Glasgow Transport Strategy Strategic Environmental Assessment

Environmental Report

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Glasgow City Council

Glasgow Transport Strategy Strategic Environmental Assessment

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Key Facts

Name of Responsible Authority	**Glasgow City Council**
Title of plan, programme or strategy (PPS)	Glasgow Transport Strategy (GTS)
Requirement for the PPS	Transport Scotland guidance recommends local authorities prepare a Local Transport Strategy (LTS) every 3 years, plus certain measures enshrined in legislation e.g. workplace parking levy also have to be justified within an LTS. Glasgow City Council's LTS is out of date (2007-09) and requires updating in this context. It is also important for the city to respond to the report from the Connectivity Commission for Glasgow, which made a number of recommendations. Further to this the city declared a Climate Emergency and outlined 61 actions to achieve carbon neutrality by 2030, which have since informed a new Climate Plan, some of which relates to transport.
Subject of the PPS	Transport, mobility and placemaking.
Period covered by the PPS	2021 – 2030/31
Frequency of updates	To be confirmed – most likely a review & refresh every 5 years.
Requirement for SEA	In accordance with The Environmental Assessment of Plans and Programmes (Scotland) Act 2005 (the Act), the GTS requires a SEA under Section 5(3) of the Act.
Geographic area covered by the PPS	The main focus of the GTS will be the Glasgow City Council area. However, it will also examine wider regional transport issues, seeking to address the adverse impacts of transport movements originating or terminating in Glasgow.
Purpose and/or objectives of PPS	To set out the objectives, policies, priorities and investment plan for the next ten years and beyond. Glasgow Transport Strategy will form the overarching framework for transport decision-making and investment in the city, whilst more detailed plans sit underneath – a new Liveable Neighbourhoods workstream, a City Centre Transport Plan to update the City Centre Transport Strategy, and a new Active Travel Strategy to build on the existing Strategic Plan for Cycling

Non-Technical Summary

Introduction

This report summarises the findings of the Strategic Environmental Assessment (SEA) which was conducted for Glasgow City Council's (GCC) Glasgow Transport Strategy (here after referred to as 'GTS'). The Environmental Assessment (Scotland) Act 2005 sets out the statutory requirements for conducting a SEA, which ensures the environment and other sustainability aspects are considered at an early stage of decision making when preparing public plans, programmes and strategies (PPS).

The purpose of the Environmental Report is to:

- Provide information on the Glasgow Transport Strategy
- Identify, describe and evaluate the likely environmental influence of the draft Strategy; and
- Provide an opportunity for the Consultation Authorities and the public to comment on any aspect of this Environmental Report.

Background to the Glasgow Transport Strategy

Transport Scotland recommends local authorities prepare a new transport strategy every 3 years. The GTS will succeed Glasgow City Council's Local Transport Strategy (2007-09) (LTS).

The Council is producing a new Glasgow Transport Strategy. This new local transport strategy is city-wide, and provides a framework for investment and decision-making on transport issues up to 2030. The GTS is being published in two parts. Part 1 is a Policy Framework, which sets out transport policies and related actions, to guide decision-making in the delivery of significant change in sustainable transport provision in the Part 1 of the Glasgow Transport Strategy, a Policy Framework, has already been adopted (2022) and was subject to an interim SEA assessment. This assessment is summarised in section 5 of this report,. It is now supported by the proposed Part 2, a Spatial Delivery Framework, which has been informed by further SEA assessment and is to be published for consultation alongside this Environmental Report.

The GTS aims to provide an overarching framework for transport decision making and investment in the City. The GTS has more detailed plans sitting underneath the overarching Framework including a Liveable Neighbourhoods workstream, a City Centre Transport Plan and an Active Travel Strategy.

The Glasgow Transport Strategy (GTS) sets out the City's objectives, policies, priorities and investment plan up to 2030. It follows from key recent work undertaken by the Glasgow Connectivity Commission and by Glasgow City Council (GCC) in developing the Case for Change that sets the framework for the GTS, and the extensive Public Conversation on Glasgow's Transport Future. The GTS sits within a framework of bold policy and strategy developments at national, regional and local level.

The GTS has been developed using a multi-criteria appraisal approach, in line with STAG. The 'Case for Change' constitutes the first stage of the STAG process and involved data analysis and stakeholder engagement to provide a baseline for the study area (the Glasgow City Council area) and to identify transport-related problems and opportunities, as well as any constraints that could exacerbate future transport issues and influence the development of solutions. This analysis enabled the development and refinement of a set of Transport Planning Objectives, which informed the development of options to both address the identified problems and enable the realisation of opportunities.

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Assessment Methodology

The SEA process has been aligned with the GTS development to ensure the SEA has had influence at each stage of the strategy development and, along with the Equality Impact Assessment process, has informed the refinement and revision of the proposed strategy.

The baseline and policy review were carried out to determine the SEA topics which should be scoped into the assessment and would be anticipated to have a positive and/or negative impact, as well as topics where a significant cumulative impact is anticipated. Schedule 3 of the 2005 act requires the GTS to be assessed against the following environmental issues:

- Air quality
- Climate
- Population and human health
- Material assets
- Water
- Biodiversity, flora and fauna
- Land and soil
- Cultural heritage
- Landscape and townscape

The SEA assessments used a set of SEA objectives and assessment that cover each of the environmental topics scoped into the assessment. The SEA objectives and assessment criteria presented have been developed from a comprehensive review of the baseline issues and policy requirements.

Focussed assessments have been undertaken by SEA specialists and the GTS development team, who worked together to understand both the intention and ambition of the draft policies and interventions. This includes examining the options available and making recommendations to strengthen the likely environmental gain or improve the sustainability benefits associated with the intervention. Assessments were undertaken at each stage of the GTS development. The stages are:

- Stage 1 – Compatibility Assessment with the Transport Strategy Objectives
- Stage 2 – Detailed assessment of the draft Policy Framework
- Stage 3 – Assessment of Spatial Delivery Framework's packages of interventions

These assessments included examining the options available and making recommendations to strengthen the likely environmental gain or improve the sustainability benefits associated with the GTS. Stage 2 and 3 followed a matrix-based approach, using the STAG scoring matrix to identify likely significant effects on SEA objectives

Policy Context

The GTS plays a pivotal role in linking national, regional and city policy context through to guiding delivery plans and resourcing across the city. The SEA considered the Strategy within the context of a focussed range of other plans, programmes and strategies (PPS). This process helped to identify a range of environmental protection objectives and problems and issues that the Strategy should take cognisance of and might support with its delivery. This comprehensive policy review has been undertaken and is included as Appendix B to this Environmental Report.

Environmental Context

A baseline information gathering exercise was carried out in order to summarise the key characteristics of GCC, focusing on the SEA issues. The full baseline report is provided in Appendix A of this Environmental Report and outlines the relevant environmental issues and the challenges for the GTS. Some key challenges for the GTS are:

- Reducing traffic volumes into the city centre and imposing stricter conditions on vehicle movements through city centre, whilst minimising equality impacts;
- Contribution towards Glasgow's Climate Plan which places strong emphasis on role of transport in the city's move towards a net zero carbon city by 2030;
- Implementing and designing solutions that to build more resilient societies and communities to respond to the impacts of climate change, reducing the need to travel and reducing journey lengths, while also improving connectivity and accessibility of opportunity for disconnected communities;
- Facilitating and promoting active travel and providing a network that people feel safe to use;
- [Supporting a transition to low / zero carbon vehicles in the city]
- With the need for multifunctional green infrastructure, ensuring provision for flood management, sustainable drainage, access and biodiversity; and
- Preserving and enhancing any unique landscape characteristics. Ensuring new development is informed by landscape character assessment as different landscapes have different capacities to absorb new development.

In the absence of the GTS it is possible that some existing environmental problems would persist or even worsen. in line with Schedule 3 of the 2005 Act, the environmental evolution without the PPS should be considered. Environmental issues identified in the GTS Case for Change Report (GCC, 2021) and the evolution of the environmental baseline, particularly the environmental problems and trends identified, are presented in Section 3.3 of this Environmental Report.

Key Findings

The interim SEA assessment in 2021 concluded that the draft Policy Framework would have predominately positive effects across the SEA topics. At stage three the final package of interventions which will form the Spatial Delivery Framework (SDF) also appeared to have predominately positive impacts on the SEA topics. A summary of the Policy and SDF findings are presented in the table below against each SEA topic.

SEA Topic	Policy Framework Findings (Cumulative Assessment)	Spatial Delivery Framework Findings (Cumulative Assessment)
Air Quality & Climatic Factors	Creation of 20minute neighbourhoods and the encouraging of hybrid models of working is expected to reduce unsustainable travel for short journeys. The policy framework makes reference to the sustainable travel hierarchy and a mode shift towards sustainable transport / low emission vehicles to realise air quality and climate change improvement targets. **Air quality and climatic factors scored positively across all nine packages.**	The final package of interventions is expected to reduce the number of private road trips across the GCC study area and increase the number of trips made by public transport within all the AQMAs. The final package of interventions is not expected to achieve the GTS Policy Framework target of a 30% reduction in private car km, however, should additional uptake in active travel materialise the car km reduction could be around 16% by 2030. This equates to a 7% reduction in

SEA Topic	Policy Framework Findings (Cumulative Assessment)	Spatial Delivery Framework Findings (Cumulative Assessment)
		carbon emissions. Further detail on carbon reductions is provided in Section 5.Overall, a **positive moderate** impact is expected on air quality and climatic factors.
Population and Human Health	The policies recognise the links between poor air quality and health, as well as the inequalities around access to sustainable transport, and aim to address these issues. There is a focus on fair and safe access to services for all in the city including, women, people with disabilities, people from ethnic minorities and the LGBT+ community. Children in particular are recognised as requiring access to affordable transport to allow access to education and recreational activities. Affordable public transport is identified as an important mechanism in ensuring equality in access to healthcare and food, as well as employment and training for adults. **Population and human health scored positively across all nine packages.**	Some interventions such as CYC1, CYC2A, DEV6B and WLK1,2,3, for example, is aimed at promoting active travel and encouraging physical activity, this leads to improvements to health and wellbeing for communities. The final package of interventions is expected to have a **positive moderate** impact on population and human health.
Material assets	Integrated travel is expected to improve access to essential services, employment, and the natural environment for people living in the city. Additionally, the policies seek to utilise existing technology to improve travel experience and planning for travel across several mode types. The policies would have a positive impact on Materials through supporting active and sustainable travel and facilitation of last-mile delivery solutions which would reduce the impact of heavy traffic on infrastructure. **Material assets scored positively across eight packages with the exception of Package 4 (Collective transport) where the impact is uncertain.**	Much of the interventions that require infrastructure development, for example PT6, PT10 and WAT3, will aim to integrate the public transport network and provide new connections across the city centre. The final package of interventions is expected to have a **positive minor** impact on material assets.
Water	The policies are expected to have a positive impact on the water environment as it sets out the importance of the blue infrastructure in the travel network and as part of a high-quality public realm. The policies explicitly refer to designing infrastructure taking climate resilience into account, particularly in relation to flood	WAT1 and WAT2 have a negative impact on water as their use of the River Clyde for transport may result in a reduction in water quality and may increase the likelihood of pollution incidents from boats. Infrastructure proposed as part of the final package of interventions such as Mobility hubs (MS1) and the Freight Distribution

SEA Topic	Policy Framework Findings (Cumulative Assessment)	Spatial Delivery Framework Findings (Cumulative Assessment)
	risk management. Water quality would also be improved by the requirement to manage run-off from roads through SUDS and other appropriate drainage. **Water scored positively in three packages (packages 2,5 and 8).**	centres (FRE12) are not located in areas that have a high likelihood of surface water flooding. Overall, the final package of interventions is expected to have a **neutral** impact on water. Later stages of the Spatial Delivery Framework development will need to take into consideration areas of current and future flood risk and how water moves through the catchment when identifying the location of certain interventions particularly those that require infrastructure development.
Biodiversity, Flora and Fauna	The policies are focussed on enhancing access to green space, improving blue/green network connectivity, increasing tree cover and creating habitats, protecting wildlife, and promoting sustainable travel. **Biodiversity scored positively in two packages (package 2 and 8).**	The final package of interventions is expected to have a **neutral** impact on biodiversity. Later stages of the Spatial Delivery Framework development will need to take into consideration the location of designated biodiversity sites (SSSI, LNRs and SNH Country parks) when identifying the location of certain interventions particularly those that require infrastructure development.
Soil and Geology	Interventions that reduce the volume of traffic on the roads that use fossil fuels may have an indirect positive impact on land quality as there will be less pollutant run off to soils. **Soil and geology scored positively in two packages (package 2 and 8).**	The final package of interventions is expected to have a **neutral** impact on soils and geology. Later stages of the Spatial Delivery Framework development will need to take into consideration the location of greenspace, derelict land and brownfield sites when identifying the location of certain interventions particularly those that require infrastructure development.
Cultural Heritage	Encouraging the move to active travel and away from private vehicles will reduce congestion in the city centre. The reduced traffic will improve townscape and public realm which could benefit the setting of cultural heritage assets The policies would have a positive impact on Cultural Heritage through facilitating effective transport for Glasgow as a tourist destination **Cultural heritage scored positively across five packages (2, 3, 5, 8 and 9).**	The final package of interventions is expected to have a **neutral** impact on cultural heritage. Later stages of the Spatial Delivery Framework development will need to take into consideration the location of designated historic and cultural assets when identifying the location of certain interventions particularly those that require infrastructure development.

SEA Topic	Policy Framework Findings (Cumulative Assessment)	Spatial Delivery Framework Findings (Cumulative Assessment)
Landscape and townscape	Encouraging the move to active travel and away from private vehicles will reduce congestion in the city centre. The reduced traffic will improve townscape and public realm. The policies are focussed on demand management for travelling by private vehicle through implementing parking restrictions. **Landscape scored positively across 6 packages with the exception of packages 4, 5 and 6 where the impact was not clear or neutral.**	The majority of the interventions in Package E reduce the ability for private vehicles to travel and park in the city centre, improving public realm and amenity for residents and visitors. The final package of interventions is expected to have a **positive minor** impact on landscape and townscape.

Next Steps and Monitoring Framework

The Environmental Report will be issued alongside the draft GTS Part 2 – Spatial Delivery Framework for public consultation for a period of 6-8 weeks. It should be noted that the GTS Part 1 – Policy Framework, has already been subject to public consultation alongside an interim SEA assessment, and has been adopted by the Council. All comments and representations will be considered before finalising the GTS Part 2 SDF and Environmental Report. Where elements of Part 2 change in response to consultation, the assessment will be reviewed and updated within the Environmental Report prior to the adoption of the final GTS Part 2 SDF.

Best practice in SEA Monitoring requires that a detailed monitoring framework reflects the implementation of the Strategy actions, identifies where existing indicators (from the delivery of related PPS) can be used to track progress and, ideally, is embedded within the final Strategy to ensure that monitoring is undertaken as part of GTS delivery.

A monitoring framework and associated targets/indicators will be presented in the Post Adoption statement, the final stage in the SEA process.

1. Introduction

1.1 Purpose of this Report

Strategic Environmental Assessment (SEA) provides plan-making authorities with a transparent process to incorporate environmental considerations into decision making at an early stage and in an integrated and documented manner.

The overall objective of SEA is to:

"Provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development" (Article 1 of the European SEA Directive 2001/42/EC).

This report presents the findings of the SEA of the Glasgow Transport Strategy. The assessment has been carried out in accordance with statutory SEA requirements and presents the anticipated impacts from the strategy on the SEA topics scoped into the assessment and relevant to the study area. In accordance with the statutory SEA requirements, a Non-Technical Summary (NTS) will accompany the report. The main objectives of this report are to fulfil the statutory SEA reporting requirements, identify anticipated significant environmental effects from the Transport Strategy and propose mitigation and enhancement measures which should be incorporated into both the Part 1 Policy Framework and Part 2 Strategic Delivery Framework.

1.2 How to Comment on this Report

This Environment Report and accompanying NTS are being issued for consultation. Subject to approval from GCC, the document will be available for consultation for a minimum period of six to eight weeks. Details of how to participate in the consultation and progress on the GTS will be posted on the GCC's dedicated Transport Strategy webpage at https://www.glasgow.gov.uk/transportstrategy.

1.3 Structure of this Report

This report is structured as follows:

- This section introduces the report, identifies the statutory requirement for undertaking the SEA, explains the background to the development of the GTS and provides a summary of the strategy.
- Section 2 provides an overview of the SEA process which has been undertaken to date including which SEA topics have been scoped in and how the report responds to consultation comments.
- Section 3 provides a review of the relevant plans, programmes and strategies (PPS) and a summary of the baseline characteristics and the evolution of the baseline in the absence of the GTS. A detailed baseline is provided in Appendix A. A full list of relevant PPS, which identifies applicable legislative and policy requirement and targets at international, national, regional and local scale provided in Appendix B.
- Section 4 presents the approach to the SEA assessment, providing the assessment criteria, scoring system and approach to reasonable alternatives.
- Section 5 presents the SEA assessment findings for the three stages of the strategy development.
- Section 6 identifies embedded and future mitigation, as well as enhancement measures
- Section 7 presents the approach to cumulative assessment.
- Section 8 identifies the next steps in the SEA process and outlines potential monitoring arrangements.

The report is supported by the following appendices:

- Appendix A: GTS SEA Baseline
- Appendix B: Relationship with relevant Plans, Programmes and Strategies

- Appendix C: Consultation Responses
- Appendix D: Detailed Policy Framework Assessment
- Appendix E Alternative Packages of Interventions

1.4 Statutory Requirements for the SEA

In Scotland, the 2005 Act transposes the EU Directive (2001/42/EC) into Scottish legislation, and Section 1 of the Act sets out the primary requirement, which is to secure the completion of an environmental assessment during the preparation of a qualifying plan or programme. The Act requires responsible authorities to assess the likely significant effects on the environment of implementing PPS, as defined within the 2005 Act. This assessment must also examine the likely significant effects of implementing reasonable alternatives to the PPS under consideration (i.e. the GTS).

The GTS is a qualifying plan under Section 5(3) of the 2005 Act, therefore a SEA is required.
Under the 2005 Act, once the need for a SEA of a PPS has been established, a three-stage process is required:

- SEA Scoping (Section 15): Responsible Authorities must provide the Consultation Authorities with sufficient information to enable them to consider the proposed scope, level of detail and consultation period for an ER to accompany the PPS;
- Preparation of an ER, and consultation on it (Section 14): Responsible authorities must prepare an ER to "identify, describe and evaluate the likely significant effects on the environment of implementing" a PPS. This report should be based on the outcomes of the SEA Scoping and the information requirements specified in Schedule 3 of the 2006 Act. The report must be consulted on in tandem with the PPS for a minimum period of six to eight weeks as agreed with the Consultation Authorities in the SEA Scoping Report. This report responds to these legislative requirements; and
- Preparation of a Post Adoption SEA Statement (Section 18): Following the adoption of a PPS, the Responsible Authority must prepare a statement setting out, amongst other matters, how environmental considerations and the SEA have been considered within the adopted PPS.

1.5 Background to the Glasgow Transport Strategy

Transport Scotland recommends local authorities prepare a new transport strategy every 3 years. The GTS succeeds Glasgow City Council's Local Transport Strategy (2007-09) (LTS). The current LTS and proposed GTS aim to provide an overarching framework for transport decision making and investment in the City. The GTS has more detailed plans sitting underneath the overarching Framework including a Liveable Neighbourhoods programme, a City Centre Transport Plan and an Active Travel Strategy. The details of these are described below:

- An ongoing Liveable Neighbourhoods programme – this responds to the need to put people and place at the heart of how people experience the City, and focus on developing a series of Liveable Neighbourhood plans within an overarching policy framework;
- The adoptedCity Centre Transport Plan (2022) – this aims to provide a coherent framework for all transport related policies and projects in the city centre, with a primary goal of putting people and place at the heart of the city and reducing the impact of vehicular traffic, and updates the existing City Centre Transport Strategy; and
- An adopted Active Travel Strategy (2022) – this update the existing Strategic Plan for Cycling and cover walking, wheeling and cycling policies and projects in the city.

These plans, although they have their own set of objectives, share the same overarching outcomes and have been considered in the context of the proposed GTS and are therefore subject to the same SEA.

1.6 GTS Development Approach

The Glasgow Transport Strategy (GTS) sets out the City's objectives, policies, priorities and investment plan up to 2030. It follows from key work undertaken by the Glasgow Connectivity Commission and by Glasgow City Council (GCC) in developing the Case for Change that sets the framework for the GTS, and the extensive Public Conversation on Glasgow's Transport Future. The GTS sits within a framework of bold policy and strategy developments at national, regional and local level.

The GTS is being developed using a multi-criteria appraisal approach, in line with STAG. The 'Case for Change' constitutes the first stage of the STAG process and involved data analysis and stakeholder engagement to provide a baseline for the study area (the Glasgow City Council area) and to identify transport-related problems and opportunities, as well as any constraints that could exacerbate future transport issues and influence the development of solutions. This analysis enabled the development and refinement of a set of Transport Planning Objectives, which informed the development of options to both address the identified problems and enable the realisation of opportunities.

Consultation with stakeholders, community representatives and the public on draft outcomes, objectives and options was carried out as a "Public Conversation on Glasgow's transport future" in 2020, which included stakeholder & community representative workshops, an online survey and the use of an online transport simulator tool. Outcomes, objectives and options were revised following the consultation and subjected to an initial appraisal. This included an initial sift against their relevance to the study area and to the Transport Planning Objectives, to arrive at a set of options for further consideration, packaging and appraisal.

The Case for Change was undertaken by GCC and a draft report was published in September 2020 to present the evidence for issues that need to be tackled by the GTS. The publication of the Draft Case for Change was to support a major public engagement exercise on transport issues in the city - the Public Conversation on Glasgow's transport future. The report provides a comprehensive review of the problems and opportunities that the GTS requires to respond to, confirms the outcomes and objectives for potential interventions and provides a long list of potential options that have been taken forward for development and assessment in this project. Following the completion of the public engagement, the Case for Change report was updated with findings from that exercise and published as a Final Case for Change report.

The GTS has been published in two parts. Part 1 a Policy Framework, which sets out transport policies and related actions, to guide decision-making in the delivery of significant change in sustainable transport provision in the city. It was published Spring 2022, following public and stakeholder consultation on a draft Policy Framework in autumn 2021. Interim SEA and EqIA assessments were carried out of the Policy Framework and published alongside the Draft Policy Framework for consideration by the public and stakeholders. The Policy Framework is supported by Part 2, a Spatial Delivery Framework, which accompanies this Environmental Report for consultation. Both parts have been informed by this SEA.

2. SEA Process

2.1 Introduction

The SEA process has been aligned with the GTS development to ensure the SEA has had influence at each stage of the strategy development and, along with the Equality Impact Assessment process, has informed the refinement and revision of the proposed strategy.

Assessments were undertaken by SEA specialists at each stage of the GTS development. This includes examining the options available and making recommendations to strengthen the likely environmental gain or improve the sustainability benefits associated with the GTS.

Following each stage of the GTS development, any negative impacts or positive opportunities that were identified were discussed with the project team to determine effective mitigation and enhancement recommendation. The key recommendations from the SEA specialists have included refinements to the objectives, alternative interventions and package wording, caveats and monitoring controls based on the environmental criteria that consider and respond to both direct impacts and indirect, secondary and cumulative impacts. Key findings and recommendations are presented in Section 5.

2.2 Scoping of SEA Topics

The baseline and policy review were carried out to determine the SEA topics which should be scoped into the assessment and would be anticipated to have a positive and/or negative impact, as well as topics where a significant cumulative impact is anticipated. Schedule 3 of the 2005 act requires the GTS to be assessed against the following environmental issues:

- Air quality
- Climate
- Population and human health
- Material assets
- Water
- Biodiversity, flora and fauna
- Land and soil
- Cultural heritage
- Landscape and townscape

The SEA Scoping Report for the GTS was published in March 2021. It was determined that the GTS has the potential to significantly impact all of the environmental issues. Accordingly, all of the issues were scoped into the SEA and provide the framework for the SEA objectives and the criteria and questions which have been used in the assessment process (see Table 4.1: SEA objectives and the assessment criteriaTable 4.1).

