

PRELIMINARY OPTIONS APPRAISAL



SYSTRA

GLASGOW CITY CENTRE TRANSFORMATION PLAN

PRELIMINARY OPTIONS APPRAISAL

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1. INTRODUCTION

1.1 Background

1.1.1 SYSTRA Limited (SYSTRA), in conjunction with Ironside Farrar, Urban Movement and Logistics UK have been commissioned by Glasgow City Council (GCC) to help prepare the Glasgow City Centre Transformation Plan (CCTP). The Plan will sit under the new, 10 year Glasgow Transport Strategy, which is currently being prepared.

1.1.2 The CCTP will help:

- Re-allocate city centre road space for active travel and green infrastructure;
- Deliver improved public transport and support/encourage a shift to more sustainable modes, particularly walking, cycling and public transport;
- Improve access for the mobility impaired;
- Achieve a 30-40% reduction in peak-hour private car traffic by 2030;
- Deliver improvements for servicing (e.g. goods deliveries and waste collection) to improve the vitality of the city centre;
- Support a doubling of the city centre population to 40,000 by 2035 and
- Support City's aim to be net zero carbon by 2030.

1.2 Purpose of this report

1.2.1 The purpose of this report is to present the findings of the Preliminary Options Appraisal. This is the second stage of the CCTP transport appraisal, and aims to appraise the transport options recommended from the previous stage, the Pre-appraisal (Initial Appraisal: Case for Change).

1.2.2 The Preliminary Options Appraisal is largely qualitative but draws on available quantitative data and previous studies where appropriate.

1.3 Pre-Appraisal (Initial Appraisal: Case for Change)

1.3.1 The Pre-Appraisal (Initial Appraisal: Case for Change) stage was completed and approved in September 2021. It collated relevant socio-demographic and transport information for the study area and identified the key problems, opportunities, issues and constraints for Glasgow city centre. A set of four Transport Planning Objectives (TPOs) were then developed, and a long list of potential interventions that could help address the identified problems and opportunities generated. The interventions were then grouped into broad themes for further consideration in the Preliminary Options Appraisal.

1.3.2 The Pre-Appraisal (Initial Appraisal: Case for Change) work was informed by an extensive stakeholder and public consultation.

1.3.3 A summary of the identified problems, opportunities, issues and constraints, key policies and the TPOs are presented in Figure 1.

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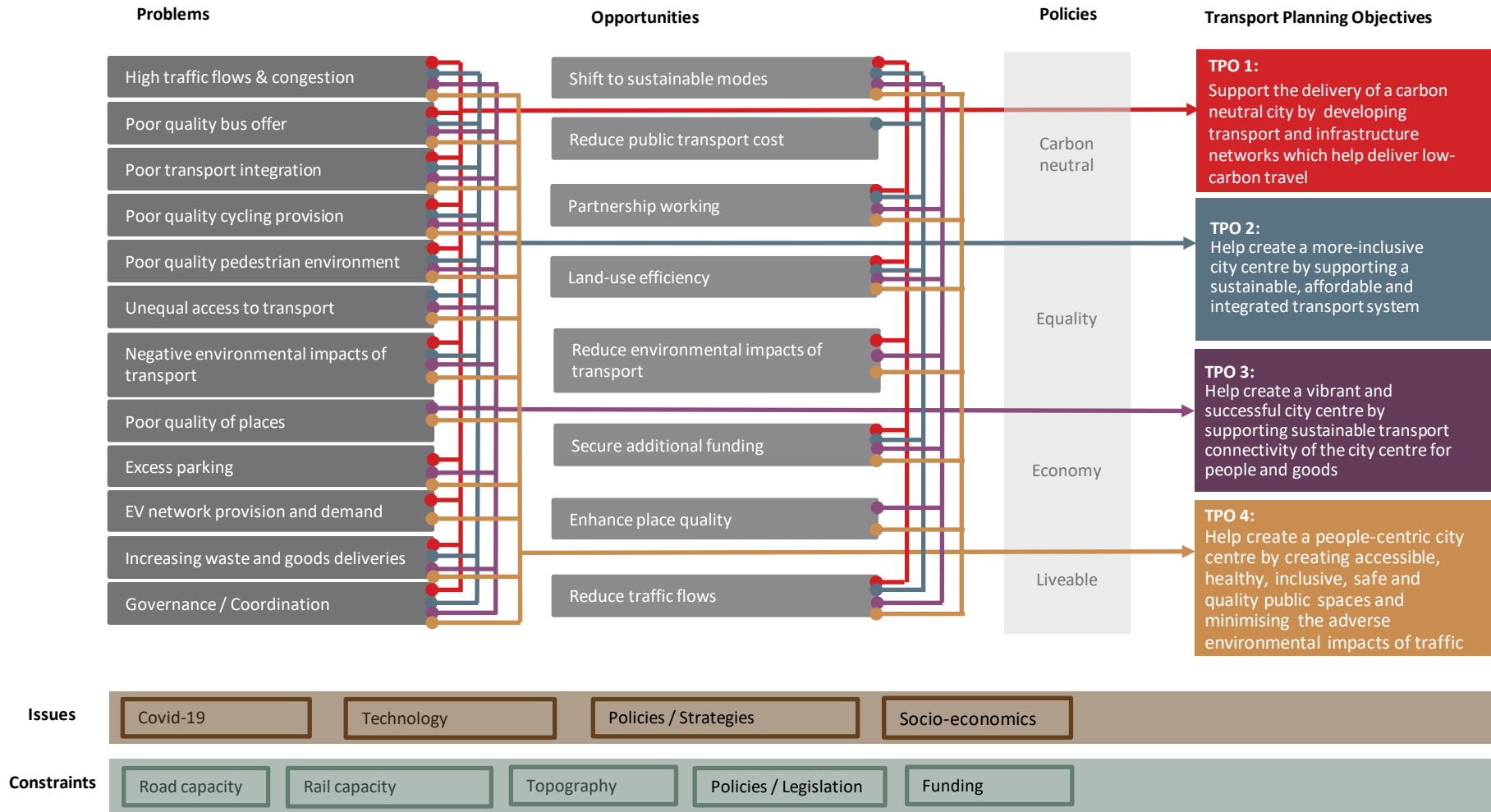


Figure 1. Mapping of Problems, Opportunities, Issues and Constraints, Policies and Transport Planning Objectives

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2. METHODOLOGY

2.1 Scottish Transport Appraisal Guidance (STAG)

2.1.1 The study is being undertaken in accordance with the Scottish Transport Appraisal Guidance (STAG). The process provides a framework to assess the performance of different transport options to address the identified problems and opportunities, and presents the results in a consistent manner to decision makers. The STAG process comprises four stages as follows:

- **Pre-Appraisal (Initial Appraisal: Case for Change):** where the problems, opportunities, issues and constraints are identified and scoped of possible. Study-specific Transport Planning Objectives (TPOs) are then identified and a list of possible options to address the problems and opportunities generated;
- **Initial Appraisal (Preliminary Options Appraisal):** where the potential options are appraised against the TPOs, five STAG criteria, Established Policy Directives and factors concerning feasibility, affordability and public acceptability, to ensure they are likely to fulfil the study's requirements;
- **Detailed Appraisal (Detailed Options Appraisal):** which involves more detailed consideration of potential options taken forward following the Initial Appraisal (Preliminary Options Appraisal), and where the outcomes to inform investment decision makers are presented. The Detailed Options Appraisal also includes proposals for monitoring and evaluation; and
- **Post-Appraisal:** which involves the application of the monitoring and evaluation proposals developed as part of the appraisal.

2.1.2 This stage of the study is the **Initial Appraisal (Preliminary Options Appraisal)**.

2.2 Sifting and packaging of interventions

2.2.1 The long list of interventions, identified during the Case for Change stage, was further developed and sifted, as ongoing stakeholder feedback was provided. The interventions were grouped into nine broad themes, as follows:

- Repurposing road space;
- Sustainable transport connectivity;
- Accessible, inclusive, safe and quality public spaces;
- Improved pedestrian and cycle facilities and infrastructure;
- Increased physical activity and health;
- Sustainable, affordable and integrated transport system;
- Minimised adverse environmental impacts of traffic;
- Network of net zero carbon infrastructure; and
- Demand management.

2.2.2 The individual interventions within each theme were then allocated to four packages of options. This process was informed by the high level assessment of 'deliverability' of each intervention and its alignment with the four packages.

2.2.3 The resulting lists of packages (i.e. options) including the relevant interventions, are outlined in Chapter 3.

2.3 Transport Planning Objectives

2.3.1 The interventions and the Options packages were appraised against the TPOs, which were developed during the Pre-Appraisal (Initial Appraisal: Case for Change) stage. The TPOs are:

Net Zero Carbon

TPO1 – Support the delivery of a net zero carbon city by developing transport and infrastructure networks which help deliver low-carbon travel;

Inclusive

TPO2 – Help create a more-inclusive city centre by supporting a sustainable, affordable and integrated transport system;

Economy

TPO3 – Help create a vibrant and successful city centre by supporting sustainable transport connectivity of the city centre for people and goods;

Liveable

TPO4 - Help create a people-centric city centre by creating accessible, healthy, inclusive, safe and quality public spaces and minimising the adverse environmental impacts of traffic.

2.3.2 The appraisal was undertaken using a seven-point scale as presented below for the STAG criteria.

2.4 STAG Criteria

2.4.1 The interventions as well as the Options packages were also appraised against the five main STAG criteria of Environment; Safety; Economy; Integration; and Accessibility and Social Inclusion; as well as a number of sub-criteria, as follows:

Environment

- Noise and vibration;
- Global air quality - carbon dioxide (CO2);
- Local air quality - particulates (PM10) and nitrogen dioxide (NO2);
- Water quality, drainage and flood defence;
- Geology;
- Biodiversity and habitats;
- Landscape;
- Visual amenity;
- Agriculture and soils;
- Cultural heritage; and
- Physical Fitness.

