Glasgow City Centre Transformation Plan

AUGUST 2021

Reference number GB01T21A73

CASE FOR CHANGE

Glasgow CITY COUNCIL

IronsideFarrar EnvironmentalConsultants

SYSTRA

GLASGOW CITY CENTRE TRANSFORMATION PLAN

CASE FOR CHANGE

IDENTIFICATION TABLE	
Client/Project owner	Glasgow City Council
Project	Glasgow City Centre Transformation Plan
Study	Case for Change
Type of document	Report
Date	August 2021
Reference number	GB01T21A73
Number of pages	155

APPROVAL					
Version	**Name**		**Position**	**Date**	**Modifications**
1	Author	JH, AC, EE, SB, JT, NB, DC, KM, JF, DC	Various	June 2021	Comments on working draft
	Checked by	JH	PM	June 2021	
	Approved by	JH	PM	June 2021	
2	Author	JH, AC	PM, A	July 2021	Minor updates following stakeholder comments
	Checked by	JH	PD	July 2021	
	Approved by	DC	PD	July 2021	
3	Author	JH, SB	PM, STP	August 2021	
	Checked by	JH	PM	August 2021	
	Approved by	DC	PD	August 2021	

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1. INTRODUCTION

1.1 Background

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

1.1.2 The CCTP will help:

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

1.2 Purpose of this report

1.2.1 The purpose of this report is to present an evidence-based Initial Appraisal: Case for Change for the CCTP. It provides relevant policy, socio-demographic and transport information related to the study area which leads to the identification of the key transport problems, issues, opportunities and constraints facing the city centre. These are informed by stakeholder and public engagement.

1.2.2 The report also sets out the Transport Planning Objectives (TPOs), established to address the identified problems and opportunities in the area, and reflect relevant national, regional and local policy drivers. Moreover, a list of potential options, that could help alleviate the identified or perceived problems, and realise the potential opportunities, is presented. The report then concludes with recommendations and next steps.

2. METHODOLOGY

2.1.1 The following sections summarise the various studies and approaches informing the Case for Change.

2.2 Scottish Transport Appraisal Guidance

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

- Pre-Appraisal (Initial Appraisal: Case for Change): where the problems, opportunities, issues and constraints are identified and scoped. Study-specific Transport Planning Objectives (TPOs) are then set out and the generation process undertaken to provide a list of possible options to address the problems and opportunities;
- Initial Appraisal (Preliminary Options Appraisal): potential options are appraised against the TPOs, five STAG criteria and factors concerning deliverability, to ensure that they are likely to fulfil the study's requirements;
- Detailed Appraisal (Detailed Options Appraisal): involving more detailed consideration of potential options taken forward following the Initial Appraisal, and presenting the outcomes to inform investment decision makers. The Detailed Appraisal also includes proposals for monitoring and evaluation; and
- Post-Appraisal: key elements of this stage involve the application of the monitoring and evaluation proposals developed as part of the appraisal.

2.3 Stakeholder Engagement

2.3.1 Consultation and engagement are both important aspects of the STAG process. They provide an opportunity for stakeholders and local community to contribute to the various stages of the appraisal process and can add value to a greater understanding of challenges and opportunities.

2.3.2 It is recognised that large scale consultations were already undertaken by Glasgow City Council during 2019-2020, as part of the development of their district, local and regional transport strategies. The findings from these consultations were supplemented by the project team's engagement with key stakeholders in 2021, in order to verify, and where appropriate, update the findings, as well as to further develop an understanding of the current situation and the Case for Change.

2.4 Baseline data

2.4.1 A wide range of information and data sources was used to help establish the current situation within the study area. Whenever possible, the latest available data was used and included:

- Census 2011;
- National Records for Scotland;
- Scottish Household Survey;
- Transport Scotland data including transport forecasts;
- Office of Rail Regulator station surveys;

- Official labour market statistics (NOMIS);
- NHS health profiles;
- Glasgow City Council local data; and
- Open source map and GIS resources.

2.4.2 Where Census 2011 data was used as an evidence, a comparison with more-recent local datasets was provided, where possible, to provide reassurance that, although the 2011 Census data is now over 10 years old, it is still reasonable to make use of its massive sample size and sophisticated statistical rigour to provide valuable insights into the relevant demographic and commuting patterns. Local knowledge can be applied to any locations which are known to have undergone significant demographic change since 2011.

3. POLICY CONTEXT

3.1 Overview

3.1.1 There are a number of wider transport, planning, and economic policies and plans as well as existing studies that will inform the development of the transport appraisal. These include those, as listed below. For ease of reference, web links are provided for all the documents, where available.

National Policies and Plans:

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

Regional

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

City

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

City Centre

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

3.1.2 Figure 1 shows how the policies and plans fit together.

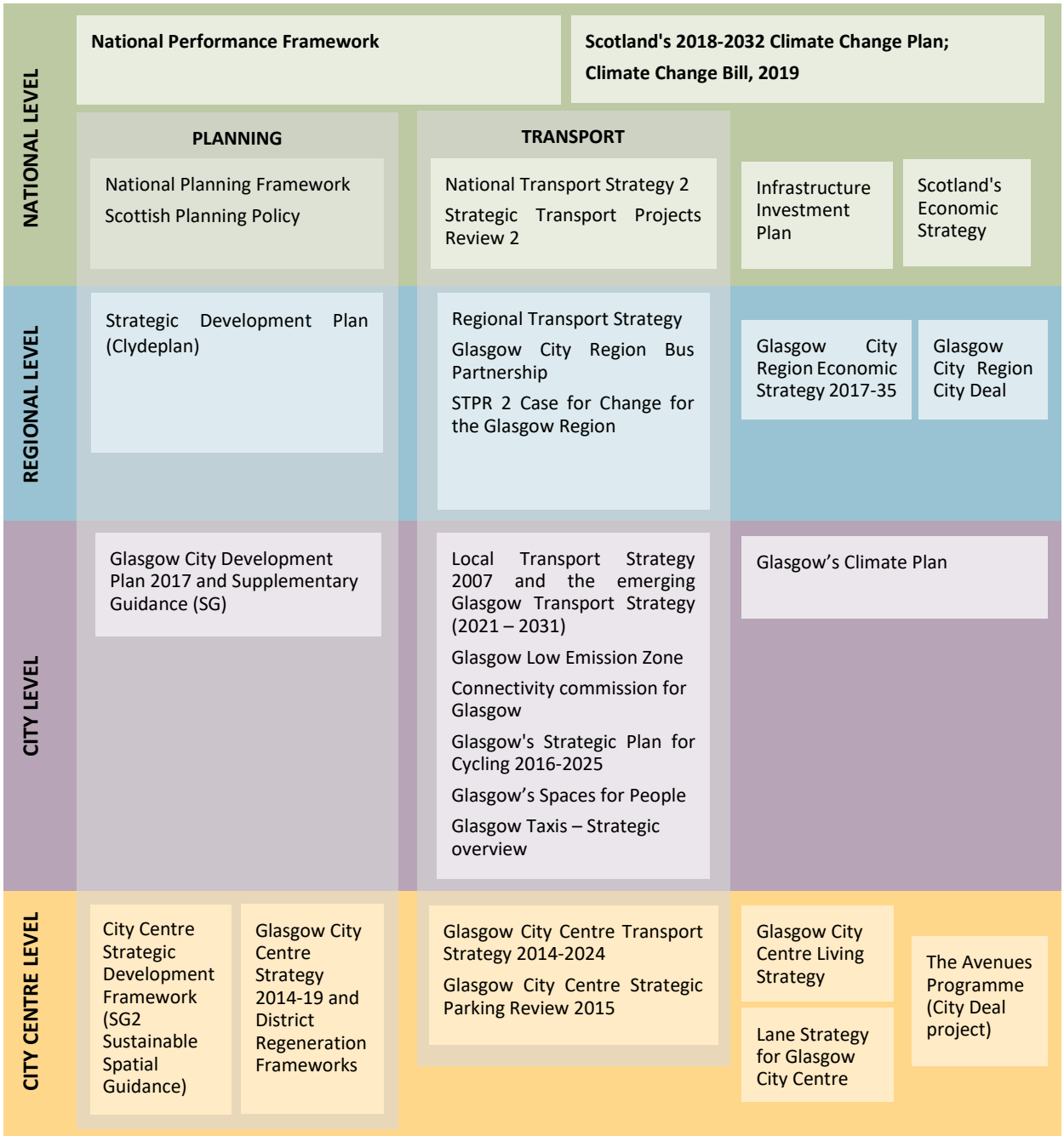


Figure 1. Key policies and plans

3.2 National Policies and Plans

National Performance Framework, 2018

3.2.1 The National Performance Framework is a Scottish Government initiative, aiming to: create a more successful country; give opportunities to all people living in Scotland; increase the wellbeing of people living in Scotland; create sustainable and inclusive growth; and reduce inequalities and give equal importance to economic, environmental and social progress.

3.2.2 The framework has set out 11 National Outcomes linked to the United Nations Sustainable Development Goals and reflecting 'the values and aspirations of the people of Scotland' and 81 National Indicators to measure progress, including a range of economic, social and environmental indicators.

3.2.3 Whilst the contribution of transport is implicitly considered in the framework in the support to communities and the economy, under the Health outcome, 'journeys by active modes' are considered explicitly as one of the National Indicators. The latest indicators note that performance has been worsening since 2012; although the proportion of journeys under 5 miles made by bike increased from 1.5% in 2012 to 1.8% in 2018, the proportion of journeys under 2 miles made on foot fell from 48.5% to 43.0%. Recent grant funding from the Scottish Government via the 'Places for Everyone' initiative has been awarded to GCC to enable a contribution to the Scottish Government's aim for a healthier, environmentally sustainable nation with a strong economy and communities, as laid out in the National Performance Framework.

National Planning Framework 3 (NPF3), 2014 & Emerging National Planning Framework 4 (NPF4)

3.2.4 NPF3 highlights the importance of 'place', and identifies where the national priorities for investment should take place to support the core aim in the Government's Economic Strategy for sustainable economic growth. The four National Planning Outcomes identified are:

- A successful, sustainable place;
- A low carbon place;
- A natural, resilient place; and
- A connected place.

3.2.5 More walking and cycling and public transport use in Glasgow City Centre by more people would directly contribute to all four of these outcomes.

3.2.6 The NPF3 strategy indicates that one of the Scotland's city regions to be developed is Glasgow and Clyde Valley Area. It states that Glasgow city centre "is the key economic asset for the region, and contains a number of significant opportunities for investment, most notably its waterfront area". It goes on to note that the rail network also continues to improve and progress has been made on electrification and more work is planned on key routes, including Edinburgh and Glasgow. Phase 1 of the Edinburgh to Glasgow Improvements Programme will reduce journey times across the Central Belt. Beyond the mid-2020s, there is a clear need to further improve capacity between Edinburgh and Glasgow with consequent opportunities to reduce journey times even further and that need could be met either by proceeding with EGIP Phase 2 or by constructing a fast rail connection between Edinburgh and Glasgow. In Glasgow, as it is mentioned in the NFP3 strategy, their aim is the modernisation of the subway, and Fastlink providing rapid bus transport between the city centre and key locations including the SECC and the new South Glasgow Hospital.

3.2.7 The National Planning Framework 4 (NPF4) is currently under development, with initial work suggesting a focus on achieving the target of net zero emissions by 2045, with a much greater focus on sustainable transport, health and wellbeing in planning processes and delivery. Of relevance for the City Centre Transformation Plan are discussions on the principle of the "20-minute neighbourhood/settlement" (having access to all goods and

services we need within a twenty minute walk or cycle from home), and the possibility of requiring "Health Impact Assessments" for major developments.

3.2.8 The new spatial strategy will also support developments that help to maintain and strengthen strategic transport and digital connectivity. It notes that connectivity should be a shared priority from local, through regional to national levels.

3.2.9 The policies will also focus on the quality, functionality, usability, accessibility, inclusiveness and future maintenance of green space. Support will be strengthened for development in town centres and restricting out-of-town retail and leisure. This is in order to help make the transition away from car-dependent developments to those that enable walking, cycling, wheeling and public transport accessibility.

Scottish Planning Policy, 2014 (revised 2020)

3.2.10 Scottish Planning Policy (SPP) was published on 23 June 2014 and last updated in 2020. It sets out national planning policies which reflect Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. The SPP promotes consistency in the application of policy across Scotland while allowing sufficient flexibility to reflect local circumstances. It directly relates to:

- The preparation of development plans;
- The design of developments, from initial concept through to delivery;
- The determination of planning applications and appeals.

3.2.11 In relation to this study, the SPP identifies a need to shift to more sustainable modes of transport to help meet the Scottish Government's greenhouse gas emission targets. Tackling congestion will also help support sustainable economic growth. The Policy requires that planning authorities should support development that reduces the need to travel and facilitates travel by walking, cycling, public transport and freight movement by rail and water.

National Transport Strategy 2, 2020

3.2.12 Published in February 2020, the NTS2 sets out a vision for transport system for the next 20 years, based on the following vision for Scotland:

"We will have a sustainable, inclusive, safe and accessible transport system, helping deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors."

3.2.13 Four priorities and associated outcomes develop the vision in more detail. These are:

- Reducing inequalities
  - Will provide fair access to services we need
  - Will be easy to use by all
  - Will be affordable by all
- Taking climate action
  - Will help deliver our net zero target

- Will adapt to the effects of climate change
- Will promote greener, cleaner choices

- Helping deliver inclusive economic growth

  - Will get people and good where they need to get to
  - Will be reliable, efficient and high quality
  - Will use beneficial innovation

- Improving our health and wellbeing

  - Will be safe and secure for all
  - Will enable us to make healthy travel choices
  - Will help make our communities great places to live

3.2.14 The NTS2 also places the sustainable travel hierarchy and investment at the heart of decision-making in transport, both are illustrated below:

Figure 2. Sustainable Travel Hierarchy

Figure 3. Sustainable Investment Hierarchy

Infrastructure Investment Plan for Scotland 2021-22 to 2025-26

3.2.15 The Scottish Government's Infrastructure Investment Plan was published in early 2021 and sets out the priorities for investment in public infrastructure in Scotland for the next

five years. The plan has adopted the following vision: *Our infrastructure supports Scotland's resilience and enables inclusive, net zero and sustainable growth.*

3.2.16 In delivering this vision, the Infrastructure Investment Plan will focus on three core strategic themes for guiding investment decisions in Scotland:

- Enabling the transition to net zero emissions and environmental sustainability;
- Driving inclusive economic growth; and
- Building resilient and sustainable places.

3.2.17 Key Investments relevant to the study include:

- £60 million to support climate adaptation and resilience in our trunk road network;
- Over £550 million will be invested over 5 years in active travel, including £50 million dedicated to Active freeways;
- £120 million of new investment in the transition to net zero electric buses;
- Over £1.2 billion to be invested in major rail improvements, including £550 million for dedicated rail decarbonisation projects, and £3.8 billion for rail passengers and rail freight;
- £525 million investment to deliver the next five years of £5 billion city region and regional growth deals;
- Doubling investment in bridge and roads maintenance, enhancing safety with a programme of around £1.5 billion over five years; and
- Investing £275 million to support community-led regeneration and town centre revitalisation as part of a new Place Based Investment Programme.

Scotland's Economic Strategy, 2015

3.2.18 Scotland's Economic Strategy focuses on "the two mutually supportive goals of increasing competitiveness and tackling inequality". The Strategy outlines the following four priorities to support sustainable growth across the country, which this study will take cognisance of. The priorities include:

- Investing in our people and our infrastructure in a sustainable way;
- Fostering a culture of innovation and research and development;
- Promoting inclusive growth and creating opportunity through a fair and inclusive jobs market and regional cohesion; and
- Promoting Scotland on the international stage to boost our trade and investment, influence and networks.

Strategic Transport Projects Review 2, 2021

3.2.19 The second Strategic Transport Projects Review (STPR2) is a review of the strategic transport network across all transport modes in Scotland, which will inform the national transport investment for the next 20 years.

3.2.20 STPR2 will report in two phases - the Phase 1 recommendations for transport investment were published in February 2021; with Phase 2 recommendations reporting in Autumn 2021.

3.2.21 The Phase 1 process has resulted in 20 short term interventions being recommended, against eight themes, as follows:

- Supporting smart and sustainable travel across Scotland
  - 1. Development and Delivery of Active Freeways
  - 2. Expansion of 20mph zones
  - 3. Influencing travel choices
- Creating smart and sustainable towns and villages
  - 4. Transport's contribution to placemaking principles in neighbourhoods
  - 5. Guidance and framework for delivering mobility hubs
- Improving accessibility in rural and peripheral areas and for vulnerable groups
  - 6. Investment in Demand Responsive Transport and Mobility as a Service
- Transforming cities
  - 7. Reallocation of road space for active travel
  - 8. Enhancing facilities at major rail stations [including at Glasgow Central)[1]
  - 9. Development of Glasgow Metro[2] & Edinburgh Mass Transit strategies
- Enhancing public transport provision
  - 10. Re-allocation of road space for buses[3]
  - 11. Supporting integrated journeys at ferry terminals
  - 12. Infrastructure to provide access for all at rail stations
- Supporting transition to low-carbon transport
  - 13. Investment in low carbon and alternative fuel systems
  - 14. Delivery of Rail Decarbonisation Programme (Phase 1)
- Supporting a viable freight industry
  - 15. Strategy for improving rest and welfare facilities for hauliers
  - 16. Infrastructure to encourage rail freight
- Enhancing safety and resilience on the strategic transport network
  - 17. Investment in the trunk road network asset
  - 18. Access to Argyll and Bute (A83)
  - 19. Investment in ferries and ports
  - 20. Speed Management Plan

3.2.22 Phase 2 will report later in 2021 and will inform the Scottish Government's medium and longer term (next 20 years) investment plans and spending reviews.

[1] This includes a review of existing infrastructure capacity and identification of short-term improvement measures to enable longer and/or more frequent train services at Glasgow Central.
[2] Glasgow 'Metro' aims to improve connectivity within the Greater Glasgow conurbation (Glasgow City, East and West Dunbartonshire, North and South Lanarkshire, East Renfrewshire and Renfrewshire). Options may include bus rapid transit, tram, light rail and/ or metro rail, with the network complementing and being integrated with the bus and heavy rail networks. It may include completely new alignments, re-use of disused former railway alignments and/or the conversion of existing rail alignments to a new mode. While corridors are not yet defined, it is envisaged that these would focus on integrating with major transport hubs such as Glasgow Central and Queen Street railway stations, Glasgow Airport and suburban interchanges.
[3] Reallocation of road space on the motorway network through Glasgow (as committed within the Programme for Government in 2019) by introducing bus priority measures at identified locations, variable speed limits for buses on the mainline, and interventions to improve access onto the local network (e.g. ramp metering)

Climate Change Bill, 2019 & Climate Change Plan, 2018 (Updated 2020)

3.2.23 A Climate Emergency was declared by the Scottish and UK Governments in 2019. The subsequent Climate Change Bill commits the Scottish Government to a target of net zero emissions of all greenhouse gases by 2045, with a legally binding target of reducing these by 75% by 2030 across Scotland.

3.2.24 The updated Climate Change Plan was first published in 2018, with amendments made in light of the Covid-19 pandemic in December 2020, setting out the strategy until 2032 to allow Scotland to become carbon neutral by 2045. The plan notes that Scotland is committed to a green recovery from the Covid-19 pandemic, which captures the opportunities to transition to net zero.

3.2.25 In transport, commitment and actions are aligned with the NTS2, combining technological advances with measures to enable mode-shift; i.e.:

- Commit to lowering car kilometres undertaken by 20% by 2030;
- Phase out the need for new petrol and diesel cars and vans by 2030, moved forward to 2025 for public bodies;
- De-prioritise single occupancy car trips;
- Support public transport, walking and cycling transformational projects; and
- Engage with the public and encourage individuals to move towards low carbon living.

3.3 Regional Policies and Plans

Regional Transport Strategy

3.3.1 The existing Regional Transport Strategy covers the period 2008-2021. Its key objectives include:

- Safety and Security – to improve safety and personal security on the transport system;
- Modal Shift – to increase the proportion of trips undertaken by walking, cycling and public transport;
- Excellent Transport System - to enhance the attractiveness, reliability and integration of the transport network;
- Effectiveness and Efficiency – to ensure the provision of effective and efficient transport infrastructure and services to improve connectivity for people and freight;
- Access for all – to promote and facilitate access that recognises the transport requirements of all;
- Environment and Health – to improve health and protect the environment by minimising emissions and consumption of resources and energy by the transport system; and
- Economy, Transport and Land-use Planning – to support land-use planning strategies, regeneration and development by integrating transport provision.

STPR 2 Case for Change for the Glasgow Region, 2021

3.3.2 The STPR 2 Case for Change for the Glasgow Region constitutes the first phase of STAG and sets out the evidence base for problems and opportunities linked to the strategic transport network across the Glasgow City Region, drawing on relevant data analysis, policy review and stakeholder engagement. The problems highlighted through data analysis, the stakeholder engagement and informed by the policy review, were:

- Social Exclusion: The region has the highest levels of deprivation across the regions in Scotland. Overall the region has 32.0% of data zones in the most deprived quintile and this is particularly acute in Glasgow City with 45.4% in the most deprived quintile and 30.4% in the most deprived decile;
- Transport Poverty: the region demonstrates wide variance in terms of both transport poverty and levels of expenditure spent on transport. Those further away from Glasgow City are most at risk of transport poverty;
- Physical Activity and Health: the SIMD health indicators show that the region also suffers from relatively poor health with a mixed picture across the area;
- Air Pollution: Air pollution is a problem in the Glasgow region and there are a number of air quality management areas and a low emission zone in place to tackle this;
- Accessibility: Levels of access vary considerably across the region with many parts in the lowest decile of SIMD Geographic Access;
- Connectivity: Whilst connectivity into Glasgow City is generally good cross regional connections are considered by stakeholders to be poor. A gap exists between Queen Street and Glasgow Central rail stations that acts a barrier to integrated travel;
- Active Travel: Despite relatively good levels of possible penetration of the region by bike, cycling is poorly represented in the mode share for the region;
- Safety: With the exception of bicycle, safety across all road-based modes is improving in the region. Safety for cyclists is getting worse according to accident statistics with an 18% increase in average accidents in the 2014 to 2018 period compared to the 2004 to 2008 period; and
- Capacity constraints: Capacity issues have led to congestion particularly at peak times. Overcrowding on peak time rail services is identified within Network Rail's Scotland Route Study and echoed through consultation.

3.3.3 The opportunities that were highlighted in the Glasgow area were:

- The Climate Emergency which is considered to provide a base upon which sustainable interventions that do not favour private car use would be more publicly acceptable;
- A strong economic base that Glasgow City Region currently has and which offers solid asset to build upon;
- Technology offers the potential for better ways to work, connect and inform people of transport choices as well as advances around lower emission fuels;
- The Glasgow City Region night time economy offers a good base of economic activity that could benefit from improved access; and
- The Transport (Scotland) Act 2019 which alters the powers available to Local Authorities allowing them the opportunity to address some transport problems in their area.

3.3.4 The objectives were aligned with the national STPR2 objectives:

- A sustainable strategic transport system that contributes significantly to the Scottish government's net zero emissions target.
    - Reduce the consumption of fossil fuels through managing travel demand and enable a shift to more sustainable modes of transport in the Glasgow City Region.
    - Increase the share of active travel, particularly for shorter everyday journeys within the region and as part of longer multi-modal end-to-end journeys.
    - Increase the share of public transport, with a particular focus on the key corridors in the region that link to the main current and future employment centres.
    - Reduce emissions generated by the strategic transport system.
- An inclusive strategic transport system that improves the affordability and accessibility of public transport.
    - Increase public transport share by improving the interchange opportunities for active travel and public transport modes to facilitate integrated journeys across the region.
    - Improve mobility and inclusion, with a particular focus on improving inclusion in locations identified as being in the 15% most deprived zones (according to SIMD).
    - Reduce transport poverty in relation to the level of household income spent on transport, particularly in more deprived areas of the region.
    - Reduce the reliance on private car, by improving public transport as a viable alternative for a greater proportion of the region's population to access hospitals, key employment centres and further education opportunities (university/colleges) in the region.
- A cohesive strategic transport system that enhances communities as places, supporting health and wellbeing
    - Reduce demand for unsustainable travel and the adverse impacts of transport on people and places/communities by supporting and embedding place principles in the strategic transport system across the region.
    - Increase the share of active travel, particularly for shorter everyday journeys within the region and as part of longer multi-modal end-to-end journeys.
    - Reduce demand for unsustainable travel arising from nationally significant growth areas, taking cognisance of the emerging NPF4, and local development plans.
- An integrated strategic transport system that contributes towards sustainable inclusive growth in Scotland
    - Increase sustainable labour market accessibility to key centres for employment, education and training particularly focused on those areas not well served by public transport and recognising demand for cross regional movements.
    - Increase competitive transport access to key domestic and international markets, by reducing costs and improving journey time reliability for commercial transport, including via cross border road and rail, and to Clyde Ports, and Glasgow airport.

- Increase resilience of accesses to key domestic and international markets, including via cross border road and rail, and to Clyde Ports, and Glasgow airport to encourage people to live, study, visit and invest in the Glasgow City Region.
- Make better use of existing transport infrastructure through the adoption of beneficial transport innovations.
- Increase the mode share of freight by sustainable modes.

- A reliable and resilient strategic transport system that is safe and secure for users

  - Increase resilience from disruption on the region's trunk road and rail infrastructure.
  - Reduce transport related casualties in line with reduction targets, with a focus on reducing killed or seriously injured (KSI) accidents on trunk roads in the region.
  - Improve resilience through climate change adaptation within the management and maintenance of Glasgow City Region's strategic road, rail and ferry infrastructure.
  - Improve perceived and actual security of the transport system. With a particular focus on public transport and active travel networks.

Strategic Development Plan (Clydeplan), 2017

3.3.5 Clydeplan, the Strategic Development Plan (SDP) is prepared by the eight Glasgow city region local authorities. The SDP's has a core aim of a 'compact city' model, based on centres, economy, low carbon infrastructure, placemaking and regeneration.

3.3.6 The Plan identifies Glasgow City Centre as a strategic centre and a strategic economic investment location, with the aim for it "to be the city region's central connected hub and the employment, retail, civic and cultural core of the city region. It will be accessible from across the city region and further afield particularly by connections to Glasgow Airport and High Speed Rail connecting to London and other UK regions and centres." Policy 20 of the Plan then supports the identification of a location in central Glasgow for a High Speed Rail terminus and the consideration of the options for sustainable transport connections between the terminus and the rest of the city region.

3.3.7 In addition, the Plan promotes:

- Development in sustainable brownfield locations and recycling previously developed land;
- Maximising the use of existing infrastructure and assets;
- Land use integration with sustainable transport networks;
- Connected transport networks including active travel, green networks and sustainable drainage networks which contribute to a low carbon economy and lifestyles; and
- Creating places which are distinctive, safe, welcoming, adaptable, resource efficient and easy to move around, with communities reinvigorated by local activity, and places enabling individual health and wellbeing.

3.3.8 The Glasgow City Region City Deal Plan was approved by the cabinet in March 2015 and revised in 2019. The £1.13 billion fund supports the local area to achieve its shared long-term vision for the local economy through Improved infrastructure; Growth in life sciences; Supporting business innovation; and Tackling unemployment.

3.3.9 The City Deal funded projects of particular relevance to the Glasgow city centre include:

- The £4 million Tontine centre, located in Merchant City and supporting new SME start-ups in the enabling technology, advanced design and manufacturing, and creative economy sectors;
- The approximately £115 million "Avenues" programme, which will result in a transformation of the city centre's streetscape and public realm - making it more "people-friendly", more attractive, greener, more sustainable and more economically competitive. Example of improvements include resurfacing of streets and pavements, the creation of avenues of trees, segregated cycle lanes, reductions in vehicle traffic, and 'smart' infrastructure such as surface water management systems and adaptable lighting systems. The Avenues Programme includes transformation at 21 locations in five blocks of work. City Deal investment until 2027/28 is being used for the "Core Avenues", broadly sub-divided into 4 blocks of activity (Blocks A, B, C and D). The new Block S will be funded through Sustrans' Places for Everyone programme.
  Sauchiehall Street between Charing Cross and Rose Street was the pilot project for the overall Avenues programme. Construction work commenced in 2018 and is now complete. The locations of the Avenues are shown in Figure 4 below:

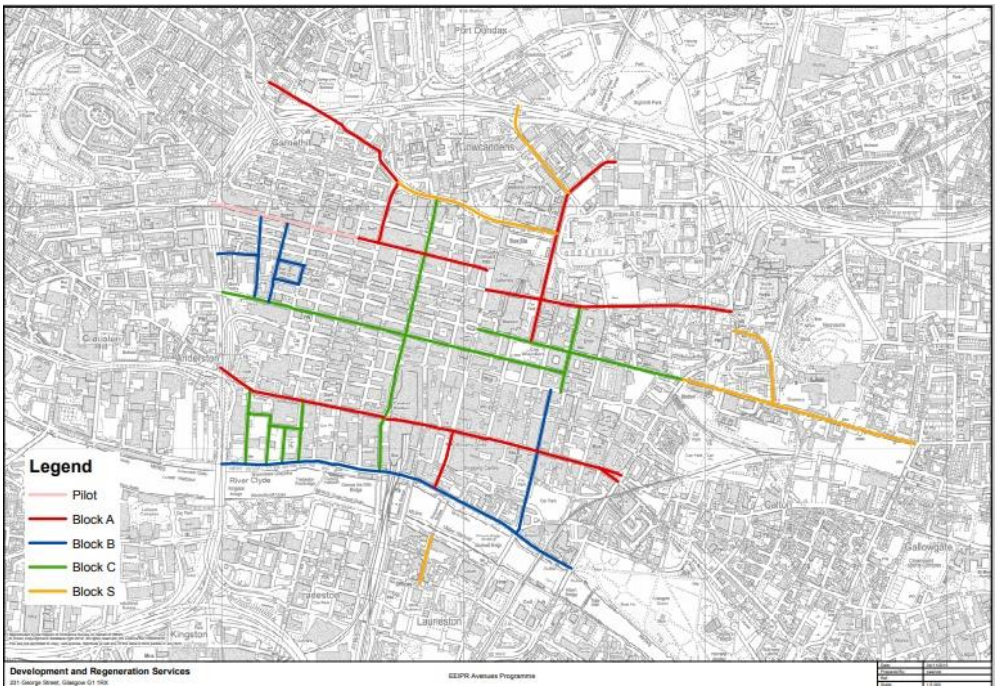


Figure 4. Avenues phasing map, Glasgow City Council, 2021[4]

[4] https://glasgow.gov.uk/avenues

- The Collegelands Calton Barras Action Plan which, with £27m of investment, aims to deliver an integrated, attractive and resilient neighbourhood within the inner east end of Glasgow. Relevant works include improvements at High Street Station, public realm work at the Barras and Calton areas and increased road connectivity through the area, and former Bellgrove Abattoir (known as the Meatmarket) site remediation and access.
- The Clyde Waterfront and West End Innovation Quarter (CWWEIQ) - providing high quality and effective links along both sides of the River Clyde, between the City Centre and the West End, and between business and research clusters, key institutions, visitor attractions, and residential communities. The project aims to regenerate the river corridor as a desirable urban quarter that attracts jobs, investment and contributes to regional economic growth. Relevant works include the approximately £50m investment to renew quay walls at Customhouse Quay and Windmillcroft Quay (located between the new Barclays Campus (Tradeston) and Springfield Quay) to help unlock development potential by addressing structural integrity, enhancing connectivity, and improving place quality at the river edge. At Customhouse Quay/ Carlton Place, the works include the renewal of the quay walls and creating new development platforms outwards into the existing river bed. At Windmillcroft Quay, the works include a construction of a new quay wall in front of the existing deteriorated quay wall, and creating new public realm at the riverside, including a public core path.
- The Canal and North Gateway (CNG) project, with investment of £83.6m, aims to deliver site remediation, servicing, new bridges, roads access and public realm improvements in Sighthill, Port Dundas, Cowlairs and Speirs Lock. Projects in the area include walking and cycling links along North Canal Bank Street, Dobbies Loan and the Sighthill pedestrian/cyclist bridge and public realm, which will connect the City Centre to the Sighthill Transformational Regeneration Area and other parts of the inner north.

Glasgow City Region Economic Strategy 2017 - 2035

3.3.10 The Glasgow City Region (GCR) Economic Strategy brings together the eight local authorities of: East Dunbartonshire Council; East Dunbartonshire Council; East Renfrewshire Council; Glasgow City Council; Inverclyde Council; North Lanarkshire Council; Renfrewshire Council; South Lanarkshire Council; and West Dunbartonshire Council.

3.3.11 The 2035 Vision for the Glasgow City Region is:
"A strong, inclusive, competitive and outward-looking economy, sustaining growth and prosperity with every person and business reaching their full potential"

3.3.12 The core aim of the Economic Strategy is for sustained and inclusive economic growth; this will be achieved by the following 11 objectives:

- Attract and retain talent and enterprises relocating to GCR;
- Improve economic outcomes for all through addressing long standing barriers in the labour market such as skills and health, both for those who are currently out of work and those on low incomes;
- Create a skills and employment system that meets the current and future needs of GCR businesses and supports our residents to access jobs and progression opportunities;

- Grow the presence of Scotland's Growth Sectors in the city region so that we increase the total number of GCR's businesses and employees who work in these sectors;
- Significantly improve the productivity of GCR's diverse business base through increased investment, innovation and exporting; development of R & D and innovation including the University of Glasgow/Queen Elizabeth University Hospital and Strathclyde University;
- Increase the number of sustainable and high growth stat-ups surviving beyond five years;
- Grow GCR supply chain activity whose growth underpins the success of GCR sectors;
- Building on the City Deal bring forward in parallel strategic programmes, projects and associated investment that maximise the value of the Deal;
- Maximise the potential of the key GCR economic assets - development of a Glasgow City Region Strategic Transport Plan in collaboration with SPT and Transport Scotland with Glasgow Airport to be a driver of the City Region economy;
- Actively promote GCR globally, with a focus on international investment including attraction of new air routes to Glasgow Airport and strengthen the international links of our city region economy; and
- Increase in the number of housing and commercial completions and decrease the amount of derelict and vacant land.

3.3.13 In relation to this study, the Glasgow City Region Economic Strategy identifies a need to integrate transport and connectivity to the longer-term success of Glasgow City Region economy. It also identifies that research by the Scottish Cities Alliance shows that transport infrastructure is the number one criterion considered by foreign investors in making an investment. This highlights the need to improve the transport infrastructure in the region to encourage foreign investment to allow the economy to flourish.

Glasgow City Region Bus Partnership

3.3.14 Established in 2018, Glasgow Bus Partnership (GBP) brings together Glasgow City Council, SPT, Transport Scotland and the city's bus operators to address current challenges faced by the industry. The partnership later expended to cover the City-Region area Local Authorities.

3.3.15 Key aims of the GBP are:

- Improving bus priority mechanisms and addressing congestion hotspots with the aim of reducing journey times and providing journey time reliability;
- Ensuring buses are given higher priority in any future city planning;
- Improving the accuracy of real time passenger information and exploring options to introduce an integrated ticketing system;
- Assisting bus operators to meet Low Emission Zone standards, leading to better air quality and reduced pollution; and
- Preparing Glasgow's City Region Bid to Transport Scotland's Bus Partnership Fund.

3.3.16 The Bus Partnership Fund bid has now been issued and has identified five strategic corridors (Paisley Road West, Maryhill Road, Dumbarton Road, Pollokshaws Road, and Great Western Road) and two city centre streets (Hope Street and Howard Street) to be the focus of the proposed bus priority measures.

3.4 City-Wide Policies and Plans

Glasgow City Development Plan 2017 and Supplementary Guidance

3.4.1 The City Development Plan (CDP), adopted in 2017, sets out the Council's 10 year vision and strategy for land use whilst also providing the basis for assessing planning applications. It is supported by a series of Supplementary Guidance which have been adopted or under development.

3.4.2 It sets out the spatial framework and development policies which support the Council's Strategic Plan, which aims to establish a world class city that delivers economic prosperity for the people of Glasgow. The CDP advocates that development should take a holistic 'placemaking' approach to building a better city.

3.4.3 It is underpinned by two overarching policies, both relevant to the study:

- CDP1, The Placemaking Principle - This seeks to create and maintain a high quality, healthy place and to develop a compact city form that supports sustainable development; and
- CDP2, The Sustainable Spatial Strategy - Strategic Development Frameworks will be prepared to support the delivery of spatial outcomes for Glasgow, and to address strategic matters.

3.4.4 The CDP identifies six priority areas where a strategic approach is needed to co-ordinate development activity, direct investment and address emerging opportunities. A "Strategic Development Framework" (SDF) has been or is being prepared for each area. The areas identified are:

- River Clyde Development Corridor;
- Govan Partick;
- City Centre;
- Glasgow North;
- Inner East; and
- Greater Easterhouse.

3.4.5 The City Centre SDF was approved in 2021 and is described in more detailed in the "City Centre Policies and Plans" section below.

Local Transport Strategy

3.4.6 The Local Transport Strategy was published in April 2007 and sets out Glasgow City Council's aspirations for taking forward transport policy and infrastructure within Glasgow. The LTS's Vision is to:

"Provide a world class transport system which is safe, reliable, integrated and accessible to all citizens and visitors: A transport system that continues to support the physical, social, economic, cultural, environmental and economic regeneration of the City while contributing to the overall well-being, health and fitness of present and future generations: A system where transport serves all sections of the community equally and there are no transport barriers in terms of accessing jobs, health care, education and leisure."

3.4.7 The LTS 2007-2009, objectives were:

- LTS1 - Support the continuing physical, social, economic, cultural and environmental regeneration of the City by maintaining and promoting efficient and effective transportation services and infrastructure within Glasgow;
- LTS2 - Promote social inclusion and tackle poverty by seeking to ensure that transport is accessible to all sections of the community and provides good links to employment, health care, education and leisure;
- LTS3 - Promote healthy and environmentally sustainable methods of transport that minimise harmful emissions and energy consumption including those that involve physical activity;
- LTS4 - Improve the safety and the actual and perceived security of travelling within the City by reducing accidents and enhancing the personal security of all users of the transport network; and
- LTS5 - Promote integration of the transport system and provision of travel information within Glasgow.

3.4.8 Although the document dates back to 2005, arguably its vision and objectives are still relevant today, as they reflect the key Scottish Transport Appraisal Guidance criteria and are reflected in the National Transport Strategy.

3.4.9 The LTS is currently being updated to cover the period 2021-2031. A Case for Change document has been prepared, setting out the following four outcomes:

- Transport contributes to a successful and just transition to a carbon neutral, clean and sustainable city;
- Transport has a positive role in tackling poverty, improving health and reducing inequalities;
- Transport contributes to continued and inclusive economic success and a dynamic, world class city ; and
- Places are created where we can all thrive, regardless of mobility or income, through liveable neighbourhoods and an inclusive City Centre.

3.4.10 The initial policy focus areas are:

- Policy Focus 1: Priority for people, not vehicles
    - Investment in cycling infrastructure to produce a city-wide network that people feel safe to cycle on.
    - Continued working towards zero serious and fatal injuries on our road network.
    - Efficient management of our road networks through design and technology to make better use of the space we have, ensuring the sustainable travel hierarchy informs our decisions and priorities.
    - Reallocation of and better management of access to road space to give priority to people walking, wheeling, cycling and on public transport, and ensure goods get to where they need to go in the city.
    - Continued maintenance of what we already have to ensure our pavements, cycleways and roads enable sustainable travel.
    - Embedding the Fairer Scotland Duty into our decision making alongside our Equality and Climate Duties, and applying a “wellbeing test” to our transport investment decision-making.
- Policy Focus 2: Better, cheaper, integrated transport systems

- Investment in a modern public transport system that supports our economy, and serves the thousands of households which don't have access to a car, providing a real alternative for those who do. In particular, supporting buses, exploring a Metro, working with SPT to support the modernisation and promotion of the Subway, and exploring innovative models of public transport provision in a changing market.
- A smart, technologically savvy city where we use technology in transport for public benefit, we are open and transparent and encourage innovation through open data. We upskill Glasgow residents in carbon, energy and technological advances related to transport so that everyone benefits. For example, creating and promoting innovative travel booking or payment apps, or online platforms that help citizens understand the carbon impacts of their travel choices. This means continued collaboration with many partners in our City, including our excellent University sector.
- We work with partners to reduce the cost of public transport in Glasgow, particularly for young people and for people on low incomes or in poverty.
- We work towards a goal of a single, integrated, smart ticket for public transport in the city (with the potential to include other forms of mobility like cycle hire and car clubs).
- We collectively agree an approach to transport governance in Glasgow that is in the best interests of the users of our transport systems.
- We create financially sustainable models of transport provision in the City and proactively identify sources of income to sustain investment in sustainable transport.
- We work collaboratively with Glasgow's taxis, which often plugs a gap in transport, to improve provision, particularly with the growth of app-based ride and hail services.

- Policy Focus 3: People-friendly, inclusive neighbourhoods and city centre

  - People and place are prioritised in our City Centre - making it easier and quicker for people to walk and cycle and make onward journeys by public transport. A new City Centre Transformation Plan will support existing goals to reduce car journeys in the city centre by 30%, whilst enabling the residential population to double.
  - Parking supply and cost are balanced to ensure that using public transport is cheaper than driving into the city centre.
  - An evidence-led and policy-driven car parking strategy is developed for the city.
  - Working collaboratively with planners and regeneration teams, 'Liveable Neighbourhoods' are created which maximise the availability of services within 20 minutes walking distance.
  - All neighbourhood streets are accessible but through traffic is reduced, creating more safe and pleasant conditions for walking, cycling, play and socialising.
  - A focus on the journey to school – further investment in walking and cycling infrastructure, a City default speed limit of 20mph in specific areas, and a wide rollout of school road closures.
  - A focus on making sure the city centre and neighbourhood environments are accessible for all, including: A full audit of dropped kerbs; Working with partners to make sure public transport interchanges are accessible; Continued upgrading of bus stops across the City; and Incorporating wheeling into our new Active Travel Plan.

- Local communities are supported and enabled to take forward ideas which benefit their neighbourhood, in line with the community empowerment agenda and recent changes to planning legislation.

- Policy Focus 4: Cleaner and low carbon transport

  - Ensuring a just transition to a low carbon transport future by: First, reducing the need to travel; Then, supporting trips by foot, wheeling, bike, public transport and shared transport; and Finally, moving to low carbon and low emission vehicles.
  - Less vehicles of all kinds on our roads, and a reallocation of road space to sustainable ways to travel.
  - Monitoring consumer trends and doing what we can to manage the rising number of light goods vehicles on our roads through hubs, working with regional partners on freight distribution and developing innovative solutions with industry for the last-mile of deliveries.
  - Considering and using the tools at our disposal to support cleaner vehicles in the city, including: Low Emission Zones; Emission-based parking charges; Working with partners on a network of electric vehicle hubs; Transitioning the Council vehicle fleet to zero carbon energy sources.
  - Considering greenspace, open space and biodiversity when we plan transport and placemaking projects, to maximise the benefits of our investment.

Connectivity Commission for Glasgow, 2017

3.4.11 The independent Glasgow Connectivity Commission was set up in November 2017 to cover strategic transport issues the city region faces. The Commission produced two separate reports; Phase 1 report – which focuses on recommendations for Glasgow City Council to improve connectivity within the city centre of Glasgow, and Phase 2 report which outlines recommendations to reshape the strategic road and rail network, to improve connectivity in the Glasgow City Region over the coming decades.

3.4.12 The Phase 1 recommendations include:

- The acceleration of the Avenues project and its extension into other parts of the city centre such as George Square, Argyle Street, Cathedral Street and High Street;
- Glasgow City Council presses ahead with plans to build a roof over the M8 at Charing Cross, creating a new pedestrian space outside the Mitchell Library;
- A strategic repurposing of the road network to prioritise people-friendly public spaces and the transport hierarchy and repurposing the inefficient grid system to a smart grid;
- Glasgow City Council actively engages with the Vacant and Derelict Land Commission to bring back dead spaces back into productive use;
- The repurposing of Glasgow's roads grid to prioritise pedestrians, active travel and public transport should be aligned with and support the council's policy to repopulate the city centre;
- The completion of a network of safe, high quality, segregated cycling arterial routes, connecting the city centre to suburbs and peripheral neighbourhoods;
- The creation of safe, high quality, segregated cycling corridors through the city centre which connect to these arterial routes, undertaken as part of the repurposing of Glasgow's road grid;

- A partnership is created between Glasgow City Council and taxi associations which drives improvements in service standards and better strategic placement of taxi ranks;
- The new partnership between Glasgow City Council and bus operators should:
    - Accelerate journey times and provide journey certainty through the rapid roll-out of bus priority measures and reducing dwell times at bus stops;
    - Improve the quality of the fleet, meeting Glasgow's LEZ requirements and driving up service standards;
    - Improve ticketing and customer information for all bus services, introduction of multi-operator 'Cheapest Day Saver' tickets across the city, and half-price fares for Apprentices and the Under-19s (note that in March 2021, free bus travel for all under 19 was approved by the Scottish Parliament and in the same month, the Scottish Government announced its intention to extend this to all under 21);
    - Better enforcement of existing bus lanes to deliver faster, more reliable journeys; and
    - deliver patronage growth of 25% in the first 5 years.
- Better monitoring of traffic volumes and speeds on Glasgow's local road network;
- Local authorities in Scotland should be given the powers in the Scottish Transport Bill to introduce non-residential parking charges;
- Glasgow City Council should propose the transport projects that could be funded from this revenue stream and assess the economic, social and environmental case for using these powers;
- A particular emphasis should be placed on supporting city centre retail and leisure at a time of intense pressure from online platforms and appreciating the impact policy can have by creating an uneven playing field for the city centre, relative to both online and out-of-town alternatives;
- Glasgow City Council should lead by example and review whether council workers should be given free or subsidised car parking; and
- Better use of strategic bus terminals and car parks to reduce journeys through the city centre.

3.4.13 Phase 2 of this commission generated a number of recommendations, including:

- Scottish Ministers to enact primary legislation for the creation of a Glasgow City Region Development Agency to plan and coordinate transport infrastructure at the city region level;
- Transport Scotland to take lead responsibility for the development of the Glasgow Metro, Glasgow Central HS2 terminus and Queen Street/Central Station tunnel including a rail link between Paisley Gilmour Street and Glasgow Airport using currently identified City Deal funding by 2025 and utilising technology that would enable this to be extended to become the first leg of the Glasgow Metro, serving the South Clyde Growth Corridor;
- Scottish and UK Governments to consider how to change the way we pay for road use to accommodate the shift towards electric and autonomous vehicles;
- Transport Scotland should consider options for bus priority measures on Glasgow's motorway network (The outcome of the "Managed Motorways" study led by Transport Scotland is expected to be published in the second half of 2021); and
- The Scottish Government and regional authorities should identify a funding package over 20 years to pay for the interventions recommended in the report.

Glasgow Low Emission Zone

3.4.14 Low Emission Zones set an environmental limit on certain road spaces, restricting access for the most polluting vehicles to improve air quality. In Glasgow city centre, levels of harmful nitrogen dioxide are being recorded at levels which do not meet statutory expectations - predominantly caused by road transport[5].

3.4.15 Glasgow's LEZ introduced the proposed LEZ in two phases, with the first phase focusing on improving the public bus services operating through the city centre:

- Phase 1 - which was enforced from 31 December 2018 and applied to local service buses operating through the city centre. It covers the area of the city centre between the M8 corridor to the north and west, the River Clyde to the south, and the Saltmarket and High Street to the east; and
- Phase 2 - which will be enforced from 1 June 2023 (subject to the relevant approvals) and apply to all vehicles i.e. all vehicles entering the zone will have to meet specified exhaust emission standards to avoid a penalty charge, unless exempt.

Glasgow's Climate Plan, 2021

3.4.16 Glasgow's Climate Plan was approved in June 2021. It was produced in response to the recommendations of the Glasgow Climate Emergency Working Group set up in early 2019, quickly followed by the Council declaring a climate and ecological emergency in May of that year.

3.4.17 The 2021 Climate Plan provides an update on the progress which has been made, sets a course for further action, and describes the means by which a city and its people will face the extraordinary challenges of the global climate and ecological emergency. It commits to achieving net zero carbon emissions by 2030.

3.4.18 Transport emissions are identified as the biggest challenge due to the slower rate in emission reduction than in other sectors. Of the actions identified, the following are particularly relevant to this study:

- Action 7: Promote homeworking and videoconferencing to reduce traffic congestion, as part of a range of effective working practices in post Covid-19 world;
- Action 22: Explore options to utilise the ongoing development of the city centre. Glasgow's Low Emission Zone to contribute towards carbon reductions from transport in the city centre;
- Action 25: Develop a Glasgow Bus Partnership in line with the provisions of the Transport (Scotland) Act 2019;
- Action 26: Explore alternative options for bus delivery in Glasgow in line with those options laid out in the Transport (Scotland) Act 2019;
- Action 33: Undertake a feasibility study about a Workplace Parking Licensing (WPL) scheme, ring fenced to fund sustainable transport in the city;
- Action 51: Deliver a comprehensive active travel network, incorporating the spaces for people measures (following consultation) and enabling 20-minute neighbourhoods through the liveable neighbourhoods plan;

[5] Glasgow's Low Emission Zone (LEZ) - Glasgow City Council

- Action 52: Enable a rapid and strategic shift to electric vehicles through increasing the current rate of deployment of EV charging infrastructure;
- Action 53: Work with transport stakeholders in the city to support rapid transition to cleaner public transport as part of the City's Low Emissions Zone;
- Action 55: Transition the fleet of private hire vehicles to zero emission vehicles by 2030; and
- Action 56: Reduce the need to own and use a car through measures in the City Development Plan 2, Glasgow Transport Strategy and the Liveable Neighbourhoods.

Glasgow's Strategic Plan for Cycling 2016-2025

3.4.19 The Strategic Plan for Cycling 2016-2025 sets out Glasgow's vision, objectives, targets and actions for increasing levels of cycling – for leisure, as a mode of transport and for sport. The Plan's vision is: " To create a vibrant Cycling City where cycling is accessible, safe and attractive to all".

3.4.20 The key outcomes are:

- An integrated network of routes;
- A Healthier City;
- More People Cycling; and
- Safer Cycling City.

3.4.21 Some of the targets include:

- T2: Increase in cycling to/from the City Centre from 7,636 per day (2012-2014 average) to 15,000 per day by 2025;
- T3: Increase number of children cycling to primary school from 3.5% to 7% by 2025; and
- T5: Increase the overall length of the Glasgow cycle network from 310km in 2015 to 400km in 2025 and to 590km thereafter.