Due to the absence of any European Designated Sites within the study area, it is not proposed to carry out a Habitat Regulations Appraisal. An HRA screening has previously been prepared by GCC in relation to the City Development Plan in 2014, and concluded an appropriate assessment was not required. Any schemes emerging with cross-boundary and regional characteristics would more appropriately be assessed at the regional level.

2.3 Response to Consultation Comments

Statutory requirements of the SEA include the requirement to provide consultation authorities with a detailed explanation of the plan in order to fully understand the likely environmental effects. In February 2021 the GTS SEA Scoping Report was sent for consultation to the Statutory Authorities (Nature Scot, Scottish environment Protection Agency (SEPA) and Historic Environment Scotland (HES)). A summary of the key comments from the statutory consultation authorities and the response from the SEA specialists is provided in Appendix C Consultation Responses.

In October 2021 the three statutory authorities (NatureScot, SEPA and HES) were consulted on the Glasgow City Council Glasgow Transport Strategy draft Policy Framework as well as the interim SEA appraisal summary. HES had no comments referring to the requirements of the Environmental Assessment Act 2005 or the SEA process but acknowledged that the full Environmental Report (ER) would be provided in future for consultation alongside the GTS Part 2: Spatial Delivery Framework.

3. Policy and Environmental Context

3.1 Introduction

This section summarises relevant baseline environmental characteristics, environmental issues and considers the evolution of the baseline in the absence of the GTS. It also notes the relationship between the GTS and other relevant PPS. This has served as an important base upon which to build the SEA Framework.

3.2 Relationship with other Plans, Programmes or Strategies

The GTS plays a pivotal role in linking national, regional and local policy through to guiding delivery plans and resourcing across Glasgow, this is illustrated in Figure 3.1.

Figure 3.1: Glasgow Transport Strategy position in relation to national, regional and city policies (Case for Change – Glasgow's Transport Strategy 2021-2031)[1]

[1] Glasgow City Council (2021). Available from: https://www.glasgow.gov.uk/transportstrategy

A comprehensive policy review has been undertaken and is included in Appendix B to this report. An understanding of the relevance of other legislation, policy and plans to the GTS is an essential step in the SEA process.

A summary of the key environmental objectives identified through the review is presented in **Error! Reference s ource not found.**.

Table 3.1: Key Environmental Requirements/Objectives

SEA Topic	Key Environmental Requirements/Objectives
Air Quality	▪ The need to minimise harmful emissions (CO_2, NO_x and Particulate Matter) to the air ▪ Improve air quality particularly within two Air Quality Management Areas (AQMAs) within Glasgow ▪ Reducing traffic volumes into the city centre and imposing stricter conditions on vehicle movements through city centre, whilst minimising equality impacts ▪ Managing the 'last mile' of goods delivery ▪ Encouraging active travel and the switch to more sustainable, cleaner and low carbon transport ▪ Ensuring links between transport projects and policies on low carbon and air quality to maximise benefits.
Climactic Factors	▪ Support target for Glasgow to be net zero carbon by 2030 ▪ Contribution towards Glasgow's Glasgow's Climate Plan ▪ Support outcomes set out in Glasgow's climate adaptation plan Climate Ready Clyde ▪ Reducing the need to travel and reducing journey lengths ▪ Improving connectivity and accessibility of opportunity for disconnected communities ▪ Reducing use of fossil fuel based energy for transport ▪ Ensuring links between transport projects and policies on low carbon and air quality to maximise benefit
Population and Human Health	▪ Protect health and well-being of Glasgow's population ▪ Being proactive in ensuring transport's role reduces poverty and improves access to life opportunities and quality open space ▪ Facilitating and promoting active travel and providing a network that people feel safe to use ▪ Work towards eliminating serious or fatal accidents on our road network ▪ Embedding equalities and Fairer Duty Scotland into decision-making, and prioritising people over vehicles ▪ Acknowledge the uncertainties caused by the Covid-19 pandemic
Material Assets	▪ Continuing maintenance of our footways, paths and cycle infrastructure to ensure longevity and ease of use ▪ Careful choice of materials utilised in transport infrastructure to ensure robustness and longevity against wear and tear, minimising carbon emissions in construction ▪ Use of sustainable and / or recycled materials for infrastructure project ▪ Developing a suitable EV network for the city.

Water	▪ Ensuring the protection and improvement in quality of the city's watercourses; ▪ Ensuring adequate drainage is included in infrastructure schemes; ▪ Ensuring provision for flood management, sustainable drainage, access and biodiversity
Biodiversity, Flora and Fauna	▪ Achieving the vison of a cleaner, greener, sustainable Glasgow which is protective of its natural environment and natural heritage. ▪ Protect biodiversity by reducing the requirement for large-scale transport facilities.
Soil & Geology	▪ Managing the conservation of/improvement of soil quality in any place making / infrastructure schemes ▪ Connecting communities through making use of vacant/derelict land ▪ Including consideration to manage carbon storage and drainage (SUDS) to alleviate flooding
Cultural Heritage	▪ Requirement to protect and enhance cultural heritage sites and their settings ▪ Achieving a high quality sustainable built environment and maintaining the sense of character in any place making ▪ Consideration of the visual intrusion of schemes, including choice of materials to be relevant for the location ▪ Protect buildings from deterioration caused by air and noise pollution
Landscape (and Townscape)	▪ Preserving and enhancing any unique landscape characteristics. Ensuring new development is informed by landscape character assessment as different landscapes have different capacities to absorb new development

3.3 Environmental Baseline Evolution

A baseline information gathering exercise was carried out in order to summarise the key characteristics of Glasgow City Council, focusing on the SEA issues. Information on air quality, climatic factors, land, soil, water, landscape, biodiversity, material assets, population, human health and cultural heritage have been included in establishing the environmental baseline. The detailed baseline is presented in Appendix A SEA Baseline.

In the absence of the GTS it is possible that some existing environmental problems would persist or even worsen. in line with Schedule 3 of the 2005 Act, the environmental evolution without the PPS should be considered. Taking account of the environmental issues identified in Appendix A and in the GTS Case for Change Report (GCC, 2021) the evolution of the environmental baseline, particularly the environmental problems and trends identified, are presented in Table 3.2.

Table 3.2: Evolution of Environmental Baseline

SEA Topic	Baseline Evolution Without the GTS
Air Quality and Climatic Factors	If the GTS is not implemented, the decline of bus passengers is likely to continue with increased reliance of motorised forms of transport as the city grows. Glasgow already lags behind other large urban areas in Scotland in terms of the proportion of people who walk and cycle for journeys and without the GTS opportunities to encourage active travel is likely to be lost. Increased traffic will increase air pollution and worsen the AQMAs within the city. GCC could fail in meeting its obligations under the Climate Change (Scotland) Act 2009, while continued breaches of European air quality limits could see fines being imposed on the UK government, which could eventually filter down to the City Council itself.

	If the GTS is not implemented, it is likely that the transport networks and wider communities would be less resilient and less able to accommodate future climate impacts.
Population and Human Health	Glasgow's population is projected to grow by 2.9% from 2019 to 2028, with the largest component of this being net migration. Single person households will continue to grow in Glasgow, and the population is forecast to grow overall. If the GTS is not implanted the transport network across the city will not be able to accommodate this growth in population, this is likely to cause delays to commuters, congestion in streets and an overall poorer quality of life for the people of Glasgow. In Glasgow in 2018, some 73% of households had no private access to a bike according to the Scottish Household Survey. This is substantially higher than the Scotland average of 65% and higher than the comparable figure for large urban areas in Scotland. If the GTS is not implemented the shift towards active travel modes would not be encouraged which would provide the people of Glasgow with more opportunities for physical exercise and its associated health benefits.
Material Assets	If the GTS is not implemented, it is likely that a range of sustainable transport facilities (including walking and cycling routes, cycle parking, public transport hubs) would not be delivered. This in turn could continue the declining use of buses in the city. The high reliance on cars and demand for cars and could jeopardise Glasgow's vision of being carbon neutral by 2030.
Water	If the GTS is not implemented, it is likely that run-off from private vehicles into Glasgow's watercourses will increase. This poses a risk to the quality of Glasgow's water bodies and the species that live there. It also poses a risk to the health of Glasgow's population. The GTS also presents an opportunity to consider how it can make a positive contribution to wider community adaptation / resilience with regard to flood risk.
Biodiversity, Flora and Fauna	If the GTS is not implemented and demand for motorised travel increases, there will likely be demand for new and significant transport infrastructure. Construction of such infrastructure could put pressure on biodiversity, including the loss and fragmentation of habitats, while increases in traffic, vehicle emissions and noise could disturb sensitive species.
Soil	If the GTS is not implemented and demand for motorised transport increases, it may be necessary to construct further large-scale transport facilities, such as new roads and bridges, to cope with demand. Construction and use of such facilities could lead to land contamination, soil erosion and soil sealing. Avoidance of constructing on brownfield sites, given there may be likely soil contamination, creates disconnect in the transport network.
Cultural Heritage	If the GTS is not implemented, improvements to public realm as part of transport projects would not go ahead while traffic congestion would worsen the setting of historic assets around the city centre.
Landscape (and Townscape)	If the GTS is not implemented, the proposed improvements to public realm as part of transport projects would not go ahead. The landscape of the city would be expected to worsen as private vehicle use increases causing congestion on the streets and leads to parking provision demand outweighing supply. The townscape would be negatively impacted, with the city becoming a less attractive place for residents and visitor.

4. SEA Assessment Approach

4.1 Introduction

The 2005 Act requires the Environmental Report to present the assessment and evaluation of the likely significant effects that GTS will have on the environment. It is important to recognise that the SEA focuses on strategic level issues and does not consider detailed measures for specific developments and construction projects within the study area. Such effects would be the focus of a project level Environmental Impact Assessment (EIA), where appropriate. Strategic mitigation has been identified throughout the assessment and this will form the basis of future, project level assessments that focus on interventions identified in the GTS.

4.2 SEA Objectives and Assessment Criteria

The SEA assessments used a set of SEA objectives and assessment questions identified in Table 4.1, that cover each of the environmental topics scoped into the assessment. The SEA objectives and assessment criteria presented have been developed from a comprehensive review of the baseline issues and policy requirements and were refined following comments received at the Scoping Stage and the Interim SEA report of the Policy following the Interim SEA Assessment of the draft Policy Framework.

Table 4.1: SEA objectives and the assessment criteria

GTA SEA Objectives	Assessment Guide Questions How will the policy….
1. **Air Quality**: Reduce emissions from all forms of transport related air pollution and improve the air quality for all across Glasgow	• Reduce the emissions and pollution associated with the most polluting vehicles i.e. private vehicles? • Contribute towards a reduction in NOx and PM levels, particularly within the city's AQMAs? • Assist in meeting AQMA targets and support LEZ objectives? • Help to limit polluting traffic growth? • Help to reduce traffic congestion? • Encourage and facilitate the use of active travel, particularly for short journeys?
2a. **Climatic Factors**: Reduce the need to travel and encourage modal shift from private vehicles to sustainable public transport to address Glasgow's climate emergency and meet wider greenhouse gas emission targets.	• Encourage modal shift from private vehicles to more sustainable transport options? • Support reduction in GHG emissions? • Facilitate ongoing co-ordination with spatial development planners to ensure communities are close to key services and places of employment, to the maximum extent possible?
2b. **Climatic Factors**: Adapt transport system so there is less reliance on fossil fuels and it is more resilient to the predicted effects of climate change.	• Reduce the use of non-renewable resources and fossil fuels? • Promote and support the best use of clean fuels/technologies? • Help adapt the transport network and support the wider community to respond to direct and indirect risks associated with climate change projections for Scotland?
3. **Population and Human Health**: Improve quality of life and human health and increase sustainable access to essential services, employment and the natural environment	• Reduce exposure to air pollution by most vulnerable groups? • Ensure safe and sustainable access for all users to essential services and employment?

	• Reduce and avoid community severance or other detriment to existing active travel routes, including maintaining or improving pedestrian crossings? • Increase and enhance provision of non-motorised transport, especially walking and cycling links and facilities? • Improve accessibility to open spaces and the path network for physical recreational purposes?
4. **Material Assets**: Improve and enhance Glasgow's existing transport infrastructure.	• Reduce the use of natural resources e.g. fossil fuels? • Reduce the impact of heavy traffic on infrastructure? • Support or lead more sustainable maintenance activity where new development is required? • Support improvements to transport technology, interchanges and timetabling? • Plan for future travel arrangements where journeys are made by a number of different modes? – e.g. electric vehicle for most of the journey, which is then parked and left to charge at a hub, cycle and walking assets, such as connected off-road paths, bike/e-bike share infrastructure.
5. **Water**: Prevent the deterioration and where possible, enhance the status of Glasgow's watercourses and reduce/manage flood risk in a sustainable way.	• Protect and where possible improve water quality within GTS region? • Contribute to reducing emissions and particulates of key pollutants to water from road transport? • Support network resilience and wider communities to anticipated extreme weather events and climate change? • Promote the reduction of flood risk? • Reduce the financial and carbon costs of wastewater pumping and treatment?
6. **Biodiversity, Flora & Fauna**: Ensure the city's biodiversity, natural habitat networks and green infrastructure including green and blue networks are protected.	• Protect and or enhance the national and local integrity of designated biodiversity sites and wildlife sites? • Protect and or enhance the integrity of existing habitat and green/blue networks and other wildlife corridors? • Protect protected species? • Provide opportunities for habitat enhancement, habitat creation or biodiversity net gain?
7. **Soil & Geology**: Prevent soil degradation and improve soil quality where possible while safeguarding valuable land resources.	• Prevent soil degradation? • Seek to improve and utilise brownfield sites and reduce impact on greenspace? • Reduce the impact on soil quality from pollutants from transport? • Reduce loss of soil from extreme events and flooding?
8. **Cultural heritage**: Protect and enhance (where appropriate) Glasgow's cultural and historic environment.	• Impact on designated and non-designated historic sites, places and spaces? • Improve accessibility to all townscape including historic sites, places and spaces? • Improve access to and understanding of the historic environment? • respect/respond to the historic urban spatial structure / plan of the city?
9. **Landscape (and townscape)**: protect and enhance the	• Create and maintain an attractive public realm?

landscape and townscape character and setting of the city	• Respect existing urban landscape, settlement pattern and sensitive views? • Protect and enhance the character, integrity and liveability of key streetscapes, including removing barriers to use? • Improve sustainable access to open space and the countryside?

4.3 SEA Scoring System

The SEA assessment has followed a matrix-based approach, using the STAG scoring matrix to identify likely significant effects on SEA objectives. The scoring system used for the assessment of effects is described in Table 4.2. This approach has several advantages including the systematic recording of potential effects and their significance together with any assumptions, uncertainties and suggested mitigation or enhancement measures.

Table 4.2: SEA Scoring System for Likely Significant Effects

Symbol	Score	Descriptions
+++	Major benefit	The option is anticipated to have a major benefit or positive impact (significant). These are benefits or positive impacts which, depending on the scale of benefit or severity of impact, the practitioner feels should be a principal consideration when assessing a option's eligibility for funding
++	Moderate benefit	The option is anticipated to have a moderate benefit or positive impact (significant). 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 minor benefit or positive impact (not significant). 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.
0	No benefit or impact/Neutral	The option is related to but does not have any benefit or impact on the SEA objective.
-	Small negative impact	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 negative impact	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
---	Major negative impacts	The option is anticipated to have a major disbenefit or negative impact (significant). 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.
?	Uncertain Impact	The option has an uncertain relationship with the SEA objective or the relationship is dependent on the way in which the aspect is managed. In addition, insufficient information may be available to enable an assessment to be made.
~	No or negligible relationship	There is no clear relationship between the option and the achievement of the SEA objective or the relationship is negligible.

4.4 GTS elements subject to SEA

In line with the Scottish Governments *Strategic Environmental Assessment Guidance 2013* the assessment has been focused on the key elements within the GTS which are likely to have significant environmental effect to ensure a proportionate approach to assessment.

The GTS is being published in two parts. Part 1 is a Policy Framework, which sets out transport policies and related actions, to guide decision-making in the delivery of significant change in sustainable transport provision in the city. It is supported by Part 2, a Spatial Delivery Framework, which accompanies this Environmental Report for consultation. An Integrated Transport Assessment was undertaken to develop and assess interventions to inform both the development of the Part 1 policy framework and the Part 2 Spatial Delivery Framework of which the SEA undertook the Environmental criteria of this assessment.

Table 4.3: GTS elements subject to SEA Assessment

Stage	Element of GTS	Subject to SEA Assessment/Review	Comment
1	GTS Policy Framework Objectives	Yes	The GTS Objectives (presented in the Final Policy Framework (2022)) were assessed to ensure it supported a positive environmental outcome. Assessment provided in Section 5.1.
2	Part 1 Policy Framework	Yes	A review of the policy framework which went for public and stakeholder consultation in autumn 2021 is provided in Section 0.
3	Packages of Interventions from the Integrated Transport Assessment	Yes	The SEA undertook the environmental assessment of the wider integrated transport assessment, this included an assessment of the alternative packages and the preferred package, Assessment provided in Section 5.3.

The overall approach to the SEA has been refined to take account of Scoping consultation responses (see section 2.3).

4.5 SEA Assessment Stages

The Strategic Environmental Assessment (SEA) has been aligned with the GTS development to ensure the SEA has had influence at each stage of the strategy development and, along with the Equality Impact Assessment (EQIA) will be used to inform and refine the finalised Strategy. **Error! Reference source not found.** sets out the S EA approach alongside the stages of development of the GTS.

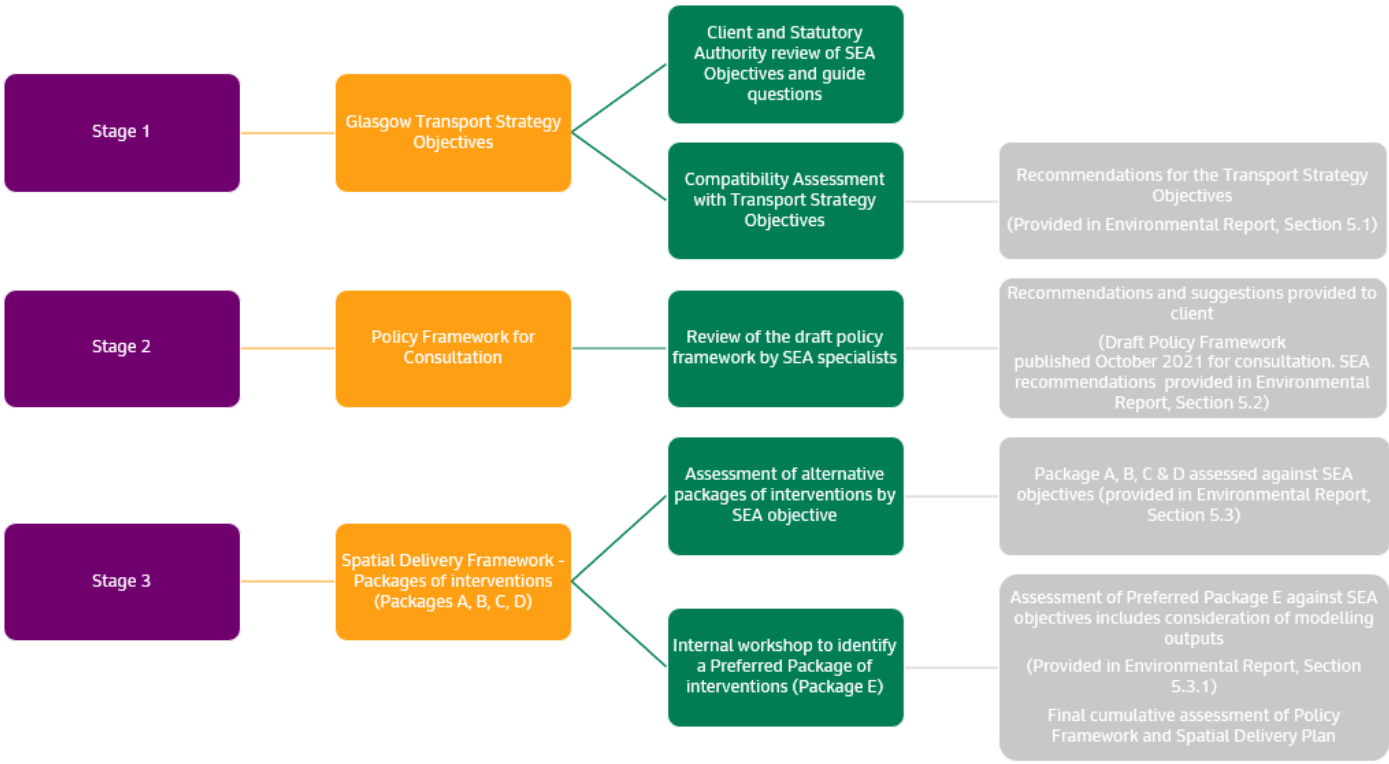

Figure 4.1: SEA approach alongside the GTS development

Focussed assessments have been undertaken by SEA specialists and the GTS development team, who worked together to understand both the intention and ambition of the draft policies and interventions. This includes examining the options available and making recommendations to strengthen the likely environmental gain or improve the sustainability benefits associated with the intervention.

4.6 Approach to Reasonable Alternatives

Article 14(2) of the 2005 Act requires that:

"The report shall identify, describe and evaluate the likely significant effects on the environment of implementing (a) the plan or programme; and (b) reasonable alternatives to the plan or programme, taking into account the objectives and the geographical scope of the Plan or Programme".

The evolution of the baseline scenario was not considered to constitute a reasonable alternative and instead consideration was given at each stage of the GTS development to identify and assess any reasonable alternatives to the key components of the draft GTS. As shown in Figure 4.1 the SEA considered alternatives and made recommendations at the key GTS stages - objective setting, developing packages of interventions and individual interventions. SEA recommendations and the findings of the assessment directly fed into the development of the final list of interventions presented in the draft GTS.

5. Assessment Findings

This section outlines the findings of the Stage 1, 2 and 3 of the SEA process (as shown in **Error! Reference source not found.**).

5.1 Stage 1 - Glasgow Transport Strategy Objectives

For Stage 1 a compatibility assessment was undertaken to consider the likely significant environmental effects arising from the proposed GTS Transport Strategy Objectives presented in the Final Policy Framework (2022).

A high-level compatibility assessment was used to determine if the GTS objectives were compatible with the SEA objectives and assessment criteria (see Table 4.1), the compatibility assessment is presented in Table 5.1. The key used for the compatibility assessment is provided below:

Key	
Compatible	+
Not compatible	-
No or negligible relationship	0
Uncertainty over compatibility	?

Table 5.1: Compatibility Assessment of the GTS Transport Objectives against the SEA Objectives

GTS Objectives	SEA Objectives									Summary
	Air Quality	Climate	Population and Human Health	Material Assets	Water	Biodiversity	Soil	Cultural Heritage	Landscape (and Townscape)	
1. To encourage low carbon movement of people and goods in a resilient transport system that can adapt sustainably in the future	+	+	0	0	0	0	0	0	0	The GTS objective is compatible with the air quality and climate objectives. There is no direct relationship identified with the other SEA objectives. However, the GTS objective could indirectly contribute to the other seven objectives. **Recommend using the word 'promote' instead of encourage.**
2. To promote clean air through sustainable transport investment and decision-making	+	+	+	+	0	0	0	0	0	The GTS objective is compatible with the air quality, climate, population and human health and material assets objectives. There is no direct relationship identified with the other SEA objectives. However, the GTS objective could indirectly contribute to the other five objectives. **Recommend using the word 'achieve' instead of promote.**
3. To encourage and enable physical activity and health improvement through travel	0	0	+	0	0	0	0	0	0	The GTS objective is compatible with the population and human health objectives. There is no direct relationship identified with the other SEA objectives.

