
Edinburgh City Centre Transformation: Creating a more liveable, inclusive and resilient city centre

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1 Introduction

Edinburgh is one of the fastest growing cities in the UK and by 2040 will have a population of almost 600,000. The way we travel, shop, socialise, work and play are also changing, reflecting global trends and new technologies. The growth of the city will provide new jobs, homes and amenities but must be carefully balanced to provide a high quality of life, access to services and opportunities for all residents, in particular communities that experience inequality.

Reducing air pollution and creating places that promote social interaction and walking and cycling are critical to improve health and wellbeing. The city must also continue to reduce its carbon emissions, including those from transport, and prepare for the demands of a changing climate.

This paper outlines the high-profile strategy that is currently being developed to set out the necessary transformation of the city centre to tackle these challenges and opportunities whilst respecting the unique context – a city centre that can better meet the needs of residents, businesses, institutions and visitors. We will explore key elements of the methodology and emerging outputs from this objectives-driven project to set the strategy and associated delivery plan that can deliver the shared vision of: *'an exceptional capital city centre that is for all, a space for people to live, work, visit and play. A place that is for the future, enriched by the legacy of the past'*.

This paper examines how a scenario-based approach has been combined with a robust and imaginative approach to data, appraisal and engagement to generate and assess different but transformational outcomes for a city centre set within wider City, Regional and National policy contexts and uncertainties. In particular we will highlight:

- The core people and place focus, driven by a strong vision and objectives and a proactive approach to stakeholder engagement and wider public consultation;
- The development of three different outcome-based scenarios to inform the development and appraisal of interventions;
- The multi-layered GIS based approach to assembling data to provide both the evidence base for change and inform the appraisal of packages of policy, design, development and management interventions to deliver desired outcomes;
- The use of Space Syntax and multi-modal modelling within this integrated data approach to inform a comprehensive place and movement scenario-based approach encompassing all modes with a major emphasis on active travel;
- How benchmarking with other leading Cities has been used within the scenario-based approach to help inform outputs and outcomes
- How the intended key focus on inclusivity, health and well-being has been taken forward in the appraisal, and associated IAA (Integrated Impact Assessment and business case work

- How we have ensured that the emerging strategy is taken forward effectively within a clear delivery plan with short, medium and longer-term actions integrated with the wider City Mobility Plan, City Plan (LDP) and LEZ

2 Background to Edinburgh City Centre Transformation

2.1 The ... Prospectus

The City Centre Transformation is being undertaken in a complex but integrated policy context with a number of strategies being developed across the economic, land-use and transportation agendas of the city but all linked into a 2050 Vision for the City. This is illustrated below.



Figure 1: The Wider Policy Context

A major public consultation exercise was undertaken in the Autumn of 2018 asking for views on a prospectus which sets out 15 ideas to create a more active and connected city, a healthier environment, a transformed city centre, and improved neighbourhood streets under the themes of Fair, Inspired, Connected and Thriving. The consultation and earlier engagement work that informed the prospectus related to the City Centre Transformation (CCT) but also the City Mobility Plan and Low Emissions Zone (LEZ) initiative.

2.2 The City Centre Transformation Team

The City of Edinburgh Council, with funding from Sustrans appointed a team led by Jacobs to undertake this major commission. The Jacobs City Centre Transformation (CCT) team led by Jacobs features a range of internal and external specialists including OPEN, Space Syntax, the BIG Partnership, White Young Green, Turleys Heritage and Semetrica with Turner and Townsend supporting the Council on project management. A clear governance structure has been put in place for the commission with effective collaboration at the heart of this. The CCT team is working very closely with the City of Edinburgh Council (CEC) team which includes Sustran representatives and the lead officers on the wider City Mobility Plan (the successor to the Local Transport Strategy, the Low Emission Zone (LEZ) team and the City Plan (Local Development Plan) team. Significant engagement has already taken place with many stakeholders and the wider public and the many constructive inputs to the work to date are very much appreciated.

