges Corridor and further reallocation of space on Lothian Road will provide greater route choice for those cycling between the Old Town and New Town.

The following outcomes are expected:

- For those walking and wheeling: a safer and more comfortable experience travelling through the full city centre, but still with some fragmentation of these benefits between the core Old Town area, Bridges corridors and other parts of the city centre connecting them
- For those cycling: much improved connections between the Old Town and New Town areas, with additional route choice available for those comfortable cycling on the Bridges corridor with reduced traffic
- For public transport: improved bus and tram operation on the Bridges corridor and key East End junction
- Still some potential for through traffic on minor streets crossing the city centre, which may limit the full realisation of a 'core' centre

Option C is expected to overcome some of the challenges identified in Option B about sustainable mode uptake. Whilst significant improvements to public transport in the previous option will contribute to this objective, these benefits were limited by some fragmentation of pedestrian priority areas and potential rat-running traffic through the city centre.

In Option C, these potential challenges are expected to be overcome by expanding the core of the pedestrian priority area limiting the opportunity for rat-running further (through the closure of Cowgate and the Jeffrey Street route) and by further enhancing the streets where those walking, wheeling and cycling interact with traffic (particularly on Cowgate and Canongate). The potential for a much more rounded uptake in sustainable transport modes is therefore expected to be realised by this option.

The following outcomes are expected:

- For those walking and wheeling: a more connected set of streets where an easy-to-understand sense of pedestrian priority is able to be achieved
- For those cycling: less interaction with traffic on key routes, makes cycling safer, particularly on Cowgate where fewer gradient issues make this an attractive east-west route
- For public transport: the same benefits as previously, but an additional challenge to be overcome: maintaining bus access to the Canongate whilst delivering much increased pedestrian priority on this route.

Finally, Option D has the potential to provide an additional marginal benefit for sustainable mode share by reducing traffic on the Lauriston Place corridor. In particular, this has the potential to improve bus journey times/reliability through Tollcross and to increase the sense of pedestrian priority at the southern end of the city centre, linking to the Meadows.

However, the traffic redistribution effects of this option (particularly onto Melville Drive) do have the potential to reduce the attractiveness of that corridor for bus progression and pedestrian priority/comfort. Although outside of the immediate city centre area considered by these proposals, that unintended consequence tempers the performance of this option against this objective.

The following outcomes are expected:

- For those walking and wheeling: a greater sense of pedestrian priority at the southern end of the city centre, particularly connecting to the Meadows (though in many ways the same benefits could be achieved by focussed pedestrian priority at key crossings / locations)
- For those cycling: less interaction with traffic on an additional route (Lauriston Place) improving route choice across the city centre
- For public transport: improved bus progression on Lauriston Place, but with impacts on Melville Drive to be managed

Reduced Through Car Trips Movements

Each option is expected to provide an increasing contribution to this objective, but with different traffic redistribution and 'rat-running' issues identified for each that would have to be managed.

Option A would dampen the ability of general traffic to access key parts of the city centre and to travel across it, but would still allow some traffic to make north-south and east-west movements through the city centre. Although this would be less attractive for general traffic as a result of wider ECCT measures, it is unlikely that the scale of traffic reduction would be sufficient to meet the city centre's contribution to Edinburgh's 30% vehicle kilometre reduction target that was put in place following the publication of ECCT.

Option B restricts key north-south movements further, but would still allow traffic to travel between the Old Town and New Town Areas via Jeffrey Street, and would still allow east-west movements on Cowgate and Lauriston Place. Whilst reducing the attractiveness of driving to and through the city centre than option A, it still therefore retains some permeability for traffic through the city centre rather than restricting traffic to 'boundary' roads.

Option C effectively removes this through-permeability within the city centre, with traffic circulating around it on the boundary roads of Queen Street, Lothian Road, Lauriston Place and The Pleasance. Whilst local traffic access is maintained within this boundary, through traffic would not be permitted on any streets within its area.

Option D retains this concept but extends the southern boundary to Melville Drive. Although this option reduces through traffic on Lauriston Place, it does not contribute to any additional overall reduction of through traffic within the city centre itself when compared with option C, and may in fact have a negative impact on bus progression on Melville Drive itself due to potential displaced traffic.

Impacts of Displaced Traffic

The volume of traffic anticipated to be displaced under Option A is relatively low with manageable increases in traffic flow anticipated on the LEZ boundary streets. Outside of the city centre boundary for this study,

minor increases in the second New Town as traffic diverts from Dundas Street to Broughton Street to travel north and south through the city centre.

Under Option B the boundary streets are anticipated to be congested, displacing traffic away from the city centre onto surrounding streets such as Queen Street and potentially through the streets of the second New Town. To mitigate against this, traffic signals improvements would be required on boundary streets to maintain a sufficient level of traffic circulation.

Performance of Option C is similar to Option B with anticipated slight traffic volume increases on the southern diversion route avoiding the Cowgate/ Grassmarket and Canongate restrictions, namely on: Abbeyhill, Queen's Drive and Melville Drive. As with Option B, lane capacity should be maintained where possible and traffic signals on these corridors optimised, balanced with the need to provide space for sustainable modes and place. Impacts on other streets, including West Richmond Street would need to be monitored.

Option D is anticipated to displace almost all city centre traffic onto the boundary streets and has knock on impacts on the streets surrounding the city centre, most notably the second New Town and Queen's Drive. Even fully optimised traffic signals and maintaining existing lane capacity on boundary streets, traffic displacement impacts on city centre and surrounding streets are anticipated to be significant.

Operational Requirements

The preferred option taken forward will require a detailed feasibility study covering servicing and operational requirements.

The ECCT measures included in Option A have been subject to more detailed assessment of the operational requirements than other options. Based on completion of the ECCT strategy, a City Centre Operations Plan, is being prepared. This report gives a greater level of confidence in how each of the affected streets will be accessed and serviced. The Operations Plan is still in development with some requirements still to be fully defined, but there is sufficient confidence that a suitable access strategy can be implemented for Option A.

The additional requirements of Option 2 have been considered at a high level through this appraisal work and the ongoing future tram business case work. Walking, wheeling, cycling and bus would be exempt from all new restrictions. Access for general traffic between the Old Town, New Town and East End areas would be restricted. Instead, through traffic would be routed via the perimeter streets of the city centre (The Pleasance, Abbey Hill, Queen Street, Lothian Road). Filtered permeability would apply on The Bridges corridor, south of Chambers Street. Local access would be maintained throughout the day but through traffic would be prohibited. Local and delivery access north of Chambers Street would be based on time-of-day restrictions, similar to restrictions through the Old Town but this would be confirmed by the next stages of the City Centre Operations Plan.

Option C builds on Option B access proposals above. Again, walking, wheeling, cycling and bus would be exempt from all new restrictions. Additional space and priority would be given to those walking, wheeling and cycling on the Cowgate/Grassmarket corridor by removing through traffic. Local access would be retained on the Grassmarket throughout the day, with turning provision introduced at the foot of Victoria Street. Local access would also be maintained on the Cowgate with the existing roundabout at the foot of Candlemaker Row enabling traffic to U-turn. Canongate would require some time-of-day restrictions to ensure full servicing of the street, consistent with wider servicing proposals for Old Town streets and would be confirmed by the next stages of the City Centre Operations Plan.

Finally, Option D expands on Option C with additional restrictions in place on Lauriston Place. Streets accessed from Lauriston Place would be accessed from the eastern (Potterrow) and western (Lothian Road) ends of the corridor, but this is expected to place more operational pressure on these connecting streets and in particular on Melville Drive, which may affect other local access and public transport operations.

5.5.6 Summary of Appraisal Against Objectives

Evaluation of the city centre options focused on four key themes: place, sustainable mode share; reducing through car trips and operations. Similar to the corridor appraisal, assessment of the city centre options has been completed using a seven-point-scale assessment, considering the relative size and scale of impacts as outlined below:

- Major benefit (represented by ✓✓✓)

- Moderate benefit (represented by ✓✓)
- Minor benefit (represented by ✓)
- No benefit or impact (represented by **0**)
- Minor negative impact (represented by **X**)
- Moderate negative impact (represented by **XX**)
- Major negative impact (represented by **XXX**)

Table 5.5 sets out how each score is intended to be allocated against each criteria. Table 5.6 then provides a summary of the appraisal of the four options against the themes.