									Recommend mentioning 'active travel' and expanding health to include 'wellbeing'.
4. To promote an affordable and inclusive sustainable travel system, particularly to support economic success	+	+	+	0	0	0	0	0	0	The GTS objective is compatible with the air quality, climate and population and human health objectives. There is no direct relationship identified with the other SEA objectives. **Recommend the term 'growth' over 'success'.**
5. To improve reliability, integration and convenience of sustainable travel modes	+	+	+	+	0	0	0	0	0	The GTS objective is compatible with the air quality, climate, population and human health and material assets objectives. There is no direct relationship identified with the other SEA objectives. **Recommend a different term to 'convenience' is used.**
6. To ensure the transport system is accessible by all including those with additional support needs	0	0	+	0	0	0	0	0	0	The GTS objective is compatible with the population and human health objectives. There is no direct relationship identified with the other SEA objectives. **No recommendation provided.**
7. To improve the safety and personal security of all transport users (and the quality of public spaces that they use)	0	0	+	0	0	0	0	0	?	The GTS objective is compatible with the population and human health objectives. There is no direct relationship identified with the other SEA objectives.

										Recommend saying 'safety and personal security of all transport users and public spaces that they use'
8. To deliver spaces for people first and foremost, with high quality public spaces and an effective sustainable travel hierarchy	0	0	+	?	0	0	0	+	+	The GTS objective is compatible with the population and human health, cultural heritage and landscape (and townscape) objectives. There is no direct relationship identified with the other SEA objectives. **Recommend integrating the historic and natural environment into this objective.**

In addition to assessing compatibility of each objective against the SEA Objectives the SEA specialists also provided recommendations for each of the GTS objectives. The changes to the GTS objectives were not considered to be significantly different (mostly wording changes) and therefore did not require a re-assessment. The final GTS objectives were:

1. To promote low carbon movement of people and goods in a resilient transport system that can adapt sustainably in the future
2. To achieve clean air through sustainable transport investment and decision-making
3. To encourage and enable physical activity and improved health & wellbeing through active travel
4. To promote an affordable, inclusive and equitable sustainable travel system
5. To improve reliability, integration and convenience of sustainable travel modes for people and goods
6. To ensure the transport system is accessible by all
7. To improve the safety and personal security of all transport users and the public spaces that they use
8. To deliver spaces for people first and foremost, with high quality public spaces which respect and respond to the natural and built environment, and an effective sustainable travel hierarchy

5.2 Stage 2 Review of Draft Policy Framework

The GTS Policy Framework set out policies and actions and follows on from the GTS Case for Change report (2021). It will be further supported by a Spatial Delivery Framework in 2022. The Draft GTS Policy Framework as consulted upon in late 2021 set out a series of transport policies and related actions under 9 parts (packages). This was then subject to an interim strategic environmental assessment, to ensure the Policy Framework responded to issues raised during that assessment.

The interim assessment was undertaken at a package level and a score assigned to each SEA objective as per the scoring criteria in Table 4.2. Details of the interim assessment are presented in Appendix D with a summary of the package assessment is presented in Table 5.2. Following these interim SEA recommendations, the Draft Policy Framework was published in October 2021 for 7 weeks of public and stakeholder consultation. The Final Policy Framework (2022) was published on in February 2022, and adopted by the Council in March 2022. A full consultation report on the Draft Policy Framework is available at www.glasgow.gov.uk/transportstrategy.

Table 5.2: Assessment of the Policy Framework – Findings and Recommendations

Package	Summary	Recommendations
1. Reducing the need to travel unsustainably	This package would have a positive effect on several of the SEA objectives, primarily in relation to creation of 20 min neighbourhoods and the encouraging of hybrid models of working. Positive effects are anticipated on climate change and air quality objectives with a reduction in unsustainable travel for short journeys. Population and Human Health will also be positively impacted by policies that reduce the amount of travelling that needs to be undertaken by individuals, improved active travel opportunities/facilities and as a result improved quality of life.	It is not clear if development management decision making will include consideration of safeguarding valuable land and resources. Recommend that policy 1.2 takes into consideration sustainable maintenance activity where new development is required.
2. Decarbonising transport and achieving cleaner air	This package would have a positive effect on all the SEA objectives, illustrating the interlinkages between decarbonisation and the built and natural environment. A significant positive effect is expected on Air Quality, Climate And Population	Recommend that the link is made between policies and their impact on AQMA's local air pollutants. Recommend explicit link is made between nature and clean

	and Human Health. Reference is made to the sustainable travel hierarchy and a mode shift towards sustainable transport / low emission vehicles to realise air quality and climate change improvement targets. The policies recognise the links between poor air quality and health, as well as the inequalities around access to sustainable transport, and aim to address these issues. Reference is also made to key policies this package would support - Circular Economy, Air Quality Action Plan, Glasgow Climate Plan.	air (e.g. planting / retaining trees) and how decarbonisation strategy could link into biodiversity/tree policies and programmes.
3. Inclusive and safe places for people and supporting sustainable travel choices	This package will have a positive effect across several of the SEA objectives with significant positive effects anticipated on Population and Human Health due to the focus on fair and safe access to services for all in the city including, women, people with disabilities, people from ethnic minorities and the LGBT+ community. The reduction in the reliance on private vehicles and anticipated modal shift due to improved access for all is anticipated to have positive effects on Air Quality, Climatic Factors, Cultural Heritage and Landscape. The development of mobility hubs helps support the development of future travel arrangements where journeys are made by different modes resulting in positive effects on Material Assets. Reference is made to linked policies, GCC's Circular Economy Route Map, Climate Change Strategy, Poverty Action Plan, Glasgow Road Safety Plan	Further assessment will be required to ensure any new facilities to support walking/cycling and wheeling and mobility hubs are sensitively designed and do not detract from the public realm and do not negatively impact on cultural heritage assets.
4. Collective transport – public, community, shared and demand responsive transport	This package would have positive effects on Air Quality, Climate and Population and Human Health objectives through anticipated modal shift, reduction in emissions and in proved public realm. Encouraging the move to active travel and away from private vehicles will reduce congestion in the city centre. The reduced traffic will improve townscape and public realm which could benefit the setting of cultural heritage assets. There is potential for negative effects on Biodiversity, Soil, Material Assets, Water, Landscape and Cultural Heritage with any new infrastructure including metro, new park and ride facilities and the HS2 terminus. However as the scale and location of the infrastructure is unknown at this stage it is considered that there will be an uncertain effect on these objectives.	Further environmental assessment will be required as infrastructure projects are developed. Brownfield land for new infrastructure should be prioritised where possible. Further assessment will be required to consider the carbon footprint of the construction of new infrastructure e.g. Glasgow Metro, HS2 terminus Reference could be made to encourage clean fuels and technologies in taxi's and private car hires.

	Reference is made to linked policies, Glasgow Climate Change Plan, Active Travel Strategy, Open Space Strategy	
5. Managing and developing assets and infrastructure	This package would have a significant positive impact on several of the SEA objectives, primarily in relation to reducing use of materials through effective management of existing assets and future proofing new infrastructure. Population and Human Health would also be positively impacted by the policies through accessibility improvements and ensuring accessibility to transport and opportunities during the winter months. The policies generally support a mode shift towards sustainable transport which would have associated benefits for Air Quality and Climate. The Water objective would be positively impacted by the policies related to flood risk adaption and mitigation Improving the existing road network is likely to have an indirect positive impact on the water environment as a result of associated drainage improvements/upgrades. Policy refers directly to building climate resilience of road infrastructure with particular focus on reducing flood risk and increasing drainage capacity. This package indirectly supports the SEA objectives in relation to Soil, Cultural Heritage and Landscape but is not expected to have a significant impact on these. Reference is made to linked policies, GCC's Circular Economy Route Map and Open Space Strategy.	To link to the Biodiversity objective this package could make a connection between policy and providing biodiversity improvements where possible as part of infrastructure upgrades, e.g. through planting (refer to LBAP / Glasgow Pollinator Plan) Policy should ideally specifically refer to green infrastructure and nature-based solutions Policy could make specific reference to its role in promoting sustainable management of surface water and highlight the importance of delivering infrastructure to support outcomes of the Clyde and Loch Lomond Flood Risk Management Plan Link to Landscape and Soil SEA objectives could be strengthened through reference to utilising vacant/derelict land where possible to unlock sustainable development and improve soil quality. Link to Cultural Heritage could be strengthened through reference to enhancing connections between Glasgow's existing transport infrastructure and the history associated with it.
6. Smart and Digital City	This package would have a minor positive impact on several of the SEA objectives, primarily in relation to Air Quality, Climate, Population and Human Health, and Materials. The policies generally support integrated / connected travel and prioritisation of sustainable modes through use of technology, which would facilitate a mode shift and result in emissions reductions and air quality improvements. Integrated travel is expected to improve access to essential services, employment, and the natural environment	Consideration should be given to whether technology could show real time pollution hotspots? Consideration should be given to whether technology could show the approximate carbon emissions for a given trip, comparing each transport mode? Additional measure recommended around reducing

	for people living in the city. Additionally, the policies seek to utilise existing technology to improve travel experience and planning for travel across several mode types. This package indirectly supports the SEA objectives in relation to Biodiversity, Soil, Cultural Heritage and Landscape but is not expected to have a significant impact on these. Reference is made to linked policies: Open Government Partnership, Glasgow Economic Recovery Group Action Plan 2020, Connectivity Commission Recommendation.	inequality in access to technology and providing support to 'hard to reach' people to ensure no one is left behind. Consider how technology could be used to link more closely with other SEA objectives, e.g. in relation to Water and Biodiversity. Could be opportunities to use technology to improve flood response and raise awareness of blue/green networks in the city. Could technology be used to provide brief historical background to key historic transport assets, as the traveller passes by them
7. Managing Travel Demand	This package would have a significant positive impact on the Air Quality, Climate and Population and Human Health objectives. The policies are focussed on demand management for travelling by private vehicle through implementing parking restrictions. Reducing road traffic in the city would have a significant positive impact on air quality and emissions and would bring associated health and wellbeing benefits. The townscape and setting of the city would be improved by the removal of traffic, contributing towards public realm improvements. This package indirectly supports the SEA objectives in relation to Water, Soils and Cultural Heritage but is not expected to have a significant impact on these. Reference is made to linked policies: Glasgow Climate Plan, Connectivity Commission.	No specific recommendations identified
8. Natural Environment	This package would have a significant positive impact on the Climate, Population and Human Health, Water and Biodiversity SEA objectives, illustrating the interlinkages between the natural environment and the built/human environment. The policies are focussed on enhancing access to green space, improving blue/green network connectivity, increasing tree cover and creating habitats, protecting wildlife, and promoting sustainable travel. Improving biodiversity and reducing road traffic in the city would have a positive impact on air quality and emissions and	Recommend policy considers ecosystem services (NatureScot's Scottish Biodiversity Strategy clearly identifies that biodiversity conservation calls for an ecosystem approach) Recommend that wording included around prevention of soil degradation and improving soil quality where possible to

	would bring associated health and wellbeing benefits. The townscape and setting of the city would also be improved by the removal of traffic, contributing towards public realm improvements and also providing wellbeing benefits. The policies are expected to have a positive impact on the water environment as it sets out the importance of the blue infrastructure in the travel network and as part of a high-quality public realm. The policies explicitly refer to designing infrastructure taking climate resilience into account, particularly in relation to flood risk management. Water quality would also be improved by the requirement to manage run-off from roads through SuDS and other appropriate drainage. Reference is made to linked policies: Glasgow Climate Plan, Glasgow's LBAP, Liveable Neighbourhood Plans, Active Travel Strategy and City Centre Transformation Plan.	strengthen contribution towards Soils objective. Recommend that wording included around the importance of green / blue space as a cultural resource within the city strengthen contribution towards Cultural Heritage objective.
9. Access to vital services and opportunities and supporting economic success	This package would have a positive effect on most of the SEA objectives, primarily Air Quality, Climate, Population and Human Health, Materials, Soil, Cultural Heritage and Landscape. The policies are focussed on accessing services and socio-economic development in the city. Facilitating mode shift towards sustainable travel and ensuring equal access to transport and the opportunities that this provides are key elements of the policies. Children in particular are recognised as requiring access to affordable transport to allow access to education and recreational activities. Affordable public transport is identified as an important mechanism in ensuring equality in access to healthcare and food, as well as employment and training for adults. The policies would have a positive impact on Materials through supporting active and sustainable travel and facilitation of last-mile delivery solutions which would reduce the impact of heavy traffic on infrastructure. The policies would have a positive impact on Cultural Heritage through facilitating effective transport for Glasgow as a tourist destination, and on Landscape through removing traffic and improving public realm/access to open space and countryside. These would contribute towards improved health and wellbeing in the	To make a clear connection with Biodiversity, the policies could link employment/training opportunities/volunteering to community initiatives in the city that support biodiversity. Refer to LBAP - Community Action for Biodiversity. To make a clear connection between accessibility to transport and access to the historic environment, there could be an additional policy around improving access to cultural heritage assets. This would recognise the importance of this for children/people in deprived areas and inequalities around access to cultural heritage (e.g. providing free / affordable transport to historic sites / buildings).

	population. This package indirectly supports the SEA objectives in relation to Water and Soil. Reference is made to linked GCC policies: Glasgow Community Food Strategy and Food Growing Strategy, Circular Economy Routemap, Glasgow Climate Plan.	

5.3 Stage 3 SEA Assessment of Alternative Packages of Interventions from the Integrated Transport Assessment work

As part of the development of the GTS, an underlying transport appraisal was carried out. This was named the Integrated Transport Assessment (ITA). That appraisal has informed both the GTS Part 1 Policy Framework and the GTS Part 2 Spatial Delivery Framework. The ITA developed a set of alternative packages to achieve the Transport Strategy Objectives presented in section 5.1.

Intervention options were developed to respond to the four key drivers: Carbon Neutral by 2030, Eliminate poverty and social inequality, Health and Wellbeing, Inclusive Economic Growth. Potential options have been gathered from a range of sources. These include existing GCC policy documents, interventions that apply to Glasgow which are referenced in the Regional Transport Strategy and the Second Strategic Transport Projects Review (STPR2) and from the project team's knowledge of the city and the problems to be addressed. These potential options were further developed by the project team and through structured interviews with stakeholders.

Options were then grouped together into four alternative packages for appraisal. This packaging has been undertaken on the following basis:

- Each of the four desired GTS outcomes has different actions that can be taken to achieve it (reducing the need to travel, encouraging modal transfer, improving accessibility, etc)
- Each of these actions then in turn has different intervention option categories that can deliver it (demand management, improved public transport service provision, new services, etc)
- Each package contains complementary options from different categories that link back to each outcome, to demonstrate that each package represents a true alternative means of achieving the intended outcomes
- Each action or set of options is also linked to the nine groups in the Policy Framework

This process has defined four initial packages for appraisal, all of which contain options from different categories and all of which contain options that can address the 'action types' linked to the desired outcomes.

The packages are:

A. Cost driven incentives, comprising cost- and regulatory- based carrot and stick measures to influence the changes to travel behaviour need to meet the objectives

B. More efficient use of the current network, comprising measures which reallocate the use of roadspace to active travel and public transport, make better use of existing public transport and water-based transport assets

C. Improved local connectivity, focussing measures on providing improved connections between local centres and neighbourhoods, through space reallocation and targeted network improvements

D. Enhanced radial capacity, focussing measures on established radial corridors to improve walking, cycling and public transport access and levels of service on these corridors.

This section presents the findings of the SEA assessment of the alternative ITA packages of interventions A, B, C and D, identified as part of the Appraisal Framework, against the SEA Objectives. A full list of the interventions and corresponding reference codes for each of the alternative packages in presented in **Appendix E of this report.**

Table 5.3 summarises the interventions within each package that perform well against the SEA objectives and also highlights those which perform poorly. An overall score has been assigned to each package in line with the SEA scoring matrix.

Table 5.3: Summary of the Packages against the SEA Objectives

Package	Summary against SEA Objectives
Package A: Cost Driven Incentives	This package scores a minor positive impact across 4 of the SEA objectives: air quality, climate, population and human health and landscape (and townscape). Several interventions within the package score a moderate positive impact on the following SEA objectives: • PT3 – Population and human health; • DM2 – Air quality; • DM4 – Air quality; and • DEV6A – Population and human health and landscape (and townscape). Two interventions score a minor negative impact for population and human health, these are DM2 and DM4. The impacts on the water, biodiversity, soil and cultural heritage SEA objectives are assessed to be negligible at this strategic level across Package A.
Overall Package A is expected to have a minor positive but not significant effect on the SEA objectives.	
Package B: More Efficient Use of Network	This package scores a minor positive impact across 5 of the SEA objectives: air quality, climate, population and human health, material assets and landscape (and townscape). Two interventions score moderate positive impacts on material assets, these are PT7 and DEV5B. No other moderate impacts are identified. Interventions within Package B that performed poorly against the SEA objectives are: • TECH1 which scored a minor negative impact on air quality, climate, material assets and landscape; • WAT 1 and WAT 2 had a minor negative impact on water and biodiversity; and • DEV4A scored a minor negative impact on climate. The impacts on the water, biodiversity, soil and cultural heritage SEA objectives are assessed to be negligible at this strategic level across Package B.
Overall Package B is expected to have a minor positive but not significant effect on the SEA objectives.	
Package C: Improved Local Connectivity	This package scores a minor positive across 4 of the SEA objectives: air quality, climate, population and human health and material assets. Three interventions score moderate positive impacts on material assets, PT6, SM1 and WAT3. While DEV6B has a moderate positive impact on air quality and population and human health. GOV1 also has a moderate positive impact on air quality. Interventions within Package C that performed poorly against the SEA objectives are:

Package	Summary against SEA Objectives
	• ROAD2 which scored a minor negative impact on air quality, population and human health and landscape; • WAT3 scored a minor negative impact on water and biodiversity; and • PT6 scored a minor negative impact on soil, cultural heritage and landscape. The impact on the water, biodiversity, soil, cultural heritage and landscape (and townscape) SEA objectives are assessed to be negligible across Package C.
Overall Package C is expected to have a minor positive but not significant effect on the SEA objectives.	
Package D: Enhanced Radial Capacity	This package scores minor positive across 3 of the SEA objectives: air quality, population and human health and material assets. Three interventions score a moderate positive for material assets, these are PT8, PT9 and PT10. PT8 also scores a moderate positive impact on air quality. No interventions scored a negative impact against any of the SEA objectives. The impact on the climate, water, biodiversity, soil, cultural heritage and landscape (and townscape) SEA objectives are assessed to be negligible across Package D.
Overall Package D is expected to have a minor positive but not significant effect on the SEA objectives.	

Table 5.3 shows that Packages A, B C and D scored a minor positive impact overall across the SEA objectives.

The ITA report recommended a package of the best performing measures identified as Package E. This package has been considered against the SEA objectives and is presented in section 5.3.1 below.

5.3.1 Cumulative Findings of Package E

Package E is comprised of the following interventions

Best Performing Interventions	Supporting Interventions
Public Transport	
PT1B: Bus services and quality improvements – new services where none exist and evidence of demand	PT1A: Bus service and quality improvements – improved quality, security, accessibility of shelters, information.
PT1C: Bus services and quality improvements – More frequent services and adjusted timings	PT5: Integrated ticketing
PT3: Bus Fares	PT6: New rail stations
PT8: Metro Scheme	PT7: Subway modernisation and increased operating hours
GOV1: Single body overseeing transport (& possibly region) (link to SOFT1)	PT10: Park and Ride – City outskirts
GOV3: Franchise system for buses	PT15: Bus infrastructure improvements
	PT16: FastLink Phase 2
	PT17: Level of Service
	ROAD5: Road Improvements to enable new bus interchange (M8 Junction 15)
	GOV2: Public ownership of buses (linked to PT3, to be explored as longer term alternative to GOV3)
	GOV4: Bus Service Improvement Partnership (linked to PT15, to be explored as shorter term alternative or precursor to GOV2 or GOV3)
Active Travel	

CYC2A: Cycle network – full network (reallocation of roadspace)	CYC1: Free or subsidised bikes to lower income groups
DM5: Road safety targets & updated road safety plan	DM3: Road safety: Speed related interventions
WALK1: Improved walking experience in all key routes	WALK3: Promote walking/better information
DEV6B: Full Liveable Neighbourhoods package. Facilitating more active travel within & between neighbourhoods	
New Mobility	
SM1: Mobility Hubs	CST1: Enhanced Community Transport
CYC6: Expansion of NextBike	PT2: Demand responsive transport
STREET4: Streetspace Priority Framework	SOFT2: Mobility as a Service
	SM2: E Scooters in Glasgow
	TECH2: Development/Promotion of Connected & Autonomous Vehicles
Water Based Movement	
	WAT1: River based movement (Clydebank to Glasgow Green)
Demand Management	
DM2: Workplace Parking Levy	AIR3: LEZ Phase 2
SOFT2: Rebranding of Sustainable Transport System	DEV5A: car parking reduction and vehicle access restrictions at edge of city centre
DEV5C: Traffic restrictions begin at 'inner orbital'. The Streetspace Allocation Framework (SAF) that will support the GTS recognises the need for reduced traffic volumes on the inner radial corridors approaching the city centre, where space is at a premium. This could be achieved through gateway treatments at upstream junctions, providing reduced capacity for through movements as they approach the areas where restrictions are most needed.	DEV5B: restrictions + reallocation of half road space to walk/cycle/place in the city centre, to maximise the opportunity from reduced traffic in the city cntre
	DEV7: Pavement parking implementation
	DM1: Controlled parking
	ROAD3: Managed Motorways
	SOFT3: Promote Sustainable Travel as First Choice
Capacity Improvements & New links	
	DEV3: Overcoming severance of M8 for direct access into city centre
	DEV4A: Improve traffic flow from Clydeside Expressway to M8 (as part of wider junction improvement)
	DEV4B: Overcoming severance on Clydeside Expressway (and Springburn Expressway)
	WAT3: New river crossings to improve local connections
	WALK2: M8 Cap at Finnieston/Woodlands
Goods	

	FREI1: Last mile delivery and kerbside management
	FREI2: Distribution centres for HGV
	FREI3: Low carbon freight movements
	FREI5: Improved reliability of freight movements via smart network ops

The majority of the interventions in Package E reduce the ability for private vehicles to travel and park in the city centre. For example, AIR3, DM1, DM2 and FREI3, have a positive impact on air quality and will therefore deliver associated health benefits from reduced air pollution. Some interventions such as CYC1, CYC2A, DEV6B and WLK1,2,3, for example, are aimed at promoting active travel and encouraging physical activity, this leads to improvements to health and wellbeing for communities. Much of the interventions that require infrastructure development, for example PT6, PT10 and WAT3, will aim to integrate the public transport network and provide new connections across the city centre.

Although the majority of interventions in Package E perform positively against the SEA objectives there are a number that are expected to have a negative impact on certain aspects of the environment, these are:

- WAT1 and WAT3 have a negative impact on water and biodiversity as they use of the River Clyde for transport may result in a reduction in water quality and may increase the likelihood of pollution incidents from boats. The use of the Clyde for commuting and recreational travel may also impact the integrity of blue networks and species that use it.

- DM2 scores a negative impact on population and human health. Although the improved air quality would have benefits for human health there is also the negative health impacts associated with employees unable to get to their job as quickly. Commuting for long periods of time, particularly when driving can cause stress to individuals. In addition, businesses may also choose to hire locally in order to avoid paying the charge, potentially discriminating against applications from those who are located further from the city centre.

- ROAD2 is expected to have a negative impact on air quality, population and human health and landscape due to the increase in capacity for private vehicles which is likely to increase emissions and have a negative impact on visual amenity.

- PT6 is expected to have benefits for air quality, climate and population and human health as a result of reducing emissions whilst also improving the material assets within the transport network, however depending on the location of the new train stations this intervention could have a negative impact on the soil, cultural heritage and landscape objectives.

The assessment of package E has included spatial detail of the interventions across the GCC and has therefore enabled a more detailed assessment to be undertaken for this package compared to Package A, B, C and D. Figure 5.1, Figure 5.2, Figure 5.3 and Figure 5.4 present the modelling outputs for public transport and road trips (AM and PM) impacts as a result of the Package E interventions against key environmental considerations.