Safety

- Accidents; and
- Security.

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Economy

- Transport Economic Efficiency (TEE); and
- Wider Economic Impacts.

Integration

- Transport integration;
- Transport and land-use integration; and
- Policy integration.

Accessibility and Social Inclusion

- Community Accessibility; and
- Comparative Accessibility.

2.4.2 The performance of an option against each of these criteria was qualitatively assessed on the seven-point scale, as recommended in STAG:

- **Major benefit (✓✓✓):** these are benefits or positive impacts which, depending on the scale of benefit or severity of impact, the practitioner feels should be a principal consideration when assessing an option's eligibility for funding;
- **Moderate benefit (✓✓):** the option is anticipated to have only a moderate benefit or positive impact. Moderate benefits and impacts are those which taken in isolation may not determine an option's eligibility for funding, but taken together do so;
- **Minor benefit (✓):** the option is anticipated to have only a small benefit or positive impact. Small benefits or impacts are those which are worth noting, but the practitioner believes are not likely to contribute materially to determining whether an option is funded or otherwise.
- **No benefit or impact (-):** the option is anticipated to have no or negligible benefit or negative impact.
- **Small minor cost or negative impact (x):** the option is anticipated to have only a moderate cost or negative impact. Moderate costs/negative impacts are those which taken in isolation may not determine an option's eligibility for funding, but taken together could do so.
- **Moderate cost or negative impact (xx):** the option is anticipated to have only a moderate cost or negative impact. Moderate costs/negative impacts are those which taken in isolation may not determine an option's eligibility for funding, but taken together could do so; and
- **Major cost or negative impacts (xxx):** these are costs or negative impacts which, depending on the scale of cost or severity of impact, the practitioner should take into consideration when assessing an option's eligibility for funding.

2.4.3 It is noted that the STAG process is currently being 'refreshed' and some of the STAG sub-criteria are being re-allocated under different STAG criteria headings. In addition, new Climate Change criterion is suggested for inclusion in as part of the appraisal. In the absence of the detailed technical database describing the sub-criteria, it is considered that the existing, adopted appraisal against the five STAG criteria will capture the

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proposed new elements. Matters concerning Climate change will be captured as part of the Environment criterion, and within Policy integration.

2.5 Feasibility, Affordability and Public Acceptability

2.5.1 Alongside the STAG criteria, the implementation potential of the options has been appraised in terms of feasibility, affordability and public acceptability:

- **Feasibility** – a preliminary assessment of the feasibility of construction or implementation and operation (if relevant) of an option. It also includes a status of its technology (e.g. proven, prototype, in development, etc.), cost, timescale or deliverability risks associated with the construction / operation of the option, and consideration of the need for any departures from design standards;
- **Affordability** – the scale of the financing burden on the promoting authority and other funding organisations, including any associated risks. It also includes the level of risk associated with an option’s ongoing operating or maintenance costs and its likely operating revenues (if applicable); and
- **Public Acceptability** – the likely public response at this initial appraisal phase.

2.5.2 For this part of the appraisal, the performance of each option has been appraised over three levels: minor, moderate or major considerations. By ‘consideration’ it is meant that there may be potential negative or problematic issues which will require a certain level of investigation.

2.5.3 As this analysis highlights ‘potential’ issues only, the scorings of ‘major considerations’ have not necessarily led to an outright rejection of an option. The scoring has been considered in the overall context of the appraisal and further analysis of ‘major’ issues should be explored if the option is taken forward.

2.6 Established Policy Directives

2.6.1 Each option has also been appraised in terms of its alignment with and contribution to the existing policies and plans. These include those reviewed and referenced in the Pre-Appraisal (Initial Appraisal: Case for Change) report, notably:

National

- [National Performance Framework](#)
- [National Planning Framework 3, National Planning Framework 4 Position Statement](#)
- [Scottish Planning Policy](#)
- [National Transport Strategy 2](#)
- [Infrastructure Investment Plan](#)
- [Scotland's Economic Strategy](#)
- [Strategic Transport Projects Review 2](#)
- [Scotland's 2018-2032 Climate Change Plan](#)
- [Climate Change Bill, 2019](#)

Regional

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- [STPR 2 Case for Change for the Glasgow Region](#)
- [Regional Transport Strategy](#)
- Strategic Development Plan ([Clydeplan](#))
- [Glasgow City Region City Deal and Glasgow City Region Economic Strategy 2017-35](#)
- [Glasgow City Region Bus Partnership](#)

City

- [Local Transport Strategy 2007 and the emerging Glasgow Transport Strategy \(2021 – 2031\)](#)
- [Glasgow City Development Plan 2017](#) and [Supplementary Guidance](#)
- [Connectivity commission for Glasgow](#)
- [Glasgow Low Emission Zone](#)
- [Glasgow's Climate Plan](#) (June 2021)
- Glasgow Taxis – Strategic overview
- [Glasgow's Spaces for People](#)
- [Glasgow's Strategic Plan for Cycling 2016-2025](#)

City Centre

- [City Centre Strategic Development Framework](#) (Planning Supplementary Guidance)
- [Glasgow City Centre Strategy 2014-19](#) and District Regeneration Frameworks
- [Glasgow City Centre Living Strategy](#)
- [Glasgow City Centre Transport Strategy 2014-2024](#)
- [Lane Strategy for Glasgow City Centre](#)
- Glasgow City Centre Strategic Parking Review 2015

2.7 Stakeholder Engagement

2.7.1 The list of potential interventions, themes and the options packages have been informed by stakeholder workshops held during September and October 2021. Where stakeholders were unable to attend the group sessions, alternative ways were offered to ensure access for all. These included one-to-one online and/or telephone discussions, email correspondence and meetings.

2.7.2 Stakeholder engagement is an ongoing process and will continue throughout the appraisal of the options. It builds on the extensive stakeholder and public consultation which informed the development of the Case for Change stage of the GCCTP.

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3. PRELIMINARY OPTIONS APPRAISAL

3.1 Overview

3.1.1 The Preliminary Options Appraisal followed a largely qualitative assessment of the interventions and the packages of options (i.e. options). This chapter summarises the assessment of performance of the options in line with the methodology described in Chapter 2, i.e. against:

- The Transport Planning Objectives (TPOs);
- The STAG criteria;
- Feasibility, Affordability and Public Acceptability; and
- Policy alignment.

3.1.2 The options that are being appraised in this Preliminary Options Appraisal are:

Option 1 - Do Minimum / Low investment measures

Measures that focus on public transport interventions and completion of existing programmes and projects;

Option 2 – Incentive based measures

Measures that focus on extending, promoting and incentivising travel behaviour change;

Option 3 - Incentive and Demand Management measures

A balance of demand management measures and measures that extend, promote and incentivise travel behaviour change;

Option 4 - Demand Management measures

Measures that focus on demand management in order to reduce vehicular access and thus promote travel behaviour change

3.1.3 The summaries of the appraisal of each option are presented in the tables below. More detailed information on the individual interventions, including their assessment against the above criteria, is included in Appendix A.

3.1.4 Note that the interventions have been allocated to all relevant themes and may appear more than once in each package.

3.2 Option Package 1 Appraisal: Do Minimum / Low investment measures

Option Package 1 Description

Measures that focus on public transport interventions and the completion of existing programmes and projects. The measures in this package include:

THEME 1a - Repurposing road space (PT)

- Strategic repurposing of the road network to prioritise public transport
- High vehicle occupancy lanes including information in the city centre
- Effective waste and recycling management to create more effective bus lanes
- Parking distribution, restrictions and increased enforcement - to provide more bus lanes

THEME 1b - Repurposing road space (Active travel/Place – non-motorised movements)

- Effective waste and recycling management to create more active travel space
- Improved traffic signal control systems- to prioritise active travel
- Traffic-calming (incl High Street, Broomielaw), speed management and enforcement - to prioritise active travel

THEME 2 - Sustainable transport connectivity

- Connecting train stations - better pedestrian provision
- Integrate lanes with Avenues/Avenues Plus

THEME 3 - Accessible, inclusive, safe and quality public spaces

- Effective waste and recycling management to improve the urban realm
- Parking distribution, restrictions and increased enforcement - to provide more quality public spaces
- Require all developments to comply with Secure by Design with Animated/Activated Frontages
- Develop Feasibility for new City Square at Mitchell Library incl. M8 bridging
- Develop City Centre Public Realm Strategy
- Street cleansing– identify, assess and prioritise
- Licensing of pavement areas / street trading
- Open up St. Enoch Shopping Centre, Buchanan Galleries
- Apply the safe systems approach, including education, training and publicity to prevent casualties
- Create safe junctions and crossing places (e.g. including around Cowcaddens Subway Station, Cowcaddens Road, Port Dundas junction)
- Safe and car free school zones

THEME 4 - Improved pedestrian and cycle facilities and infrastructure

- Create safe junctions and crossing places (e.g. including around Cowcaddens Subway Station, Cowcaddens Road, Port Dundas junction)
- Active travel hubs
- Improve existing bike hire offer, with more affordable access to cycling and bike hire including electric bikes
- More cycling parking and storage

THEME 5 - Increased physical activity and health

- Promote public awareness of health benefits of outdoor lifestyles, activity and active travel (incl disability/mobility impaired messages)

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THEME 6 - Sustainable, affordable and integrated transport system

- Connecting train stations - better pedestrian provision
- Shared mobility including public taxi, private hire and ride-hailing (includes taxi ranks locations)
- Coach parking (focus on location, safety/integration)
- Bus Stop rationalisation