2.3 The Current Status of the City Centre Transformation project

The draft strategy currently being developed by the CCT team will be discussed at the May meeting of the City of Edinburgh Transport and Environment Committee after which it is proposed to take it through a public consultation exercise through the early summer. The final version of the strategy, amended where appropriate in the light of the consultation exercise, will be taken to a subsequent committee meeting along with an associated delivery plan.

It is intended that the presentation we give at the STAR Conference will provide more detail on the emerging interventions and strategy as the appraisal elements of the commission are completed with this paper focussing more on the approach, methodology and work to date including engagement.

3 The need for Change

3.1 Engagement and Consultation on the Prospectus Connecting our City, Transforming our Places

'Connecting our City, Transforming our Places', the prospectus prepared for the major public engagement in Autumn 2018, reflected a set of shared issues and ambitions for the city developed through stakeholder engagement in spring 2018. It was also informed by policy review, benchmarking with international cities and the emerging themes of the Edinburgh 2050 City Vision.

Engagement was combined across the needs of three closely-related strategic plans: The City Mobility Plan, Low Emission Zones(s) and Edinburgh City Centre Transformation to maximise public participation and ensure joined-up delivery of citywide and community priorities.

The approach to public engagement included:

- an eight-week online survey hosted on the Council's Consultation Hub from 17 September to 11 November 2018, accompanied by hard copy surveys available in Edinburgh City Libraries;
- seven stakeholder workshops, three public drop-in sessions and on-street engagement in town centres across the city at Gorgie, Leith Walk, Leith, Corstorphine, Morningside and Craigmillar; and
- focus groups and interviews to explore differences in opinion expressed through the online survey in greater detail with local businesses, car-based commuters from the region, resident motorists and under-represented groups (young and older people, people from ethnic and language minority groups, people with disabilities and mobility impairments and those on low incomes).

Engagement activity was promoted through print media, the Council's Consultation Hub, its social media channels, paid-for social media, bus shelter advertisements, radio adverts, lamp post wraps, the dedicated Connecting Places project website, and vox pop videos.

Additionally, engagement about the ideas presented in the prospectus was supported through meetings with representatives from neighbouring local authorities and SEStran to discuss regional transport issues. Briefings and discussions were also held with the Transport Forum, Development Forum, Edinburgh Access Panel and Edinburgh Tourism Action Group.

3.1.1 Headline Findings from the Engagement Exercise

More than 5,000 people contributed their views, either through the Council's online survey (4,192 returns), by attending workshops and drop-in events (300 participants) or through groups and organisations submitting written responses. In terms of the volume of responses, this was the largest Council engagement of 2018. Social media reach was significant with 269,388 impressions on Twitter and 13,240 on Facebook.

92% of survey respondents gave their postcode details, of which 81% were Edinburgh residents and 11% were from beyond the Council area. Responses were slightly higher from males (51%) than females (42%) and broadly representative of adults of working age. Around 10% of respondents considered themselves to have a disability. Respondents' main mode of travel was mixed: 32% typically take public transport, 24% use a car or van, whilst 21% walk and 19% cycle. The main reason to visit

the city centre other than for work (32%) was for leisure and dining (19%), slightly ahead of shopping (16%) and arts and culture (9%).

'Connecting our City, Transforming our Places' sought to test 15 ideas for change but also to understand the level of change and innovation the city should embrace to achieve a fairer, thriving, connected and inspired Edinburgh.

To deliver a city fit for the future 51% of respondents considered that the Council needs to take a more widespread and radical approach to address the issues raised; 36.5% felt targeted investment and improvement was required and 11.5% thought major change was unnecessary.