Figure 5.1 Package E Public Transport Trips impacts AM and Environmental Considerations

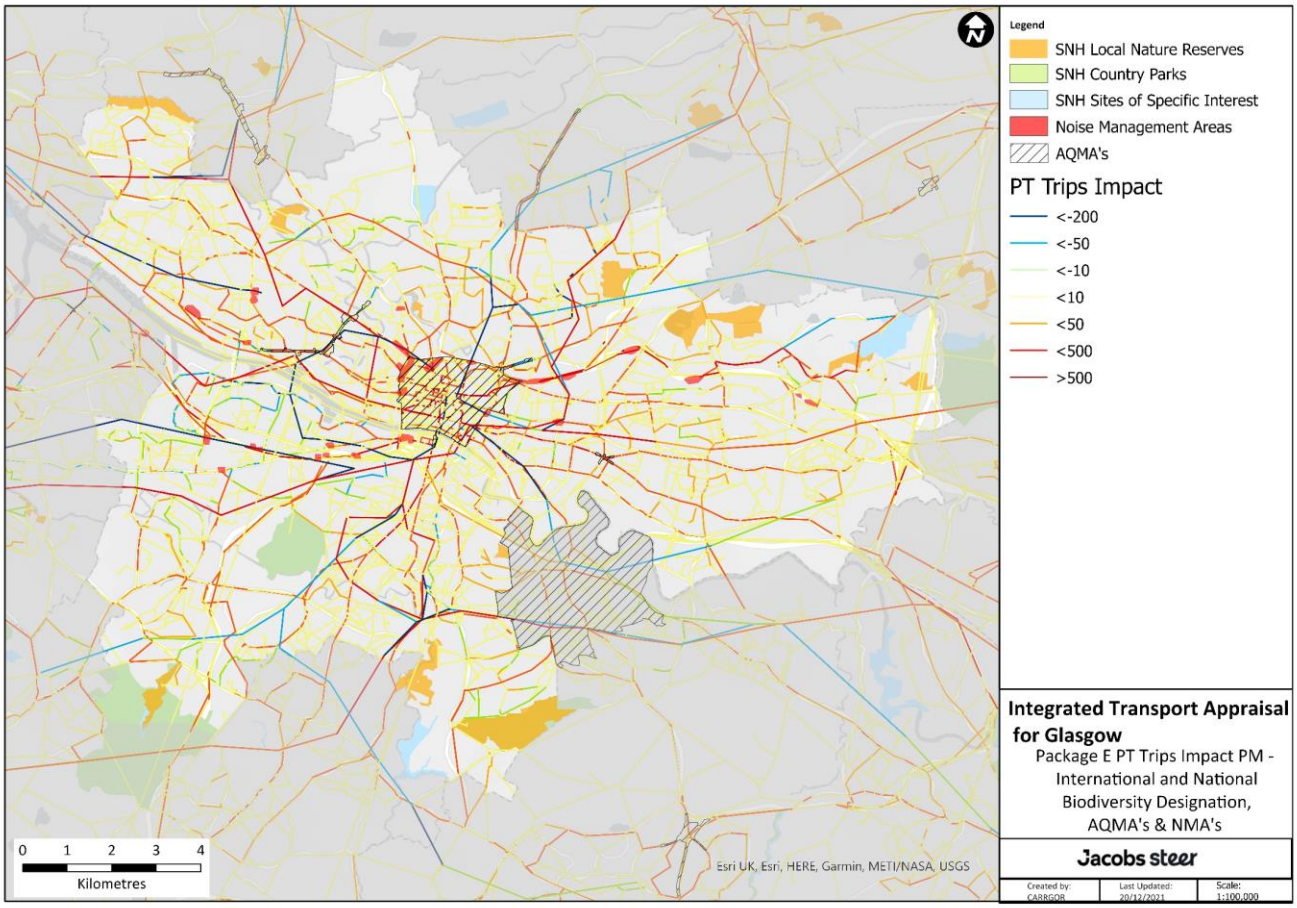

Figure 5.2 Package E Public Transport Trips impacts PM and Environmental Considerations

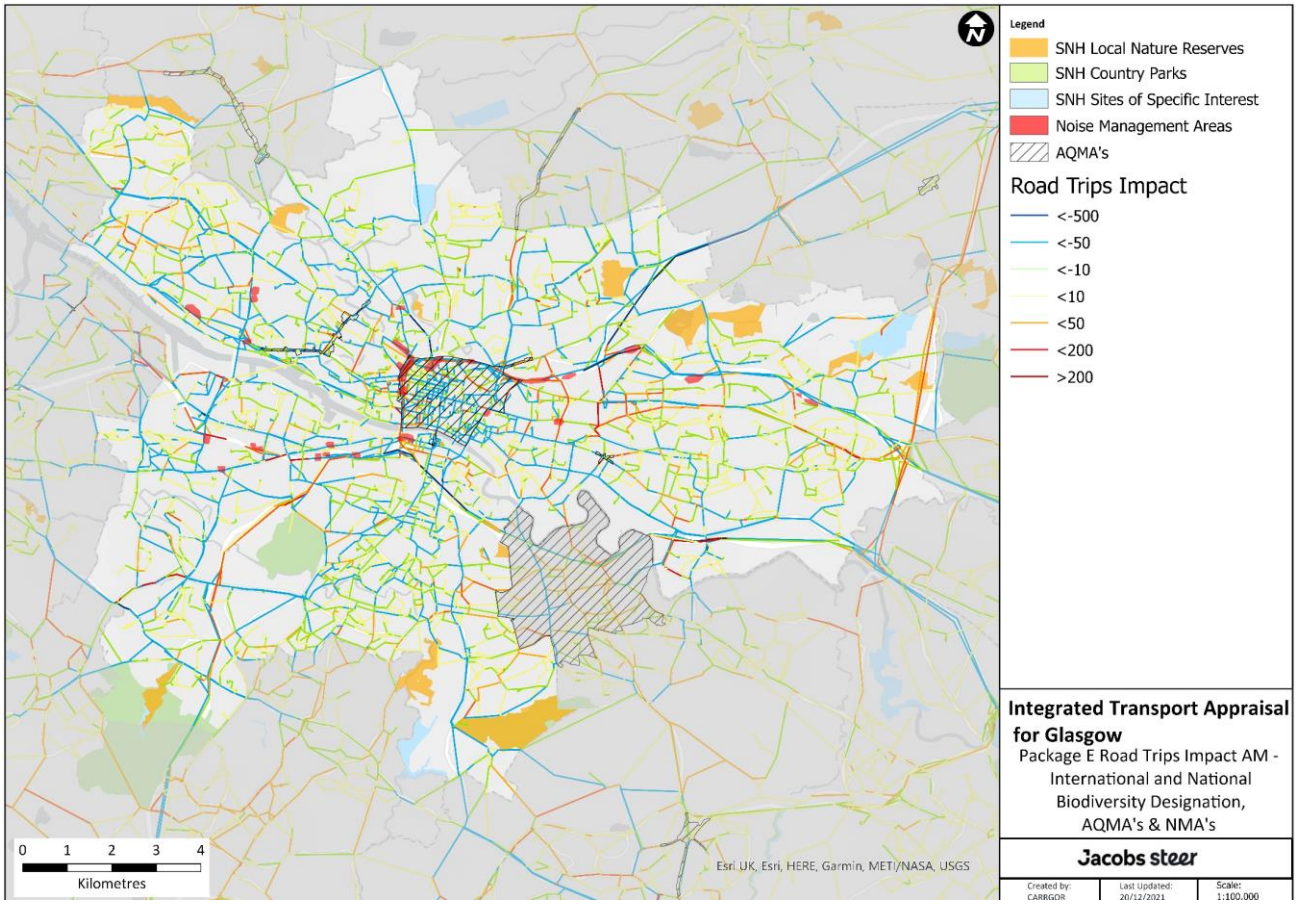

Figure 5.3 Package E Road Trips (private vehicle) impacts AM and Environmental Considerations

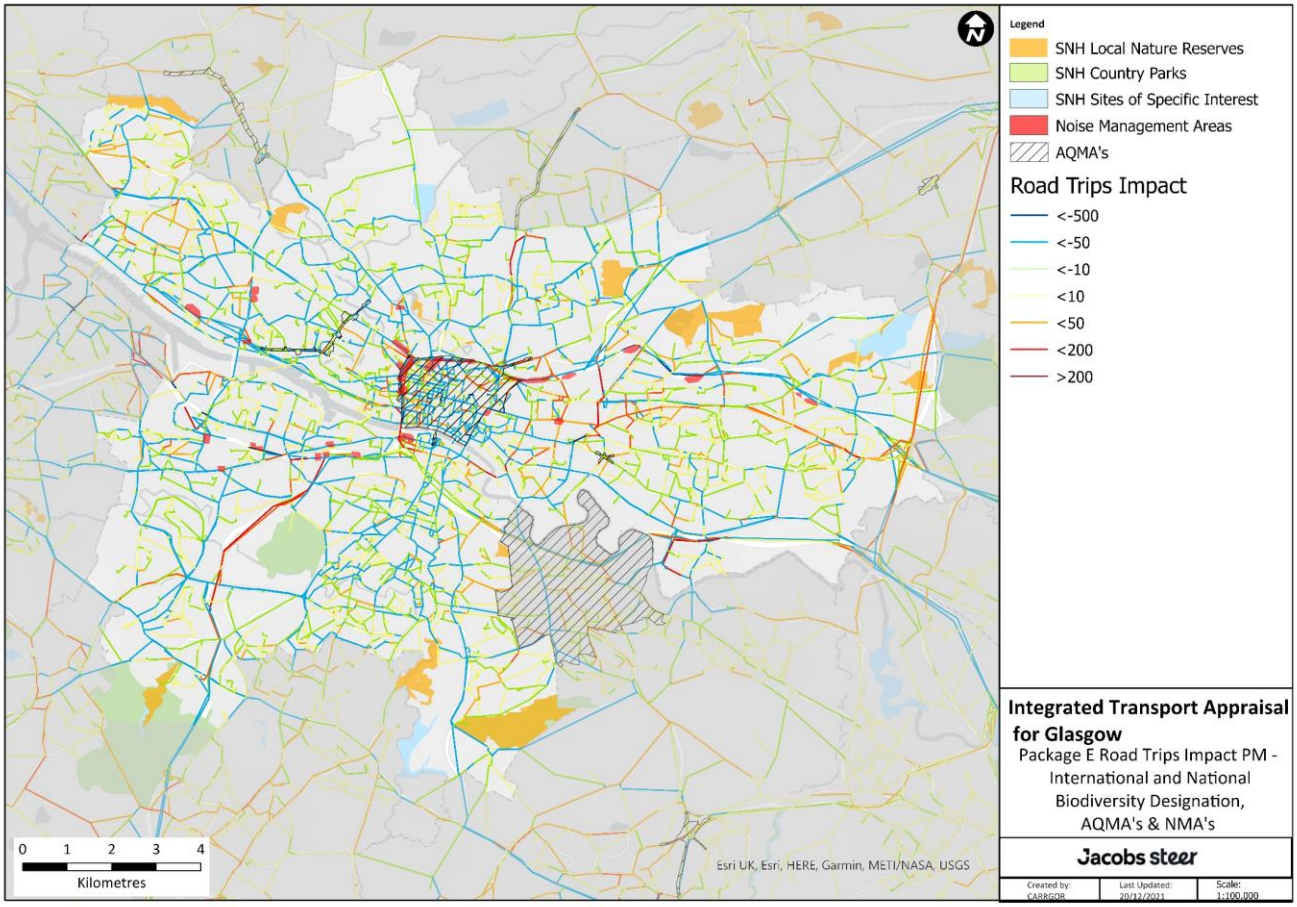

Figure 5.4 Package E Road Trips (private vehicle) impacts PM and Environmental Considerations

Within GCC there are three Air Quality Management Areas (AQMAs). These are located at the City Centre, Byres Road/Dumbarton Road and Parkhead Cross2. All of these have been declared for the pollutant nitrogen dioxide (NO2).The City Centre and Byres Rd / Dumbarton Rd AQMAs have also been declared for the pollutant particles (PM10)..Figure 5.3 and Figure 5.4 shows that there could be an increase in AM and PM road trips by private vehicles within the Parkhead Cross AQMA but a decrease across the City Centre and Byres Road AQMAs. Figure 5.3 and Figure 5.4 show that overall, there is likely to be a decrease in private road trips across the GCC study area. Figure 5.1 and Figure 5.2 show the number of trips made by public transport are expected to increase within all the AQMAs. Modelling results also indicated a reduction in CO2 emissions of approximately 3%, reducing from 550,000 tonnes per year in the reference case to 530,000 per year (with a more pronounced 14% reduction in the city centre). Overall Package E is expected to have a positive, moderate impact on air quality and climatic factors.

There are multiple Noise Management Areas (NMAs) within GCC[3]. Package E is expected to reduce the number of road trips made by private vehicles across the city (see Figure 5.3 and Figure 5.4), it is therefore expected that the majority of NMAs would not be negatively impacted by the Package E interventions, however there may be localised impacts on NMAs which may have negative impacts on health for local residents at these locations. Overall, Package E is expected to have a positive, moderate impact on population and human health.

Figure 5.1 to Figure 5.4 show that there are five Scottish Natural Heritage (SNH) Sites of Special Scientific Interest (SSSIs) – Fossil Grove, Possil Marsh, Bishop Loch, Waulkmill Glen and Cart & Kittoch, 12 SNH Local Nature Reserves (LNR)[4] and 3 SNH Country Parks, Pollock, Dams to Darnley and Cathkin Braes in the GCC.

[2] Local Air Quality Management, GCC
[3] City Development Plan, 2017
[4] Glasgow Local Biodiversity Action Plan, 2020.

Depending on the location of certain public transport interventions there is the potential for interventions within Package E to have an impact on these designated sites and on the biodiversity, flora and fauna SEA objective.

Package E is expected to have a neutral impact on the Water objective at this strategic level as it is considered that the interventions are not expected to reduce water quality within the GTA region given the expected reduction in emissions from private vehicles. Due to the fact the majority of the interventions are proposed within the existing network/roadway areas of flood risk have not been specifically reviewed as it is considered that the interventions will not impact negatively on this however it is recognised that there is a significant opportunity for positive impacts on surface water management and improved resilience on the transport network. To ensure positive effects on flood risk interventions should be developed in line with mitigation set out in section 6 of this report.

Table 5.4 provides a summary of Package E against the SEA objectives. At this stage the impact on the water, biodiversity, soil and cultural heritage SEA objectives is assessed to be neutral for Package E. However during specific project development will need to take into consideration the location of designated biodiversity sites (SSSI, LNRs and SNH Country parks) as well as important historic and cultural assets and areas prone to flooding when identifying the location of certain interventions particularly those that require infrastructure development. Overall Package E is expected to have a moderate positive but not significant impact on the SEA objectives.

Table 5.4 Cumulative summary of Package E against the SEA Objectives

SEA Objective	Air Quality	Climatic Factors	Population and Human Health	Material Assets	Water	Biodiversity, Flora and Fauna	Soil & Geology	Cultural Heritage	Landscape (and townscape)
Score	++	++	++	+	0	0	0	0	+

5.3.2 Additional External Influences: Package E+

It was recognised that Package E could be further strengthen by having a strategic approach to demand management and parking across the city, improving the competitiveness of sustainable travel options and avoiding traffic and parking displacement. To understand the relative performance of measures that can be delivered as part of the GTS and given the potential changes to the generalised cost of road travel, trip rates and vehicle occupancy that could each be influenced by external policy or trends a Package E+ was developed.

Package E+ assumes the following:

- Package E measures in place as described in Section 5.3
- Assumed 20% increase in the generalised cost of travel, aligned to STPR2 'low traffic growth scenario'. It is assumed that this could derive from future road user charging and or increased fuel cost
- Assumed 25% reduction in commuting trips rates, aligned to Covid Legacy scenario
- Assumed 10% increase in vehicle occupancy rates

It is considered that E+ will promote low carbon movement of people and goods in a resilient transport system that can adapt sustainably in the future. Package E+ could result in 15% car km reduction against reference case (compared to 14% for Package E) and a 7% reduction in carbon emissions against reference case (compared to 3% for Package E). Reducing road user carbon emissions over time will require action to be taken to both improve the local vehicle fleet (e.g. increased vehicle electrification) and modal shift from private cars to more sustainable forms of transport (e.g. public transport, cycling and walking). The changes in road user carbon emissions presented within this assessment relate solely to those that would occur as a result of modal shift from private cars as a result of the proposals. In order to provide context, it should be noted that road user carbon emissions in the study area considered are estimated to reduce by approximately 17% solely as a result of

improvements to the national vehicle fleet between 2022 and 2030. The estimated reductions in road user carbon emissions presented in this report would therefore be in addition to such reductions.

As a result of this reduction in carbon emissions the impact on the air quality and climatic factors SEA objectives is expected to be major beneficial assuming that the uptake of active travel does materialise.

Package E+ would also create significant disincentives to car travel which in turn will make alternative active modes significantly more attractive and affordable. With improvements to air quality from reduced congestion on the roads, more affordable active travel options and providing a network that people feel safe to use would create a major beneficial impact on the population and human health SEA objective and a minor positive impact on the material assets SEA objective. Package E+ is not expected to change the neutral impact identified on the Biodiversity, Soil & Geology, Water and Cultural Heritage objectives and the positive impacts on Landscape and Townscape from Package E.

Package E+ is being presented within the draft Part 2 Spatial Delivery Framework which accompanies this Environmental Report for consultation.

Table 5.5 Cumulative summary of Package E+ against the SEA Objectives

SEA Objective	Air Quality	Climatic Factors	Population and Human Health	Material Assets	Water	Biodiversity, Flora and Fauna	Soil & Geology	Cultural Heritage	Landscape (and townscape)
Score	+++	+++	+++	+	0	0	0	0	+

6. Mitigation and Enhancement Recommendations

Schedule 3 of the 2005 Act requires consideration to be given to "the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme".

6.1 Mitigation

While no negative impacts were identified on any SEA topics from the draft Policy Framework; recommendations for further study or enhancements were provided within table 5.2.

During the ITA assessment of the final package E and E+ any negative impacts that were identified were discussed with the project team to determine effective mitigation and to embed these in the development of the strategy. Where mitigation could not be embedded at this stage due to the strategic nature of the policy, but the Package may still have a significant environmental effect, future mitigation measures were considered. This predominantly comprises recommendations for further studies and/or future project-specific environmental appraisals. Table 6.1 proposes mitigation and enhancement measures for each of the SEA topics These should be reviewed following the adoption of Part 2 of the GTS and as specific projects are taken forward

Table 6.1: Mitigation Measures for Strategic Delivery Framework

SEA Topic	Mitigation and Enhancement Recommendations
Air Quality/ Climate/Material Assets	• Ensure early planning for carbon reduction within every intervention taken forward. • Develop a set of climate resilient design principles for major infrastructure projects including new railway stations. • Hold carbon opportunities workshops from the earliest planning stage onwards. • Close collaboration with the City Development Plan team to ensure travel demand and trip lengths are reduced. • Future-proof new transport infrastructure to allow the introduction or wider roll-out of emerging zero or low-carbon technologies. • Identify the key emission sources associated with each intervention, and how they can be reduced. • In addition to embedded carbon considerations, construction activities also need to be considered and planned for. Options requiring significant earthwork movements will have a high energy demand from earth moving equipment and tipper trucks moving earth around/off/to the site. The source of power supply is a significant factor when assessing emissions from construction – whether the machine is powered by diesel generators or can be plugged into the electricity grid. • Operational maintenance and refurbishment emissions also need to be considered for an asset throughout its operational life. • Opportunities for offsetting should be considered where appropriate to contribute towards the national legislative target of achieving net zero emissions by 2045. • The potential impacts of climate change on existing and proposed infrastructure need to be planned for and considered in the delivery of the interventions, for example, sufficient space may need to be allowed

	for additional SuDS and permeable surfacing that can accommodate projected trends in rainfall and surface water flooding. • Interventions to be future-proofed for projected changes to flood risk from other sources and changes to temperature (variations and extremes) and storminess. • Recommendations from the Glasgow Flood Risk Management Plan and Climate Ready Clyde Strategy should be embedded in detailed project design
Population and Human Health	• Seek to deliver public transport improvements and active travel interventions in advance of All of the active travel recommendations are taken forward and implemented in order to maximise the potential modal shift from private vehicles to walking, wheeling and cycling. • Provision of high-quality, attractive, dense and safe networks for people to walk, wheel and cycle to places of work, essential services, community facilities and spaces and public transport hubs should be considered. These should be provided within communities and link with other communities. • Seek opportunities to implement active travel measures in, or close to areas with concentrations of poor health, low levels of physical activity, areas of deprivation or areas where the air quality is poor. • The development of the transport intervention options should prioritise the provision of high-quality green or blue infrastructure or improve accessibility to existing green and blue infrastructure. This is likely to lead to significant benefits for mental and physical health, as well as sense of place and local pride.
Water	• The development of the interventions will provide opportunities to reduce flood risk and increase the installation of SuDS which will help maintain or improve water quality. The design of upgrades to existing transport infrastructure or new infrastructure should be undertaken in line with best practice and relevant SEPA guidance, and the Glasgow Flood Risk Management Plan. • Early on in intervention design a review should be undertaken to identify potential conflict with adaptation interventions to be delivered through the Flood Risk Management Plan • Project-specific flood risk assessments should be undertaken where required. • Ensure the design of SuDS features considers opportunities for multi-functionality and delivers amenity and biodiversity benefits as well as attenuation and treatment.
Biodiversity/Soil and Geology	• Further environmental assessment will need to be undertaken to ensure site-level biodiversity constraints and opportunities are identified and thereby allow any negative effects on biodiversity to be avoided or minimised. This includes consideration of designated and undesignated biodiversity. This environmental assessment will need to prioritise delivering nature-based solutions with multiple benefits and achieving positive effects for biodiversity, such as the Scottish Government's agreement to protect at least 30 per cent of Scotland's land and seas by

	2030 (also known as the '30 by 30' commitment) and to highly protect 10 per cent (NatureScot, 2022a). • Where new transport infrastructure is proposed, particularly linear infrastructure including works on any water bodies, opportunities to provide green or blue infrastructure for biodiversity benefits and climate resilience should be explored – for example to provide new wildlife corridors between biodiversity sites. Careful design will be required to ensure any new wildlife corridors support connectivity without facilitating the spread of invasive non-native species. This green or blue infrastructure is also likely to provide benefits for other SEA topics – for example, tree planting can provide shading and cooling and potentially intercept airborne particulate matter. • Opportunities to enhance habitats with a high carbon sink value should be explored. • New interventions should also look to deliver positive effects for Biodiversity by integrating nature into new or retro-fitted infrastructure projects. • Where new transport infrastructure is proposed, this should seek to reduce overall land-take and avoid sites designated for their biological interest, particularly sites of international and national importance. • Further engagement with NatureScot will be required in relation to the development of any new infrastructure, improvements to existing infrastructure or provision of green and blue infrastructure. This will allow any biodiversity opportunities to be maximised
Cultural Heritage/Landscape and Townscape	• Further environmental assessment will need to be undertaken to ensure site-level heritage constraints and opportunities are identified. This includes consideration of designated and undesignated heritage assets. For rail infrastructure, the environmental assessment will also need to consider the potential impacts associated with access work, electrification and issues for historic bridges and other heritage assets relating to gauge clearance work. Consultation with HES is likely to be required for site-specific work at heritage assets on the transport network, such as railway stations and road bridges. • At the project level, the location and design of transport interventions should avoid direct effects on cultural heritage resources or their setting where feasible. • Interventions should be designed to respect existing urban landscape, settlement pattern and sensitive views • Interventions should be designed to protect and enhance the character, integrity and liveability of key streetscapes, including removing barriers to use

7. Cumulative Effects

Cumulative effects have been considered throughout the GTS development and the summary below presents the policy framework (intra-plan) cumulative impacts and the inter-plan (the impact of the strategy alongside other PPS).

Firstly, an intra-cumulative impacts of draft policy framework packages have been considered for assessment as outlined in Table 7.1. This is the cumulative impact across each SEA objective if all nine packages were to be delivered at the same time.