Table 5.5: City Centre Appraisal Scoring

City Centre Appraisal Objective	Major Negative (XXX)	Moderate Negative (XX)	Minor Negative (X)	Neutral (0)	Minor Positive (✓)	Moderate Positive (✓✓)	Major Positive (✓✓✓)
1. Maximise opportunities (through Streetspace Allocation Framework) to improve place value of streets			Disruption to existing place setting, reducing the place value of the city centre	No change to the place value of the city centre	Opportunity for localised improvements to place value only	Opportunity for more connected improvements to place value across city centre streets	Opportunity for fully connected improvements to place value across city centre streets
2. Support and prioritise people walking, wheeling, cycling and using public transport	Measures are likely to significantly reduce the uptake of walking, wheeling, cycling, bus and tram	Measures are likely to somewhat reduce the uptake of walking, wheeling, cycling, bus and tram	Measures are likely to slightly reduce the uptake of walking, wheeling, cycling, bus and tram	Measures are not likely to affect the uptake of walking, wheeling, cycling, bus and tram	Measures are likely to slightly increase the uptake of walking, wheeling, cycling, bus and tram	Measures are likely to somewhat increase the uptake of walking, wheeling, cycling, bus and tram	Measures are likely to significantly increase the uptake of walking, wheeling, cycling, bus and tram
3. Reduce number of private car trips across the city centre	Significant increase in traffic volumes expected across the city centre	Moderate increase in traffic volumes expected across the city centre	Minor increase in traffic volumes expected across the city centre	No change in traffic volumes expected over current commitments	Minor additional reduction in traffic volumes expected across the city centre	Moderate additional reduction in traffic volumes expected across the city centre	Significant additional reduction in traffic volumes expected across the city centre
4. Impacts of displaced traffic	Significant increase in traffic volumes expected on the streets surrounding the city centre	Moderate increase in traffic volumes expected on the streets surrounding the city centre	Minor increase in traffic volumes expected on the streets surrounding the city centre	No change in traffic volumes expected over current commitments	Minor additional reduction in traffic volumes expected on the streets surrounding the city centre	Moderate additional reduction in traffic volumes expected on the streets surrounding the city centre	Significant additional reduction in traffic volumes expected on the streets surrounding the city centre
5. Ensure that operational requirements of residents, businesses and street users are met	It is clear that there will be significant adverse impacts to local access and servicing arrangements that cannot be managed	It is possible that there will be significant adverse impacts to local access and servicing arrangements that cannot be managed	It is possible that there will be slight adverse impacts to local access and servicing arrangements that cannot be managed	It is unknown if any identified impacts on local access and servicing can be managed	It is possible that any identified impacts on local access and servicing can be managed	It is likely that any identified impacts on local access and servicing can be managed	It is confirmed that any identified impacts on local access and servicing can be managed

Table 5.6: City Centre Appraisal Against Themes

Theme / Objective	Option 1	Option 2	Option 3	Option 4
Improved Place Value *Maximise opportunities (through Streetspace Allocation Framework) to improve the place value of streets*	**Score:** ✓ Opportunity to improve the sense of place on the Royal Mile, Waverley Bridge and George Street	**Score:** ✓ Opportunity to improve the sense of place on The Bridges corridor and Lothian Road	**Score:** ✓✓✓ Significant opportunity to improve the sense of place on the Cowgate and Canongate. Leading to the majority of the city centre prioritising people of vehicles	**Score:** ✓✓✓ Opportunity to improve the sense of place on Lauriston Place. Prioritising people over vehicles on almost all city centre streets – although complex operational plan for Lauriston Place
Sustainable Mode Share *Support and prioritise people walking, wheeling, cycling and using public transport*	**Score:** ✓ Increased bus and cycle priority on the Meadows to George Street corridor and increased cycle priority on George Street	**Score:** ✓✓ Major improvement in conditions for walking and public transport on the Bridges corridor. Better conditions for walking and cycling infrastructure on Lothian Road	**Score:** ✓✓✓ Better conditions for walking and cycling in the Old Town (especially Cowgate)	**Score:** ✓✓ Better connections for walking and cycling in Old Town and on/ across Lauriston Place. However, the impact of Lauriston Place closure is expected to have some negative impact on bus delays
Reduce Through Car Trips *Reduce number of private car trips across the city centre*	**Score:** 0 Unlikely to result in a significant reduction in private vehicle trips	**Score:** ✓ Would help facilitate a 20-30% reduction in vehicle trips through the city centre,	**Score:** ✓✓ Would help facilitate a 20-30% reduction in vehicle trips through the city centre	**Score:** ✓✓✓ Would help facilitate a reduction of more than 30% in city centre private vehicle trips
Operational Requirements *Impacts of Displaced Traffic*	**Score:** 0 Unlikely to result in a significant displacement in private vehicle trips	**Score:** XX Potential to result in a significant displacement of private vehicle trips	**Score:** XX Potential to result in a significant displacement of private vehicle trips	**Score:** XXX Potential to result in very significant displacement of private vehicle trips
Operations Requirements *Ensure that operational requirements of residents, businesses and street users are met*	**Score:** ✓✓✓ Only a small section of Bank Street closed with loading areas closely located	**Score:** ✓✓ With the exception of North Bridge, it is anticipated that the Bridges corridor would be accessible for deliveries and local traffic	**Score:** ✓ Early morning delivery windows potentially required on Cowgate and Canongate with one-way access a consideration	**Score:** XX Restrictions on Lauriston Place may require a more complex operational plan to service a large residential and business area

5.6 Summary and Recommendation

5.6.1 Overview

Whilst Option A performs positively against most of the city centre objectives, it is not considered to go far enough to encourage the reduction in through-car trips needed across the city centre, particularly in light of the target for the city to achieve a 30% car kilometre reduction that was agreed after the publication of ECCT.

This option is also limited in the scale of benefits that can be achieved against the sustainable mode-share and place value objectives, given the fragmented nature of traffic removal from the core city centre. Option A does however provide the greatest certainty at this stage on the impacts to local access, servicing, and vehicle redistribution, given the work already undertaken by the City Centre Operations Plan.

Option B performs more strongly against most of the objectives, particularly in relation to it the likelihood of encouraging vehicle reduction (through more pronounced traffic restrictions between Old Town and New Town areas) and improving the attractiveness of sustainable modes and enhancing the place value of the city centre (through more connected interventions to the east of the city centre). There is slightly less certainty than Option A on how local access and servicing will be managed, but sufficient understanding of the issues through this project and the City Centre Operations Plan that solutions can be identified.

Option C performs more strongly again against the place value objective in particular. By incorporating additional traffic restrictions on the Cowgate and Canongate, the option creates significant opportunity to enhance and activate these key spaces at all times of the day, adding vibrancy to the heart of the Old Town and fully connecting these areas to other Old Town streets with a single larger pedestrian priority core area. The management of local access and servicing operations will require more detailed consideration and design measures at key junctions to ensure that all streets can be adequately served but can be accommodated in the next stages of the City Centre Operations Plan.

Option D is likely to reduce the most through car traffic from the city centre, but is likely to be at the expense of even more uncertainty over local access and operational requirements, and the potential knock-on traffic impacts on Melville Drive in particular. It is not considered that any additional benefits on place improvements on Lauriston Place would outweigh these particular impacts.

5.6.2 Recommendation

It is considered that Option C offers the greatest balance of opportunity for the city centre: a fully connected series of pedestrian-priority streets in a single core area, that complement the Old Town Street closures already proposed, and add significantly to the place value potential of key locations; likely to encourage a significant reduction in through-traffic; and the potential to overcome local servicing and operational requirements through careful design of junctions, traffic filters and full consideration of timing options.

This results in the existing pedestrian priority core area at the heart of the Old Town being significantly extended to cover most of the Royal Mile and down to the Cowgate, with managed traffic access to the city centre ‘sectors’ around this pedestrian-priority core. Car traffic that does not specifically need to be in or pass through the city centre can pass from sector to sector via the ‘boundary’ streets (The Pleasance, Queen’s Drive, Lothian Road, Lauriston Drive).

It is therefore recommended that this option is taken forward in combination with the recommended SAF combined map for the wider network, as the basis of delivering enhanced city centre benefits.

The city centre proposals will be complemented by the network-wide measures set out in Chapter 3 and 4, to encourage people to travel to the city centre by public transport, with the bus network being key to reducing vehicle kilometres. The Council will work with bus operators to agree specific journey time savings along each corridor and the emerging design solutions required to achieve these.