3.4.22 Of relevance to the study are the proposed cycle routes (Figure 5).

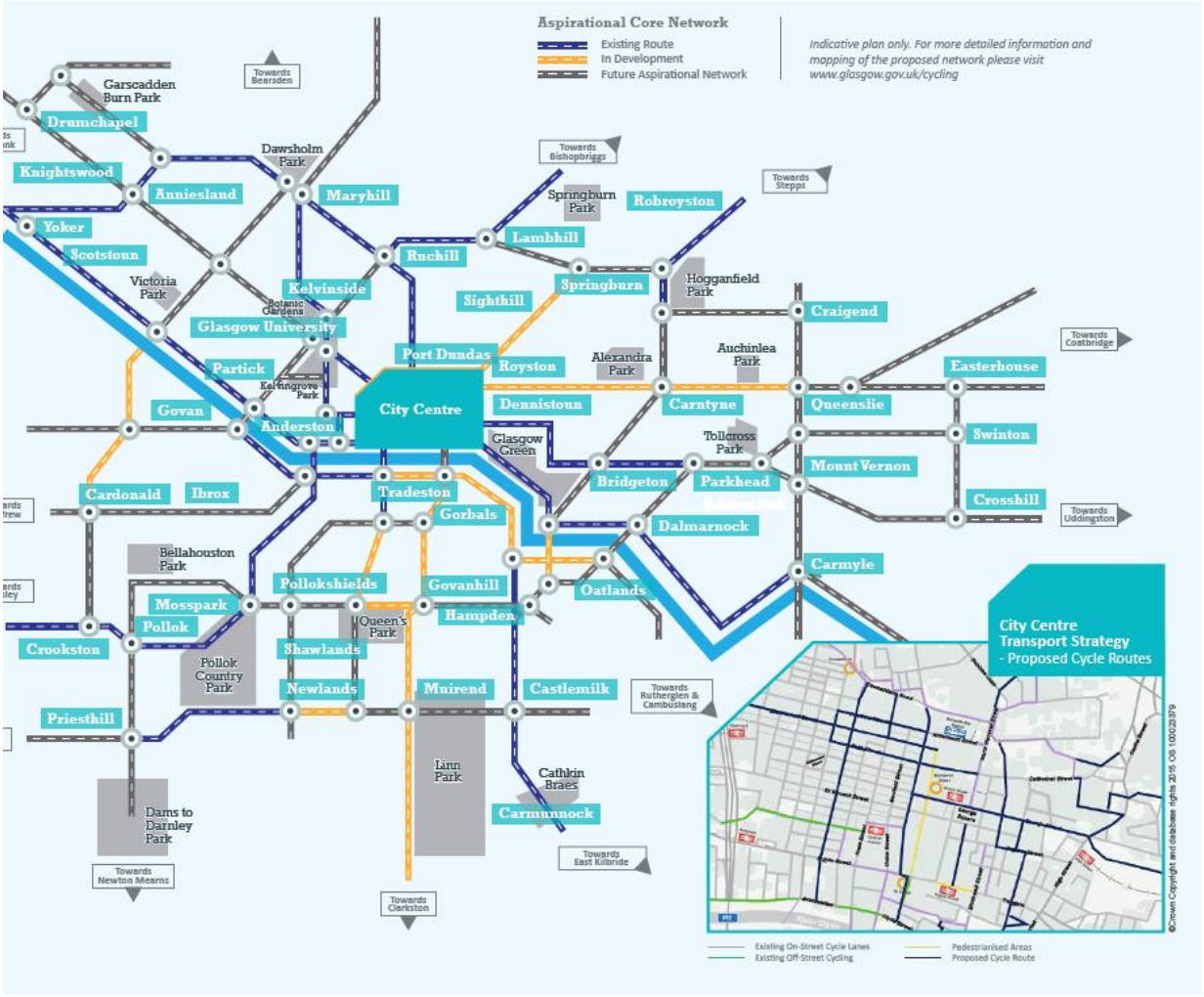


Figure 5. Proposed Cycle routes

Glasgow's Spaces for People

3.4.23 Since the first lockdown in March 2020, Spaces for People has been making temporary travel infrastructure changes across our City Centre, Neighbourhood Space and Active Travel Routes. A street-by-street approach has been adopted, with temporary measures introduced to allow priority to be given to pedestrian space around our transport centres, core shopping streets and any identified pedestrian pinch points. Work completed to date includes a number of projects; those in the study area include :

- **Footway widening around Glasgow Central Station High and Low Level entrances** to provide additional queuing space; From Sunday 21 June 2020, Gordon Street will become one-way (eastbound) to permitted traffic between Hope Street and Union Street and Argyle Street will become one-way (eastbound) to permitted traffic between Hope Street and Union Street;
- **Light-segregated cycle lane** along the Broomielaw and Clyde Street;
- **A two-way cycle track** on Cambridge Street;
- **Two-way cycling on one-way street** introduced on Argyle Street (Union Street to Hope Street) and protected with light-segregation on Howard Street;
- **Footway widening and road closures in and around George Square, including North Hanover Street at Queen St station**; The following roads will be closed to all

traffic except cycles - George Square (East and West), Hanover Street (local access via Ingram St) and North Hanover Street (northbound bus gate);

- **A bus/cycle/taxi gate has also been added to George Square (St Vincent Street) and South Frederick St (north);**
- **A bus/cycle/taxi lane on Cochrane Street** to speed up journeys and support sustainable transport; and
- **Widening of footways in Union, Hope and Bath Street**.

3.4.24 It is understood that the temporary measures will be re-considered as part of the development of Glasgow's Active Travel Strategy.

3.5 City Centre Policies and Plans

City Centre Strategic Development Framework, 2021

3.5.1 As a Supplementary Guidance to the City Development Plan, the City Centre Strategic Development Framework (SDF) sets out the placemaking ambition and strategic policy guidance to direct development in the city centre over the next 30 years. The SDF proposes a number of strategic interventions under the four key City Development Plan themes to make the centre 'a vibrant, inclusive, sustainable and liveable place. A green, attractive and walkable City Centre will create a people – centred place that is climate resilient, fosters creativity and opportunity and promotes social cohesion, health and wellbeing and economic prosperity.' It identifies six Strategic Place Ambitions in response to priority issues raised by city stakeholders for improvement of the centre. These ambitions seek to:

- Reinforce the centre's economic competitiveness;
- Re-populate the centre and ensure liveable and sustainable neighbourhoods that promote health, wellbeing and social cohesion;
- Reconnect the centre with the riverside and surrounding communities;
- Reduce traffic dominance and car dependency and create a pedestrian and cycle friendly centre, with improved public transport, that is healthier and cleaner;
- Green the centre and make it climate resilient with a network of high quality public spaces and green/blue infrastructure that caters for a variety of human and climatic needs; and
- Repair, restore and enhance the urban fabric to reconnect streets and reinforce the city's distinctive heritage and character.

3.5.2 The SDF will sit alongside the City Centre Strategy and inform nine District Regeneration Frameworks (DRFs) that will establish principles for place-making and development at a more local level. More detail on the DRFs is provided in the next section.

Glasgow City Centre Strategy 2014 –19 and District Regeneration Frameworks, 2019

3.5.3 The Glasgow City Centre Strategy 2014-2019 aims to lay the foundations of the Future Glasgow Vision to allow it to compete within Scotland and the UK and with other leading European cities. It has adopted a comprehensive, integrated, approach to address the many dimensions of city life with over 55 defined actions. A core component of the strategy is the establishment of nine districts for which a District Regeneration Framework (DRF) should be developed - that is a plan for short, medium and long-term actions that will bring economic, environmental and social improvements to the area.

Five plans have been completed and approved by the City Council while the four remaining are under development. The Districts are shown in Figure 6 below.

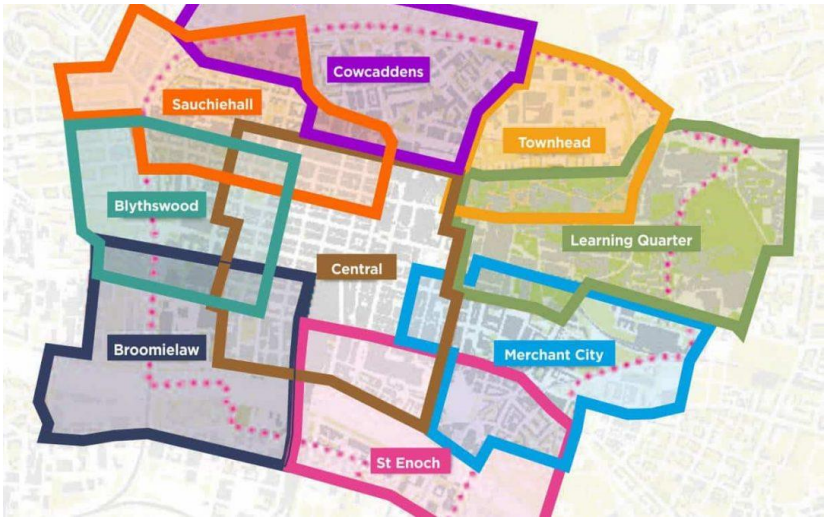


Figure 6. Districts in the study area

3.5.4 The districts' ambitions include:

- The **Central DRF** seeks to respond to the car and bus dominated character of the district and address the shortage of quality green and public spaces. It also incorporates proposals to enhance the city centre's public transport and active travel networks to create a sustainable, walkable city. In addition, it seeks to ensure that Glasgow's historic fine built heritage is protected and focuses on policies to attract investment, secure funding and foster collaborative working in the district;
- The **Blythswood DRF** was approved by Glasgow City Council and aims to improve the look and feel of the public space in St Vincent Street and improve the pedestrian and cycling experience in North Street – Motorway;
- The **Broomielaw DRF** was approved in June 2019 and the action plan focuses on the River Park, the M8, Great Streets and Spaces, Mobility, Great Buildings and transforming Broomielaw into a place which is vibrant at all times of day and at the weekend;
- The **St Enoch DRF** was approved by Glasgow City Council and suggests that the following suggested Avenues projects for this District would significantly improve the streets' overall performance as public spaces; Jamaica Street to Bridge Street, The Waterfront – from Glasgow Green to Transport Museum, Glassford Street – Stockwell Street and High Street to Trongate to Saltmarket to Albert Bridge;
- The **Sauchiehall and Garnethill DRF** was approved by Glasgow City Council and suggests that the following Avenues project for this District would significantly improve the Streets overall performance as public spaces; Sauchiehall to Charing Cross and Renfrew Street to Killermont Street;
- The **Merchant City DRF** is being developed. It aims for more transformation of the area with the development of the University of Strathclyde. George Street and High Street – Saltmarket are set to be the catalyst projects for this area, improving the pedestrian and cycling experience and wayfinding;
- The **Learning Quarter DRF** is also being developed. Its main focus will be in the Cathedral and George Street areas which are the two major routes in this District and give people access to various important civic and commercial buildings;

- **Townhead DRF** is also being worked on. This District is largely residential, made up of terraces and tower blocks, with some small-scale industrial units. There is a project which could help Townhead connect to the rest of the city and that is the potential development of the Sighthill land-bridge connection; and
- **Cowcaddens DRF** is also in development. Its focus are the following main projects in the area: Buchanan Street Bus Station, Cowcaddens subway, the expansion of the Speirs Locks area and potential development of the Killermont Street to Sighthill land-bridge connection.

Glasgow City Centre Living Strategy

3.5.5 The City Centre Living Strategy Vision 2035 is to enable a sustainable, inclusive and diverse city centre population. It sets out six key objectives, as follows:

- To increase the city centre population from its baseline of 20,233 in 2018 to around 40,000 by 2035;
- To find productive outcomes for vacant space, with particular focus on upper floors;
- To provide a quality city centre environment, responsive to climate change emergency, greener, safer, more sustainable and better connected;
- To deliver quality in design;
- To offer a responsive, innovative approach to investment opportunities that support this strategy; and
- To enable resilient, empowered and socially cohesive neighbourhoods.

3.5.6 The strategy supports the wider regeneration strategy in Glasgow city centre through actions focused on delivering a more liveable place with the necessary supporting policy and physical infrastructure.

Glasgow City Centre Transport Strategy, 2014-2024

3.5.7 Approved in 2015, the City Centre Transport Strategy aims to deliver balanced transport benefits, encourage sustainable transport and provide a vibrant city centre in line with City Centre Strategy's overall aim. Five objectives were developed:

1. Improve the health of Glasgow's citizens by increasing the modal share of trips to/from and within the city centre by active travel modes (walking, cycling and public transport);
2. Support the growth in economic vibrancy of the city centre, by ensuring access for residents, blue badge holders, tourists and traffic essential to sustain economic functions;
3. Enhance the quality of main pedestrian spaces, key development areas and main access routes;
4. Reduce harmful traffic emissions and noise; and
5. Enhance road safety and personal security for all city centre users.

3.5.8 Key actions contained in the strategy include:

- Facilitate the introduction of the 'Avenues' concept on a number of streets commencing with Sauchiehall Street. This may include the removal of some on street parking to allow the widening of footways and introduction of cycle facilities;
- Implement a series of cycle routes through the city centre mainly segregated from traffic;

- Restrict traffic access to Gordon Street between Renfield Street and West Nile Street;
- Investigate the implementation of a 20mph zone in the city centre;
- Undertake a review of loading and servicing facilities;
- Undertake a review of disabled parking provision;
- Undertake a strategic review of parking facilities;
- Review and improve signing and information provision for all users of the city centre;
- Promote the introduction of bus gates/traffic management measures on the main north/south bus routes through the city centre on Renfield Street and Oswald Street;
- Investigate the introduction of infrastructure improvements on Union Street to facilitate bus operations and improve the pedestrian environment;
- Review bus stops and usage throughout the city centre and in particular on the Renfield Street/Union Street corridor; and
- Consider ways to introduce a Low Emissions Zone within an emerging national framework.

Lane Strategy for Glasgow City Centre, 2017

3.5.9 The Lane Strategy sets out a series of actions aimed at creating attractive and active lanes throughout Glasgow city centre, which would help foster a thriving civic life, promote economic growth, inclusion and sustainability.

3.5.10 The strategy recognises that the lanes are potentially one of the most significant and useful assets within Glasgow City Centre. They offer a very different experience to the busy main streets in terms of scale and shelter, opportunities for art and culture, employment through cheaper spaces for small businesses to develop, places to perform, to eat and drink. They are rich in history and architecture.

3.5.11 The strategy discusses a number of challenges and opportunities for consideration in order for the lanes potential to be unlocked. These include:

- Revision of planning policy and guidance (e.g. creation of active frontages and spaces opening on to lanes, integration with the Avenues programme etc);
- Effective waste and recycling management (e.g. reduction of waste and recycling at source, education and training, timed windows for collection, ban on bins in lanes etc);
- Parking (e.g. resurfacing, parking restrictions and enforcement to prevent indiscriminate parking); and
- Community safety and public health (e.g. installation of lighting/encouragement of greater footfall on lanes, tackling problems of antisocial and criminal behavior, burning of vehicles, fire raising in bins, drug misuse, drug related litter, rough sleeping, smell/vermin from waste etc).

3.5.12 The strategy suggests that a demonstration project should be trialled within the city centre to test and refine the system, which would then also inform roll-out across the whole city centre. In addition, a list of Action projects has been proposed; these focus on lanes presenting the greatest opportunity for positive change and include:

- Sauchiehall Lane: BID area – focus on evening economy and entertainment;
- Sauchiehall Lane: Willow Tearooms – focus on heritage and management of lanes;

- Bath Lane: Wellington St – Renfield Street – focus on culture, entertainment, development of new lanes;
- Renfield Lane - Drury St - Gordon Lane - Mitchell Lane – focus on events, evening economy, entertainment and heritage;
- Springfield Court - McCormack Lane - Princes Court – Royal Exchange Square - North Court Lane – focus on retail and entertainment, development of new lanes, culture;
- Garnethill: Buccleuch Lane – Dalhousie Lane – focus on residential area, greenspace; and
- Tontine Lane and Elmbank Gardens -focus on arts, culture, making and employment.

3.5.13 The location of Action Projects in shown in Figure 7 below.

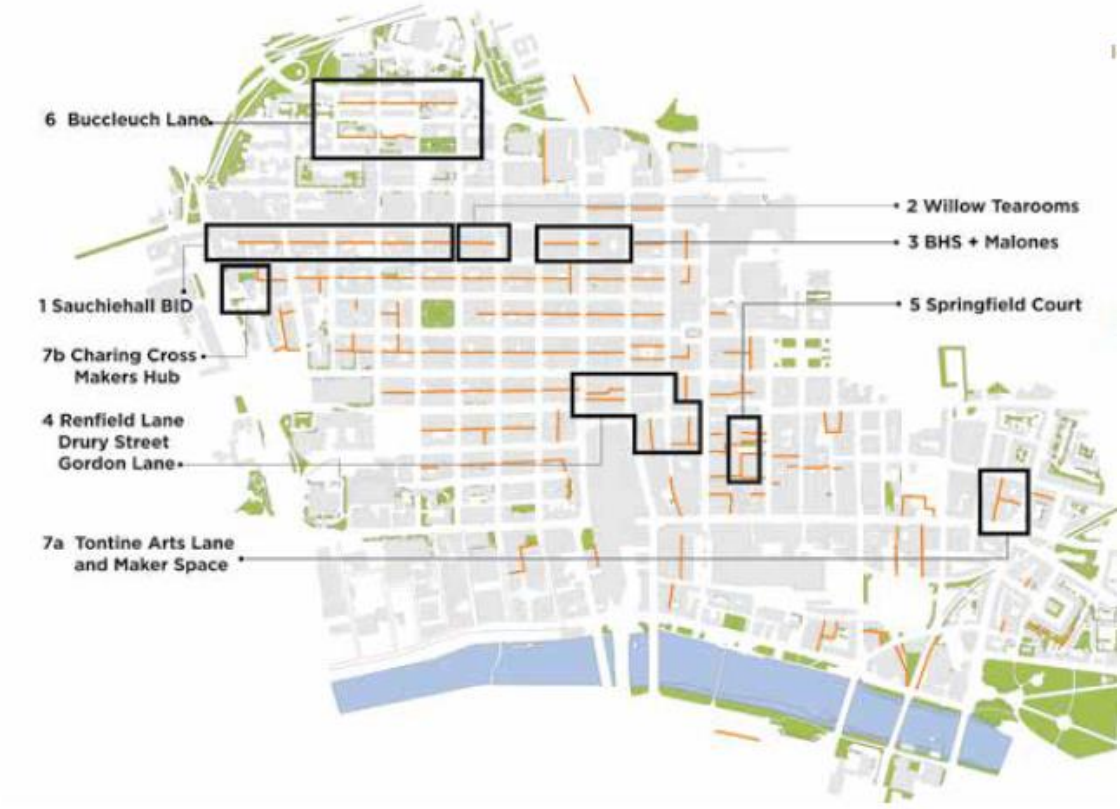


Figure 7. Locations of Action Projects

3.5.14 Figure 8 shows a Lanes Hierarchy of four categories, ranging from locations where significant immediate opportunities for greater activity are available with only minimal improvements required (CAT A) to largely utilitarian lanes with limited opportunities for change in the foreseeable future (CAT D).

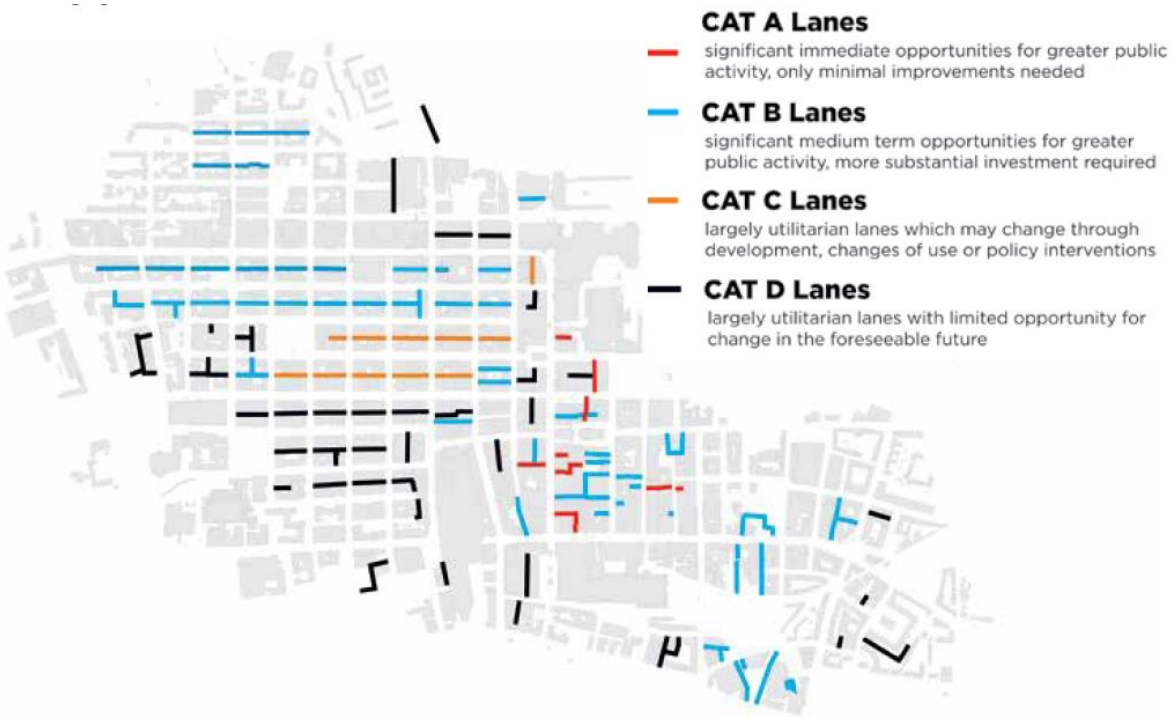


Figure 8. Hierarchy of Lanes

Glasgow City Centre Strategic Parking Review, 2015

3.5.15 The scope of the Strategic Parking Review, which was developed following discussion with the Chamber of Commerce, was to:

- Review the current limit on the total provision of off-street public car parking as contained in the City Development Plan and recommend a level that would meet the future needs of the city;
- Review the spatial distribution of off-street parking spaces;
- Consider the factors that influence the choice to use or not use specific car parks; and
- Provide recommendations to achieve optimum utilisation of the car parks, in terms of business need, while still meeting the overall aims and objectives of the Council's policies and objectives.

3.5.16 The desk top review of existing Council policies concluded that there is a consistent approach to parking which supports national policy set by the Scottish Government. The Council's policy approach includes setting maximum parking standards for private non-residential parking in the city centre, setting a 'ceiling' for public off-street parking and a presumption against temporary car parks (as set out in the Proposed City Development Plan).

3.5.17 The key recommendations from the review are:

- The cap on permanent off-street parking capacity is set at 12,026, the level of the proposed City Development Plan;

- Despite the potential reduction in available off street car parking capacity in some areas of the city centre if temporary car parks are removed, that this supply is not replaced as there is spare capacity elsewhere in the city centre and Council and national policies are to encourage sustainable methods of transport;
- Progress is being made towards the use of Parking Guidance Information (PGI), satnav and phone app technology to provide details about available car parking spaces in the City Centre and this should be increased further; and
- It is essential that appropriate parking provision for 'blue badge' holders and servicing businesses is maintained if any on–street parking is removed as part of the development of the 'Avenues' in the city centre.

3.6 Drivers of uncertainty

3.6.1 The main driver of uncertainty is the ongoing Covid-19 pandemic, which has led to major changes in travel behaviour, some of which are likely to endure in the longer term and challenge the viability of current transport delivery models.

3.6.2 Transport Scotland have been monitoring travel trends since the start of the pandemic-related restrictions (lockdown) in March 2020 in Scotland[6]. It has found that in general during lockdown:

- Demand for public transport fell by 85% to 95% - rail services were running at around 40% and bus at 30%;
- Travel reduced overall, with people making on average 1.4 trips per day compared to a baseline of 2.7 trips per day prior to lockdown.

3.6.3 Restrictions have now significantly eased, and in its latest update, for the period 28 June - 4 July 2021[7], Transport Scotland's analysis found that different modes of travel had recovered at a different pace compared to 2019 levels during the same time period:

- Walking journeys were the same as previous time period;
- Cycling journeys were up by 10%;
- Concessionary bus journeys down by 40%;
- Rail journeys were down by 50%;
- Ferry journeys were down by 20%;
- Air journeys were down by 65%; and
- Car journeys were down by 5%.

3.6.4 Whilst active travel levels remained higher than pre-Covid-19 (as it has been throughout the pandemic), public transport modes remain significantly below its pre-pandemic level.

3.6.5 Rather than generating new travel behaviours, the Covid-19 pandemic has been found to have heightened some previously known trends, and has introduced some new concerns around travel demand and modal choice.

- **Less travel demand, particularly in the AM peak.** There is evidence from earlier research such as the 2018 Commission for Travel Demand report[8] of a reduction in overall travel demand had occurred since the 1990s and could be expected to continue. There is now growing evidence that the significant drop in travel during the pandemic is likely to endure to some extent, particularly commuting in

[6] https://www.transport.gov.scot/coronavirus-covid-19/transport-transition-plan/
[7] https://www.transport.gov.scot/publication/covid-19-transport-trend-data-28-june-4-july-2021/
[8] http://www.demand.ac.uk/wp-content/uploads/2018/04/FutureTravel_report_final.pdf

association to the rise in working from home. Multiple surveys throughout 2020 and 2021 have found that large percentages of office workers were planning to continue working from home at least part of the week. This increase in working from home and flexible working has implications for the viability and vibrancy of city centre like Glasgow's relying on office workers, and for transport planning and delivery models focused on a peak period which may no longer exist. A continued rise in online shopping also threatens the economic model of city centres dominated by retail;

- **Demand for public transport and use of the car.** The messaging throughout 2020 and 2021 discouraging the use of public transport although justified on short term public health ground, has led to disproportionate drops in public transport use as shown earlier, threatening its economic viability and delivery model. The impact is being felt particularly strongly for buses which already experienced a steady drop in ridership over recent years. Transport Scotland's latest 'COVID-19 Public Attitudes Survey' (May 2021)[9] has found that 'Concerns about using public transport remain high: 70% of people are very or fairly concerned about contracting or spreading the virus while using public transport; and 61% are very or fairly concerned about having enough space to observe physical distancing on public transport. This has been fairly consistent across the previous 17 waves of the survey;
- By contrast, the same survey found that '40% agree with the statement "I will avoid public transport and use my car or other vehicle more than I did before when restrictions on transport are lifted". As shown earlier, car use has nearly recovered to its overall pre-pandemic level, albeit with variations within that, especially around the peak period.
- **Rise in demand for walking and cycling infrastructure.** Significant rise in walking and cycling levels have been observed over the past 18 months of the pandemic, building on previous, more-modest increases in walking and cycling journeys. It is not clear how long this increase might be sustained for. Nevertheless, Cycling Scotland has been monitoring cycling levels at locations across Scotland since the start of the Covid-19 restrictions. In its "one year on" review, it found a 47% rise in people cycling rom 23 March 2020- to 22 March 2021 compared to the same period 2019-2020.[10] More anecdotal evidence suggests an increased demand for bikes and bike repair leading to a current shortage at bike shops.[11]

3.6.6 Each of those trends and its implications for Glasgow City Centre are explored in more detail later in the report through sectoral analysis.

3.7 Governance of transport in the city and wider city region

3.7.1 Governance of transport in the city is split among a number of players, including:

- Glasgow City Council – who is the roads and planning authority for the city, with a large number of statutory duties and responsibilities;
- SPT – who has a number of statutory roles and responsibilities in relation to public transport in the city, and also operates the Glasgow Subway. Their responsibilities include:
  - Preparation of a Regional Transport Strategy;
  - Socially necessary bus services and demand response transport;

[9] https://www.transport.gov.scot/publication/covid-19-public-attitudes-survey-data-wave-18/
[10] https://www.cycling.scot/news-and-blog/article/one-year-on-cycling-up-47-percent-in-scotland
[11] https://www.theguardian.com/business/2021/mar/21/cycling-boom-rolls-on-amid-struggle-to-meet-uk-demand-during-covid

- Own and operate Buchanan bus station;
- Supporting community transport;
- Schools transport;
- Bus shelter maintenance;
- Operation and administration of the region's Zonecard – an integrated multi-modal ticketing scheme;
- Operation and administration of Strathclyde Concessionary Travel Scheme which provides discounted travel for those who are eligible on rail, subway and on ferry; and
- Grant funding transport infrastructure in the city.

- Transport Scotland - the national transport agency for Scotland. It sets the overall strategy for transport in Scotland, and is responsible to Scottish Ministers for a wide range of policy and strategy areas including specific maintenance and development of the trunk road network, funding of rail network and managing rail franchise;
- The Glasgow City Region City Deal - a partnership of eight neighbouring local authorities, with Glasgow as lead authority; and
- A large number of public transport operators in the city – from ScotRail (and other cross-border rail operators) to bus operators to community transport providers. Network Rail are responsible for rail infrastructure across the UK. Taxis and private hire, car club and Nextbike, and voluntary and community groups are also part of an extensive and complex mix of transport solutions in the city.

3.8 Summary

3.8.1 This section has reviewed some of the wider planning, transport and economic policies and strategies pertinent to the study area. In terms of setting the context for this transport appraisal, it can be seen that the policies seek to deliver opportunities in terms of:

- Repurposing road space and road network to prioritise people-friendly public spaces and the sustainable travel hierarchy;
- Improving the quality of places through greening of the city and the support of 20-minute neighbourhoods;
- Achieving the target of net zero emissions by 2045 nationally and by 2030 in Glasgow City;
- Phasing out the need for new petrol and diesel cars and vans by 2030;
- Enhancing public transport provision by:

    - Reducing train journey times and improving rail capacity across the Central Belt through EGIP;
    - Improving station environments including subway and Glasgow Queen Street;
    - Undertaking a review of existing infrastructure capacity and identification of short-term improvement measures to enable longer and/or more frequent train services at Glasgow Central;
    - Improving connectivity within the Glasgow conurbation as well as further afield through the development of Glasgow 'Metro', Glasgow Central HS2 terminus and Queen Street/Central Station tunnel;
    - Reallocating road space on the motorway network through Glasgow by Transport Scotland by introducing bus priority measures at identified

locations, variable speed limits for buses on the mainline, and interventions to improve access onto the local network (e.g. ramp metering).

- Places for Everyone initiatives and funding for:
  - Glasgow Central Station High and Low Level entrances to provide additional queuing space;
  - Amending sections of Gordon Street and Argyle Street to one-way to permitted traffic;
  - Footway widening and road closures to all traffic except cycles in and around George Square;
  - Footway widening in Union, Hope and Bath Street;
  - Creating a bus/cycle/taxi gate to George Square (south) and South Frederick St (north); and
  - Creating a bus/cycle/taxi lane on Cochrane Street to speed up journeys and support sustainable transport;
- Delivery of interventions and schemes through City Deal including Tontine, Avenues, Clyde waterfront, Collegelands and Canal and North Gateway;
- Building a roof over the M8 at Charing Cross and creating a new pedestrian space outside the Mitchell Library;
- Extending of Avenues into other parts of the city centre such as George Square, Argyle Street, Cathedral Street and High Street;
- Creating attractive and active lanes throughout Glasgow city centre, and associated revision of planning policy and guidance, effective waste and recycling management, parking reallocation and improved community safety and public health;
- Developing guidance and framework for delivering mobility hubs;
- Investing in Demand Responsive Transport and Mobility as a Service;
- Implementing Glasgow Low Emissions Zone for all vehicles in 2023;
- Increasing the city centre population from its baseline of 20,233 in 2018 to around 40,000 by 2035; and
- Supporting SDF and Connectivity Commission ambitions.

4. SOCIO-ECONOMIC CONTEXT

4.1 Overview

4.1.1 The initial stage of the STAG process is establishing the current situation within the study area. This includes developing an understanding of the geographic, socio-economic and transport contexts for the study area.

4.1.2 The aim of this chapter is therefore to present the key background information on population, demographics, economic activity, and the environment to help inform the identification of problems, opportunities, issues and constraints in the area. Information related to the transport network is presented in Chapter 5.

4.2 Study Area

4.2.1 Figure 9 below shows the red line boundary of the Glasgow City Centre study area. The '2011 Census Datazone' boundaries, used for some of the data analysis where relevant, are indicated by the black outline.

4.2.2 The study area boundary roughly follows the nine districts of the SDF areas discussed earlier (in Section 3.5 and illustrated in Figure 6 earlier).

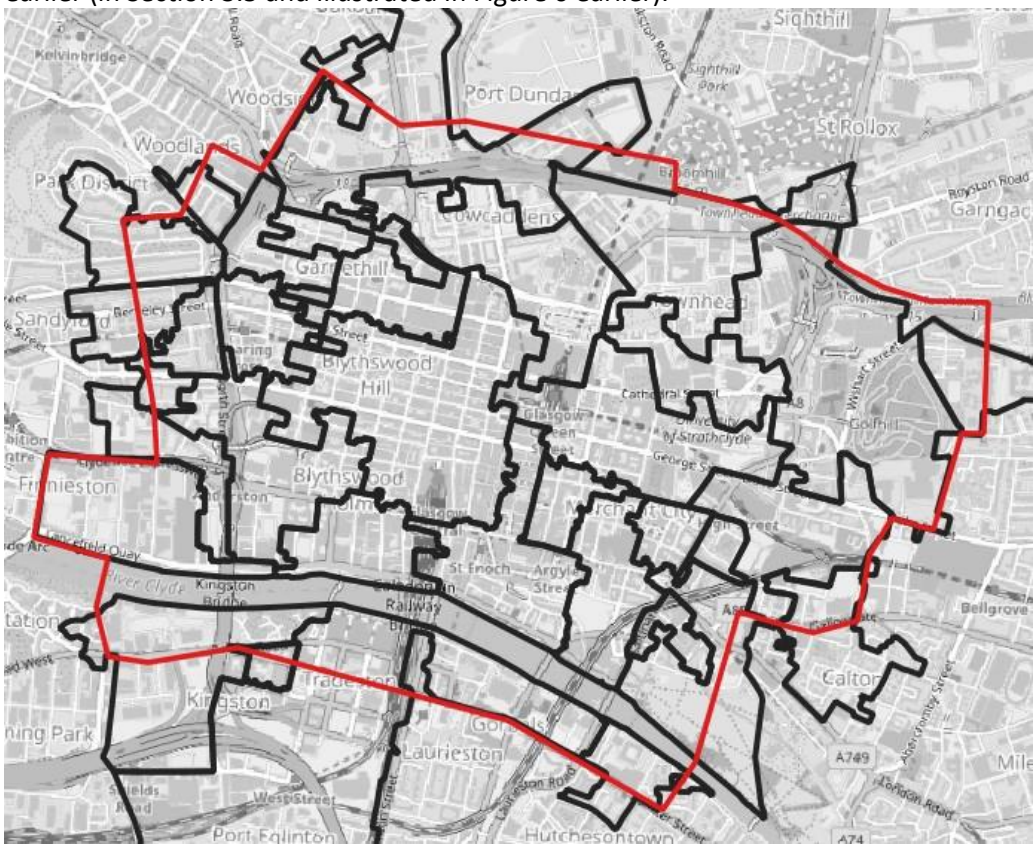


Figure 9. Study Area

4.3 Demographics and housing

Population and density

4.3.1 According to the 2019 Mid-Year Population Estimates produced by the National Records of Scotland, the study area has a population of approximately 39,600. The 2019 estimates take into account the ageing of the population by one year (since the last estimate), births, deaths, and migration.

4.3.2 A comparison of the 2019 estimated population figures with the 2011 Census data shows that there was a stark increase (+59%) in the under 16s group in the study area compared to Glasgow City (+5%) and Scotland as a whole (1%) between 2011 and 2019. The data also shows that the City Centre working age proportion increased 23% compared to 8% for Glasgow City and 0% for Scotland. In contrast, the pensionable age group decreased by 1% for Glasgow City Centre and increased 4% for Glasgow City and 17% for Scotland.

4.3.3 The overall total population increase for Glasgow City Centre was 23%, compared to 7% for Glasgow City Council and 3% for Scotland. Further details are shown in Table 1.

Table 1. Census 2011 and 2019 Estimated Population

AREA	CHILDREN (< 16 YEARS)	WORKING AGE (16 – 64)	PENSIONABLE AGE (65+)	TOTAL
Glasgow City Centre 2011	1,887	27,721	2,524	32,132
Glasgow City Centre 2019	2,996	34,111	2,495	39,602
Change	**+59%**	**+23%**	**-1%**	**+23%**
Glasgow City 2011	95,627	415,453	82,165	593,245
Glasgow City 2019	100,666	447,290	85,164	633,120
Change	**+5%**	**+8%**	**+4%**	**+7%**
Scotland 2011	916,331	3,488,738	890,334	5,295,403
Scotland 2019	921,397	3,497,758	1,044,145	5,463,300
Change	**+1%**	**0%**	**+17%**	**+3%**

4.3.4 The above population figures contrast with the City Centre Living Strategy which puts the city centre population in 2018 at 20,245. The Strategy then aims for the city centre population to reach 40,000 by 2035[12]. This mis-match in figures is likely to be due to the Living Strategy targeting a smaller area than the area covered by this study, which also includes densely populated locations to the west of Garnethill and Blythswood.

4.3.5 Figure 10 illustrates the population density for the study area, using the 2019 Glasgow City Centre Estimated Population figures. The actual population totals are overlaid on top of each datazone. As can be seen from the figure, the study area includes pockets of highly

[12] City Centre Living Strategy, page 51

dense areas as well as areas of low population density. The most dense datazone is 'Gallowgate North and Bellgrove – 05' (pop. 1,877) around High Street, followed by 'Laurieston and Tradeston – 06' (pop. 1,036) south of the river, and areas of Garnethill (City Centre West 03 (pop. 819) and 04 (pop. 592) datazones) and Anderston (Anderston 06 (pop 1033) and 03 (pop 613).

4.3.6 Overall, the density of the Glasgow City Centre study area is 5,610 persons/km^2. This is high relative to the Glasgow City Council area at 3,625 persons/km^2, which has the highest population density of any local authority area in Scotland[13].

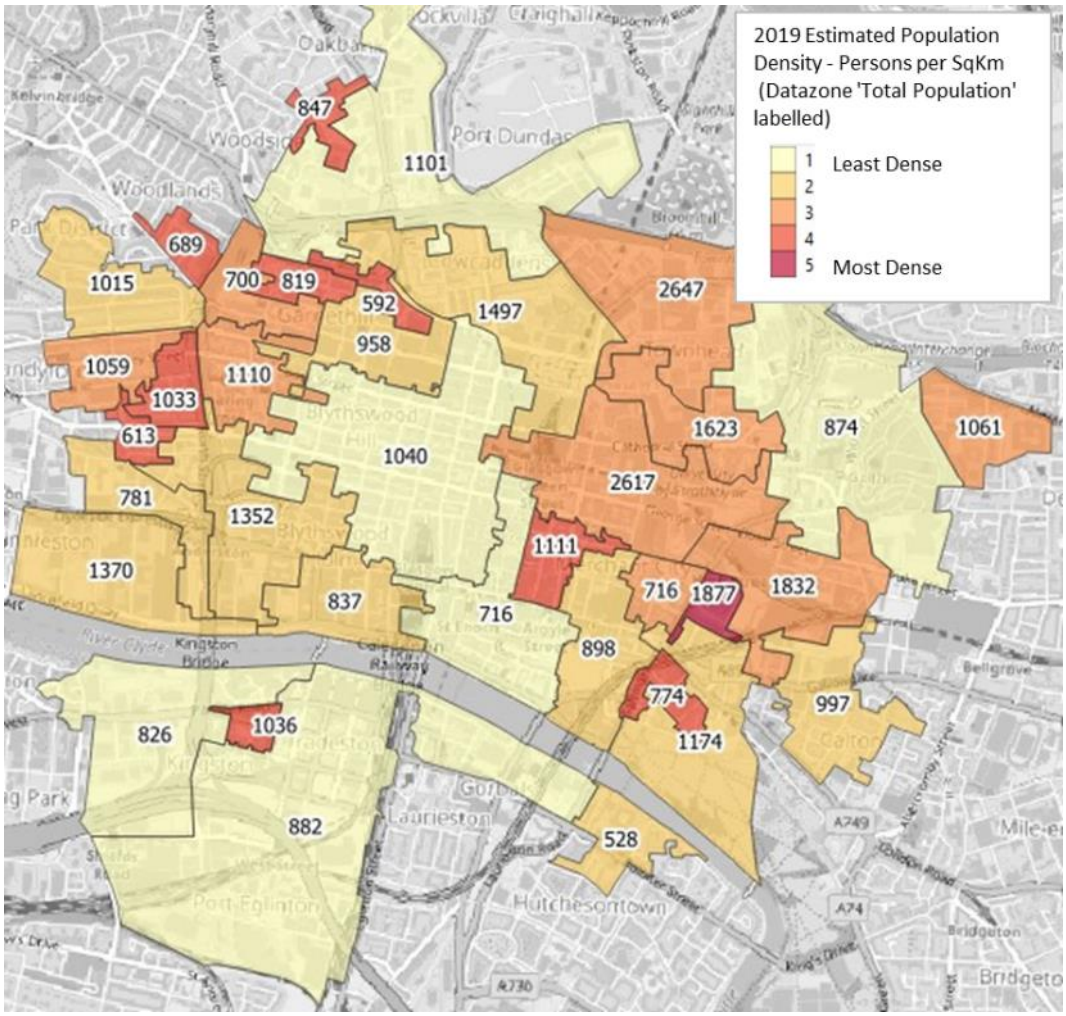


Figure 10. 2019 Estimated Population Density

4.3.7 In terms of future residential growth, Figure 11 shows the housing sites that are either in planning or under construction within the study area[14]. As can be seen, these areas are focussed in/around Anderston, Tradeston, St Enoch and Sighthill. Additionally, the SDF proposes further population growth in Merchant City and Central.

[13] Based on Census 2019 Estimated Population figures, the population density of Aberdeen City is 1231 persons/ km^2, Dundee City is 2,498 persons/km^2 , City of Edinburgh is 1,993 persons/km^2 and Stirling is 43 persons/km^2

[14] GCC Housing Planning Data, 2021

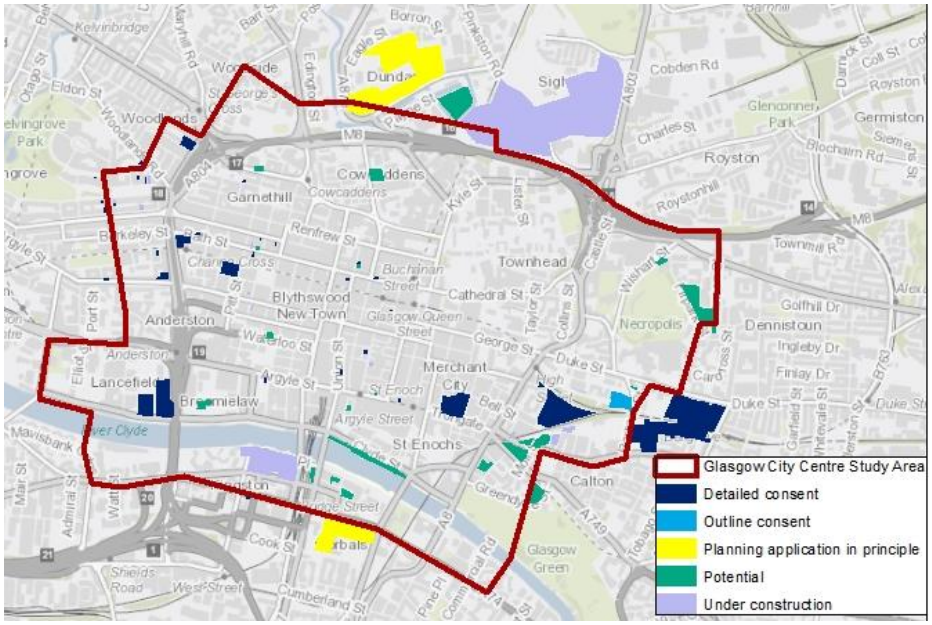


Figure 11. Future housing sites, City Living Strategy 2035

Main point – The city centre experienced a stark increase (+59%) in the under 16s group of population and 23% rise in working age population between 2011 and 2019 in comparison to Glasgow and Scotland as a whole. The most populated areas include Townhead and Charing Cross, and the most densely populated areas are parts of Tradeston, High Street, Garnethill and Anderston. These areas provide an opportunity for compact city planning and transport provision, with focus on sustainable travel and shorter trips. Most of these areas have also been a focus for additional housing.

Population by housing stock and tenure

4.3.8 As shown in Figure 12, the 2011 Census confirms that 95% of the City Centre population lives in a flat or an apartment, compared to 64% for Glasgow City and 29% for Scotland.

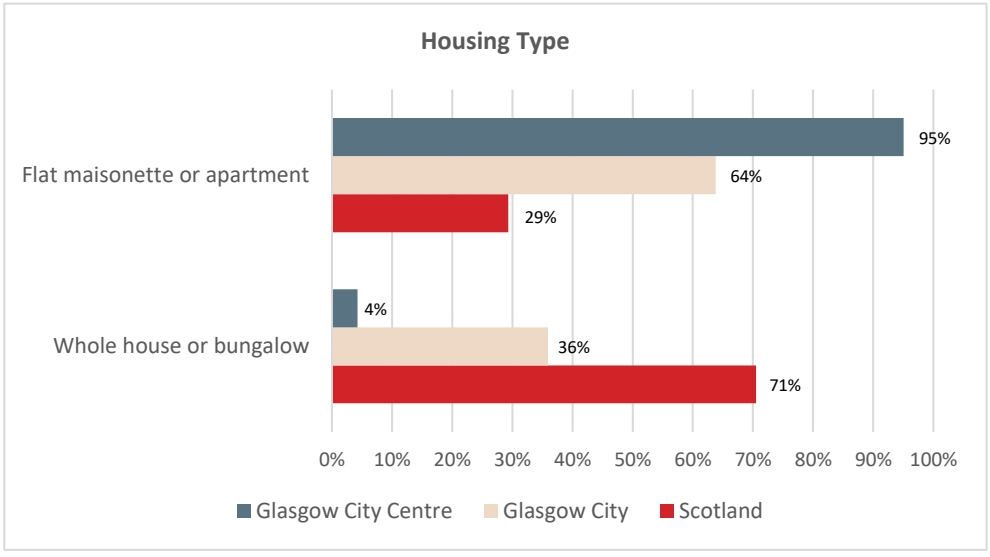


Figure 12. Population by Housing Type, Census 2011

4.3.9 When tenure is considered, Figure 13 illustrates that the city centre has the highest proportion of privately rented homes (43%) compared to Glasgow City (16%) and Scotland as a whole (12%). The next highest tenure type for the study area is social renting at 27%, which is lower than for Glasgow City (34%) but higher than for Scotland (21%). The areas with high social renting include Anderston, Cowcaddens, Townhead, Calton, and Gorbals, followed by areas around Saltmarket, High Street, and Cathedral. 27% of the population also own their home (with a mortgage and outright summed together), although this is much lower than the average for Glasgow City (49%) and Scotland (65%). The information echoes the data provided in the City Centre Living Strategy 2035.

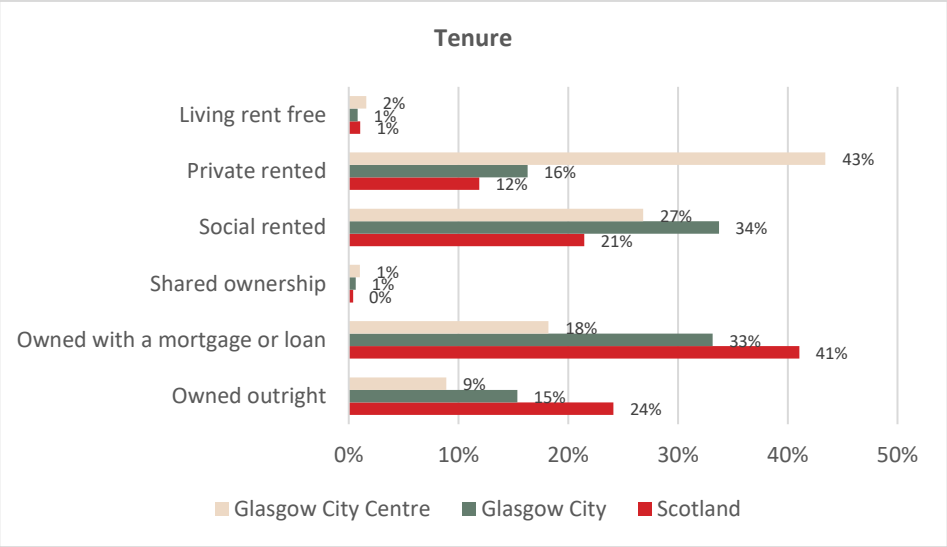


Figure 13. Tenure, Census 2011

Main point – The vast majority (95%) of the city centre population lives in flats or apartments. In addition, 70% of the city centre population lives in rented accommodation (43% are privately rented flats and 27% are social renting) which is higher than in Glasgow City and Scotland. This has implications for the provision of supporting transport facilities (e.g. bike storage, EV charging infrastructure etc) which may need to be focused on communal provision.

4.4 Employment and economic sectors

Employment

4.4.1 Figure 14 shows the split of people aged 17-74 between economically active and inactive[15]. As can be seen from the figure, the study area has a slightly lower percentage of economically active people (59%) when compared to Glasgow City (64%) and Scotland as a whole (69%).

[15] Economically active people include full time and part time employees, self-employed, unemployed but seeking employment, and full time students. Economically inactive include those who are retired, looking after home or family, are permanently sick or disabled, and students

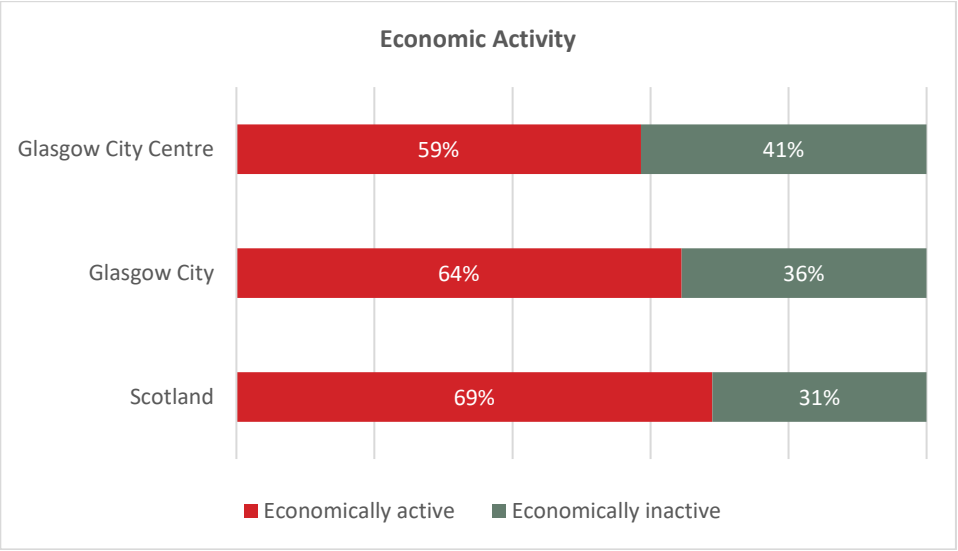


Figure 14. Economic Activity, Census 2011

4.4.2 The city centre proportion of those in full time employment (30%) is lower than that for Glasgow City (36%), and Scotland as a whole (40%) (Figure 15). The proportion of part-time employees in the city centre (5%) is again lower than Glasgow City (11%) and Scotland (13%). This may be due to the city centre jobs not being filled by city centre residents, owing to the high volume of commuters into the city each day. There is only a slight difference in the proportions of self-employed and unemployed populations across all three areas, with the city centre having the smallest proportions of the three areas at 5% and 4%, respectively.

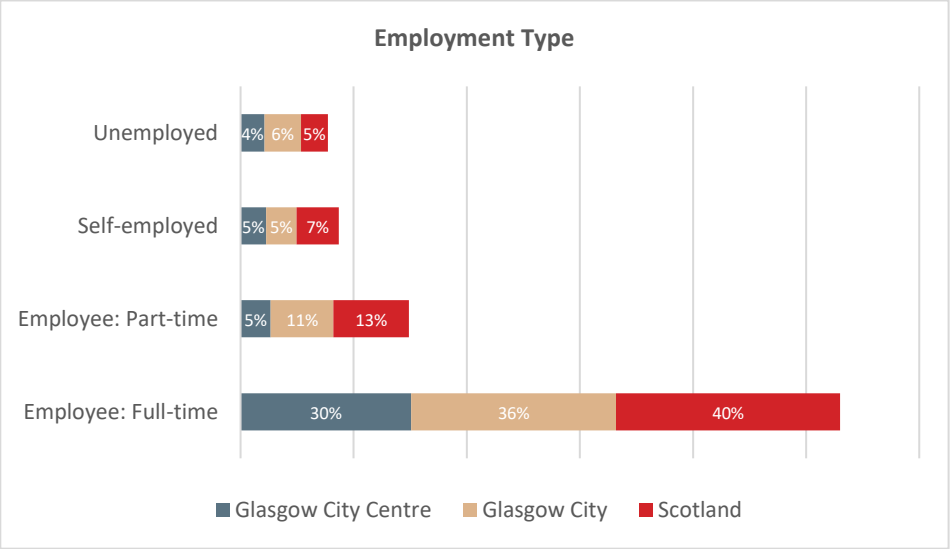


Figure 15. Employment Type, Census 2011

4.4.3 The number of jobs and job density for the region according to NOMIS is not available at datazone level. Therefore, the data is summarised in Table 2 by Local Authority (Glasgow City) and Parliamentary Constituency. The Glasgow Central constituency is the best fit geographically for the study area and illustrates that, whilst the area gained additional 11,000 jobs between 2017 and 2019, the job density, measured by number of jobs per resident aged 16-64, dropped 0.02 points to 2.83. Given that the Census data on employment showed the city centre has a lower proportion of economically active people

than Glasgow City and Scotland as a whole, this job density figure provides further evidence that jobs in the centre are not taken up by the city centre residents.

Table 2. Number of Jobs/ Job Density, NOMIS

AREA	TOTAL NUMBER OF JOBS			JOB DENSITY		
	2017	2018	2019	2017	2018	2019
Glasgow City Council	454,000	458,000	463,000	1.04	1.04	1.04
Glasgow Central – best fit for the study area	225,000	231,000	236,000	2.85	2.85	2.83

Main point – Whilst there was a 5% increase in the number of jobs between 2017 and 2019 in the city centre, the reduced job density figures and the lower proportion of economically active people in the city centre (59%) compared to Glasgow City (64%) and Scotland as a whole (69%) suggest that the city centre jobs are not necessarily filled by the city centre residents, potentially due to the high attraction of commuters to the city centre.

Economic Sectors

4.4.4 Figure 16 shows the breakdown of employment for the city centre residents by industry, using Census data. As can be seen, the two main industries are wholesale/retail (15%), and accommodation/food services (14%), followed by health and social work (10%), education (9%), and financial and other professional services (8% each).