Table 7.1: Cumulative Effects of the Draft Policy Framework

Policy Framework Package	Air Quality	Climatic Factors	Population and Human Health	Material Assets	Water	Biodiversity	Soil	Cultural Heritage	Landscape
1	+	+	+	+	~	0	0	~	+
2	++	++	++	+	+	+	+	+	+
3	+	+	++	+	~	~	~	+	+
4	+	++	++	?	?	?	?	?	?
5	+	+	++	++	++	~	0	+	0
6	+	+	+	++	0	0	0	0	0
7	++	++	++	+	0	~	0	0	+
8	+	++	++	+	++	++	+	+	+
9	+	+	++	+	0	~	0	+	+
Cumulative Score	**+**	**+**	**++**	**+**	**+**	**+**	**+**	**+**	**+**

The cumulative effect on almost all SEA objectives is expected to be minor positive impact. Population and human health is expected to experience a moderate positive benefit.

Table 7.2 presents a summary of the cumulative effects on each SEA topic, providing detail behind the scoring presented in Table 7.1.

Table 7.2: Cumulative Assessment of Stage 2 Policy Framework Summary

SEA topic	Summary of Cumulative Assessment
Air Quality and Climatic Factors	Creation of Liveable Neighbourhoods and the encouraging of hybrid models of working is expected to reduce unsustainable travel for short journeys. The policy framework makes reference to the sustainable travel hierarchy and a mode shift towards sustainable transport / low emission vehicles to realise air quality and climate change improvement targets. Potential adverse effects could arise where parking controls and/or street closures result in the displacement of private vehicles to other parts of the city. However, these would be localised and mitigated through further assessment at the project level **Overall, a major positive cumulative effect on air quality and climatic factors is expected from the Strategy.**
Population and Human Health	The policies recognise the links between poor air quality and health, as well as the inequalities around access to sustainable transport, and aim to address these issues. There is a focus on fair and safe access to services for all in the city including, women, people with disabilities, people from ethnic minorities and the LGBT+ community.

SEA topic	Summary of Cumulative Assessment
	Children in particular are recognised as requiring access to affordable transport to allow access to education and recreational activities. Affordable public transport is identified as an important mechanism in ensuring equality in access to healthcare and food, as well as employment and training for adults. Population and human health scored positively across all nine packages. **Overall, a moderate positive cumulative effect on population and human health is expected from the Strategy.**
Material Assets	Integrated travel is expected to improve access to essential services, employment, and the natural environment for people living in the city. Additionally, the policies seek to utilise existing technology to improve travel experience and planning for travel across several mode types. The policies would have a positive impact on Materials through supporting active and sustainable travel and facilitation of last-mile delivery solutions which would reduce the impact of heavy traffic on infrastructure. Material assets scored positively across eight packages with the exception of Package 4 (Collective transport) where the impact is uncertain. **Overall, a minor positive cumulative effect on material assets is expected from the Strategy.**
Water	The policies are expected to have a positive impact on the water environment as it sets out the importance of the blue infrastructure in the travel network and as part of a high-quality public realm. The policies explicitly refer to designing infrastructure taking climate resilience for the wider community into account, particularly in relation to flood risk management. Water quality would also be improved by the requirement to manage run-off from roads through SUDS and other appropriate drainage. Water scored positively in three packages (packages 2,5 and 8). **Overall, a minor positive cumulative effect on water is expected from the Strategy.**
Biodiversity	The policies are focussed on enhancing access to green space, improving blue/green network connectivity, increasing tree cover and creating habitats, protecting wildlife, and promoting sustainable travel. Biodiversity scored positively in two packages (package 2 and 8). **Overall, a minor positive cumulative effect on biodiversity is expected from the Strategy.**
Soil and Geology	Interventions that reduce the volume of traffic on the roads that use fossil fuels may have an indirect positive impact on land quality as there will be less pollutant run off to soils. Soil and geology scored positively in two packages (package 2 and 8). **Overall, a minor positive cumulative effect on soil is expected from the Strategy.**
Cultural Heritage	Encouraging the move to active travel and away from private vehicles will reduce congestion in the city centre. The reduced traffic will improve townscape and public realm which could benefit the setting of cultural heritage assets. There are also opportunities to enable more sustainable access to cultural heritage sites. The policies would have a positive impact on Cultural Heritage through facilitating effective transport for Glasgow as a tourist destination Cultural heritage scored positively across five packages (2, 3, 5, 8 and 9). **Overall, a minor positive cumulative effect on cultural heritage is expected from the Strategy.**
Landscape and townscape	Encouraging the move to active travel and away from private vehicles will reduce congestion in the city centre. The reduced traffic will improve townscape and public realm.

SEA topic	Summary of Cumulative Assessment
	The policies are focussed on demand management for travelling by private vehicle through implementing parking restrictions. Landscape scored positively across 6 packages with the exception of packages 4, 5 and 6 where the impact was not clear or neutral. **Overall, a minor positive cumulative effect on landscape is expected from the Strategy.**

Table 7.3 presents the inter-plan cumulative assessment has been undertaken focusing on proposals in the City Development Plan.

Table 7.3 Potential cumulative Effects with other PPS

SEA topic	Summary of Cumulative Impact with other key PPS
Air Quality and Climatic Factors	The cumulative effect of the GTS and other PPS on air quality is likely to remain positive, with the City Development Plan encouraging higher density development closely linked to public transport and active travel service supporting modal shift and a reduction in traffic in the city. Any new development on greenfield sites may generate higher vehicle trips rates which may lead to negative effects on air quality particularly along key transport corridors. The air quality issues are mostly attributable to traffic congestion and AQMAs are in place with action plans to help reduce emissions in these areas. Effective implementation of the GTS in conjunction with other plans such as the Active Travel Strategy, and City Centre Transport Plan may encourage further use of sustainable transport modes.
Population and Human Health	The cumulative effect of the GTS and other PPS on population and human health is likely to remain positive, with the PPS supporting a significant reduction in traffic within the city and supporting the provision of additional facilities for sustainable travel such as mobility hubs, core paths, cycleways etc.
Material Assets	The cumulative effect of the GTS and other PPS on material assets could see more significant positive effects through modal shift to sustainable transport modes, and the integration of sustainable transport options into new developments.
Water	The cumulative effect of the GTS and other PPS on water is likely to be remain positive, with the CDP promoting an integrated approach to the planning and development between transport infrastructure and SUDS water management infrastructure If sites are developable, appropriate design of development will be required in order to ensure that there is no associated increase in flood risk outwith the site and to ensure there is no unacceptable flood risk for future uses of the site. Consideration should also be given to what opportunities the GTS presents in terms of managing flood risk for the wider community, and the implications of GTS interventions 'locking-in' existing and future flood risk through the retention of existing impermeable surfaces. Effective implementation of the GTS with the Metropolitan Glasgow Strategic Drainage Partnership (MGSDF) objectives will ensure an integrated approach to infrastructure development and SUDS and surface water management.
Biodiversity	The cumulative effect of the GTS and other PPS on biodiversity is likely to be mixed with the potential for significant impacts/opportunities depending on the location of new housing development and major transport infrastructure projects. However the reduction and removal of private vehicles and the promotion of the creation and enhancement of the

SEA topic	Summary of Cumulative Impact with other key PPS
	blue/green networks and new Local Nature Reserves in the CDP will have a positive effect on biodiversity with the city centre. Through appropriate layout and design of development, higher levels of biodiversity could be established within development. Effective implementation of the GTS in conjunction with Glasgow's Local Biodiversity Action Plan.
Soil and Geology	There may be mixed effects on soil quality due to new housing/infrastructure development proposed within both the City Development Plan, with the potential for some greenfield development. This would require careful mitigation and further environmental appraisal will be required as proposals are developed.
Cultural Heritage	The cumulative effect of the GTS and other PPS on cultural heritage should remain positive with policies identified within the CDP to protect and enhance cultural heritage with Glasgow However, there could be adverse visual impacts on the setting of heritage assets from new developments, depending on the location and design. Further assessment will be required at the project level.
Landscape and townscape	The cumulative effect of the GTS and other PPS should remain positive through the combination of the reduction in private vehicle traffic in the city centre. There is potential for adverse impacts from combinations of transport and land use developments where these are located on greenfield sites or of a high density. However this could be mitigated through sensitive design in line with CDP guidance and there is potential for combined enhancements to landscape/streetscape through sensitive design and planning particularly where brownfield sites are targeted.

8. Next Steps

8.1 Monitoring

Section 19 of the 2005 Act requires the GCC, as the Responsible Authority, to monitor the significant environmental effects of the implementation of the transport strategy.

Best practice in SEA Monitoring requires that a detailed monitoring framework reflects the implementation of the strategies actions, identifies where existing indicators (from the delivery of related PPS) can be used to track progress and, ideally, is embedded within the final Strategy to ensure that monitoring is undertaken as part of GTS delivery.

A monitoring framework and associated targets/indicators will be presented in the Post Adoption statement, the final stage in the SEA process.

8.2 SEA Activities to Date and Next Steps

The draft ER will be issued alongside the draft GTS Part 2 Spatial Delivery Framework and will be subject to public consultation for a minimum period of 6 to 8 weeks. All comments and representations will be reviewed and considered before finalising the GTS and the ER.

Table 8.1: SEA Activities and Next Steps

SEA Stage	Timescale
Scoping Report Prepared and issued scoping request to consultation authorities (5-week consultation)	February 2021
Received responses on Scoping report from Statutory Authorities	April 2021
Final draft of SEA Environmental Report	May 2023
Adoption of Environmental Report	TBC
Statutory Consultation on SEA findings and GTS (6 week – consultation)	TBC
Post Adoption SEA Statement	TBC

Appendix A: SEA Baseline

Glasgow City Council

Glasgow Transport Appraisal Strategic Environmental Assessment

May 2023

Appendix A: SEA Baseline

This appendix sets out the baseline data for the SEA topics. It identifies the environmental issues and challenges that the GTS should consider.

1.1 Air Quality

GCC operates a range of automatic and non-automatic air monitoring equipment in various parts of the city. The council owns and operates eight automatic monitoring stations, which monitor a variety of pollutants including nitrogen dioxides, particulates, carbon monoxide and ozone. Further, the Glasgow city area also serves as the location for four automatic monitoring stations operated on behalf of DEFRA.

Glasgow currently has Air Quality Management Areas (AQMAs) in the City Centre and Byres Rd /Dumbarton Rd for the pollutant nitrogen dioxide (NO2).

In 2018 GCC was the first local authority to establish a LEZ (low emission zone) across the city centre, initially focusing on buses but due to roll out to all vehicles during 2023.

Overall CO2 emissions have reduced in Glasgow since 2005 though, proportionally, transport-related CO2 has increased, and levels have fluctuated since 2011.

Traffic: Glasgow traffic data is collected via SCOOT traffic signals, Bluetooth detectors and a cordon of automatic traffic counters. Total vehicle kilometers within the City Council area has been rising since 2005, with the biggest increase on the trunk roads network, with some increase in the local roads network seen again after a period of relative stasis. The heaviest traffic flows, after the M8 and other motorways, are at the Clyde Tunnel and Clydeside Expressway.

The road and rail networks, along with industry and the airport, are likely to be significant sources of noise in Glasgow, impacting on the wider environment and quality of life for residents. Scottish Government submission to the Environmental Noise Directive 2002/49/EC (END) in December 2012 estimated 86,000 people are exposed to noise levels greater than 65 decibels during the day, generated by Glasgow's roads network.

Summary of key issues:

- Current transport behaviour patterns and choice of vehicles resulting in traffic congestion hot spots and subsequent air pollution and damage to the environment;
- Air Quality Management Areas (AQMAs) and development within them;
- Ongoing work on city centre Low Emission Zone.

Challenges for the GTS:

- Reducing traffic volumes into the city centre and imposing stricter conditions on vehicle movements through city centre, whilst minimising equality impacts;
- Managing the 'last mile' of goods delivery;
- Encouraging active travel and the switch to more sustainable, cleaner and low carbon transport;
- Ensuring links between transport projects and policies on low carbon and air quality to maximise benefits.

1.2 Climate

A climate (and ecological) emergency was declared Glasgow City Council in May 2019. A 52-point action plan has subsequently been developed, covering key issues such as transport, to increase the rate of action towards reducing Glasgow's carbon emissions to achieve neutrality by 2030.

Transport is a significant contributor of emissions directly linked to climate change, as well as those harming human health through local air pollution. Although CO2 emissions from transport have slightly reduced in

Glasgow since 2005, the share from transport as a proportion of all CO2 emissions within the local authority area have increased.

CO2 emissions on Glasgow's motorway network and diesel railways have increased since 2005.

In Glasgow only 45% of residents travel to work by car compared with 63% Scotland as a whole. Rail based commuting in Glasgow at 15% is the second highest level in Scotland and a higher than average proportion of commuting trips area made by bike, at 5% compared with the Scotland average of 2.8%. However, only 13% walk to work compared to 15% for Scotland's large urban areas. The bus share of the journey to work at 17%, is second only to Edinburgh. The main modes of travel to school are walking, followed by car then bus.

Personal access to licensed vehicles is lowest of any local authority in Scotland at 382 per 1000 population.

Flooding: is a growing risk and major investment is needed in Glasgow's drainage networks over the next 50 years to deal with it. (see Water) Heat and longer spells of dry weather may also pose a risk to transport - road and rail infrastructure in particular.

Summary of key issues:

- Glasgow declaration of a climate and ecological emergency in 2019;
- The contribution of transport emissions towards greenhouse gases, directly linked to climate change, and the impact of road transport and private vehicles in particular;
- Evidence of increasing energy consumption by the transport sector overall, and reliance on fossil fuels.

Challenges for the GTS:

- Contribution towards Glasgow's 61 Climate Emergency action commitments which places strong emphasis on role of transport in the city's move towards carbon neutrality;
- Reducing the need to travel and reducing journey lengths, while also improving connectivity and accessibility of opportunity for disconnected communities;
- Reducing use of fossil fuel based energy for transport;
- Managing the last mile of deliveries to tackle rising emissions from LGVs;
- Ensuring links between transport projects and policies on low carbon and air quality to maximise benefits.

1.3 Population and Human Health

Glasgow is the largest urban local authority in Scotland, covering 17,630 hectares, and the most populous urban area in Scotland with 633,120 residents in 2019. The wider city region is home to over 1million people.

Glasgow's population has been rising over the past 12 years following decades of decline, with stabilised birth rates and an increase in net inward migration contributing to the overall growth.

Although Glasgow has a relatively young population, it is set to age, with the population over 50 years of age predicted to rise to 241,000 by 2043 – an increase of 22% from 2018 levels.

Together with Edinburgh, Glasgow has the highest % population at working age, which at 70% has implications for travel demand in relation to employment and economic activity.

The number of households and the number of single households in Glasgow are both set to rise – by 16% and 5% respectively by 2041, with implications for travel demand as people are more dispersed, though the type of housing stock (flats vs houses) may mitigate this. The compact city from resulting from Glasgow having the highest population density in Scotland – at 3,586 persons per km2 will impact service provision, perhaps reducing the need for travel.

Over 40% of the population in Glasgow City are in the most deprived SIMD quintile (worst 20% data zones) in Scotland, although for some areas of Glasgow this rises to 78%. In 2017, over 34% of children were classed as being in poverty after housing costs. This was the highest of all local authority areas in Scotland.

Glasgow and the West of Scotland has a poor human health record, the root causes of which are numerous and interlinked, with transport contributing to the complexity.

From 2015 to 2017, Glasgow City was ranked 389th (the lowest in the UK) for life expectancy at birth for both males and females, with life expectancy at 73.3 years for males and 78.7 years for females.

Glaswegians have the lowest health life expectancy in Scotland with the predicted period of life spent 'not in good health' at 16.7 years for men and 20 years for women (in the period 2009-13). Just under a quarter of adults in Glasgow are obese, with obesity rates rising for the past 10 years. This presents a challenge to uptake of active travel in particular, as well as being an imperative to move towards more active lives given the role physical activity can play in mortality rates.

Summary of key issues:

- Areas of deprivation and disconnected communities across Glasgow due to historical development;
- Pollution and noise from transport and energy emissions linked to climate change contribute to poor health and disease;
- Disconnected active travel network and unequal participation in cycling spatially and by segments of population;
- Unequal access to nature and open space
- Unequal access to transport networks limiting choices and opportunities and restricting access to health care;
- Health inequalities played out in susceptibility to Covid-19, and role of physical activity in this and links to transport, plus potential role of air pollution.

Challenges for the GTS:

- Contribution towards Glasgow's 61 Climate Emergency action commitments which places strong emphasis on role of transport in the city's move towards carbon neutrality;
- Reducing the need to travel and reducing journey lengths, while also improving connectivity and accessibility of opportunity for disconnected communities;
- Reducing use of fossil fuel based energy for transport;
- Managing the last mile of deliveries to tackle rising emissions from LGVs;
- Ensuring links between transport projects and policies on low carbon and air quality to maximise benefits.
- Ensuring that equalities, social renewal, human rights, sustainability and climate change inform the development of the Plans at each stage;
- Being proactive in ensuring transport's role reduces poverty and improves access to life opportunities;
- Facilitating and promoting active travel and providing a network that people feel safe to use;
- Work towards eliminating serious or fatal accidents on our road network;
- Embedding equalities and Fairer Duty Scotland into decision-making, and prioritising people over vehicles;
- Acknowledge the uncertainties caused by the Covid-19 pandemic.

1.4 Material Assets

Glasgow City Council area is supplied by extensive networks of transport infrastructure: trunk and local roads, well-developed suburban rail, underground, bus and active travel.

Roads - Glasgow's motorway system consists of the M8, M73, M74, M77 and M80.

Subway - Glasgow's Subway Network consists of 15 subway stations serving the City Centre, West End and the inner South Side of the City. Usage patterns have been mixed in recent years, with peak usage 2007-8, with

2018-9 showing an increase on the previous five years. Glasgow Central had 32.8m entries/exits, Queen Street 17.2m (2018-19)

Rail networks: in Scotland rail passenger journeys have grown over the past decade generally with Glasgow emulating this with strong growth, with those stations in the centre showing the highest patronage in 2018-19.

Bus network: There is an extensive bus route network across which several providers operate, including 80 routes by FirstBus.

Cycle network: The cycle network has recently been enhanced by the addition off over 40km of Pop-up Cycle routes as part of the Council's Covid-19 response via Spaces for People funding. The network also includes sections of the NCN. There are 347km of Core Paths.

Sites for housing and other development are defined by the CDP.

Summary of key issues:

- Damage caused to transport infrastructure and other transport-related assets through climate change effects, air pollution and impacts from heavy traffic;
- Carbon impact from construction of new transport projects through use of materials.

Challenges for the GTS:

- Continuing maintenance of our footways, paths and cycle infrastructure to ensure longevity and ease of use;
- Careful choice of materials utilised in transport infrastructure to ensure robustness and longevity against wear and tear, minimising carbon emissions in construction;
- Use of sustainable and / or recycled materials for infrastructure projects;
- Developing a suitable EV network for the city.

1.5 Water

Several watercourses pass through Glasgow City on their journey from the Scottish central uplands to the Firth of Clyde. The main bodies of water and watercourses in the City are: the River Clyde (which is tidal up to the weir at Glasgow Green), the Forth and Clyde Canal, the White Cart Water and the River Kelvin. Smaller tributaries include the Molendinar Burn, the Brock Burn, the Levern Water and the Auldhouse Burn.

Rainfall management, flood risk management and ensuring water course quality are key activity drivers.

Surface water run-off may be contaminated through exposure to traffic and may have a further impact on the water environment. Transport infrastructure may contribute to increased surface run off, potentially impacting on flooding.

A comprehensive approach to flood management across the City is vital to mitigate against the impact of extreme weather events caused by climate change, and will contribute more generally towards enhancing the City's natural environment and biodiversity.

Glasgow City is the lead authority within the Clyde and Loch Lomond Local Plan District (LPD), which includes 10 local authorities along with SEPA and Scottish Water. Together they implement the Local Flood Risk Strategy and Management Plan and hold responsibility for reducing flood risk to the 20 Potentially Vulnerable Areas (PVA) contained within the LPD boundary. There are three PVAs within Glasgow (city centre, city north and city east)[1]. Areas that are could be susceptible to surface water flooding are evenly spread across the city and include some large A Roads e.g. Shettleston Road, parts of the M8, the underground and some of the rail line. There are no clustered areas that could be susceptible to a high likelihood of surface water flooding.

[1] SEPA (2022). Available from: https://map.sepa.org.uk/floodmap/map.htm

Work is underway through Surface Water Management Plans (SWMPs) - which assess the flood risk from multiple sources and provide options for measures to slow, treat and store surface water above ground and at source - and the Metropolitan Glasgow Strategic Drainage Partnership (MGSDP.

A large investment, with works currently in progress, to improve Glasgow's wastewater treatment works and sewer network. This will benefit the River Clyde and its tributaries as well as reducing the risk of flooding in urban communities.

SEPA's River Basin Management Plans review the ecological status of surface and ground water bodies. In 2008, just under half of water bodies in the Clyde advisory group area (44% surface water bodies and 57% groundwaters) were classified as being at good or high ecological status. The 2009-15 plan aimed to maintain the good status and to secure continuous improvement in those with less than good status.

Summary of key issues:

- Potential for the pollution of the City's watercourses through surface-water run-off from the City's older road surfaces;
- Poor maintenance of roads can lead to longer term sedimentation;
- Climate change potentially resulting in increased frequency of storms and resultant flooding which may affect transport infrastructure;
- Flooding may affect sewerage systems, potentially impacting communities and properties as well as biodiversity and health;
- Risk of flooding along Clyde corridor from rising sea levels.
- Consideration of active travel projects along the Clyde from committed projects/ further development of the Clyde Waterfront;
- Role of watercourses in active travel and outdoor access including Clyde and Canal & towpath network;
- Also consider use of and access to 'blue' spaces for people and water transport potential

Challenges for the GTS:

- Ensuring the protection and improvement in quality of the city's watercourses;
- Ensuring adequate drainage is included in infrastructure schemes;
- With the need for multifunctional green infrastructure, ensuring provision for flood management, sustainable drainage, access and biodiversity;
- Balancing transport related projects that relate to water-based transport and access to water/adjacent areas for leisure, health and wellbeing with protecting water quality and flood risk management

1.6 Biodiversity, Flora and Fauna

Glasgow was the first Scottish City to declare an ecological emergency in May 2019.

The Council acknowledged the significance of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Global Assessment Report 2019 which indicated biodiversity loss was increasing due to land-use change, the impact of climate change, pollution, invasive alien species and the exploitation of natural resources.

Glasgow's open spaces, wild plants and native animal species contribute to the health and wellbeing of its citizens. Open spaces and trees are particularly important for climate change mitigation through absorbing pollutants, providing oxygen and contributing to flooding prevention through the absorption of rainfall.

Glasgow has more than 3,500ha of Greenspace and 91 parks. Biodiversity is considered carefully in the management of all Glasgow Parks and where appropriate, habitats and species are protected and enhanced as part of overall park management.

Through a major audit and subsequent monitoring of species of animals, plants and fungi, Glasgow is recorded to have at least 6.000 species.

Protecting this biodiversity is a key consideration within Glasgow's Energy and Carbon Masterplan, the City Development Plan, Open Space Strategy and Local Biodiversity Action Plan, with a view to reversing biodiversity loss. Biodiversity benefits are integrated into the Metropolitan Glasgow Strategic Drainage Plan through the delivery of Sustainable Urban Drainage Systems (SUDS), green infrastructure and blue-green networks.

Additionally Glasgow has:

- 5 nationally important 'Sites of Special Scientific Interest' (SSSIs) designated by Scottish Natural Heritage;
- 12 Local Nature Reserves; four of them are within the Seven Lochs Wetland Park creating an important chain of close proximity to link habitats.
- over 90 SINCs (Sites of Importance for Nature Conservation) in the city.
- 14 Habitat Action Plans and 23 Species Action Plans

The majority of Glasgow's ancient, long established and semi-natural woodland are broad leaved/mixed woodland and wet woodland habitats.

Summary of key issues:

- Climate change and light, noise and pollution from transport negatively impacting biodiversity;
- Need to retain habitats connectivity; consider blue-green networks, open space and biodiversity when planning transport and place making projects;
- Uneven distribution of greenspace network across this city.