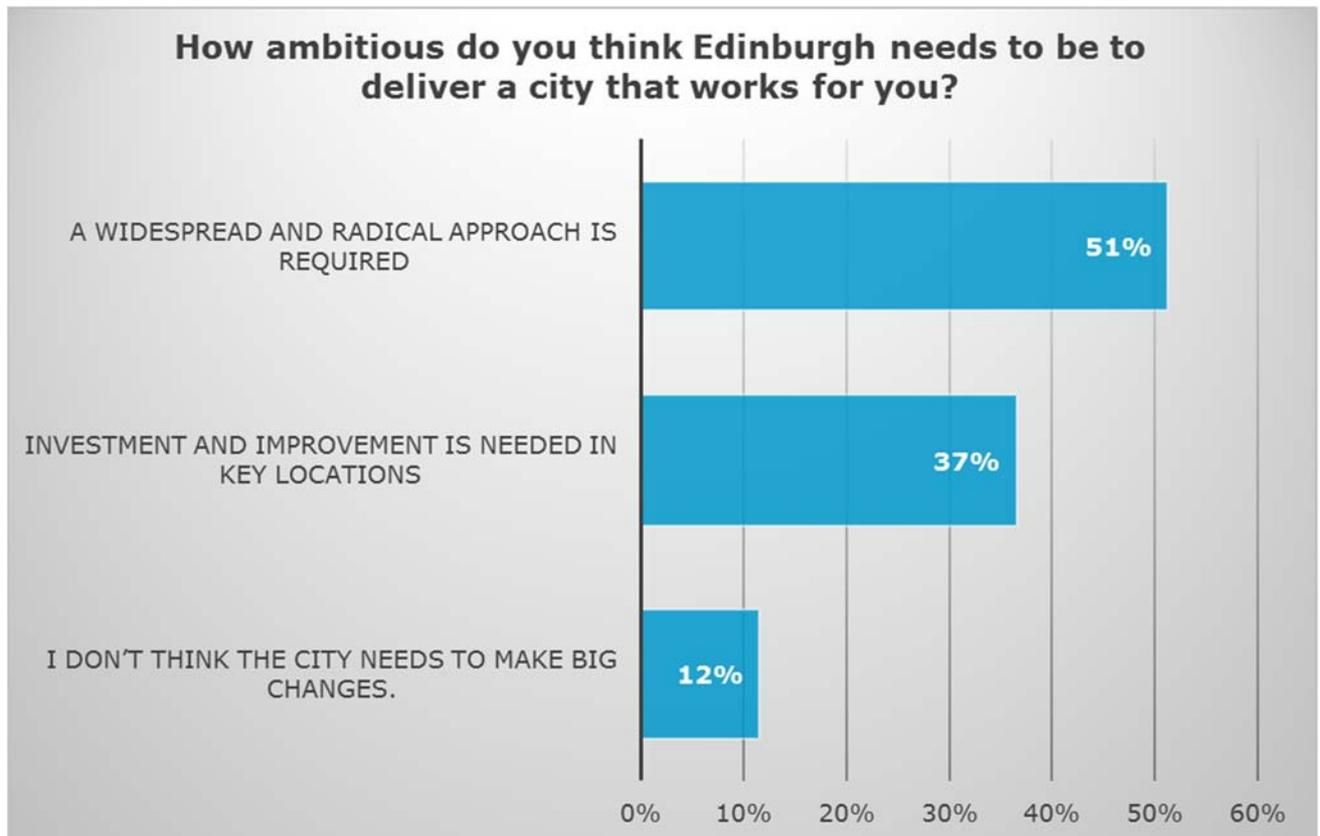


Figure 2: Public Engagement Exercise Autumn 2018

Around 74% of survey respondents, including 60% of those identifying as having a disability, supported reductions in the amount of general traffic in the city centre and town centres to benefit both people who live in, work in and visit Edinburgh but also to improve conditions for those walking, cycling or using public transport. Just under 20% of respondents disagreed with traffic reductions. More than 90% of respondents supported better management of congestion through technology, stricter controls on large goods vehicles in the built-up area and the expansion of park and ride facilities.

75% of survey respondents supported the creation of some permanently vehicle-free streets in the city centre and town centres, with 24% in disagreement. Support was higher than for selected monthly vehicle-free street events, which were supported by 61.5% of respondents with 37.5% of those surveyed not in support of this approach. In both instances, support from people identifying as having a disability was around 10% less. Of concern is the view that only 37% of respondents were satisfied with the quality of central streets and public spaces.