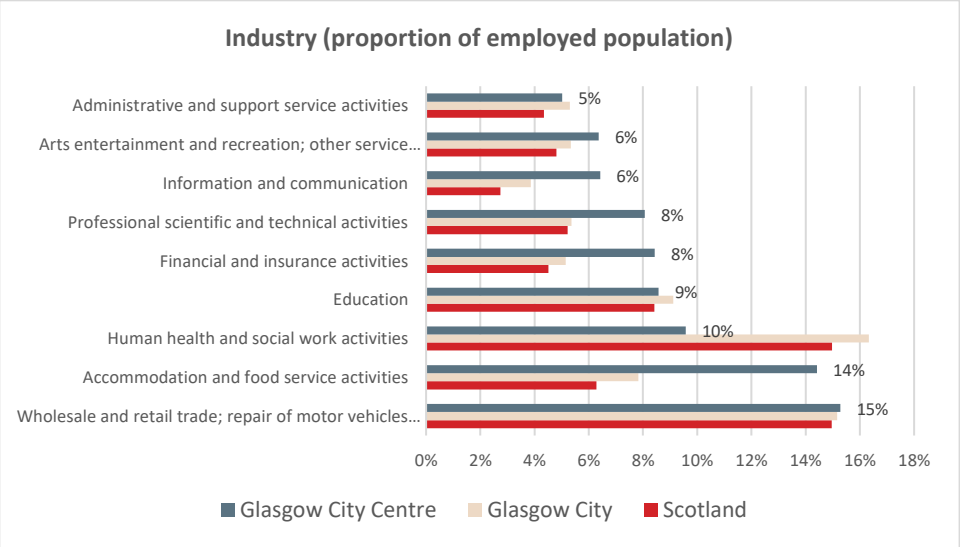


Figure 16. Employment by Industry, Census 2011

4.4.5 Based on the 2019 Government's Business Register & Employment Survey (BRES) data, the highest concentration of jobs is as follows:

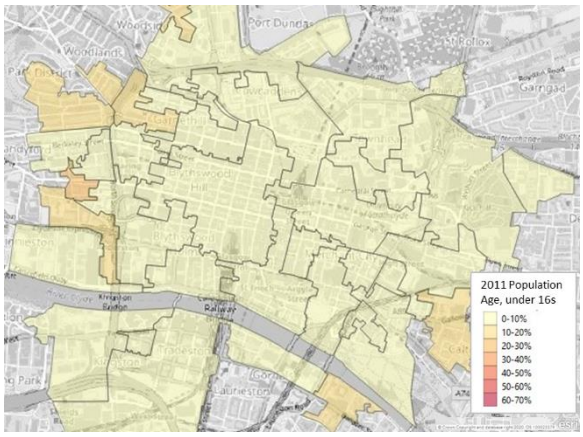
- Private sector service industries - are heavily concentrated in Central, but also Broomielaw and parts of Blythswood;
- Shopping, leisure and the visitor economy – are focused on Central, but also Merchant City and St Enoch;

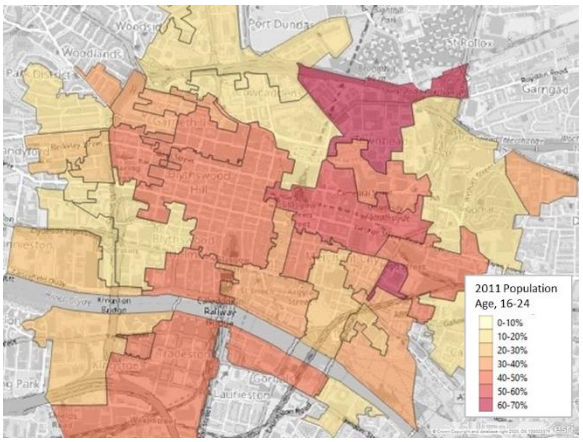
- Employment in public administration - a significant presence is in Broomielaw, Merchant City, Sauchiehall/Blythswood and Cowcaddens;
- Education employment - focused on the major institutions in the Learning Quarter and Cowcaddens;
- Employment in healthcare and social work - dominated by the Glasgow Royal Infirmary (Learning Quarter).

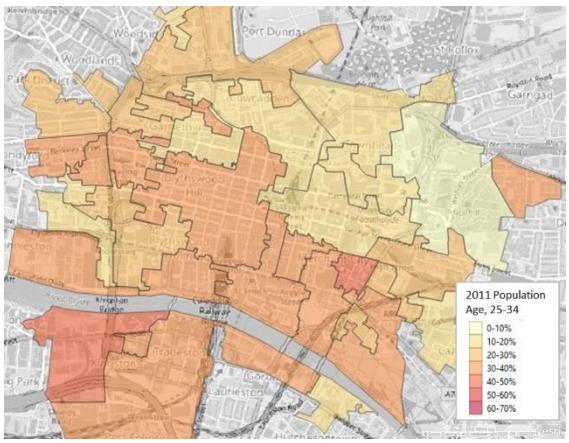
Main point – the main industries in the city centre include wholesale/retail and accommodation/food services (concentrated in Central, Merchant City and St Enoch), followed by health and social work (Learning Quarter), education (Learning Quarter and Cowcaddens), and financial and other professional services (Central, Broomielaw and Blythswood). This suggest there is a varying demand for travel as well as the times required to travel among these groups.

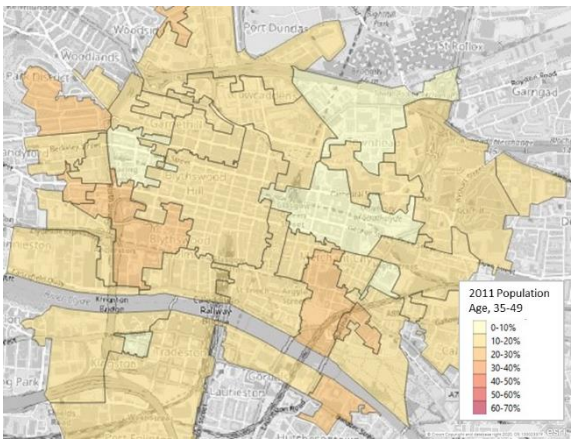
Population by age, gender and ethnicity

4.4.6 If the age demographics are broken down further, as illustrated in Figure 17, the city centre is predominantly comprised of 16-34 year olds. The combination of the two age groups together (16-24 and 25-34) make up more than 70% of the population for 12 out of 36 city centre datazones. The highest concentration of the 16-24 year age group is around the Caledonian and Strathclyde Universities, suggesting a large student population in these areas.









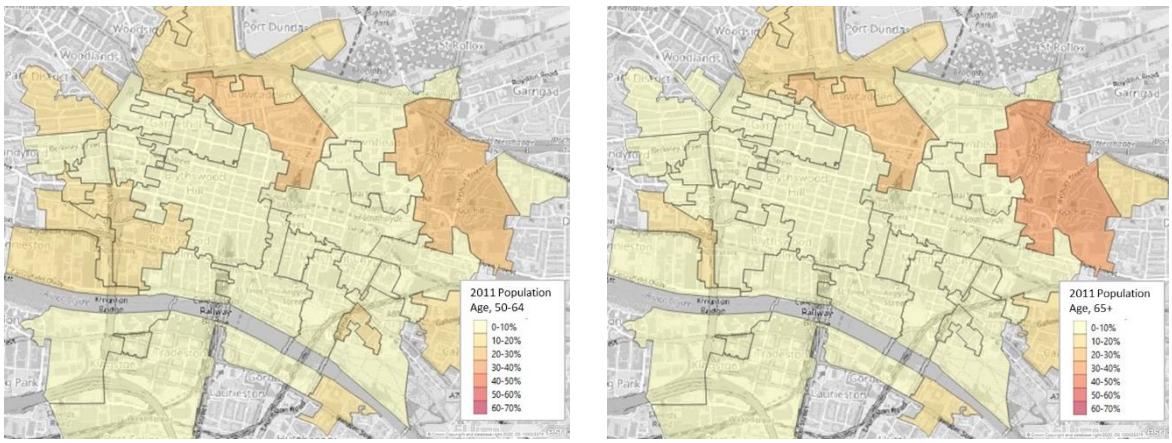


Figure 17. City centre population distribution by age, Census 2011

4.4.7 Based on data presented in section 4.4.22, young people are less likely to have access to a car. They are also less likely to hold a driving license, and are more likely to walk or travel by bus to work.[16]

4.4.8 The population distribution by gender is shown in Figure 18, indicating that most of the city centre datazones are more than 50% male, with "Laurieston and Tradeston – 02" to the south of the river being 73% male. Conversely, only nine of the 36 datazones has a female proportion between 50-55% and all remaining areas have less than 50%.

4.4.9 Again, data presented in the GTS Equality impact assessment suggests that women are less likely to have access to a driver's licence than men, and use buses more frequently than men. They are also less likely to travel by bike than men[17].

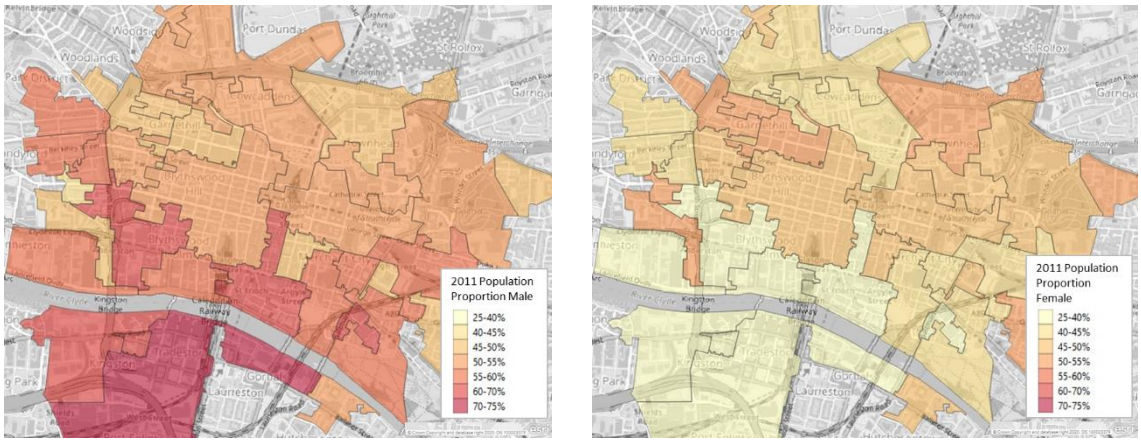


Figure 18. Population distribution by gender, Census 2011

4.4.10 The breakdown of the population by ethnicity from the 2011 Census (Table 3) shows that the city centre has higher than average proportion of population from a variety of ethnic backgrounds in comparison to Glasgow City and Scotland as a whole. 16% of the population includes Asian communities, particularly concentrated in areas of Garnethill, Woodlands, George Street, High Street, Broomielaw and Tradeston. (Figure 19).

[16] GTS Equality Impact Assessment Screening Form, June 2020, page 13
[17] GTS Equality Impact Assessment Screening Form, June 2020, page 7

4.4.11 Evidence from the GTS Equality Impact Assessment suggests that households from Chinese or African households are more likely to not have access to a car in Glasgow compared to other ethnic groups. In addition, in Glasgow, black and minority ethnic communities are under-represented when it comes to riding a bike.[18]

Table 3. Population by ethnicity, Census 2011

ETHNICITY	SCOTLAND	GLASGOW CITY	GLASGOW CITY CENTRE
White	96%	88%	78%
Mixed or multiple ethnic groups	0.4%	0.5%	0.9%
Asian Scottish or Asian British	2.7%	8.1%	16.0%
African	0.6%	2.1%	3.0%
Caribbean or Black	0.1%	0.3%	0.5%
Other ethnic groups	0.3%	0.6%	2.0%

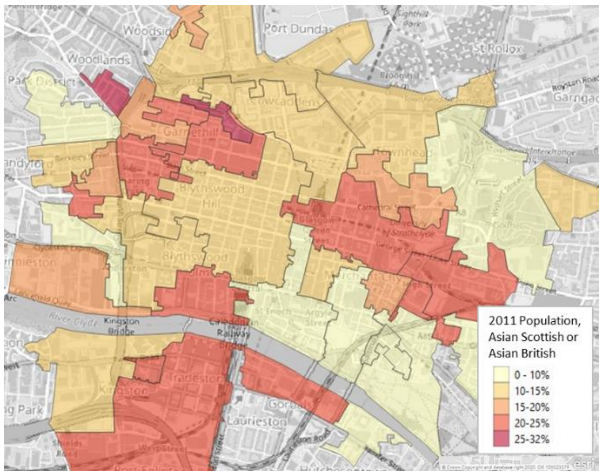


Figure 19. Population proportion which is Asian, Census 2011

Main point – the city centre population includes over 70% of 16-34 year olds, predominantly males, and higher than average ethnic minorities, particularly Asian (16%). These groups are reliant on travel alternatives to a private car, with women and ethnic minorities under-represented when it comes to riding a bike.

[18] GTS Equality Impact Assessment Screening Form, June 2020, page 9 https://www.glasgow.gov.uk/CHttpHandler.ashx?id=50282&p=0

Deprivation

4.4.12 The Scottish Index of Multiple Deprivation (SIMD) 2020 is the Scottish Government official tool for identifying the most deprived areas in Scotland. The index can be used to help identify areas which may be of greater need for public support and interventions. SIMD shows where Scotland's most deprived areas are across seven different domains of deprivation. The domains are measured using a number of indicators to form ranks for each domain and presented at a datazone level. Each of the seven domain ranks are then combined to form the overall SIMD[19].

4.4.13 The seven different SIMD domains and their indicators are as follows[8]:

- Employment - percentage of working age people who are employment deprived and receive certain benefits;
- Income - percentage of people who are income deprived and receive certain benefits or tax credits;
- Crime – includes recorded crimes of violence, sexual offences, domestic housebreaking, vandalism, drugs offences, and common assault;
- Housing – considers the percentage of people living in households that are overcrowded and/or with no central heating;
- Health – includes indicators such as mortality ratio, hospital stays due to alcohol or drug misuse, emergency hospital stays, the proportion of population being prescribed drugs for anxiety, depression or psychosis, and the proportion of live singleton births of low birth weight;
- Education – includes indicators such as school pupil attendance, attainment of school leavers, working age people with no qualifications, proportion of people aged 16-19 not in full-time education, employment or training, and proportion of 17-21 year olds entering into full time higher education; and
- Geographic access to services – considers the average drive time to a petrol station, a GP surgery, a post office, a primary school, a secondary school, and a retail centre, public transport travel time to a GP surgery, a post office, and a retail centre, and proportion of premises unable to receive superfast broadband.

4.4.14 Using a quintile ranking, which splits Scotland's datazones into 5 groups, the data shows that Glasgow city centre has an average overall rank of 2.6. This means that it is roughly in the middle between the most 20% deprived and the least 20% deprived of Scotland's datazones.

4.4.15 When individual datazones are considered, (Figure 20) we see that there are nine datazones in the city centre which are ranked in the 20% most deprived datazones in Scotland. These are (in order of decreasing deprivation):

- Gorbals and Hutchesontown
- City Centre West
- Calton and Gallowgate
- Anderston (2 datazones)
- City Centre South
- Woodside
- Laurieston and Tradeston
- City Centre East

[19] SIMD20 Technical Notes, page 4

4.4.16 The three most-deprived datazones (Gorbals and Hutchesontown, City Centre West, and Calton and Gallowgate) are each in the bottom rank for income, employment, health, housing, and crime-related deprivation indicators.

4.4.17 The data in the GTS Equality Impact Assessment shows that those living in the most deprived areas are also more likely to walk or use the bus for their journeys. [20]

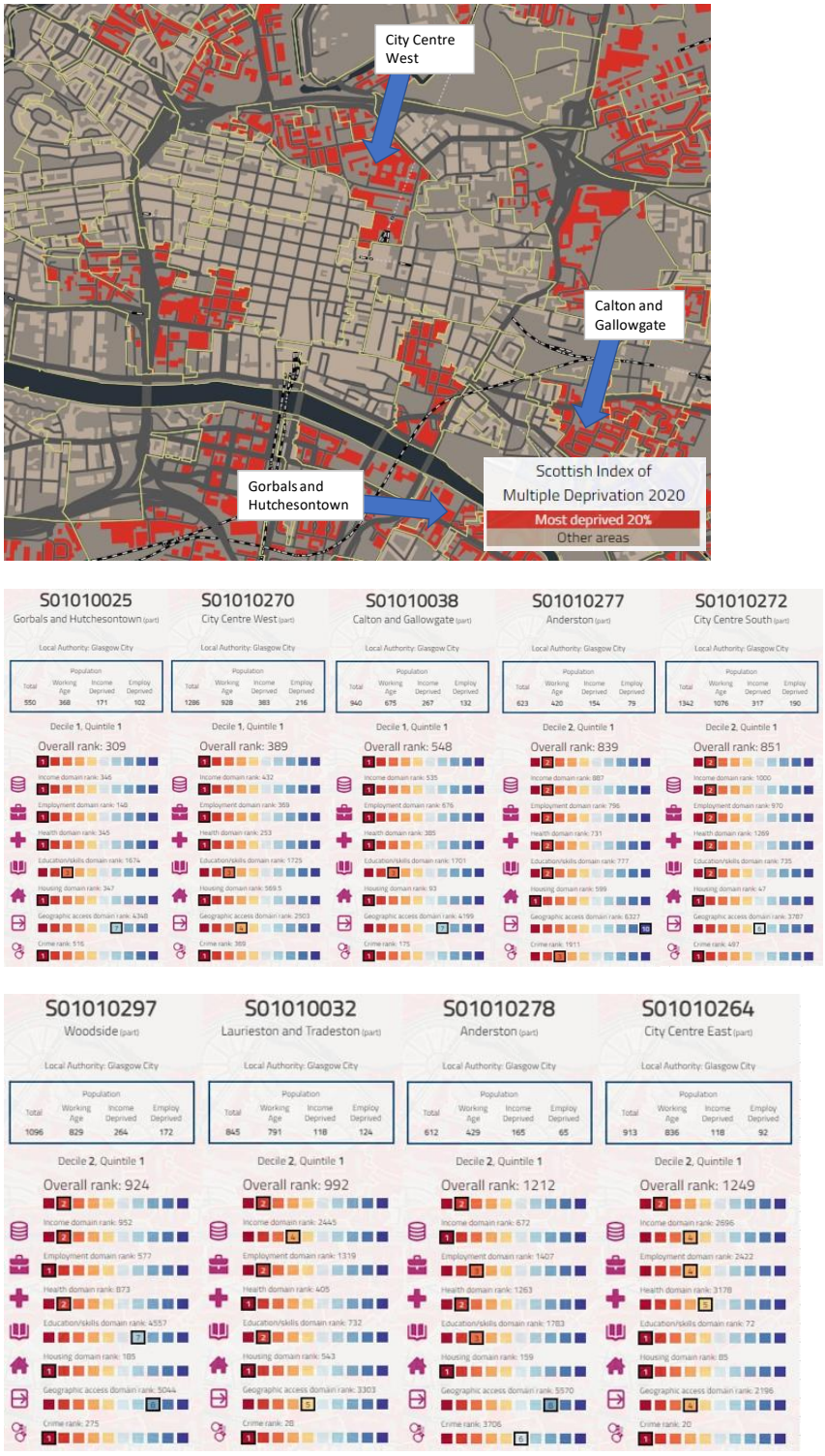


Figure 20. SIMD 2020, Most Deprived 20% areas

[20] GTS Equality Impact Assessment Screening Form, June 2020, page 18

Main point – the city centre includes nine of the 20% most deprived Scotland datazones. The lowest ranked datazones (particularly for income, employment, health, housing, and crime) include Gorbals and Hutchesontown (south – east of the river), City Centre West (Cowcaddens area), and Calton and Gallowgate. These groups are most likely to rely on walking and bus travel for their journeys.

Health

4.4.18 Figure 21 shows that:

- 2% of the city centre population are looking after their home or family members; the figure is lower than for Glasgow City (4%) and Scotland (4%) as a whole; and
- 6% of the population belong to the long term sick or disabled (6%) category; Whilst the figure is lower than in Glasgow City (8%), it has still implications for the transport provision, as sick or disabled adults are less likely to have a driving license and are more likely to use the bus[21].

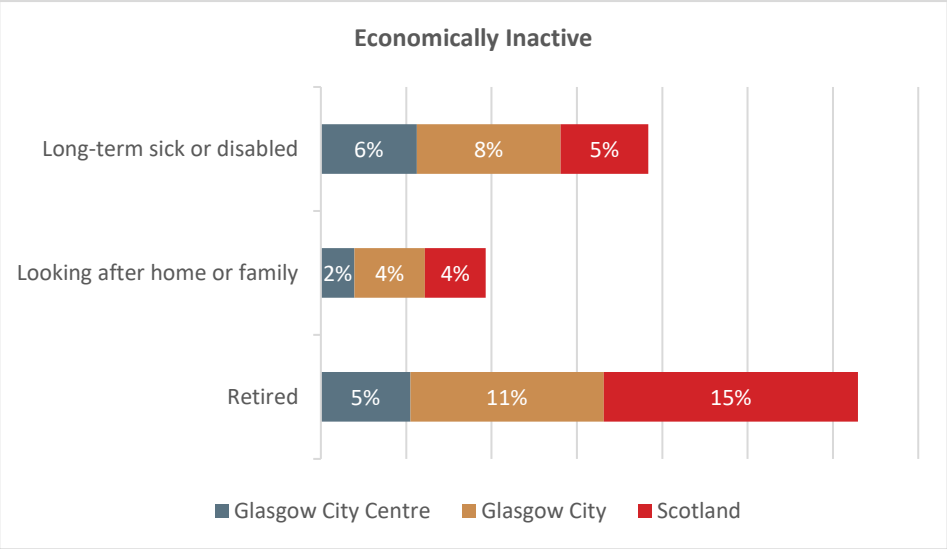


Figure 21. Economic Inactivity, Census 2011

4.4.19 Moreover, as illustrated in Figure 22, 15% of the population in the study area stated their daily activities are limited because of their health. This group of population is less likely to walk and cycle for their everyday journeys[22] and are therefore reliant on travel alternatives.

[21] GTS Equality Impact Assessment Screening Form, June 2020, page 10
[22] GTS Equality Impact Assessment Screening Form, June 2020, page 4

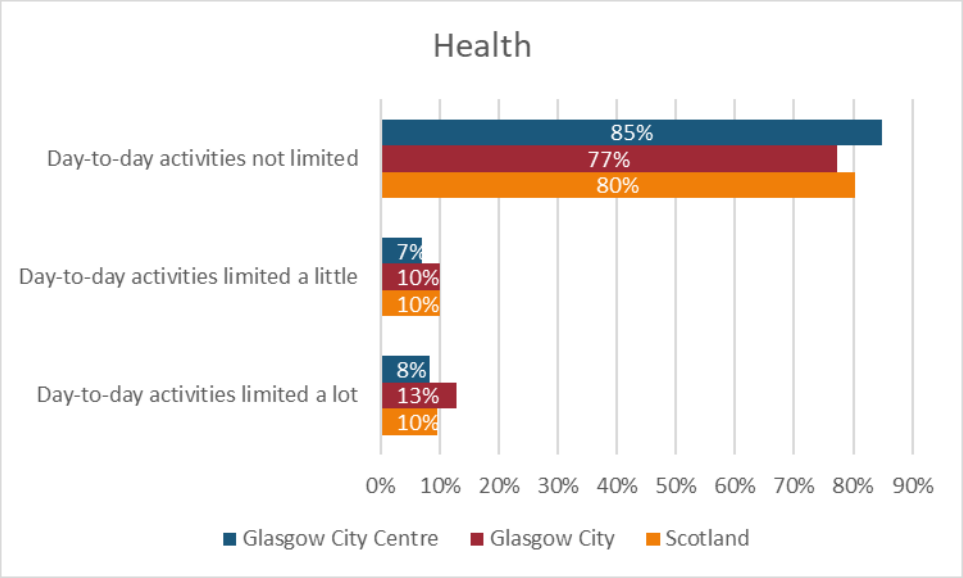


Figure 22. Health, Census 2011

Main point – although the city centre has a lower proportion of people who are sick or disabled and those whose activities tend to be limited because of their health when compared to Glasgow City and Scotland, there are still transport implications for these groups as they are more likely to use the bus and are less likely to walk or cycle for their everyday journeys.

Car Availability

4.4.20 Census 2011 data shows (Figure 23) that 63% of households in Glasgow city centre do not have access to a car or van, which is higher than for Glasgow City (51%) and Scotland as a whole (31%). The data also indicates that the city centre has a lower proportion of households with one, two, as well as three and more cars/vans when compared to the Council area and nationally.

4.4.21 The results from the 2019 Scottish Household Survey (no data was available for the city centre), indicate that the proportion of households in Glasgow City and Scotland with no access to a car/van has fallen slightly since 2011, those with one car or van rose by nearly 1% and those with two cars/vans rose by 3% regionally and nationally.

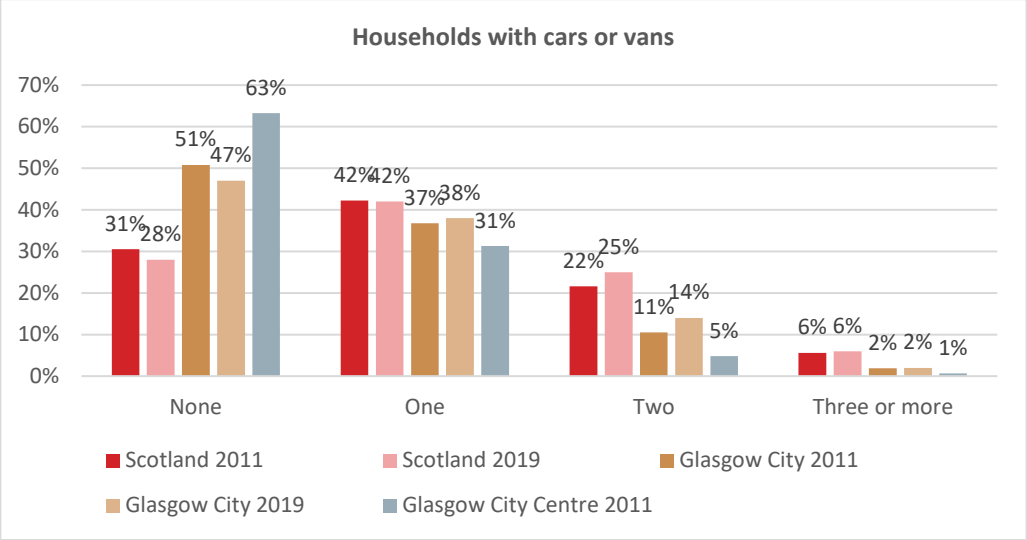


Figure 23. Car availability, Census 2011, Scottish Household Survey 2019

4.4.22 Figure 24 shows the city centre population with no access to a car/van broken down by age group. This data from 2011 illustrates that the younger age groups are much more likely to have no access to a car, with some areas showing the 16-24 and 25-34 year old age groups accounting for 50-70% of the population which has no access.

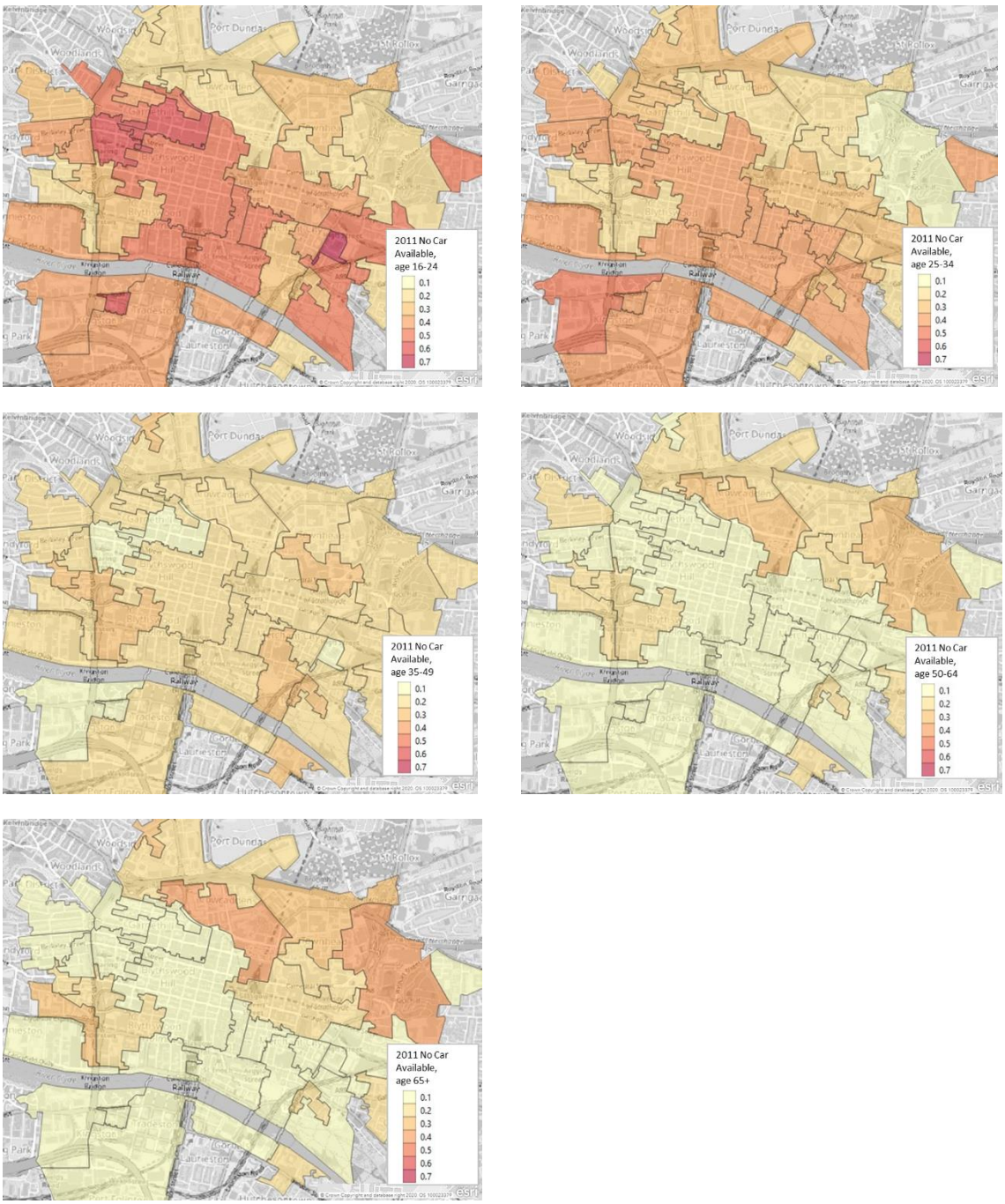


Figure 24. Car Availability by age, Census 2011

Main point – 63% of the city centre households do not have access to a car or van and are therefore reliant on travel alternatives. The highest levels of no car/van availability are among the 16-34 age group, who form the majority of the city centre population.

4.4.23 Based on the 2020 SIMD Broadband sub-domain data, which shows the percentage of premises with no broadband coverage or no access to superfast broadband[23], 20-46% of premises in the core city centre datazones do not have access to superfast broadband. These include areas of Blythswood, Anderston, Townhead and St Enoch (Figure 25).

4.4.24 A comparison with data on population density illustrates that the city centre areas with the highest population density all tend to have access to superfast internet. This provides an opportunity to influence travel demand through the provision of information to support sustainable travel choices.

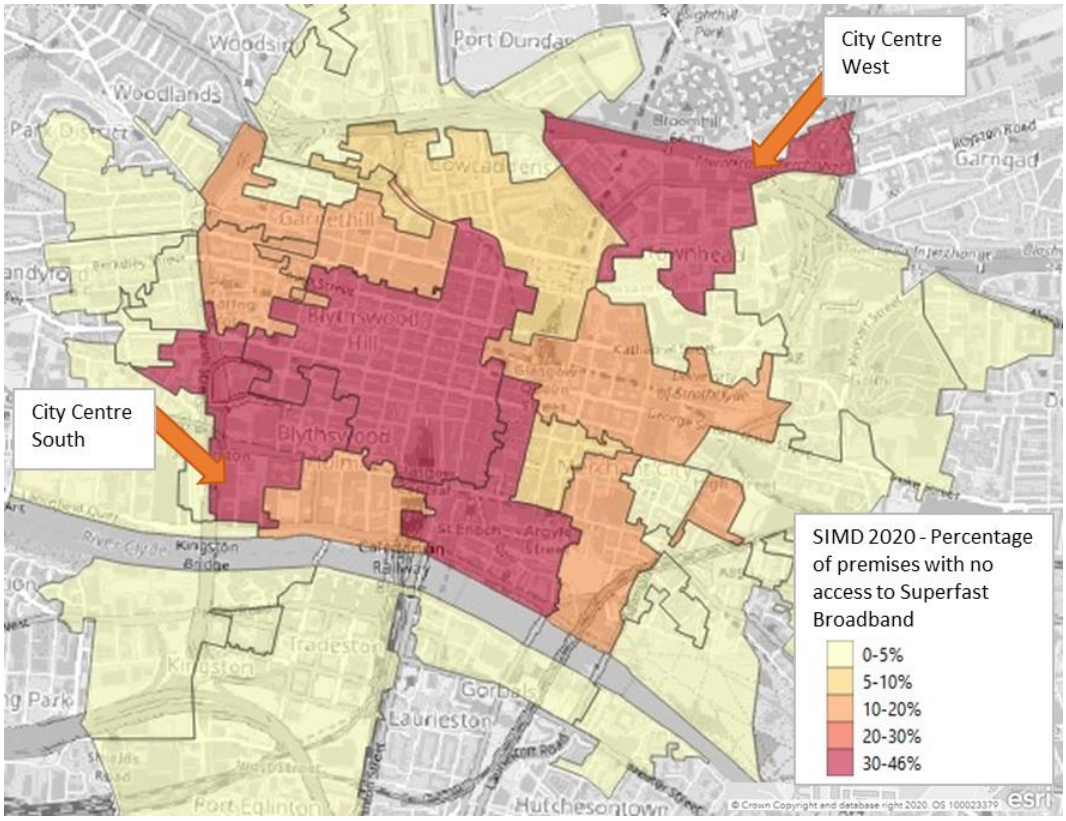


Figure 25. Superfast Broadband Access, SIMD 2020

Main point – The areas of the lowest superfast internet coverage include the highly populated area of Townhead, and private sector, shopping, leisure and visitor economies in Blythswood, Anderston and St Enoch. The most densely populated areas in the city centre all tend to have access to superfast internet which provides an opportunity to influence travel demand, reduce the need to travel and promote sustainable travel.

[23] Defined as providing a minimum 30Mbit/s download speed

4.5 Neighbourhoods and place

4.5.1 The city centre contains a number of established and distinctive neighbourhoods (Garnethill/ Townhead/ Merchant City/ Broomielaw/ etc) with their own unique place qualities. Any new development must adopt a context-responsive design-led approach to placemaking at the District/.Neighbourhood level that responds to the needs of the neighbourhood supporting local communities and wider place quality and sustainability. The District Regeneration Frameworks (DRF's) provide finer grained urban design guidance to support quality area based masterplans and design proposals that enhance place quality. Each of the Districts contain a number of existing discrete neighbourhoods with their own identities, character and communities. The DRFs will seek to meet the needs of these neighbourhoods.

4.5.2 Glasgow within its repopulate and liveability place ambition is seeking to capture the benefits of the '20 minute neighbourhood', whereby people should be able to meet their needs (for work, shops, services, schools, play, greenspace) within a short walk or cycle from home. The City Centre has the potential to accommodate more residents and evolve to include a series of vibrant, diverse and inclusive 20 minute neighbourhoods that bring life to the whole centre.

4.5.3 The Glasgow Household Survey[24] is conducted annually by Ipsos MORI on behalf of Glasgow City Council. The data from the 2019 survey includes responses relating to neighbourhoods and place. Data is also available from the annual Scottish Household Survey also carried out by Ipsos MORI[25]. The data shows that perceptions of local neighbourhoods were largely positive: 83% of respondents were either very satisfied or fairly satisfied with their neighbourhood as a place to live, while just over one in ten (11%) were either very or fairly dissatisfied.

4.5.4 61% of respondents felt their neighbourhood was above average compared to others in Glasgow, with almost a quarter (22%) considering it to be one of the best.

4.5.5 When asked about any improvements that would make their neighbourhood a better place to live, the most common response was improved cleanliness (38%), followed by better road maintenance (19%), less dog fouling (16%), more facilities and things for youths to do (16%), more for children to do (16%) and better pavement maintenance (12%).

4.5.6 62% of respondents said they would be willing to share more of their views about their neighbourhood with the council if asked, and the preferred ways of doing so were via online consultations (51%), social media (36%) and public meetings or workshops (33%).

4.5.7 80% of respondents felt very / fairly safe when walking alone in their neighbourhood after dark compared to 15% who felt very / A bit unsafe.

4.5.8 Data from the 2018 Glasgow Household Survey suggests that in terms of traveling into the centre in the evening, 39% of the respondents said they never did this, leaving 26% who travelled to the centre in the evening at least weekly, 14% who did so two or three times a month and 19% who did so once a month or less. Travel into the city centre varied by both age and social class, with younger people more likely than older people to travel into the city centre both during the day time and in the evening.

[24] https://www.glasgow.gov.uk/index.aspx?articleid=17712
[25] https://scotland.shinyapps.io/sg-scottish-household-survey-data-explorer/

Main point – based on consultation findings people in Glasgow are mostly very or fairly satisfied with their neighbourhood as a place to live, with the majority reporting they were feeling safe when walking alone in their neighbourhood after dark. Improved cleanliness, better road and pavement maintenance and more facilities for youth and children were the most cited measures for improvement. In terms of travel to the city centre in the evening, this varies by age and social class, with younger people more likely than older people travelling to the city centre during the day time and in the evening.

4.6 Travel demand

4.6.1 Journeys to work and education have a significant impact on the transport network as traditionally, they tend to be clustered in morning and evening peaks. However, during the Covid-19 pandemic, the usual peak hours of vehicle traffic (i.e. between 7am and 9am and between 4pm and 6pm) have changed substantially, with car traffic becoming heavier between 10am and 3pm and slightly lighter during the evening peak. This was likely due to the increased propensity to work from home since lockdown began.[26]

Journeys to work

4.6.2 Looking at the pre-Covid-19 travel patterns, Scottish Household Survey (SHS) 201927 data show that in Glasgow the main mode of travel for the journey to work is by car. A comparison to Census 2011 data confirms the proportions per mode of travel to be broadly similar, as indicated in Figure 26.

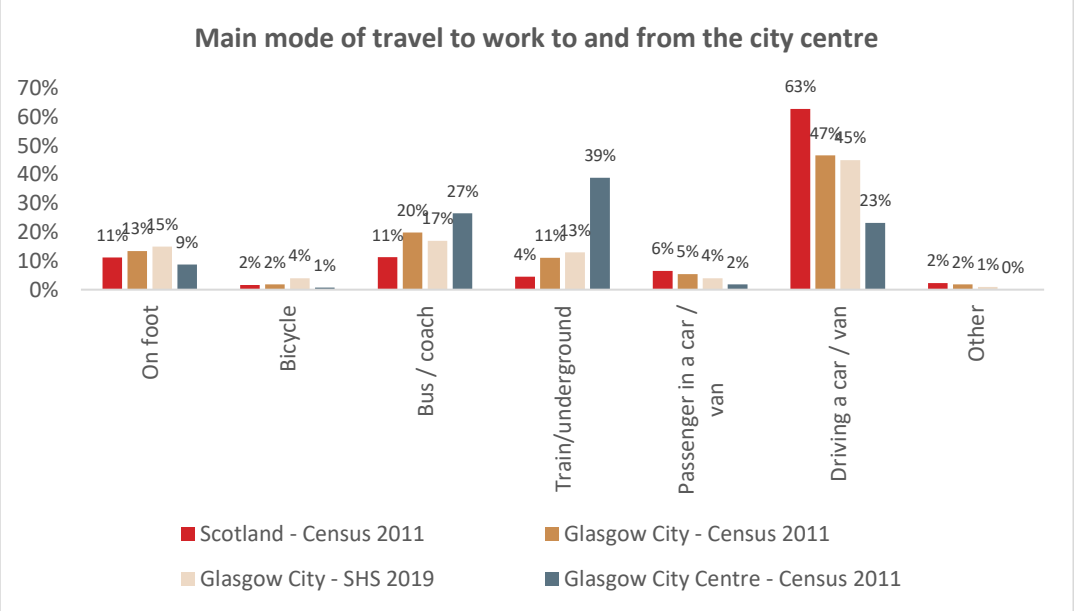


Figure 26. Main mode of travel to work, SHS, Census

4.6.3 Figure 26 also shows, that based on Census 2011 data taken from Scotland Datashine, of all people aged 16-74 in employment and excluding those that work from home, the main mode of travel to work to and from the city centre[28] is train/underground (39%), followed

[26] COVID-19: Scotland's transport and travel trends, page 26
[27] Transport and Travel in Scotland 2019: Results from the Scottish Household Survey
[28] Uses City Centre South, City Centre East and City Centre West locations as origins and destinations

by bus/coach (27%), lone car/van driving (23%), walking (9%), car sharing (2%) and bicycle (1%). These figures indicate higher (77%) than local (52%) and national (35%) proportions of sustainable transport journeys, which provides an opportunity to build upon. The proportions including absolute values are also highlighted in Figure 27 as a pie chart.

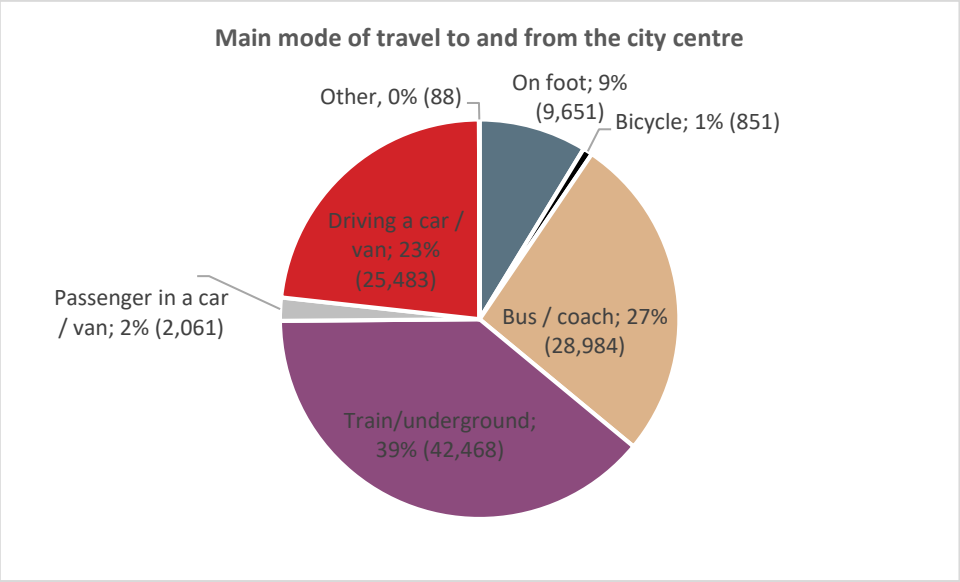


Figure 27. Main mode of travel to work, Scotland Datashine Census 2011

4.6.4 A comparison of the Census 2011 travel to work data from Datashine with the Strathclyde Regional Transport Model (SRTM) outputs for commuting to and from Glasgow city centre[29] shows the overall proportions of travel to work by car the same (25%), with the SRTM showing higher proportion of public transport journeys and lower share of active travel trips than Census 2011 (Figure 28).

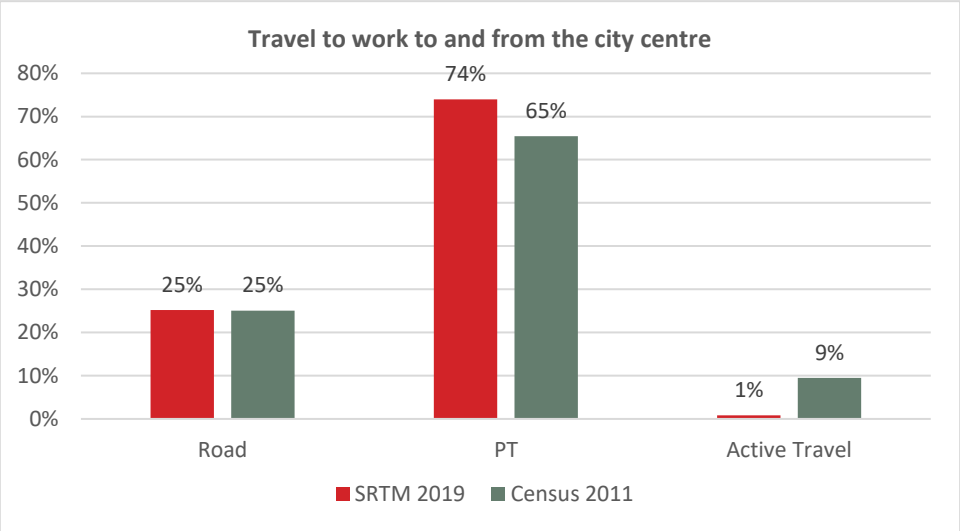


Figure 28. Travel to work by mode SRTM vs Census

4.6.5 Figure 29 shows the distance travelled by all people in employment as presented in Census 2011 and Scottish Household Survey 2019. As can be seen, the majority of Glasgow City Centre residents (62%) travel less than 5 kilometres to work, which is lower

[29] Glasgow Integrated Transport Assessment, Draft Stage 1 report, Jacobs/Steer, 2021

than the local average (71% - SHS 2019 and 73% Census 2011), but higher than the national figure (57%).

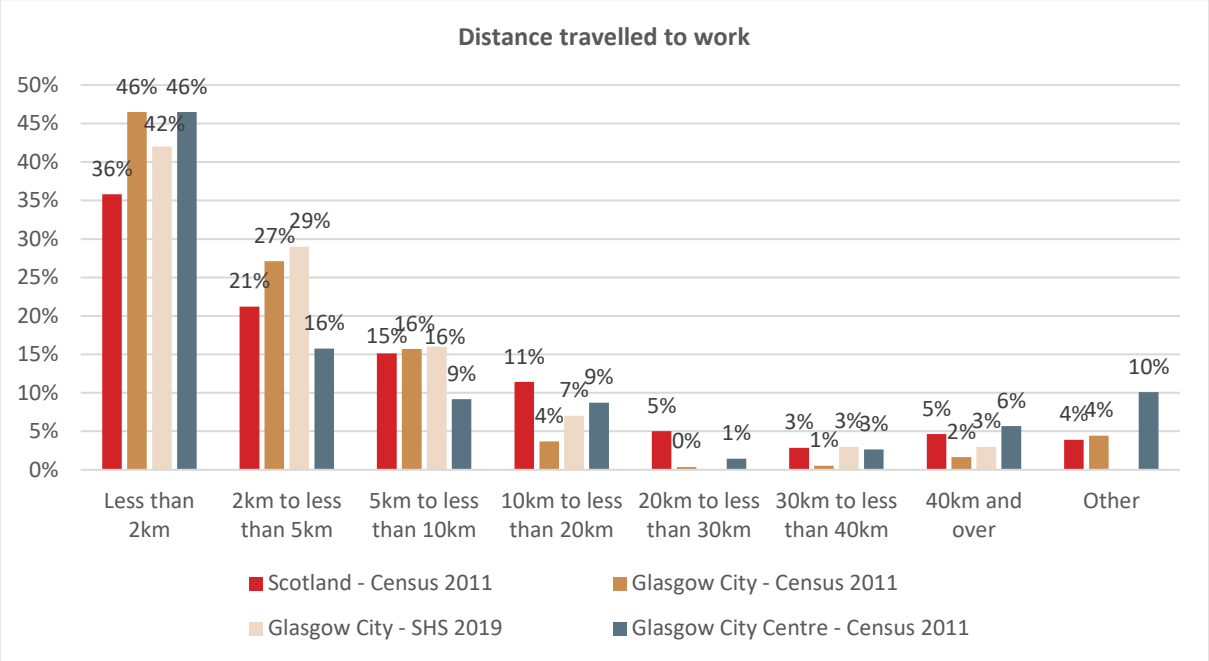


Figure 29. Distance travelled to work

Main point – 77% of trips to work to and from the city centre are made by sustainable transport modes. 62% of trips made by city centre residents are less than 5km. This provides an opportunity to build upon.

4.6.6 In terms of workplace locations, Scottish Household Survey 2019 shows that overall, almost 60% of Glasgow residents work within Glasgow Council area.

	Council area of workplace															
	Highlands / Islands	Grampian	Tayside	Central	Fife	Edinburgh	Lothians	Glasgow	Dunbartonshire / Argyll & Bute	Renfrewshire / Inverclyde	North Lanarkshire	South Lanarkshire	Ayrshire	Borders / Dumfries & Galloway	Not Known	*Sample size (=100%)*
Council area of residence																
Highlands / Islands	**81.5**	0.7	0.2	0.1	0.2	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	17.0	*2,410*
Grampian	0.9	**78.5**	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.2	*1,910*
Tayside	0.1	2.2	**79.5**	1.6	2.4	0.9	0.1	0.6	0.0	0.0	0.3	0.2	0.2	0.2	11.6	*1,330*
Central	0.1	0.3	0.9	**60.1**	1.4	6.4	3.7	5.2	0.9	0.1	2.3	0.7	0.1	0.1	17.5	*1,470*
Fife	0.2	0.2	5.5	2.3	**63.4**	9.9	2.4	0.2	0.1	0.0	0.7	0.0	0.0	0.0	15.2	*920*
Edinburgh	0.0	0.1	0.4	0.5	0.9	**71.2**	5.9	1.0	0.1	0.0	0.5	0.1	0.0	0.2	19.1	*1,640*
Lothians	0.0	0.2	0.2	1.7	0.8	29.9	**44.5**	1.7	0.0	0.0	0.9	0.7	0.0	0.3	19.0	*1,640*
Glasgow	0.0	0.1	0.1	1.1	0.1	1.0	0.4	**59.7**	4.1	5.5	3.7	2.9	1.2	0.1	20.1	*1,780*
Dunbartonshire / Argyll & Bute	0.3	0.2	0.0	1.1	0.1	0.5	0.2	26.5	**48.5**	3.5	2.7	0.8	0.3	0.1	15.2	*1,400*
Renfrewshire / Inverclyde	0.1	0.0	0.0	0.3	0.4	1.0	0.2	26.5	2.8	**46.4**	1.0	3.5	1.8	0.0	16.0	*1,540*
North Lanarkshire	0.0	0.0	0.0	2.6	0.4	1.8	3.9	17.2	1.9	1.5	**40.8**	7.3	0.7	0.0	21.8	*960*
South Lanarkshire	0.0	0.0	0.0	1.3	0.2	1.5	2.2	18.8	1.4	3.2	11.1	**37.9**	0.5	0.5	21.5	*880*
Ayrshire	0.1	0.1	0.1	0.1	0.0	0.1	0.0	10.8	0.9	4.3	0.6	1.6	**63.4**	0.4	17.4	*1,260*
Borders / Dumfries & Galloway	0.0	0.6	0.0	0.2	0.0	3.9	2.1	0.7	0.0	0.1	0.3	0.4	0.4	**73.5**	17.9	*810*
Scotland	**4.9**	**9.5**	**6.4**	**4.3**	**4.6**	**11.0**	**4.7**	**13.4**	**3.4**	**4.4**	**4.3**	**3.6**	**4.1**	**3.3**	**18.1**	*19,950*

Figure 30. Council travel to work from Scottish Household Survey 2019

4.6.7 The data for the city centre indicates that 85% of those who live in Glasgow City Centre also work in Glasgow; 11% stated they did not have a fixed place of work. Of those who work in Glasgow, the vast majority (88%) commute to the city centre. A small proportion of trips (6%) is also attracted to Hillhead.

4.6.8 The most popular mode for all local trips to work (i.e. within Glasgow City) from the city centre is walking (86%), followed by train/metro (6%) and lone driving (3%). Table 4 shows further details.