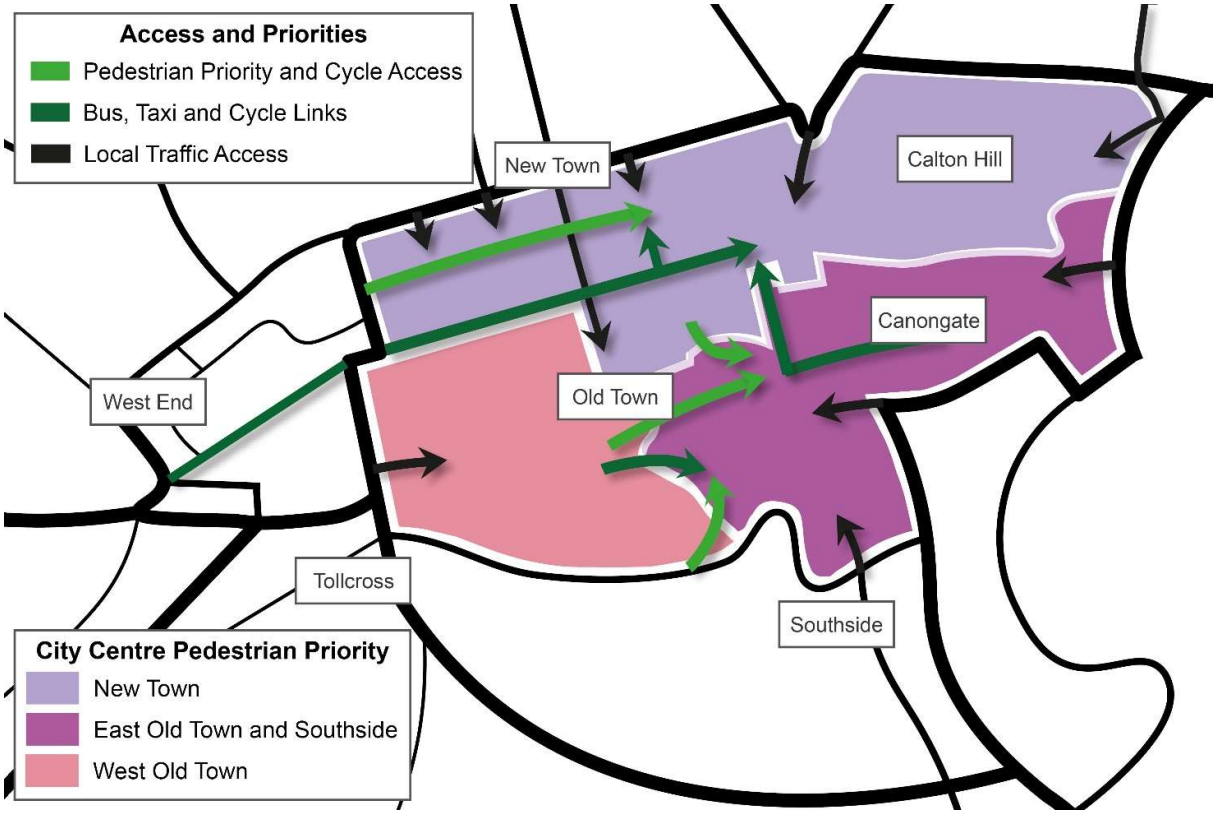


Figure 5.14: Option C Schematic

5.7 Implementation

Most of the interventions proposed originate from existing scheme proposals and can be implemented as part of their project programme:

- Bank Street and Market Street closures (Meadows to George Street)
- George Street closure (George Street)
- Lothian Road place and active travel improvements (Lothian Road project)
- Traffic filter(s)/junction changes on The Bridges could be also trialled/delivered earlier, supporting improved conditions for place, walking/wheeling, and bus priority, with some potential for footway widening in advance of future tram delivery. Through access restrictions on New Street and Jeffrey Street would need to be considered at the same time to avoid potential traffic displacement.
- Cowgate is currently closed to general traffic in the late evenings and the majority of the infrastructure needed is already in place. The closure of Cowgate could be trialled relatively easily, following a similar approach to the successful Summer Streets programme, with only servicing details to be considered and impact on neighbouring streets such as Blair Street.
- Similarly, Canongate could also be trialled in the near future. Further consideration is however required regarding restrictions, in order to retain bus services, while limiting access to deliveries and local movements.
- Any form of closure of Lauriston Place is likely to be complex due to servicing and local access requirements. However, should other changes prove successful, the incremental benefits offered by closing Lauriston Place to through traffic make it a worthy candidate for consideration in the longer term. If a tram from Granton to Bioquarter is delivered Edinburgh would then likely need a second cross city

tram line to alleviate pressures on Princes Street in the long term. The Lauriston Place / Potterrow corridor is a likely routing, with implementation requiring reduced access in some form for general traffic.

Future tram from Granton to Bioquarter is unlikely to be constructed before the early 2030s. Closure of the Bridges to through general traffic is seen as essential for this project to proceed successfully. It is recommended that the ECCT delivery plan developed in 2019 is revisited to account for the additional measures recommended in this report, to ensure that the sequencing and phasing of implementation projects maximises efficiencies and minimises disruption during the implementation period.

5.7.1 'Big Bang'

One possible approach is to implement all, or a large portion of agreed measures at one time, as was the approach taken in Ghent. This approach would require significant further work on an implementation plan and City Centre Operational Plan to maximise the potential for successful delivery with as little disruption as possible.

Introducing general traffic restrictions, as proposed under the preferred option, is anticipated to make a significant contribution towards car kilometre reduction in the city centre and reduction of vehicular dominance. Nevertheless, these won't be sufficient to deliver a 30% reduction on their own.

There are different ways the city could decide to implement a 'Big Bang' approach; this is for the ECCT Delivery Plan to explore and recommend rather than this report. But, based on high level analysis, it is anticipated that there is a significant potential risk that remaining traffic (including public transport services) could be impacted in the earlier stages towards achieving a car kilometre reduction of 30% or more, assuming a reluctance for users to switch mode. It is therefore recommended that other policy interventions are considered to support a 'Big Bang', if that is the approach chosen by the Council. This would include 'carrots' as well as 'sticks'. Further interventions that would help ease the implementation include parking restrictions and other potential policies such as a workplace parking levy, and road user charging.

Early messaging and guidance to road users could help offset the immediate impact of major network changes, and resulting public transport impacts. Frequently, it is the first weeks of a scheme that have the greatest negative impact on congestion - and there is the potential for the transport model to significantly underestimate this. In the medium term, impacts settle to an as modelled condition (or better) as traffic evaporation and behaviour change takes place.

5.7.2 Stepped Implementation

Given recent experience with partial closure of the Cowgate and North Bridge as part of temporary works, an alternative approach is a stepped plan, potentially implemented as follows:

- Stage 1 - experimental closure of Cowgate and relevant linked streets
- Stage 2 – experimental restrictions on The Bridges corridor
- Stage 3 - full implementation of Option C

Some of the proposed measures were developed to concept level as part of the Pedestrian Priority Zone (PPZ) project that followed ECCT. These will provide a useful starting point for how the individual street and junction design measures can be visualised and developed, to aid public understanding.

5.7.3 Monitoring and Evaluation

As the measures are installed on the ground, detailed monitoring of the traffic circulation impacts should be undertaken to ensure that any unintended consequences can be identified and mitigated. For example, the additional pressure placed on the 'boundary' streets of the city centre may require closer examination and mitigation of the streets in the West End or south of the Meadows to ensure that the experience of those walking, wheeling, and cycling is not compromised in these areas as a result.

Finally, the resilience of the city centre will need careful consideration as measures are implemented. For emergency access, those streets with traffic restrictions should be designed and operated to allow emergency vehicles to pass through if necessary. In the event of significant construction works on any of the city centre 'boundary' streets, the City Centre Operations Plan should identify means by which general traffic can still circulate, potentially by permitting the short-term opening of certain bus gates to general traffic where no alternative north-south or east-west links are available.

Canongate (before)

Canonagate (after)

Market Street (before)

Market Street (after)

6 Neighbourhoods

6.1 20 Minute Neighbourhood Programme

The Circulation Plan will support the development of Edinburgh's 20 Minute Neighbourhoods programme, by facilitating local journeys to be made more easily by sustainable modes and enabling residents to live well locally. The 20 Minute Neighbourhoods programme is being developed in parallel to the Circulation Plan so is not reported here. There are two immediate next steps to ensure that the emerging output from the Circulation Plan can be enhanced by the development of local neighbourhood improvements:

- Delivery of local enhancements focussed on walking. A sperate work package has prepared a methodology for prioritising these local enhancements, focussing on low-cost measures benefitting pedestrians such as dropped kerbs, 'tightening' corner radii, and widening and improving key footway routes to local facilities and services. Where there is support from local residents, street closures to reduce intrusive through traffic can complement these measures
- School streets – in addition, the potential for car-free streets or zones around the city's schools during pick-up and drop-off periods will be examined. This will ensure that proposals to improve access to schools by walking, wheeling and cycling are developed in full alignment with the emerging SAF and that traffic restrictions and diversions are put in place within this strategic context

The Circulation Plan will also support climate adaptation and nature priorities. The development of Edinburgh's national project, 'Urban Sustainable Blue and Green Surface water management solutions' is being delivered through the Green Blue Network priority areas. This also embeds the Local Nature Network projects. The detailed design of the new streets can complement the aspirations of these other city-wide networks, for example, by increasing tree canopy cover and designing in measures to help with surface water flooding. These would take into account local historic sensitivities.

7 Next Steps

7.1 Technical Reporting and CMP implementation Plan

The work completed to date on the Circulation Plan and documented in this report will directly support the following:

- February 2024 Transport and Environment Committee reporting, seeking agreement with the findings and recommended space allocations from this work
- Active Travel, Public Transport and Parking Actions and associated Business Cases, which will align to the strategic space allocations derived from the Circulation Plan

7.2 Application of Our Future Streets

Thereafter, it is intended that the Our Future Streets will be applied in the following ways:

- Interactive Mapping – the mapping and space allocations documented in this report and associated mapping will be available in GIS format, from which an interactive mapping platform will be made available to allow stakeholders to view the space allocations on each part of the network. This tool could then be made publicly available via the Council's website, if desired
- Design intents – the space allocation maps and resulting design intents for each of the key corridors identified will be used as inputs to the establishment of future design briefs for downstream delivery projects. In this way, design teams can focus attention on detailed design decisions within the strategic framework of the wider network developed by the Circulation Plan

7.3 Continued Technical Development

In addition, it is anticipated that the Circulation Plan, and the SAF in particular, will continue to be reviewed and updated by the Council as follows:

- Further development and integration of Local Neighbourhood and School Street proposals
- Future monitoring of network operations
- Sensitivity and stress testing of recommended changes
- Continued monitoring of other cities