THEME 7 - Minimised adverse environmental impacts of traffic

- Low emission vehicle lanes, including information in the city centre
- Green street, parks and play spaces
- Remove unnecessary and through traffic activity
- Route traffic to minimise impacts
- Undertake resurfacing using Low Noise Pavements
- Surface water management strategy
- Regulate waste collection to minimise the AQ & GHG emissions and noise from waste collection
- Regulate freight deliveries to minimise the AQ & GHG emissions and noise from goods deliveries (including, for example, e-cargo bikes, low carbon freight, freight hubs/consolidation centres at strategic locations)
- Car free zone


THEME 8 - Network of net zero carbon infrastructure

- Low Carbon Council fleet
- Electric Bike charging
- Carbon Audit / Capital Carbon Assessment (Operations/Development)
- Require all Taxi and Public Transport Vehicles to be zero emission by 2026

THEME 9 - Demand management

- Parking restrictions to manage demand (e.g. 7am-7pm)
- Waste vehicles restrictions to manage demand (e.g. xx am-xx pm)
- Coach parking (focus on enforcement, charging)

Performance against Transport Planning Objectives

Criteria	Score	Rationale
Net zero carbon TPO1 - Support the delivery of a net zero carbon city by developing transport and infrastructure networks which help deliver low-carbon travel		The Option Package would support the delivery of a net zero carbon city, its networks and infrastructure through the provision of a wide range of measures including bus priority lanes in the city centre, traffic calming, improvements to active travel infrastructure and facilities such as safer crossings and junctions, cycle storage and cycle hire, and promotion and improved connections to public transport hubs. Further positive impacts are anticipated through the provision of low emissions and/or car free zones in the city centre, re-routing of traffic from the centre, enhanced provision of EV charging points for private cars, taxis and bikes, and regulated and managed servicing and freight deliveries to reduce carbon during peak hours. More benefits

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Criteria	Score	Rationale
		are constrained by the extent of schemes and not having a fuller focus on demand reduction.
Inclusive TPO2 - Help create a more-inclusive city centre by supporting a sustainable, affordable and integrated transport system	✓	The option package will benefit inclusivity through sustainability, affordability and integration. Schemes of particular benefit include: improving cycle parking, storage, and e-bike charging; improving cycle hire to make it more affordable and to include electric bicycles, which will open up cycling to more users; improving shared mobility options; providing better connections with train stations, and creating active travel hubs.
Economy TPO3 - Help create a vibrant and successful city centre by supporting sustainable transport connectivity of the city centre for people and goods	✓	Positive impacts for sustainable connectivity are gained through the range of transport measures proposed in this package which promote active travel and public travel, as well as improved public spaces. However, some measures will represent a shifting away from private motorised vehicle access to the city centre, and some restriction of motorised delivery vehicles. This may mean that the benefits are only minor, at least at first, as the economy reshapes to a more sustainable delivery model.
Liveable TPO4 - Help create a people-centric city centre by creating accessible, healthy, inclusive, safe and quality public spaces and minimising the adverse environmental impacts of traffic	✓✓	This package proposes measures which help to reduce emissions in the city centre by removing and redistributing traffic, encouraging the use of more sustainable transport modes, and regulating waste, freight, and taxis. Some spaces currently used for traffic and parked vehicles will be redefined as those for sustainable and more efficient movement, both making them more accessible for the majority, and helping to minimise the impacts of traffic. Measures aimed at making spaces safer will also help make the city centre more people-centric. Benefits are constrained by their extent, and a focus on environmental factors rather than fuller demand management.

Summary of performance against STAG criteria

Criteria	Score	Rationale
Environment	✓	The physical changes associated with the public transport intervention of this package would be relatively minor. In operation and assuming increased uptake of more sustainable and active forms of transport, there could be slight positive impacts on noise and vibration, run-off, air quality, landscape, visual amenity, and physical fitness.

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Criteria	Score	Rationale
Safety	✓	This package is expected to have some benefit for accidents. The repurposing of road space towards active travel and public transport is likely to encourage modal shift, reducing the volume of cars on the road. Some measures will also improve facilities for active modes and public transport, which may reduce the incidence and severity of accidents, including those which reduce vehicle speeds and provide segregated movement space. This package includes improvements which will redesign streets and transport infrastructure, with a focus on improving quality of space. All new design will be undertaken in line with up to date standards, which will create a cumulative minor improvement to security overall and for specific user groups - such as cyclists with improved cycle storage facilities.
Economy	✓	There will be some journey time and quality benefits for public transport and active travel users. This may be accompanied by some disbenefits for car users; however, the overall effect is likely to be a minor positive. Overall there are likely to be negligible benefits for wider economic impacts from this set of measures.
Integration	✓	There will be positive impacts on transport integration as active travel and public transport becomes better integrated. Land-use and transport integration is also strengthened by improving public transport and active travel links with key services and public spaces. Moderate positive impacts are considered on policy integration as the measures support key policy aims and objectives.
Accessibility and Social Inclusion	✓	Measures are likely to have some benefit for community accessibility, largely in terms of enhanced access to public transport facilities, and some improvements to the ability to walk or cycle to services in the area. While 'new' coverage is limited, the quality of the access is expected to be improved. Overall there are likely to be negligible benefits for comparative accessibility compared to those already committed proposals, with few being notably relevant to particular groups or areas in need.

Implementability Appraisal


Criteria	Score	Rationale
Technical and Operational Feasibility	Minor Consideration	Overall, there are minor technical and operational consideration for the delivery of the Package as it focuses on existing and/or committed programmes. The package uses existing infrastructure (i.e. bus stops and roads), and an established mode/technology. Some moderate operational considerations may relate to the measures related to car free

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Criteria	Score	Rationale
		zones, re-routing of traffic, servicing and freight management.
Financial Affordability	Minor to Moderate Consideration	Overall, the package estimates minor to moderate financial considerations, depending on whether the particular interventions within the package has an allocated funding or whether an additional capital expenditure is required. Moderate financial considerations include measures such as junction and crossing improvements, improvements to bike hire offer and related EV infrastructure, creating more green parks and public spaces, and car free zones. Measures that relate to the repurposing or removal of car parking may be impacted by the loss of car parking revenue.
Public Acceptability	Minor Consideration	Overall, there is expected to be a minor consideration with regard to public acceptability. However, measures where moderate or major public consideration could be expected include measures that support car free zones, re-routing and/or removal of traffic, loss of car parking and parking restrictions.

Selection / Rejection of Option Package for Detailed Appraisal

Rationale
<p>The Option Package contributes to all four TPOs by helping to deliver net zero carbon, sustainable and connected infrastructure, and a quality public space environment in the city centre.</p> <p>The Option Package is predicted to have a slight positive impact on Safety, Economy, Integration and Accessibility and Social Inclusion.</p> <p>Minor considerations are expected in terms of its Implementability, although a small number of measures are likely to require moderate feasibility, financial or public acceptability considerations.</p> <p> The Option Package is selected for Detailed Appraisal</p>

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3.3 Option Package 2 Appraisal: Incentive-based measures

Option Package 2 Description

Measures that focus on extending, promoting and incentivising travel behaviour change. The measures included in this package include:

THEME 1a - Repurposing road space (PT)

- Strategic repurposing of the road network to prioritise public transport
- Effective waste and recycling management to create more effective bus lanes

THEME 1b - Repurposing road space (Active travel/Place – non-motorised movements)

- Strategic repurposing of the road network to prioritise active travel (incl Ballater Street, Norfolk Street Jamaica Street, Bridge Street, High Street etc)
- Effective waste and recycling management to create more active travel space
- Smart 'tartan' grid of streets for car-only or car-free traffic management (prioritising Active travel)
- Reduce and simplify the current junction arrangement around Junction 15 (focus on Active travel)
- Parking distribution, restrictions and increased enforcement - to provide more space for active travel/people
- Improved traffic signal control systems- to prioritise active travel
- Traffic-calming (incl High Street, Broomielaw), speed management and enforcement - to prioritise active travel
- Accelerate Avenues Programme (focus on road repurposing)
- Expansion of Avenues Plus Project (focus on road repurposing)

THEME 2 - Sustainable transport connectivity

- Long continuous and connected walking and cycling routes (including new routes through St Enoch, Buchanan Galleries etc)
- Connecting train stations - better pedestrian provision
- Dynamic Buchanan Bus Station - better /new connections & integration with city centre, Queen Street rail station and Buchanan Galleries
- Masterplans – e.g. Broomielaw, River Park (incl possible Custom House Quay extension) and Tradeston (focus on connectivity)
- Complete a network of safe, high quality, segregated cycling arterial routes connecting the city centre to suburbs and peripheral neighbourhoods
- Reconnecting and activating the railway undercroft (focus on connections)
- Accelerate Avenues Programme (focus on connectivity)
- Expansion of Avenues Plus Project (focus on connectivity)
- Integrate lanes with Avenues/Avenues Plus

THEME 3 - Accessible, inclusive, safe and quality public spaces

- Strategic repurposing of the road network to prioritise people-friendly public spaces
- Effective waste and recycling management to improve the urban realm
- Smart 'tartan' grid of streets for car-only or car-free traffic management (focus on creating quality places)
- Modify/remove slip roads to/from the motorway and reconnect historic streets/links that have been severed
- Reduce and simplify the current junction arrangement around Junction 15 (focus on place)