Table 4. Travel from Glasgow City Centre (home) to work – Census 2011 datazones

	On foot	Bicycle	Bus/ Coach	Train/ metro	Car (pax)	Car (driver)	Other	Total	% Total
Glasgow City	3082	11	153	216	0	96	0	3558	85%
Anderston	49	0	8	0	0	6	0	63	**1.8%**
City Centre South	1094	0	15	0	0	16	0	1125	**31.5%**
City Centre East	876	11	42	11	0	17	0	957	**26.8%**
Cowlairs and Port Dundas	0	0	0	0	0	6	0	6	**0.2%**
City Centre West	771	0	22	21	0	0	0	814	**22.8%**
Calton	22	0	0	20	0	0	0	42	1.2%
Craigton	0	0	0	15	0	0	0	15	0.4%
Drumchapel/ Anniesland	0	0	30	16	0	0	0	46	1.3%
East Centre	7	0	0	0	0	7	0	14	0.4%
Govan	44	0	23	21	0	13	0	101	2.8%
Hillhead	98	0	7	105	0	0	0	210	**5.9%**
Langside	0	0	6	0	0	6	0	12	0.3%
Linn	0	0	0	0	0	6	0	6	0.2%
Southside Central	0	0	0	7	0	0	0	7	0.2%
Springburn	7	0	0	0	0	0	0	7	0.2%
Woodlands	38	0	0	0	0	0	0	38	**1.1%**
Woodside	30	0	0	0	0	7	0	37	**1.0%**
City of Edinburgh	0	0	0	18	0	0	0	18	0.4%
East Dunbartonshire	0	0	6	0	0	0	0	6	0.1%
England	0	0	0	8	0	0	8	16	0.4%
Inverclyde	0	0	6	0	0	7	0	13	0.3%
North Lanarkshire	0	0	0	0	6	0	0	6	0.1%
Perth and Kinross	0	0	6	6	0	0	0	12	0.3%
Renfrewshire	0	0	0	20	0	15	0	35	0.8%
South Lanarkshire	0	0	0	8	0	6	0	14	0.3%
Stirling	0	0	0	6	0	0	0	6	0.1%
West Dunbartonshire	0	0	0	12	0	16	0	28	0.7%
No fixed place	135	9	67	54	19	164	30	478	11.4%
Grand Total	**3217**	**20**	**238**	**348**	**25**	**304**	**38**	**4190**	
Grand Total %	**77%**	**0.5%**	**6%**	**8%**	**1%**	**7%**	**1%**	**100%**	

4.6.9 Figure 31 below shows the trips made from Glasgow City Centre to all work destinations by different modes. The circles represent the approximate locations of work, with the sizes of the dots representing the modes by which they are mainly reached from the city centre.

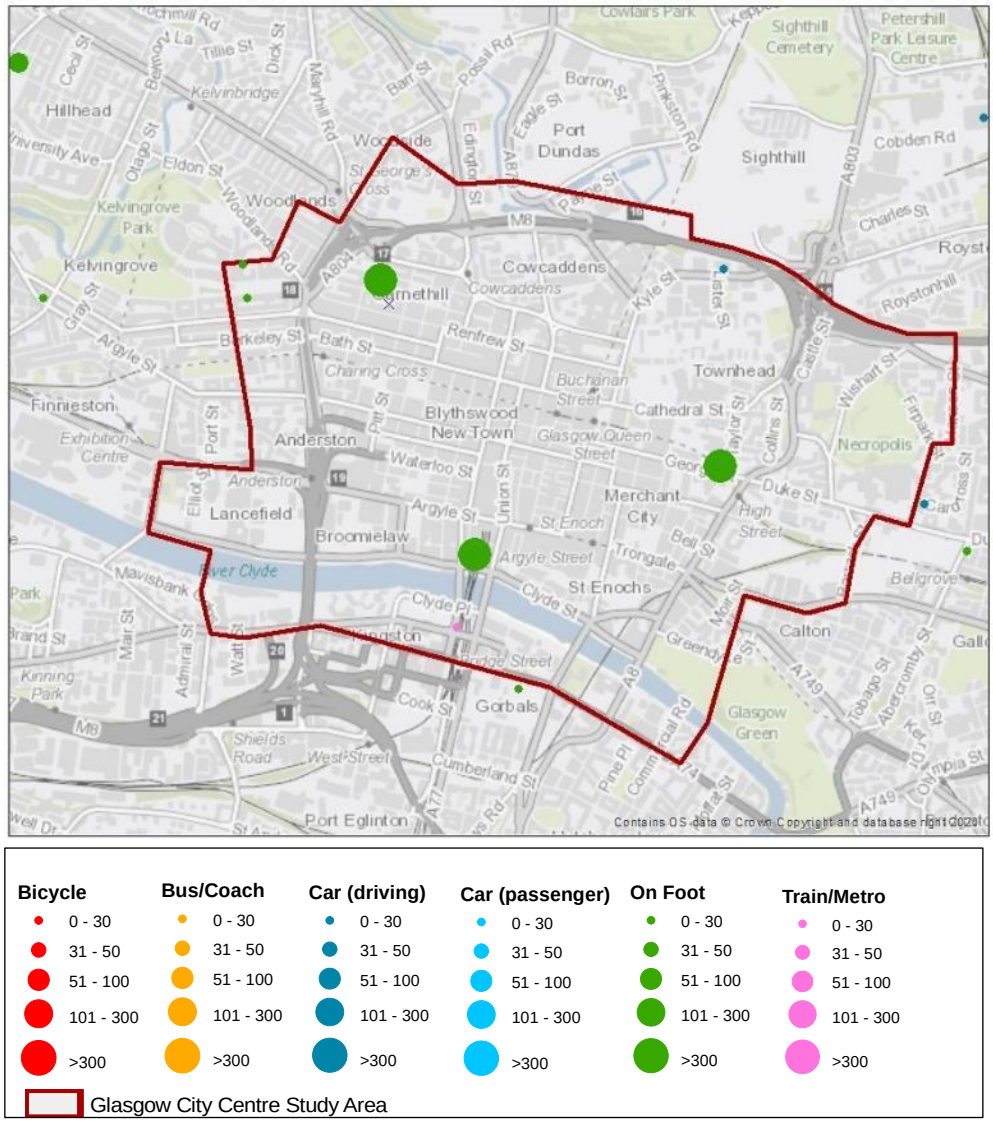


Figure 31. Travel from Glasgow City Centre (home) to work – Census 2011 datazones

4.6.10 As indicated in Table 5, more trips are attracted towards Glasgow City Centre. The distribution of the origins of these trips shows that 48% are made from the Glasgow City Council area, followed by North and South Lanarkshire (18% each) and East Dunbartonshire. Out of the Glasgow City Council trips, the highest proportions are from the city centre (17%), Langside (8%) and Partick West (7%).

4.6.11 The main mode of travel to the city centre from around Glasgow is public transport (62%), followed by walking (18%) and driving alone (17%). The main mode of travel to the city centre from areas outside Glasgow City Council is public transport (69%; train 47%, bus/coach 22%), followed by lone car driving (29%).

Table 5. Travel to Glasgow City Centre (work) from home origins – Census 2011 datazones

	On Foot	Bicycle	Bus/ Coach	Train/ Metro	Car (pax)	Car (driver)	Other	Grand Total	% Total
Glasgow City	9175	798	16538	15277	964	8832	50	51634	47.7%
Anderston	588	0	38	14	0	39	0	679	**1.3%**
City Centre	0	0	0	17	0	0	0	17	**0.0%**
City Centre East	1355	0	42	25	0	19	0	1441	**2.8%**
City Centre South	681	0	7	0	0	7	0	695	**1.3%**
City Centre West	705	11	30	7	0	7	0	760	**1.5%**
Cowlairs and Port Dundas	95	0	173	19	0	43	0	330	**0.6%**
Finnieston and Kelvinhaugh	397	31	171	79	6	51	7	742	1.4%
Townhead	0	0	0	120	0	31	0	151	**0.3%**
Woodlands	537	51	47	157	0	46	8	846	**1.6%**
Woodside	229	9	35	69	0	10	0	352	**0.7%**
Baillieston	0	0	770	1344	85	715	0	2914	5.6%
Calton	1130	26	885	387	24	221	8	2681	5.2%
Canal	409	56	489	612	28	271	0	1865	3.6%
Craigton	0	0	516	374	29	227	0	1146	2.2%
Drumchapel/ Anniesland	7	19	710	1351	72	629	0	2788	5.4%
East Centre	738	59	1394	392	73	388	11	3055	5.9%
Garscadden/ Scotstounhill	0	15	294	309	11	207	0	836	1.6%
Govan	639	6	1195	954	99	737	0	3630	**7.0%**
Greater Pollok	0	0	889	521	81	721	0	2212	4.3%
Hillhead	353	122	448	1623	18	410	0	2974	5.8%
Langside	78	114	1400	1700	67	654	7	4020	7.8%
Linn	6	16	873	793	50	655	0	2393	4.6%
Maryhill/Kelvin	121	56	618	248	20	222	0	1285	2.5%
Newlands/ Auldburn	96	22	605	650	15	342	0	1730	3.4%
North East	0	0	231	44	75	263	0	613	1.2%
Partick West	184	84	1060	1481	55	554	9	3427	6.6%
Pollokshields	15	10	43	337	20	159	0	584	1.1%
Shettleston	91	0	1064	758	61	552	0	2526	4.9%
Southside Central	474	91	1338	775	32	328	0	3038	5.9%
Springburn	247	0	1173	117	43	324	0	1904	3.7%
Argyll and Bute	0	0	0	536	0	94	0	630	1.1%
City of Edinburgh	0	0	860	700	54	550	0	2164	3.8%
Clackmannanshire	0	0	12	175	0	67	0	254	0.4%
East Ayrshire	0	0	472	538	23	598	0	1631	2.9%
East Dunbartonshire	0	12	1982	2576	325	2670	0	7565	13.4%
East Lothian	0	0	210	335	0	161	0	706	1.2%
East Renfrewshire	0	10	791	1819	141	1519	0	4280	7.6%
England	0	0	33	132	0	28	0	193	0.3%
Falkirk	0	0	14	956	0	198	0	1168	2.1%
Fife	0	0	16	33	0	53	0	102	0.2%
Highland	0	0	104	125	0	128	0	357	0.6%
Inverclyde	0	0	259	1082	15	610	0	1966	3.5%
Midlothian	0	0	0	6	0	13	0	19	0.0%
Moray	0	0	0	0	0	34	0	34	0.1%
North Ayrshire	0	0	305	1682	8	350	0	2345	4.1%
North Lanarkshire	0	0	2634	4900	193	2653	0	10380	18.3%
Perth and Kinross	0	0	203	306	7	329	0	845	1.5%
Renfrewshire	0	0	1358	2703	128	1860	0	6049	10.7%
Scottish Borders	0	0	0	11	0	0	0	11	0.0%
South Ayrshire	0	0	337	592	0	248	0	1177	2.1%
South Lanarkshire	0	22	1979	4966	123	2854	0	9944	17.6%
Stirling	0	0	16	404	12	383	0	815	1.4%
West Dunbartonshire	0	0	456	1711	26	690	0	2883	5.1%
West Lothian	0	0	246	573	17	290	0	1126	2.0%
Grand Total	**9175**	**842**	**28825**	**42138**	**2036**	**25212**	**50**	**108278**	
Grand Total %	8%	1%	27%	39%	2%	23%	0%	100%	

4.6.12 The below map shows the work trips made to Glasgow City Centre from all home origins by different modes.

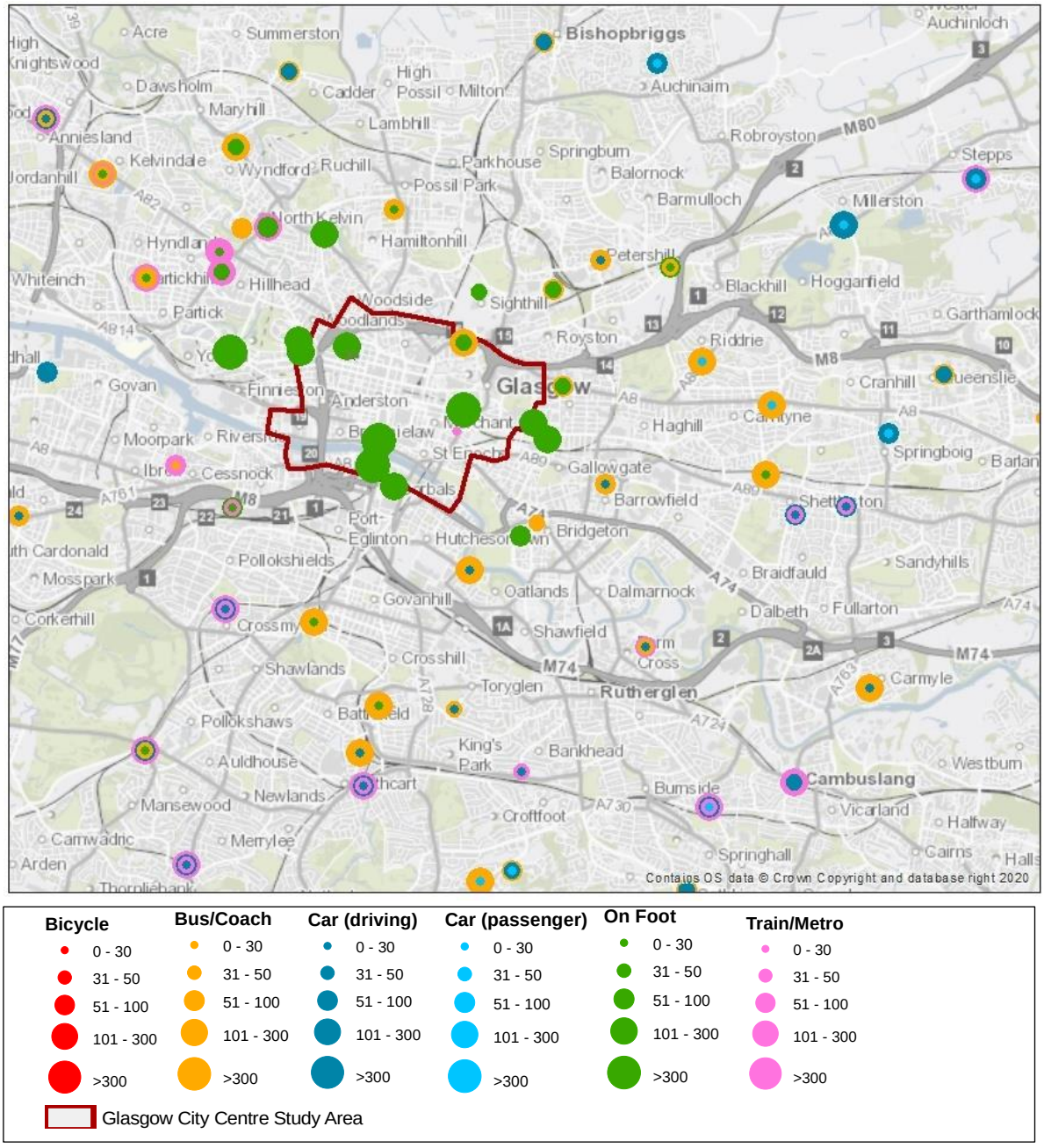


Figure 32. Travel to Glasgow City Centre (work) from home – Census 2011 datazones

4.6.13 SRTM[30] sector based analysis for trips to and from the city centre is shown in relation to Census data in Figure 33. The SRTM data includes all commuting trips to and from the city centre in the AM and PM peaks. Census data include all commuting trips with geographies manually assigned to match SRTM sectors.

[30] Glasgow Integrated Transport Assessment, Draft Stage 1 report, Jacobs/Steer, 2021

4.6.14 The comparison shows that, although the individual proportions are different, there are similarities in terms of the most popular modes of travel from the different geographical sectors. The only exemption is the South East sector which suggests that car travel is the most popular mode of travel (SRTM) rather than public transport (Census). This is likely to be due to different geographies being included in that sector in the two datasets.

4.6.15 In addition, the data shows that Census has much higher proportions of trips by walking and cycling in comparison to the SRTM.

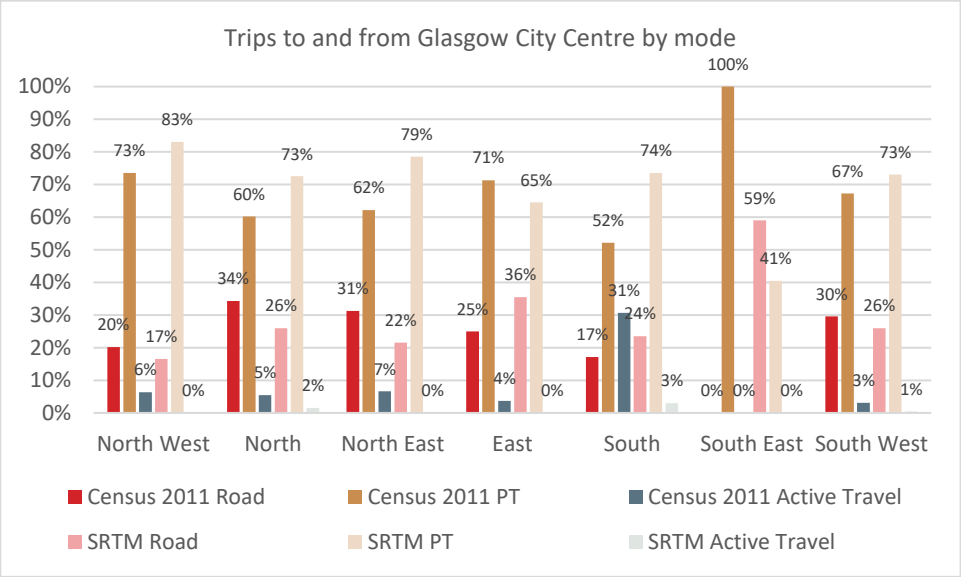


Figure 33. Census 2011 and SRTM 2019 travel to work data

Main point – 75% of those who live in Glasgow City Centre work in the city centre and 5% travel to Hillhead. The most popular mode for local trips from the city centre is walking (86%), followed by train/metro (6%) and lone driving (3%). In terms of travel to work trips to the city centre, the majority of trips are from the Glasgow City area, particularly, the city centre, Langside and Partick West. The main mode of travel to the city centre for local trips is public transport (62%), followed by walking (18%) and lone car driving (17%). The most popular mode of travel to the city centre from outside the Glasgow City area is public transport (particularly train), with most trips originating in North and South Lanarkshire (18% each) and East Dunbartonshire (13%)

Journeys to education

4.6.16 Figure 34 illustrates the range of schools and further educational establishments within the study area. As can be seen there are four primary schools (Oakgrove primary, Garnetbank primary, St Patrick's primary and St Mungo's primary) within the study area although the city centre residents are also within catchments of a number of neighbouring primary schools. There is no secondary school within the study boundary, but again, the city centre residents fall within catchments of five secondary schools nearby. In terms of further educational establishments, there are three Universities (Caledonian, Strathclyde and Glasgow School of Art) and three Colleges (Royal Conservatoire, City of Glasgow and Glasgow Metropolitan) within the study area, with the University of Glasgow and Glasgow Kelvin College within a short commute.

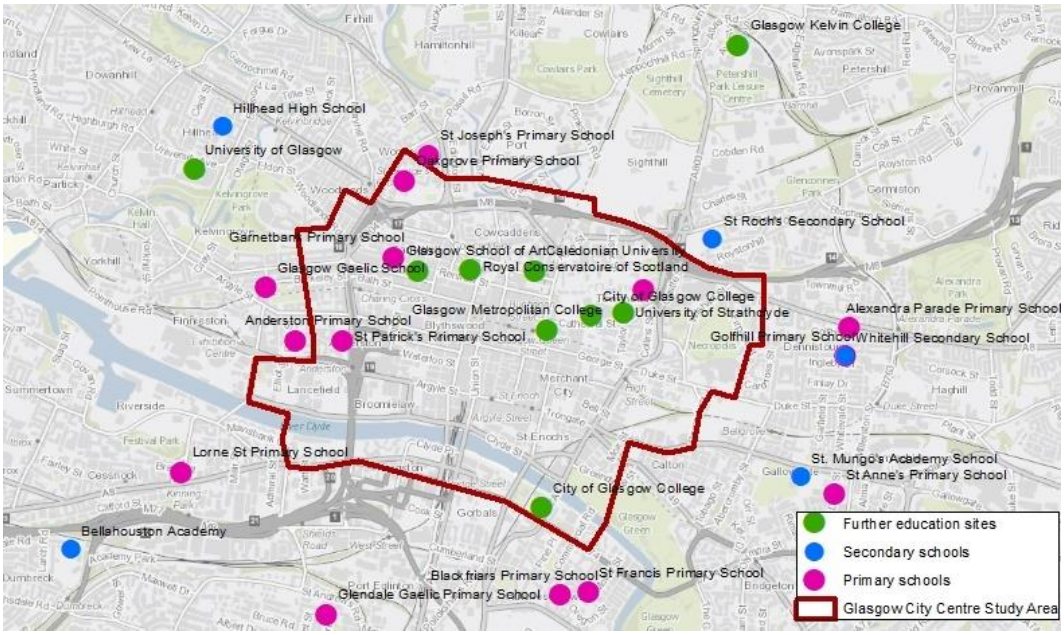


Figure 34. Glasgow City Centre - Education Institutions

4.6.17 Figure 35 shows the main mode of travel to education from different sources, including Census 2011[31], SHS 2019[32] and Hands up Survey 2020[33]. The data indicates that the main mode of travel to school is walking and cycling, with some 50% of pupils using these modes nationally as well as in Glasgow. The data also shows that car travel to school has increased since 2011, and it is now the second most popular mode of travel to education. At the same time, travel by public transport has decreased since 2011, both nationally and at local level.

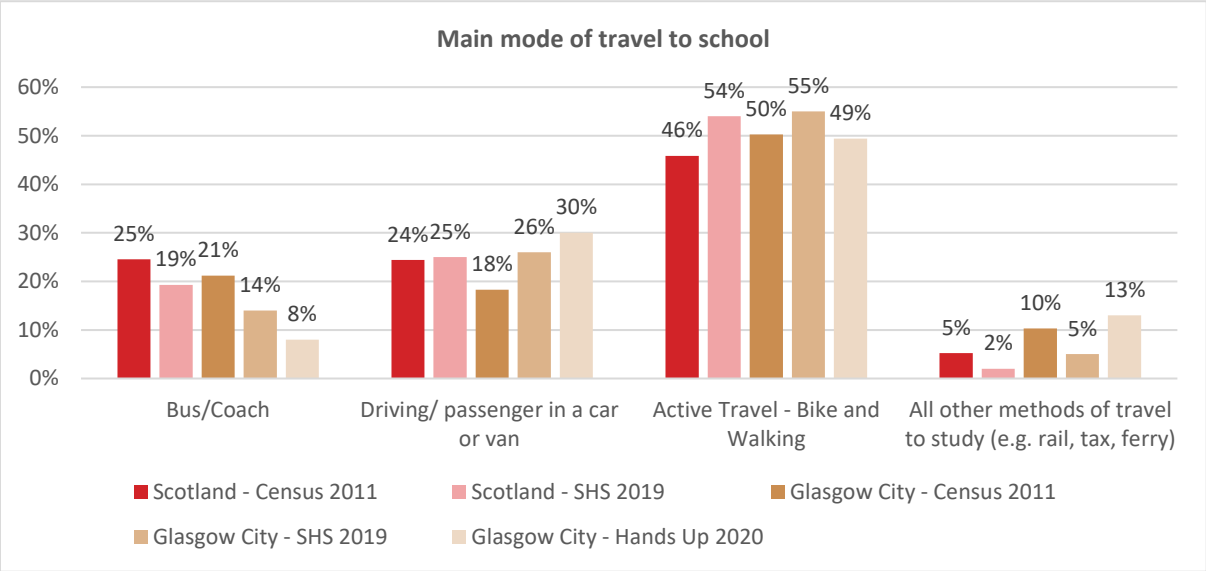


Figure 35. Main mode to school

[31] All people aged 4 and over studying the week before the Census
[32] Pupils in full time (school) education
[33] Primary, Secondary, SEN and Independent schools

4.6.18 Census data for the main mode of travel to work and education[34] shows that 59% of residents walk or cycle to these destinations. A comparison of the dataset with travel to work only data suggests, that walking and cycling are also the main mode of travel within the city centre area (Figure 36).

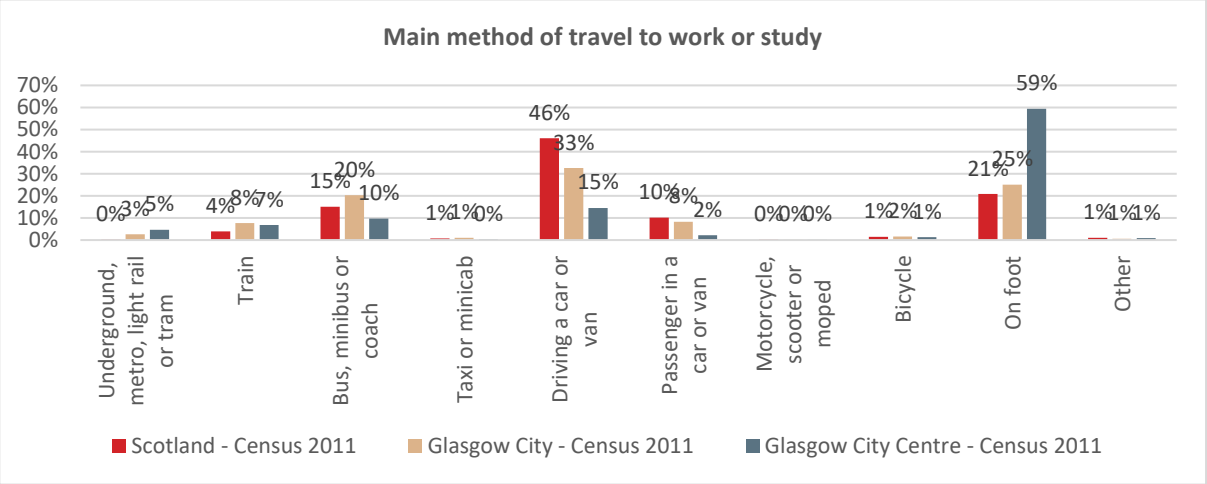


Figure 36. Method to work or study – Census 2011

4.6.19 In terms of distance travelled, Census 2011 data demonstrates that out of people aged 4 and over who are studying, and excluding those who mainly study from home (18%), the vast majority (74%) of the City Centre residents travel to their place of study less than 2km. This is considerably higher than the local (59%) and national (49%) average.

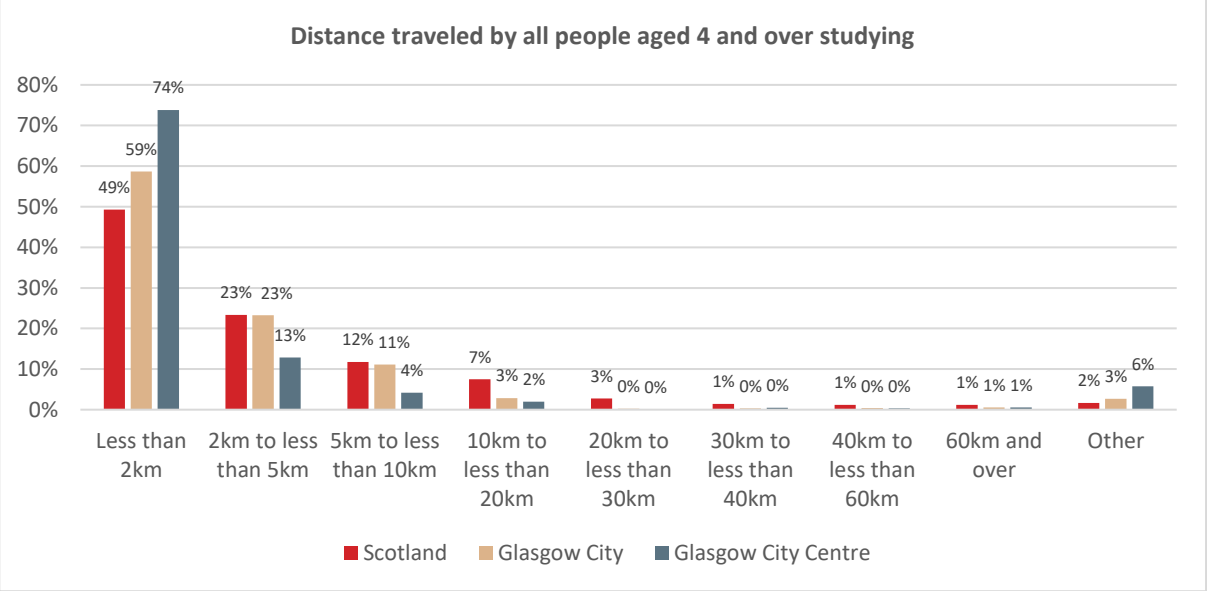


Figure 37. Distance travelled by all people aged 4 and over studying – Census 2011

[34] Includes all people aged 4 and over who are studying or aged 16 to 74 in employment excluding those who mainly work from home as published in Census 2011

Main point – although the main mode of travel to education remains walking and cycling, there has been an increase in car travel and a reduction in public transport trips for this purpose. The majority of city centre residents (74%) travel less than 2km to their place of study. This provides an opportunity to further increase active travel as a main mode.

Journeys to healthcare

4.6.20 The healthcare provision in the area includes the Glasgow Royal Infirmary, the Princess Royal Maternity Unit, the Glasgow Dental Hospital and the Mental Health Resource Centre on Florence Street (Figure 38). The sites are accessible on foot from within the majority of the study area within 30 minutes[35].

4.6.21 Based on SHS 2019 data for the Glasgow City Council, approximately 3% of journeys are made to visit hospital or other healthcare facilities.

Journeys for shopping and other purposes

4.6.22 Glasgow City Centre offers a wide range of shopping facilities, including Sauchiehall Street, Buchanan Street and Galleries and St Enoch Shopping Centre.

4.6.23 Based on SHS 2019 data for the Glasgow City Council area, shopping accounts for the majority of all trip purposes (23%), followed by commuting (20%) and visiting friends/relatives (11%). These figures are in line with the national average.

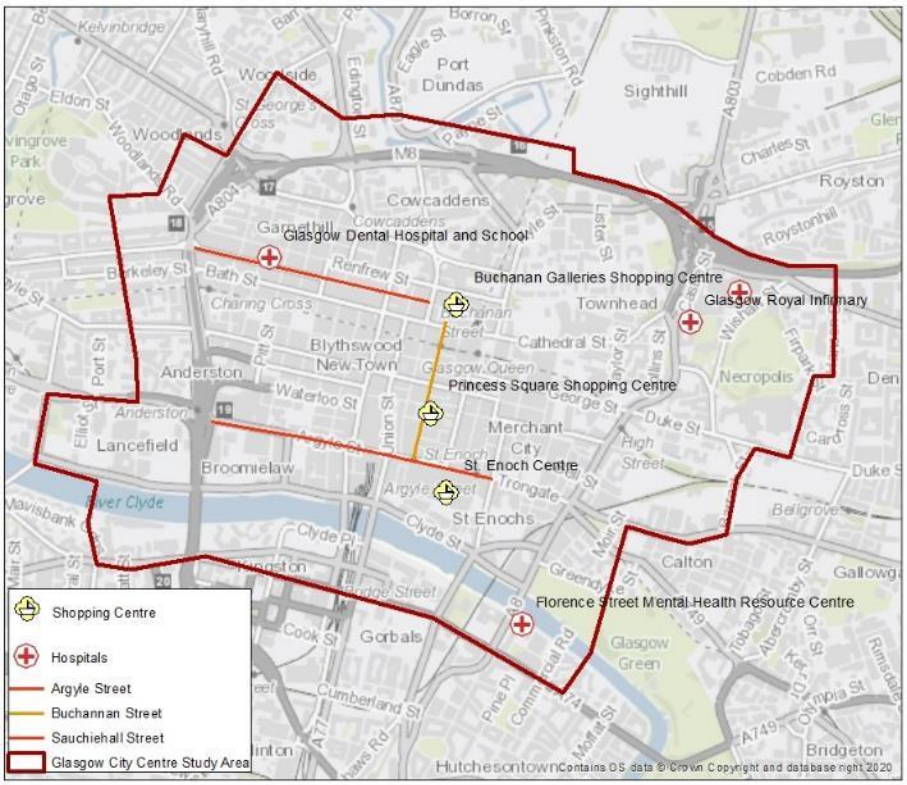


Figure 38. Glasgow City Centre – Healthcare and leisure facilities

[35] Using Google maps directions by walking

4.6.24 In terms of all journey purposes, the Glasgow Household Survey in 2018[36] explored the topic of the city centre in Glasgow. The data suggests that travel into the city centre varies by both age and social class. Younger people were more likely than older people to travel into the city centre both during the day time and in the evening. Those in "middle and upper" social classes [37] were more likely than those in "middle and working" class to travel into the city at both times of day. The single mode of transport respondents used most often to travel to the city centre was bus (39%), followed by train (22%) and driving (14%).

Main point – shopping and commuting account for the majority of Glasgow trip purposes. The main mode of travel for all purposes is public transport (61%), particularly bus (39%) which provides an opportunity to build upon.

[36] https://www.glasgow.gov.uk/CHttpHandler.ashx?id=46752&p=0

[37] National Readership Survey (NRS) Social Grade (ABC1 = middle and upper-class & C2DE = middle and working class)

4.7 Servicing and deliveries

4.7.1 Using the 2019 Department for Transport National Road Traffic Survey data, Table 6 shows the proportion of national urban traffic represented by commercial vehicles.

Table 6. Urban road traffic (bln miles) by vehicle type, 2019

Road type	Cars & Taxis	Light Comm	Heavy goods	Motor cycles	Buses & Coaches	Total
Urban 'A' roads	169.1	33	15.8	1.5	1.3	220.7
Minor urban roads	67.9	12.7	0.7	1	0.9	83.2
Relative split						
Urban 'A' roads	77%	15%	7%	1%	1%	100%
Minor urban roads	82%	15%	1%	1%	1%	100%

4.7.2 For Glasgow and comparable cities (Table 7), the proportions between car and commercial traffic confirm that the split is likely to be in line with nationwide figures, with 22% of 'A' road traffic being commercial. These vehicle types are currently most likely to be diesel powered. The data also shows, that commercial vehicles are the second largest road user group at 16% to 22% of urban traffic.

Table 7. Relative traffic by vehicle type, 2019

City	Cars	Light Comm	Heavy goods
Edinburgh	81%	16%	3%
Glasgow City	80%	15%	4%
Manchester	84%	14%	2%

4.7.3 Figure 39 shows the weekday and weekend hourly traffic profile of commercial traffic relative to car. It illustrates that during weekdays, light commercial traffic follows a similar hourly profile to cars (with the highest levels during the AM and PM peak hours), whilst heavy goods vehicle movements are more evenly spread. At weekends the similarity remains albeit that commercial traffic is at lower overall levels.

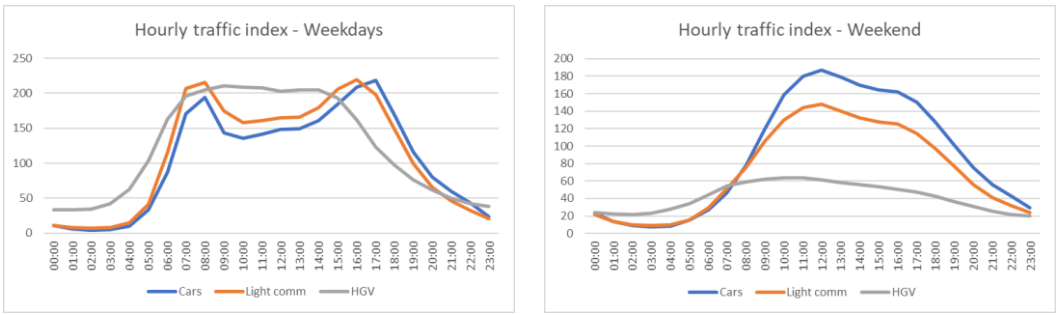


Figure 39. Commercial traffic hourly profile

4.7.4 SRTM 2019 data shows that light and heavy goods trips to and from Glasgow city centre account for approximately 8% of traffic in the AM and PM peak hours.

4.7.5 Traffic intensity (vehicle movements per road length) has shown limited change over the last 15 years (Figure 40). Glasgow traffic flow is in line with similar major cities, without seeing the increase that Manchester has experienced. As expected, city traffic levels are above national levels.

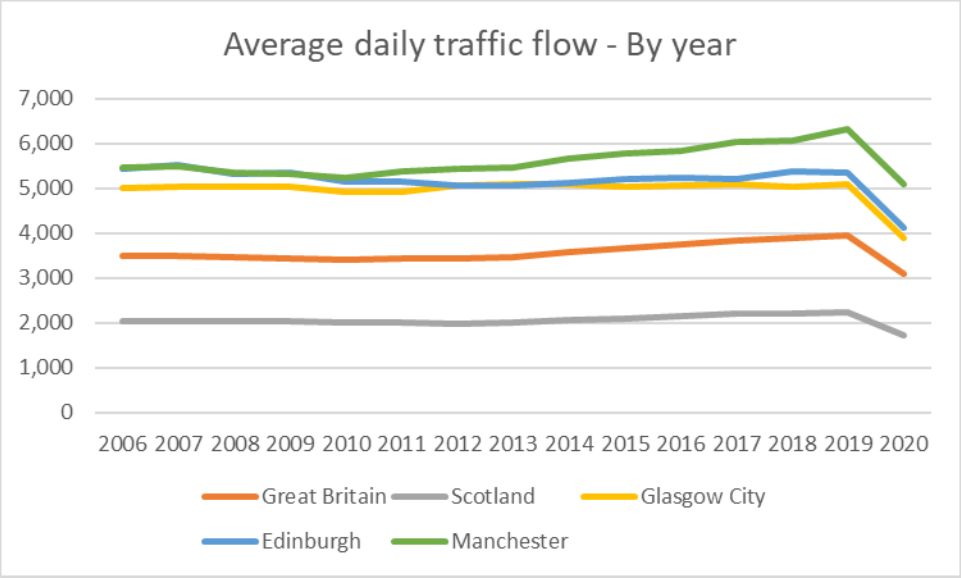


Figure 40. Average daily traffic flow, DfT, 2020

4.7.6 Freight traffic is driven by population and economic activity. As well as expected deliveries to retail outlets and hospitality, office accommodation, followed by large public facilities such as hospitals and schools are major drivers of freight traffic. Considering the high volume of transport hubs, retail, leisure, health and education sites in the study area, the freight traffic is expected to be significant.

Main point – commercial traffic accounts for approximately 19% of Glasgow road traffic, with the highest number of trips by light commercial vehicles observed during the morning and evening peak hours, and heavy goods vehicle movements more evenly spread throughout the day. This provides an opportunity to manage freight and waste servicing more effectively, both in terms of restricting delivery and servicing times, and consolidating deliveries to specific areas.

4.8 Environment

Noise and Vibration

4.8.1 According to FOI data, 20,521 noise complaints have been filed in Glasgow in the past three years, making it the second noisiest city in the UK[38] (Leeds City is the noisiest). Appropriately, The City Centre Strategy (2014 -2024) makes a clear and defined commitment to the council policy about Noise Management Areas highlighting the need to "*avoid, prevent or mitigate the harmful effects of environmental noise exposure on the residential population*".

4.8.2 The dominant environmental noise source in the study area is road traffic movements from cars, HGVs and buses. There are several one-way streets in the study area that will carry sporadic intermittent traffic. Local topography also means that roads gradients will increase traffic noise levels in some areas. The massing of buildings can also create street canyons which further elevate noise levels. The grid system layout of the roads in

[38] https://www.glasgowlive.co.uk/news/glasgow-news/glasgow-second-noisiest-uk-17359915

combination with traffic signalling has the potential to result in stop start traffic, resulting in acceleration and deceleration.

4.8.3 Round 3 strategic noise modelling[39] carried out in response to the European Parliament and Council Directive for Assessment and Management of Environmental Noise 2002/49/EC (Figure 41) demonstrates the complex distribution of noise exposure within the study area.

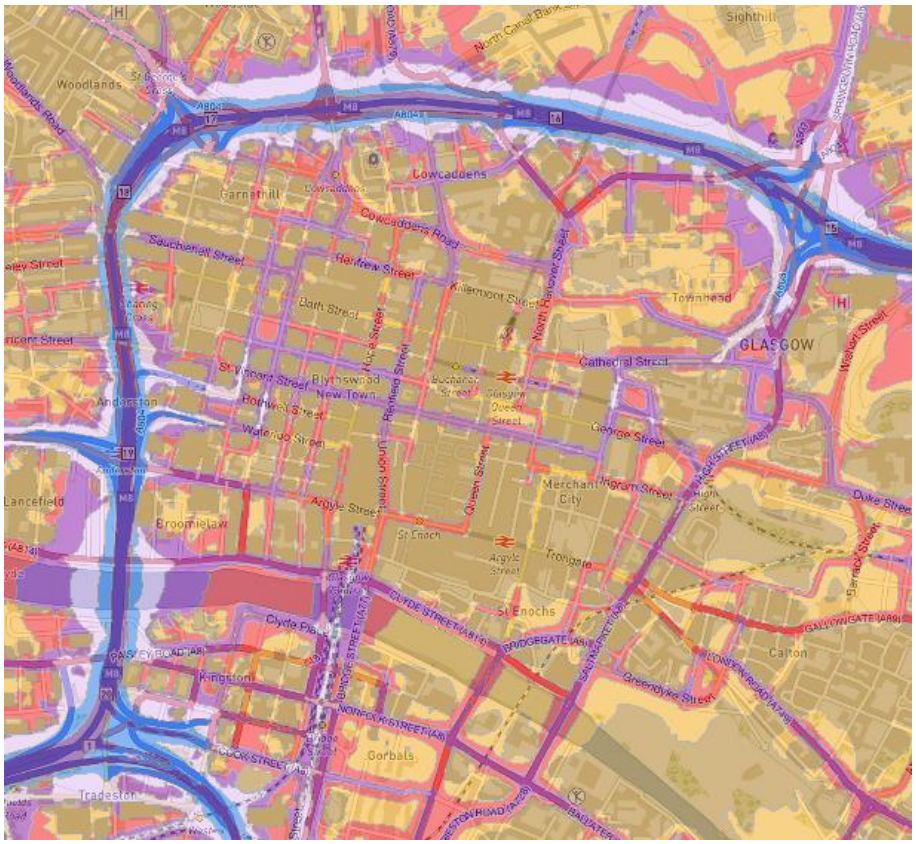


Figure 41. Consolidated L_{den} noise contours for the Glasgow Agglomeration

4.8.4 Under the regulations the competent authorities are required to draw up actions plans to manage noise. Consequently, 18 Designated Noise Management Areas (NMAs) have been declared in Glasgow city[40], some of which are located within the study area. Additionally, quiet areas (QA) have been defined, which are defined as areas which are a minimum of 9 hectares and in which at least 75% of the area is subject to noise levels not exceeding < 55 dB Lday[1]. As a result, the areas which qualify are in parks located outside of the city centre study area. Smaller Urban Quiet Areas or Tranquil Areas are currently being identified as an alternative location for people to escape from environmental noise.

4.8.5 Looking to a future comprising a larger proportion of electric vehicles (EVs), noise levels are likely to reduce for lower speed roads where exhaust and powertrain noise dominates, whereas this decrease is not likely to be observed for higher speed roads where tyre-road interface dominates.

[39] https://noise.environment.gov.scot/noisemap/
[40]https://consult.gov.scot/environment-forestry/consultation-on-draft-noise-action-plans/supporting_documents/Glasgow%20Action%20Plan.pdf

Air Quality

4.8.6 Traffic is the principal source of impacts on air quality in Glasgow City Centre. Partly owing to the volume of vehicles in the city centre. However, topography and grid layout of the centre create extensive 'street canyons' that reduce dispersion, leading to elevated concentration of contaminants. Gradients of roads also increase emissions, particularly for buses and HGVs. These issues are exacerbated when vehicles stop and start when traveling up hills.

4.8.7 The Air Quality (Scotland) Regulations 2000 require local authorities to regularly assess levels of 7 air pollutants and seek improvements in those areas where levels are above the set standards. The annual mean NO_2 objective was exceeded in 2019 at one automatic monitoring station and at six diffusion tube monitoring sites, all within the existing City Centre AQMA. There were also several monitoring sites where concentrations were only marginally below the objectives (i.e., greater than 36 µg/m3). No other exceedances of the objectives were recorded in Glasgow in 2019 including PM_{10} and $PM_{2.5}$.

4.8.8 Modelling carried out as part of the National Modelling Framework indicated more widespread exceedances of the annual mean NO_2 objective in 2019, however, these predictions are for locations at the edge of the pavement, not property facades where relevant exposure would occur. Source apportionment also completed as part of this study which shows the roads what type of vehicles are the dominant source of emissions on each road. No exceedances of the PM10 or PM2.5 objectives were measured in 2019.

4.8.9 The areas of Glasgow City Centre where annual average nitrogen dioxide concentrations exceed the air quality objective is expected to decrease in future years, due to anticipated reductions in background concentrations, the ongoing upgrade of the local vehicle fleet and other local intervention, notably the LEZ (e.g., local transport management schemes, implementation of quality bus corridors and the development of travel plans), The second phase of the LEZ, should further reduce concentrations.

Greenhouse gas and carbon reduction

4.8.10 A climate (and ecological) emergency was declared Glasgow City Council in May 2019. An 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.

4.8.11 The Council has previously set a target for the city to reach a 30% reduction on its carbon dioxide emissions by the year 2020 (from a 2005/06 baseline) which is due to be met according to available data in Figure 42.

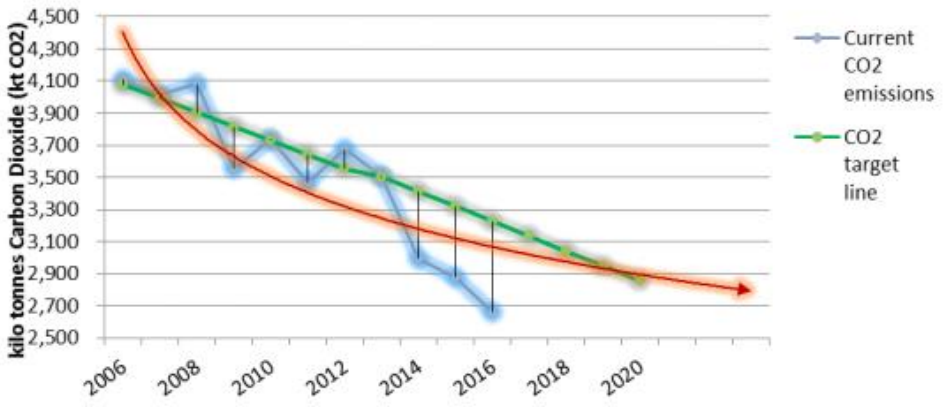


Figure 42. Glasgow Carbon Dioxide Emissions from 2006 – 2020[41]

4.8.12 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 not seen the reductions as seen in other sectors as shown in Figure 43.

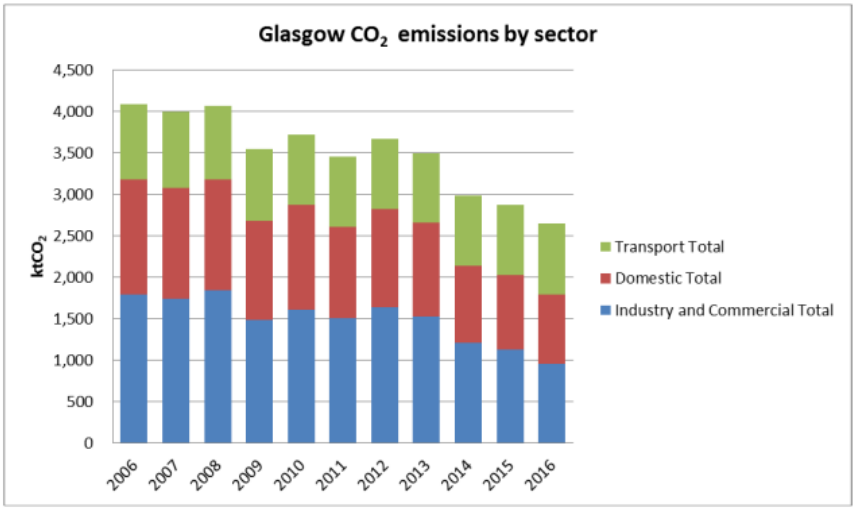


Figure 43. Emissions by Sector (Glasgow City Council's Climate Emergency Working Group)

Main point – Although CO2 emissions from transport have slightly reduced in Glasgow since 2005, its annual average nitrogen dioxide (NO_2) concentrations exceeded the air quality objectives within the existing City Centre AQMA. Glasgow is also the second noisiest city in the UK. The dominant source of noise, poor air quality and greenhouse gases in the city centre is road traffic, partially due to one way streets carrying intermittent traffic, local hilly topography, massing of buildings which can create street canyons, and grid system layout of the roads in combination with traffic signalling resulting in acceleration and deceleration of traffic. The introduction of lower speed roads, LEZ, upgrades of local vehicle fleet and other sustainable transport interventions provide opportunities to reduce the noise levels and greenhouse gases, and improve the local air quality.

[41] The Report existing City Centre AQMA and Recommendations of Glasgow City Council's Climate Emergency Working Group

4.9 Summary

4.9.1 This section has presented some of the key trends in socio-economic context for the study area. The main points include:

- Glasgow City Centre is Scotland's key destination for employment, training, education, shopping and leisure; attracting over 50% of trips from outside of the local authority area when it comes to travel to work alone;
- The main industries in the city centre include wholesale/retail and accommodation/food services, followed by health and social work, education, and financial and other professional services; all which have varying needs for travel;
- The area includes vibrant and wealthy neighbourhoods mixed with areas that belong to the 20% most deprived Scotland's datazones in terms of income, employment, health, housing, and crime. Evidence shows that those living in deprived areas are most likely to rely on walking and bus travel for their journeys. They may also have a compromised access to technology to support sustainable travel choices and information;
- Over 70% of the population are 16-34 year olds, predominantly males. The area has also higher than average ethnic minorities, particularly Asian (16%) when compared to Glasgow City and Scotland as a whole, and a small proportion of long term sick, disabled and those whose activities tend to be limited due to their health. All these groups are reliant on travel alternatives to a private car, with women and ethnic minorities under-represented when it comes to riding a bike;
- 95% of the city centre population lives in flats or apartments; and an above average proportion of the population (70%) lives in rented accommodation in comparison to Glasgow City and Scotland; which has implications for the provision of supporting transport facilities such as bike storage, EV charging infrastructure which may need to be focussed on communal facilities;
- Road traffic, including the increasing number of commercial vehicles, one way streets, local hilly topography, massing of buildings, and the grid system layout of the roads contribute to the negative environmental effects such as noise, poor air quality and greenhouse gases in the city centre.

4.9.2 There are also potential opportunities arising from the socio-economic evidence, including:

- The majority of trips (77%) to work to and from the city centre are made by sustainable transport modes particularly train/metro and bus coach, suggesting there could be opportunities to increase this share if suitable public transport infrastructure is provided;
- The city centre benefits from areas of high population density, has a high proportion of short distance local trips to work (i.e. under 5km), and includes already a high proportion of trips to work and education by walking, suggesting there are opportunities for compact city planning and transport provision, with a potential to increase the active travel baseline further, if suitable walking and cycling facilities and infrastructure are provided;
- Restricting commercial delivery and servicing times including waste, and consolidating deliveries to specific areas could enable more effective management of freight and waste servicing of the city centre. This, coupled with the introduction of lower speed roads, LEZ, upgrades of local vehicle fleet and other sustainable

transport interventions can help reduce the noise levels and greenhouse gases, and improve the local air quality; and

- Improved quality of the city centre environment is also likely to increase social inclusion and help stimulate sustainable day and night-time economies.

5. TRANSPORT CONTEXT

5.1 Overview

5.1.1 Glasgow is a major Scottish transport node with a comprehensive internal transport network including motorways (M8, M73, M74, M77 and M80), the UK's second largest suburban commuter rail network, subway system, an extensive network of bus routes, as well as a large network of pedestrian and cycle routes.

5.2 Walking

Walking levels

5.2.1 Data from the city centre permanent count sites (Figure 44) shows pedestrian footfall from the start of 2018 to May 2021. The data indicates a footfall of nearly six million pedestrians per month in the city centre pre-Covid-19, with a substantial reduction in city centre footfall following the beginning of the Covid-19 pandemic. A slight recovery is observed in the summer of 2020, but this is followed by a further downturn due to renewed lockdown.