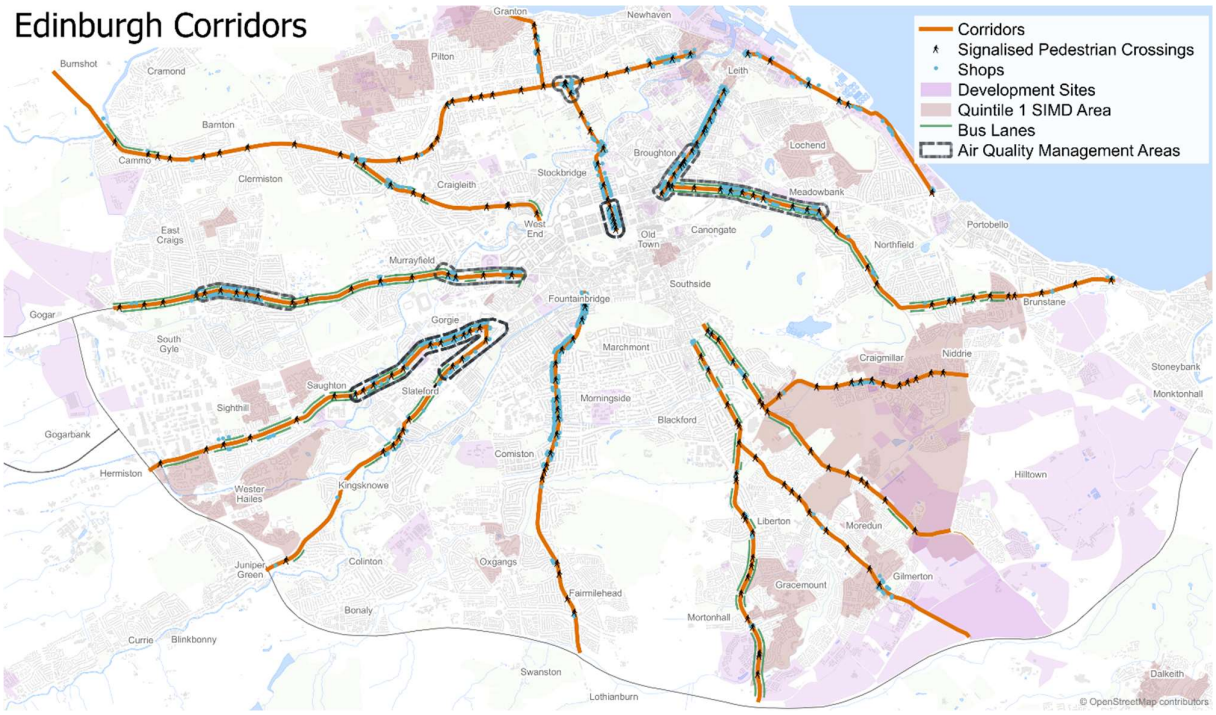
Appendix A. Streetspace Allocation Mapping Outputs

Network maps and corridor summaries presented in separate PDF files

Appendix B. Appraisal Supporting Information

Maps detailing:

- Crossing points
- SIMD
- Development sites
- Key connections
- Alternative routes
- Shop locations
- Traffic volume information



Appendix C. Appraisal of Corridors

A.1 A90

Appraisal Criteria	Score	Rationale
Opportunity to enhance a high street or local centre	0	No local centre – small cluster at Maidencraig Crescent
Opportunity to improve pedestrian accessibility including overcoming severance	+2	Opportunity to improve severance – currently poor (Quality St at Davidson's Mains key example of fast-moving traffic segregating amenities from residential areas)
Opportunity to deliver enhanced cycling catering for an important cycle flow	+1	Very limited opportunity on the outer section due to high traffic volumes and impact on bus delays if segregation put in place. Significant opportunity for protected cycling on inner section - could be implemented in association with Granton to Bioquarter tram.
Modest traffic volumes, present opportunity for reallocation of space without wider intervention	-2	Very high traffic volumes (1800 vehs/hr) connecting to Fife and the northeast of Scotland
Opportunity to improve public transport journey times by reducing delays / increasing reliability	+1	30-40 buses per hour with significant regional flows. Significant congestion but limited opportunity to segregate buses
Opportunity to reduce transport poverty and inequality	0	Accident rates are consistent with the rest of the city. Adjacent to major secondary school. No areas in SIMD lowest 40%
Opportunity to mitigate negative traffic impacts on air quality	0	No known AQMA but high traffic volumes with an opportunity to reduce
Ability of investment in the corridor to support new development and/or regeneration	0	Limited regeneration opportunities but supports development in Queensferry and Fife. No areas in SIMD lowest 40%
Integration with objectives of existing projects	0	BPF for bus only
Impact on general traffic and likely displacement	-2	Delivering bus lanes or segregated cycling on the outer section would be likely to have a high impact. A8 to the south is unlikely to be able to accommodate any displaced traffic. No alternative to the north
Impacts on parking and loading	0	No significant parking or loading present

A.2 A8

Appraisal Criteria	Score	Rationale
Opportunity to enhance a high street or local centre	+2	Local centre at Corstorphine local centre – continuous shop frontages
Opportunity to improve pedestrian accessibility including overcoming severance	+2	In general, sufficient crossing opportunities but specific solutions at Corstorphine local centre and the zoo may be required. Opportunities to reduce severance at Drumbrae
Opportunity to deliver enhanced cycling catering for an important cycle flow	+2	Part of the Primary cycle network. Could tie into significant development at West Edinburgh
Modest traffic volumes, present opportunity for reallocation of space without wider intervention	-1	Relatively high traffic volumes especially on outer sections, but significantly lower than the A90 (include 800-1100 vehs/hr)
Opportunity to improve public transport journey times by reducing delays / increasing reliability	+2	40+ buses per hour and will need to cater for future demand from West Edinburgh. Significant congestion but there is potential to reduce general traffic flows
Opportunity to reduce transport poverty and inequality	0	Accident rates are consistent with the rest of the city. No areas in SIMD lowest 40%
Opportunity to mitigate negative traffic impacts on air quality	+2	Known AQMA at St John's Road (plus Newbridge and Roseburn Terrace) – opportunity to improve
Ability of investment in the corridor to support new development and/or regeneration	+2	Facilitates West Edinburgh development – potential for significantly increased PT and AT flows. No areas in SIMD lowest 40%
Integration with objectives of existing projects	+2	A8 / Corstorphine Connections. West Edinburgh development. BPF
Impact on general traffic and likely displacement	-1	Some impact on general traffic with some potential displacement to the A90 to the north and the A71 to the south
Impacts on parking and loading	-1	Significant levels of on-street parking but in general there are viable alternatives available. Town centre measures likely to have some impact on loading provision on St John's Road.

A.3 A71

Appraisal Criteria	Score	Rationale
Opportunity to enhance a high street or local centre	+2	Gorgie has major potential for upgrade. Also some local shops at Chesser
Opportunity to improve pedestrian accessibility including overcoming severance	+2	Major opportunity to improve or replace underpass crossings (though high cost)
Opportunity to deliver enhanced cycling catering for an important cycle flow	+2	High density of housing provides a demand for cycling and there is space for high quality provision Calder Road without impacting on bus priority. Flat corridor. More space constraints on inner sections but extensive protected cycling feasible
Modest traffic volumes, present opportunity for reallocation of space without wider intervention	-1	Relatively High traffic volumes (1000 vehs/hr)
Opportunity to improve public transport journey times by reducing delays / increasing reliability	+1	High PT volumes (50 buses per hour) serving Western Hailes. Delays at Chesser Avenue and through Gorgie. Extensive existing bus priority but scope for enhancement
Opportunity to reduce transport poverty and inequality	+2	Accident rates are consistent with the rest of the city. Several areas in SIMD lowest 20% and 40%
Opportunity to mitigate negative traffic impacts on air quality	+1	Known AQMAs on Gorgie/Dalry and Slateford/Dundee Street
Ability of investment in the corridor to support new development and/or regeneration	+1	Potential for redevelopment within West Hailes and sites adjacent to a reimagined Calder Road
Integration with objectives of existing projects	+1	Major street reconfiguration under development for Dalry, however nothing under consideration at present but nothing in the outer section (significant investment would be needed for Calder Road to meet objectives)
Impact on general traffic and likely displacement	0	Opportunity to divert general traffic on to the Western Approach Road. in association with changes on inner sections. Significant space available on outer dual carriageway section.
Impacts on parking and loading	-1	Some minor instances of on-street parking for residents that would be difficult to relocate but generally not a major issue

A.4 A70

Appraisal Criteria	Score	Rationale
Opportunity to enhance a high street or local centre	+1	Small cluster in Juniper Green and some spread across Slateford. Local centres at Dalry Road and Dundee Street/Fountain Bridge
Opportunity to improve pedestrian accessibility including overcoming severance	+1	Possible improvements Slateford Station/Chesser area
Opportunity to deliver enhanced cycling catering for an important cycle flow	+1	Significant opportunities, but the need to deliver better bus priority, and problematic physical constraint at Ingles Green railway underbridge means continuous cycling protection is very unlikely to be deliverable
Modest traffic volumes, present opportunity for reallocation of space without wider intervention	+1	800-1000 vehs/hr but the majority of traffic on this corridor originates within the city boundary
Opportunity to improve public transport journey times by reducing delays / increasing reliability	+1	Service 44 is the principal route for half the corridor with several services joining from Longstone (25-35 buses per hr). Delays in the Slateford Station/Chesser area
Opportunity to reduce transport poverty and inequality	+1	Accident rates are consistent with the rest of the city. Some areas in SIMD lowest 20% and 40%
Opportunity to mitigate negative traffic impacts on air quality	0	AQMAs on Gorgie/Dalry and Slateford/Dundee Street
Ability of investment in the corridor to support new development and/or regeneration	0	Limited sites within City Plan 2030.
Integration with objectives of existing projects	+1	Links to Dundee Street/Fountain Bridge and Dalry active travel/ town centre projects and BPF bus priority proposals
Impact on general traffic and likely displacement	0	Bus priority and active travel improvements should be deliverable with low impact
Impacts on parking and loading	0	With the exception of Juniper Green, no significant on-street parking is present