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- Parking distribution, restrictions and increased enforcement - to provide more quality public spaces
- M8 Cap at Charing Cross - to provide a new 'quality place'
- Masterplans – e.g. Broomielaw, River Park (incl possible Custom House Quay extension) and Tradeston (focus on places improvements)
- Reconnecting and activating the railway undercroft (focus on activating/place improvements)
- Create street play / active sport & piloting play streets for child-friendly city
- Accelerate Avenues Programme (focus on quality place env)
- Expansion of Avenues Plus Project (focus on quality place env)
- Develop SMART-City and enhanced CCTV and active security
- Require all developments to comply with Secure by Design with Animated/Activated Frontages
- St. Enoch Highline (focus on quality places)
- Streets and public space improvements (including lighting, seating, signage, greening & associated user infrastructure) – e.g. St Vincent Street, West George Street, Blythswood Square, Glorious Argyle Street, Sauchiehall Street, Buchanan Street, George Square, High Street, Improved Glasgow Cross / Trongate, Lively and safe Ballater Street, St. Enoch event square), Enhanced public realm and spaces in Calton/Barras, Cowcaddens Road, Port Dundas junction
- New Anderston Cross (refurb M8 (Junction 19)) and night-time strategy
- Develop Feasibility for new City Square at Mitchell Library incl. M8 bridging
- Develop City Centre Public Realm Strategy
- Street cleansing– identify, assess and prioritise
- Licensing of pavement areas / street trading
- Public art, Street festival/light festival, Design for rain
- Planned quay wall extension and new public realm walkway at Windmillcroft Quay (south of river between Tradeston and Kingston Bridge)
- Active, attractive promenades & riverfront
- Open up St. Enoch Shopping Centre, Buchanan Galleries
- Updated access to the St. Enoch Car Park, Re-develop King Street parking
- Apply the safe systems approach, including education, training and publicity to prevent casualties
- Create safe junctions and crossing places (e.g. including around Cowcaddens Subway Station, Cowcaddens Road, Port Dundas junction)
- Safe and car free school zones
- Safe and attractive underpasses and vennels
- Green street, parks and play spaces (focus on place)

THEME 4 - Improved pedestrian and cycle facilities and infrastructure

- Create safe junctions and crossing places (e.g. including around Cowcaddens Subway Station, Cowcaddens Road, Port Dundas junction)
- Introduce segregated cycle lanes where possible (incl around Cowcaddens Road, Port Dundas Junction)
- Active travel hubs

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- Improve existing bike hire offer, with more affordable access to cycling and bike hire including electric bikes
- More cycling parking and storage

THEME 5 - Increased physical activity and health

- Create Quiet / Low Use Streets/ Activity zones, street gyms
- Green street, parks and play spaces (focus on physical activity)
- Promote public awareness of health benefits of outdoor lifestyles, activity and active travel (incl disability/mobility impaired messages)
- Access points to River Clyde – Active Leisure

THEME 6 - Sustainable, affordable and integrated transport system

- Connecting train stations - better pedestrian provision
- Dynamic Buchanan Bus Station - improved/new bus station layout and improved place/modes integration in front of bus station
- Mobility hubs (including, for example places to hire mobility scooters and other shared use provision)
- Improve existing car club offer
- Scottish Accessible Travel Framework - Support disabled people's rights by removing barriers and improving access to travel; and ensuring they are fully involved in work to improve all aspects of travel
- Shared mobility including public taxi, private hire and ride-hailing (includes taxi ranks locations)
- Coach parking (focus on location, safety/integration)
- Bus Partnership work
- Bus Stop rationalisation
- Travel information and apps

THEME 7 - Minimised adverse environmental impacts of traffic

- Low emission vehicle lanes, including information in the city centre
- Green street, parks and play spaces (focus on place)
- Remove unnecessary and through traffic activity (focus on environment)
- Route traffic to minimise impacts
- Undertake resurfacing using Low Noise Pavements
- Surface water management strategy
- Regulate waste collection to minimise the AQ & GHG emissions and noise from waste collection
- Regulate freight deliveries to minimise the AQ & GHG emissions and noise from goods deliveries (incl e.g. e-cargo bikes, low carbon freight, freight hubs/consolidation centres at strategic locations etc)
- Car free zone (focus on environmental impacts)

THEME 8 - Network of net zero carbon infrastructure

- Enhanced private/residential electric vehicle charging points/hubs
- Low Carbon Council fleet
- Electric Bike charging
- Carbon Audit / Capital Carbon Assessment (Operations/Development)
- Require all Taxi and Public Transport Vehicles to be zero emission by 2026
- EV Charging Points for Taxis

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THEME 9 - Demand management

- Variable demand parking charges
- Workplace Parking Levy
- Smarter parking
- Remove unnecessary and through traffic activity (focus on demand reduction)
- Policies to /support reduced need to travel, low traffic neighbourhoods and low car ownership
- Parking restrictions to manage demand (e.g. 7am-7pm)
- Freight/delivery vehicles restrictions to manage demand(e.g. xx am-xx pm)
- Waste vehicles restrictions to manage demand (e.g. xx am-xx pm)
- Coach parking (focus on enforcement, charging)
- Car free zone (focus on demand reduction)

Performance against Transport Planning Objectives

Criteria	Score	Rationale
<p>Net zero carbon TPO1 - Support the delivery of a net zero carbon city by developing transport and infrastructure networks which help deliver low-carbon travel</p>	<p>✓✓</p>	<p>The Option Package would support the delivery of a net zero carbon city, its networks and infrastructure through the provision of a wide range of measures including bus priority lanes in the city centre, traffic calming, improvements to active travel infrastructure and facilities such as safer crossings and junctions, cycle storage and cycle hire, and promotion and improved connections to public transport hubs. Further positive impacts are anticipated through the provision of low emissions and/or car free zones in the city centre, re-routing of traffic from the centre, enhanced provision of EV charging points for private cars, taxis and bikes, and regulated and managed servicing and freight deliveries to reduce carbon during peak hours. A focus on motorised traffic demand reduction helps to provide a more notable overall benefit for this TPO. This is coupled with a more comprehensive package of active travel measures, such as segregated cycling and more-car free space, and a more complete package of measures to help decarbonise transport, such as resident and taxi EV charging.</p>
<p>Inclusive TPO2 - Help create a more-inclusive city centre by supporting a sustainable, affordable and integrated transport system</p>	<p>✓✓</p>	<p>The option package will benefit inclusivity through sustainability, affordability and integration. Schemes of particular benefit include: improving cycle parking, storage, and e-bike charging; improving cycle hire to make it more affordable and to include electric bicycles, which will open up cycling to more users; improving shared mobility options; providing better connections with train stations, and creating active travel hubs. Furthermore, a general shift away from car, encouraged by a more extensive range of measures to reduce demand for car use will benefit sustainable transport users overall. Master-planning, and improved connectivity to</p>

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Criteria	Score	Rationale
		areas outside of the city centre will also help produce a more integrated and inclusive transport network.
Economy TPO3 - Help create a vibrant and successful city centre by supporting sustainable transport connectivity of the city centre for people and goods	✓✓	Positive impacts for sustainable connectivity are gained through the range of transport measures proposed in this package which promote active travel and public travel, as well as improved public spaces. More extensive placemaking is proposed, in order to help create a more vibrant city. Measures represent a shifting away from private motorised vehicle access to the city centre, and some restriction of motorised delivery vehicles. This may mean a restriction to the benefits for some areas of the economy, at least at first, as the movement of people and goods reshapes to a more sustainable delivery model.
Liveable TPO4 - Help create a people-centric city centre by creating accessible, healthy, inclusive, safe and quality public spaces and minimising the adverse environmental impacts of traffic	✓✓	This package proposes measures which help to reduce emissions in the city centre by removing and redistributing traffic, encouraging the use of more sustainable transport modes, and regulating waste, freight, and taxis. Some spaces currently used for traffic and parked vehicles will be redefined as those for sustainable and more efficient movement, both making them more accessible for the majority, and helping to minimise the impacts of traffic. Measures aimed at making spaces more safe, and more extensive placemaking will also help making the city centre more people-centric and liveable. An expansion of the extent of measures, and a focus on demand reduction helps to create a strong moderate benefit.

Summary of performance against STAG criteria

Criteria	Score	Rationale
Environment	✓	Assuming increased uptake of more sustainable and active forms of transport, there could be slight positive impacts on noise and vibration, run-off, air quality, landscape, visual amenity, and physical fitness.
Safety	✓✓	This package is expected to have a moderate benefit for accidents. The notable repurposing of road space towards active travel and public transport is likely to encourage moderate modal shift, reducing the volume of cars on the road. Some measures will also improve facilities for active modes and public transport, which may reduce the incidence and severity of accidents, including those which reduce vehicle speeds and provide segregated movement space. This package includes a more significant number and extent of measures than package 1, and includes supportive car reducing policies and a car free zone. It

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Criteria	Score	Rationale
		also includes extensive improvements which will redesign streets and transport infrastructure, with a focus on improving quality of space. Other measures are aimed directly at improving security, such as enhanced CCTV and active security as part of SMART-city measures. All new design will be undertaken in line with up to date standards, which will create a cumulative moderate improvement to security overall. There are particular improvements for pedestrians and cyclists overall and on new and improved access routes, such as underpasses and vennels.
Economy	✓✓	There will be some notable time, reliability and quality benefits for users of public transport and active travel. This may be accompanied by some disbenefits for car users; however, the overall effect is likely to be a moderate positive. Journey times benefits may be particularly great for those on new/improved routes connecting the city centre to the suburbs and peripheral neighbourhoods, and for those where severance is being tackled. Overall, there are likely to be minor benefits for wider economic impacts from this set of measures, largely from improved labour market access through improved journey times, greater connectivity to employment for some areas, including from a reduction in severance.
Integration	✓✓	This package is expected to have a moderate benefit for transport integration, as active travel, public transport and other shared mobility measures become better integrated. Extensive improvements and transformational projects such as St Enoch highline, the M8 cap, area masterplans, motorway junction slip roads modification and the city centre street re-design will create new, quality public spaces, connected to sustainable transport infrastructure. New/enhanced continuous, safe and connected active travel routes will help connect neighbourhoods, public spaces, services and other land-uses. The package and its interventions support key policies as they support low carbon infrastructure and networks, climate change resilience, accessibility and inclusivity. They also promote the sustainable travel hierarchy and 20 minute neighbourhood policies.
Accessibility and Social Inclusion	✓✓	Measures are likely to have moderate benefits for community accessibility, largely in terms of enhanced access to public transport facilities, and some improvements to the ability to walk or cycle to services in the area. Effective master-planning and new routes, coupled with improved quality will produce a moderate benefit. Overall there may be minor benefits from improved connectivity to the city centre for some deprived areas, with an improvement in access for those without a car. Safety and security improvements may also help those with anxiety

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Criteria	Score	Rationale
		about travelling for various reasons, e.g. fear of an accident, safety at night, using certain routes such as underpasses.