City Centre Footfall Counter Locations

Figure 44. City Centre permanent footfall counter locations

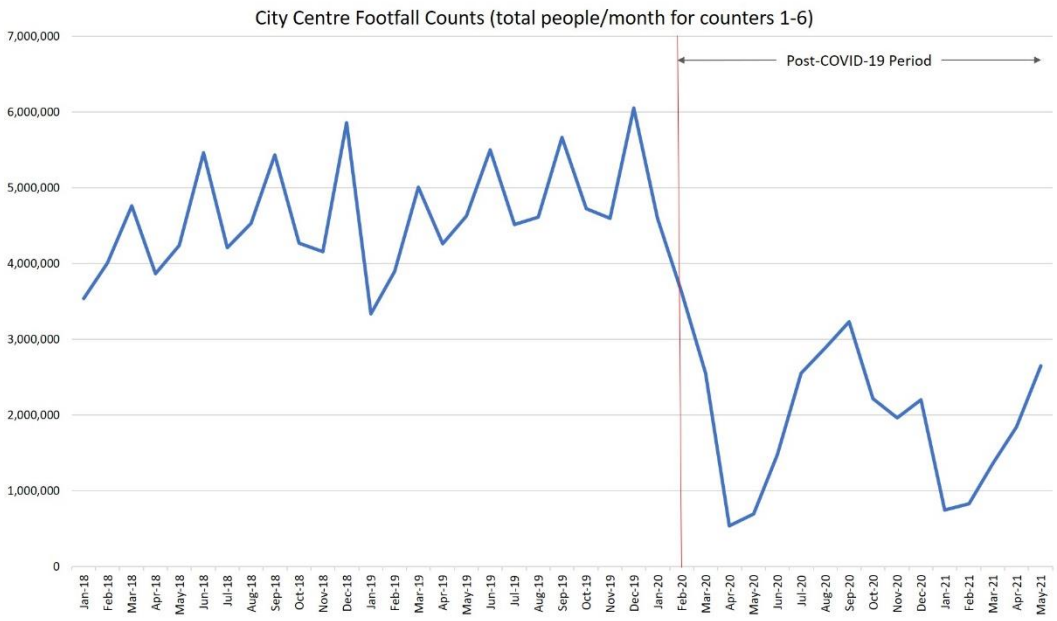


Figure 45. City Centre monthly footfall totals from six permanent counters, Jan 2018-May 2021

5.2.2 Any predictions as to future trends need to be undertaken with caution. Prior to 2020, it can be seen that the gradual trend was upwards, but there also seemed to be a repeated pattern of peaks and troughs within the two years 2018 and 2019. There may be specific factors behind some troughs (such as the effect of two major fires on closing different sections of Sauchiehall Street), but the chart points to the possibility of there being underlying seasonal patterns. Figure 46 presents the figures for each of the seven counters individually, and highlights Argyle Street and Buchanan Street as the busiest pedestrian areas.

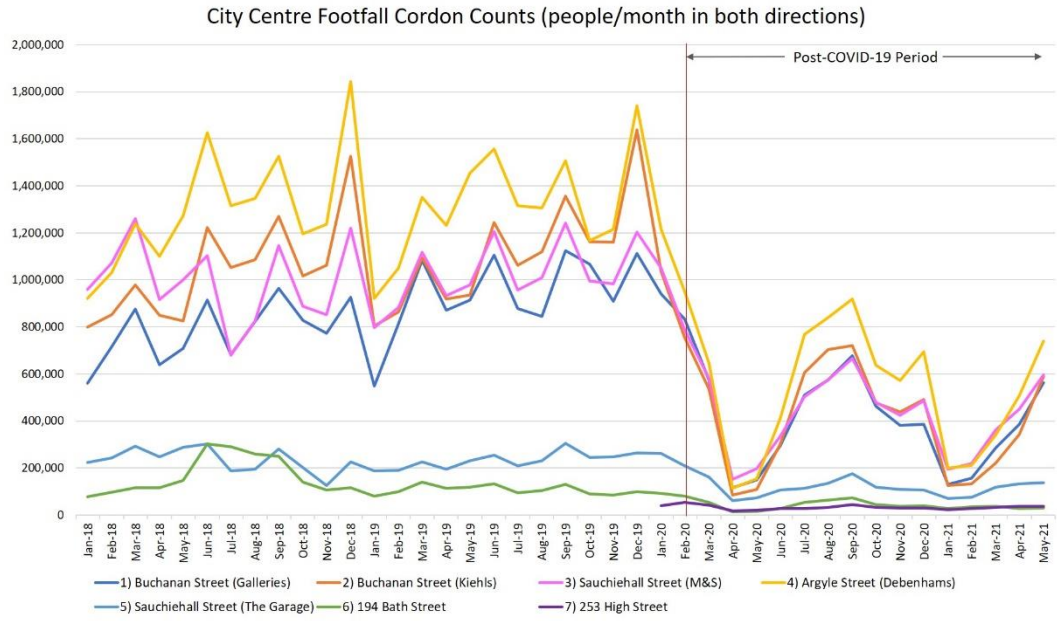


Figure 46. City Centre monthly footfall at each of the seven permanent counters, Jan 2018-May 2021

5.2.3 In addition to the data from the permanent counters, the 2018 (Figure 47) and 2020 (Figure 48) walking cordon counts around the city centre boundary show that the two busiest city centre access points for walking in both years were Trongate at Albion Street (site 23) and Sauchiehall Street at Charing Cross (site 5). The sites that had a relatively big drop in

pedestrian activity in 2020 in comparison to 2018 include Bath Street (site 4) and St Vincent Street (site 3), most likely reflecting the travel restriction associated with the Covid-19 pandemic. On the other hand, the access points with much higher footfall in 2020 in comparison to 2018 include all sites across the river Clyde.

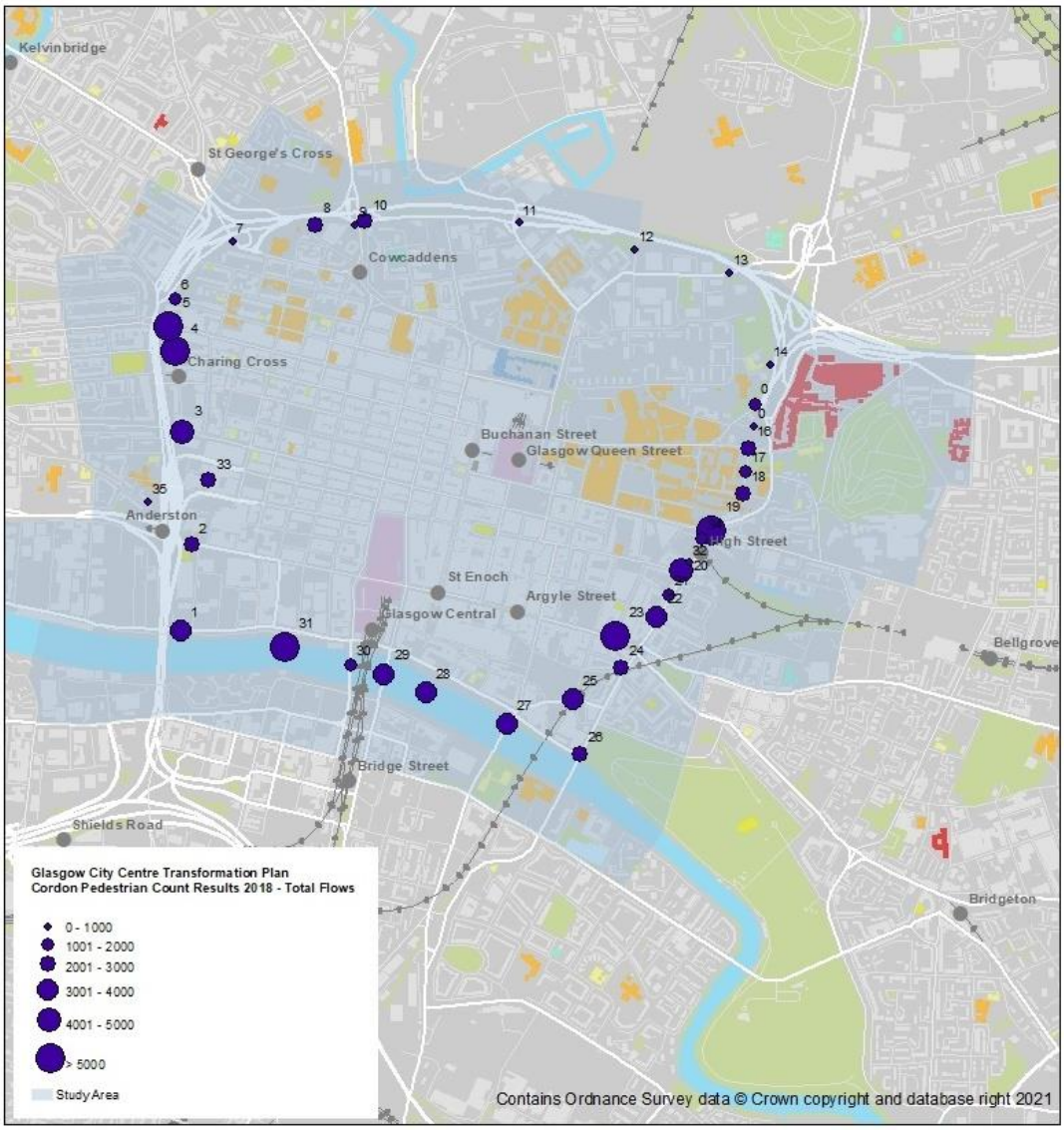


Figure 47. Map of daily pedestrian flows in and out of the city centre - GCC Cordon Counts – Sept. 2018

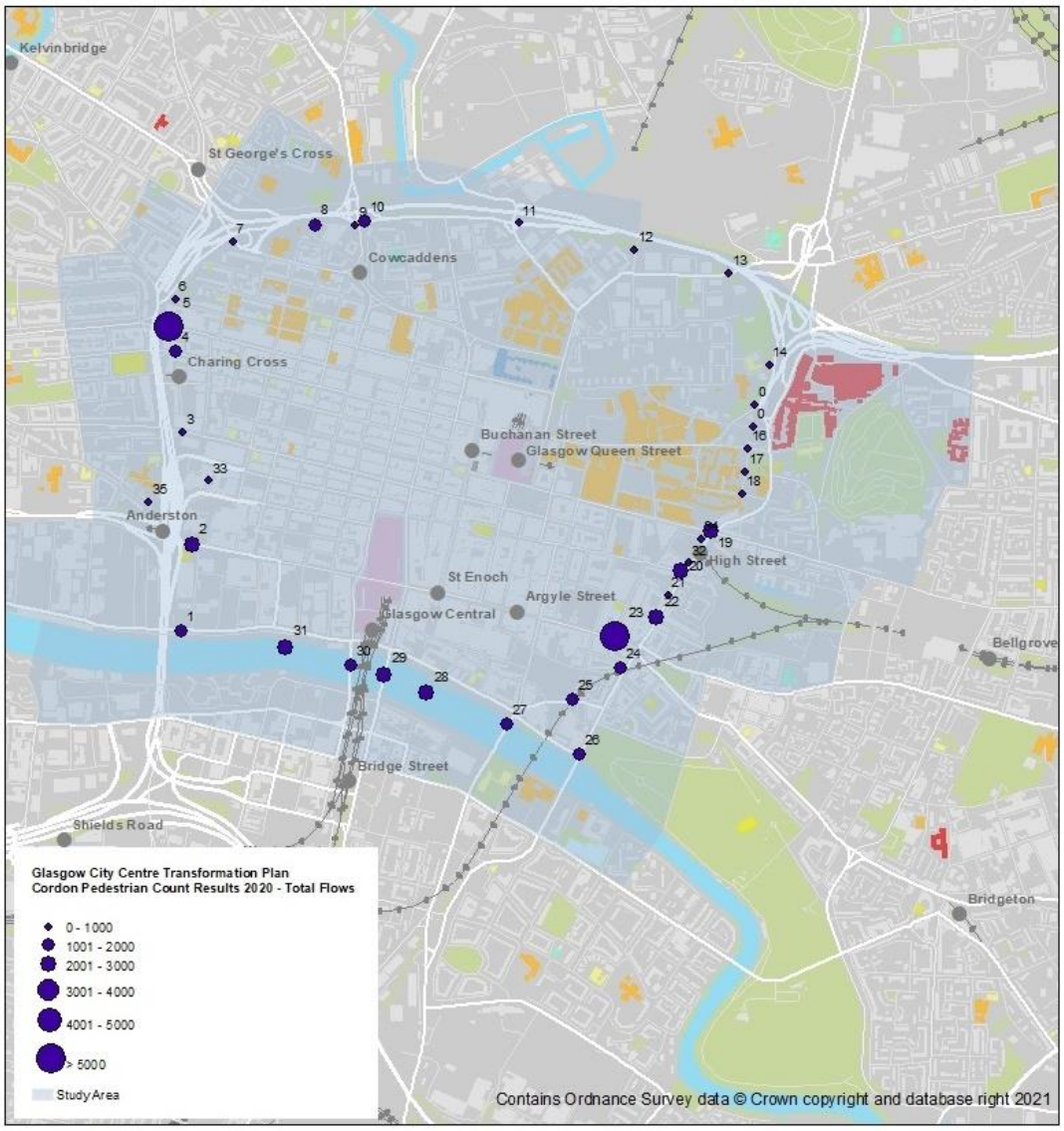


Figure 48. Map of daily pedestrian flows in and out of the city centre - GCC Cordon Counts – Sept. 2020

Walking provision

5.2.4 As identified in a number of existing strategies[42], the existing walking environment in the city centre has been noted of generally poor quality in many places, with existing pedestrian network considered too fragmented (not creating continuous routes), with long detours and no choice of different routes.[43] Specifically, the pedestrian environment was considered as lacking of:

- Legible crossings,
- Smooth walking without obstacles,
- Enjoyable streetscapes,
- Continuous pavement across lanes with pedestrian priority; and
- Dropped kerbs.

[42] City Centre District Regeneration Framework - Sauchiehall and Garnethiil pilot
[43] Broomielaw, St. Enoch, Central and Blythswood DRF's

5.2.5 A few examples of the poor quality pedestrian environment are shown in Figure 49.

A wheelchair user having to use the carriageway on Cathedral Street due to a missing dropped kerb.

Obstacles, like these on West Nile Street, are often placed with no thought for walking conditions.

Even at well-used crossing points (here on Killermont Street) walking often has no priority.

Signs rarely make things better. What's needed here (on Argyle Street) is better design for walking.

Figure 49. Examples of poor quality pedestrian infrastructure

5.2.6 In addition, the 2014-2024 City Centre Transport Strategy identified the following key issues affecting conditions for people walking:

- Poor Pedestrian Environment;
- Conflicts with Taxis; and
- Poor Air Quality.

5.2.7 In relation to the poor pedestrian environment, the Strategy stated that, in some areas around the city centre, the streetscape is of a low standard, making these unattractive locations to pedestrians. Contributing factors to the poor quality environment include poor footway surface, poor lighting, and conflicts with vehicles. Problem locations have been identified at Sauchiehall Street, Glasgow Central Station, Queen Street Station, Buchanan Bus Station, Argyle Street, High Street and in the International Financial Services District (IFSD).

5.2.8 There are, however, good examples of much improved pedestrian environment in the city centre, which attract footfall and make much better places to walk through and be in. These are illustrated in Figure 50 and include:

- Pedestrianisation and the removal of motor traffic from Buchanan Street and from parts of Argyle Street and Sauchiehall Street;

- Regeneration of the Merchant City, marked by a major upgrade in the quality of the streetscape; and
- The Avenues programme, a £140m initiatives to deliver a joined-up network of people friendly streets in the city centre.

Buchan Street. For many years one of the most popular and successful streets in the city centre.

The Pedestrianisation and the removal of motor traffic from Buchanan Street and from parts of Argyle Street and Sauchiehall Street *Sauchiehall Street Avenue scheme has made it much better for strolling, and even learning to ride.*

A typical Merchant City street scene, this being Candleriggs.

Argyle Street, which the counters say has the highest footfall of any street in the city.

Figure 50. Quality pedestrian environment in the city centre

Main point – the existing pedestrian environment in the city centre is of poor quality in many places, which include a lack of legible crossings, dropped kerbs, smooth walking surfaces without obstacles, contiguous and direct routes, pedestrian priority, poor lighting and conflicts with vehicles. Available funding and improvement schemes such as the pedestrianisation and the removal of motor traffic from Buchanan Street, parts of Argyle Street and Sauchiehall Street, regeneration of the Merchant City, and the Avenues helped to improve the walking environment and provide an opportunity for increased footfall and a modal shift away from private car. Whilst these programmes present significant improvement, as they are only targeted, other streets may further deteriorate without ongoing investment.

5.3 Cycling

Cycling levels

5.3.1 GCC has undertaken City Centre walking and cycling cordon counts at 35 sites on two days on two September weekdays since 2009, except in 2019 when no survey was commissioned. Over the past decade or so, the surveys have shown a steady upward trend in cycle flows, more than doubling overall (+111%) between 2009 and 2018. A small drop occurred in 2020 in the context of the Covid-19 pandemic. It shows an overall drop in flows compared to 2018, with a reduction of 4% overall. However, if we assume a continuing trend between 2018 and 2019, the drop in 2020 may have been more important than appears here. This is consistent with travel to the city centre being dominated by travel to work and study, replaced by home working and studying during that period as although retail and hospitality were open in September 2020, most offices remained shut.

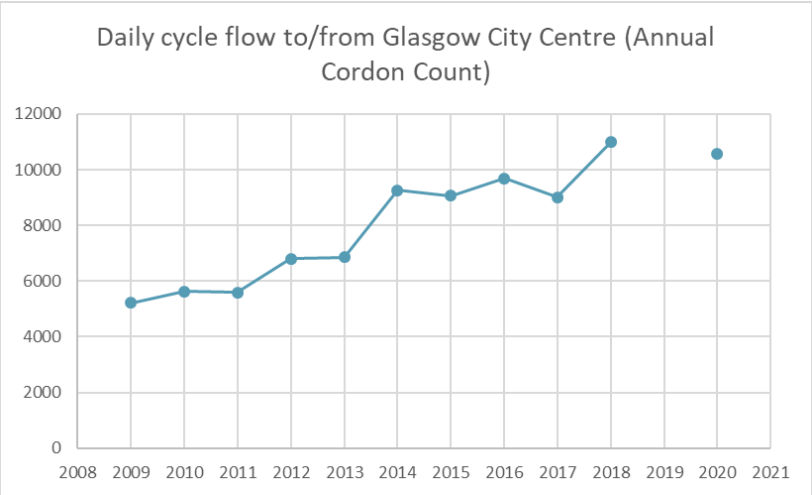


Figure 51. Graph of daily cycle flow in/out of the city centre 2009-2020 GCC Cordon Counts

5.3.2 Figure 52 below shows average daily cycle flows entering and exiting the city centre, at each count location if the 2018 cordon count survey. It shows the busiest access points along the Broomielaw (the NCN 75 route) at the Kingston bridge, the Tradeston (Squiggly) Bridge, and Glasgow Green at Clyde Street.

5.3.3 Figure 53 then shows cycle flows recorded is September 2020, capturing changes to travel patterns during the Covid-19 pandemic. It shows that the overall reduction in cycling levels of 4% overall is not uniformly distributed around the cordon. Some survey locations record an increase in cycle traffic compared to 2018, for example site 26, at the Saltmarket/Clyde Street junction, along the NCN 75 cycle route and access to Glasgow Green, which is consistent with an increase in leisure cycling recorded across the city and at the national scale. Other increases are harder to interpret without more in depth analysis as the percentage change is affected by the small overall flows and a range of factors may be at play.

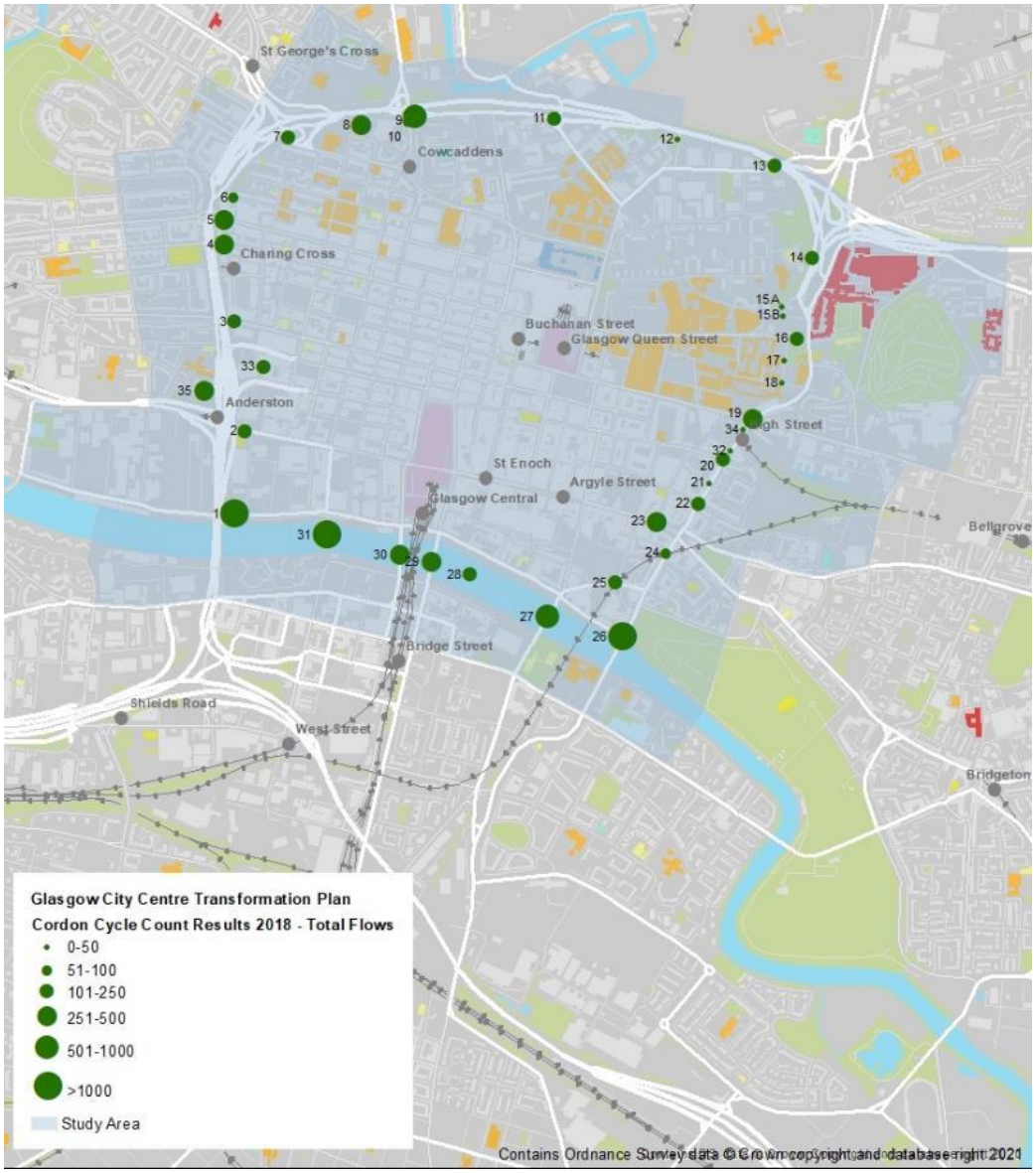


Figure 52. Map of daily cycle flows in and out of the city centre - GCC Cordon Counts – Sept. 2018

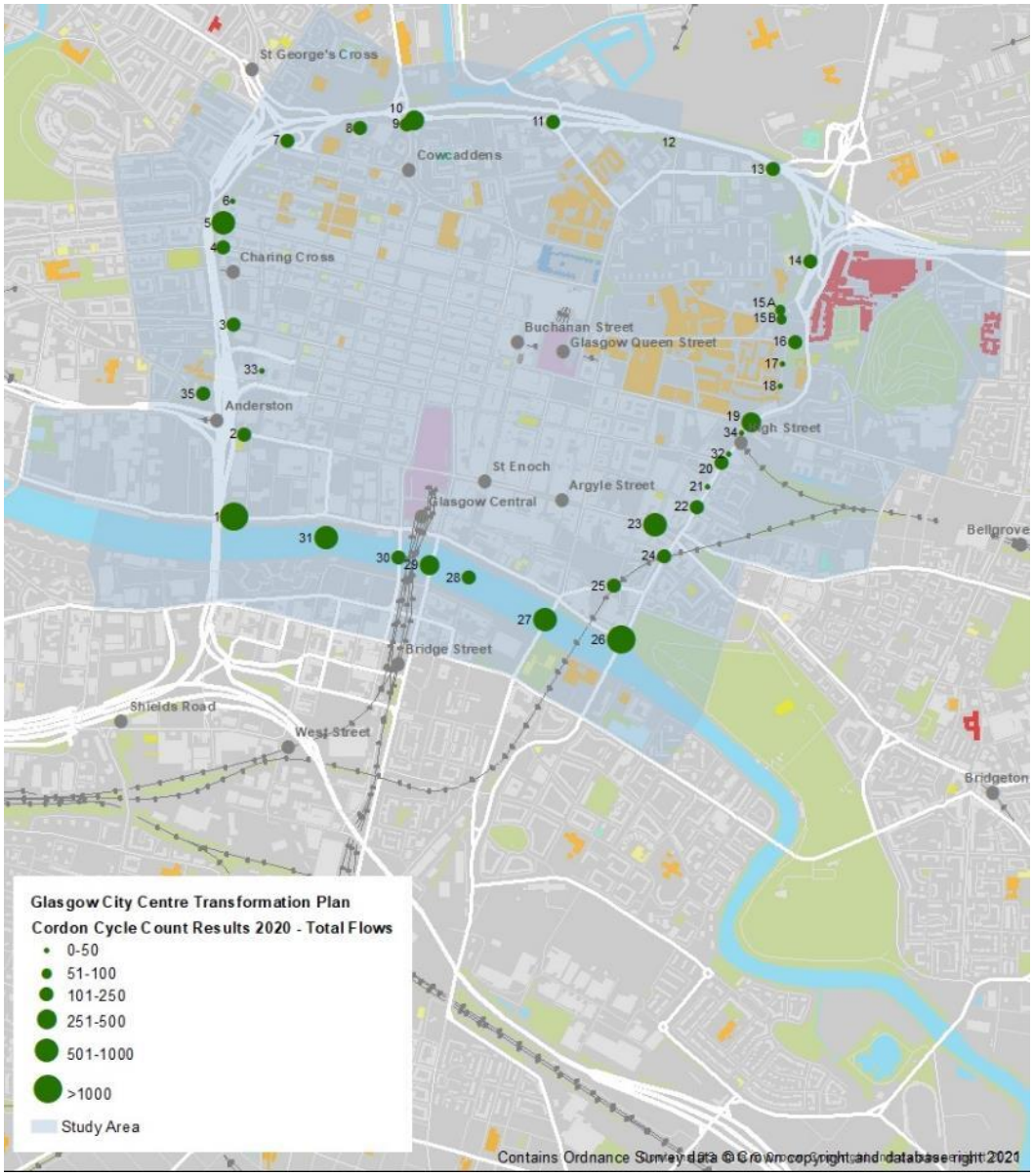


Figure 53. Map of daily cycle flows in and out of the city centre - GCC Cordon Counts – Sept. 2020

Cycling provision

5.3.4 Current cycling provision in the city centre ranges from signposted routes along quieter streets to two-way on-carriageway segregated cycle tracks, also including two-way cycling one way street ("cycle contraflow"). Figure 54 below identifies and locates cycle provision by type of infrastructure in and around the city centre. Sauchiehall Street, Buchanan Street and Argyle Street are included as they are widely used as shared-use routes, even though their status for cycling is unclear with a bylaw and associated sign banning cycling, yet a core path status suggesting they are open to cycling.

5.3.5 Temporary cycling infrastructure has been introduced during 2020 and 2021 in the context of the Covid-19 pandemic to facilitate social distancing, enable local outdoors physical activity and provide alternatives to the use of shared and public transport. Provision has included a temporary one-way light-segregated lane along the Broomielaw, A two-way cycle track on Cambridge Street, new or upgraded two-way cycling on Howard

Street and Argyle Street as well as road closure to motorised traffic or modal filters/bus gates around George Square.

Part closure (westbound) of Argyle Street to motorised traffic.

One-way light-segregated cycle track - Broomielaw

Figure 54. Examples of temporary cycling infrastructure (Spaces for People programme)

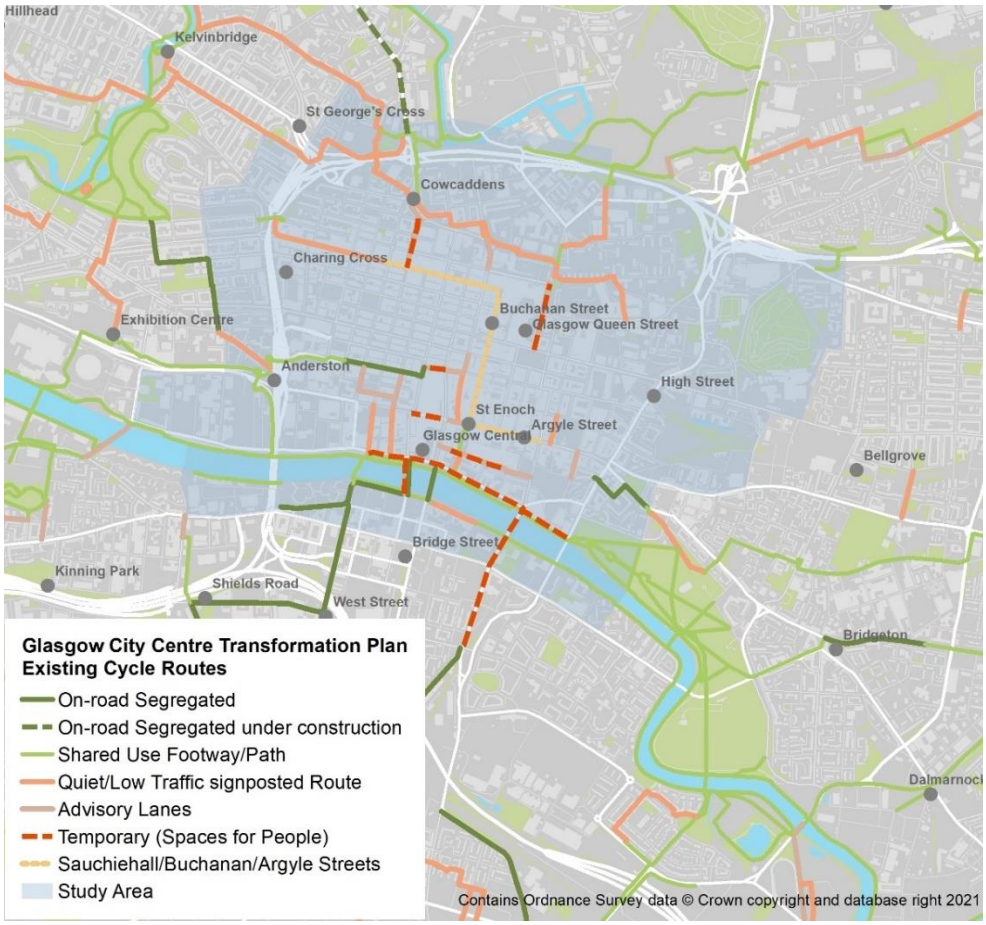


Figure 55. Map of existing cycling provision

5.3.6 The map above (Figure 55) shows a network which is fragmented in coverage and typology. The current cycling provision is disjointed and difficult to navigate with few through-routes fully signposted and of consistent level of provision.

5.3.7 Current cycling routes do not serve large parts of the city centre, for example the Merchant City area, the office-dominated area between Sauchiehall Street and Waterloo Street, or all destinations along the High Street are inaccessible by the signposted and/or formally identified cycle network.

5.3.8 A 20mph speed limit is in place along all streets within the city centre (bounded by the Clyde, the M8 and the High street). However variable compliance and overall volumes of motorised traffic make the wider road network unattractive as cycling routes.

5.3.9 Access to and from the city centre by bike is made difficult by the M8 and its junctions to the north and west, the Clyde and the Broomielaw to the south, and the High Street and Townhead M8 junction to the east. Routes have been developed to guide cyclists through those areas, but they can be difficult to navigate, inconvenient or require lengthy detours. For example segregated infrastructure has been provided across most bridges over the Clyde, however once on the north side, there is no clear and attractive route across the Broomielaw. The bottom left photograph on Figure 56 below illustrates the challenge for a cyclist arriving from the Tradeston Bridge, facing a three-stage Toucan crossing, narrow islands constrained by guardrailing, long waiting times and a section of shared use footway to then reach (one-way) York Street and the city centre.

5.3.10 The quality of cycling infrastructure varies along signposted routes. Many sections of routes do not meet the latest best practice standard in terms of comfort, directness, safety, cohesion and attractiveness. Issues identified during site visits include poor quality surfacing, conflicts between users at pinch points, obstruction of cycling infrastructure by drivers, or significant delays and detours at junctions or crossings. Examples of substandard provision identified are shown on Figure 56.

Three-stage 'Toucan' crossing – Broomielaw / Tradeston Bridge

Narrow, poorly maintained and obstructed two-way cycling on one-way street – Howard Street

Pinch point and low section under bridge - Shared-use path, unsegregated (Clyde Walkway)

Narrow shared-use path, segregated near bus stop – Cowcaddens Road/Garscube Road

Figure 56. Examples of issues identified with current cycling provision

5.3.11 More recent additions or upgrade are more in line with those standards. Examples of good quality infrastructure include segregated infrastructure such as the Sauchiehall Street 'Avenue', or the temporary cycle track on Cambridge Street, but also the introduction of bus gates and other modal filtering lowering volume and speed of motorised traffic in the city centre (Figure 57).

Shared-use path, unsegregated – Garscube Road M8 underpass

Two-way cycle track off-carriageway (Sauchiehall Street)

Two-way cycle track and signal - Cambridge Street

Two-way cycle track (near-completion) – Garscube Road

Figure 57. Examples of infrastructure closer to latest best practice

Cycle parking

5.3.12 GCC data identifies over 1,400 on-street cycle parking spaces available in the city centre. It does not include publicly available but privately-owned cycle parking such as that provided across university campuses or rail stations. It mainly takes the form of uncovered 'Sheffield' stands, complemented by hoops attached to poles. A few locations near key destinations have larger sometimes covered cycle parking such as near the Royal Conservatoire of Scotland (48 spaces) or the School of Arts (32 spaces). The map below (Figure 58) shows an uneven distribution of those spaces, with limited cycle parking provided in the residential neighbourhoods to the north (Garnethill, Townhead, Cowcaddens) for visitors. Very few spaces are also available south of the Clyde.

5.3.13 The dominant housing types in the city centre, tenements and other types of flats, make it difficult for residents to store personal bikes safely and conveniently, although more recent development include provision for resident cycle parking. A pilot for on-street secure cycle hangars available to resident for an annual fee is ongoing across the city, however no location in the city centre is included to date.

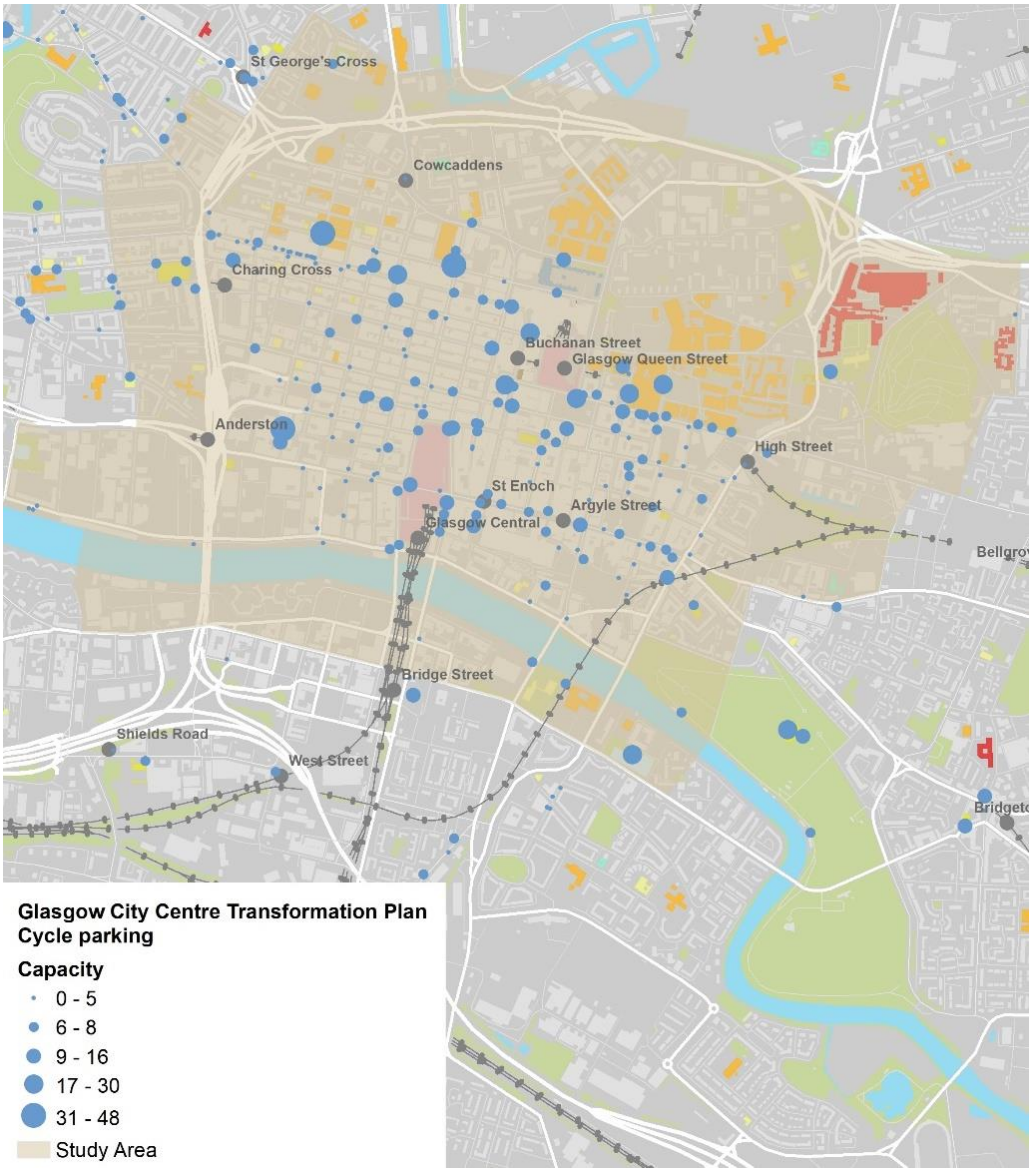


Figure 58. Map of existing on-street cycle parking capacity in the city centre

Cycle hire

5.3.14 Glasgow's public cycle hire scheme (MACH), currently managed by NextBike, was launched in 2014 with 400 bikes at 31 stations. As of May 2021, it has grown to 870 standard bikes and 126 e-bikes at 100 stations across the city. The city centre has 39 stations, 17 of which are equipped with e-bike docking stands. Figure 59 below shows the location of cycle hire station, standard and e-bike in the city centre.

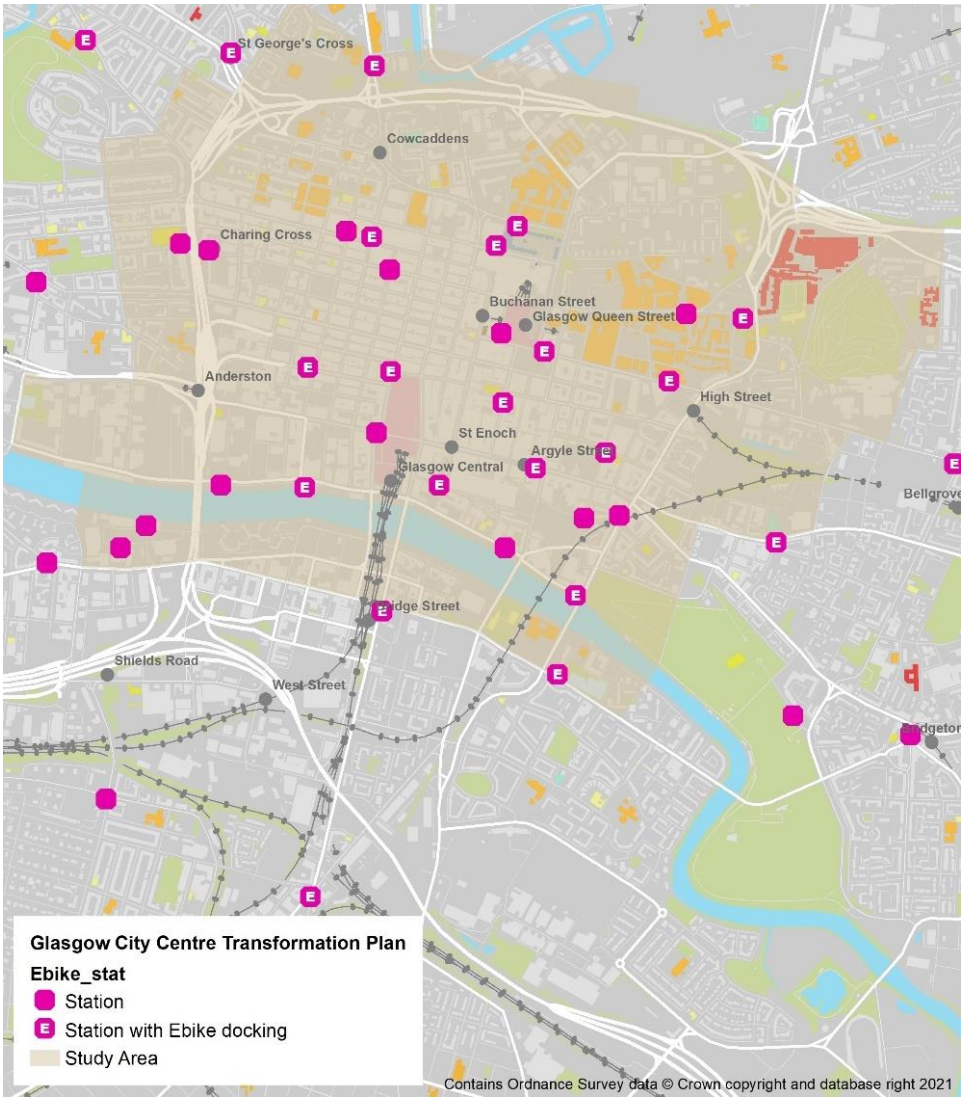


Figure 59. Map of Cycle Hire locations in the city centre

5.3.15 6 of the 10 busiest stations across Glasgow by number of monthly rentals are in the city centre. The busiest one is the Broomielaw (at the Tradeston bridge) which has an average of 1006 rentals starting there every month (data available between August 2017 and February 2021). The second busiest is at St Enoch Square, with an average of 870 rentals a month over the period.

5.3.16 Figure 60 below shows the total number of rentals in 2019 from each station in the city centre, confirming stations at the Tradeston Bridge/Broomielaw side and St Enoch Square as the most popular, as well as showing a relatively even spread of use of stations across the city centre. Stations with lower levels of use are on the edges of the city centre: Springfield Quay, Garscube Road, University Avenue, London Road. All those stations are located along busy roads without easy access to the cycle network (either quiet routes or segregated facilities).

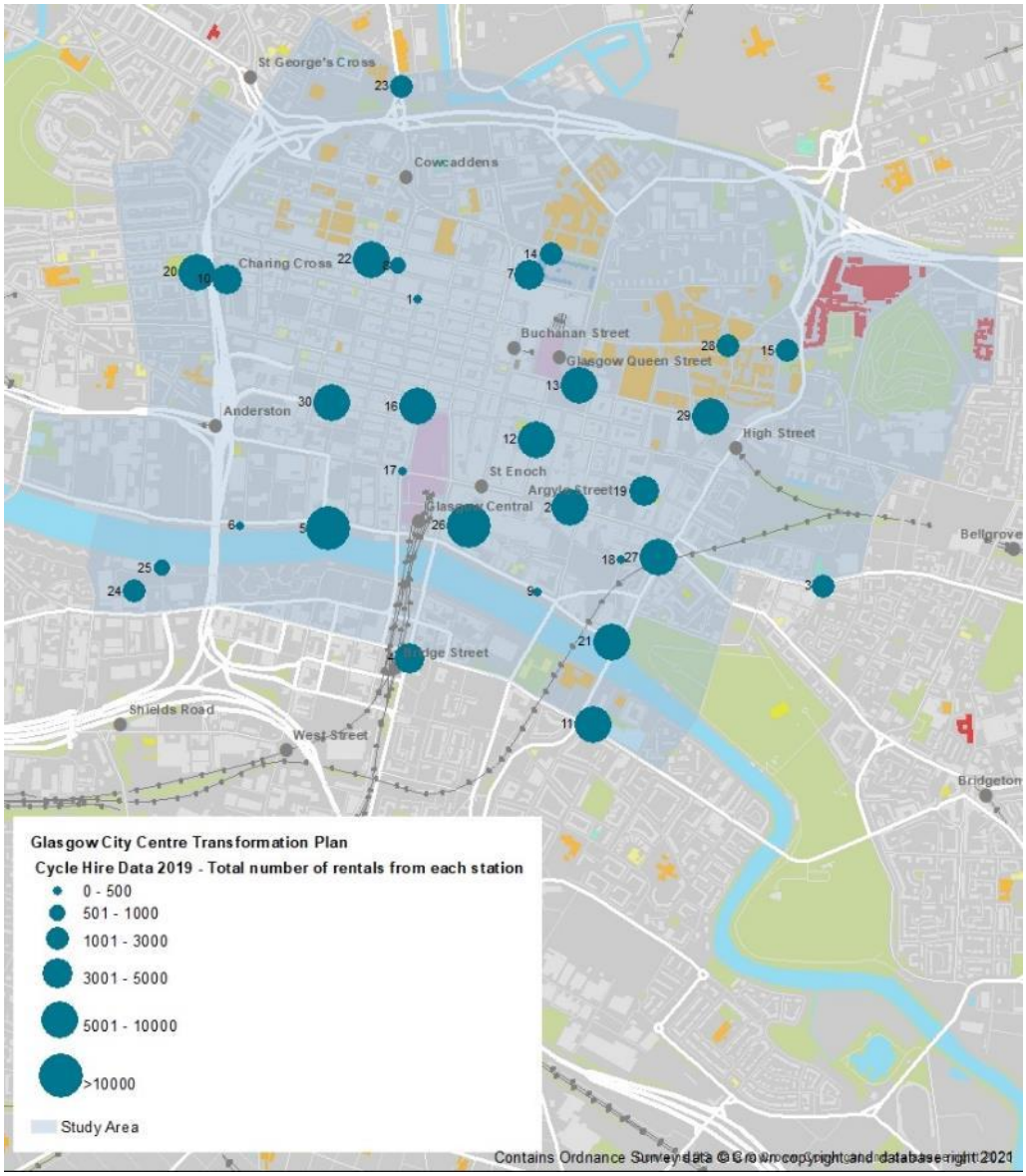


Figure 60. Map of most used cycle hire stations in the city centre – 2019

5.3.17 Comparing monthly rentals across the city centre in 2019 with 2020, during the Covid-19 pandemic shows a drop of 10% in rentals made in the city centre. However, as shown on the graph in Figure 61, the drop was not uniform throughout the year. After a significant reduction in the early part of the year during the first Lockdown in March/April 2020, the number of rentals then recovered and by July 2020 reached a higher level than in 2019 for the rest of the year. This is in spite of offices remaining largely closed and retail and hospitality only partially reopening over the summer month to close again in October.

5.3.18 That rental profile in 2020 suggests an increase use for leisure purposed replacing partially the assumed drop in commuting journeys. Figure 62 shows the distribution of rentals across stations in 2020. As can be seen, stations along the Clyde Walkway (NCN 75) and St Enoch Square saw an increase in rentals in 2020 compared to 2019, while other stations along access routes to office and retail areas (eg: Charing Cross, Waterloo Street west) saw an overall decrease.

5.3.19 It should be noted when comparing 2019 with 2020 data that 6 stations have rental data available only starting later in 2019 or 2020 when they are assumed to have been

installed, and the number of bikes available is also assumed to have increased during that period. However, it is unclear at this level of analysis what the impact of those new stations and bikes have been on other stations (i.e. to what extent rentals at other stations would have increased had those new stations not been introduced). Partial data from the newer stations is therefore included in the dataset as removing them does not significantly change the profile of use shown on the graph below.

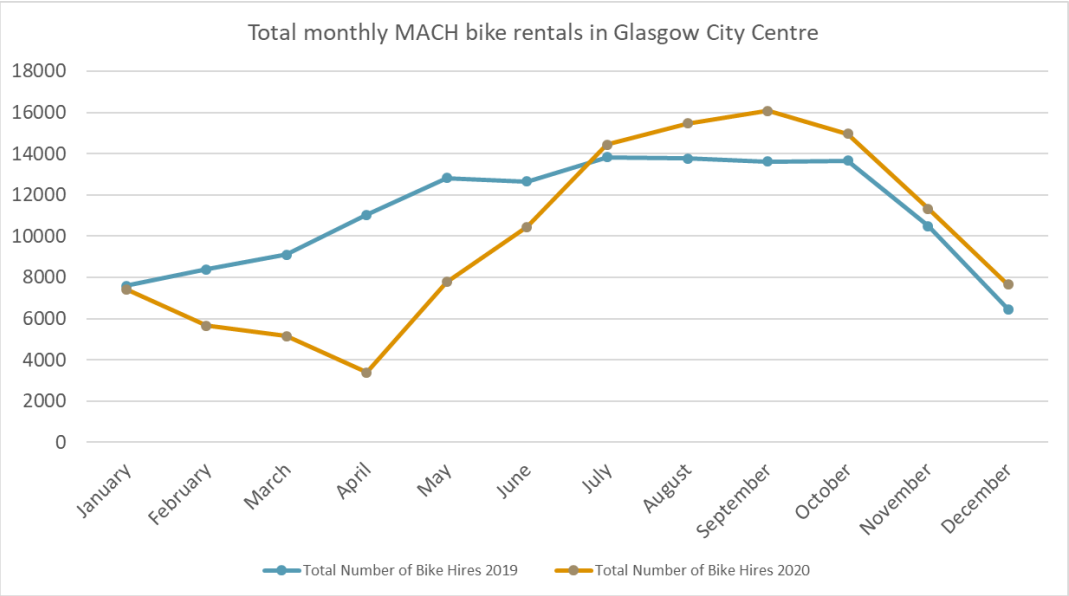


Figure 61. Graph of monthly MACH bike rentals in Glasgow City Centre – 2019 and 2020

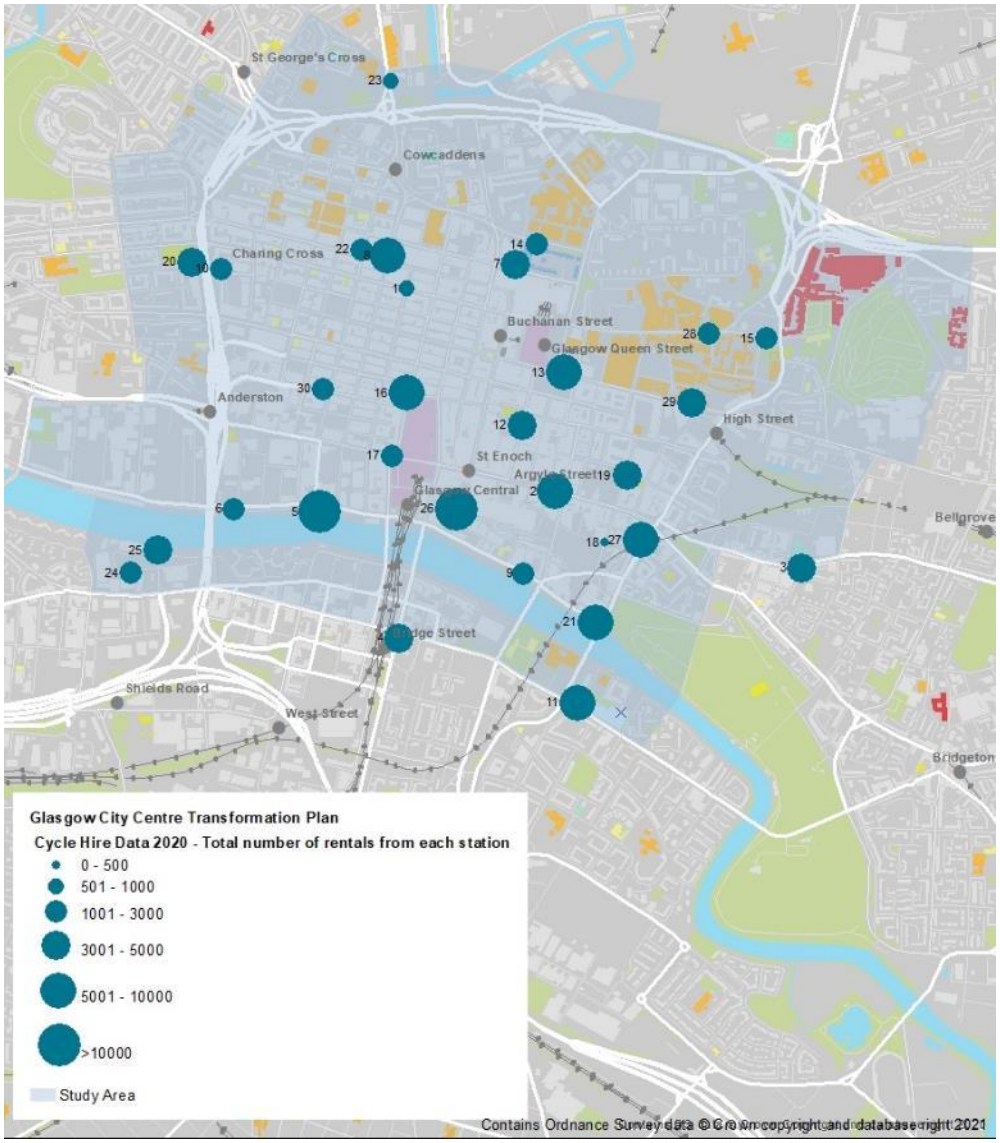


Figure 62. Map of most used cycle hire stations in the city centre – 2020

Main point – the existing cycle network is fragmented in coverage and typology. Many parts are disjointed, difficult to navigate, inconvenient or requiring lengthy detours. Many sections of the routes also suffer from poor quality surfacing, conflicts between users at pinch points and obstruction of cycling infrastructure by drivers. Moreover, the current routes do not serve large parts of the city centre, including the Merchant City area and High Street, and the access is also made difficult by the M8 and its junctions. Despite the poor quality provision, cycling to/from the city centre has more than doubled between 2009-2018, with the busiest access points along the Broomielaw (the NCN 75 route) at the Kingston bridge, the Tradeston (Squiggly) Bridge, and Glasgow Green at Clyde Street. The availability of funding and recent improvements such as the Sauchiehall Street 'Avenue', the temporary cycle track on Cambridge Street, as well as the introduction of bus gates and other modal filtering lowering volume and speed of motorised traffic in the city centre provide opportunities to build upon and increase cycling levels further.