3.1.2 A fair and inspiring capital city

This section of the prospectus looked at ideas to improve quality of life and opportunities for all to access work and local services, creating city centre and town centre environments for business, culture and civic life to flourish.

Three-quarters of survey respondents supported traffic reductions and the creation of some vehicle free streets in town and city centres, evidencing strong support for the creation of a walkable city centre in parallel with town centre improvements. This level of support dropped to 60% for those identifying themselves as having a disability, and 50% for those who drive a car or van as their main mode of transport. Almost 20% of respondents were against traffic reductions.

Traffic reduction in the town and city centres was supported by 50% of those who drive a car or van as their main mode of transport, just over 75% of public transport users, around 85% of those who walk and just under 95% of those who cycle as their main mode of transport. Only 37% of survey respondents were satisfied with the quality of streets and public spaces.

Whilst the need to enable access to the city centre and town centres for goods and services was a key emerging point from engagement, 90% of those surveyed supported controls on large goods vehicles within the built-up area. Support for reductions in on-street parking was lower at 57% with 41% of respondents not in support of parking reductions. However, support for reductions in on-street parking was closer to 80% for those identifying as having a disability.

Focus group participants considered it essential that shoppers, including people with mobility impairments or with small children, were able to park to access local shops and services.

Workshop and focus group comments cited the negative impact of the volume of bus traffic on the enjoyment of Princes Street, albeit recognising its importance as a transport corridor. Almost 60% of those surveyed disagreed with reducing services passing through the city centre and this increased to more than 70% for those identifying as having a disability. Focus group participants supported further limited stop services at peak times to reduce congestion and re-introducing a city centre sprinter loop.

Smart integrated ticketing, to make it easier to change between all modes of public transport (and ideally including rail), was a universally popular engagement finding, and was supported by 87% of survey respondents with only 4% in disagreement. It was recognised, however, that such ticketing requires national and regional co-ordination. Current ticketing options were often seen as inflexible, and public transport fares were perceived as too high, notably for group travel, young people, and for those changing between modes.

3.1.3 A healthy city and environment

This section of the prospectus looked at the lifelong health benefits of walking and cycling, reducing harm to citizens from traffic related air pollution, cutting carbon emissions by promoting clean fuels and vehicles, and setting sustainable travel targets for new developments and different areas of the city.

75% of survey respondents agreed that by creating a safe, attractive, accessible and connected network of walking and cycling routes more people would choose to walk or cycle for short journeys rather than use a car, whilst 17% of respondents disagreed. Workshop participants wished to see conflicts between pedestrians and cyclists reduced with focus groups also wishing to see safe cycle routes across the city, preferring safe and direct segregated cycleways as a result and seeking improved road surface conditions.

75% of survey respondents supported controlling access within the city for the most polluting vehicles through a Low Emission Zone. Around 15% of respondents disagreed with such controls. Support levels

exceeded 55% for those selecting car or van as their main mode of travel. Workshop participants recognised in equal measure the health benefits for the public but also the risk of traffic displacement and the financial implications for those unable to afford newer vehicles that would comply with the LEZ.

3.1.4 A smart and thriving city

This section of the prospectus looked at supporting inclusive growth by improving the movement of goods and services, managing traffic volumes, managing freight, creating a fully integrated public transport network, and considering future technological solutions to better manage traffic and reduce congestion.

When asked to consider Edinburgh's growth and the reach of public transport, 87% of survey respondents supported extending the public transport network to better serve new homes and employment areas within the city and wider region with only 5% of survey respondents in disagreement; focus groups and workshop participants agreed with this objective.

The expansion of park and ride facilities was viewed by 93% of survey respondents as a good way of reducing traffic in the city centre and town centres with 5% not in support of such measures. Focus groups comprising car commuters wished to see these linked by express bus routes into the city centre but also connected by walking and cycling networks to out-of-centre employment zones. Improved facilities including vehicle charging points, toilets and cafes and click-and-collect lockers were also considered to be good ways of improving the desirability of park and ride.