Implementability Appraisal

Criteria	Score	Rationale
Technical and Operational Feasibility	Moderate to Major Consideration	Overall, the package is estimated to have moderate to major technical and operational considerations. Major considerations are expected from the transformational projects such as; modifications to the motorway junctions, capping of the M8 at Charing Cross, re-design of the city centre streets to create new public spaces, and resolving issues with the active St Enoch freight line to create a new active travel walkway and a public space. Moderate operational considerations are anticipated for measures such as car parking redistribution, new active travel routes, master-planning, car free zones and servicing and freight management.
Financial Affordability	Moderate to Major Consideration	The package includes measures with estimated minor to major considerations. Measures with major considerations for which major capital expenditure is likely to be required include, street improvements, expansion of the Avenues, new riverfront and associated walkways and the above noted transformational projects. Measures that relate to the repurposing or removal of car parking may be impacted by the loss of car parking revenue. Overall, the impact for the Package is considered moderate to major.
Public Acceptability	Moderate to Major Consideration	Overall, there is expected to be moderate to major consideration with regard to public acceptability. This is due to a few, potentially contentious interventions, which include; the loss and redistribution of car parking, revised car parking charges, creation of car free zones, M8 capping and the M8 junction modifications.

Selection / Rejection of Option Package for Detailed Appraisal

Rationale
<p>The Option Package contributes to all four TPOs by helping to deliver net zero carbon, sustainable and connected infrastructure, and a quality public space environment in the city centre.</p> <p>The Option Package is predicted to have moderate positive impacts on Safety, Economy, Integration and Accessibility and Social Inclusion.</p>

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Rationale

Moderate to major considerations are also expected in terms of its Feasibility, Financial Affordability and Public Acceptability.

✓ **The Option Package is selected for Detailed Appraisal**

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3.4 Option Package 3 Appraisal: Incentive and demand management measures

Option Package 3 Description

A balance of demand management measures and measures that extend, promote and incentivise travel behaviour change. The measures included in this package include:

THEME 1a - Repurposing road space (PT)

- Strategic repurposing of the road network to prioritise public transport
- High vehicle occupancy lanes including information in the city centre
- Effective waste and recycling management to create more effective bus lanes
- Parking distribution, restrictions and increased enforcement - to provide more bus lanes

THEME 1b - Repurposing road space (Active travel/Place – non-motorised movements)

- Strategic repurposing of the road network to prioritise active travel (incl Ballater Street, Norfolk Street Jamaica Street, Bridge Street, High Street etc)
- Effective waste and recycling management to create more active travel space
- Parking distribution, restrictions and increased enforcement - to provide more space for active travel/people
- Improved traffic signal control systems- to prioritise active travel
- Traffic-calming (incl High Street, Broomielaw), speed management and enforcement - to prioritise active travel
- Accelerate Avenues Programme (focus on road repurposing)
- Expansion of Avenues Plus Project (focus on road repurposing)

THEME 2 - Sustainable transport connectivity

- Connect neighbourhoods with under/over pass connections (across the M8) - includes retention and enhancement of existing bridges; adding new high-quality contemporary bridges. These would include the new crossing over M8 connecting Sighthill with the City Centre; widening of the existing bridge crossings over the M8 at St Vincent Street and Bath Street; reconnecting William St and Bothwell St, and Kent Rd with Elmbank Crescent
- Connect neighbourhoods with/across the river Clyde - includes retention and enhancement of existing bridges
- M8 Cap at Charing Cross - to reduce the barrier effect of the motorway
- Long continuous and connected walking and cycling routes (including new routes through St Enoch, Buchanan Galleries etc)
- Connecting train stations - better pedestrian provision
- Dynamic Buchanan Bus Station - better /new connections & integration with city centre, Queen Street rail station and Buchanan Galleries
- Masterplans – e.g. Broomielaw, River Park (incl possible Custom House Quay extension), Tradeston (focus on connectivity)
- Complete a network of safe, high quality, segregated cycling arterial routes connecting the city centre to suburbs and peripheral neighbourhoods
- Glasgow City Region Metro
- Reconnecting and activating the railway undercroft (focus on connections)
- Accelerate Avenues Programme (focus on connectivity)
- Expansion of Avenues Plus Project (focus on connectivity)
- St. Enoch Highline (focus on creating/improving connectivity)

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- Integrate lanes with Avenues/Avenues Plus
- Implement lanes (as per Lanes Strategy) and integrate with Avenues/Avenues Plus

THEME 3 - Accessible, inclusive, safe and quality public spaces

- Effective waste and recycling management to improve the urban realm
- Parking distribution, restrictions and increased enforcement - to provide more quality public spaces
- Masterplans – e.g. Broomielaw, River Park (including possible Custom House Quay extension), Tradeston (focus on places improvements)
- Reconnecting and activating the railway undercroft (focus on activating/place improvements)
- Create street play / active sport & piloting play streets for child-friendly city
- Accelerate Avenues Programme (focus on quality place env)
- Expansion of Avenues Plus Project (focus on quality place env)
- Develop SMART-City and enhanced CCTV and active security
- Require all developments to comply with Secure by Design with Animated/Activated Frontages
- Streets and public space improvements (including lighting, seating, signage, greening & associated user infrastructure) – e.g. St Vincent Street, West George Street, Blythswood Square, Glorious Argyle Street, Sauchiehall Street, Buchanan Street, George Square, High Street, Improved Glasgow Cross / Trongate, Lively and safe Ballater Street, St. Enoch event Square, enhanced public realm and spaces in Calton/Barras, Cowcaddens Road and Port Dundas junction
- New Anderston Cross (refurb M8 (Junction 19) and night-time strategy
- Develop Feasibility for new City Square at Mitchell Library incl. M8 bridging
- Develop City Centre Public Realm Strategy
- Street cleansing– identify, assess and prioritise
- Licensing of pavement areas / street trading
- Public art, Street festival/light festival, Design for rain
- Planned quay wall extension and new public realm walkway at Windmillcroft Quay (south of river between Tradeston and Kingston Bridge)
- Active, attractive promenades & riverfront
- Open up St. Enoch Shopping Centre, Buchanan Galleries
- Updated access to the St. Enoch Car Park, Re-develop King Street parking
- Apply the safe systems approach, including education, training and publicity to prevent casualties
- Create safe junctions and crossing places (e.g. including around Cowcaddens Subway Station, Cowcaddens Road, Port Dundas junction)
- Safe and car free school zones
- Safe and attractive underpasses and vennels
- Green street, parks and play spaces (focus on place)

THEME 4 - Improved pedestrian and cycle facilities and infrastructure

- Create safe junctions and crossing places (e.g. including around Cowcaddens Subway Station, Cowcaddens Road, Port Dundas junction)
- Introduce segregated cycle lanes where possible (incl around Cowcaddens Road, Port Dundas Junction)

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- Active travel hubs
- Improve existing bike hire offer, with more affordable access to cycling and bike hire including electric bikes
- More cycling parking and storage

THEME 5 - Increased physical activity and health

- Create Quiet / Low Use Streets/ Activity zones, street gyms
- Green street, parks and play spaces (focus on physical activity)
- Promote public awareness of health benefits of outdoor lifestyles, activity and active travel (incl disability/mobility impaired messages)
- Access points to River Clyde – Active Leisure

THEME 6 - Sustainable, affordable and integrated transport system

- Updated and improved PT nodes and gateways (focus on place quality, improved approaches, environments & modes integration to improve legibility, passenger experience and increase patronage), for example rail and subway stations, including Charing Cross railway station, Glasgow Central, Anderston Station, Argyle Street railway station, High Street station; Cowcaddens Subway Station, Bus interchange at Cathedral St & southern bus hub; connecting Queen St station with Cathedral St
- Connecting train stations - better pedestrian provision
- Dynamic Buchanan Bus Station - improved/new bus station layout and improved place/modes integration in front of bus station
- Mobility hubs (including places to hire mobility scooters and other shared use provision)
- Improve existing car club offer
- Scottish Accessible Travel Framework - Support disabled people's rights by removing barriers and improving access to travel; and ensuring they are fully involved in work to improve all aspects of travel
- Shared mobility including public taxi, private hire and ride-hailing (includes taxi ranks locations)
- Coach parking (focus on location, safety/integration)
- Bus Partnership work
- Bus Stop rationalization
- Travel information and apps

THEME 7 - Minimised adverse environmental impacts of traffic

- Low emission vehicle lanes, including information in the city centre
- Green street, parks and play spaces (focus on place)
- Remove unnecessary and through traffic activity (focus on environment)
- Extend AQMZ
- Route traffic to minimise impacts
- Undertake resurfacing using Low Noise Pavements
- Surface water management strategy
- Regulate waste collection to minimise the AQ & GHG emissions and noise from waste collection
- Regulate freight deliveries to minimise the AQ & GHG emissions and noise from goods deliveries (including. e-cargo bikes, low carbon freight, freight hubs/consolidation centres at strategic locations etc)
- Car free zone (focus on environmental impacts)