5.4 Bus

Bus provision

5.4.1 As shown in Figure 63, Glasgow city centre benefits from an extensive bus network coverage.

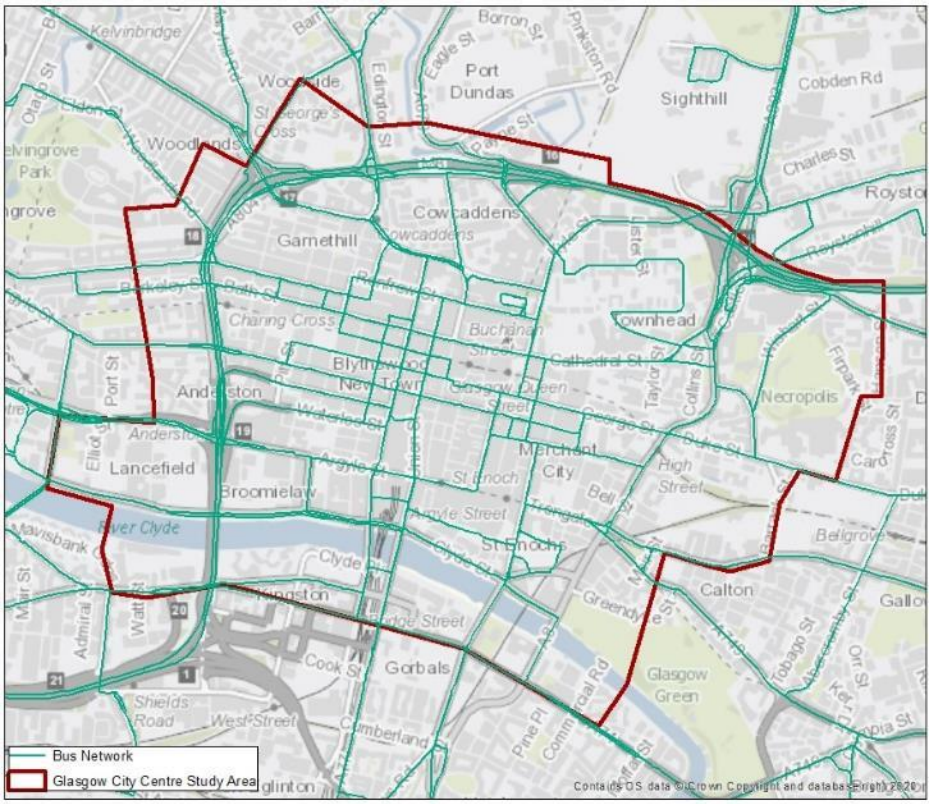


Figure 63. Bus routes in Glasgow City Centre

5.4.2 In the city centre, in Q4 2019 there were approximately 130 bus services, operated by eight operators. First Bus is the dominant operator in Glasgow with around 6,000 weekday departures per day into and out of the city centre. McGills have around 1,200 and Stagecoach around 1,000. (Figure 64)

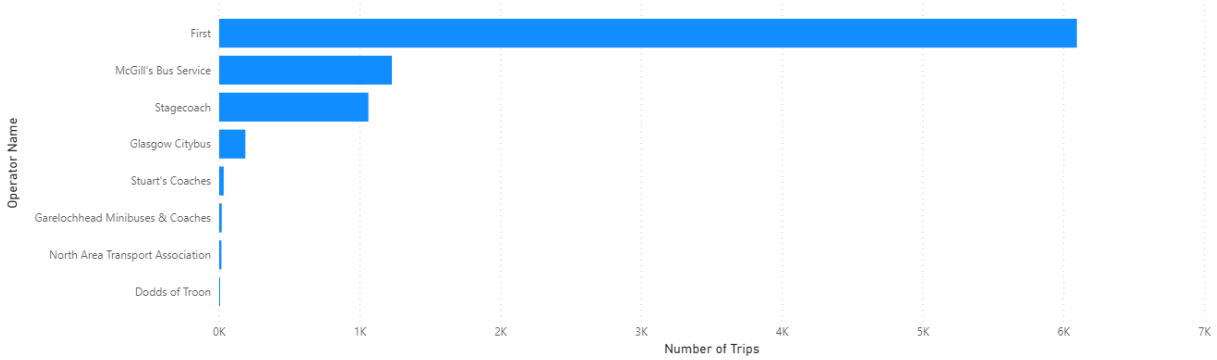


Figure 64. Weekday Total Bus departures by Operator Glasgow

5.4.3 As illustrated in Figure 65, the network offers services throughout the day, with the highest number of services operating between 07:00 and 18:00. Early morning (05:00-

07:00) and evening (17:00 – 23:00) are slightly reduced; with limited night time service provided by 'First' only.

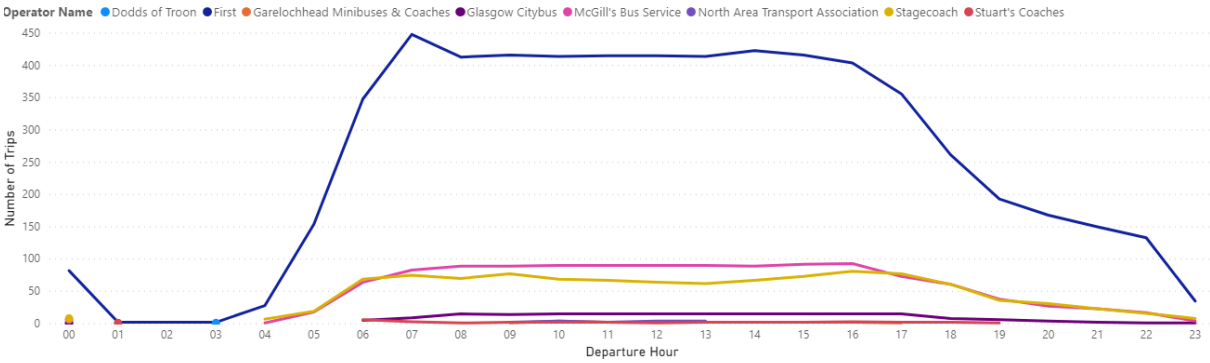


Figure 65. Weekday bus departures by operator Glasgow by hour

5.4.4 There are approximately 3,800 bus stops in the Glasgow City area, of these 307 are within the study area. Analysis has been undertaken based on the bus network in Q4 2019 to establish the current capacity of the stops. This has looked at the frequency of routes stopping at each stop including at the bus station in the morning and afternoon peaks. The analysis shows that nearly 50% of stops have between 0-9 buses per hour stopping at them, a further nearly 30% are between 10-19 stops and the remainder are over 20 buses per hour.

Table 8. Bus Stop Frequency City Centre Area

Stop Frequency [Buses/hour]	AM Peak		PM Peak	
0-9	142	46%	137	45%
10-19	90	29%	89	29%
20-29	46	15%	46	15%
30-39	27	9%	33	11%
40-49	2	1%	2	15

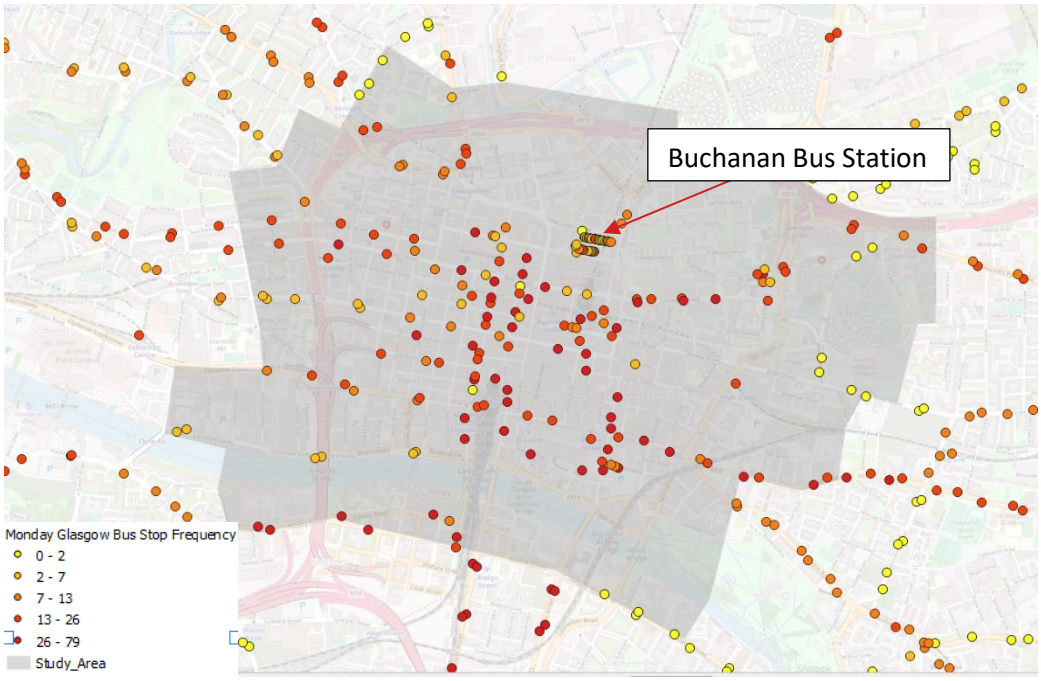


Figure 66. Bus stop frequency, Glasgow City Centre, Monday Peak Hour

5.4.5 In 2019 there were 71 stops in Glasgow City Centre (20%) that have over 25 buses per hour at peak times. TFL's Accessible Bus Stop Guidance[44] states that "where locations are served by more than 25-30 buses per hour and sufficient space is available, bus stops should be split. This enables buses on different routes to serve separate stops, thus reducing bus-on-bus delay and bus stop congestion." These 71 stops should be reviewed to ensure that there is enough capacity at the stops.

[44] TfL Accessible Bus Stop Design Guidance, http://content.tfl.gov.uk/bus-stop-design-guidance.pdf

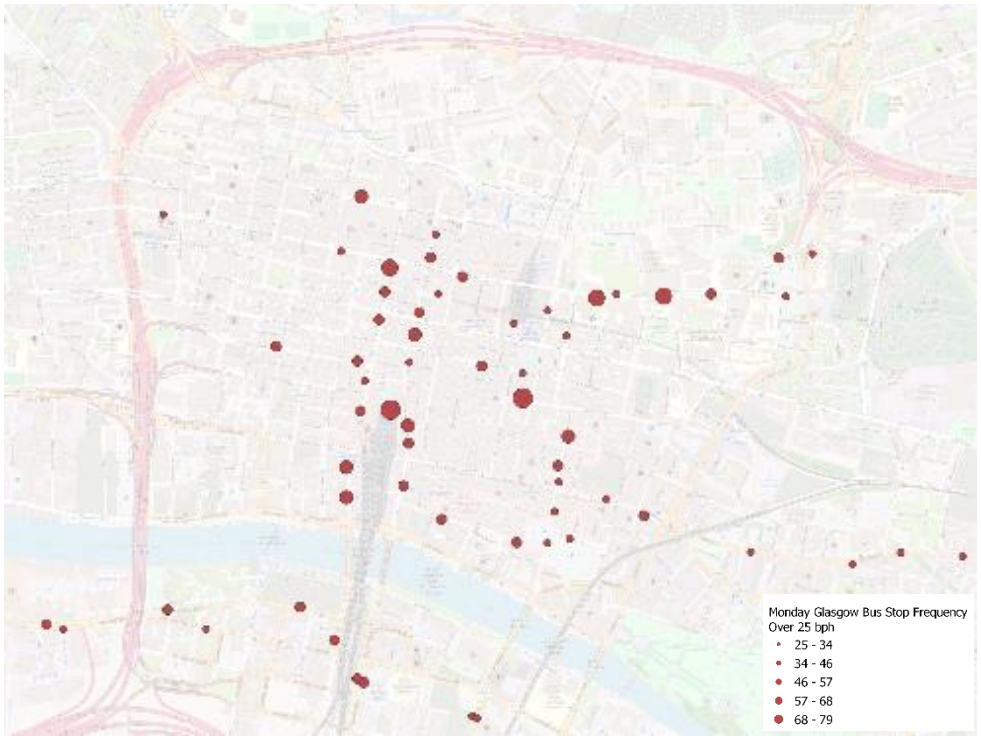


Figure 67. Bus Stops with over 25 buses per Hour (Monday)

5.4.6 Buchanan Bus station which is Glasgow's main bus station, is located in Glasgow City Centre. The station is the terminus for journeys between the city and other towns and cities in Scotland, as well as long-distance services to other parts of the United Kingdom and international journeys. There are 57 stands with approximately 200 buses per hour and 1,700 bus journeys departing from the station every day, with over 40,000 passengers[45] using these journeys on a daily basis. This equates to around 14.5 million passengers a year. It is within walking distance of Glasgow Queen Street railway station and Cowcaddens and Buchanan Street subway stations.

5.4.7 In 2018 a refurbishment of the bus station concourse was approved to declutter the concourse and improve passenger flow and the look and feel of the bus station[46]. The bus station facilities include a wheelchair accessible ticket office (open 7 days a week from 09:00-17:00), toilets, lost property and left luggage facilities, bike parking and bike hire facilities, and a taxi rank.

Bus fares

5.4.8 Understanding and reporting of public transport fares can be very complex given the different ticketing products available for a diverse range of journey types, with a need to cover one-off journeys, multi-leg and multi-modal journeys, season tickets, concessionary fares and other discounts.

5.4.9 In a deregulated bus market, fares can vary by operator and corridor. Whilst there are some differences in fares between bus operators in Glasgow, these tend not to be significant and network operators do not generally indulge in corridor-by-corridor competition using fares. With First Bus as the dominant operator, there is a consistency

[45] www.spt.co.uk

[46] Strathclyde Partnership for Transport Annual Report 2018/2019

throughout much of the network, even in corridors served by other operators. Whilst beneficial in some respects, network-based fares can however limit the flexibility operators might have in targeting particular markets and inevitably leads to effective cross-subsidies between busy and less busy routes. All major operators offer some form of period or season tickets for commuters, using various purchase channels including paper tickets, smart cards or m-tickets for mobiles.

5.4.10 Trying to understand the ticketing options available and the validity of each ticket in Glasgow is confusing; as stated above there are a mixture of zonal tickets with different prices across different operators and modes. For example First Bus has a Local and City fare but for a ticket to cover both then a network ticket is required. McGills has 7 different zones and tickets that cover each zone.

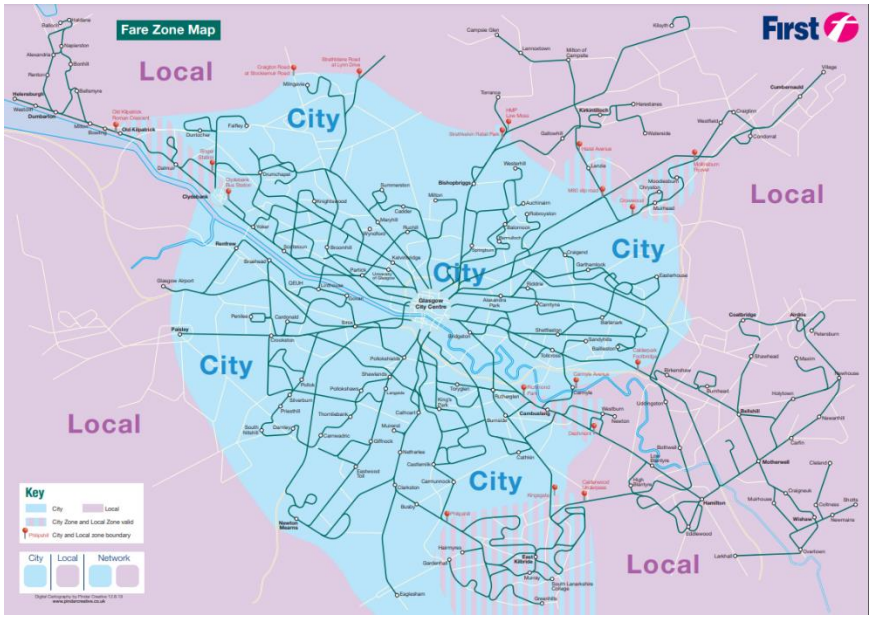


Figure 68. First Glasgow Fare Map

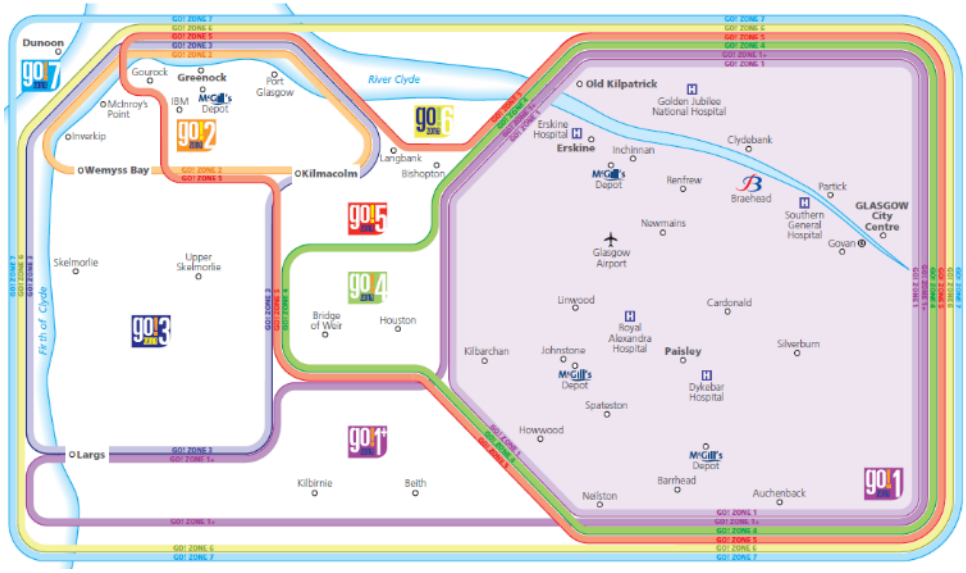


Figure 69. McGills Zonal Tickets

5.4.11 Operator tickets have been compared across Scotland, trying to use comparable tickets, to investigate whether or not bus tickets in Glasgow are more expensive. As can be seen

in Figures 70 and 71, First Bus and McGills daily tickets are priced similarly and are comparable to Lothian in Edinburgh. Xplore Dundee and Stagecoach Glasgow are slightly cheaper, the multi operator Glasgow tripper is a premium product and is over £5 per day. In terms of weekly and monthly tickets, the Glasgow operator tickets are comparable to those in Edinburgh and are more expensive than Dundee. With monthly tickets McGills is the most expensive of those reviewed. There is also no monthly multi operator ticket available in Glasgow.

5.4.12 The subway in Glasgow is priced at £4.20 for an all-day ticket and is cheaper than the equivalent bus ticket. The joint rail, and subway adult ticket is £7.40.

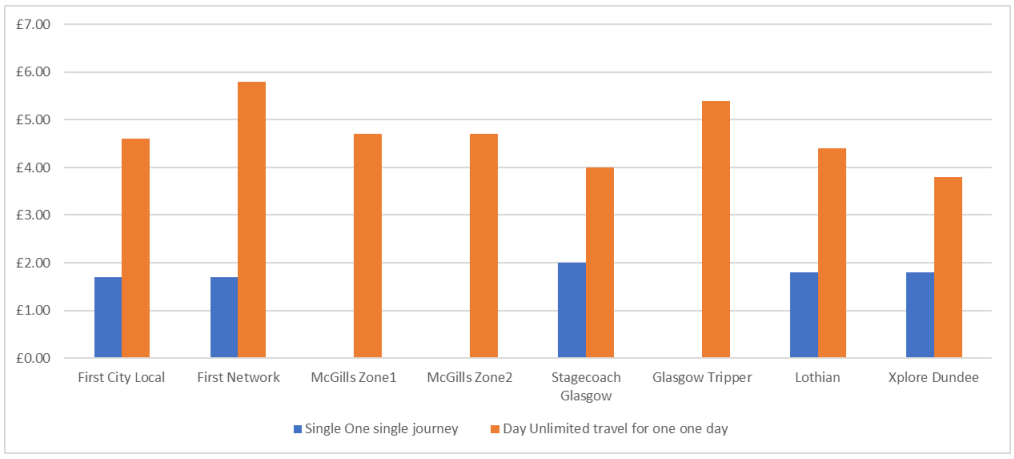


Figure 70. Single and daily ticket price comparison across Scotland

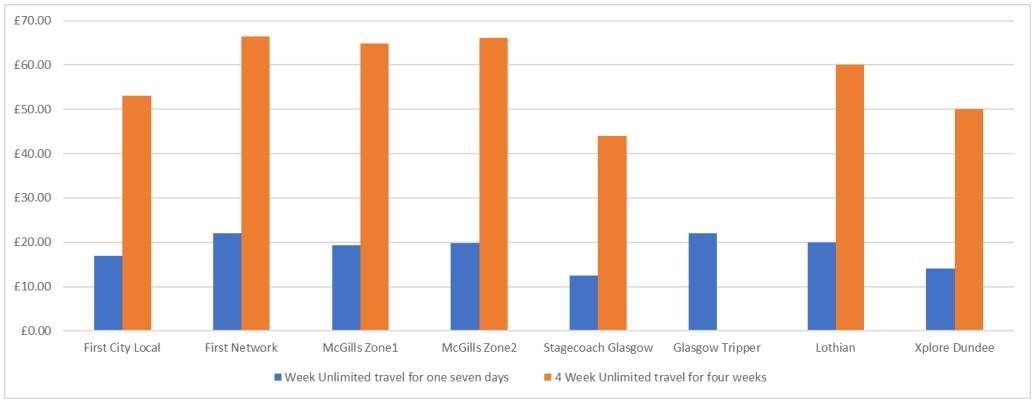


Figure 71. Weekly and Monthly ticket price comparison

5.4.13 Multi-modal ticketing options are available through the ZoneCard, a season ticket promoted by SPT offering unlimited travel by train, Subway, most buses, and some ferries in the Strathclyde region, with charges varying on a zonal basis.

5.4.14 Cost of fares affects different age groups in a different way. For Glasgow residents (and those in the wider Strathclyde region) over-60 years old or with an eligible disability, the National Entitlement Card scheme gives holders free bus travel in Scotland at any time of day, whilst the Strathclyde Concessionary Travel Scheme offers reduced fares on trains and Subway in the Strathclyde area during inter-peak and off-peak hours.

5.4.15 In 2019 the SHS found that 88.7% of adults over the age of 60 in Glasgow had a concessionary fare pass. Of these pass holders over half used their passes at least 2-3 times per week, although one fifth had not used them in previous month. The frequency

of concession scheme usage in Glasgow is lower than in Edinburgh, but higher than other urban areas.

5.4.16 Child discounts for the under 16s of half-price or less apply on both the local rail and bus networks, with further discounts available for accompanied or group travel on the rail network. Currently, young people in Scotland aged 16, 17 or 18 (or aged 19 to 25 and a full time volunteer) are entitled to concessions on the cost of travel on buses, trains and ferries through the Young Scot National Entitlement Card, with single bus tickets discounted by 33% and a similar discount for rail tickets. Season tickets are not included in the scheme, potentially reducing the value of concession for regular travellers, although First offer the equivalent of a Student discount for Young Scot card holders.

5.4.17 Following the recent Scottish Parliament budget settlement, the Scottish Government are working towards offering young people aged 16, 17 or 18 free travel on most bus routes across Scotland.

5.4.18 The SPT RTS public survey of 2019 examined transport issues relating to GCC residents in full-time education. Based on a modest sample of residents in education, including both further and higher education, the survey identified that transport was not a main factor in education site location choice. However, over half of respondents suggested that they had encountered transport issues on their education journeys with cost of fares identified as the biggest issue, followed by service reliability.

5.4.19 Discounts for students older than 18 are available on many bus services in Glasgow, including on services provided by First and McGill's, driven by commercial need, although the discounts available are modest.

5.4.20 Other bespoke discounts are also available for selected groups; for example, First, in a partnership with Jobcentre Plus, offer job seekers travelling using a Jobcentre Plus Travel Discount Card savings of up to 55% off the cost of an equivalent single journey. Apart from the statutory concessions scheme, those offered by the operators are done so on a commercial basis.

5.4.21 The RTS Public Survey found that residents of the SPT region identified the cost of public transport fares as one of their top transport-related challenges when accessing work, education, and hospitals by public transport and in the take up of new employment opportunities. Additionally, a recent survey of young people by the Scottish Youth Parliament found that many young people felt that the cost of fares was too high in relation to the wages they earn.[47]

5.4.22 Bus fare rises in particular have a disproportionate impact on women, younger people, disabled people and black and ethnic minority people as people in these groups are more likely to use buses to meet a large proportion of their travel needs.

5.4.23 The Glasgow Bus Partnership vision highlighted multiple commitments on fares and ticketing including:

- Contactless payments on all buses by the end of 2021;
- Simplified multi-modal ticketing by mid-2022;
- Single operator fare capping by the end of 2021/22 (or as soon as practical for non-Ticketer users);

[47] Scottish Youth Parliament; All Aboard Campaign Survey Results

- Multi-operator fare capping by mid-2022 (or as soon as practical for non-Ticketer users); and
- Multi-modal fare capping to be explored with Subway, Transport Scotland and ScotRail by the end of 2024.

Bus usage

5.4.24 Bus patronage across Scotland has been decreasing since 2009. As shown in Figure 72, the numbers have dropped from 458 million journeys in 2009 to 366 million in 2019 over a 20% decline, in the past 5 years between 2016 and 2019 numbers have dropped by 10%; this was before the effects of the Covid-19 pandemic.

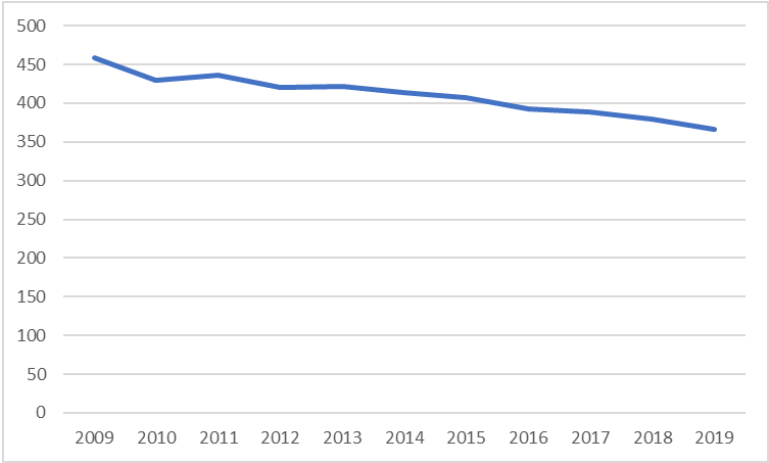


Figure 72. Bus passenger journeys in Scotland 2010-2019

5.4.25 In the report 'The Factors behind Scotland's Decline in Patronage'[48] Professor David Begg says that there are large regional variations in patronage and that the Glasgow area has suffered the greatest decline in Scotland of over 20% before the pandemic. Figure 73 shows the comparison in passenger numbers between all Scotland and South West and Strathclyde.

[48] The Factors behind Scotland's Decline in Patronage, David Begg (2017); https://www.transporttimes.co.uk/Admin/uploads/the-factors-behind-scotlands-decline-in-bus-patronage.pdf

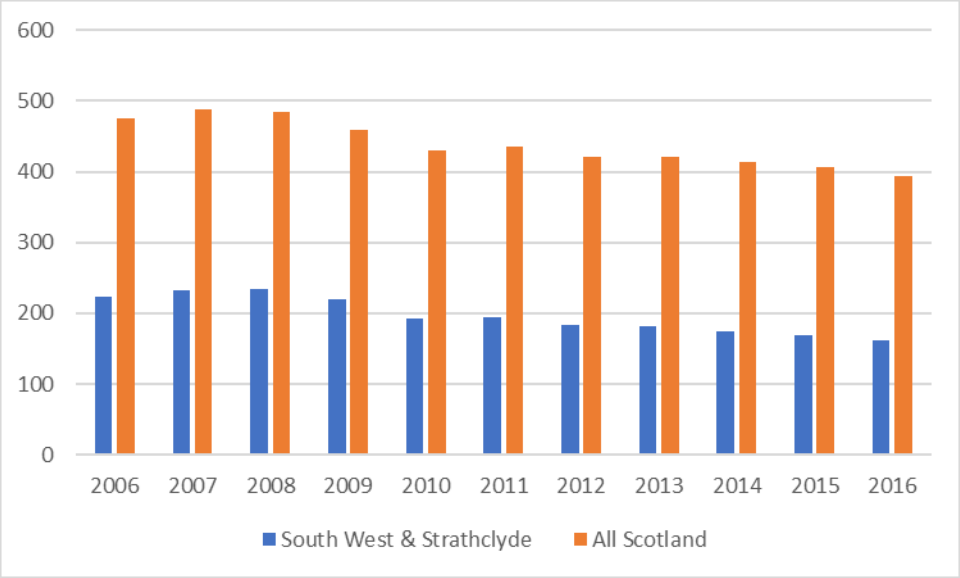


Figure 73. Passenger journeys in South West and Strathclyde and All Scotland 2016-2016

5.4.26 According to the Connecting Glasgow Report (2019)[49], Glasgow has experienced a steeper decrease in bus patronage compared to other UK cities, with a loss of more than 70 million passenger journeys per year in less than a decade across the STP area, with this being seen as a 'crisis' in demand. Key drivers leading to this decline noted in the Connecting Glasgow Report include:

- Poor bus service quality and passenger information;
- Oldest bus fleet in the UK;
- Increasing journey times and declining frequencies;
- Prohibitive prices; and
- Unsuccessful bus partnership.

Bus satisfaction

5.4.27 As can be seen in Figure 74, satisfaction with local public transport services in the area as well as nationally has been declining since 2014, although there was a slight increase observed between 2018 and 2019.[50] And whilst satisfaction of public transport users with their services in the Glasgow City is higher than Scotland as a whole , SHS data shows that it is lower than some other urban areas, including 88% ratings in Edinburgh.

[49] Connecting Glasgow https://www.glasgow.gov.uk/CHttpHandler.ashx?id=43556&p=0
[50] 84 Transport Scotland: Transport and Travel in Scotland Local Area Analysis. 2012-13, 2014, 2015, 2016, 2017, 2018 and 2019. Table 13

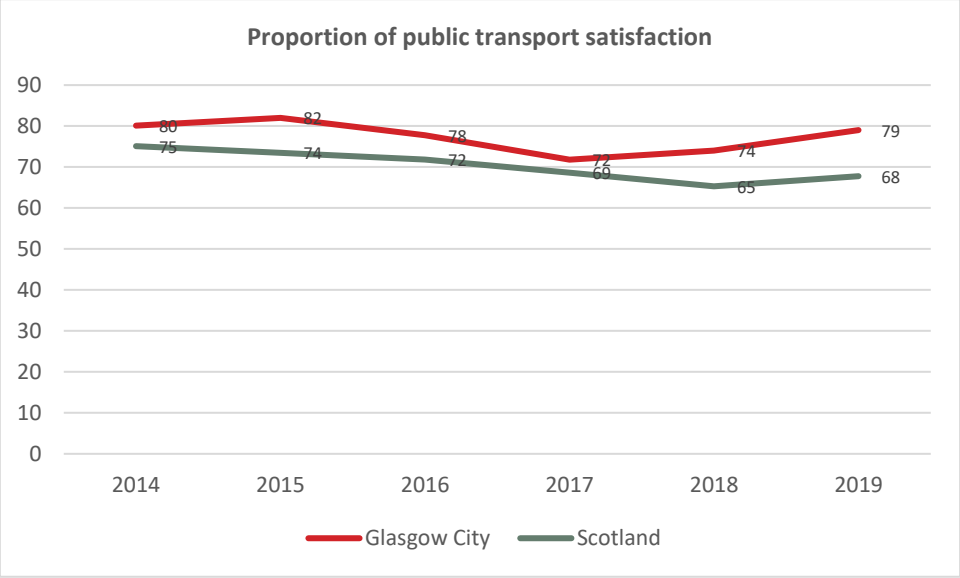


Figure 74. Satisfaction with public transport services, SHS 2014-2019

5.4.28 Moreover, the satisfaction figures hide differences between modes. As shown in Figure 75, passenger satisfaction with train services is higher for all categories than with the bus provision. The key issues of concern related to bus service include the cleanliness of buses, personal safety and security on buses, information about routes and ticketing options, and the value of fares.

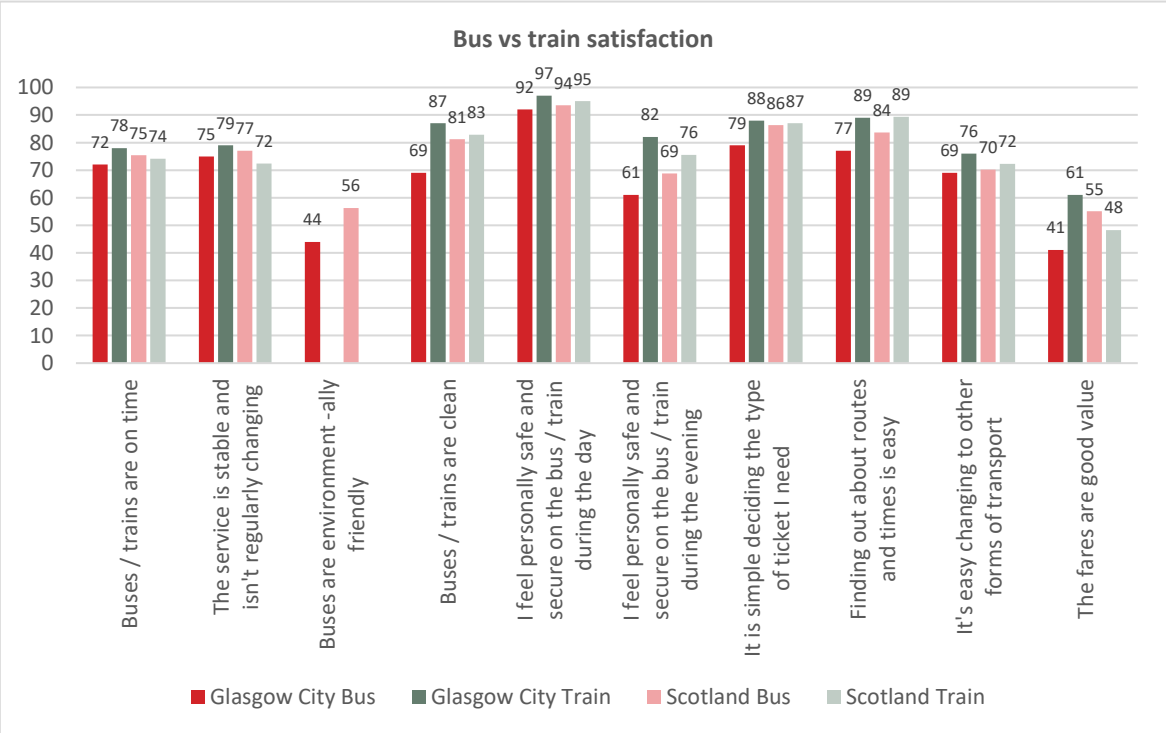


Figure 75. Bus vs train service user satisfaction, SHS, 2019

5.4.29 The RTS Public Survey identified that nine in every 10 bus passengers, eight in every 10 rail passengers and 4 in every 10 Subway passengers feel that they regularly experience transport challenges during their journeys using those modes. The top three recorded challenges by mode were:

- Bus – reliability of services, cost of fares, and frequency;
- Rail – reliability of services, crowding, cost of fares; and
- Subway – crowding, cost, hours of operation

5.4.30 Additionally, a substantial number of comments were received on integration challenges, including multi-operator ticketing and inter-changing between services.[51]

5.4.31 A Public Conversation on Glasgow's Transport Future was undertaken to inform the ongoing development of Glasgow's transport strategies. Key findings from the Conversation also related to problems with bus reliability, lack of smart and integrated ticketing, lack of integration with other modes, and rising congestion.[52]

Journey times

5.4.32 The Glasgow Bus Partnership was convened in 2018 initially by Glasgow City Council for the City. The Council's aim was a voluntary partnership which would reduce journey times on arterial routes by 20% and by 50% at peak times in the City Centre and associated targets.

5.4.33 In the submission to the bus partnership fund in Scotland by the Glasgow bus partnership[53] data was provided on journey times by SPT. All observed routes displayed an increase in journey times compared to historical base data, with average yearly increases ranging between 0.1% and 1.9%. For some routes, the journey times have increased by as much as half an hour, with others 60% longer than they were historically.

Table 9. Historical Bus Journey Time Comparisons [54]

Route	Start Year	End Year	JT Increase (Mins)	JT Increase (%)	Compound Annual Growth Rate (%)[55]
Central Station to Darnley via Shawlands, Thornliebank	1995	2016	15	50%	1.9%
Glasgow (Buchanan Bus Station) to Hamilton via Parkhead, Tollcross, Uddingston	1990	2016	27	60%	1.8%
City to Castlemilk	1988	2016	17	55%	1.6%
Central Station to Summerston via Saracen	1995	2016	11	35%	1.5%
Glasgow (Buchanan Bus Station) to Hamilton via Shawfield, Rutherglen, Cambuslang	1987	2016	26	47%	1.3%
Central Station to Penilee	1995	2016	8	32%	1.3%
Summerston to Tollcross	1995	2016	16	30%	1.3%
Knightswood to Newton Mearns (Mearns Cross)	1988	2016	29	42%	1.3%
Hope Street at Renfrew Street to Drumchapel via Maryhill	1990	2016	11	38%	1.2%
Faifley to Baillieston	1989	2016	31	38%	1.2%
Central Station to Paisley	1995	2016	8	28%	1.2%
Hairmyres to Motherwell	1987	2016	18	37%	1.1%
Glasgow Buchanan Bus Station to Kirkintilloch (Harestanes)	1987	2016	16	35%	1.0%
Glasgow to Paisley via Partick & Clyde Tunnel	1988	2016	14	32%	1.0%

[51] Developing the Regional Transport Strategy – Consultation on the Draft 'Case for Change' http://www.spt.co.uk/documents/latest/p120321_Agenda9.pdf

[52] The Glasgow City Region Connect: Prioritising People Submission To The Bus Partnership Fund On Behalf Of The Glasgow Bus Partnership of April 21

[53] Bus partnership fund submission April 2021 by the Glasgow bus partnership

[54] Data provided by SPT based on historical timetables

[55] The Compound Annual Growth Rate (CAGR) describes the average annual percentage growth across the observed period, allowing comparison where the historical base year of the data is not consistent

Queen Street Station to Auchinairn	1990	2016	6	29%	1.0%
Hope Street to Drumchapel (Kinfauns Drive) via Great Western Road	1990	2016	8	23%	0.8%
West Regent Street to Easterhouse Shopping Centre	1988	2016	7	24%	0.8%
Glasgow to Carluke via Parkhead, Tollcross, Bellshill, Motherwell, Wishaw	1990	2016	19	21%	0.7%
Partick to Springburn	1986	2016	9	24%	0.7%
City centre to Milngavie (Craigton Road)	1980	2016	9	29%	0.7%
Central Station to Silverburn (ex Pollok Centre) via Paisley Road West	1995	2016	4	14%	0.6%
Castlemilk to Govan	1988	2016	8	17%	0.6%
Clydebank Bus Station to East Kilbride (Calderwood)	1988	2016	18	17%	0.6%
Milton to Central Station	1995	2016	3	11%	0.5%
Central Station to Kennishead	1988	2016	3	11%	0.4%
Clydebank to Balloch via Renton	1982	2016	7	13%	0.4%
Union Street to Kilbarchan	1988	2016	6	9%	0.3%
Botanic Gardens to Springburn via Gilshochill, Cadder, Possil	1995	2016	2	6%	0.3%
Charing Cross to East Kilbride (Greenhills)	1995	2016	4	5%	0.2%
Central Station to Govan via Shawlands & Pollok	1995	2016	2	3%	0.1%

5.4.34 The above data is supported by information on traffic delays in Glasgow collected by First Bus between September and November 2018, which showed, that some of the most congested sections of the network are on the approaches to the city centre along Great Western Road, Mary Hill Road, King George Bridge and Glasgow Bridge in the city centre. When weighted by passenger numbers per service, congestion appeared to be most severe along the A77 and on King George Bridge and Glasgow Bridge.

5.4.35 Another analysis of journey time variability was carried out in 2020 by SPT for the purposes of their Regional Transport Strategy update. The SPT data suggested that the largest journey time variability for buses is on the motorway network in the Strathclyde area, while in the corridors identified by the First Bus study the variability seems to be minimal. The analysis of average speed, showed Great Western Road, Mary Hill Road, the A77, King George Bridge and Glasgow Bridge to have an average bus speed below 20km/h.

Main point – Glasgow city centre benefits from an extensive bus network coverage, with 20% of bus stops having over 25 buses per hour at peak times. However, Glasgow experienced a steep decline in bus patronage over the years, with problems such as poor service reliability, increased journey times due to congestion, low passenger satisfaction and perception of high fares. Nevertheless, the availability of bus emergency funding to operators as a response to the Covid-19 pandemic, and the provision of free bus travel for under 22s in early 2022 may provide opportunities to reduce the perception of high fares, and give operators greater influence over their bus operations, thus help rebuilt travel demand.

5.5 Rail

Rail provision

5.5.1 There are 59 rail stations in the Glasgow City region, of which seven stations are within the city centre study area. They include the two principal mainline rail stations - Glasgow Central and Glasgow Queen Street.

5.5.2 **Glasgow Central** is the largest station in Glasgow. It is the terminus of the West Coast mainline for intercity services between Glasgow and England. Passenger numbers at Glasgow Central grew by almost 10 million between 2009 and 2017.

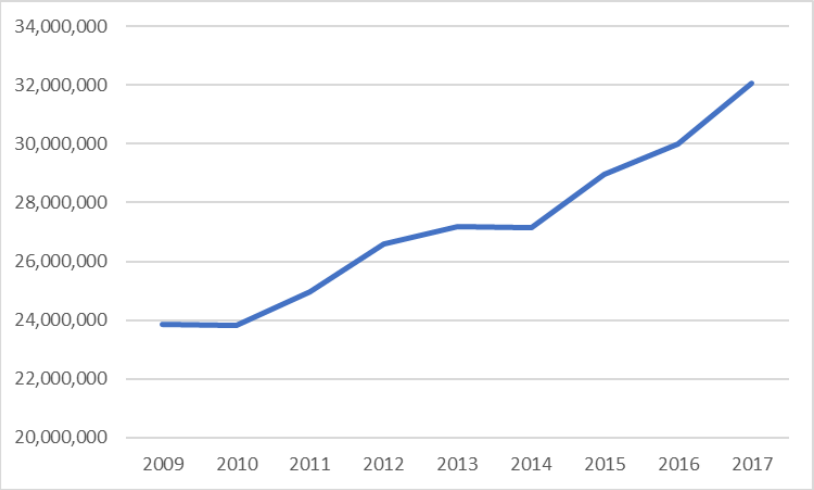


Figure 76. Annual Passenger numbers Glasgow Central

5.5.3 The facilities at the station include: full time staff on site, ticket office and self- service ticket machines, CCTV, first class lounge and waiting facilities, toilets, lost property and left luggage facilities, WiFi, shops, bike parking and bike hire facilities, car park, taxi rank and bus services.

5.5.4 The second Strategic Transport Projects Review (STPR2) proposed rail station development as part of its proposed projects. At Glasgow Central Station, redevelopment would involve a review of existing infrastructure capacity and identification of short-term improvement measures to enable longer and/or more frequent train services in preparation of High Speed Rail services at the station and improving access from the riverside. Network Rail's Scotland Route Study[56] identified areas of the Scottish rail network where changes would be required to support the delivery of the 2043 Indicative Train Service Specification (ITSS). The ITSS is an aspirational train service for 2043, developed by the rail industry, which reflects the opportunities which could be achieved if the Conditional Outputs from the Scotland Market Study, Long Distance Market Study, and Freight Market Study are met within Scotland. The report stated that extra track and platform capacity is required at Glasgow Central Station, both within the station and on its approaches to meet demand. The STPR states that " Without investment in Glasgow Central Station, trains will not be able to be lengthened (or frequency increased) to accommodate forecast demand with customers being crowded off trains and unable to travel by rail to key employment locations. Pedestrian flow and retail/passenger facilities within Glasgow Central were also highlighted as a key consideration.[57]

5.5.5 In 2019 there were six operating companies serving the station, Scotrail, Cross Country, TransPennine Express, Avanti West Coast, London Northern Railway and Caledonian Sleeper.

[56] Network Rail, Scotland Route Study, July 2016, https://www.networkrail.co.uk/wp-content/uploads/2016/11/Scotland-RouteStudy.pdf
[57] Strategic Transport Projects Review (STPR2), Appendix B, Project 8, https://www.transport.gov.scot/media/49059/stpr2-phase-1-ast-project-8-stations-plan-3-feb-2021.pdf

5.5.6 **Glasgow Queen Street** is the second largest station in Glasgow. It connects Glasgow with Edinburgh via the Glasgow – Edinburgh and North Clyde Line and other connections such as the West Highland Line for the Scottish Highlands, the Highland mainline and Glasgow-Dundee Line. It is located between George Street to the south and Cathedral Street Bridge to the north and is at the northern end of Queen Street adjacent to George Square, Glasgow's major civic square. It is also a short walk from Buchanan Street, Glasgow's main shopping district and the location of Buchanan Street subway station, the closest connection to Queen Street for the Glasgow Subway network.

5.5.7 The facilities at the station are similar to those at Glasgow Central, and include: full time staff on site, ticket office and self- service ticket machines, CCTV, first class lounge and waiting facilities, toilets, lost property and left luggage facilities, WiFi, shops, bike parking and bike hire facilities, car park, taxi rank and bus services.

5.5.8 A £120 Million project is currently being undertaken to redevelop Queen Street and transform the station without closing it to passengers. It is hoped that the number of people using the station will increase by 40 per cent to reach 28m by 2030. To manage this growth in passengers redevelopment is required. The pandemic delayed work on the project, but the project will give passengers:

- A contemporary building both internally and externally
- An expanded concourse
- Improved, fully accessible, entrances on Dundas Street and George Square
- New station facilities including accessible toilets, lost property and ticket office as well as space for retail
- Extended platforms to accommodate longer trains of up to eight carriages

5.5.9 In 2019 there were three operating companies serving the station, Scotrail, North British Railway and Caledonian Sleeper.

Rail usage

5.5.10 Glasgow Central is the 11th busiest station in the UK and the busiest station within the study area . There were over 32 million entries and exits in 2019-20. The second busiest station is Queens Street, followed by Charing Cross and Argyle Street (Figure 77). All these stations experienced a slight drop in passenger entries and exits between 2018 and 2020. (Figure 78)

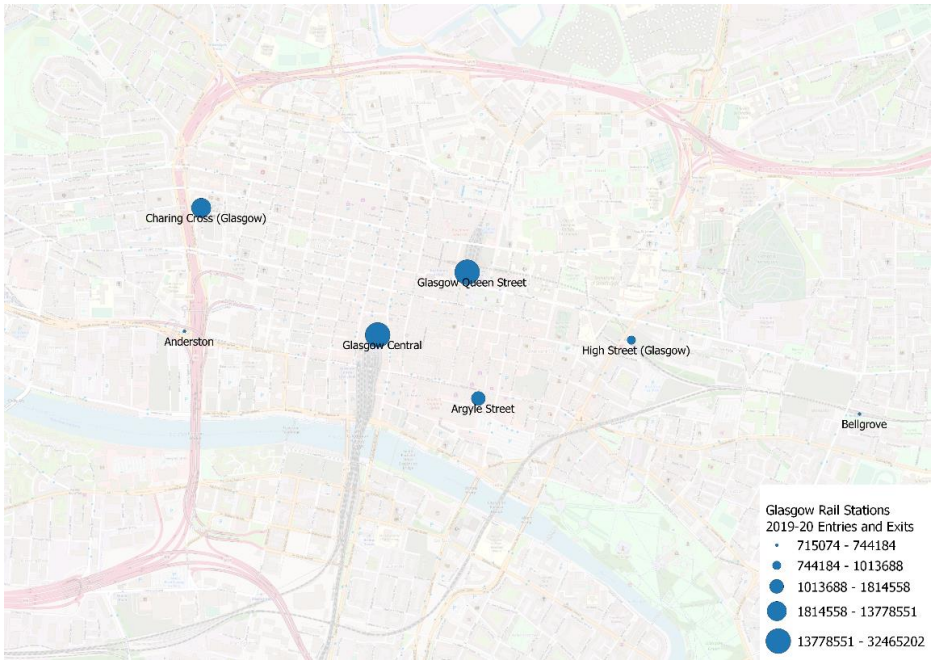


Figure 77. Glasgow Rail Stations entries and exits

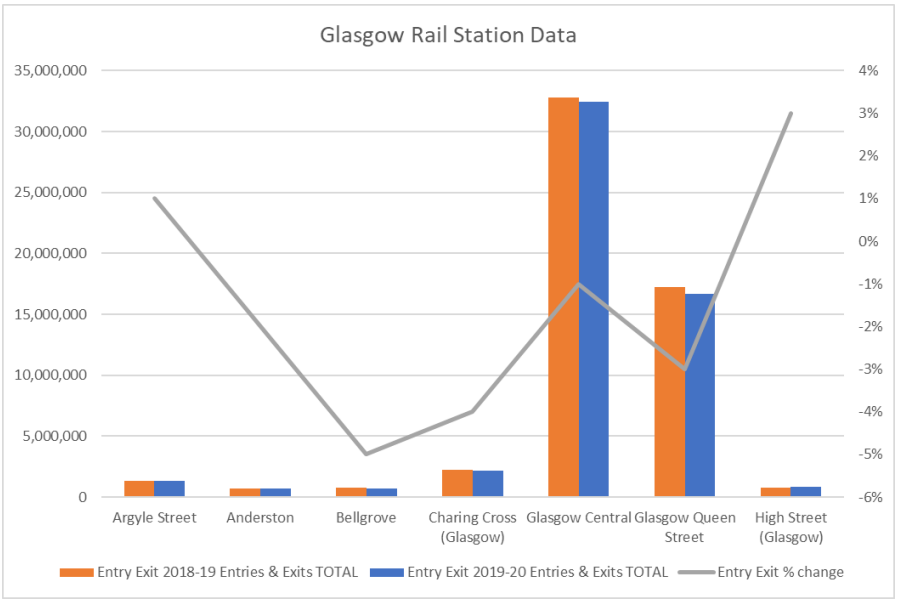


Figure 78. Glasgow Rail Stations entries and exits (Percentage Change)

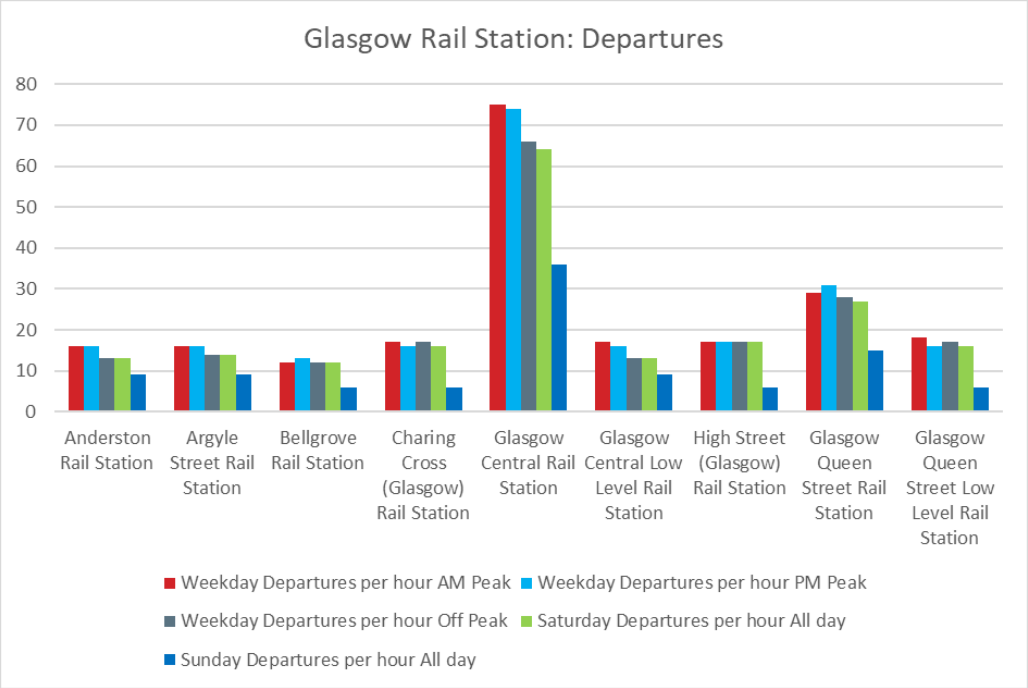


Figure 79. Rail Station Departures by day of the week Q4 2019

5.5.11 Glasgow Central in Q4 2019 was also the busiest stop in terms of train departures within the study area. There were 75 departures per hour in the morning peak and 74 in the evening peak. In the off-peak period, there were still 66 departures every hour. On Saturdays the numbers of departures were 64. On Sundays the numbers drop to 36 departures per hour.