Workshop participants shared these opinions but also sought parking controls to deter onward journeys into the city by car. The location and capacity of park and ride facilities serving the city was viewed as critical by neighbouring local authorities to ensure their effective use and prevent displacement of traffic and parking.

91% of survey respondents wished to see the impact of larger goods vehicles on the city centre and town centres reduced through the introduction and enforcement of controls by vehicle size, weight and delivery time, with around 8% of respondents in disagreement. 93% of respondents supported investment in freight depots in and around the city to enable first and last-mile delivery by smaller, cleaner vehicles with 6% of respondents not in support of such measures.

Support for the extension of Controlled Parking Zones (CPZs) was mixed, with 42% in support, 21% unsure and 36% against such a move. Workshop participants highlighted the need for CPZs to reduce on-street parking pressures, with Leith cited as a specific example, whilst neighbouring local authorities also considered cross-boundary displacement of parking and traffic to be a risk of this approach.

Focus group participants felt that CPZs play a useful role in stopping commuter parking in residential streets and that parking charge revenue should be clearly assigned or ring-fenced to for measures to improve sustainable travel, such as cycle routes. There were perceptions that it was simply the Council generating additional income. There was also a perceived need for increased awareness of the rules and timings of various parking restrictions.

When asked to consider the potential for a levy on businesses providing workplace parking to fund sustainable transport improvements, 72% of survey respondents were supportive with 28% in disagreement. As per comments received on CPZs, there was support for revenue generated to be ring-fenced for transport improvements. Despite being made aware of the benefits of Nottingham's Workplace Parking Levy, workshop participants expressed concerns that businesses may be pushed out of the city.

High support was received from survey respondents (93%) with regard to the use of future technological solutions to better manage traffic and reduce congestion, with 5 % in disagreement. Workshop participants suggested there was a need for more up-to-date data and better use of data to inform

decision making, including baseline origin-destination information. Concern was raised that autonomous vehicles could result in more private vehicles on the road. Participants generally found it difficult to engage with technological advances such as autonomous vehicles.

3.2 Benchmarking against other Cities

A review of best practice from other international cities was undertaken to inform the strategy. Given the richness and complexity of Edinburgh as an urban environment, it was necessary to take a considerable number of examples - Edinburgh cannot be benchmarked against a single city. The benchmarking exercise has researched the current evolution and trends in cities globally, aiming to identify the most suitable or innovative ideas, effective policy measures and interventions that contribute towards an holistic range of outcomes.

The matrix shown below demonstrates the breadth of the case studies reviewed. They are classified by categories which respond to the main challenges and opportunities reflected through the consultation process. Consideration has focused on contemporary urban trends that will form the cities of the future: sustainable mobility; public real – placing pedestrians and bicycles first; heritage and culture; development investment and tourism; infrastructure and environment; vertical transportation.

city	Public Realm Pedestrian First	Sustainable Mobility	Development Investment and Tourism	Residential Communities in City Centre	Heritage and Culture	Topography	Digital Engagement and Participation	Infrastructure and Environment	Freight
Amsterdam	●	●	●	●	●		●		●
Barcelona	●	●	●	●					
Bilbao	●			●		●			
Birmingham	●	●	●					●	
Bordeaux		●	●		●				
Chicago							●		
Copenhagen	●			●			●		
Dublin		●	●		●		●		●
Granada				●	●				
Leeds									●
Ljubljana	●					●			●
London		●	●			●		●	
Madrid		●						●	
Melbourne					●			●	
Milton Keynes		●						●	●
Oslo	●	●						●	
Seville	●	●			●				
Toledo	●				●	●			
Vienna	●	●	●		●		●	●	
Zurich	●	●	●		●		●	●	