A.5 A702

Appraisal Criteria	Score	Rationale
Opportunity to enhance a high street or local centre	+2	Few shops until Morningside Road where there is high density of shops (high street feel).
Opportunity to improve pedestrian accessibility including overcoming severance	+2	Opportunity to improve crossings in Morningside/Bruntsfield and Comiston Road.
Opportunity to deliver enhanced cycling catering for an important cycle flow	+1	High potential to implement segregation on the outer section of this route. Unlikely to be feasible on Morningside section, but potential to use quiet alternative route to connect towards city centre
Modest traffic volumes, present opportunity for reallocation of space without wider intervention	-1	High levels of congestion but traffic volumes are relatively low (650 vehs/hr) in comparison to other corridors
Opportunity to improve public transport journey times by reducing delays / increasing reliability	+1	High PT volumes (30 buses per hour) and mode share. Buses impacted by congestion with slow journey times and reliability issues. However potential for bus priority on inner sections is very constrained due to continuous 'high street' nature.
Opportunity to reduce transport poverty and inequality	0	One area in SIMD lowest 40%
Opportunity to mitigate negative traffic impacts on air quality	0	No known AQMAs
Ability of investment in the corridor to support new development and/or regeneration	0	Low SIMD and no planned development in City Plan 2030 (Astley Ainsley).
Integration with objectives of existing projects	+1	Links to the Lothian Road Boulevard Fairmilehead crossroads BPF project and Travelling Safely cycling segregation on Comiston Road.
Impact on general traffic and likely displacement	0	Impact of likely measures on general traffic is expected to be low.
Impacts on parking and loading	-1	Some displacement of on-street parking (public and residents) and loading in area of high parking demand

A.6 A701

Appraisal Criteria	Score	Rationale
Opportunity to enhance a high street or local centre	0	Infrequent density of shops until the Bridges where there is high density of shops (high street feel)
Opportunity to improve pedestrian accessibility including overcoming severance	-1	There are local opportunities for improvement, but relatively low pedestrian volumes and adequate crossing facilitates
Opportunity to deliver enhanced cycling catering for an important cycle flow	+1	Potential connectivity to Straiton Retail Park, Cameron Toll and King's Buildings but topography challenging at Liberton Brae
Modest traffic volumes, present opportunity for reallocation of space without wider intervention	+1	Traffic is modest in comparison to other major arterial routes (500-600 vehs/hr)
Opportunity to improve public transport journey times by reducing delays / increasing reliability	+2	40-50 buses per hour on inner section. Regional connections to Penicuik and Peebles. Needs to support major future development in Midlothian. Modest congestion but delays at Kaimes Crossroads and Cameron Toll
Opportunity to reduce transport poverty and inequality	+1	Accident rates are consistent with the rest of the city. Several areas in SIMD lowest 20% and 40%
Opportunity to mitigate negative traffic impacts on air quality	0	No AQMAs and relatively low traffic volumes
Ability of investment in the corridor to support new development and/or regeneration	+2	Major development in Midlothian and the A701 is a key focus for that local authority. Several areas in SIMD lowest 20% and 40%.
Integration with objectives of existing projects	0	Kaimes Crossroads (BPF)
Impact on general traffic and likely displacement	0	Impact of likely measures on general traffic is expected to be low.
Impacts on parking and loading	-1	Instances of on-street parking for residents that would be difficult to relocate

A.7 A772

Appraisal Criteria	Score	Rationale
Opportunity to enhance a high street or local centre	+1	Opportunity to enhance the local centre at Gilmerton/Drum
Opportunity to improve pedestrian accessibility including overcoming severance	-1	There are local opportunities for improvement, modest pedestrian volumes and adequate crossing facilitates
Opportunity to deliver enhanced cycling catering for an important cycle flow	+1	Cycle infrastructure is already provided on this corridor but there are opportunities for enhancement at junctions and for a better connection towards the city centre from the junction of Gilmerton Road and Liberton Gardens.
Modest traffic volumes, present opportunity for reallocation of space without wider intervention	+2	Low traffic volumes in comparison to other arterial routes (200-400 vehs/hr)
Opportunity to improve public transport journey times by reducing delays / increasing reliability	0	Modest public transport volumes (10 buses per hour). Delays at Gilmerton junction, remainder of the corridor performs adequately
Opportunity to reduce transport poverty and inequality	+1	Accident rates are consistent with the rest of the city. Several areas in SIMD lowest 20% and 40%.
Opportunity to mitigate negative traffic impacts on air quality	0	No AQMAs and relatively low traffic volumes
Ability of investment in the corridor to support new development and/or regeneration	+1	Several areas in SIMD lowest 20% and 40%. Substantial development at Farrier Fields
Integration with objectives of existing projects	0	No known future projects but existing cycle infrastructure already in place. Potential links to BPF
Impact on general traffic and likely displacement	0	Impact of likely measures on general traffic is expected to be low
Impacts on parking and loading	-1	Instances of on-street parking for residents that would be difficult to relocate

A.8 A7

Appraisal Criteria	Score	Rationale
Opportunity to enhance a high street or local centre	+1	Royal Infirmary/Bio-Quarter and Cameron Toll are important destinations. Local centre on Dalkieth Road
Opportunity to improve pedestrian accessibility including overcoming severance	-1	Local opportunities for improvement to currently adequate crossing facilitates
Opportunity to deliver enhanced cycling catering for an important cycle flow	+1	Potential to enhance important links to the Royal Infirmary/Bio-Quarter, Cameron Toll and King's Buildings
Modest traffic volumes, present opportunity for reallocation of space without wider intervention	-1	Moderate traffic volumes (700-1200 vehs/hr)
Opportunity to improve public transport journey times by reducing delays / increasing reliability	+2	Important existing PT corridor (20-25 buses per hour + future tram) serving the Royal Infirmary/Bio-Quarter, King's Buildings and Cameron Toll. Delays at Cameron Toll and on Dalkeith Road
Opportunity to reduce transport poverty and inequality	+2	Accident rates are consistent with the rest of the city. Several areas in SIMD lowest 20% and 40%
Opportunity to mitigate negative traffic impacts on air quality	+1	AQMA on the Bridges which this corridor feeds directly into
Ability of investment in the corridor to support new development and/or regeneration	+2	Several areas in SIMD lowest 20% and 40%. Bio-Quarter
Integration with objectives of existing projects	+2	Existing north-south tram proposals, Bio-Quarter and Old Dalkeith Road cycle scheme
Impact on general traffic and likely displacement	0	Impact of likely measures on general traffic is expected to be low
Impacts on parking and loading	-1	Some minor instances of on-street parking for residents that would be difficult to relocate but generally not a major issue

A.9 Niddrie Mains Road

Appraisal Criteria	Score	Rationale
Opportunity to enhance a high street or local centre	+2	Definitive local centre. Significant investment in Craigmillar local centre is not reflected in the current streetscape
Opportunity to improve pedestrian accessibility including overcoming severance	+1	Multiple existing crossings but not always positioned at key desire lines
Opportunity to deliver enhanced cycling catering for an important cycle flow	+2	Significant opportunity for enhancement
Modest traffic volumes, present opportunity for reallocation of space without wider intervention	-1	Reasonably high traffic volumes during midweek peaks and weekend inter-peaks
Opportunity to improve public transport journey times by reducing delays / increasing reliability	+2	Part of the Primary PT network. Significant congestions in the peaks and weekends – the latter driven by shopping demand to/from Fort Kinnaird (30 significantly impacted)
Opportunity to reduce transport poverty and inequality	+2	Several areas in SIMD lowest 20% and 40%.
Opportunity to mitigate negative traffic impacts on air quality	0	No known AQMAs
Ability of investment in the corridor to support new development and/or regeneration	+1	Links areas of SIMD most deprived 20% and new development at the QMU
Integration with objectives of existing projects	+2	Craigmillar town centre and Niddrie Mains Road active travel and bus priority project
Impact on general traffic and likely displacement	-1	Impact of likely measures on general traffic is expected to be modest, some impact in Craigmillar town centre likely.
Impacts on parking and loading	-1	Some on-street parking for residents that would be difficult to relocate

A.10 A1

Appraisal Criteria	Score	Rationale
Opportunity to enhance a high street or local centre	+1	Potential to enhance local centres at Jock's Lodge and Abbeyhill
Opportunity to improve pedestrian accessibility including overcoming severance	+1	Relatively low frequency of crossings in appropriate locations, but potential to enhance
Opportunity to deliver enhanced cycling catering for an important cycle flow	+1	Significant potential for enhancement on outer section but modest demand. Higher demand on inner section but space constraints are mode challenging
Modest traffic volumes, present opportunity for reallocation of space without wider intervention	-1	Relatively modest traffic volumes (850-1050 vehs/hr)
Opportunity to improve public transport journey times by reducing delays / increasing reliability	+1	Major growth corridor supporting growth in East Lothian (50-60 buses per hour currently). Delays due to congestion. Milton Road/Sir Harry Lauder Road and Jock's Lodge but limited potential to enhance exiting bus priority at key locations
Opportunity to reduce transport poverty and inequality	-1	Accident rates are consistent with the rest of the city. Some areas in SIMD lowest 40%
Opportunity to mitigate negative traffic impacts on air quality	0	AQMA at London Road which this corridor feeds into. measures unlikely to have a negative effect
Ability of investment in the corridor to support new development and/or regeneration	+2	Major development in East Lothian and QMU
Integration with objectives of existing projects	0	Links to existing Places for Everyone and Smokey Brae cycle scheme
Impact on general traffic and likely displacement	0	Impact of likely measures on general traffic is expected to be modest
Impacts on parking and loading	0	Some minor instances of on-street parking for residents that would be difficult to relocate but generally not a major issue