5.5.12 Whilst bus demand in Glasgow has fallen significantly over the past decade or so, rail demand growth has been significant. Key demand growth drivers are likely to have included strong investment in rail services and infrastructure, for example, reopening lines via Airdrie and to Larkhall, electrification, rolling stock replacement and station development. Modal and distribution shift from bus to rail may also have contributed to driving some of this growth. Rail demand, as measured by the Office for Road and Rail station entries and exists, increased by around 30% over the decade to 2017/18 at stations in the City Council's administrative area to 77m entries/exists per annum. Rail demand growth has also been apparent in many of the neighbouring authority areas.

5.5.13 The SHS analysis may confirm some link between passenger satisfaction and demand growth in identifying that those using the Glasgow rail network are generally more satisfied than in other parts of Scotland, except in respect of punctuality and ease of finding information and interchange. Whilst, in absolute terms, safety of using the network in the evening and value of fares have low scores, the performance of the local network is better than across the country as a whole, especially in respect of fares, and with the rail scores significantly higher than the equivalent responses from bus passengers (though some care needs to be taken in making direct comparisons across modes).

5.5.14 The separation between Glasgow Central and Queen Street is a problem for passengers and is "an issue of strategic importance for the city and the west of Scotland as a whole"[58]. There is no ability to have a complete through journey. This also means that there would be no direct access to high speed services at Central from the north, north east and

[58] Connecting Glasgow Report, https://www.glasgow.gov.uk/CHttpHandler.ashx?id=45064&p=0

Edinburgh unless this gap is plugged by new infrastructure. The Connecting Glasgow report proposes that a radical solution is required, to construct a new tunnel linking the existing rail networks either side of the River Clyde.[59] A tunnel would increase city centre capacity of the network around Glasgow, potentially providing around 20 trains (around 11,000 seats assuming 8 car trains) in each direction across the city every hour.

5.5.15 The Connectivity Commission also highlighted a problem of connecting city's taxi fleet with public transport, particularly their permeability into rail stations, and highlighted opportunities for better located taxi ranks provision.[60]

Rail fares

5.5.16 Rail fares used by regular commuters are regulated, including season ticket charges; the 2020 fares increase was capped to the July 2019 Retail Price Index increase of 2.8%. Season tickets, offering station to station fares, are priced to provide annual travel at the cost of the equivalent of around 40 weeks of peak-period travel. There is a strong interest in the rail industry in looking towards 'smarter' season tickets to provide discounted costs for regular and/or shoulder/off-peak commuters, with the COVID-19 p providing an added drive and urgency to developing these products.

5.5.17 Multi-modal ticketing options are available through the ZoneCard, a season ticket promoted by SPT offering unlimited travel by train, Subway, most buses, and some ferries in the Strathclyde region, with charges varying on a zonal basis. In general, ZoneCard fares are charged at a premium over single operators' own products, but they are cheaper for multi-operator and multi-modal journeys.

Table 10. ZoneCard Tickets

Number of zones	1 week	4 weeks	10 weeks	Annual (52 weeks)
2	£20.90	£75.20	£178.00	£815.00
3	£27.60	£99.40	£235.00	£1,076.00
4	£32.90	£118.40	£280.00	£1,283.00
5	£37.10	£133.60	£315.00	£1,447.00
6	£42.30	£152.30	£360.00	£1,650.00
7	£47.50	£171.00	£404.00	£1,853.00
8	£51.80	£186.50	£440.00	£2,020.00
9	£57.00	£205.20	£485.00	£2,223.00
10	£60.40	£217.40	£513.00	£2,356.00
11	£65.50	£235.80	£557.00	£2,555.00
12	£70.70	£254.50	£601.00	£2,757.00
All (i.e. valid in all zones)	£75.10	£270.40	£638.00	£2,929.00

[59] Connecting Glasgow Report, https://www.glasgow.gov.uk/CHttpHandler.ashx?id=45064&p=0
[60] Connecting Glasgow Report, https://www.glasgow.gov.uk/CHttpHandler.ashx?id=45064&p=0, page 15

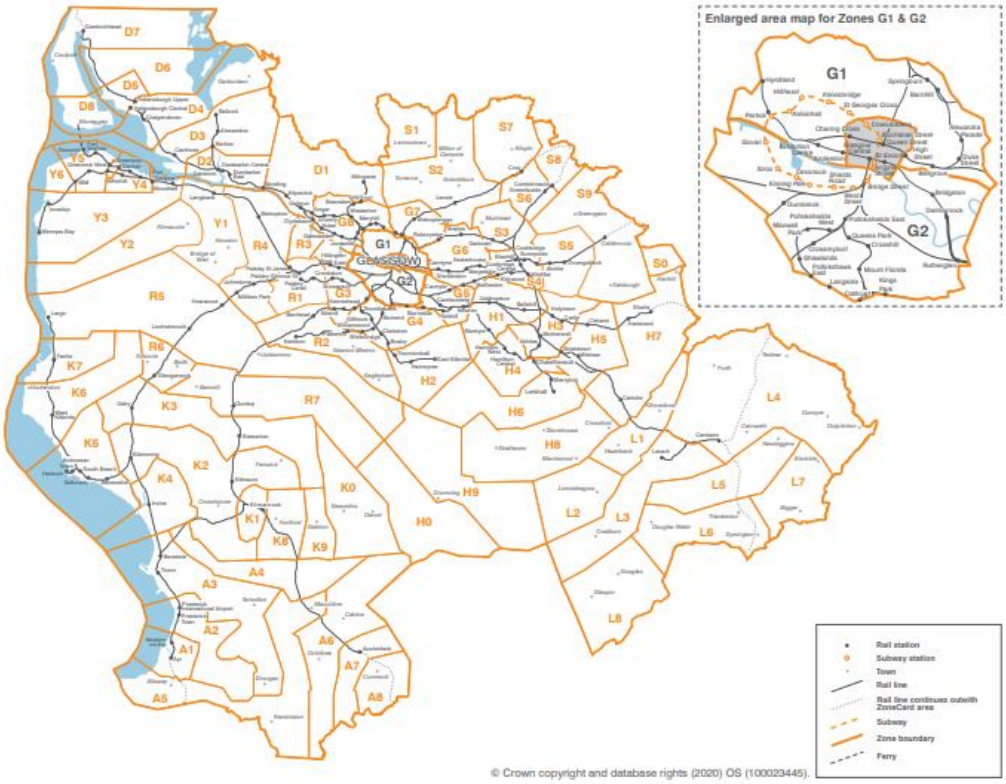


Figure 80. ZoneCard area map

Main point – Rail demand in Glasgow increased by around 30% over the last decade with passenger satisfaction generally higher than in other parts of Scotland. Glasgow Central, Queen Street, Argyle Street and Charring cross are the busiest stations in the city centre. Whilst the proposed redevelopment of Central and the existing redevelopment of Queen Street provides opportunities to further increase growth in passenger numbers, increase connectivity and allow High Speed Rail services, the separation between Glasgow Central and Queen Street is a problem for passengers and was highlighted as an issue of strategic importance. Recent change in travel patterns (also due to the Covid-19 pandemic) offers opportunities for 'smart' season tickets for regular and off-peak commuters, potentially reducing the cost of travel and boosting passenger demand.

5.6 Subway

Subway provision

5.6.1 The Glasgow Subway is an underground rapid transit system which runs from 06:30 to 23:40 Monday to Saturday and 10:00 to 18:12 on Sunday. During the off-peak periods trains run every 6–8 minutes. There are fifteen stations on the Subway distributed over a 10 km circuit of the West End and City Centre of Glasgow, with eight stations to the North of the River Clyde and seven to the South.

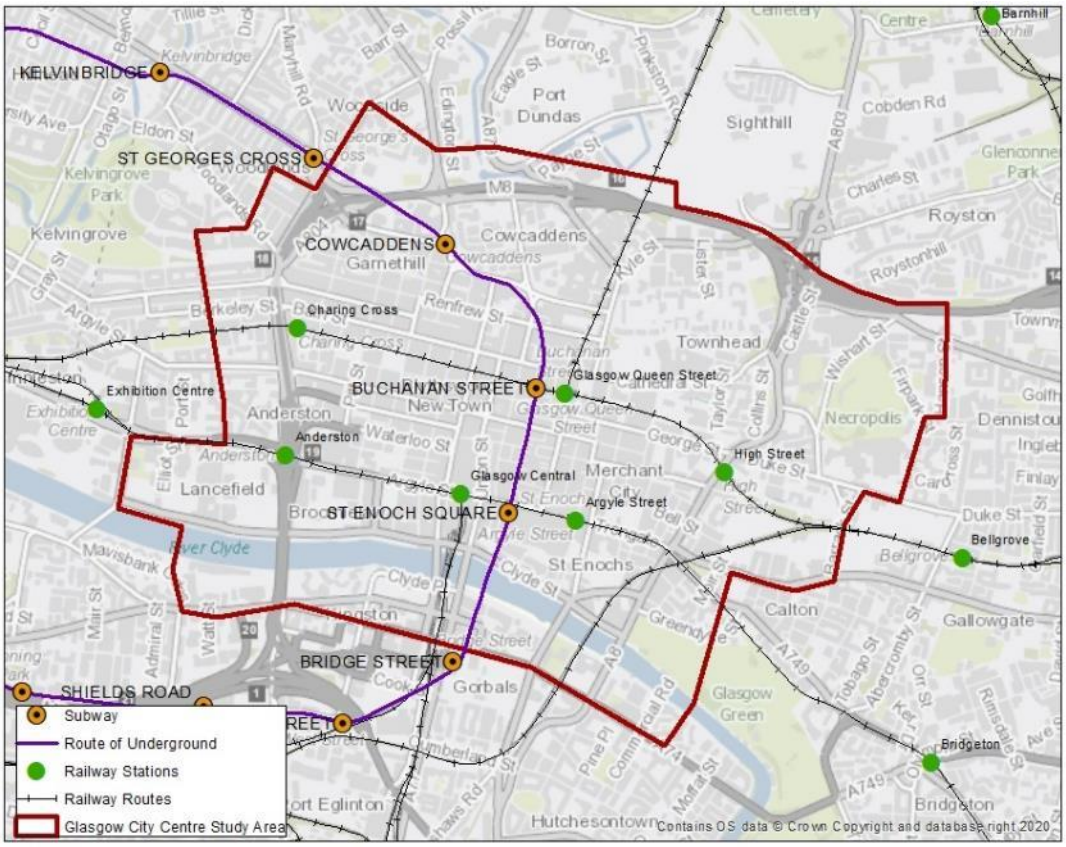


Figure 81. Subway map

Subway fares

5.6.2 Subway tickets are a fixed price and are not related to the distance travelled. There are a mixture of smart products and paper tickets available. The tickets and the prices for each ticket are shown in the table below:

Table 11. Subway tickets

Type	Adult Smart	Adult Paper	Child Smart	Child Paper
Single	£1.55	£1.75	£0.80	£0.80
All day	£3.00	£4.20	£1.50	£2.10
7 day ticket	£14.00		£7.00	
28 day ticket	£54.00		£27.00	
10 week ticket (online only)	£120.00		£60.00	
6 Month ticket	£270.00		£135.00	
12 Month ticket	£485.00		£245.00	

5.6.3 As part of the £288 million Subway modernisation programme, SPT introduced a smart ticketing solution to the Subway in Autumn 2013 with reusable plastic Subway Smartcards replacing the paper magnetic strip tickets. This new ticketing solution includes new software, smartcard ticketing machines, smart gates and related ticketing equipment across all Subway stations. The technology provides more flexible travel by offering customers the benefits of a contactless paperless system.

5.6.4 All customers who register for a smartcard simply top up their cards and tap on and off the Subway. Since its launch, the technology has been adopted by more than 100,000 Subway customers.

Subway usage

5.6.5 Data on passenger journeys show (Figure 82) that there has been a relatively steady flow of passengers over the past decade to 2018-19, albeit a small drop in 2016-17.

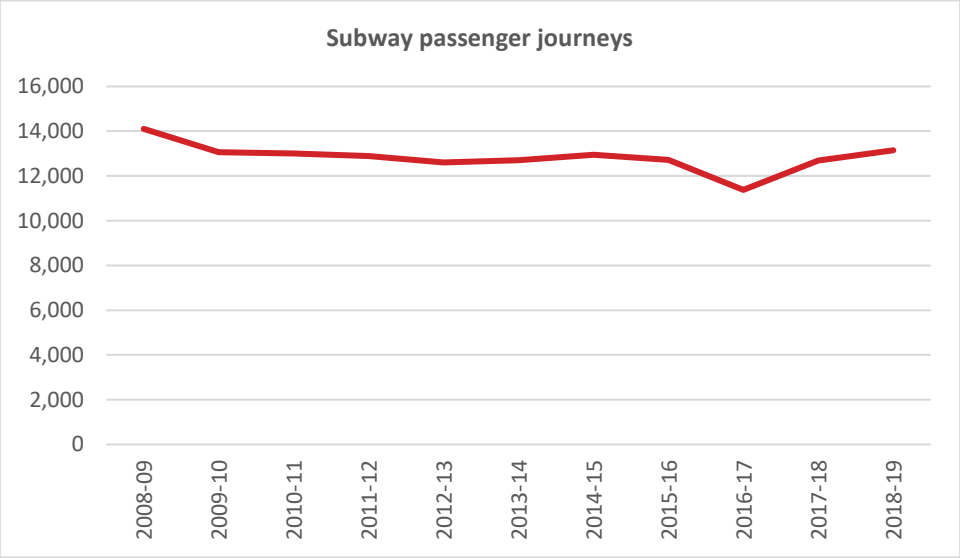


Figure 82. Passenger Journeys Subway Glasgow

5.6.6 The latest Department for Transport figures compare the 2019-20 and 2020-21 passenger journeys (Figure 83). The data shows that during the Covid-19 pandemic, the volumes declined substantially, by approximately 80%.

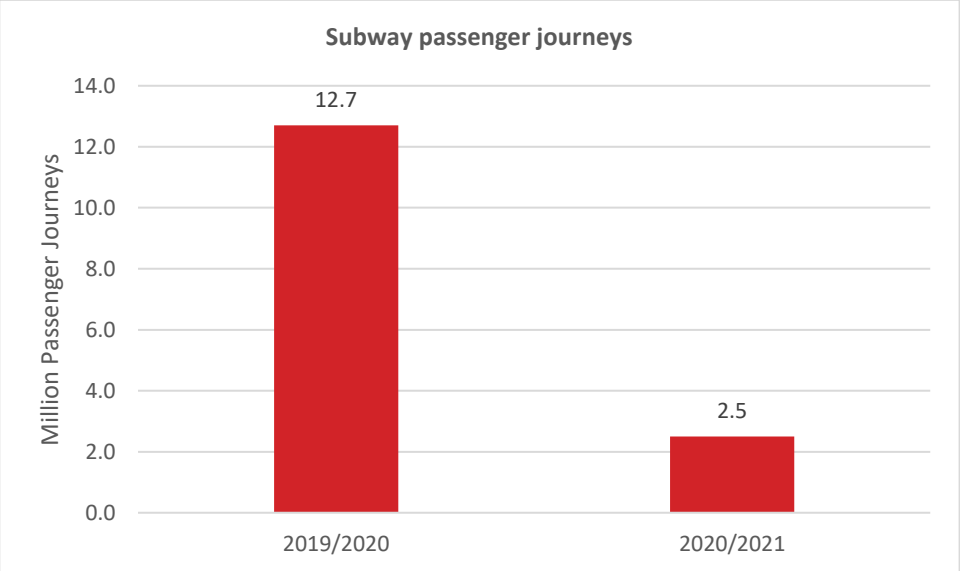


Figure 83. Passenger Journeys Subway Glasgow Pre and During Covid-19

5.6.7 In 2018 Transport Focus undertook a survey of Subway passengers to look at satisfaction levels. They surveyed nearly 500 passengers. Key results from the Survey included:

- Overall satisfaction was 97 per cent;

- 95 per cent were satisfied with punctuality; and
- 80 per cent were satisfied with the value for money (this compares to 68 per cent for tram passengers, 65 per cent of bus passengers and 47 per cent of rail passengers in Great Britain (59 per cent of ScotRail passengers)).

5.6.8 All 15 subway stations have undergone refurbishment with the new Subway look and feel, boasting a new bright, modern and a welcoming environment for passengers. All stations improved accessibility standards and SPT has attained Royal National Institute for the Blind (RNIB) accreditation for pan-disability, not just sight-related challenges.

5.6.9 In 2019 new Subway trains arrived into Glasgow and now have to undergo intensive and extensive testing before they can be brought into service. The new trains are to initially operate with drivers before becoming the first in the UK to run without any staff on board. The trains will be able to operate more frequently than currently, with open-plan walk-through carriages rather the current separate ones.

Main point – the subway has had a relatively steady flow of passengers over the last decade, with overall high levels of passenger satisfaction; however during the Covid-19 pandemic the volumes dropped substantially, by approximately 80%. Improvements to station environments and accessibility standards at all stations, new smart card ticketing and new trains have been delivered through the recent subway modernisation programme, which also provides the opportunity to improve capacity and increase service frequency to help increase passenger demand.

5.7 Demand Responsive Transport

5.7.1 SPT operates a MyBus service offering door-to-door transport for areas around Glasgow. The service is supported by Glasgow City Council and operates like a taxi at normal bus fares, between 09:00 and 16:00 for Monday to Friday. Trips to the city centre can be arranged from different areas on different days.

5.7.2 Pre-booking by phone is required for all journeys, from 2 hour to 1 day in advance of travel. Anyone can use the services including for trips such as for shopping, GP appointments, visiting friends, attending local clubs[61].

5.7.3 The pick-up/drop-off locations are generally from the user's chosen origin, however sometimes a short walk to/from the vehicle is required from locations that may be unsafe or difficult to access. The service has a limited capacity especially for daily work or study purposes, as it has to be pre-booked and there is no guarantee of a place.

5.7.4 The areas of Operation for MyBus are depicted in Table 12.

[61] www.spt.co.uk/bus/mybus/

Table 12. MyBus areas of operation

MyBus Operating Areas			
Service	**Area**	**Service**	**Area**
M1	East Ayrshire	M92	Clydebank
M10	Dumbarton	M93	Glasgow North East
M11	Inverclyde	M94	Glasgow South East
M12	Irvine	M96	Hamilton
M13	South Ayrshire	M98	Motherwell
M14	Kilmarnock	M99	Monklands
M15	East Kilbride	R300	Arran
M18	Maryhill – Bearsden	R400	North Lanarkshire
M19	Wishaw – Shotts	R500	Irvine Valley
M22	Saltcoats – Stevenston – Adrossan and Isle of Arran	R600	East Dunbartonshire
M32	Garnock Valley	R700	Carrick
M42	Largs	R800	Lanark
M45	Renfrew	R850	Allander
M65	Johnstone	R900	Three Valleys
M85	Paisley	R950	Lomond
M90	Cumbernauld	R965	Gryffe Valley

Main point – the existing DRT service allows connections to the city centre from neighbouring areas, however as it operates to the city centre only on certain days, has a limited capacity and has to be pre-booked, it is likely to be a viable transport option for only a small group of the population.

5.8 Road network

5.8.1 Glasgow City Centre is bounded by the M8 to the west and north, the River Clyde to the south and roughly by Glasgow Green and The Necropolis to the east. Connections to and from the M8 are found at Junctions 15-19. Connections over the River Clyde are on King George V Bridge, A77 Glasgow Bridge, Victoria Bridge (Gorbals Street) and Albert Bridge (Crown Street). The M8 and associated slip roads are managed by Transport Scotland, whilst all other roads in the city centre are the responsibility of Glasgow City Council.

5.8.2 The city centre is largely comprised of a grid network of one-way roads, with roughly every road south of Cowcaddens Road subject to a 20mph speed limit since March 2016. West Graham Street/ Cowcaddens Road/ Baird Street and to the north have a 30mph speed limit. To the south of the River Clyde the speed limit is 30mph. Generally, east of Saltmarket/ High Street is 30mph. Figure 84 presents the general city centre speed zones.

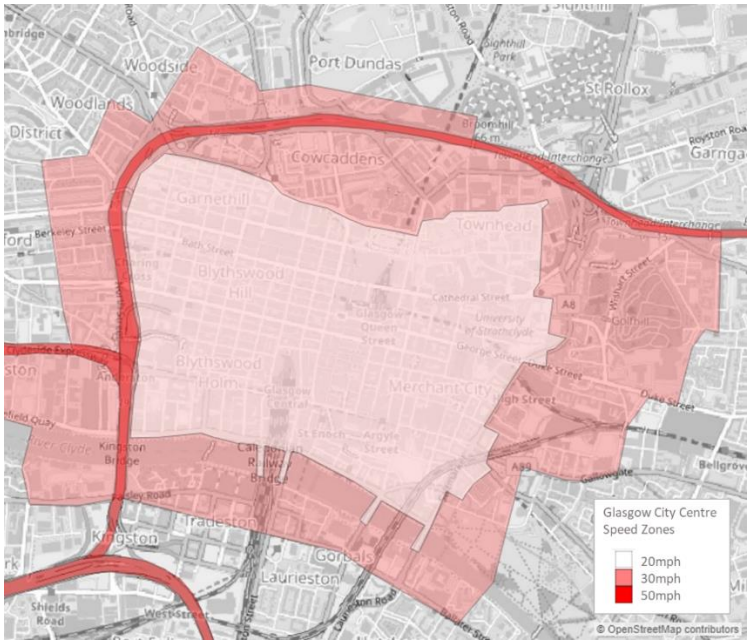


Figure 84. City Centre Speeds

Traffic volumes and congestion

5.8.3 Monitoring data from GCC shows an overall fluctuation of traffic flows across the City between 2014 and 2018, although there has been an increase of traffic on the M8 in this period. The M8 also records the highest seven day average flows. Out of the city centre routes, the highest flows were observed on Great Western Road, Maryhill Road and Springburn road (Figure 85).

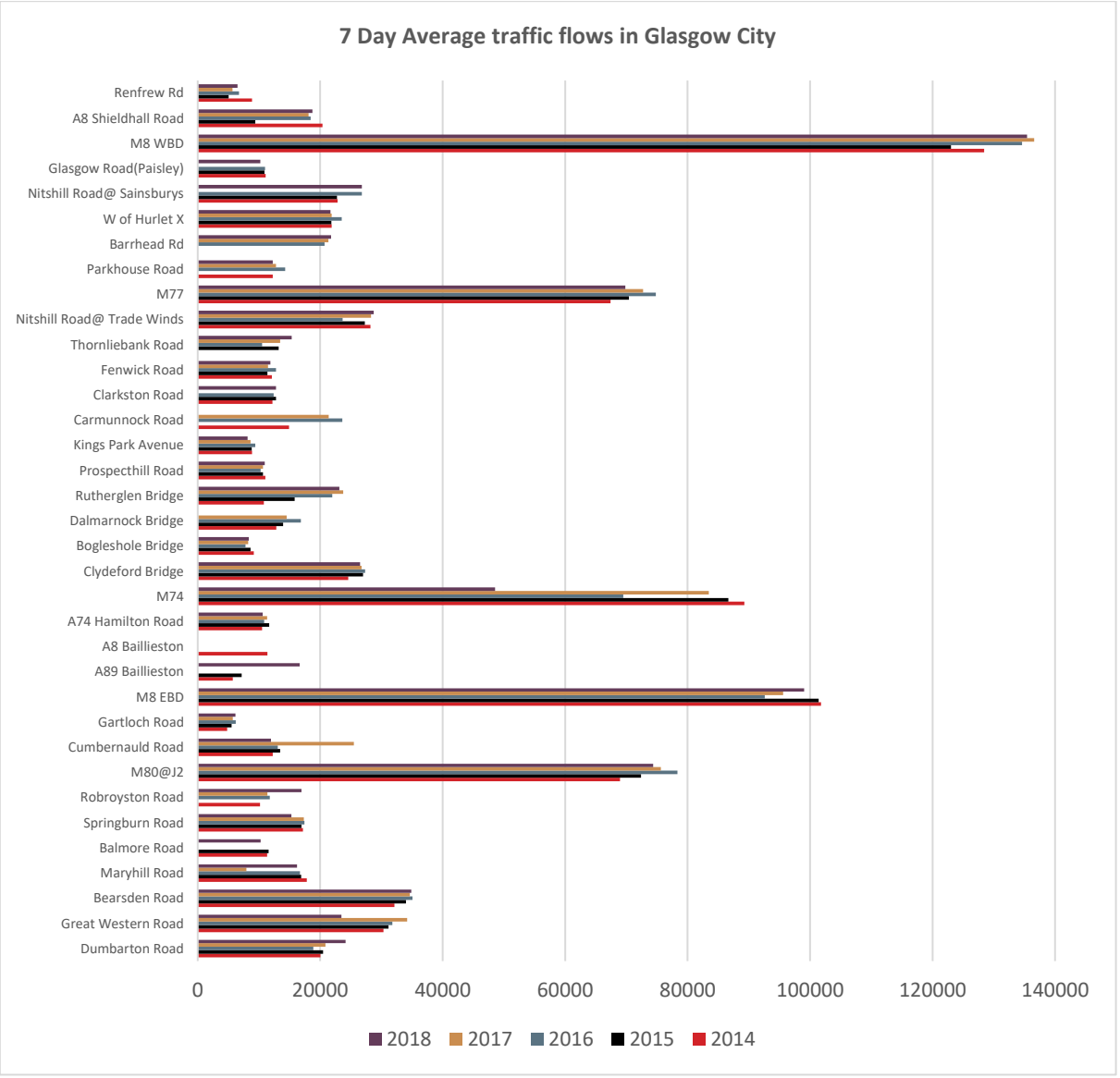


Figure 85. Trends in traffic flows across the City

5.8.4 The information is echoed in Figure 86 which shows the 2019 annual average daily traffic flows (AADT)[62], as recorded in the Automatic Traffic Counters (ATC) in the City Centre area. As can be seen, the highest flows are again observed along the M8, Junctions 15, 18 and 19, connections from the north and north west (Great Western Road, Maryhill Road and Springburn road) as well as the connections over the River Clyde.

[62] Traffic flows comprise Car, LGV, HGV, Bus and motorcycle

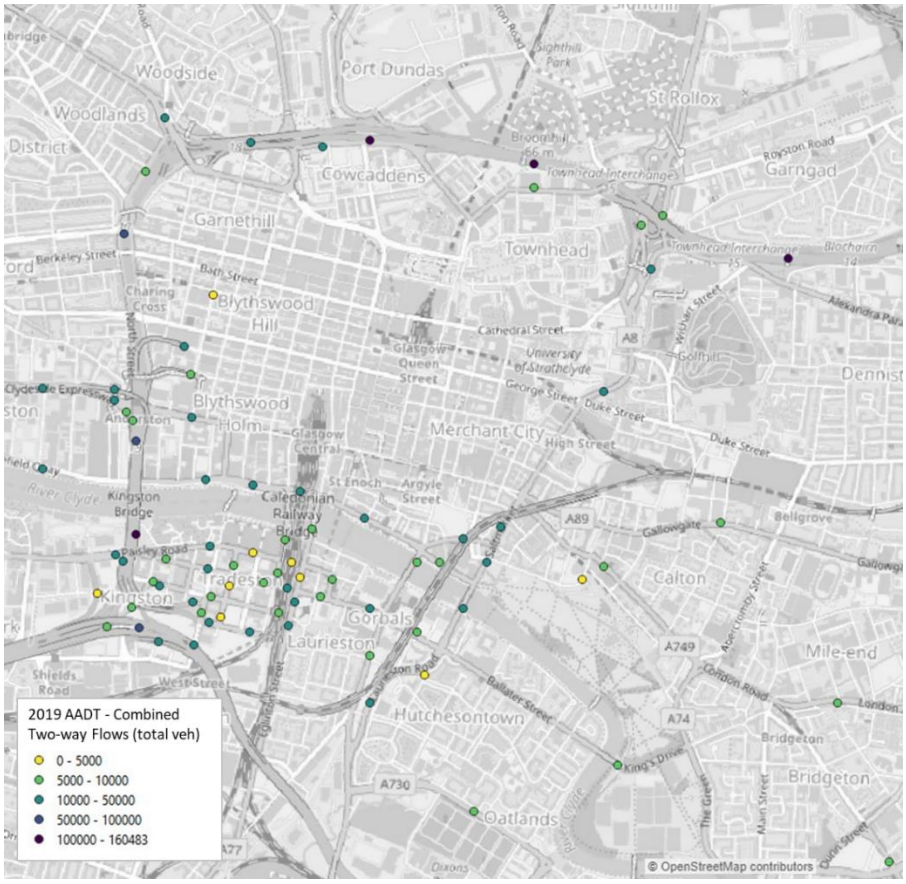


Figure 86. City Centre Traffic Volumes, DfT

5.8.5 In terms of congestion, the picture in the city centre is mixed. Whilst it is clear that on the motorway network traffic is increasing and accounting for a bigger share of journeys, the share of traffic on local authority roads in the GCC area has reduced since 2009[63] (Figure 87)

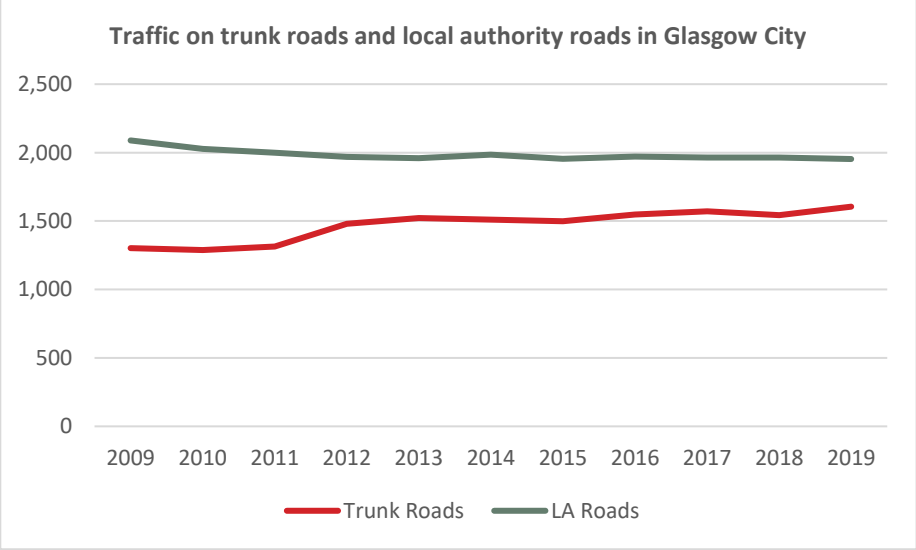


Figure 87. Traffic on trunk roads and local authority roads in Glasgow City, Scottish Transport Statistics

[63] Chapter 5: Road Traffic (transport.gov.scot)

5.8.6 Traffic congestion is a difficult concept to define and measure, with differences possible between actual and perceived congestion, and relative and absolute measures also complicating any analysis.

5.8.7 The Scottish Household Survey includes a measure of congestion as perceived by residents. Figures for 2016-18 suggest that 15% of Glasgow car driver respondents felt their journey had been delayed by congestion, higher than the Scottish average of 12.5%, though slightly lower than the average for large urban areas in Scotland (16%).

5.8.8 Furthermore, according to the (pre-Covid-19) INRIX 2019 Global Traffic Scorecard Report, drivers in Glasgow lost 43 hours in congestion last year, with a decrease of 16% compared to the previous year and implied cost to £335 per driver in delays, with the 'last mile' for the commute at a speed of 13 mph. This compares to Edinburgh where there were 165 lost hours last year at a cost of £764 per driver, with this representing a 6% decrease compared to previous year.

5.8.9 In the analysis of the 2019 data, INRIX used commute times based on city centre and other employment centres. INRIX's earlier 2018 Global Traffic Scorecard analysis was based on the estimates calculated exclusively using the time taken to get to and from the city centre core from surrounding commuter neighbourhoods. The narrow city centre-only definition of average delay suggests congestion in Glasgow led to 99 hours being lost in traffic (a 4% increase from 2017), an estimated cost of congestion of £736 per driver and an economic cost across the city of £320m for the city.

5.8.10 In the 2018 INRIX analysis, Great Western Road between Kelvinside and Western Road ranked as the 9th most congested corridor in the UK outside of London, counting for 8 minutes daily delay and 31 hours yearly delay, although it did not retain this ranking in the 2019 release.

5.8.11 TomTom also generates estimates of congestion, with a congestion level indicator based on the additional driving time relative to a baseline of uncongested conditions. TomTom's analysis of congestion in Glasgow has remained consistent from 2017 to 2019, with a 'congestion level' indicator of ~25% throughout, but with peak period figures over 50%, suggesting delays of ~15 minutes for each 30 minute journey in the two peak periods. TomTom suggests the lost time in congestion in the city to be 119 hours. By way of comparison, the congestion level indicator for Edinburgh is higher at 41% with 172 hours lost in congestion.

5.8.12 A snapshot of current post-Covid-19 weekday traffic congestion in the City Centre was obtained via the TomTom website for Tuesday 11 May at 16:30, shown in Figure 88. The city congestion for the full week commencing 5 May 2021 can be compared to the 2020 and 2019 congestion, as shown in Figure 89.

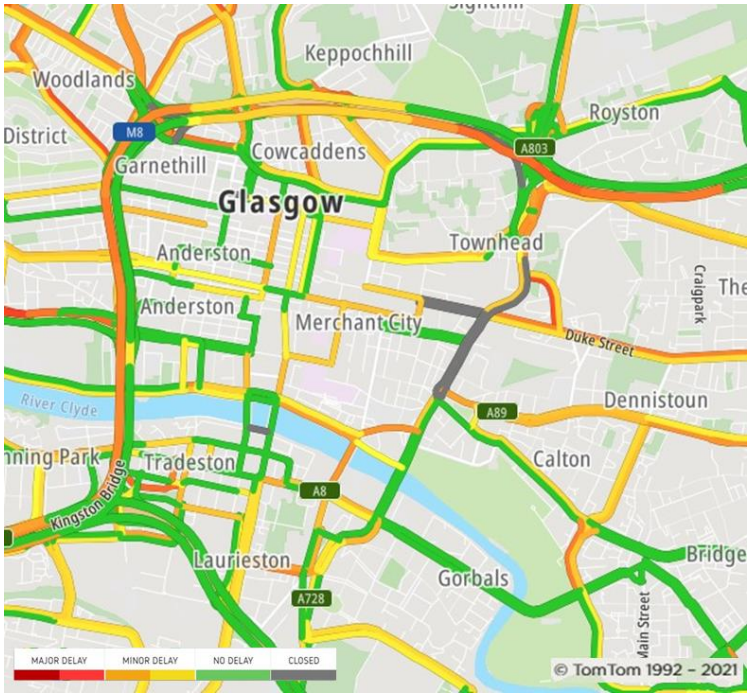


Figure 88. Traffic Congestion – 11 May 2021 16:30, TomTom

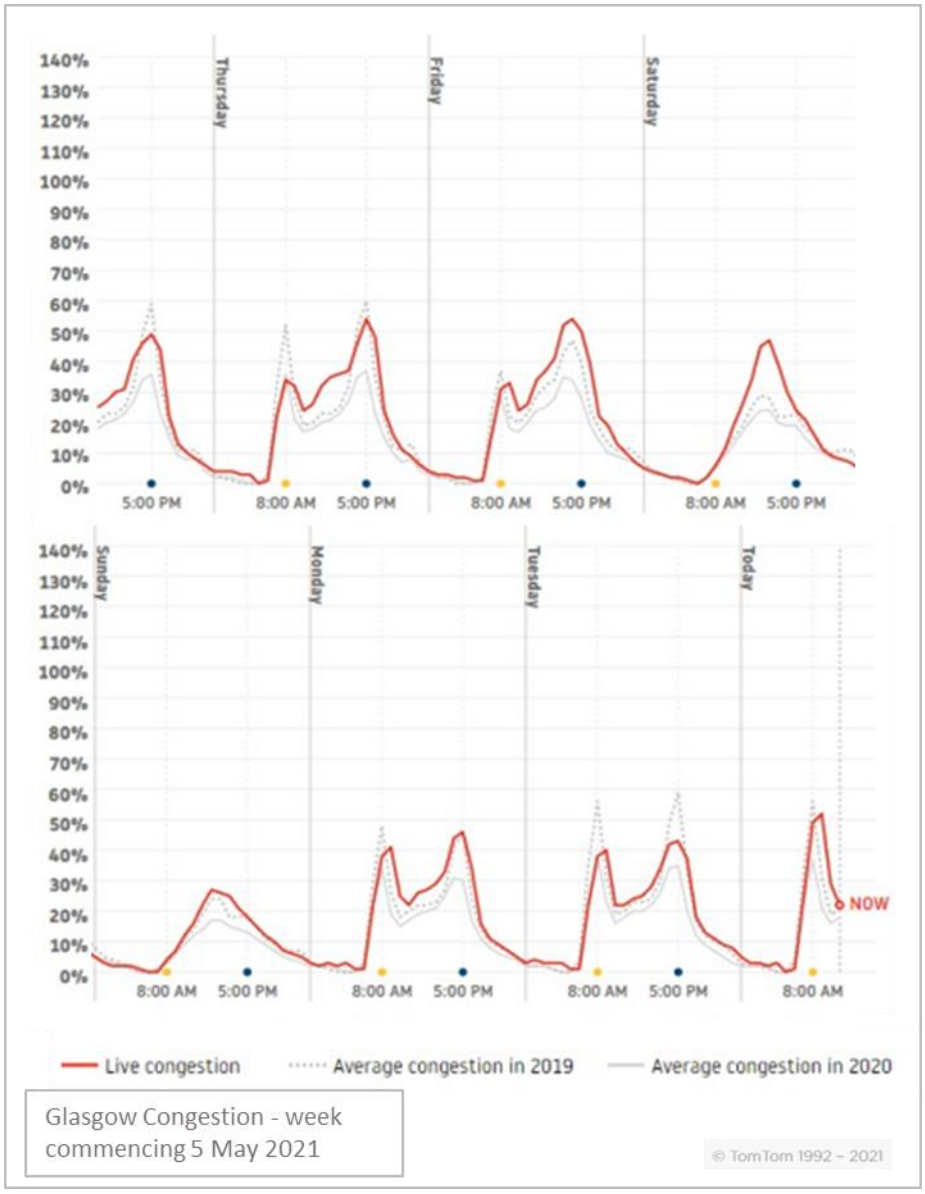


Figure 89. Traffic Congestion 5 – 12 May 2021, TomTom

5.8.13 The data indicates reduced levels of congestion on weekday am and pm peaks during the Covid-19 pandemic, with higher levels recorded on Friday afternoon and the weekend during the selected period.

5.8.14 In addition, a snapshot from the estimated levels of congestion in 2023 from the S-Paramics model of the city centre is illustrated in Figure 90. The model outputs show high levels on congestion in the city centre, particularly in the PM peak.

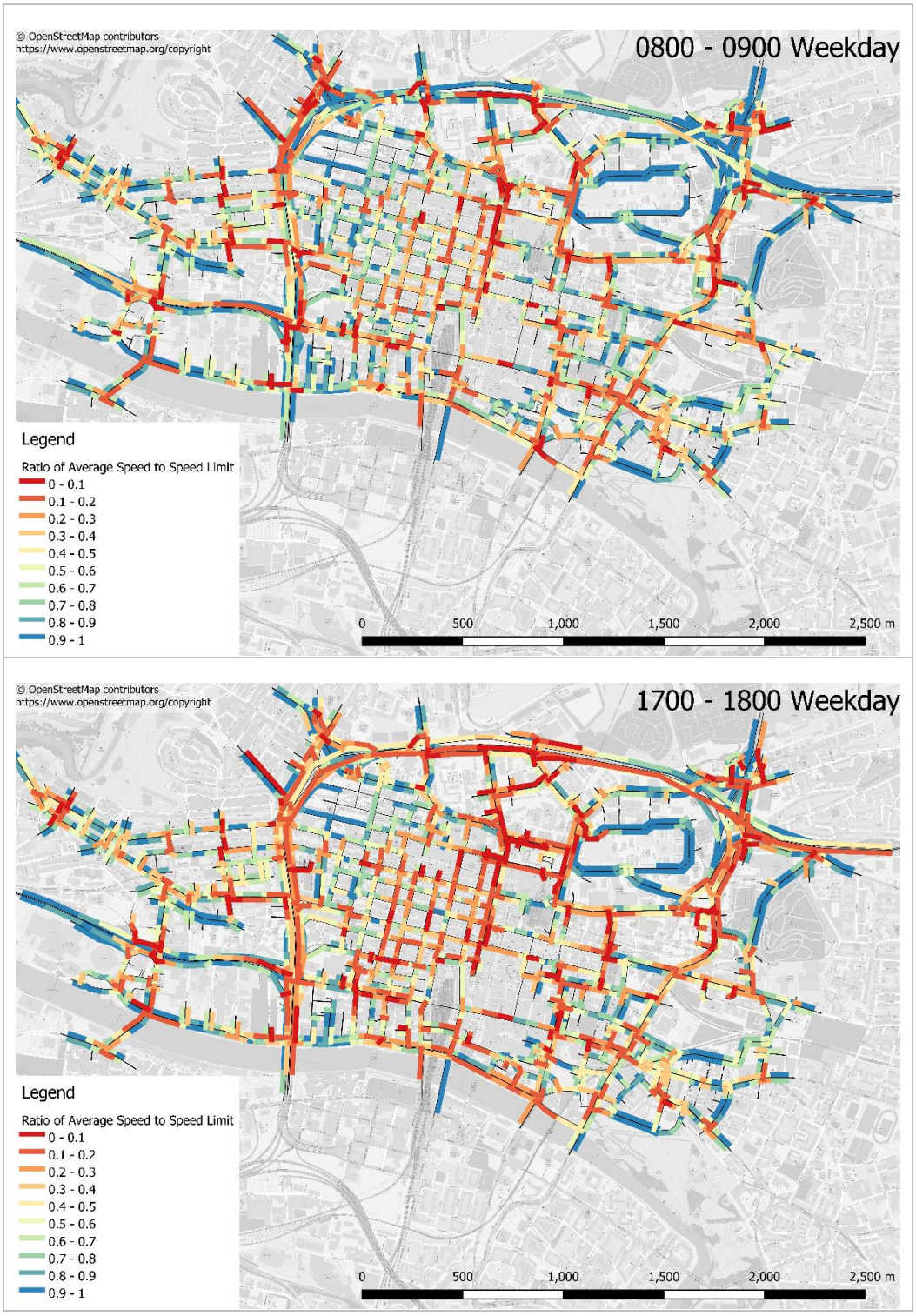


Figure 90. Predicted congestion in the city centre 2023, S-Paramics

Highway capacity

5.8.15 The Connectivity Commission identified that Glasgow has a disproportionately high amount of its city centre space devoted to roads and parking and a far lower proportion of space in the city centre for pedestrians when compared to other UK cities (Figure 91).[64]

[64] Connecting Glasgow, pages 12 and 13

It also suggested that Glasgow's grid system not only de-prioritises the needs of pedestrians and cyclists over vehicle movements, it also creates a vastly inefficient use of space, with cars, buses, pedestrians and cyclists mostly funnelled along the same corridors.

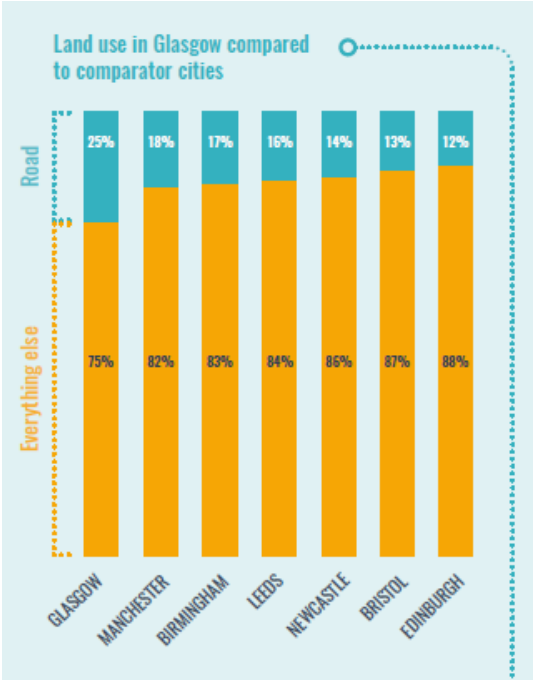


Figure 91. Road space in Glasgow, Connectivity Commisison

5.8.16 Highway capacity is used on the approaches to the city centre and on city streets to offer dedicated bus and taxi lanes as part of the City Council's commitment to improving bus passenger journey times and service reliability to reverse the decline in bus travel in the city and generally increase the use of public transport and reduce traffic pollution and congestion. The network of priority measures (Figure 92) includes a range of full-time and part-time provision, including the provision of new bus gates on Oswald Street and Union Street from September 2019.

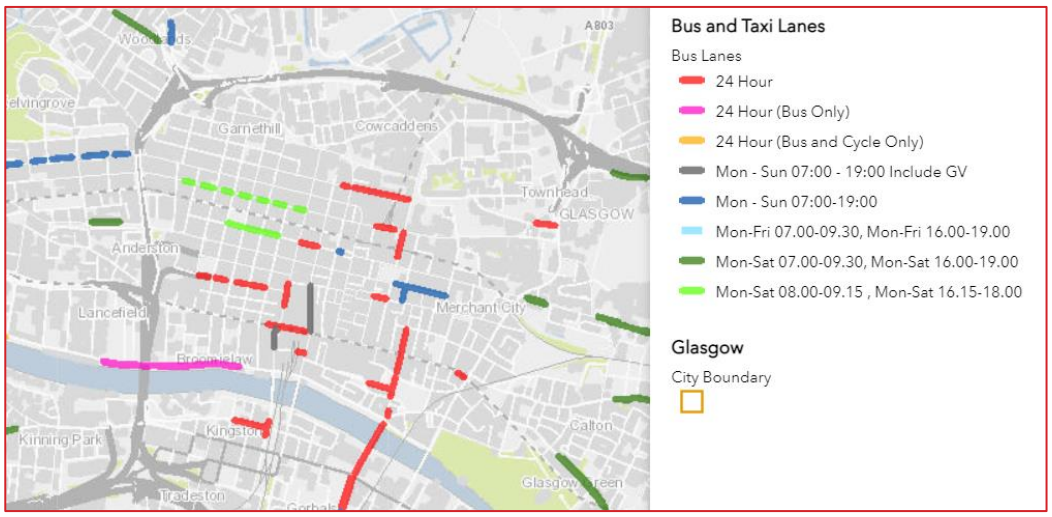


Figure 92. Bus and Taxi Lane Provision

5.8.17 Bus lane enforcement in Glasgow uses a digital camera system that records vehicles illegally making use of the city's bus lanes, with a charge notice of £60 to the registered keeper of the vehicle, however it is often misused which impacts on bus journey times and reliability and cause frustration to motorists who adhere to the regulations.

5.8.18 Highway capacity is also used on the approaches to the city centre and on city streets for dedicated cycle lines.

Main point – the city centre is largely comprised of a grid network of one-way roads with constrained capacity from competing demands from other transport modes. Pre-Covid-19 data shows high traffic flows particularly along the M8 , junctions 15, 18 and 19 and the connections from the north, north west and across the River Clyde. This contributes to reduced journey times, congestion and poor air quality with negative impacts on bus users, cyclists and pedestrians. Rebalancing the high amount of road space presents an opportunity to increase open space and improve sustainable transport provision in the city centre.

Accidents

5.8.19 Road traffic accidents in the city centre are numerous, which is perhaps unsurprising given the level of car use in a dense urban area. Data from Crashmap.co.uk presented in Figure 93 illustrate the change in accident frequency over the latest available eight years of full data, for all casualty types.

5.8.20 The data shows that overall, accident levels have been declining, although there has been an increase of serious accidents in 2019. On average, approximately 44% of all accidents per year involve pedestrian or cyclist casualty.

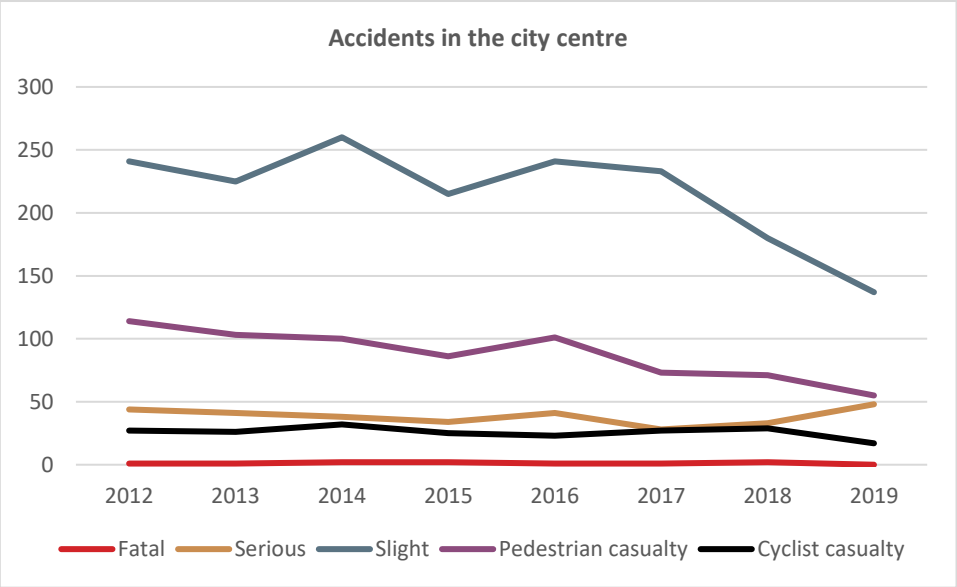


Figure 93. City centre accidents

5.8.21 The locations of accidents are illustrated in Figure 94. The figure shows that between 2017 – 2019 there were three fatal accidents; one was a motorcyclist casualty and two were pedestrian casualties. There were no cyclist fatalities in the city centre in this time period. However, in the absence of any further details into the causes of these collisions, it is difficult to determine if there are any safety issues associated with the road network. Nevertheless, based on the data presented in the Glasgow Road Safety Plan, the top causation attributed to collisions in the Glasgow City area include 'loss of control' (for driver/rider) and 'failed to look properly' (for pedestrian, and driver/rider)[65].