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THEME 8 - Network of net zero carbon infrastructure

- Enhanced private/residential electric vehicle charging points/hubs
- Low Carbon Council fleet
- Electric Bike charging
- Carbon Audit / Capital Carbon Assessment (Operations/Development)
- Require all Taxi and Public Transport Vehicles to be zero emission by 2026
- EV Charging Points for Taxis

THEME 9 - Demand management

- Variable demand parking charges
- Workplace Parking Levy
- Smarter parking
- Remove unnecessary and through traffic activity (focus on demand reduction)
- Policies to /support reduced need to travel, low traffic neighbourhoods and low car ownership
- Parking restrictions to manage demand (e.g. 7am-7pm)
- Freight/delivery vehicles restrictions to manage demand(e.g. xx am-xx pm)
- Waste vehicles restrictions to manage demand (e.g. xx am-xx pm)
- Coach parking (focus on enforcement, charging)
- Car free zone (focus on demand reduction)

Performance against Transport Planning Objectives

Criteria	Score	Rationale
<p>Net zero carbon TPO1 - Support the delivery of a net zero carbon city by developing transport and infrastructure networks which help deliver low-carbon travel</p>	<p>✓✓✓</p>	<p>The Option Package would support the delivery of a net zero carbon city, its networks and infrastructure through the provision of a wide range of measures including bus priority lanes in the city centre, traffic calming, improvements to active travel infrastructure and facilities such as safer crossings and junctions, cycle storage and cycle hire, and promotion and improved connections to public transport hubs. Further positive impacts are anticipated through the provision of low emissions and/or car free zones in the city centre, re-routing of traffic from the centre, enhanced provision of EV charging points for private cars, taxis and bikes, and regulated and managed servicing and freight deliveries to reduce carbon during peak hours. A focus on motorised traffic demand reduction helps to provide a major overall benefit for this TPO. This is coupled with a more comprehensive package of active travel measures, such as segregated cycling and more-car free space, and a more complete package of measures to help decarbonise transport, such as resident and taxi EV charging. Extension of the AQMZ, and or expanding it, to create an ULEZ will help push the benefit further out of the city centre/enhance the benefit to the city centre.</p>

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Criteria	Score	Rationale
<p>Inclusive TPO2 - Help create a more-inclusive city centre by supporting a sustainable, affordable and integrated transport system</p>	<p>✓✓</p>	<p>The option package will benefit inclusivity through sustainability, affordability and integration. Schemes of particular benefit include: improving cycle parking, storage, and e-bike charging; improving cycle hire to make it more affordable and to include electric bicycles, which will open up cycling to more users; improving shared mobility options; providing better connections with train stations, and creating active travel hubs. Furthermore, a general shift away from car, encouraged by a more extensive range of measures to reduce demand for car use will benefit sustainable transport users overall. Master-planning, and improved connectivity to areas outside of the city centre will also help produce a more integrated and inclusive transport network - this package proposes specific improvements which will help tackle severance across the M8 and that will enhance PT nodes and gateways.</p>
<p>Economy TPO3 - Help create a vibrant and successful city centre by supporting sustainable transport connectivity of the city centre for people and goods</p>	<p>✓✓</p>	<p>Positive impacts for sustainable connectivity are gained through the range of transport measures proposed in this package which promote active travel and public travel, as well as improved public spaces. More extensive placemaking is proposed, in order to help create a more vibrant city. Measures represent a shifting away from private motorised vehicle access to the city centre, and some restriction of motorised delivery vehicles. This may mean a restriction to the benefits for some areas of the economy, at least at first, as the movement of people and goods reshapes to a more sustainable delivery model.</p>
<p>Liveable TPO4 - Help create a people-centric city centre by creating accessible, healthy, inclusive, safe and quality public spaces and minimising the adverse environmental impacts of traffic</p>	<p>✓✓✓</p>	<p>This package proposes measures which help to reduce emissions in the city centre by removing and redistributing traffic, encouraging the use of more sustainable transport modes, and regulating waste, freight, and taxis. Some spaces currently used for traffic and parked vehicles will be redefined as those for sustainable and more efficient movement, both making them more accessible for the majority, and helping to minimise the impacts of traffic. Measures aimed at making spaces more safe, and more extensive placemaking will also help making the city centre more people-centric and liveable. The extent of demand reduction measures, balanced with behavioural change helps to create a major overall benefit.</p>

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Summary of performance against STAG criteria

Criteria	Score	Rationale
Environment	✓	Assuming increased uptake of more sustainable and active forms of transport, there could be slight positive impacts on noise and vibration, run-off, air quality, landscape, visual amenity, and physical fitness.
Safety	✓✓	This package is expected to have moderate benefits for accidents. The notable repurposing of road space towards active travel and public transport is likely to encourage moderate modal shift, reducing the volume of cars on the road. Some measures will also improve facilities for active modes and public transport, which may reduce the incidence and severity of accidents, including those which reduce vehicle speeds and provide segregated movement space. This package includes a more significant number and wider extent of measures than package 1, and includes supportive car reducing policies and a car free zone. It also includes extensive improvements which will redesign streets and transport infrastructure, with a focus on improving quality of space. It includes measures aimed directly at improving security, such as enhanced CCTV and active security as part of SMART-city measures. All new design will be undertaken in line with up to date standards, which will create a cumulative moderate improvement to security overall; this includes improved and updated PT notes and gateways. There are particular improvements for pedestrians and cyclists overall and on new and improved access routes, such as underpasses and vennels.
Economy	✓✓	There will be some notable time, reliability and quality benefits for users of public transport and active travel. This may be accompanied by some disbenefits for car users; however, the overall effect is likely to be a moderate positive. Journey times benefits may be particularly great for those journey on new/improved routes connecting the city centre to the suburbs and neighbourhoods, and for those where severance is being tackled. Particular improvements will be seen over Packages 1 and 2, due to the inclusion of further additional neighbourhood connections and under/overpass connections across the M8. Overall there are likely to be minor benefits for wider economic impacts from this set of measures, largely from improved labour market access through improved journey times, greater connectivity to employment for some areas, including from a reduction in severance, including across the M8.
Integration	✓✓	This package is expected to have moderate benefits for transport integration, as active travel, public transport and other shared mobility schemes become better integrated through a greater extent of interventions, including Buchanan bus station

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Criteria	Score	Rationale
		improvements, area masterplans, creation of mobility hubs, SMART city centre measures, re-purposed road space and streets re-design. Particular improvements will be seen over Packages 1 and 2, due to the inclusion of improvements and updates to public transport nodes and gateways which will further enhance integration between transport modes. Extensive improvements to active travel infrastructure and networks to connect neighbourhoods, public spaces and the city centre, both across the M8 and the river Clyde will bring moderate benefits to transport and land-use integration. Further benefits are anticipated through measures such as Master-planning, transformation of lanes into connected, active travel routes, retail and public spaces, and enhancements at and to public transport nodes and gateways. The proposed interventions are in line with key policies as they support low carbon infrastructure and networks, climate change resilience, accessibility and inclusivity. They also promote the sustainable travel hierarchy and 20 minute neighbourhood policies.
Accessibility and Social Inclusion	✓✓	Measures are likely to have moderate benefits for community accessibility, largely in terms of enhanced access to public transport facilities, and some improvements to the ability to walk or cycle to services in the area. Effective Master-planning and new routes, coupled with improved quality will produce a moderate benefit. The Package may provide greater benefits than Packages 1 and 2, due to the additional neighbourhood connections and under/overpass links across the M8. Overall there may be minor benefit from improved connectivity to the city centre for some deprived areas, with an improvement in access for those without a car. Safety and security improvements may also help those with anxiety about travelling for various reasons, e.g. fear of an accident, safety at night, using certain routes such as underpasses.

Implementability Appraisal


Criteria	Score	Rationale
Technical and Operational Feasibility	Moderate to Major Consideration	Overall, the package is estimated to have moderate to major technical and operational considerations. This is due to wider potential impacts, including traffic re-routing, street re-design, car parking re-distribution, capping of the M8, car free zones, enhanced river crossings and the re-development of lanes due to third party ownerships. Additional considerations include space availability to support improvements at public transport nodes and city centre public spaces, traffic free active travel routes including across the motorway, resolving the live freight operation at St Enoch

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Criteria	Score	Rationale
		to create a new active travel walkway and a public space, effectively managing servicing and freight, and developing SMART city centre.
Financial Affordability	Moderate to Major Consideration	The package includes measures with estimated minor to major considerations. Measures with major considerations for which major capital expenditure is likely to be required include, street and public transport nodes improvements, expansion of the Avenues, lanes redevelopment, improved connections over the M8 and the river Clyde, new riverfront and associated walkways, St Enoch highline, and the extension of the AQMZ. Measures that relate to the repurposing or removal of car parking may be impacted by the loss of car parking revenue.
Public Acceptability	Moderate to Major Consideration	Overall, there is expected to be moderate to major considerations with regard to public acceptability. This is due to a few, potentially contentious interventions, which include; the redistribution of car parking, revised car parking charges, creation of car free zones, M8 capping and the M8 junction modifications.