A.11 A199

Appraisal Criteria	Score	Rationale
Opportunity to enhance a high street or local centre	+2	Portobello town centre at east end of the corridor has major potential for enhancement. Currently there are few shops spread across the corridor but there is potential for significant densification around Seafield
Opportunity to improve pedestrian accessibility including overcoming severance	-1	Some sections are one sided street or have little residential development. However crossing opportunities are poor in some places and require improvement .
Opportunity to deliver enhanced cycling catering for an important cycle flow	+2	Potential east/west connection across the north of the city with level topography
Modest traffic volumes, present opportunity for reallocation of space without wider intervention	-1	Forms part of the primary east/west link across the north of the city (850-1150 vehs/hr)
Opportunity to improve public transport journey times by reducing delays / increasing reliability	0	Modest bus volumes (10-20 buses per hour) in comparison to other arterial routes but potential increase as part of future developments. Delays a result of reduced priority at intersections with other key corridors
Opportunity to reduce transport poverty and inequality	-1	Accident rates are consistent with the rest of the city. Some areas in SIMD lowest 40%. Limited population through Seafield and Portobello bypass
Opportunity to mitigate negative traffic impacts on air quality	+2	Opportunity to improve known AQMA at Salamander Street
Ability of investment in the corridor to support new development and/or regeneration	+2	Significant development anticipated in the vicinity of Seafield
Integration with objectives of existing projects	+1	Links to Leith Connections Project and Seafield regeneration
Impact on general traffic and likely displacement	-1	Impact of likely measures on general traffic is expected to be modest - associated with changes at the major Kings Road junction
Impacts on parking and loading	+2	No significant on-street parking with viable alternatives present

A.12 Granton – Stockbridge

Appraisal Criteria	Score	Rationale
Opportunity to enhance a high street or local centre	+2	Stockbridge local centre at southern end of the corridor has major potential for enhancement.
Opportunity to improve pedestrian accessibility including overcoming severance	+1	High pedestrian movements in Stockbridge, but regular available crossings present.
Opportunity to deliver enhanced cycling catering for an important cycle flow	+1	Topography means strategic links to city centre likely to be delivered on alternative routes. However very good opportunity for better connection between Stockbridge and the north of the city
Modest traffic volumes, present opportunity for reallocation of space without wider intervention	+2	Comparatively low traffic volumes (500-650 vehs/hr)
Opportunity to improve public transport journey times by reducing delays / increasing reliability	0	Limited number (10-15 buses per hour) but important bus services. Limited delays in comparison to other corridors and relatively low frequency. Limited opportunity for bus priority without reducing traffic volume
Opportunity to reduce transport poverty and inequality	+1	Areas in SIMD lowest 20% and 40% at Granton
Opportunity to mitigate negative traffic impacts on air quality	0	No known AMQAs and relatively low traffic volumes
Ability of investment in the corridor to support new development and/or regeneration	+1	Development in City Plan 2030 at Granton Waterfront
Integration with objectives of existing projects	+1	Synergy with redevelopment in Granton
Impact on general traffic and likely displacement	0	Impact of likely measures on general traffic is expected to be low
Impacts on parking and loading	-1	Instances of on-street parking for residents and loading for businesses that would be difficult to relocate

A.13 Ferry Road

Appraisal Criteria	Score	Rationale
Opportunity to enhance a high street or local centre	+1	Local centres at Inverleith Row, Pilrig Street and Great Junction Street
Opportunity to improve pedestrian accessibility including overcoming severance	+1	Infrequent crossings in places,
Opportunity to deliver enhanced cycling catering for an important cycle flow	+1	Significant potential for enhancement on western section but significant constrainst towards east
Modest traffic volumes, present opportunity for reallocation of space without wider intervention	-2	Medium traffic volumes (700-900 vehs/hr)
Opportunity to improve public transport journey times by reducing delays / increasing reliability	+1	Key connection east/west across north Edinburgh (25-35 buses per hour). Significant delays to buses throughout the day – but fairly limited opportunities for priority
Opportunity to reduce transport poverty and inequality	+1	Some areas in SIMD lowest 20% and 40%
Opportunity to mitigate negative traffic impacts on air quality	+2	Known AQMA at Inverleith Row – opportunity to improve
Ability of investment in the corridor to support new development and/or regeneration	+1	Some areas in SIMD lowest 20% and 40%. Future development at Bonnington supporting City Plan 2030 and further afield at Seafield and Portobello
Integration with objectives of existing projects	0	In City Plan but no designated funding or schemes
Impact on general traffic and likely displacement	-1	Changes could result in some traffic displacement
Impacts on parking and loading	-1	Instances of on-street parking for residents that would be difficult to relocate

Appendix D. City Centre Options Modelling

General Traffic Journey Time Impacts

Microsimulation modelling was undertaken to assess the four city centre options and provide more detailed travel times for general traffic through the city centre.

The journey time routes compared are shown in Figure D.1 with key corridors and the anticipated diversion routes included. Modelling journey time outputs on these routes are listed in Table D.1 for the AM and Table D.2 for the PM. The two tables show the base model travel time and the percentage change from all four options models under the 100% traffic demand scenario and 70% demand scenario.

It should be noted that under Option 4 (100% traffic demands), modelled congestion levels in the city centre mean that some vehicles cannot complete their journeys within the simulation period. This reduces forecast journey times as these are averaged over fewer vehicles, and exclude those with extended travel times that could not complete their journeys.