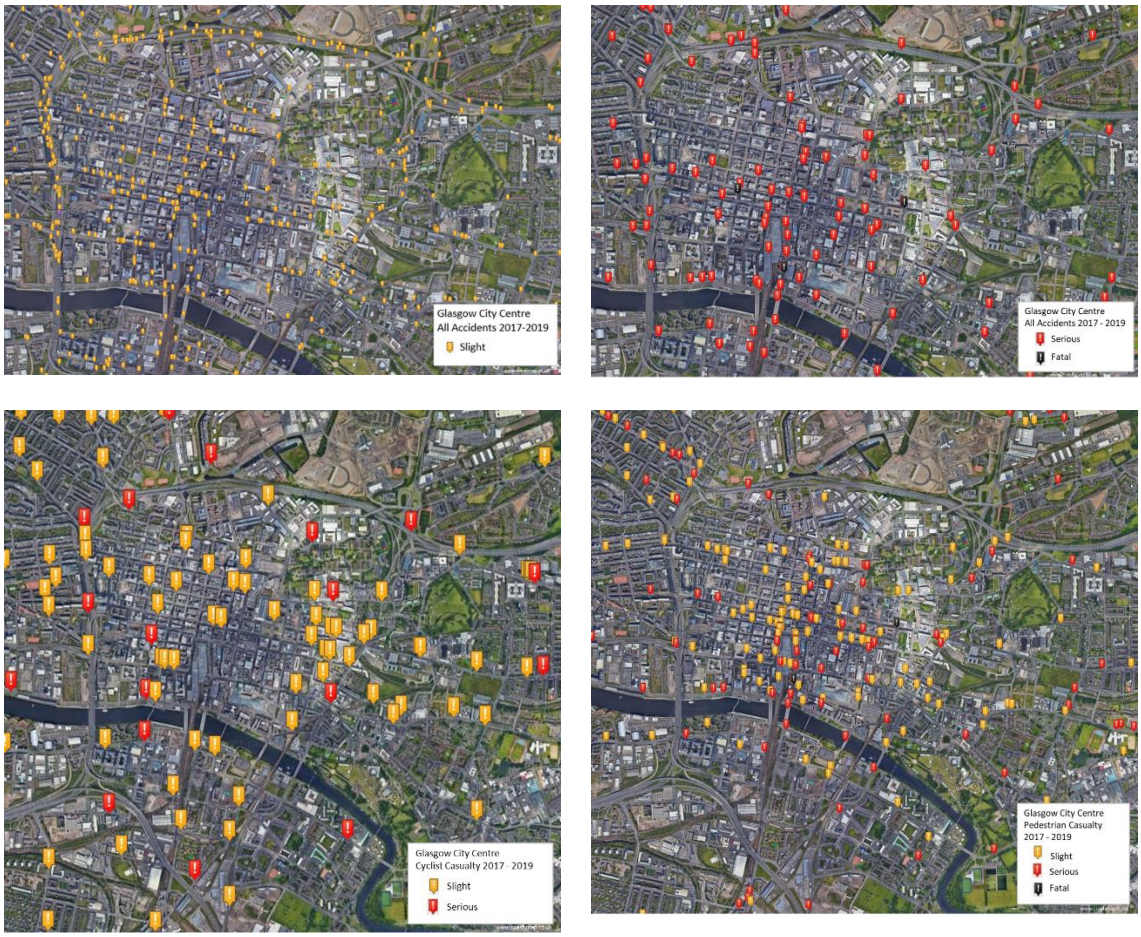


Figure 94. Location of accidents in the city centre 2017 – 2019, Crashmap.co.uk

Main point – Overall, accident levels in the city centre have been declining. On average, approximately 44% of all accidents per year result in pedestrian or cyclist casualty.

5.9 EV infrastructure

5.9.1 Figure 95 shows 57 electric vehicle charge point locations across the study area. Each charge point has two connection ports, so in effect this provision can accommodate 114 vehicles. There is good coverage of 7kW and 22kW locations, which is enough for most users who are able to stay an hour or more as part of their work or shopping trip, to get a reasonable top up charge. Of the 57 locations shown, 37 are listed as being within a car park, with multiple charge points located within most car parks. Examples include Cathedral Precinct, Duke Street, and Charing Cross car parks and Dundasvale Multi storey. This indicates that the intended user is one who will be parking for a few hours. The

[65] Committee Information - Submission Documents (glasgow.gov.uk)

majority of the points are operated by ChargePlace Scotland, which operates the public charging network in Scotland on behalf of Transport Scotland. The network is still free to use in Glasgow. Some of the on street bays shown are dedicated to car club electric vehicles only.

Figure 95. EV charging points in the city centre

Main point – There is a good coverage of EV charging infrastructure in the city centre, allowing a short stay top up charge for EV users.

5.10 Car clubs

5.10.1 Becoming a member of a car club can give residents access to one-off use of a "personal" vehicle for people who cannot or do not wish to own a vehicle. Glasgow currently hosts two car clubs, Co-Wheels and Enterprise Car Club. Membership fees can run on a monthly or annual basis, depending on level of use and personal preference. Co-Wheels charges a one off membership fee of £25 and a £5 monthly minimum spend thereafter. Enterprise offer a £2/month fee or £20 annual fee, with no minimum spend. Vehicles are hired by the hour in 15 minute increments, plus mileage. Mileage with Co-Wheels is 18p/m. Enterprise charge by vehicle type, from 21p/m for a car to 27p/m for a van. Hire of electric vehicles pay no mileage with Co-Wheels but 5p/m with Enterprise. Between both companies, hourly rates range from £4.75 for a small car to £8.90 for a large van, and rates are often capped at the daily rate (from roughly £33 - £50 depending on vehicle type), so users can have vehicles overnight. Access to unlock/lock the vehicles is through an RFID card or credit card.

5.10.2 Figure 96 shows the location of parking bays dedicated to car club vehicles. Many of these locations are found within NCP car parks. Electric car club vehicles are parked next to designated charge points.

Figure 96. Car club locations

Main point – there are two car clubs operating in Glasgow with a number of locations spread out around the city centre. They provide an opportunity for shared mobility, particularly in densely populated areas of the city centre

5.11 Parking

Public Parking

5.11.1 Based on the information provided as part of the Glasgow City Centre Strategic Parking Review[66], Table 14 provides an estimate of numbers of parking spaces available for public use in the city centre. The data excludes the car parks at Springfield Quay and under the southern end of the Kingston Bridge due to their restricted pedestrian connectivity with destinations in the city centre.

5.11.2 The figures include on-street provision and in off-street car parks, including permanent spaces and those temporarily occupying land with planning permissions that may be redeveloped for other purposes in due course. In total, just under 17,000 parking spaces are estimated to be available in the city centre.

[66] Glasgow City Centre Strategic Parking Review considered the total provision of off-street public car parking as contained in the City Development Plan and had an aim of recommending a level of parking provision that would meet the future needs of the city. The review also considered spatial distribution of off-street parking spaces, factors that influence the choice to use or not use specific car parks; and recommendations to achieve optimum utilisation of the car parks in terms of business need, while still meeting the overall aims and objectives of the Council's policies and objectives.

Table 13. High level estimates public parking provision

City centre	Public Parking Provision	Notes
On-street spaces	All spaces – 2,350	Various charges and maximum duration of stay applicable in different locations
Off-street spaces	Permanent spaces – 11,958 Temporary spaces – 2,650	Mix of short and long stay facilities. 27 permanent off-street car parks and 16 temporary car parks - with more than 50 spaces
Total public provision	16,958	

5.11.3 The report noted that some car parks in the city centre serve different purposes, including those focusing mainly on parking for the retail and leisure sectors whilst others, including some on the fringes of city centre cater primarily for commuters. The review concluded that car parks in the west and south of the city centre predominantly serve a business or commuting function.

5.11.4 Earlier parking occupancy surveys indicate that, taken as a whole, there is substantial spare capacity in the city centre car parks with total occupancy reaching a peak of only 51% between 1300 and 1400 on week days. Whilst these surveys could now be considered old, it has been suggested, anecdotally, that there remains ample spare capacity during both weekdays and at weekends, although the pattern of car park usage is likely to be different with those car parks associated shopping activity being busier than those focused on weekday commuter usage.

Private non-residential and workplace parking

5.11.5 Whilst estimates of the numbers of public parking spaces are reasonably well understood in Glasgow, the volumes of private non-residential spaces are not; the lack of understanding of private non-residential provision being common across many local authorities in the UK.

5.11.6 A high level estimate of workplace parking volumes, focusing on spaces used by employees, was generated as part of the Glasgow Workplace Parking Levy Scoping Study/Initial outline Business Case. These estimates are concerned with parking provided by businesses (including those in public and private sectors) for the use of employees, as opposed to other private non-residential provision such as high-turnover spaces used for the business customers, particular those in the retail sector such as supermarkets and out-of-town retail parks. Whilst this leaves some gap in the understanding of total parking provision, in practice the number and proportion of parking spaces missed is likely to be relatively small in the city centre compared to non-central and outer areas of Glasgow.

5.11.7 Table 14 provides the high-level estimates of the numbers of workplace parking places that exist in the potential central area charging zone (broadly following the current City Centre Air Quality Management Area zone, with some minor exclusions and an extension south of River Clyde) and as a comparator to an extended city centre (a wider definition including the West End and current adjacent restricted/controlled parking areas).

5.11.8 The estimates show, initially, those workplace parking spaces that would be expected to be licenced in any Workplace Parking Levy (WPL) scheme, assuming that customer parking, occasional business visitor parking, fleet vehicle spaces and loading/unloading spaces do not need to be licenced. In the analysis, disabled spaces that have a statutory exemption from charging are also excluded.

5.11.9 This, therefore, represents the current supply of potential workplace parking places that could be considered as eligible for licensing. However, in Scotland 'qualifying NHS premises' also have a statutory exemption from potential WPL charging, charges are levied on workplace parking spaces that are normally occupied and there are likely to be a range of other locally defined exemptions and discounts. Therefore, the number of charged workplace parking spaces is likely to be significantly less than these totals.

Table 14. High Level Estimates Workplace Parking Provision

Area Option	Estimated eligible workplace parking provision for WPL Licencing	Notes
Charging Area 1 – City Centre	11,400 – 12,800	Private non-residential spaces eligible for WPL licencing. Does not include visitor or customer parking and a number of other minor exclusions
Charging Area 2 – Extended City Centre	*18,100 – 20,300*	

Park and Ride

5.11.10 Glasgow also offers three local Park and Ride locations, all subway based and close to city centre:

- Bridge Street (Subway-based, 159 parking spaces);
- Kelvinbridge (Subway-based, 150 parking spaces); and
- Shields Road (Subway-based, 800 parking spaces).

5.11.11 Parking provision is also made at many rail stations on both local and longer distance routes, with most offering free parking, except in key regional centres. There are no formal local bus-based sites, although informal park and ride may exist to provide access to rail and bus services.

Ownership and management of car parking

5.11.12 Public parking provision in Glasgow is provided by a number of operators with both permanent and temporary off-street locations, and on-street facilities managed by GCC. Local authority owned and managed parking facilities provide an opportunity to both influence and manage travel demand, especially to the city centre, and to raise revenues.

5.11.13 On-street parking provision in and around the city centre is managed by GCC though controlled and restricted parking zones, generally limiting use to short-stay durations only. Long-stay usage of on-street spaces is allowed for residents, and outside the core city centre area, for resident visitors, and for business permit holders. The business permit scheme allows any business operating from a property located within the qualifying parking permit zone (all zones, except City Centre, Hillhead, Garnethill and Necropolis) to access designated on-street spaces for a fixed annual fee, though it does not guarantee availability.

5.11.14 With on-street parking management in the hands of GCC, there is an opportunity to both influence and manage travel demand, both through supply of on-street spaces and pricing, although both will influence the revenues raised from parking activities.

5.11.15 Off-street spaces are provided by a number of operators, including both public and private sector providers. The largest operator of public parking in the city is GCCC, which manages 6,500 spaces through operating seven multi-storey and nine surface sites. Other large providers include NCP with 2,200 spaces, QPark with 2,250 spaces, and large single site operators at Buchannan Galleries (2,000 spaces), St.Enoch (900 spaces) and the Royal Infirmary (700 spaces).

5.11.16 From summer 2007 until early 2021, the local authority controlled off-street parking was managed by CityParking (Glasgow) LLP. This GCC-owned company was charged with managing and developing the off-street car parks previously operated by the Council and operated as an autonomous company with its own Board and Managing Director. Driven by changes in the strategic context, including GCC's general direction of transport policy and the implementation of the low emission zone, the city centre Avenues public realm and road space reallocation projects, City Parking has been taken back fully in-house under direct GCC control.

5.11.17 An additional provider in the city centre is the PFI car park at Glasgow Royal Infirmary. NHS Greater Glasgow and Clyde reserves over 900 permits for staff at Glasgow Royal Infirmary at a subsidised reduced monthly cost, but has no influence on private commercial transactions at the facility, but encourages the provider to make prices as competitive with other private sector and public provision.

5.11.18 With off-street parking management split between public and private sectors, there is an opportunity for GCC to exert some influence on parking behaviours in order to manage travel demand, although only for around half of the off-street public parking market. This influence will depend on any changes in objectives for GCC controlled parking trading off commercial and wider social objectives and in competing with other private sector providers.

Parking zones and restrictions

5.11.19 On-street parking is actively managed in and around Glasgow city centre through a number of restricted and controlled parking zones. Parking controls tend to be clustered around the central area of the City and the West End (but with a number of local parking zones existing elsewhere in the city and there are a number event-based restrictions applying for sporting stadia, for example at Hampden and Scotstoun).

5.11.20 The geographical coverage of the city centre and West End focused parking restrictions are shown in Figure 97. These operate slightly differently with varying restrictions applying between zones at times of the week primarily to reflect local conditions and the mix of land-use, including residential, commercial, retail and leisure. Variations include Monday-Friday, Monday-Saturday and Monday-Sunday/all week zones in the core of the city centre.

5.11.21 There has been and continues be an on-going evolution of parking restrictions around the city centre, with additional areas being considered as controlled and restricted parking zones (including into Dennistoun, Royston, Thornwood and Broomhill) and exploration extending chargeable hours in some parking zones to include evenings and weekends at requests of residents.

Figure 97. Glasgow City Centre Parking Zones

Residents Parking Scheme

5.11.22 GCC operates a residents permits scheme to permit residents to park their own cars in otherwise restricted parking areas. Visitor parking permit scheme are available on some of the non-central parking area through a voucher scheme.

5.11.23 Permits are issued for most of controlled parking areas noted in Figure 97 above, and are valid quarterly, bi-annually (some areas) or annually. Parking permits for residents in the city centre are issued as virtual permits; the vehicle will be registered with GCC and allows any parking bay in the relevant zone to be used, though it does not guarantee use of any particular parking space. Outside the city centre a mix of virtual and paper permits are issued.

Car park charges

5.11.24 Public car parking charges vary by location and usage, with central area car parks focusing on the retail and leisure sectors generally limiting long-stay commuter usage either explicitly or through charge levels.

5.11.25 Where long-stay parking is permitted charging at least for core accessible city centre locations is generally relatively high, though long-term season tickets are available, including for some car parks 5-day and 7-day season tickets, with highest charges applicable for tickets available for commuters to use at the weekends. City centre fringe locations generally offer cheaper parking, although with less convenient accessibility for core central area locations; car parks to the west of the city centre/M8 can also be used to access the West End.

Main point – car parks in the city centre serve different purposes (i.e. retail, leisure, commuting) with car parks in the west and south of the city centre predominantly serving a business or commuting function. However, survey occupancy surveys indicate that, taken as a whole, there is substantial spare capacity in the city centre car parks both during weekdays and at weekends. This provides opportunities for efficient land use redevelopment of the underutilised spaces, but also issues for any reduction in revenues to the Council due to the loss of car parking.

5.12 Summary

5.12.1 This chapter has outlined the key transport baseline for Glasgow. A summary of the main points include:

- The existing pedestrian environment in the city centre is of poor quality in many places, which include a lack of legible crossings, dropped kerbs, smooth walking surfaces without obstacles, contiguous and direct routes, pedestrian priority and poor lighting and conflicts with vehicles;
- The existing cycle network is fragmented, many parts are disjointed, difficult to navigate, inconvenient or requiring lengthy detours. Many sections of the routes also suffer from poor quality surfacing, conflicts between users at pinch points and obstruction of cycling infrastructure by drivers;
- The bus provision, although with an extensive network coverage in the city centre, suffers from poor service reliability, increased journey times due to congestion, low passenger satisfaction and perception of high fares;
- The existing DRT service allows connections to the city centre from neighbouring areas, however as it operates to the city centre only on certain days, has a limited capacity and has to be pre-booked, it is likely to be a viable transport option for only a small group of the population;
- The road network suffers from high traffic flows and constrained capacity due competing demands from other transport modes. This contributes to reduced journey times, congestion and poor air quality with negative impacts on bus users, cyclists and pedestrians.

5.12.2 The opportunities arising from the transport baseline include:

- The available investment to improve pedestrian and cycling provision, as well as doubling of cycling levels between 2008 and 2018, can be a catalyst for further improvements and can help further increase walking and cycling levels to and from the city centre;
- The availability of bus emergency funding to operators as a response to the Covid-19 pandemic, and the provision of free bus travel for under 22s in early 2022 may provide opportunities to reduce the perception of high fares, and give operators greater influence over their bus operations, thus help rebuilt travel demand;
- Rising rail demand, the overall high levels of satisfaction with rail and subway services, future station improvements, as well as smart card ticketing and 'smart' season tickets offer opportunities to further increase growth in passenger numbers and increase connectivity of the city centre; and
- Rebalancing the high amount of road space and spare parking capacity can help increase open space and improve sustainable transport provision in the city centre.

6. STAKEHOLDER AND PUBLIC ENGAGEMENT

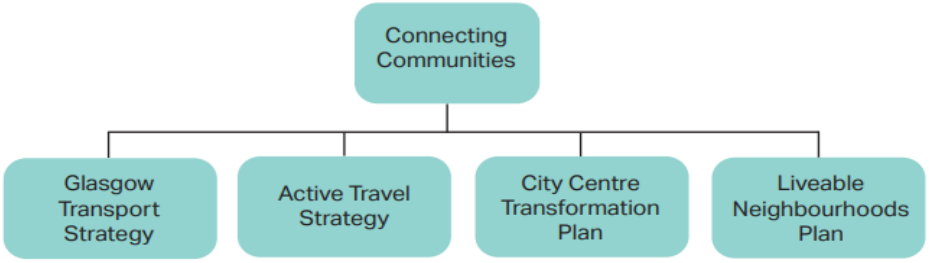
6.1.1 Glasgow has been involved in an extensive and ongoing public engagement to inform the City Vision, the City Development Plan (CDP), City Centre Strategic Development Framework (CDF) City Centre Strategy and District Regeneration Frameworks (DRF's). The engagement identified key issues to be addressed in the City Centre to improve it's social, environmental and economic performance over the next 30 years.

6.1.2 The key outcomes from the engagement continue to inform the identification of problems, opportunities, issues and challenges (POIC) and define options and interventions for this Case for Change.

6.1.3 The engagement, undertaken during 2019 and 2020 included:

- An online survey of Council officers internally across various team, receiving over 50 responses
- An internal workshop with Council officers with nearly 40 attendees from multiple teams
- Two workshops with invited stakeholders in February 2020 in the Lighthouse, Glasgow
- One to one discussions with some stakeholders to explore issues in more detail across 2020

6.1.4 In addition, significant consultation called 'Connecting Communities: A Public Conversation on Glasgow's Transport Future' was undertaken in September and October 2020 by Glasgow City Council.



6.1.5 The Consultation, which included 2899 Survey Responses, 23 Online Conversations, 29 Stakeholder organisations and 11 Community Councils added to awareness and thinking, and recorded:

- Broad support for the analysis of the Problems
- Agreement on the key Draft Outcomes and specific objectives
- Support for a Transformation Plan including:
  - Liveable Neighbourhoods
  - Re-balancing Road Space
  - Support for more sustainable transport modes
- Clear indication of a transportation system not addressing need with 50%+ advising transport system did not meet their needs

6.1.6 Public support for interventions that would allow local community priorities to be addressed included (Figure 98):

Figure 98. Interventions with public support

6.1.7 Engagement over a range of policies and conversations has defined a mandate for the SDF and in turn, the City Centre Transformation Plan. Glasgow City Council will build on this consultation to develop the specific objectives and options for the City Centre Transformation Plan (CCTP).

7. PROBLEMS, OPPORTUNITIES, ISSUES AND CONSTRAINTS

7.1 Overview

7.1.1 This chapter summarises the actual and perceived problems, opportunities, issues and constraints which form the basis for the development of Transport Planning Objectives and guide the development of options.

7.1.2 The problems, opportunities, issues and constraints for the city centre were identified through the analysis of wider planning policy, socio-economic data, local development proposals and the relevant transport and travel information. They have been grouped into common themes and detailed further below.

7.1.3 For the purposes of STAG, the terminology used for problems, opportunities, issues and constraints includes:

- **Problems:** existing and future problems within the transport system which result in a shortfall in meeting objectives, e.g. lengthy journey times, poor transport access to services etc;
- **Opportunities:** possibilities to improve the transport system and the way it is used, e.g. improve journey times;
- **Issues:** uncertainties that the study may not be in a position to resolve, but must work within the context of, e.g. uncertainty whether a major road link will be built that will affect the study area;
- **Constraints:** the bounds within which a study is being undertaken, e.g. available funding, policy or environmental designations etc.

7.2 Problems

High traffic flows and congestion

- Increasing traffic flows on the M8 and high volumes of traffic on the approaches to the city centre contribute to an increase in journey times for all road users;
- The analysis of bus network shows that for some routes, the average yearly increase in journey times was by as much as half an hour. This negatively impacts on bus service reliability, bus user satisfaction and contributes to low bus patronage;
- High congestion levels also negatively impact on local air quality, rise in greenhouse gas emissions and noise levels.

Poor quality bus offer

- User satisfaction with bus services in Glasgow has been decreasing over the years, with key problems including variability of bus journey times (leading to punctuality and reliability concerns), safety and security of using buses in the evening, and the perceived high cost of fares;
- Poor user satisfaction contributes to low passenger demand, which has been steeply declining;

Poor transport integration

- Problems related to transport integration received a substantial number of comments during the public consultation. These included challenges with multi-operator ticketing, a lack of smart integrated ticketing, interchanging between services, and lack of integration with other modes (e.g. poor integration of city's taxi fleet with public transport network);
- Additional problems, also identified in existing strategies, include integration challenges between Queens Street and Central train stations, potentially limiting opportunities through enhanced services including High Speed Rail.

Poor quality of cycling provision

- Glasgow lacks a network of cycle routes in and through the city centre that are direct, feel safe and secure. The existing cycle network is fragmented in coverage and typology. Many parts are disjointed, difficult to navigate, inconvenient or requiring lengthy detours;
- Many sections of the cycle routes also suffer from poor quality surfacing, conflicts between users at pinch points and obstruction of cycling infrastructure by drivers;
- The current routes do not serve large parts of the city centre, including the Merchant City area and High Street, and the access is also made difficult by the M8 and its junctions;
- In addition, with competing demands for road space from many different users, the cycling infrastructure is often poorly enforced.

Poor quality of pedestrian environment

- The existing pedestrian environment in the city centre is of poor quality in many places, which include a lack of legible crossings, dropped kerbs, smooth walking surfaces without obstacles, continuous and direct routes, pedestrian priority, poor lighting and conflicts with vehicles;
- In addition, the M8 and busy roads often act as barriers to pedestrian movements.

Unequal access to transport

- 63% of the city centre households do not have access to a car or van and are therefore reliant on travel alternatives. The highest levels of no car/van availability are among the 16-34 age group, who form the majority of the city centre population;
- 15% of the population in the study area stated their daily activities are limited because of their health. This group of population is less likely to walk and cycle for their everyday journeys and are therefore reliant on travel alternatives;
- 6% of the population belong to the long term sick or disabled (6%) category; Whilst the figure is lower than in Glasgow City (8%), it has still implications for the transport provision as sick or disabled adults are less likely to have a driving licence and are more likely to use the bus;
- The city centre includes nine of the 20% most deprived Scotland datazones. The lowest ranked datazones (particularly for income, employment, health, housing, and crime) include Gorbals and Hutchesontown (south – east of the river), City

Centre West (Cowcaddens area), and Calton and Gallowgate. These groups are most likely to rely on walking and bus travel for their journeys;

- The city centre population includes over 70% of 16-34 year olds, predominantly males, and higher than average ethnic minorities, particularly Asian (16%). These groups are reliant on travel alternatives to a private car, with women and ethnic minorities under-represented when it comes to riding a bike;
- The vast majority (95%) of the city centre population lives in flats or apartments. In addition, 70% of the city centre population lives in rented accommodation (43% are privately rented flats and 27% are social renting) which is higher than in Glasgow City and Scotland. This has implications for the provision of supporting transport facilities (e.g. bike storage, EV charging infrastructure etc).

Negative environmental impacts of transport

- Glasgow is the second noisiest city in the UK. Consequently, 18 Designated Noise Management Areas (NMAs) have been declared in Glasgow city, some of which are located within the study area;
- Glasgow's CO2 emissions from transport have slightly reduced since 2005, although not to the extent as from other sectors. Moreover, the annual average nitrogen dioxide (NO_2) concentrations exceeded the air quality objectives within the existing City Centre AQMA;
- Vehicle tyre and brake abrasion remain a substantial source of particulates;
- The dominant source of noise, poor air quality and greenhouse gases in the city centre is road traffic, partially due to one way streets carrying intermittent traffic, local hilly topography, massing of buildings which can create street canyons, and grid system layout of the roads in combination with traffic signalling resulting in acceleration and deceleration of traffic.

Poor quality of places

- Glasgow has a disproportionately high amount of its city centre space devoted to roads and parking and a far lower proportion of space in the city centre for pedestrians and 'open spaces' when compared to other UK cities;
- It also has a large number of lanes in the city centre that are underutilised and present community safety and public health concerns (e.g. antisocial and criminal behaviour, drug misuse and litter, waste and litter accumulation etc);
- Whilst consultation findings show that people in Glasgow are mostly very or fairly satisfied with their neighbourhood as a place to live, with the majority reporting they were feeling safe when walking alone in their neighbourhood after dark, in terms of travel to the city centre in the evening, a large proportion of respondents stated they never travelled to the city centre in the evening.

Excess parking

- Car parks in the city centre serve different purposes (i.e. retail, leisure, commuting) with car parks in the west and south of the city centre predominantly serving a business or commuting function. However, survey occupancy surveys indicate that, taken as a whole, there is substantial spare capacity in the city centre car parks both during weekdays and at weekends;

- According to Connectivity Commission's Connecting Glasgow (2019) there is sufficient space in off-street car parks in Glasgow to remove most or all on-street parking. Of the more than 12,000 permanent parking spaces in Glasgow, in general; only over 6,000 are occupied at peak times, suggesting that many on-street car and some off-street car parking spaces can potentially be redeveloped.

Ensuring the EV Charging Network Keeps Up with the Demand for EV Charging

- Given the limited supply of off-street residential parking (e.g. drives and garages) in the city centre, most EV owning residents are going to have to rely on publicly-available and/or workplace charging;
- There is therefore a need to ensure that the provision of publicly-available EV charging in the city centre keeps up with this demand, for example by providing residential hubs of rapid chargers (to support 'local filling station' style rapid charging) and/or overnight 'kerb-side'/parking pay charging at locations where overnight residential parking is permitted and encouraged;
  Some additional research and/or liaison with the SP Energy Networks (who maintain the distribution network in Glasgow) is needed, to check whether the ability to provide the required distribution of residential hubs of rapid chargers is likely to be limited by grid capacity constraints, now or in the future.

Increasing waste and goods deliveries

- Commercial traffic accounts for approximately 19% of Glasgow road traffic, with the highest number of trips by light commercial vehicles observed during the morning and evening peak hours, and heavy goods vehicle movements more evenly spread throughout the day;
- This has negative environmental effects as well as impacts on quality of places.

Transport governance

- The area includes a complex governance of transport with a number of players being responsible for different parts of the transport infrastructure, e.g. GCC, SPT, Transport Scotland, City Deal Partnership, transport operators and infrastructure providers. This can make decisions lengthy and complicated.

7.3 Opportunities

Shift to sustainable transport modes

- 77% of trips to work to and from the city centre are already made by sustainable transport modes (particularly train/underground, bus/coach, walking and cycling). The most popular mode to work for local trips from the city centre is waking (86%) and train/metro (6%). The main mode of travel to the city centre for local trips is public transport (62%), and walking (18%); and the most popular mode of travel to the city centre from outside the Glasgow City area is (again) public transport (particularly train). This provides an opportunity to build upon;

- 62% of trips made by city centre residents are less than 5km which provides opportunities to encourage active travel;
- The main mode of travel to education remains walking and cycling, with the majority of city centre residents (74%) travelling less than 2km to their place of education;
- Highly densely populated areas in the city centre provide an opportunity for compact city planning and transport provision, with focus on sustainable travel and shorter trips;
- Cycling to/from the city centre has more than doubled between 2010-2018. The availability of funding and recent improvements such as the Sauchiehall Street 'Avenue', the temporary cycle track on Cambridge Street, as well as the introduction of bus gates and other modal filtering lowering volume and speed of motorised traffic in the city centre provide opportunities to build upon and increase cycling levels further;
- Glasgow's public cycle hire scheme managed by NextBike has grown to 870 standard bikes and 126 e-bikes at 100 stations across the city;
- Available funding and improvement schemes such as the pedestrianisation and the removal of motor traffic from Buchanan Street, parts of Argyle Street and Sauchiehall Street, regeneration of the Merchant City, and the Avenues helped to improve the walking environment and provide an opportunity for increased footfall and a modal shift away from private car;
- Bus services provide good frequency of buses per bus stop;
- Rail demand in Glasgow increased by around 30% over the last decade with passenger satisfaction generally higher than in other parts of Scotland;
- The proposed redevelopment of Central and the existing redevelopment of Queen Street provide opportunities to further increase growth in passenger numbers;
- The subway has sustained a relatively steady flow of passengers over the last decade, with overall high levels of passenger satisfaction;
- There are two car clubs operating in Glasgow with a number of locations spread out around the city centre which provide opportunity for shared mobility;
- MaaS could transform travel experience and sustainable travel choices;
- All highly densely populated areas have access to superfast internet;
- Potential Metro development can bring further travel choice and connections.

Reduce the cost of PT

- There are opportunities for public transport to be cheaper and more viable for passengers with increase in working from home. In particular, there is a strong interest in the rail industry in looking towards 'smarter' season tickets to provide discounted costs for regular and/or shoulder/off-peak commuters, with the Covid-19 providing an added drive and urgency to developing these products;
- The availability of bus emergency funding to operators as a response to the Covid-19 pandemic, and the provision of free bus travel for under 22s in early 2022 may provide opportunities to reduce the perception of high fares, and give operators greater influence over their bus operations;
- MaaS could help reduce travel cost by helping facilitate integrated tickets.

Partnership working/governance

- The availability of bus emergency funding to operators as a response to the Covid-19 pandemic to boost passenger demand may give operators greater influence over their bus operations;
- Partnership working can help improve transport integration, for example, joint working between public transport and taxi association can drive improvements in service standards and better strategic placement of taxi ranks.

Land use efficiency

- Rebalancing the high amount of road space presents an opportunity to increase open space and improve sustainable transport provision in the city centre; It can also help to create legible, coherent, simplified routing for various modes;
- Vacant and derelict land provides opportunities for quality land re-development;
- The Avenues programme will result in a transformation of the city centre's streetscape and public realm - making it more "people-friendly", more attractive, greener, more sustainable and more economically competitive;
- City centre lanes and the Lane strategy provide an opportunity to create attractive and active lanes throughout Glasgow city centre, help foster a thriving civic life, promote economic growth, inclusion and sustainability;
- Better use of public transport terminals and car parks can reduce journeys through the city centre.

Improvements to environmental impacts of transport

- The need to address climate change and improve environmental impacts of transport is set out in and supported by a wide range of national, regional and local policies and strategies;
- Low Emission Zones sets an environmental limit on certain road spaces, restricting access for the most polluting vehicles to improve air quality. Phase 2 will be enforced from 1 June 2023 (subject to the relevant approvals) and apply to all vehicles. This means that all vehicles entering the zone will have to meet specified exhaust emission standards to avoid a penalty charge, unless exempt;
- The introduction of lower speed roads, upgrades of local vehicle fleet and other sustainable transport interventions provide opportunities to reduce the noise levels and greenhouse gases, and improve the local air quality;
- Consolidation of freight deliveries to hubs, the use of more sustainable modes (e.g. e-cargo) throughout the journey and/or as last mile solution; and city centre waste and services management plans can help improve the environment and the place quality of the city centre;
- Reduced greenhouse gases will help to address heating of the city and impacts of surface water.

Funding

- City deal funding provides opportunities to improve sustainable transport infrastructure in the city centre though a number of programmes, for example the

Avenues, Canal and North Gateway, Collegelands, and Clyde Waterfront and West End Innovation Quarter;

- In addition, city centre large developments, both under constructions and committed can help address the identified problems, increase sustainable mode share, (perception) of safety/security etc.

Improved place quality

- Creating green, quality spaces, supported by active travel infrastructure will have positive impacts on biodiversity, reduced emissions, accessibility, people's health, safety and security. It is also likely to reconnect communities, and provide them with more community empowerment and ownership;
- Improved quality of the city centre environment is likely to increase social inclusion and help stimulate sustainable day and night-time experience based economy (not just retail and office economy).

Reduced traffic flows

- Increased working from home and on-line shopping, accelerated by the changing travel demand to and from the city centre as a result of the Covid-19 pandemic is likely to lead to reduced flows on the city centre network.

7.4 Issues

Covid-19

- The Covid-19 pandemic has led to changes in travel demand for many modes, particularly public transport, which saw a drop in patronage in favour of private car and active travel modes;
- Although walking and cycling levels increased during the pandemic, the levels are still well below the pre-Covid-19 figures as they included a high proportion of commuting trips;
- The drop in public transport demand brings uncertainties over viability of some service provision whilst demand is rebuilt, especially in deprived areas;
- The drop in demand for the main trip purposes of commuting and shopping, uncertainty of people's travel behaviour and the changing guidance and health advice, makes future travel demand predictions difficult.

Technology

- The city centre includes nine of the 20% most deprived Scotland datazones. These areas may have a compromised access to technology to support e.g. home-working, access to sustainable travel information to support travel choices, enhanced travel experience through MaaS etc). In addition, a compromised access may also be in the areas of the lowest superfast internet coverage which include the highly populated area of Townhead, and private sector, shopping, leisure and visitor economies in Blythswood, Anderston and St Enoch;

- The take up of EVs is dependent on wider factors including pricing, availability of vehicles and supporting infrastructure (e.g. EV chargers for tenements, depot based EV chargers for buses and goods vehicles etc).

Policies/Strategies

- There are a wide range of policies, strategies and ambitions that may impact on the study and which need to be monitored and taken into account, including:
  - Reduced parking provision will reduce parking income which may compromise Council revenue streams;
  - Timescales for the delivery and the 'go-live' date of Climate Emergency and Climate Action Plan agenda are very challenging;
  - Aims to increase the city centre population from its baseline of 20,233 in 2018 to around 40,000 by 2035;
  - Uncertainty over the outcome of some studies, e.g. Glasgow City Region Metro feasibility, Active Travel Strategy etc.

Socio-economics

- The vast majority (95%) of the city centre population lives in flats or apartments. In addition, 70% of the city centre population lives in rented accommodation (43% are privately rented flats and 27% are social renting) which is higher than in Glasgow City and Scotland. This has implications for the provision of supporting transport facilities (e.g. bike storage, EV charging infrastructure etc) which may need to be focused on communal provision.

7.5 Constraints

Road capacity

- The city centre road capacity is constrained from competing demands from different transport modes and their facilities including:
  - cars, HGVs, LGVs and associated parking and loading bays;
  - buses and associated bus priority measures;
  - taxis and related taxi ranks;
  - cycles and related cycle lanes;
  - pedestrians and related accessible and inclusive infrastructure for end to end journeys.

Rail capacity

- Several parts of the rail network are and are predicted to be at capacity (including standing capacity) should no further infrastructure or service enhancements at be put in place. This has implications for passenger services as well as rail freight.

Topography

- The city centre has a hilly topography which impacts on the susceptibility of walking and cycling, air quality, increases transport related emissions, noise levels;
- The city centre is largely comprised of a grid network of one-way roads with constrained capacity from competing demands from other transport modes.

Policies and Legislation

- The following policies and legislation may place constraints on possible interventions and ambitions for the city centre:
  - Carbon net zero target by 2030;
  - LEZ;
  - PT legislation and franchising; and
  - Structure of the local bus sector (deregulated market, open to competition, limited role of local transport authorities/regional partnerships (persuasion not compulsion), limited public sector funding to pay for their public transport aspirations.

Funding

- There are tight budgets to improve the transport provision, for example for coach and taxi operators to upgrade their fleet, who were hit harder by Covid-19 (and post-Covid-19) than goods vehicles and therefore less able to afford to upgrade their vehicles). This also brings the risks of objections/resistance from them, delaying implementation and/or causing barriers to the implementation.

8. OBJECTIVES SETTING

8.1 Overview

8.1.1 In accordance with STAG, TPOs should be developed with SMART principles in mind. This means that the objectives should be:

- Specific: saying in precise terms what is sought;
- Measurable: it will be possible to measure whether or not the objective has been achieved;
- Attainable: there is general agreement that the objective can be achieved;
- Relevant: it is a sensible indicator or proxy for the change which is sought; and
- Timed: it will be associated with an agreed future point by which it will have been met.

8.1.2 It is acknowledged that TPOs should be subject to review and refinement as the STAG appraisal process develops and more detail comes forward. This is important to ensure that the study objectives provide a framework against which performance can be assessed as part of monitoring and evaluation activities following the implementation / construction of measures.

8.2 Proposed study objectives

8.2.1 The investigation of the inter-related problems and opportunities, stakeholder consultation and review of the wider national, regional and local policy setting has led to the development of the following set of objectives for this study.

Carbon neutral

- **TPO1** - Support the delivery of a carbon neutral city by developing transport and infrastructure networks which help deliver low-carbon travel

Inclusive

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

Economy

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

Liveable

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

8.2.2 The mapping of the objectives to the identified problems, opportunities, issues and constraints in shown in Figure 99.

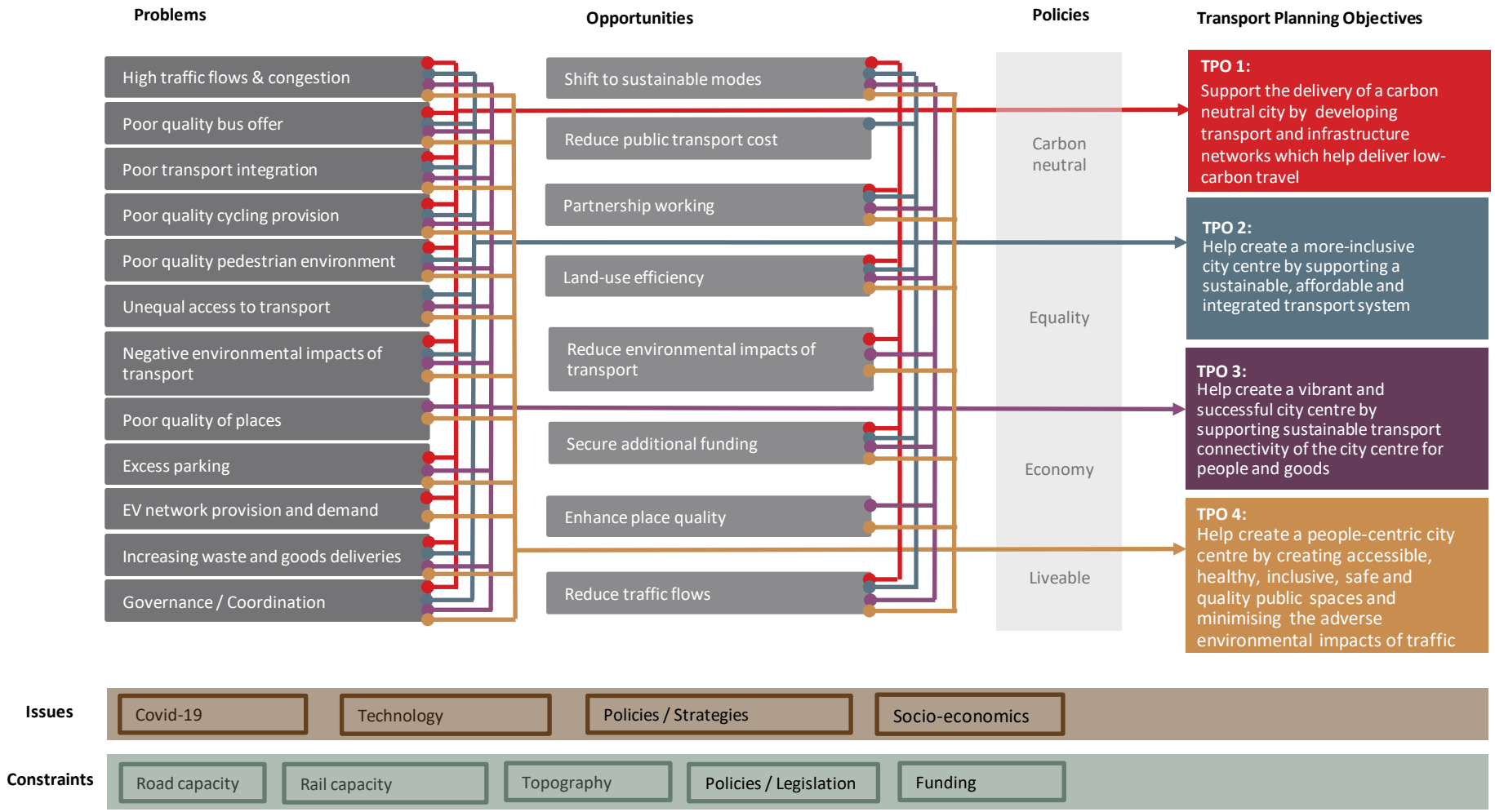


Figure 99. Mapping of Problems, Opportunities, Issues and Constraints, Policies and Transport Planning Objectives

9. OPTION GENERATION, SIFTING AND DEVELOPMENT

9.1 Overview

9.1.1 The purpose of the option generation, sifting and development process is to derive a range of options that could satisfy the study's TPOs, alleviate the identified problems and address the outlined opportunities. The options should then be subject to further appraisal process as part of the Initial and Detailed Appraisal stages.

9.1.2 In line with the STAG guidance, the options for this Pre-appraisal were generated through a number of methods, including:

- Consideration of previous studies;
- Statutory planning process i.e. relevant transport and land use plans;
- Consultation exercises;
- Consideration of known problems and opportunities;
- A gap analysis of the existing transport network and committed measures; and
- Professional judgement flowing from a structured decision making process by the study team.

9.2 Options for consideration

9.2.1 The generated long list of options, grouped into eight broad themes, is as follows:

THEME 1 - Repurposing road space

- Strategic repurposing of the road network to prioritise people-friendly public spaces and the transport hierarchy and repurposing the inefficient grid system to a smart grid
- High vehicle occupancy lanes including information in the city centre
- Effective waste and recycling management to help re-purpose road space, lanes etc
- Smart 'tartan' grid of streets for car-only or car-free traffic management, with initial focus on Blythswood Square area
- Concentration of car parking on the edge of the city centre, to limit penetration of cars into the City Centre and induce footfall
- Modify/remove slip roads to/from the motorway and reconnect historic streets/links that have been severed
- Low emission vehicle lanes, including information in the city centre
- Variable demand parking charges
- Workplace Parking Levy
- Relieve traffic pressure on Ballater Street, Norfolk Street, Jamaica Street and Bridge Street, enabling better road functionality and to accommodate pedestrians and cyclists
- Reduce traffic dominance and create a high quality High Street linking the Cathedral to Glasgow Green
- New road capacity schemes with sustainable transport allocations
- Reduce and simplify the current junction arrangement around Junction 15
- Managed Motorways
- Transport Scotland Objective to reduce car Kms by 20% by 2030

- Parking distribution, restrictions and enforcement - to help re-purpose road space, lanes etc
- Improved traffic signal control systems- to prioritise active travel
- Speed management and enforcement - to prioritise active travel
- Traffic-calming
- Smarter parking
- Piloting play streets for child-friendly city

THEME 2 - Sustainable transport connectivity

- Connect neighbourhoods (including M8 & Clyde) with under/over pass connections
- M8 Cap at Charring Cross
- Retain and enhance existing bridges; add new high-quality contemporary bridges to improve connections across and along the River Clyde
- New crossing over M8 connecting Sighthill with the City Centre
- Retain and enhance existing bridges; add new high-quality contemporary bridges to improve connections across and along the River Clyde
- Establish freight collection centres / future drone (?)
- Segregation of waste streams / trade and domestic
- Long continuous routes & well-connected urban nodes and gateways
- New routes through St. Enoch
- Connecting train stations
- Dynamic Buchanan Bus Station
- Masterplans – e.g. Broomielaw, River Park, Tradeston
- Complete a network of safe, high quality, segregated cycling arterial routes connecting the city centre to suburbs and peripheral neighbourhoods
- New crossing over M8 connecting Sighthill with the City Centre
- Improve pedestrian/cycle links around Port Dundas Junction
- Widen existing bridge crossings over the M8 at St Vincent Street and Bath Street
- Address changing needs for Waste Management organisation and collection
- Freight hubs/consolidation centres - on the fringes of the city centre/strategic locations
- Low carbon freight movement - e-cargo bikes and sustainable transit deliveries
- Glasgow City Region Metro
- Updated streets of 'Golden Z'
- Updated and improved rail and subway stations and their environments and approaches
- Reconnecting and activating the railway undercroft
- Connected East - West

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

- Create street play / active sport
- Accelerate Avenues Programme
- Expansion of Avenues Plus Project
- Develop SMART-City and enhanced CCTV and active security
- Improve street and public space lighting
- Require all development to comply Secure by Design with Animated Frontages
- Variation in street character (Tartan)
- Glorious Argyle Street, George Square

- Traffic-calmed and reconstructed High Street
- Improved Glasgow Cross / Trongate
- Lively and safe Ballater Street
- St. Enoch event square
- St. Enoch Highline
- Streets improvements – e.g St Vincent Street, West George Street, Blythswood Square
- Nightlife and hospitality
- New Anderston Cross (refurb M8 (Junction 19) and night-time strategy
- Develop Feasibility for new City Square at Mitchell Library incl. M8 bridging
- Develop City Centre Public Realm Strategy
- Specific Street /Space interventions (TBC)
- Street cleansing– identify, assess and prioritise
- Seating / Lighting / Signage & associated user infrastructure
- Licensing of pavement areas / street trading
- Public art, Street festival/light festival, Design for rain
- Calm quays, Activating the quays
- Planned quay wall extension and new public realm walkway at Windmillcroft Quay (south of river between Tradeston and Kingston Bridge)
- Active, attractive promenades & riverfront
- Design guidelines needed
- Open up St. Enoch Shopping Centre, Buchanan Galleries
- Updated access to the St. Enoch Car Park, Re-develop King Street parking
- Lively street-fronts
- Possible extension of Custom House Quay(Building Guidelines)
- Enhanced public realm and spaces in Calton/Barras
- Connectivity and public realm improvements to link to Port Dundas / Pinkston from Dobbies Loan
- SEC redevelopment
- Support low traffic neighbourhoods
- Apply the safe systems approach, including education, training and publicity to prevent casualties
- Reduce car use, particularly at peak times, introduce segregation where possible, create safe junctions and crossing places and reduce vehicle speed to an appropriate level
- Safe and car free school zones

THEME 4 - Improved pedestrian and cycle facilities and infrastructure

- Improve walking links and infrastructure around Cowcaddens Subway Station
- Improve pedestrian/cycle links around Port Dundas Junction
- Public space treatment & greening with improved pedestrian/cycle infrastructure on Cowcaddens Road
- Reduce severance between the City Centre and Clyde Waterfront, by enhancing accessibility & crossing points; reducing traffic, speeds/road widths on Broomielaw
- Relieve traffic pressure on Ballater Street, Norfolk Street Jamaica Street and Bridge Street enabling better road functionality and accommodate pedestrians and cyclists
- Widen existing bridge crossings over the M8 at St Vincent Street and Bath Street
- Pilot E-scooters and micro-mobility
- Active travel hubs

- Pedestrian + accessibility champion
- Retain and enhance existing bridges; add new high-quality contemporary bridges to improve connections across and along the River Clyde
- Relieve traffic pressure on Ballater Street, Norfolk Street Jamaica Street and Bridge Street enabling better road functionality and accommodate pedestrians and cyclists
- Public space treatment and greening with improved pedestrian/cycle infrastructure on Cowcaddens Road
- Improve walking links and infrastructure around Cowcaddens Subway Station
- Improve existing bike hire offer, with more affordable access to cycling and bike hire including electric bikes
- More cycling parking and storage
- Safe and attractive underpasses and vennels
- Pedestrian priority crossings on High Street
- Nextbike 2.0
- New opening of the Govan - Partick footbridge

THEME 5 - Increased physical activity and health

- Promote City Cycle partnership
- Increase cycle levels of use by 10% annum – for next 5 years
- Create Quiet / Low Use Streets and Quiet Zones
- Promote Outdoor Lifestyles & Activity
- Introduce leisure route
- Green street, parks and play spaces
- Create street gyms / activity zones
- Increase pedestrian footfall by 10% annum – for next 5 years
- Promote public awareness of health benefits of activity and active travel
- Provide information and community support measures
- Access points to River Clyde – Active Leisure

THEME 6 - Sustainable, affordable and integrated transport system

- Improve connections between stations including bus and train
- Enhancements in and around Charing Cross railway station to improve legibility, passenger experience and increase patronage of rail/public transport
- Significantly improve the passenger experience by enhancing arrival spaces next to Glasgow Central and Anderston Stations
- Restore river activity with new River Taxis interchanging with Glasgow Central Station; river and canal-based movement of people and goods
- Enhancements in and around Argyle Street railway station to improve legibility, enhance passenger experience and increase patronage of rail/public transport
- Enhancements in and around High Street railway station
- Develop / facilitate Glasgow City Mobility App
- Updated rail and subway stations
- Park and Ride
- Public transport fare improvements and smart integrated ticketing
- Enhanced community transport with more sustainable transport access to food, education/training, employment
- Mobility hubs
- Improve existing car club offer

- Car journey sharing
- Accessible information and journey planning
- Scottish Accessible Travel Framework
- Shared mobility including public taxi, private hire and ride-hailing
- Implement lanes/integration with Avenues and Avenues Plus
- Smarter cleaner bus system
- River Taxi

THEME 7 - Minimised adverse environmental impacts of traffic

- Reduce car levels/restrict access
- Remove unnecessary and through traffic activity
- Extend AQMZ
- Route traffic to minimise impacts
- Green Walls / CC mitigation
- Develop the Low Emission Zone (LEZ)
- Ultra-low emissions zone
- Plant Trees (to capture CO_2 and particulate matter)
- Undertake resurfacing using Low Noise Pavements
- Introduce permeable/ surface drainage & SW attenuation
- Surface water management strategy

THEME 8 - Network of carbon neutral infrastructure

- Enhanced electric vehicle charging points/hubs
- Low carbon Council fleet
- Electric Bike charging
- Carbon Audit / Capital Carbon Assessment (Operations/Development)
- Policies to reduce the need to travel e.g. 20 minute neighbourhoods and discourage car ownership
- Require all Taxi and Public Transport Vehicles to be zero emission by 2026
- Mapping 20-minute Infrastructure
- Utility & Energy Networks

9.2.2 The links between the options themes and the study objectives are shown in Table 15.

Table 15. Mapping of options and TPOs

	THEME 1 - Repurposing road space	THEME 2 - Sustainable transport connectivity	THEME 3 - Accessible, inclusive, safe and quality public spaces	THEME 4 - Improved pedestrian and cyclist infrastructure and facilities	THEME 5 - Increased physical activity and health	THEME 6 - Sustainable, affordable and integrated transport	THEME 7 - Minimised adverse environmental impacts of traffic	THEME 8 - Network of carbon neutral infrastructure
TPO1 - Support the delivery of a carbon neutral city by developing transport and infrastructure networks which help deliver low-carbon travel	✓	✓	✓	✓✓	✓	✓	✓✓	✓✓
TPO2 - Help create a more-inclusive city centre by supporting a sustainable, affordable and integrated transport system		✓	✓✓	✓	✓	✓✓	✓	✓
TPO3 - Help create a vibrant and successful city centre by supporting sustainable transport connectivity of the city centre for people and goods	✓	✓✓	✓	✓		✓	✓	✓
TPO4 - Help create a people-centric city centre by creating accessible, healthy, inclusive, safe and quality public spaces and minimising the adverse environmental impacts of traffic	✓✓	✓	✓	✓✓	✓✓	✓	✓✓	✓

10. RECOMMENDATIONS AND NEXT STEPS

10.1.1 This Case for Change report has identified the main transport problems, opportunities, issues and constraints for the Glasgow City Centre area.

10.1.2 These have then provided the basis for developing Transport Planning Objectives and a long list of options, grouped into the following eight themes:

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

10.1.3 These themes and the specific interventions will be 'packaged-up' at the beginning of the Preliminary Options Appraisal and then explored in more detail by being qualitatively assessed against the five STAG criteria of Environment, Economy, Safety, Integration and Accessibility/Social inclusion. In addition, they will be considered in terms Feasibility, Affordability and Public Acceptability.

10.1.4 Following the 'Preliminary Options Appraisal', options that perform well against the above criteria will be subject to 'Detailed Options Appraisal'.

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