Challenges for the GTS:

- Achieving the vison of a cleaner, greener, sustainable Glasgow which is protective of its natural environment and natural heritage.
- Protect biodiversity by reducing the requirement for large-scale transport facilities.
- Considering greenspace, open space and biodiversity when we plan transport and placemaking projects, to maximise the benefits of our investment."

1.7 Soil

Glasgow has consistently had the highest concentration of vacant and derelict land of any Scottish city, and it is recognised that this has arisen as a result of fragmented ownership, poor ground conditions, and inadequate infrastructure on many sites.

Between 2017 and 2018, Glasgow saw a reduction in vacant and derelict land of 64 hectares, a 6.4% fall from 1069 to 1005 hectares. There was also a reduction in the number of vacant and derelict sites, from 761 to 721.

Most of the land brought back to use was developed for residential purposes (66.4%), with other uses including transport, recreation and leisure.

Of the remaining vacant and derelict land, most of this can be found in the north and east of the city, and 349 of the sites are owned by the council.

A geodiversity audit of the City was made by the British Geological Survey in 2013, highlighting geological extrusions important for their educational, cultural or biodiversity value. Other data sets are available via NatueScot on where peatland and other important carbon soils lie in the city.

Summary of key issues:

- Many post-industrial brownfield sites with likely soil contamination. These sites causing disconnect in transport networks, impacting on communities;
- Potential for reduction in soil quality through the effects of climate change such as flooding and absorption of pollutants from transport, with further impacts on wildlife and flora;
- Loss of soil to watercourses through flooding or excessive water run-off;
- Damage/removal of soil resulting in loss of carbon storage.

Challenges for the GTS:

- Managing the conservation of/improvement of soil quality in any place making / infrastructure schemes;
- Connecting communities through making use of vacant/derelict land;
- Including consideration to manage carbon storage and drainage (SUDS) to alleviate flooding.

1.8 Cultural Heritage

Glasgow has one UNESCO World Heritage Site: the Antonine Wall. The Wall site is managed and cared for in partnership with several local authorities and Historic Scotland. GCC has the smallest holding of the partners, with responsibility for 0.07 km/0.16 ha at Cleddans Burn, but also holds other management responsibilities including planning and roads.

Battlefields: Langside (13 May 1568)

Gardens & Designed Landscapes: Pollock Park, The Necropolis, Victoria Park, Glasgow Botanic Gardens and Kelvingrove Park.

Conservation Areas: 25 areas varying in character from the city centre and Victorian residential suburbs to a rural village and a former country estate.

Buildings of Special Architectural or Historic Interest: Over 1800 items in Glasgow have been listed by the Scottish Ministers as being Buildings of Special Architectural or Historic Interest. Glasgow includes a huge range of building types, engineering structures and smaller items like statues, monuments, police telephone boxes and letter boxes which are listed. Listed items are categorised according to their merits: Category A which covers buildings of national and international importance accounts for 15% of all listed buildings in Glasgow.

Non-designated historic environment assets:

A significant portion of Glasgow's transport consists of historic assets including Glasgow Central Station and Queen Street Station, both Category A Listed Buildings and George V Bridge and Brommielaw Bridge, both Category B Listed Buildings.

Summary of key issues:

- Glasgow is rich in listed buildings, conservation areas, scheduled monuments and archaeological sites, giving a sense of place, wellbeing and cultural identity to the city. Potentially under threat from climate change, pollution, new development and growth in transport;
- Derelict / unused buildings detracting from the city character and neighbourhoods appearance;
- Development pressure on urban open spaces;
- Unsympathetic works in Conservation areas;
- Climate change potentially leading to increased rain and wind, as well as air pollutants direct from traffic or energy for transport may damage building structures.

Challenges for the GTS:

- Glasgow is rich in listed buildings, conservation areas, scheduled monuments and archaeological sites, giving a sense of place, wellbeing and cultural identity to the city. Potentially under threat from climate change, pollution, new development and growth in transport;

- Derelict / unused buildings detracting from the city character and neighbourhoods appearance;
- Development pressure on urban open spaces;
- Unsympathetic works in Conservation areas;
- Climate change potentially leading to increased rain and wind, as well as air pollutants direct from traffic or energy for transport may damage building structures.

1.9 Landscape and Townscape

Of Glasgow's total land area approximately 80% is defined as urban area; of this urban area 36% is defined as open space (excluding open water and private gardens).

Approximately 7.3% of total land area as 'vacant and derelict'. 60% of Glasgow residents live within 500m of derelict land, double the Scottish average – compared to 20% in East Dunbartonshire.

Glasgow Open Space Strategy (OSS) was adopted at the City Administration Committee in February 2020. Glasgow's network of green spaces accounts for over a fifth of the city's total area, and the importance of these to the health and attractiveness of the city has long been recognised by the Council.

In catering for a growing population, new demands are being made on the City's open spaces, for example, helping adapt to climate change, (e.g. rainfall) habitats, contributing to active travel networks, sport and recreation, mitigating climate change, and contributing to wellbeing by fostering a sense of place.

Summary of key issues:

- Risk of large infrastructure schemes to utilise land otherwise classified
- Threat to landscape character and its biodiversity from traffic flows and management in existing networks, as well as from development of new schemes.
- Vacant and derelict land are a blight on urban character

Challenges for the GTS:

- Preserving and enhancing any unique landscape characteristics. Ensuring new development is informed by landscape character assessment as different landscapes have different capacities to absorb new development.

Appendix B: Relationship with Relevant Plans, Programmes and Strategies

Glasgow City Council

Glasgow Transport Appraisal Strategic Environmental Assessment

May 2023

Appendix B: Relationship with Relevant Plans, Programmes and Strategies (PPS)

Table B.1: International Relevant PPS and Environmental Objectives

Name of Plan, Policy or Strategy	Environmental Objectives
Kyoto Protocol (1997/2005)	To commit industrialised countries to a reduction of four greenhouse gases (GHG) (carbon dioxide, methane, nitrous oxide, sulphur hexafluoride) and two groups of gases (hydrofluorocarbons and perfluorocarbons).
United Nations Conference COP21 (2015-Paris)	Agreement to set a goal of limiting global warming to below +2C compared to pre-industrial levels.
Gothenburg Protocol (1999) (Amended 2012, entry into force 2019)	To abate acidification, eutrophication and ground-level Ozone. First binding agreement to target emissions reductions for PM2.5 which are a concern for most cities.
Johannesburg Declaration on Sustainable Development (2002)	Commitment to building a "humane, equitable and caring global society".

Table B.2: European Relevant PPS and Environmental Objectives

Name of Plan, Policy or Strategy	Environmental Objectives
EU Water Framework Directive (2000/60/EC)	• To enhance the status and prevent further deterioration of aquatic ecosystems and associated wetlands • To promote the sustainable use of water • To lessen the effects of floods and droughts • To reduce pollution of water • To rationalise and update existing water legislation and introduce a co-ordinated approach to water management, based on the concept of river basin planning
EU Floods Directive (2007/60/EC)	• Establishes a framework to assess and manage flood risk via a three-step procedure including: the creation of flood hazard, flood risk maps and flood risk management plans. • To reduce the negative impacts on human health, economic activity, the environment and cultural heritage due to flooding.
EU Waste Framework	• To protect human health and the environment against harmful effects caused by the collection, transport, treatment, storage and tipping of waste
EU Air Quality Framework (96/62/EU) and other related Directives	• To protect the environment as a whole and protect health • To maintain ambient air quality, where it is good, and to improve air quality in other cases using limit values and/or alert thresholds for ambient air pollution levels • Set established standards for a range of pollutants.
EU Environmental Noise Directive (EDC) 2002/49/EC	• Concerned with developing community measures to reduce noise emitted by road and rail vehicles and infrastructure, and from aircraft.
EU Biodiversity Strategy for 2030 (and associated Action Plan)	• To set Europe's biodiversity on a path to recovery by 2030, benefiting people, the climate and the planet. • Build societal resilience to future threats such as climate change impacts. • Elements include a network of protected areas on land and sea. • Part of the European Green Deal

Name of Plan, Policy or Strategy	Environmental Objectives
EU Climate and Energy Framework 2030	• EU-wide targets and policy objectives for the period 2021-2030, Moving towards a climate-neutral economy and implements its commitments under the Paris Agreement. • Key targets for 2030

Table B.3: National Relevant PPS and Environmental Objectives

Name of Plan, Policy or Strategy	Environmental Objectives
Scottish Government - National Performance Framework	• To create a more successful country through sustainable and inclusive growth. • The framework measures progress against Scotland's National Outcomes, which are linked to the UN Sustainable Development goals.
Scottish Government - Transport (Scotland) Act 2019	• LEZs • Improve bus services • Encourage smart ticketing • Pavement parking outlaw
Scottish Government - National Transport Strategy (2020)	• Takes climate action by helping deliver net-zero target; will adapt to the effects of climate change; will promote cleaner, greener choices. • This document will be the basis upon which the Scottish Government takes decisions and evaluates the success of Scotland's transport policies going forward
Scottish Government – Strategic Transport Projects Review 2	• STPR2 will help to deliver the vision, priorities and outcomes for transport set out in the National Transport Strategy (NTS2) and will align with other national plans such as the National Planning Framework (NPF4) and the Climate Change Plan. • STPR2 involves conducting an evidence-based review of the performance of Scotland's strategic transport network across all transport modes – walking, cycling, bus, rail and road plus wider island connectivity – to identify interventions required to support the delivery of Scotland's Economic Strategy.
Scottish Government - Cycling Action Plan for Scotland (2017-2020)	• Vision of 10% of all journeys by bike by 2020.
Scottish Government - Scotland's Accessible Travel Framework (2016)	• Vision: All disabled people can travel with the same freedom, choice, dignity and opportunity as other citizens.
Scottish Government - A Long-Term Vision for Active Travel in Scotland 2030 (2014)	• Aims for cycling and walking, across all communities, to be the mode of choice for shorter journeys.
Scottish Government - Let's Get Scotland Walking - National Walking Strategy (2014)	• Aims for a culture of walking for everyday travel, recreation and well-being; better quality walking environments and; convenient and safe mobility for all.
Scottish Government – Cleaner Air for Scotland (CAFS) (2015) The Road to a Healthier Future	• Provides a national strategy within which the Scottish Government and its partners can work together towards achieving the best possible air quality for Scotland. • As set out in CAFS, transport is one of the largest contributors to Scotland's PM10 and NOx emissions, the majority of these from road transport. The strategy makes a number of commitments towards reducing transport emissions and increasing active travel, outlines the importance of

Name of Plan, Policy or Strategy	Environmental Objectives
	placemaking for improving air quality and, through the creation of the National Low Emission Framework, helps mark the way for Low Emission Zones (LEZ). • There is a strong requirement on local authorities to help deliver these targets. Creating a better environment for cycling and walking can help reduce the percentage of trips that are undertaken by motorised vehicles.
Scottish Government - Infrastructure Commission for Scotland Phase 1 Key Findings Report, 2020	• Commission established by the Scot Government to provide informed and independent advice on creating a 30-year infrastructure strategy to meet the economic growth and societal needs of the future. • Provides 8 recommendations on how infrastructure investment can contribute to national outcomes in Scotland. • Prioritise investment decisions on the basis of their contribution to inclusive net zero carbon economy outcomes.
Scottish Government - National Planning Framework 4 (2023)	• The long term spatial plan for Scotland setting out where development and infrastructure is needed to support sustainable and inclusive growth. • NPF4 looks to 2050 and will have a wider alignment to other programmes and strategies, incorporating for the first time SSP.
Scottish Government - Planning etc. (Scotland) Act 2006	• To bring in a much more inclusive and efficient planning system • To improve community involvement, support the economy, and help it to grow in a sustainable way.
Scottish Government – Planning (Scotland) Act 2019	• The Scottish Government is seeking to improve Scotland's planning system so that it responds to a changing world and ensure it plays its part in addressing climate change. This act will determine the future structure of the modernised planning system, including preparations for NPF4.
Scottish Government - Creating Places A Policy Statement on architecture and place for Scotland (2013)	• Reflecting the responsibility to preserve Scotland's rich built and natural heritage, but also to create future assets meeting the vision of quality, successful places which support communities, respect the environment and drive the economy. • Sets out the comprehensive value good design can deliver. • The policy statement, setting out the Scottish Government's position on architecture and place, recognises the strong and established relationship with planning and therefore the policies within the Statement are considerations in determining planning applications and appeals.
Scottish Government - Designing Streets (March 2010)	• Provides the first policy statement in Scotland for street design, predominantly for use on new streets but also applicable to existing streets undergoing redesign. • Emphasis on place-making and away from a system focused upon the dominance of motor vehicles. • Intended to work in tandem with Designing Places (2001)
Scottish Government - Scotland Economic Strategy (2015)	• Sustainable investment in people and infrastructure. • Encourage a culture of innovation. • Promote inclusive growth.

Name of Plan, Policy or Strategy	Environmental Objectives
Scottish Government - Scottish Energy Strategy (2017) The future of energy in Scotland	• The first energy strategy for Scotland, setting out the government's vision for the future energy system though to 2050. • Guided by three core principles: a whole-system view; an inclusive energy transition; a smarter local energy model.
Scottish Government - Climate Change (Scotland) Act 2008	• Sets out targets for 2050 for the reduction of greenhouse gas emissions. • Provisions on mitigation of and adaptation to climate change, energy efficiency and the reduction and recycling of waste
Scotland's 2018-2032 Climate Change Plan Update (Scottish Government, 2020)	• Sets out the pathway to new and ambitious targets set by the Climate Change Act 2019
Scottish Government – Climate Change (Emissions Reductions Targets) (Scotland) Act 2019	• Builds on the targets set in the Climate Change Act, seeking to reduce Scotland's emissions of all greenhouse gases to net-zero by 2045 at the latest, with interim targets.
Scottish Government - The Land Reform (Scotland) Act 2003	• Development of Core Path plans and Local Access Forums to increase the public right of access.
Scottish Government - Nature Conservation (Scotland) Act 2004)	• Conservation of biodiversity, conserve and enhance Scotland's natural features.
Scottish Government - Scottish Biodiversity Strategy - It's In Your Hands (2004)	• To set out a 25 year framework (to 2030) for Government action to conserve biodiversity for the health, enjoyment and wellbeing of the people of Scotland • Aims to halt biodiversity loss by 2010 and for Scotland to be recognised as a world leader in biodiversity by 2030.
Scottish Government - Part IIA of the Environmental Protection Act 1990: Contaminated Land	• To provide the legislative framework for the identification and remediation of contaminated land, introducing for the first time a statutory definition of contaminated land. • Aimed at addressing land which has been historically contaminated and which poses unacceptable risks to human health or the wider environment in the context of the current land use.
Scottish Government - Flood Risk Management (Scotland) Act 2009	• To set out local authorities' and the Scottish Environment Protection Agency's functions in relation to flood risk management.
River Basin Management Plan for Scotland 2021-2027	• To set out actions to address impacts on Scotland's water environment. • Focuses on reducing resource use, eliminating waste and restoration of natural capital • Covers actions for public bodies, industry and land managers in Scotland
Water-resilient places – surface water management and blue-green infrastructure: policy framework	• Outlines how surface water is currently managed in Scotland. • Identify planning for drainage and flood risk management (through blue-green infrastructure) that drives multiple benefits to communities.

Table B.4: Regional Relevant PPS and Environmental Objectives

Name of Plan, Policy or Strategy	Environmental Objectives
Glasgow City Region Economic Strategy 2017-2035 and City Region Deal	Vision for sustained and inclusive economic growth, an outward-looking economy.

Name of Plan, Policy or Strategy	Environmental Objectives
Regional Transport Strategy 2008-2021 "A Catalyst for Change" (Update in progress)	Statutory duty on the seven Regional Transport Partnerships (RTPs) in Scotland to produce a Regional Transport Strategy (RTS) for their area. Notes 4 key outcomes: improved connectivity; access for all; reduced emissions; attractive, seamless and reliable travel.
Glasgow and Clyde Valley Strategic Development Plan / Regional Spatial (Strategy in progress)	Clydeplan's role is to prepare and maintain an up to date Strategic Development Plan (SDP) for the Glasgow city region.
Clyde and Loch Lomond Plan District Flood Risk Management Plan	Describes the ambition for managing flooding and he priorities for action that we believe are most important and helps inform the development of local plans. The plan sets the national direction of future flood risk management, helping to target investment and coordinate actions across public bodies.

Table B.5: Local Relevant PPS and Environmental Objectives

Name of Plan, Policy or Strategy	Environmental Objectives
Glasgow City Council - The Glasgow City Council Strategic Plan (2022-27)	• Shapes the authority's response to the cost-of-living crisis, the climate emergency and pressures on public services. • Challenges include reducing poverty and inequality in the communities; increase opportunity and prosperity; flight the climate emergency in a just transition to a net zero city; and enable staff to deliver essential services in a sustainable, innovate and efficient wat for communities.
Glasgow City Council - Glasgow City Development Plan 2017 (10 years)	• Aims for a healthy, high quality place and a compact city form that supports sustainable development. • Outcomes include a well-connected place to move around and do business in and a green place which is resilient, accessible and attractive. • Overarching policies are: Placemaking Principle and Sustainable Spatial Strategy.
Glasgow City Council – Glasgow Economic Strategy 2016-2023	• Aiming to make Glasgow the most productive major city economy in the UK. • Focus areas include smart infrastructure investment and investing in connectivity. City Deal should lead to a greatly improved transport network.
Glasgow City Council - Glasgow's Housing Strategy 2017-2022	• Themes include improving access to appropriate housing - increasing the supply and improving the quality of available housing. • Promoting area regeneration, promoting health and wellbeing. • Transport links are vital for improving employment opportunities and a key action is to work with transport providers to improve connections where communities have identified this as a priority.
Glasgow Community Planning Partnership - Glasgow Community Plan 2017 & Community Action Plan 2018-2020	• Focus on economic growth and resilient communities and a fairer more equal Glasgow. • Objective of inclusive growth. • Transport is a priority action.
Glasgow City Council – Glasgow's Open Space Strategy 2019	• The strategy's vision is by 2050 for a network of good quality, well-distributed, multi-functional open spaces and connecting infrastructure, that contributes positively to the strategy's

Name of Plan, Policy or Strategy	Environmental Objectives
	outcomes and helps address many of the critical issues facing the city.
Glasgow City Council - Core Paths Plan (2012)	• To ensure that the public are given reasonable access throughout Glasgow. • To illustrate existing designated routes such as rights of way and public paths.
Glasgow City Council – Strategic Plan for Cycling 2016-2025	• Vision to create a vibrant Cycling City where cycling is accessible, safe and attractive to all. • Aim for Glasgow to be one of the most sustainable cities in Europe.
Glasgow City Council – City Centre Living Strategy (to 2035)	Aims to double the city centre's population to 40,000 over the next 15 years.
Glasgow City Council – Energy & Carbon Masterplan (ECM) to 2020 & Carbon Management Plan 2 (2013-21)	The ECM builds on the first Sustainable Energy Action Plan (SEAP) for Glasgow from 2010 and provides a single, coordinated strategy and plan of project and actions across the city to meet targets of reducing carbon emissions by 30% from 2006 levels by 2020.
Glasgow City Council - Air Quality Action Plan (2009)	To reduce levels of Nitrogen Dioxide (NO2) and Particulate Matter (PM10) within the City's Air Quality Management Areas within a specified period of time.
Glasgow City Council - Local Biodiversity Action Plan (2001)	To protect, enhance and promote local biodiversity throughout the City.
Glasgow City Council - Town Centre Action Plans	To consider matters such as the appropriate mix of uses, improvements to the physical environment, traffic management measures, improvements to car parking and public transport issues.
Glasgow City Council - River Clyde Flood Management Strategy (2005)	To provide information about the implementation of flood management solutions and improvements to quay walls, incorporating the creation of and improvements to public spaces along the River Clyde corridor and feeding into the strategic drainage plan for Glasgow.
Glasgow City Council - Climate Change Strategy (Draft)	• To identify opportunities to reduce Greenhouse Gas emissions and reduce & offset carbon emissions. • To identify service areas that require adaptation to climate change scenarios. • To embed climate change considerations into existing and new Council strategies, plans and policies. • To establish and identify actions, targets and to undertake monitoring and reporting. • To raise awareness of climate change impacts and actions to staff, developers, communities and local business.
• Glasgow City Council – Glasgow's Climate Plan	• Council's response to the climate and ecological emergency • Actions which address the crisis without further disadvantaging people and communities who already experience significant inequalities. Ensuring that barriers to their transition to next zero carbon are understood and addressed • Actions to create a safer, resilient and more sustainable city should be aimed at building a just and more equal city.
Historic Environment Policy for Scotland (2019)	• Policy statement directing decision-making that affects the historic environment.

Name of Plan, Policy or Strategy	Environmental Objectives
	• HEPS sets out a series of principles and policies for the recognition, care and sustainable management of the historic environment.
Our Place in Time- the Historic Environment Strategy for Scotland (2014)	• Presents a common vision and ambition about how we will care collectively for Scotland's environmental resources over the next ten years.

Appendix C: Consultation Comments and Responses

Glasgow City Council

Glasgow Transport Appraisal Strategic Environmental Assessment

May 2023

Appendix C: Consultation Comments and Responses

This appendix outlines the response from the Statutory Authorities (Nature Scot, Scottish Environment Protection Agency (SEPA) and Historic Environment Scotland (HES)) for the different stages of the GTS development. SEPA were unable to provide comments on the scoping report and SEA objectives.

Table C.1: Response to Local Transport Strategy – Connectivity Plan - Scoping Report (received April 2021)

Section of Report	Comment	Response
Nature Scot		
Table 1: Environmental Issues, Baseline, Data Sources and Challenges for the GTS 'Landscape and Natural Heritage'	We note that reference has been made to a greener Glasgow in relation to Biodiversity, Flora & Fauna, however, this is also important in terms of Landscape and Natural Heritage. Landscape is an aspect of the natural heritage; however, natural heritage also includes elements such as biodiversity and soils. Through integrating green networks and transport such as active travel, multiple benefits can be delivered including enhanced landscape and sense of place as well as wider natural heritage and population benefits. NatureScot is the new name for Scottish Natural Heritage so we suggest amending the reference made to Scottish Natural Heritage on page 8 under 'Biodiversity, Flora & Fauna'.	Noted. SEA assessment criteria under the Biodiversity objective have been developed which highlight the need to identify opportunities for enhancement. Reference to 'Scottish Natural Heritage' amended.
Chapter 3.3 Methodology for Assessing Environmental Effects	The use of a matrix supported by SEA objectives and indicators is a tried and tested methodology and we are content with this approach. As stated, this allows for detailed commentary on the longer/shorter term predicted effect, cumulative effects, and any potential mitigation measures as well as allowing detail on the significance of the effect. We welcome the Example Assessment Template in Table 3 and highlight that there is also an opportunity to set out opportunities for enhancement as well as mitigation measures. For example, the assessment could identify opportunities to deliver positive effects for biodiversity through the use of blue-green infrastructure and creating nature-rich active travel routes. We suggest adding an additional column to the matrix to show this. These should then directly inform the Plan. We note that work is currently ongoing to develop a set of environmental objectives and we suggest that these are used to identify opportunities for enhancement with clear links to measurable indicators. In particular, as further thinking on positive effects for	Opportunities for enhancement have been considered alongside mitigation measures within the assessment. Biodiversity, Soils and Landscape are each covered by individual objectives, and have more detailed set of corresponding assessment criteria questions. A draft set of objectives was issued to Nature Scot for comment in May 2021 and the comments received were incorporated into the final assessment objectives presented in the main report. See table C.2 for detailed comments.

Section of Report	Comment	Response
	biodiversity emerges through the NPF4processit could be used to inform Biodiversity objectives. It would also be useful to clarify what is included in the SEA topic 'Landscape & Natural Heritage'. Landscape is an aspect of the natural heritage, however, natural heritage also includes elements such as biodiversity and soils.	
Appendix 1: Other Relevant Plans, Policies and Strategies	We welcome the recognition of emerging PPS including NPF4 and the Glasgow City Region RSS.	Noted
General Comment	We highlight the opportunity to utilise the SEA process to identify opportunities for enhancement, such as positive effects for biodiversity through greened active travel routes using blue-green infrastructure. The SEA objectives and indicators could be used to support this as well as updating the matrix to identify enhancement opportunities as well as mitigation measures.	SEA assessment criteria under the biodiversity objective have been developed which highlight the need to identify opportunities for enhancement. A draft set of objectives was issued to Nature Scot for comment in May 2021 and the comments received were incorporated into the final assessment objectives presented in the main report. See table C.2 for detailed comments.
Historic Environment Scotland		
General Comment	Your assessment should also consider potential effects on non-designated historic environment assets. Data on these can be found at Pastmap and relevant local authorities' Historic Environment Records.	Noted.