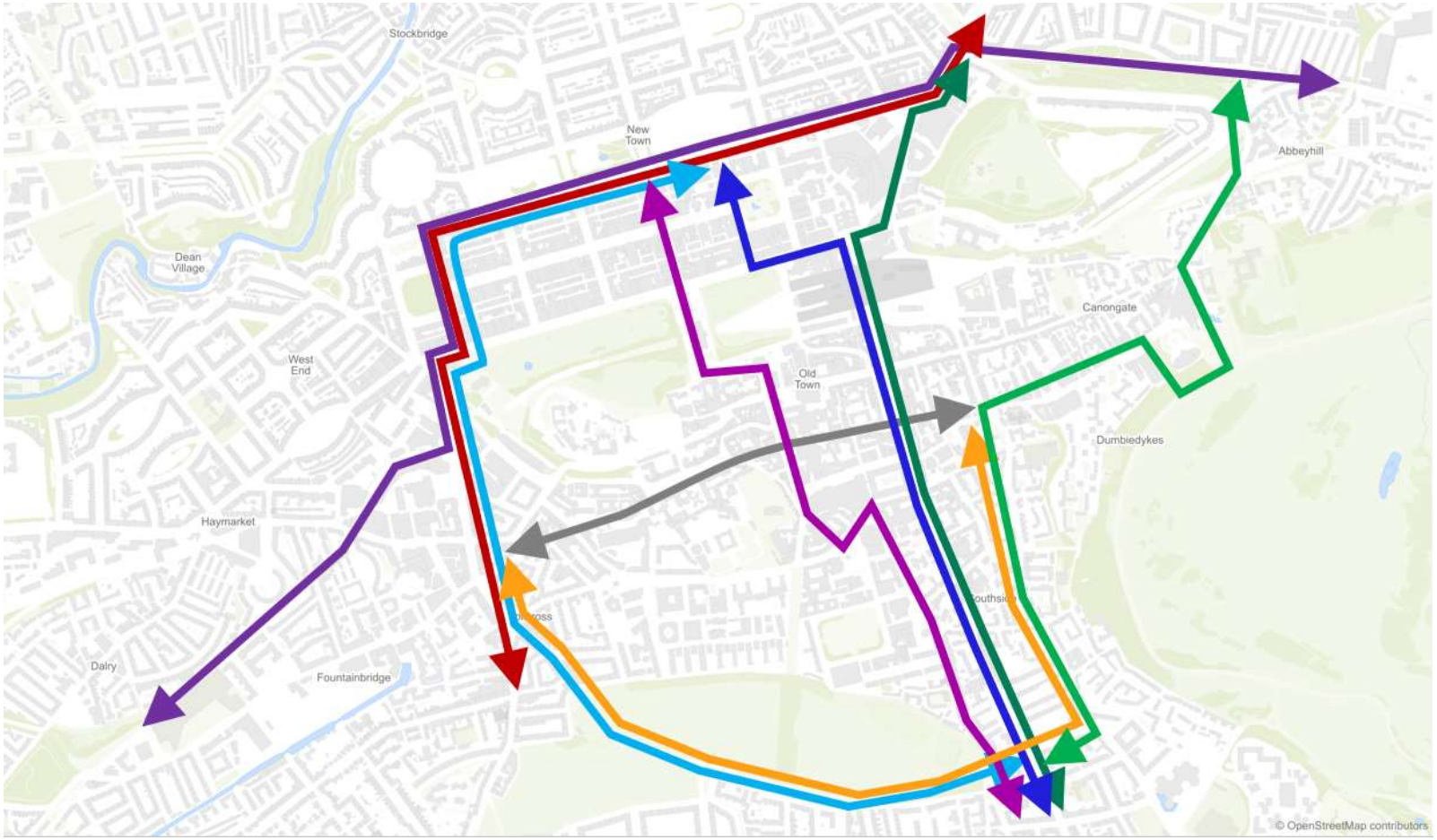


Figure D.1: Modelled General Traffic Journey Time Assessment Routes

Table D.1: Modelled AM General Traffic Journey Times

	Route	Base Ave Journey Times	100% Traffic Demands				70% Traffic Demands			
			Opt 1	Opt 2	Opt 3	Opt 4	Opt 1	Opt 2	Opt 3	Opt 4
	Tollcross – Leith Walk	14:05	-2%	2%	41%	21%	-23%	-24%	-16%	-12%
	Leith Walk – Tollcross	11:35	-8%	65%	75%	66%	-20%	60%	49%	14%
	W Approach Rd – A1	10:22	42%	40%	120%	75%	-6%	5%	16%	14%
	A1 – W Approach Rd	11:15	4%	115%	139%	37%	-7%	21%	29%	13%
	Tollcross – Dundas St	08:33	-10%	21%	55%	26%	-17%	0%	13%	13%
	Dundas St – Tollcross	08:26	16%	100%	115%	68%	-1%	73%	63%	10%
	Lothian Rd–Holyrood Rd (via Cowgate)	03:09	9%	7%	-	-	-1%	0%	-	-
	Holyrood Rd–Lothian Rd (via Cowgate)	04:28	1%	-21%	-	-	-19%	-17%	-	-
	Lothian Rd–Holyrood Rd (via Meadows)	06:31	-13%	-22%	13%	51%	-24%	-25%	1%	-14%
	Holyrood Rd–Lothian Rd (via Meadows)	06:46	14%	13%	104%	119%	-33%	-30%	21%	40%
	A7–Leith St (via Bridges)	11:34	48%	-	-	-	-37%	-	-	-
	Leith St–A7 (via Bridges)	04:48	17%	-	-	-	-13%	-	-	-
	A7–A1 (via Pleasance)	05:27	10%	36%	134%	86%	-4%	33%	32%	10%
	A1–A7 (via Pleasance)	06:24	-11%	55%	81%	48%	-23%	-20%	-26%	-22%
	A7–Queen St (via Bridges)	08:33	32%	-	-	-	23%	-	-	-
	Queen St–A7 (via Bridges)	08:48	36%	-	-	-	9%	-	-	-
	A7–Queen St (via Mound)	15:56	-	-	-	-	-	-	-	-
	Queen St–A7 (via Mound)	08:31	-	-	-	-	-	-	-	-
	A7–Queen St (via Lothian Rd)	10:22	18%	13%	90%	92%	-24%	-14%	24%	33%
	Queen St–A7 (via Lothian Rd)	10:21	-10%	23%	48%	50%	-17%	4%	5%	-4%

Table D.2: Modelled PM General Traffic Journey Times

	Route	Base Ave Journey Times	100% Traffic Demands				70% Traffic Demands			
			Opt 1	Opt 2	Opt 3	Opt 4	Opt 1	Opt 2	Opt 3	Opt 4
	Tollcross – Leith Walk	16:57	14%	-25%	109%	15%	-41%	-45%	-29%	-37%
	Leith Walk – Tollcross	10:52	10%	140%	147%	152%	-4%	99%	93%	92%
	W Approach Rd – A1	13:15	112%	-8%	196%	39%	-16%	-24%	-10%	-14%
	A1 – W Approach Rd	13:24	35%	107%	173%	174%	-9%	8%	21%	38%
	Tollcross – Dundas St	07:52	-8%	98%	126%	63%	-12%	53%	9%	-10%
	Dundas St – Tollcross	09:07	82%	125%	138%	103%	29%	82%	85%	76%
	Lothian Rd–Holyrood Rd (via Cowgate)	03:18	16%	49%	-	-	-2%	176%	-	-
	Holyrood Rd–Lothian Rd (via Cowgate)	09:26	-11%	16%	-	-	-60%	-51%	-	-
	Lothian Rd–Holyrood Rd (via Meadows)	05:10	-5%	28%	18%	8%	-10%	39%	16%	13%
	Holyrood Rd–Lothian Rd (via Meadows)	05:06	5%	-7%	152%	104%	-12%	-9%	26%	61%
	A7–Leith St (via Bridges)	16:21	4%	-	-	-	-64%	-	-	-
	Leith St–A7 (via Bridges)	05:32	-18%	-	-	-	-20%	-	-	-
	A7–A1 (via Pleasance)	05:23	1%	52%	78%	82%	-11%	38%	20%	11%
	A1–A7 (via Pleasance)	05:17	5%	48%	84%	74%	-9%	8%	-7%	0%
	A7–Queen St (via Bridges)	11:17	-10%	-	-	-	-13%	-	-	-
	Queen St–A7 (via Bridges)	08:56	45%	-	-	-	39%	-	-	-
	A7–Queen St (via Mound)	12:49	-	-	-	-	-	-	-	-
	Queen St–A7 (via Mound)	10:56	-	-	-	-	-	-	-	-
	A7–Queen St (via Lothian Rd)	09:38	60%	-6%	220%	96%	-17%	-17%	13%	21%
	Queen St–A7 (via Lothian Rd)	10:02	7%	42%	66%	54%	-9%	4%	13%	27%

100% Traffic Demands

The major network change for general traffic under Option 1 is the closure of the Mound corridor. This displaces traffic onto Lothian Road, the Bridges, and the Pleasance, increasing travel times on the corridors, and a majority of routes analysed through the city centre.

The general traffic restrictions on the Bridges corridor under Options 2-4 leads to significant delay on all other routes assessed. Lothian Road is one of the primary diversion routes from the Bridges and journey times on this corridor increase in excess of 100% (15-20 minutes). Delays of 10-15 minutes are also anticipated for vehicles that use the Pleasance, which is another key diversion route for vehicles that previously used the Bridges.

In Options 3 and 4, restricting general traffic on the Cowgate/Grassmarket resulted in a modelled increase of around 5-10 minutes for vehicles travelling east and west through the city centre. Previously 4-9 minutes via the Cowgate/Grassmarket and 10-15 minutes via Melville Drive and the Pleasance.

70% Traffic Demands

If Edinburgh's 30% reduction in vehicle kilometres target is met, the delays for general traffic are significantly reduced. Modelling of Option 1 suggests most routes assessed would be quicker for general traffic. This would indicate that this option does not go far enough to disincentivise general traffic from travelling through the city centre.

However, once more restrictions are imposed such as the Bridges (Options 2-4) and Cowgate/Grassmarket (Options 3 and 4) delays of up to 10 minutes were modelled on the corridors that remain open: London Road, Queen Street, Lothian Road, Melville Drive, the Pleasance and Abbeyhill. These levels of delays are significant for those that need to travel in the city centre by private vehicles, e.g. mobility impaired, deliveries, etc.

As previously stated, congestion levels in Option 4 are severe and the journey time analysis above does not provide a complete picture of the performance of the network. Implementing this option is likely to be a step too far even if a 30% reduction in traffic demand is achieved.

70% Compared With 100% Traffic Demands

At 100% of existing traffic demands significant levels of congestion are anticipated throughout the city centre if any additional interventions are implemented beyond Option 1 proposals. Several of the routes analysed encounter delays in excess of 100% under Option 2 increasing to almost all routes under Options 3 and 4. This suggests Options 2-4 should not be implemented without confidence that the options or wider policy measures will induce a notable reduction in private vehicle demand in the city centre.

Gradually making the city centre less attractive for general traffic and delivering major sustainable transport improvements to provide an alternative to private vehicle use (such as new Tram routes) should result in a city centre that is still serviceable and accessible for people of all abilities and demographics. As demonstrated by the more manageable general traffic delays modelled in the 70% traffic demands scenario for Options 2 and 3.

In a similar fashion to the public transport impacts above, refinement of the traffic model will be undertaken to understand the extent to which these impacts can be mitigated and contribute to the levels of traffic reduction needed across the city centre. The above impacts do however set out the relative impacts that can be expected between each option to inform the assessment of these options.

Appendix 2. Corridor 'design intent' example

Corstorphine Road: A8-05

Existing road layout:

Proposed road layout changes:

- Provide 2-way protected cycling.
- Two-way bus priority can be accommodated along the corridor, with some short stretches requiring the application of minimum widths.
- Variable width up to 23m allows place space, on street parking, and loading to be allocated at some locations.

Western Terrace: A8-06

Existing road layout:

Proposed road layout changes:

- Provide one-way bus lane and bi-directional cycling (replacing a bus lane) to link in with the existing level of provision on Section A8-07.
- Retain place to the east of section around Murrayfield Gardens.