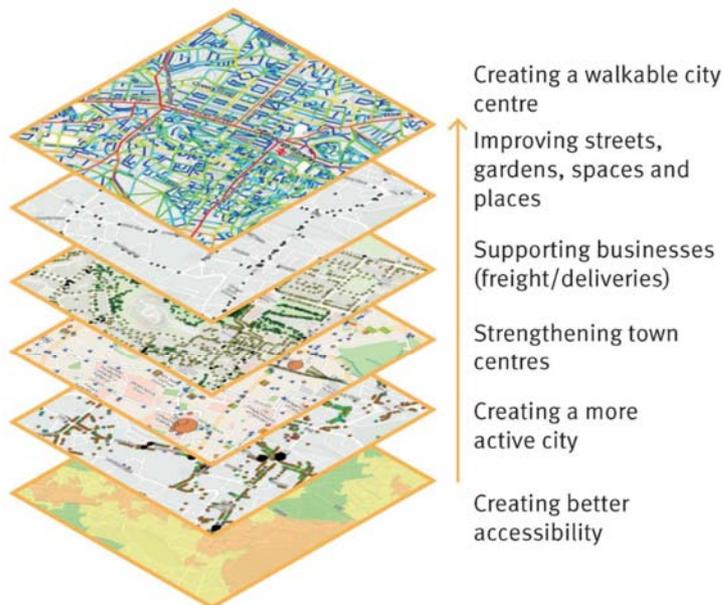
Figure 3 Summary Benchmarking Matrix

This exercise has also fed into the development of the appraisal scenarios described in a subsequent section, helping define the 'art of the possible' to tackle the city's main challenges and opportunities.

3.3 Baseline Data

An holistic GIS based framework for data analysis has been created. This is underpinned by over 400 datasets covering the whole range of transportation, demographic, environmental and economic data as well as layers on current infrastructure, facilities, services and topography. This enables large scale and spatially specific analysis to be undertaken. This data has been and will continue to be analysed to understand the what can be learnt from the current position with regards challenges and opportunities,

and how these could change over time with and without intervention. This framework places residents at the heart of the analysis and has been designed to support identification of what the Strategy needs to address and help in the prioritisation of spatial locations where action needs to be taken.



Integrated city data layers

Figure 3: Approach to Data

3.4 Strategic / Microsimulation modelling

Initial strategic and microsimulation modelling has been undertaken as part of CCT. This complements other modelling approaches including TRACC public transport accessibility analysis and the SPACE Syntax work highlighted below.

The strategic VISUM model of the city centre was previously updated with 2016 traffic data as part of the tram Outline / Final Business Case. This model was first used to help understand the key impacts of emerging proposals. For example, possible street closures were tested in order to understand how traffic might reroute through the city centre. A series of mitigation proposals were then identified to help accommodate this additional traffic.

A single microsimulation model of the city centre was developed from previously created models of the city centre new town and city centre east areas. This enabled multiple potential interventions to be modelled to a greater level of detail and to be tested in parallel so as to help understand potential cumulative impacts. While it is acknowledged that such a large microsimulation model has limitations, it was invaluable in the optioneering process. VISSIM modelling allowed very specific interventions to be assessed at a level not possible in VISUM. These included:

- Junction improvements / reallocation of road space
- Bus stop rationalisation and supporting signal optimisation improvements, and
- F | f d # s u r u w | # h d v x u h v #

Testing options in combination helped identify those measures which worked best in combination and those that might potentially conflict. A range of traffic reduction scenarios were tested, linked to the appraisal scenarios, discussed below.

Microsimulation modelling was also extremely valuable in helping council officers see how the city might look and operate under each emerging scenario. It also helped ensure that options taken forward were both realistic and deliverable while meeting the overarching project aim of transforming the city centre.

3.5 Space Syntax

One of the key data layers in the overall GIS data tool is the Space Syntax models. Space Syntax Ltd are a member of the Jacobs led team. Over the last twenty years, Space Syntax has pioneered a unique, space-based approach to the modelling of human activity patterns in buildings and urban systems. Their models integrate multiple influences on behaviour including:

- a) spatial layout hierarchy, from more accessible to less accessible places
- b) the distribution of object attractors and land uses
- c) the location of transport nodes.