Section of Report	Comment	Response
Relevant Plans, Policies and Strategies (PPS)	This section should include the following PPS: •Historic Environment Policy for Scotland (2019) (HEPS). The preparation of all plans, programmes and strategies in Scotland should be considered through the policies and principles within the Historic Environment Policy for Scotland (HEPS). Of relevance to the SESTran RTS is Policy HEP3 which states that "Plans, programmes, policies and strategies, and the allocation of resources, should be approached in a way that protects and promotes the historic environment." •Our Place in Time-the Historic Environment Strategy for Scotland	These have been added to the PPS review and considered in the ER.
Methodology for Assessing Environmental Effects	We note that you are still developing SEA criteria by which to assess effects. We would be happy to provide further comment on these once they have been drafted. Alternatively, you may wish to use the following criteria, based on the Historic Environment Policy for Scotland (HEPS): • 'will the GTS component protect, promote, and where appropriate, enhance the historic environment? 'For vision, objectives, and non-spatial options, and • 'will there be effects on designated or undesignated heritage assets or their settings? 'For spatially defined options.	A draft set of objectives was issued to Historic Environment Scotland for comment in May 2021 and the comments received were incorporated into the final assessment objectives presented in the main report. The objectives reflect the criteria recommended. See table C.2 for detailed comments.
Table 2	We are content that non-spatially specific elements of the GTS are assessed at a strategic, generic level for the historic environment. However, we would expect any spatially defined elements, and their reasonable alternatives, to be assessed at a level which reflects the level of spatial detail within the element. This would include any spatially defined projects and initiatives and actions which will form the Delivery Plan referred to in paragraph 1.6.3., where the GTS is setting the framework for future development consent for those elements.	Noted The level of assessment has been tailored to reflect the level of invention/option proposed within the GTS.

Table C.2: Response to SEA Objectives and Guide Questions (received May 2021)

Section of Report	Comment	Response
NatureScot		
Key baseline Issues	Population and Human Health - in relation to "Disconnected active travel network…" this could also highlight unequal access (e.g. using active travel) to nature and open space.	Baseline text has been amended.
	Water - in relation to "Also consider use of 'blue' spaces…" access to blue assets could also be highlighted.	Baseline text has been amended.
	Biodiversity – under "Need to retain habitat connectivity…" it would be useful to include blue-green networks (which has more emphasise on the network aspect than simply 'greenspace').	Baseline text has been amended.
	Landscape – could also cover vacant and derelict land as a blight on urban character as well as uneven access to nature	Baseline text has been amended.
Key Policy Requirements	Climate – Could include Scottish Government's Climate Change Plan	These policies have been added to Appendix B PPS.
SEA Objectives	Climate – would be useful to amend "sustainable public transport" to simply "sustainable transport" so that it also covers active travel modes.	SEA objective has been amended.
	Population and Human Health – welcome the objective to improve access to natural environment.	SEA objective and guide questions have been amended.
	Water – could have an objective on access to blue assets	SEA guide questions have been amended.
	Biodiversity – recommend changing "ensure the city's biodiversity…are protected" to "improve/enhance the city's biodiversity…" This is in line with the emerging NPF4 and its objectives. There are opportunities to deliver multifunctional blue-green networks which provide recreational and active travel routes as well as habitat connectivity, for example	SEA guide questions have been amended.
SEA Assessment Guide Questions	Climate – would be useful to have an active travel question here (although we see there is one under Air Quality)	No change made as this is captured within Air Quality.

Section of Report	Comment	Response
	Population and Human Health – could also include access to multifunctional blue-green networks in the "Improve accessibility to open spaces and path network…" question.	SEA guide questions have been amended.
	Landscape – good to see public realm included here. It could however be difficult to measure and monitor "attractive" so perhaps this could be amended to "high-quality, well-designed".	SEA guide questions have been amended.
Historic Environment Assessment		
Key baseline Issues	Given the scope of the proposed strategy, it would be helpful for this section to recognise that a significant proportion of Glasgow's transport infrastructure (including related streetscape /riverscape features) is historic.	Baseline text has been amended
Key Policy Requirements	This section should include the following PPS: • Historic Environment Policy for Scotland (2019) (HEPS). The preparation of all plans, programmes and strategies in Scotland should be considered through the policies and principles within the Historic Environment Policy for Scotland (HEPS). • Our Place in Time- the Historic Environment Strategy for Scotland	These policies have been added to Appendix B PPS.
SEA Assessment Guide Questions	We recommend that you add a reference to the setting of historic environment assets to the first question. Additionally you could consider adding a question which will focus on the maintenance and retention of historic environment assets, such as will the policy / action support the continued use / reuse and maintenance of historic environment assets, where appropriate?	SEA guide questions have been amended

Appendix D: Detailed Policy Framework Assessment

Glasgow City Council

Glasgow Transport Appraisal Strategic Environmental Assessment

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Appendix D: Detailed Policy Framework Assessment

This appendix presents the detailed SEA assessment of the Policy Framework.

Table D.1: SEA Assessment of Package 1 'reducing the need to travel sustainably'

SEA Objective	Score	Summary
Air Quality	+	Policy supports creating 20-minute neighbourhoods and the encouraging of hybrid models of working is going to reduce the amount of travelling that needs to be undertaken by individuals. However, where the public transport network is not improved, there may still be use of private cars, which may lead to a neutral or minor negative impacts.
Climate	+	Policy supports creating 20-minute neighbourhoods and the encouraging of hybrid models of working. This supports the SEA objective to ensure communities are close to key services and places of employment and should support a modal shift for short journeys.
	+	The creation of 20-minute neighbourhoods will prioritise walking, cycling and wheeling for short journeys therefore supporting the SEA objective in reducing reliance on fossil fuels.
Population and Human Health	+	Policy is likely to improve quality of life for the residents of the 20-minute neighbourhoods, as there will be reduced traffic and the area, and more active travel contributing to positive health impacts.
Material Assets	+	This package of policy measures is expected to contribute to this SEA objective and is assigned a Minor Positive effect.
Water	~	There is no clear relationship between this package of policy measures and achieving this SEA objective.
Biodiversity	0	Reducing the need for travel is likely to lead to less congestion on roads. There may therefore be minor positive impacts on priority sites or species as a result of reduced pollutant emissions and noise impacts from road transport. Overall this package is related to but does not have a significant effect on this SEA objective and is scored a Neutral effect.
Soil	0	The policies are likely to indirectly contribute to this SEA objectives. However it is not explicit in the policies and therefore the package has been scored a Neutral effect.
Cultural heritage	~	There is no clear relationship between this package of policy measures and achieving this SEA objective.
Landscape	+	Reducing traffic congestion will improve the pleasantness of the city, improving access for cyclists and pedestrians to move around. The setting of the city is also likely to improve. This package is expected to contribute to the achievement of this SEA objective but not significantly and is scored a Minor Positive effect.

Table D.2: SEA Assessment of Package 2 'Decarbonising transport and achieving cleaner air'

SEA Objective	Score	Summary
Air Quality	++	The policies are focussed on reducing carbon emissions and improving air quality within the city, therefore the policies directly support this SEA objective.
Climate	++	Many of the policies are focussed on facilitating a mode shift toward sustainable travel and reducing greenhouse gas emissions to ensure the realisation of net-zero targets, therefore the policies directly support this SEA objective.
	++	Many of the policies are focussed on facilitating a mode shift towards renewable energy/low carbon transport and away from resilience on fossil fuels, therefore the policies directly support this SEA objective.
Population and Human Health	++	Improving air quality within the city is likely to have direct health and wellbeing benefits, particularly for vulnerable groups, with improved life expectancy and reduced rates of respiratory disease potential benefits. Enhanced amenity may also encourage people to spend more time outdoors or use active travel means, which can also bring indirect health improvements from increased physical activity. Facilitating a mode shift towards sustainable travel away from private vehicles will ensure fair access to community facilities, employment and the natural environment. Policy sets out that the council will support a fair transition to a net zero carbon city, reducing inequality in access.
Material Assets	+	Transition to low carbon public transport fleet would make use of existing transport infrastructure, though new vehicles would be required. Facilitating a mode shift to sustainable travel would reduce the impact of heavy traffic on infrastructure. Policy supports reuse and recycling of materials as per Council's Circular Economy Route Map.
Water	+	Reducing the volume of traffic on the roads that use fossil fuels is likely to have a positive impact on water quality as there will be less pollutant run off to watercourses.
Biodiversity	+	Reducing air pollution, particularly oxides of nitrogen, will have a direct positive impact on biodiversity in the city. Promoting active travel and reducing community severance through decreased traffic on the roads may indirectly improve connectivity between green and blue networks.
Soil	+	Reducing the volume of traffic on the roads that use fossil fuels may have an indirect positive impact on land quality as there will be less pollutant run off to soils.
Cultural heritage	+	Reducing traffic and improving air quality within the city is likely to enhance the setting and amenity of cultural heritage resources. There may also be beneficial impacts on the façade of buildings from reduced pollutant concentrations. Facilitating a mode shift to active/sustainable travel will also improve access to the historic environment for all.

SEA Objective	Score	Summary
Landscape	+	Reducing traffic and improving air quality within the city is likely to indirectly enhance the landscape and townscape character and setting of the city. Facilitating a mode shift to active/sustainable travel will also improve access to the open space and countryside.

Table D.3: SEA Assessment of Package 3 'Inclusive and safe places for people & supporting sustainable travel choices'

SEA Objective	Score	Summary
Air Quality	+	Policy seeks to improve access to sustainable modes for all people. This could reduce the reliance on private vehicles, reducing road traffic emissions and contributing to improved air quality.
Climate	+	Policy supports modal shift which will reduce emissions from road traffic and will contribute to the national GHG emission targets and contribute to achieving this SEA objective.
	~	There is no clear relationship between this package of policy measures and achieving this SEA objective.
Population and Human Health	++	Policy seeks to ensure fair access to services for all in the city including, women, people with disabilities, people from ethnic minorities and the LGBT+ community. Overall this package is expected to significantly contribute to this SEA objective.
Material Assets	+	The creation of mobility hubs supports the development of future travel arrangements where journeys are made by different modes and facilitation of walking wheeling and cycling seeks to improve/enhance existing infrastructure.
Water	~	There is no clear relationship between this package of policy measures and achieving this SEA objective.
Biodiversity	~	There is no clear relationship between this package of policy measures and achieving this SEA objective.
Soil	~	There is no clear relationship between this package of policy measures and achieving this SEA objective.
Cultural heritage	+	Facilitating walking, cycling and wheeling would reduce the number of private vehicles in the city centre. This is likely to improve the setting of the historic environment.
Landscape	+	Facilitating walking, cycling and wheeling would reduce the number of private vehicles in the city centre. This is likely to improve the attractiveness of the public realm and townscape of the city centre.

Table D.4: SEA Assessment of Package 4 'Collective transport - public, community, shared and demand responsive transport'

SEA Objective	Score	Summary
Air Quality	+	Policy seeks to facilitate modal shift to more sustainable modes of transport including, bus, rail, metro and encourages the use of park and ride. This will reduce the traffic congestion within the city centre, with positive effects on air quality and AQMA's.
Climate	++	Policy promotes the use of existing public transport services such as the subway and bus and train operators and will strongly encourage modal shift and support a reduction in GHG emissions.
	+	Improving public transport and park and ride facilities will encourage a move away from private vehicles which rely on fossil fuels.
Population and Human Health	++	Improving the air quality and landscape amenity as a result of reduced traffic congestion will improve the quality of life for those in the city centre. It is likely to encourage the use of the public realm for recreation and physical activity which has benefits for human health. Reduced congestion will also improve accessibility in and around the city, reducing journey time to work and school.
Material Assets	?	Expansion of the Glasgow Metro could improve the areas that can be accessed from this public transport service. If sustainable materials are used and new technology introduced this is more likely to contribute to this SEA objective. However due to the uncertainty on the carbon footprint and quantity of construction materials required for the new infrastructure - Glasgow Metro, HS2 terminus etc. the effect on this SEA objective is considered uncertain.
Water	?	There is a link between the policies and this SEA objective. Modal shift to public transport services and other modes of travel will reduce the use of private vehicles. This will reduce pollutant run-off into water sources from private vehicles. There is potential for negative effects due to the potential for new infrastructure required to support a number of these policies include metro, new park and ride facilities and HS2 terminus. However as the scale and location of the infrastructure is unknown at this stage it is considered that there will be an uncertain effect on this SEA objective.
Biodiversity	?	There is potential for negative effects due to the potential for new infrastructure required to support a number of these policies include metro, new park and ride facilities and HS2 terminus. However as the scale and location of the infrastructure is unknown at this stage it is considered that there will be an uncertain effect on this SEA objective.
Soil	?	There is potential for negative effects with any new infrastructure required to support a number of these policies include metro, new park and ride facilities and HS2 terminus. However as the scale and location of the infrastructure is unknown at this stage it is considered that there will be an uncertain effect on this SEA objective.
Cultural heritage	?	Encouraging the move to active travel and away from private vehicles will reduce congestion in the city centre. The reduced traffic will improve the setting of some cultural heritage assets. However there is potential for negative effects with any new

SEA Objective	Score	Summary
		infrastructure required to support a number of these policies include metro, new park and ride facilities and HS2 terminus. However as the scale and location of the infrastructure is unknown at this stage it is considered that there will be an uncertain effect on this SEA objective.
Landscape	?	Encouraging the move to active travel and away from private vehicles will reduce congestion in the city centre. The reduced traffic will improve townscape and public realm within the city centre. However there is potential for negative effects with any new infrastructure required to support a number of these policies include metro, new park and ride facilities and HS2 terminus. However as the scale and location of the infrastructure is unknown at this stage it is considered that there will be an uncertain effect on this SEA objective.

Table D.5: SEA Assessment of Package 5 'Managing and developing assets and infrastructure'

SEA Objective	Score	Summary
Air Quality	+	Policy refers to future proofing new investment in assets and infrastructure in terms of smart city objectives and net zero carbon 2030. Policy supports the presumption against building new roads for the explicit purpose of capacity, in order to reduce car kilometres by 20% by 2030.
Climate	+	Policy refers to future proofing new investment in assets and infrastructure in terms of smart city objectives and net zero carbon 2030, i.e. will support low emissions and air quality improvements. Policy supports the presumption against building new roads for the explicit purpose of capacity, in order to reduce car kilometres by 20% by 2030.
	+	Policy refers directly to building climate resilience of road infrastructure with particular focus on reducing flood risk and increasing drainage capacity.
Population and Human Health	++	Policy supports promotion of sustainable transport / active travel which has indirect quality of life and health benefits and will also reduce inequality and improve access to services and the natural environment. Policy directly supports improvements to accessibility e.g. through provision of dropped kerbs. Policy directly supports the safe passage or vehicles and pedestrians and minimising travel delays during the winter months. Policy supports safe operation of the Clyde Tunnel, a key transport connection within the city.
Material Assets	++	This package directly relates to the sustainable use of materials through effective management and maintenance of transport infrastructure. Policy supports the recycling of material back into road materials to reduce carbon footprint. Policy supports sustainable transport projects that are designed to incorporate low carbon measures and sustainable materials where possible, including reuse and recycling. Policy supports the presumption against building new roads for the explicit purpose of capacity.

SEA Objective	Score	Summary
Water	++	Improving the existing road network is likely to have an indirect positive impact on the water environment as a result of associated drainage improvements/upgrades. Policy refers directly to building climate resilience of road infrastructure with particular focus on reducing flood risk and increasing drainage capacity.
Biodiversity	~	There is no clear relationship between this package of policy measures and achieving this SEA objective.
Soil	0	Package indirectly supports objective as the effective maintenance of existing assets and reducing the use of materials should minimise the requirement to disturb soil. Not likely to have a significant effect.
Cultural heritage	+	Policy supports the effective management and operation of the Clyde Tunnel, and general improvements to transport accessibility which would have a positive impact on access to the historic environment.
Landscape	0	Policy supports promotion of sustainable transport / active travel which supports creation of a high-quality public realm and improved access to open space and countryside. Policy directly support improvements to accessibility e.g. through provision of dropped kerbs, thereby removing barriers to use.

Table D.6: SEA Assessment of Package 6 'Smart and Digital City'

SEA Objective	Score	Summary
Air Quality	+	Policy supports integrated/connected travel and prioritisation of sustainable modes through use of technology, which would facilitate a mode shift towards sustainable transport and associated emissions reductions and air quality improvements.
Climate	+	Policy supports integrated/connected travel and prioritisation of sustainable modes through use of technology, which would facilitate a mode shift towards sustainable transport and associated emissions reductions and realisation of GHG targets.
	+	Policy supports integrated/connected travel and prioritisation of sustainable modes through use of technology, which would facilitate a mode shift towards sustainable transport and associated emissions reductions and less reliance on fossil fuels.
Population and Human Health	+	Policy will improve access to essential services, employment and the natural environment by facilitating affordable and integrated travel across the city, using existing technologies and smartcards. Policy seeks to make data open where appropriate, allowing transparency in relation to trends and encouraging participation and empowerment within communities. Policy will directly impact on this objective by improving access to employment and education opportunities, through offering apprenticeships and facilitating STEM programmes with schools.

SEA Objective	Score	Summary
Material Assets	++	Policy directly supports objective. Policy seeks to use existing technologies and smartcards to improve travel experience / efficiency. Policy supports improvements to transport technology, including planning for future travel arrangements where journeys are made by several modes.
Water	0	Policy indirectly supports objective through promotion of mode shift towards sustainable travel, and associated reduction in pollution run-off from vehicles. Not likely to have a significant effect.
Biodiversity	0	Policy indirectly supports objective through promotion of mode shift towards sustainable travel, and associated reduction in pollutants such as oxides of nitrogen which can harm biodiversity. Not likely to have a significant effect.
Soil	0	Policy indirectly supports objective through promotion of mode shift towards sustainable travel, and associated reduction in pollution run-off from vehicles. Not likely to have a significant effect.
Cultural heritage	0	Policy will improve accessibility to the open space / countryside by facilitating affordable and integrated travel across the city, using existing technologies and smartcards. Not likely to have a significant effect.
Landscape	0	Policy will improve accessibility to the historic environment by facilitating affordable and integrated travel across the city, using existing technologies and smartcards. Not likely to have a significant effect.

Table D.7: SEA Assessment of Package 7 'Managing Travel Demand'

SEA Objective	Score	Summary
Air Quality	++	Policy directly supports objective. Reducing parking available will reduce the number of private vehicles within the city, thereby encouraging mode shift and supporting reduction in GHG emissions.
Climate	++	Policy directly supports objective. Reducing parking available will reduce the number of private vehicles within the city, thereby reducing emissions and improving air quality.
	+	Policy indirectly supports objective. Reducing parking available / providing EV infrastructure will facilitate mode shift towards sustainable travel and reduce the use of non-renewable resources and fossil fuels.
Population and Human Health	++	Policy directly supports this objective through its link to the Liveable Neighbourhoods initiative. Reducing street parking will reduce the volume of cars in the city; in turn, this will improve amenity of street space and reduce emissions which can be harmful to human health. Policy supports roll out of cycle parking for flats and reallocation of space within car parks to cycle storage and EV charging, which will encourage mode shift to sustainable travel. Policy recognises that different people have different needs and that people with mobility difficulties will be prioritised for city parking.

SEA Objective	Score	Summary
Material Assets	+	Policy supports this objective as relates to upgrades of existing infrastructure. Reducing available parking will reduce the volume of road traffic using road infrastructure. Policy supports use of technology to improve provision of information on spaces available in car parks.
Water	0	Reducing road traffic in the city likely to reduce pollutant run off to watercourses. Not likely to be a significant effect.
Biodiversity	~	There is no clear relationship between this package of policy measures and achieving this SEA objective.
Soil	0	Reducing road traffic in the city likely to improve the setting of historic environment assets in the city. Not likely to be a significant effect.
Cultural heritage	0	Reducing road traffic in the city likely to reduce pollutant run off to soils. Not likely to be a significant effect.
Landscape	+	Reducing road traffic in the city would have a positive impact on the landscape and town character and setting and improve the public realm in general.

Table D.8: SEA Assessment of Package 8 'Natural Environment'

SEA Objective	Score	Summary
Air Quality	+	Policy indirectly supports objective as sets promotes mode shift towards sustainable transport, which would reduce emissions and improve air quality.
Climate	+	Policy indirectly supports objective as sets promotes mode shift towards sustainable transport, which would reduce emissions and address the climate emergency.
	++	Policy inherently supports the design of infrastructure with climate resilience in mind, particularly increased incidences of flooding and high temperatures.
Population and Human Health	++	Policy inherently supports enhancing biodiversity, creating blue and green corridors and providing new open space provision within the city, and this would have a positive impact on health and wellbeing for the population. There is an established link between access to green / blue space and wellbeing benefits, including increased uptake of physical activity. Policy recognises importance of blue / green networks as part of a place-based approach in the City Centre and Liveable Neighbourhoods, enhancing public realm and amenity for people living in and visiting the city. Policy supports building a strong active travel network and facilitating mode shift, which would improve air quality, ensure access to essential services and employment, reduce community severance, increase physical activity and overall community wellbeing.

SEA Objective	Score	Summary
		Policy includes measures to tackle inequality in access to green / blue corridors by including these factors in behaviour change programmes.
Material Assets	+	Policy supports this objective through reducing the use of fossil fuels through facilitating a mode shift towards active / sustainable travel. Policy supports this objective through use and promotion of existing infrastructure for transport e.g. the core path network, green spaces, the Clyde. Policy promotes use of alternative materials for transport infrastructure to ameliorate heat.
Water	++	Policy supports objective through recognition of river and canal networks as important infrastructure for place making and travel. Policy directly supports objective as requires consideration of the impact of transport infrastructure on water quality and appropriate mitigation where required. Policy supports the protection and enhancement of biodiversity, which would extend to water species / habitats and thus is likely to result in a positive impact on water quality. Policy sets out an approach to flood risk management in relation to transport investment, including statutory requirements for SUDS and FRA.
Biodiversity	++	Policy seeks to enhance and protect biodiversity and so directly supports this objective. Policy sets out how transport infrastructure projects should have due regard to nature/wildlife sites, adhere to the city's LBAP, ensure no net loss of trees, and create green & biodiversity corridors in the city, amongst other actions.
Soil	+	Policy indirectly supports objective as positive impacts for biodiversity would generally be favourable to soils. No specific actions noted in relation to soils.
Cultural heritage	+	Policy indirectly supports objective as facilitating a mode shift towards sustainable travel and away from motorised transport would improve the setting of historic sites and improve accessibility to them.
Landscape	+	Policy indirectly supports objective as facilitating a mode shift towards sustainable travel and away from motorised transport, which would improve the landscape and townscape character and setting of the city. Policy recognises the role of green and blue infrastructure in creating a high-quality public realm.