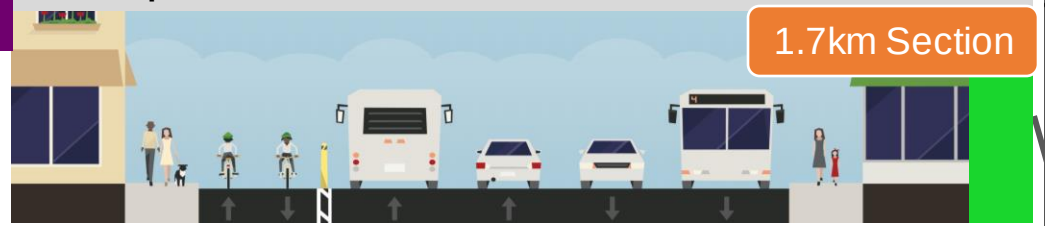
Hampton Terrace/Haymarket Terrace: A8-07

Existing road layout:

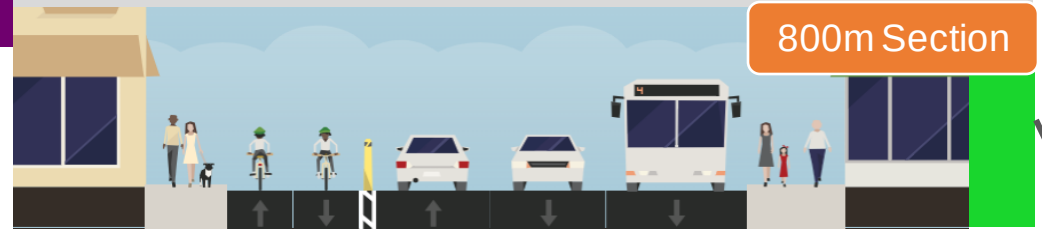
Proposed road layout changes:

- Retain existing provision of bi-directional cycling and the one-way inbound bus lane.
- Retain place to the west of section along Roseburn Terrace.

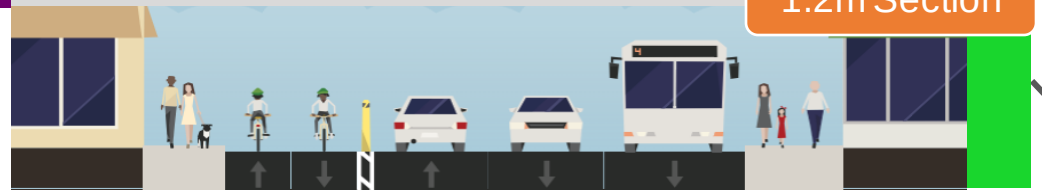
Corstorphine Road: A8-05 – Minimum width of 20m

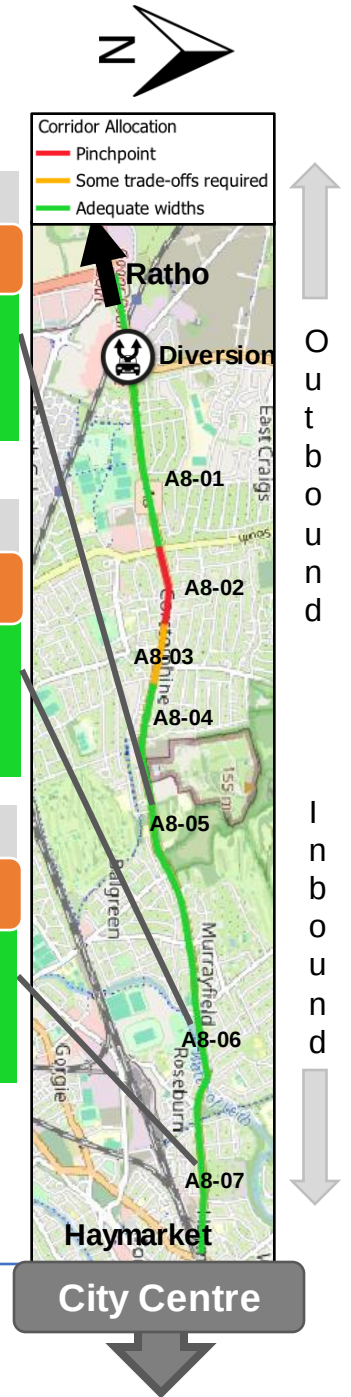


Western Terrace: A8-06 – Minimum width of 18m



Hampton Ter. and Haymarket Ter.: A8-07 – Minimum width of 18m



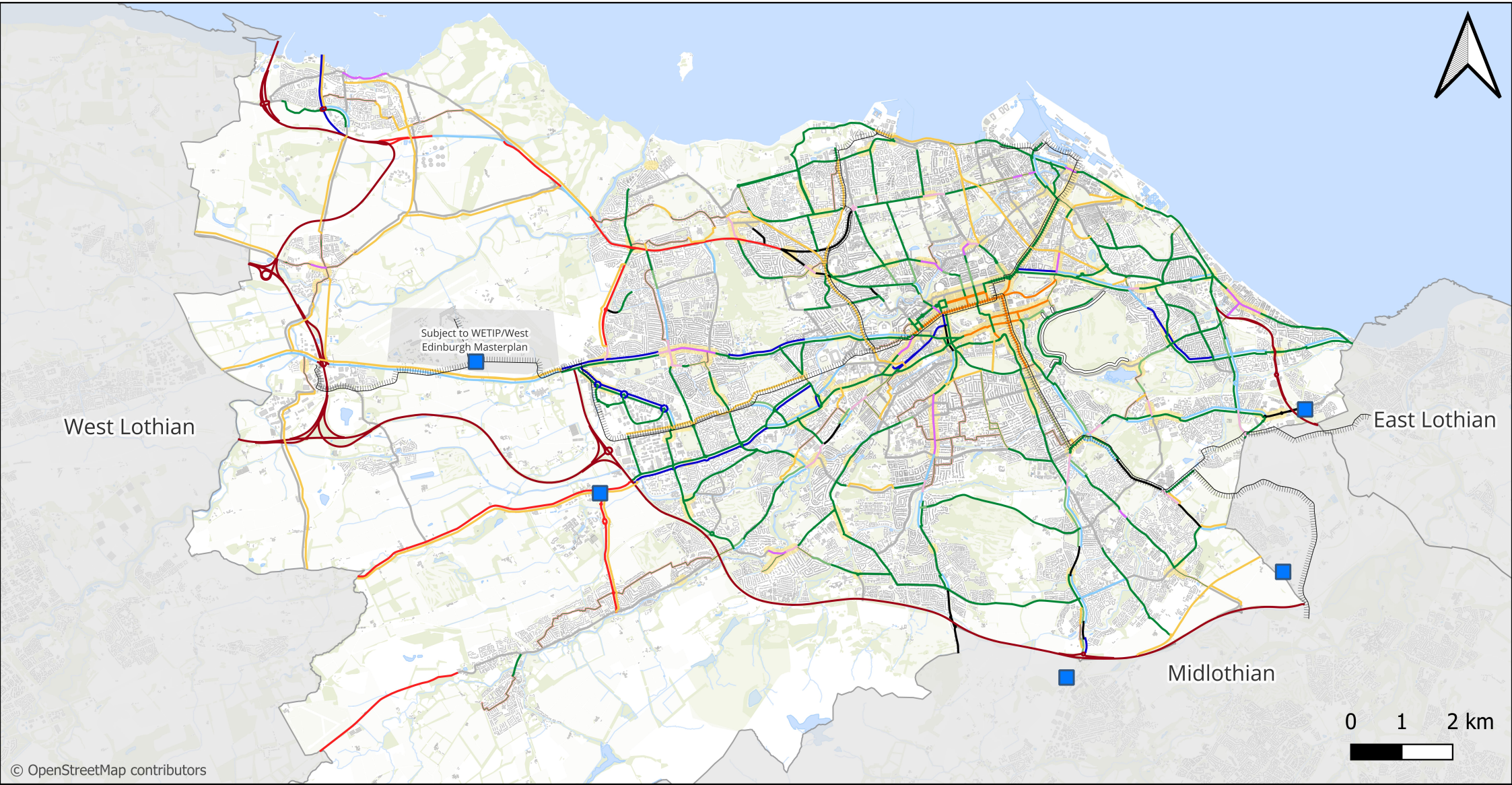


Our Future Streets (Circulation Plan) - Integrated Network Map

Key: Intended Allocation of Space

- Bus lane in one direction
- Bus lanes in both directions
- Bus lane(s) and protected cycle track(s)
- 1-way protected cycle track
- 2-way protected cycle track(s)
- Traffic network - higher volume
- Mixed traffic street - general traffic network
- Mixed traffic street - cycle network
- Local design solution - traffic restriction
- Local design solution - junction/movement
- Local design solution - place/high street
- Local design solution - cycle network continuity
- Traffic free path
- Tram Alignments (Existing and Future)
- High Place Value
- HES Roads
- Trunk road(s) and motorway network
- Park and ride sites

Note: When streetspace allocations are proposed rather than existing, delivery will be subject to consultation and relevant legal processes as appropriate to any changes.



Our Future Streets (Circulation Plan) - Integrated Network Map - City Centre

Key: Intended Allocation of Space

- Bus lane in one direction
- Bus lanes in both directions
- Bus lane(s) and protected cycle track(s)
- 1-way protected cycle track
- 2-way protected cycle track(s)
- Traffic network - higher volume
- Mixed traffic street - general traffic network
- Mixed traffic street - cycle network
- Local design solution - traffic restriction
- Local design solution - junction/movement
- Local design solution - place/high street
- Local design solution - cycle network continuity
- Traffic free path
- Tram Alignments (Existing and Future)
- High Place Value
- HES Roads

Note: When streetspace allocations are proposed rather than existing, delivery will be subject to consultation and relevant legal processes as appropriate to any changes.