Selection / Rejection of Option Package for Detailed Appraisal

Rationale
<p>The Option Package contributes to all four TPOs by helping to deliver net zero carbon, sustainable and connected infrastructure, and a quality public space environment in the city centre.</p> <p>The Option Package is predicted to have moderate positive impacts on Safety, Economy, Integration and Accessibility and Social Inclusion.</p> <p>Moderate to major considerations are also expected in terms of its Feasibility, Financial Affordability and Public Acceptability.</p> <p> The Option Package is selected for Detailed Appraisal</p>

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3.5 Option Package 4 Appraisal: Demand management measures

Option Package 4 Description

Measures that focus on demand management in order to reduce vehicular access and thus promote travel behaviour change. The measures included in this package include:

THEME 1a - Repurposing road space (PT)

- Strategic repurposing of the road network to prioritise public transport
- High vehicle occupancy lanes including information in the city centre
- Effective waste and recycling management to create more effective bus lanes
- Smart 'tartan' grid of streets for car-only or car-free traffic management (prioritising PT)
- Managed Motorways
- Parking distribution, restrictions and increased enforcement - to provide more bus lanes

THEME 1b - Repurposing road space (Active travel/Place – non-motorised movements)

- Strategic repurposing of the road network to prioritise active travel (incl Ballater Street, Norfolk Street Jamaica Street, Bridge Street, High Street etc)
- Effective waste and recycling management to create more active travel space
- Smart 'tartan' grid of streets for car-only or car-free traffic management (prioritising Active travel)
- Reduce and simplify the current junction arrangement around Junction 15 (focus on Active travel)
- Parking distribution, restrictions and increased enforcement - to provide more space for active travel/people
- Improved traffic signal control systems- to prioritise active travel
- Traffic-calming (incl High Street, Broomielaw), speed management and enforcement - to prioritise active travel
- Accelerate Avenues Programme (focus on road repurposing)
- Expansion of Avenues Plus Project (focus on road repurposing)

THEME 2 - Sustainable transport connectivity

- Connect neighbourhoods with under/over pass connections (across the M8) - includes retention and enhancement of existing bridges; adding new high-quality contemporary bridges - e.g. New crossing over M8 connecting Sighthill with the City Centre; Widening of the existing bridge crossings over the M8 at St Vincent Street and Bath Street; reconnecting William St and Bothwell St, and Kent Rd with Elmbank Crescent
- Connect neighbourhoods with/across the river Clyde - includes retention and enhancement of existing bridges
- M8 Cap at Charing Cross - to reduce the barrier effect of the motorway
- Long continuous and connected walking and cycling routes (incl new routes through St Enoch, Buchanan Galleries etc)
- Connecting train stations - better pedestrian provision
- Dynamic Buchanan Bus Station - better /new connections & integration with the city centre, Queen Street rail station and Buchanan Galleries
- Masterplans – e.g. Broomielaw, River Park (incl possible Custom House Quay extension), Tradeston (focus on connectivity)
- Complete a network of safe, high quality, segregated cycling arterial routes connecting the city centre to suburbs and peripheral neighbourhoods

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- Glasgow City Region Metro
- Reconnecting and activating the railway undercroft (focus on connections)
- Accelerate Avenues Programme (focus on connectivity)
- Expansion of Avenues Plus Project (focus on connectivity)
- St. Enoch Highline (focus on creating/improving connectivity)
- Integrate lanes with Avenues/Avenues Plus
- Implement lanes (as per Lanes Strategy) and integrate with Avenues/Avenues Plus

THEME 3 - Accessible, inclusive, safe and quality public spaces

- Effective waste and recycling management to improve the urban realm
- Parking distribution, restrictions and increased enforcement - to provide more quality public spaces
- Masterplans – e.g. Broomielaw, River Park (including possible Custom House Quay extension), Tradeston (focus on places improvements)
- Reconnecting and activating the railway undercroft (focus on activating/place improvements)
- Create street play / active sport & piloting play streets for child-friendly city
- Accelerate Avenues Programme (focus on quality place environment)
- Expansion of Avenues Plus Project (focus on quality place environment)
- Develop SMART-City and enhanced CCTV and active security
- Require all developments to comply with Secure by Design with Animated/Activated Frontages
- Streets and public space improvements (including lighting, seating, signage, greening & associated user infrastructure) – e.g. St Vincent Street, West George Street, Blythswood Square, Glorious Argyle Street, Sauchiehall Street, Buchanan Street, George Square, High Street, Improved Glasgow Cross / Trongate, Lively and safe Ballater Street, St. Enoch event Square, enhanced public realm and spaces in Calton/Barras, Cowcaddens Road and Port Dundas junction
- New Anderston Cross - refurbish M8 (Junction 19) and develop a night-time strategy
- Develop Feasibility for new City Square at Mitchell Library incl. M8 bridging
- Develop City Centre Public Realm Strategy
- Street cleansing– identify, assess and prioritise
- Licensing of pavement areas / street trading
- Public art, Street festival/light festival, Design for rain
- Planned quay wall extension and new public realm walkway at Windmillcroft Quay (south of river between Tradeston and Kingston Bridge)
- Active, attractive promenades & riverfront
- Open up St. Enoch Shopping Centre, Buchanan Galleries
- Updated access to the St. Enoch Car Park, Re-develop King Street parking
- Apply the safe systems approach, including education, training and publicity to prevent casualties
- Create safe junctions and crossing places (e.g. including around Cowcaddens Subway Station, Cowcaddens Road, Port Dundas junction)
- Safe and car free school zones
- Safe and attractive underpasses and vennels
- Green street, parks and play spaces (focus on place)

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THEME 4 - Improved pedestrian and cycle facilities and infrastructure

- Create safe junctions and crossing places (e.g. including around Cowcaddens Subway Station, Cowcaddens Road, Port Dundas junction)
- Introduce segregated cycle lanes where possible (incl around Cowcaddens Road, Port Dundas Junction)
- Active travel hubs
- Improve existing bike hire offer, with more affordable access to cycling and bike hire including electric bikes
- More cycling parking and storage

THEME 5 - Increased physical activity and health

- Create Quiet / Low Use Streets/ Activity zones, street gyms
- Green street, parks and play spaces (focus on physical activity)
- Promote public awareness of health benefits of outdoor lifestyles, activity and active travel (incl disability/mobility impaired messages)
- Access points to River Clyde – Active Leisure

THEME 6 - Sustainable, affordable and integrated transport system

- Connecting train stations - better pedestrian provision
- Dynamic Buchanan Bus Station - improved/new bus station layout and improved place/modes integration in front of bus station
- Mobility hubs (incl eg. Places to hire mobility scooters and other shared use provision)
- Improve existing car club offer
- Scottish Accessible Travel Framework - Support disabled people's rights by removing barriers and improving access to travel; and ensuring they are fully involved in work to improve all aspects of travel
- Shared mobility including public taxi, private hire and ride-hailing (includes taxi ranks locations)
- Coach parking (focus on location, safety/integration)
- Bus Partnership work
- Bus Stop rationalisation
- Travel information and apps

THEME 7 - Minimised adverse environmental impacts of traffic

- Low emission vehicle lanes, including information in the city centre
- Green street, parks and play spaces (focus on place)
- Remove unnecessary and through traffic activity (focus on env)
- Extend AQMZ
- Route traffic to minimise impacts
- Undertake resurfacing using Low Noise Pavements
- Surface water management strategy
- Regulate waste collection to minimise the AQ & GHG emissions and noise from waste collection
- Regulate freight deliveries to minimise the AQ & GHG emissions and noise from goods deliveries (including, for example, e-cargo bikes, low carbon freight, freight hubs/consolidation centres at strategic locations etc)
- Car free zone (focus on env impacts)

THEME 8 - Network of net zero carbon infrastructure

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- Enhanced private/residential electric vehicle charging points/hubs
- Low Carbon Council fleet
- Electric Bike charging
- Carbon Audit / Capital Carbon Assessment (Operations/Development)
- Require all Taxi and Public Transport Vehicles to be zero emission by 2026
- EV Charging Points for Taxis

THEME 9 - Demand management

- Variable demand parking charges
- Workplace Parking Levy
- Smarter parking
- Remove unnecessary and through traffic activity (focus on demand reduction)
- Policies to /support reduced need to travel, low traffic neighbourhoods and low car ownership
- Parking restrictions to manage demand (e.g. 7am-7pm)
- Freight/delivery vehicles restrictions to manage demand(e.g. xx am-xx pm)
- Waste vehicles restrictions to manage demand (e.g. xx am-xx pm)
- Coach parking (focus on enforcement, charging)
- Car free zone (focus on demand reduction)

Performance against Transport Planning Objectives

Criteria	Score	Rationale
Net zero carbon TPO1 - Support the delivery of a net zero carbon city by developing transport and infrastructure networks which help deliver low-carbon travel		The Option Package would support the delivery of a net zero carbon city, its networks and infrastructure through the provision of a wide range of measures including bus priority lanes in the city centre, traffic calming, improvements to active travel infrastructure and facilities such as safer crossings and junctions, cycle storage and cycle hire, and promotion and improved connections to public transport hubs. Managed motorways will further enhance bus access improvement to the city. Further positive impacts are anticipated through the provision of low emissions and/or car free zones in the city centre, re-routing of traffic from the centre, enhanced provision of EV charging points for private cars, taxis and bikes, and regulated and managed servicing and freight deliveries to reduce carbon during peak hours. A focus on motorised traffic demand reduction helps to provide a major overall benefit for this TPO. This is coupled with a more comprehensive package of active travel measures, such as segregated cycling and more-car free space, and a more complete package of measures to help decarbonise transport, such as resident and taxi EV charging.
Inclusive TPO2 - Help create a more-inclusive city		The option package will benefit inclusivity through sustainability, affordability and integration. Schemes of particular benefit include: improving cycle parking, storage,

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Criteria	Score	Rationale
centre by supporting a sustainable, affordable and integrated transport system		and e-bike charging; improving cycle hire to make it more affordable and to include electric bicycles, which will open up cycling to more users; improving shared mobility options; providing better connections with train stations, and creating active travel hubs. Furthermore, a general shift away from car, encouraged by a more extensive range of measures to reduce demand for car use will benefit sustainable transport users overall. Master-planning, and improved connectivity to areas outside of the city centre will also help produce a more integrated and inclusive transport network.
Economy TPO3 - Help create a vibrant and successful city centre by supporting sustainable transport connectivity of the city centre for people and goods	✓✓	Positive impacts for sustainable connectivity are gained through the range of transport measures proposed in this package which promote active travel and public travel, as well as improved public spaces. More extensive placemaking is proposed, in order to help create a more vibrant city. Measures represent a shifting away from private motorised vehicle access to the city centre, and some restriction of motorised delivery vehicles. This may mean a restriction to the benefits for some areas of the economy, at least at first, as the movement of people and goods reshapes to a more sustainable delivery model.
Liveable TPO4 - Help create a people-centric city centre by creating accessible, healthy, inclusive, safe and quality public spaces and minimising the adverse environmental impacts of traffic	✓✓✓	This package proposes measures which help to reduce emissions in the city centre by removing and redistributing traffic, encouraging the use of more sustainable transport modes, and regulating waste, freight, and taxis. Some spaces currently used for traffic and parked vehicles will be redefined as those for sustainable and more efficient movement, both making them more accessible for the majority, and helping to minimise the impacts of traffic. Measures aimed at making spaces more safe will also help making the city centre more people-centric. The extent of measures, and a focus on demand reduction and behavioural change helps to create a major overall benefit.