Table D.9: SEA Assessment of Package 9 ' Access to vital services and opportunities & supporting economic success'

SEA Objective	Score	Summary
Air Quality	+	Indirectly supports objective as policy encourages various initiatives for travelling by sustainable/active means e.g. for journeys to and from school and work, work with the Glasgow Bus Partnership, and as part of the Active Travel Strategy. The policy also

SEA Objective	Score	Summary
		supports business and industry through strategic network of movement for vehicles with mode shift where possible. A mode shift towards sustainable travel would have a positive impact on reducing emissions and improving air quality.
Climate	+	Indirectly supports objective as policy encourages various initiatives for travelling by sustainable/active means e.g. for journeys to and from school and work, work with the Glasgow Bus Partnership, and as part of the Active Travel Strategy. The policy also supports business and industry through strategic network of movement for vehicles with mode shift where possible. A mode shift towards sustainable travel would have a positive impact on reducing emissions and working towards GHG targets.
	+	Indirectly supports objective as policy encourages various initiatives for travelling by sustainable/active means e.g. for journeys to and from school and work, work with the Glasgow Bus Partnership, and as part of the Active Travel Strategy. The policy also supports business and industry through strategic network of movement for vehicles with mode shift where possible. A mode shift towards sustainable travel would have a positive impact on reducing reliance on fossil fuels and promoting the use of clean fuels/technologies.
Population and Human Health	++	Package directly supports this objective as it is concerned with improving access to opportunities and socio-economic success, including for events and tourism within the city. Policy also sets of mechanisms for reducing inequality, e.g. for school children that may not have access to public transport, or for access to employment, healthcare and food. Policy would have a positive impact on employment and education through investment in green job opportunities and training.
Material Assets	+	Policy indirectly supports objective through supporting active and sustainable travel and facilitating last-mile delivery solutions which would reduce the impact of heavy traffic on infrastructure. Policy indirectly supports objective in relation to technology, setting out large scale events in the city may be used to trial innovation.
Water	0	Policy indirectly supports objective through supporting active and sustainable travel which would reduce emissions, thereby reducing pollutants to water from road transport. Not likely to be a significant effect.
Biodiversity	~	There is no clear relationship between this package of policy measures and achieving this SEA objective.
Soil	0	Policy indirectly supports objective through supporting active and sustainable travel which would reduce emissions, thereby reducing pollutants to soil from road transport. Not likely to be a significant effect.
Cultural heritage	+	Policy sets out importance of effective transport system in relation to promotion of Glasgow as a major tourism destination. Encouraging visitors for cultural events is also likely to boost attendance at historical sites.

SEA Objective	Score	Summary
Landscape	+	Policy indirectly supports objective through supporting road space reallocation for active and sustainable travel, and which would result in public realm improvements and improve access to open space and the countryside.

Appendix E: Alternative Packages of Interventions

Glasgow City Council

Glasgow Transport Appraisal Strategic Environmental Assessment

May 2023

Appendix E: Alternative Packages of Interventions

This appendix presents the alternative packages of interventions considered in the Integrated Transport Assessment of which the SEA undertook the environmental component of that assessment.

1.1.1 Package A

The following options were appraised as Package A; cost driven incentives, comprising cost- and regulatory- based 'carrot' and 'stick' measures to influence the changes to travel behaviour need to meet the objectives. These are shown in Appendix A.

Package A Options

Ref	Description	Working Assumptions	Spatial Information	Timescale
PT_Theme_4	Fares and Ticketing	Network wide policies that deliver **cost driven incentives** e.g. revised fare models and targeted interventions around affordability as well as integrated ticketing. Theme consists of elements of: • PT3: Bus fares • P5: Integrated ticketing Assume a general reduction in fares within GCC boundary and access/ticketing is integrated between bus, rail and subway	Network-wide	Quick win
CYC1	Free or heavily subsidised bikes to lower income groups	Discounted access (£3 annual membership) to NextBike Glasgow (normally £60), with 60-minute free hire Assume 1,000 bikes given out per year across city Recipients on very low, or no, income	Not applicable	Quick win

Ref	Description	Working Assumptions	Spatial Information	Timescale
AIR3	Low Emission Zone (LEZ) Phase 2	LEZ applies to all vehicles (with exemptions) Euro 4 petrol & Euro 6 diesels compliant.	Current LEZ boundary	Medium
FREI3	Low carbon freight movement - rail freight, low carbon road-based freight.	Most effective interventions likely to be provision of charging points to encourage take-up of electric LGVs by small business and independent tradespeople (e.g. in construction sector, rather than distribution), coupled with effective enforcement over defined areas. Measures to support the use of very low emission delivery fleets including ease of access for trailer bikes.	Not applicable	Long
GOV2	Public ownership of buses, with implication of lower fares	Similar in concept to Translink in Northern Ireland, providing better integration, less competition between public transport services, structured fares	Not applicable	Long
DM1	City-wide parking policy change	Reduction in on-street and off-street city centre parking spaces from 2,500 to 1,000 (overall), with on-street spaces removed in some locations[1]. Extend charging period until later in evening. Out of city centre-controlled parking zones included in north, east and south of city on a similar scale to current Extend Controlled Parking Zone (CPZ) in west	City centre defined by LEZ boundary. Extend CPZ to include Govan, Pollokshields, inner east end and inner north. Developed further by Strategic Parking Plan project	Medium
DM2	Workplace Parking Levy	Annual charge on employers with 'x' or more liable workplace parking spaces in a defined area, of £y per parking space . The charge could be a flat rate or banded.	Glasgow Workplace Parking Levy Scoping Study[3] - 3 options proposed. Option 1 (city centre zone) tested	Medium

[1] Interview with Steve Gray, GCC Neighbourhoods, Regeneration & Sustainability

[3] Glasgow Workplace Parking Levy Scoping Study - Initial Outline Business Case v1, November 2020

Ref	Description	Working Assumptions	Spatial Information	Timescale
		In Nottingham[2], only spaces used for commuter travel are liable and x = 11. The Glasgow Scoping Study suggests a flat rate charge in the range £300 to £500. Exemptions could apply to disabled spaces, NHS premises, charity volunteers etc		
DM4	Road user charging / congestion charging	Variable charges for different classes of vehicles entering a defined zone (city centre) at specific times of day. Exemptions likely for ultra-low emission vehicles and reduced or zero charges for disabled drivers. Manchester proposed a charge of £2 (outer cordon) + £1 (inner cordon) in 2007 prices. Edinburgh proposed a £2 charge in 2006 prices (£3 in 2021 prices).	City centre zone tested	Medium
DEV5A	City Centre Transformation Plan package of measures	Improvements to pedestrian environment and cycling network, reduction in on-street parking capacity as described above and increase in active travel mode share resulting from the package	City centre boundary – developed further by City Centre Transport Plan and 'Pedestrian First Zone' projects	Medium
DEV6A	Liveable Neighbourhoods Plan package of measures	Focussed on car reduction initially: greatest areas of rat-running / short car trips. Including: filtered permeability and other functional measures of low traffic neighbourhoods	Boundaries as defined by Liveable Neighbourhoods strategy	Medium
DEV7	Pavement parking implementation	Implementation would benefit people walking and wheeling, but could disbenefit general traffic flow, especially goods vehicles.[4]	City-wide (exceptions to be defined)	Medium
STREET1	Streetspace Priority Framework	As existing but with greater disincentives as above (such as parking changes)	City-wide	Quick win

[2] Nottingham Workplace Parking Levy; https://www.nottinghamcity.gov.uk/wpl

[4] Parking Provisions Study for Transport Scotland, Jacobs, 2020

1.1.2 Package B

The following options were appraised as Package B; more efficient use of the current network, comprising measures which reallocate the use of roadspace to active travel and public transport, make better use of existing public transport and water-based transport assets. These are shown in Appendix A.

Package B Options

Ref	Description	Working Assumptions	Spatial Information	Timescale
PT_Theme_2	Quality Enhancements	This option provides general network wide enhancements that **enable more efficient use of the current network and quality improvements** e.g. improved cleanliness, security, information, accessibility. This theme consists of elements of the following options which would be applied network wide including those improvements proposed by the BPF bid: • PT1: Bus service and quality improvements • PT7: Subway modernisation and increased operating hours • PT15: Bus infrastructure.	Network wide	Quick Win
CYC2A	Cycling infrastructure package of measures	Cycle city network as defined in Active Travel strategy - connected core segregated or low traffic cycling network (to agreed standard) across the city serving key destinations and from each 'neighbourhood'	City Network, National Cycle Network & Liveable Neighbourhoods maps	Medium
WLK3	Promoting walking, better information	Improved on-street signage and wayfinding system, using smartphone technology, similar to systems in	City-wide, initial focus on city centre and areas with high volume of walk trips	Quick win

Ref	Description	Working Assumptions	Spatial Information	Timescale
		place in Brighton[5] (Applied Wayfinding), Sheffield[6] (Connect Sheffield) and under development in Dublin[7].		
FREI1	Package of measures to tackle the last mile, light goods vehicles regulation / coordination, cycle logistics. Also enable / improve effective urban deliveries and collections, including waste collection and street cleaning.	• Support the use of very low emission delivery fleets • Investigate the use of micro-fulfilment centres, including click & collect points, automated lockers and local warehouses • Seek to minimise conflicts between needs of HGVs/LGVs servicing commercial premises and needs of other vehicles (especially cycle lanes) • Optimise use of roadspace to provide loading bays, residential/disabled parking, cycle lanes etc • Encourage initiatives to improve packing efficiency and the use of sustainable packing materials Public education campaign re high climate impacts of rapid delivery	Not applicable	Medium
FREI2	Freight distribution centres for heavy goods vehicles	Potential locations should be evenly distributed across the city to serve different geographic sectors, close to the strategic road network and existing/disused rail lines, where existing light industrial land uses are present, with enough coverage to allow low-carbon last mile movements.	Potential sites: • South Street (Whiteinch) • Hillington • Kennishead • Polmadie • Carmyle	Long

[5] Walk Brighton; http://appliedwayfinding.com/projects/walk-brighton/

[6] Connect Sheffield; http://www.atelierworks.co.uk/dev/wayfinding/connect-sheffield.php

[7] http://whereisthecraic.com/

Ref	Description	Working Assumptions	Spatial Information	Timescale
			• Queenslie • Springburn • Garscube Road (Maryhill)	
FREI5	Improve reliability of freight/goods journeys in Glasgow	Smart network operations: understanding key movements and providing improved journey time reliability on key routes, (as currently for bus)	Key locations will include interface of strategic road network to freight distribution hubs above, e.g. reduce delay at M8 J19 for Clydeside Expressway of M8 J25 for Clyde Tunnel.	Medium
SOFT2	Mobility as a Service	Sharing of cars and bikes, improving access to public transport information and efficient use of parking capacity to promote low-carbon travel choices by public and businesses.	City-wide	Medium
SOFT3	Behaviour change campaigns to promote sustainable travel as the first choice	Apply best practice examples from Smarter Choices, Smarter Places programme in targeted areas to maximise impact.	Targeted areas to be defined	Quick win
TECH1	Priority for pedestrians at all signals	Pedestrian delay is less than vehicle delay	City-wide	Quick win
GOV4	Bus Service Improvement Partnership	Quality improvements to buses including accessibility of vehicles and bus stops, more bus priority on-road, improve passenger security at stop/on board Improved journey time and journey time reliability, more attractive buses	Not applicable	Medium
WAT1	River based movement of goods and people	Focus on the Clyde, connections between SECC, Science Centre, new Barclays site, City Centre and Glasgow Green. Assume weir at Glasgow Green is upstream terminus of service.	City Deal and City Development Plan River Clyde charts Key locations: • SECC • QEUH	Medium

Ref	Description	Working Assumptions	Spatial Information	Timescale
			• Glasgow Green • Transport Museum • Barclays Office Campus • City Centre Quay • Braehead • Pacific Quay	
WAT2	Forth and Clyde Canal based movements of goods and people	Key locations within Glasgow that could be served along the canal and key constraints to this (e.g. significant locks such as at Maryhill). Very slow movement – journey time not the key driver	Canal network maps Key locations: • Speirs Wharf (City Centre connection) • Clay Playpits (Leisure) • Lambhill (residential) Barriers: • 17 locks • Low hanging and swing bridges	Medium
DM3	Road safety: Speed related interventions	Reduce default speed limit from 30mph to 20mph across city. Assume higher speed limit roads unchanged. Change to enforcement regime	City-wide Higher speed limit roads unchanged: • All motorways • Clydeside Expressway • Eastern section of the A8 • A803	Quick win
DM5	Road safety targets & updated road safety plan	Default speed limit of 20mph in city centre Reducing car use, particularly at peak times, introducing segregation where possible Longer pedestrian crossing times at some junctions	City-wide	Quick win

Ref	Description	Working Assumptions	Spatial Information	Timescale
ROAD3	Managed motorways	Bus hard shoulder running[8] on: • M80 Junctions 4 to 1 (inbound only) • M77 Junctions 5 to 1 (inbound only) • M8 Junctions 20 to 28 (both directions) • M80 Junction 1 to M8 Junction 15 - motorway lane reallocated to bus only System to be managed with an improved ITS / Managed Motorway system on the M8 Junctions 20 to 29, M77 Junction 5 to M8 and M80 Junction 4 to M8.	As described These bus hard shoulders connecting onto the Bus Priority Corridors as follows: • M77 managed motorway connects to Corridor 8a at M77 Junction 1 • M8 managed motorway connects to Corridor 8A at M8 Junction 22/21 • M80 managed motorway connects to Corridor 3 at M80 Junction 1	Long
ROAD5	Road Improvements (M8 Junction 15)	Rationalise local road network at the Townhead Interchange to accommodate a new bus interchange, improve traffic circulation and deliver local environmental improvements.	J15 and connections to Cathedral Street / hospital	Medium
ROAD6	Improved maintenance over and above current standards	All existing and new cycle routes are maintained regularly to maximise availability (i.e. not iced over or ponded) All bus routes would be prioritised over other parts of the local road network, plus maintaining bus shelters and walking routes to bus stops.	City-wide	Medium
DEV4A	Improved operation of the Clydeside Expressway	Less delay for vehicles accessing M8 at Anderston (with implication that less congestion on this movement would reduce delay for freight and bus). Limitations in the SRTM coding of this junction result in a negligible impact in model outputs.	M8 Junction 19	Medium

[8] Managed Motorways Study for Transport Scotland, Jacobs, unpublished

Ref	Description	Working Assumptions	Spatial Information	Timescale
DEV5B	City Centre Transformation Plan package of measures	Car parking reduction as defined in Package A, plus reallocation of half roadspace to walk/cycle/place Improvements to pedestrian environment and cycling network, car parking related options linked to charging/availability/volume, improvements to bus journey times, last mile & loading related options. Car free streets as defined by city centre team	City centre boundary	Medium
STREET2	Streetspace Priority Framework	Wider footways and pedestrian space in all local centres Kerbside space is managed dynamically to reduce pressure on loading/parking/bus lanes Space is reallocated to cycle tracks and/or bus lanes Where space is constrained, space will be prioritised to cycling in line with Sustainable Travel Hierarchy	City-wide	Quick win

1.1.3 Package C

The following options were appraised as Package C; improved local connectivity, focussing measures on providing improved connections between local centres and neighbourhoods, through space reallocation and targeted network improvements. These are shown in Appendix A.

Package C Options

Ref	Description	Working Assumptions	Spatial Information	Timescale
PT_Theme_3	New services to address gaps in the network	This option relates to extended network coverage via new routes and services **to improve local connectivity, where evidence of need is greatest.** This theme consists of elements of: • PT1: Bus service and quality improvements • PT2: Demand responsive transport • PT6: New rail stations • PT17: Level of service (providing greater certainty for passengers on the service they will receive from different components of the PT network, in terms of frequency, capacity, journey time and other metrics. These criteria will be developed by ongoing work by Clyde Metro and the Strathclyde and Glasgow Strategic Bus Network Plan)	Bus • Gaps in bus network, focussing on orbital movements in north and west of the city New Stations • Parkhead Forge Other stations that may be duplicated by Metro proposals (Package D) • Glasgow Cross • West Street • Drumchapel (West) • High Street (relocation) **Error! Reference source not found.** is a map showing gaps in the public transport network	Quick Win/Medium
CST1	Enhanced role of community transport	Improve coverage and encourage patronage increase of CT services.	• Focus on older and disabled persons and disadvantaged communities • Focus on access to hospitals and integration with existing public transport.	Medium
SM1	Mobility Hubs as per STPR2 definition	The co-location of public and shared mobility modes; the redesign of space to reduce private car space and improve the surrounding public realm; and clear signage identifying the space as a mobility hub which is part of a	Large interchanges/city hubs e.g. Queen Street, Glasgow Central, Partick. Transport corridor, smaller interchanges/linking hubs Business park/new housing development hubs	Quick win/Medium

Ref	Description	Working Assumptions	Spatial Information	Timescale
		wider network (ideally providing digital travel information)	Suburbs/mini hubs e.g. Easterhouse, Shawlands, Pollok, Parkhead Tourism hubs e.g. SECC **Error! Reference source not found.** shows indicative locations	
SM2	E-scooters in Glasgow	Availability of e-scooters as part of NextBike system	Same as NextBike	Medium
CYC2B	Cycling infrastructure package of measures	Connections within/between local neighbourhoods (not radial routes)	City Network, National Cycle Network & Liveable Neighbourhoods maps	Medium
WLK1	Walking / pedestrian package of infrastructure measures	Strategic enhancements to functional routes such as widening or adding new sections of footway (leisure-based routes set out in Open Space Strategy); systematic approach to dropped kerbs on key routes; lighting enhancements on key routes; improved & consistent signage/wayfinding. Improvement to network coherence, providing a high quality and continuous network should increase mode share for active travel. Streets would have high level of walking service, and that walking provision is prioritised in space and time above other modes. Commitment to certainty of experience.	City-wide Adopted LDP Core paths Spaces for people - Sustrans (open data)	Quick win
SOFT1	Rebranding of sustainable transport system	Behaviour change campaigns on sustainable travel especially public transport, better integrated public facing information on sustainable transport	City-wide	Quick win

Ref	Description	Working Assumptions	Spatial Information	Timescale
GOV1	Transport governance – single body overseeing transport in Glasgow (and possibly region) – link to SOFT1	Better integration, less competition between public transport services, structured fares; similar structure to Transport for Greater Manchester or Merseytravel.	Not applicable	Medium
WAT3	New river crossings such as Clyde Corridor SDF note on new crossing linking Tradeston Bridge & Clyde Arc, and identification of gap in crossings west of new (committed) Govan-Partick bridge	New river crossings, such as: 1. Yorkhill to Thornwood 2. Govan to Yorkhill 3. Science Centre to Govan 4. Springfield Quay to Anderston 5. Scotstoun to Braehead	Proposed crossings mapped as per River Clyde Development Corridor SDF (2020)	Long
ROAD2	New road capacity schemes with sustainable transport allocation (footways & crossings, cycleways, space for public transport)	North Clydeside Development Route runs parallel to Dumbarton Road, could act as a relief road to help bus priority through Yoker, and link to new road bridge to Renfrew East End Regeneration Road phase 3 – connecting Biggar Street up to M8. Was due to be 4-lane road; assume potential bus and cycle provision on some of these lanes and 1 lane of traffic in each direction Northern Circumferential Route (connecting Maryhill, Milton and Springburn) Summerston and Easterhouse Regeneration Routes as marked on CDP figure 18:	As described	Medium
DEV4B	Redesign of Clydeside Expressway (and Springburn Expressway) - prioritising walking and cycling and improving	At-grade crossings and signalised junctions to improve connectivity and enhance permeability on the Clydeside Expressway: • Anderston • Finnieston • Kelvinhaugh	As described	Long

Ref	Description	Working Assumptions	Spatial Information	Timescale
	crossing arrangements at key nodes	• Ferry Road And on the Springburn Expressway: • Royston • Sighthill • St Rollox		
DEV6B	Liveable Neighbourhoods Plan package of measures	More rounded placemaking approach: facilitating more local trips within neighbourhoods and between adjoining neighbourhoods (walk and cycle)	Liveable Neighbourhoods	Medium
STREET3	Streetspace Priority Framework	Wider footways and pedestrian space in all local centres Segregated cycle routes delivered Bus or Metro is prioritised where it facilitates new neighbourhood or orbital connections Where conflict for space exists, placemaking takes priority over higher capacity movement functions	City-wide	Quick win

1.1.4 Package D

The following options were appraised as Package D; enhanced radial capacity, focussing measures on established radial corridors to improve walking, cycling and public transport access and levels of service on these corridors. These are shown in Appendix A.

Package D Options

Ref	Description	Working Assumptions	Spatial Information	Timescale
PT_Theme_1	Bus/Transit Corridor Enhancement – Infrastructure & Services	This option provides new corridor infrastructure to provide **enhanced radial capacity**. This theme consists of elements of the follow sub-options which would be applied on high demand corridors: • PT1: Bus service and quality improvements • PT8: Metro scheme • PT15: Bus infrastructure • PT16: FastLink Phase 2	Proposed metro route network Bus corridors: • Springburn Road • Robroyston Road • M8 – Gartloch Road • Edinburgh Road • Hamilton Road • Shettleston Road • Dalmarnock Road • Aitkenhead Road • Pollokshaws Road • Glasgow to Barrhead • Paisley Road West • Shieldhall Road/Govan Road • Dumbarton Road • Great Western Road • Maryhill Road • Balmore Road	Medium/Long
PT_Theme_5	Park & Ride / Modal Integration	Enhanced access to public transport from all modes. Includes elements of: • PT5: Integrated ticketing	At key radial interchange points on the 16 identified corridors, also taking into account metro proposals. Potential locations are shown in **Error! Reference source not found.** and include:	Medium

Ref	Description	Working Assumptions	Spatial Information	Timescale
		• PT9: Park and Ride at city centre outskirts • PT10 Park and Ride at city outskirts This option links closely with SM1 – Mobility Hubs.	• Carmyle and surrounding area (linking to M74, national rail, Shettleston Road bus corridor, metro proposals and radial cycle route) • Castlemilk and surrounding area (linking to Aitkenhead Road bus corridor, metro proposals and local cycle connector routes) • Silverburn and surrounding area (linking to M77, Glasgow to Barrhead bus corridor, metro proposals and local cycle connector routes) • Clydeside Expressway/Scotstoun and surround area (linking to Dumbarton Road bus corridor, metro proposals and cycle connector routes • Maryhill and surrounding area (linking to Maryhill Road bus corridor, local rail and local cycle connector routes) • Possilpark and surrounding area (linking to Balmore Road bus corridor, local rail, metro proposals and local cycle connector routes)	
CYC2C	Cycling infrastructure package of measures	Focus on radial capacity (active freeways)	City Network, National Cycle Network & Liveable Neighbourhoods maps	Medium
CYC6	Expansion of NextBike	128 additional 'stations' to improve access in areas currently poorly-served, especially high trip generators and areas of multiple deprivation; e.g. every train/subway station, university, college and other relevant locations, including hospitals, community centres, retail centres and parks.	City-wide, with focus on high SIMD areas. Outer areas would have at least one station every 2 km^2 and inner areas have one station every 0.5 km^2	Quick win

Ref	Description	Working Assumptions	Spatial Information	Timescale
WLK2	M8 Cap project	Covering the M8 between Junctions 18 & 19 to provide surface-level connections and parks between City Centre and Finnieston / Woodlands. Modelled by adding walk links with improved speeds.	Polygon drawn over the specified area. The road layout is undefined.	Medium
DEV3	Overcoming severance of M8 for walking access to city centre	Improved crossing opportunities at Anderston, Woodlands, Garscube, Cowcaddens to enhance walking and cycling access to/from/across/under M8 & Clydeside Expressway. These were developed separately from active travel network proposals, by identifying potential locations where specific severance due to the M8 and Clydeside Expressway could be reduced.	As described	Medium
GOV3	Franchise system for buses	Better integration, less competition between public transport services, structured fares. More certainty of service performance. Potentially easier to implement than other governance options.	Not applicable	Medium
TECH2	Development / promotion of Connected & Autonomous Vehicles (CAVs)	Assumed conversion of up to 20% of fixed route bus services to Autonomous Vehicles operating on same fixed routes with no change in service frequency or capacity by 2030	Not applicable	Medium
DEV5C	City Centre Transformation Plan package of measures	Improvements to pedestrian environment and cycling network, car parking related options linked to charging/availability/volume, improvements to bus journey times, last mile & loading related options.	City centre boundary	Medium
STREET4	Streetspace Priority Framework	Segregated cycle routes delivered on radials; Bus and/or Metro is delivered on radials: Where conflict for space exists between the two, this will be resolved by examining the level of service achieved for	City-wide	Long

Ref	Description	Working Assumptions	Spatial Information	Timescale
		each mode on a 'sector' basis (e.g. ensuring highest level of service is achieved for cycling and public transport on either Alexandra Parade or Duke Street, based on greatest need/benefit for the potential demands on each street) To facilitate this, through traffic is limited from 'inner orbital', and comprehensive parking plans are established for each street		