Summary of performance against STAG criteria

Criteria	Score	Rationale
Environment	✓	Assuming increased uptake of more sustainable and active forms of transport, there could be slight positive impacts on noise and vibration, run-off, air quality, landscape, visual amenity, and physical fitness.

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Criteria	Score	Rationale
Safety	✓✓	This package is expected to have moderate benefit for accidents. The notable repurposing of road space towards active travel and public transport is likely to encourage moderate modal shift, reducing the volume of cars on the road. Some measures will also improve facilities for active modes and public transport, which may reduce the incidence and severity of accidents, including those which reduce vehicle speeds and provide segregated movement space. This package includes a more significant number and wider extent of measures than package 1, and includes supportive car reducing policies and a car free zone. It also includes extensive improvements which will redesign streets and transport infrastructure, with a focus on improving quality of space. It includes measures aimed directly at improving security, such as enhanced CCTV and active security as part of SMART-city measures. All new designs will be undertaken in line with up to date standards, which will create a cumulative moderate improvement to security overall. There are particular improvements for pedestrians and cyclists overall and on new and improved access routes, such as underpasses and vennels.
Economy	✓✓	There will be some notable journey time, reliability and quality benefits for users of public transport and active travel. This may be accompanied by some disbenefits for car users; however, the overall effect is likely to be a moderate positive. Journey time benefits may be particularly great for those on new/improved routes connecting the city centre to the suburbs and peripheral neighbourhoods, and for those where severance is being tackled. Management motorways may provide an even wider benefit to users travelling into and out of the city. Particular improvements will be seen over Packages 1 and 2, due to the inclusion of further additional neighbourhood connections and under/overpass connections across the M8. Overall there are likely to be minor benefits for wider economic impacts from this set of measures, largely from improved labour market access through improved journey times, greater connectivity to employment for some areas, including from a reduction in severance, including across the M8.
Integration	✓✓	This package is expected to have moderate benefits for transport integration, as active travel, public transport and other shared mobility schemes become better integrated through a greater extent of interventions, including Buchanan bus station improvements, area masterplans, creation of mobility hubs, and SMART city centre measures. The Package includes further re-purposing of road space (including Managed motorways) and extensive street re-designs. Extensive improvements to active travel and public transport infrastructure and networks to

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Criteria	Score	Rationale
		connect neighbourhoods, public spaces and the city centre, both across the M8 and the river Clyde will bring moderate benefits to transport and land-use integration. Further benefits are anticipated through measures such as master-planning, transformation of lanes into connected, active travel routes, retail and public spaces, re-prioritised road space and car parking. The proposed interventions are in line with key policies as they support low carbon infrastructure and networks, climate change resilience, accessibility and inclusivity. They also promote the sustainable travel hierarchy and 20 minute neighbourhood policies.
Accessibility and Social Inclusion	✓✓	Measures are likely to have moderate benefits for community accessibility, largely in terms of enhanced access to public transport facilities, and some improvements to the ability to walk or cycle to services in the area. Effective Master-planning and new routes, coupled with improved quality will produce a moderate benefit. The package may provide greater benefit than Packages 1 and 2, with additional neighbourhood connections and under/overpass connections across the M8. Overall there may be minor benefit from improved connectivity to the city centre for some deprived areas, with an improvement in access for those without a car. Safety and security improvements may also help those with anxiety about travelling for various reasons, e.g. fear of an accident, safety at night, using certain routes such as underpasses.

Implementability Appraisal


Criteria	Score	Rationale
Technical and Operational Feasibility	Moderate to Major Consideration	Overall, the package is estimated to have moderate to major technical and operational considerations. This is due to wider potential impacts, including traffic re-routing, extensive street re-design and road re-purposing, car parking loss, restrictions and re-distribution, capping of the M8, car free zones, enhanced river crossings and the re-development of lanes due to third party ownerships. Additional considerations include traffic free active travel routes including across the motorway, resolving the live freight operation at St Enoch to create a new active travel walkway, effectively managing servicing and freight, developing SMART city centre; and the extending of the AQMZ to create ultra-low emissions zone.
Financial Affordability	Moderate to Major Consideration	The package includes measures with an estimated minor to major considerations. Measures with major considerations for which major capital expenditure is likely to be required

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Criteria	Score	Rationale
		include, street and public transport nodes improvements, expansion of the Avenues, lanes redevelopment, improved connections over the M8 and the river Clyde, new riverfront and associated walkways, St Enoch highline, and the extension of the AQMZ. Measures that relate to the repurposing or removal of car parking may be impacted by the loss of car parking revenue.
Public Acceptability	Moderate to Major Consideration	Overall, there is expected to be moderate to major consideration with regard to public acceptability. Measures where major public consideration could be expected include car parking re-purposing, restrictions and re-distribution, revised car parking charges, creation of car free zones, the M8 capping, active travel routes over the M8, and the extension of the AQMZ

Selection / Rejection of Option Package for Detailed Appraisal

Rationale
<p>The Option Package contributes to all four TPOs by helping to deliver net zero carbon, sustainable and connected infrastructure, and a quality public space environment in the city centre.</p> <p>The Option Package is predicted to have moderate positive impacts on Safety, Economy, Integration and Accessibility and Social Inclusion.</p> <p>Moderate to major considerations are also expected in terms of its Feasibility, Financial Affordability and Public Acceptability.</p> <p> The Option Package is selected for Detailed Appraisal</p>

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4. SUMMARY AND NEXT STEPS

4.1 Summary

4.1.1 This Preliminary Options Appraisal has taken the potential interventions identified in the Initial Appraisal: Case for Change stage and appraised them in a process aligned with Transport Scotland's Scottish Transport Appraisal Guidance (STAG) process.

4.1.2 In accordance with the STAG process, the options have been assessed against the study TPOs and STAG criteria of Environment, Safety, Economy, Integration and Accessibility. They have also been appraised against Feasibility, Affordability and Public Acceptability, and the fit of each option with the relevant established Policy Directives.

4.1.3 A summary of the scoring of all options is provided in Table 1 further below.

4.2 Next Steps

4.2.1 The appraisal has resulted in a recommendation that the four packages of options are taken forward to the Detailed Appraisal stage.

4.2.2 The recommended options are:

- **Option Package 1** - Do Minimum / Low investment measures (Measures that focus on public transport interventions and completion of existing programmes and projects);
- **Option Package 2** – Incentive based measures (Measures that focus on extending, promoting and incentivising travel behaviour change);
- **Option Package 3** - Incentive and Demand Management measures (A balance of demand management measures and measures that extend, promote and incentivise travel behaviour change); and
- **Option Package 4** - Demand Management measures (Measures that focus on demand management in order to reduce vehicular access and thus promote travel behaviour change).

4.2.3 The Detailed Appraisal will then consider these options in more detailed quantitatively, including their further performance against TPOs, STAG criteria, Cost to Government and Risk and Uncertainty.

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Option Package no.	Option Package name	Appraisal against TPOs				Appraisal against STAG criteria					Implementability appraisal			Select?
		Net zero carbon TPO1 - Support the delivery of a carbon neutral city by developing transport and infrastructure networks which help deliver low-carbon travel	Inclusive TPO2 - Help create a more-inclusive city centre by supporting a sustainable, affordable and integrated transport system	Economy TPO3 - Help create a vibrant and successful city centre by supporting sustainable transport connectivity of the city centre for people and goods	Liveable TPO4 - Help create a people-centric city centre by creating accessible, healthy, inclusive, safe and quality public spaces and minimising the adverse environmental impacts of traffic	Environment	Safety	Economy	Integration	Accessibility	Technical and Operational Feasibility	Financial Affordability	Public Acceptability	
1	Do Minimum - Low investment measures	✓	✓	✓	✓	TBC	✓	✓	✓	✓	Minor	Minor to Moderate	Minor	Yes
2	Incentive based measures	✓✓	✓✓	✓✓	✓✓	TBC	✓✓	✓✓	✓✓	✓✓	Moderate to Major	Moderate to Major	Moderate to Major	Yes
3	Incentive and demand management measures	✓✓✓	✓✓	✓✓	✓✓✓	TBC	✓✓	✓✓	✓✓	✓✓	Moderate to Major	Moderate to Major	Moderate to Major	Yes
4	Demand management measures	✓✓✓	✓✓	✓✓	✓✓✓	TBC	✓✓	✓✓	✓✓	✓✓	Moderate to Major	Moderate to Major	Moderate to Major	Yes

Table 1. Summary scoring of options

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