Space Syntax models simultaneously analyse pedestrian, cycle and vehicle movement networks and have been applied in planning and design projects worldwide.

The approach works by transforming the street pattern of an area, into a network “graph”. In urban systems, the road centreline map of the area is often used as a starting point, where the network is divided into individual “segments” of space, each segment being the street or path between two intersections. In buildings or convex open spaces, the network will typically be divided into individual “tiles” of space within each space.

Each segment or tile is then evaluated using a mathematical algorithm to calculate its interaccessibility within the network, i.e. how relatively easy or difficult it is to reach that segment from all other segments, or how likely it is that movement between different parts of the network is likely to pass along that segment. In this way, the software calculates both the “to movement” and the “through movement” characteristics of each segment.

Key to the success of this approach is the discovery that movement in buildings and cities often follows a “least angle” path between origins and destinations. In other words, many people minimise the angular deviation from their origin to their destination, even if this means they sometimes take a slightly longer route.

A second key aspect of the Space Syntax approach is the multi-scale analysis of spatial layouts, allowing short-and long-distance journeys to be simultaneously evaluated and showing how different parts of the same network are differently used, depending on the scale of journey. Frequently, the same parts of the network are used on short-and long-distance journeys. Land use analysis shows that these multi-scale places are typically successful commercial locations, thus demonstrating the importance of careful spatial layout design in creating multi-scale opportunities for shops to trade to more than one scale of movement.

The simultaneous analysis of spatial layout, land use and transport factors are a third key factor in the uniqueness and success of Space Syntax models. By demonstrating the fundamental role of space in determining land use potentials, then showing how the specific location of individual land use attractors and transport attractors exploits these potentials or not, Space Syntax models make it possible to integrate the three essential aspects of planning and design: spatial, land use and transport.

The spatial hierarchy of the City Centre was examined at different scales as illustrated in the images below (copyright Space Syntax Limited).



Figure 4 Spatial Accessibility – Intermediate Route Hierarchy Existing City Centre

This scale highlights journeys that are important at the intermediate scale e.g. trips by bus and cycle. There is a strong overlap with higher scale movements.



Figure 5 Spatial Accessibility – Local 25 min walk

This local route hierarchy figure highlights routes which form part of the local or walking catchment of the representing a 25 -min walk. This analysis shows how some routes which are very important on the larger scales are less crucial for the local scale journeys.

This analysis was repeated at different scales and also used to test the introduction of new horizontal and vertical links to examine their impact on accessibility.

3.6 Development of CCT Principles

A series of 6 principles have been set for the City Centre Transformation through the engagement, data and related workstreams. These are set out below:



The unique character of Edinburgh’s built and natural environment will be retained and enhanced

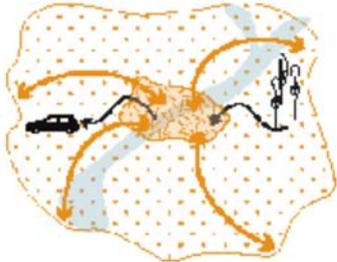
Potential measures: demographics and socio-economics (residents, jobs,...), movement to/from city centre, activity, visitors (indicators from WHS Management Plan), number of assets with active community involvement/ownership



Priority will be given to people travelling on foot, bicycle and public transport, providing enhanced connectivity and permeability, whilst minimising negative impacts of traffic displacement

enhancing connectivity & permeability, minimising negative impacts of traffic displacement

Potential measures: modal split – including by gender, area of public realm and length of cycling lanes, footfall, block permeability, air quality



Through traffic will be reduced within the city centre, improving air quality, creating a better environment for city centre residents and enhancing local centres

reducing through traffic, enhancing local centres and improving air quality, increase in access to bike hire and car hire/sharing.

Potential measures: reduction of traffic levels, air quality, activity in local centres (retail, leisure, business, movement, footfall)



Green areas, open spaces and street networks will be linked to get the best from existing assets for the community

Potential measures: new ‘green routes’ and links, new planted trees, new wider pavements, cycle lanes, number of assets with active community involvement/ownership

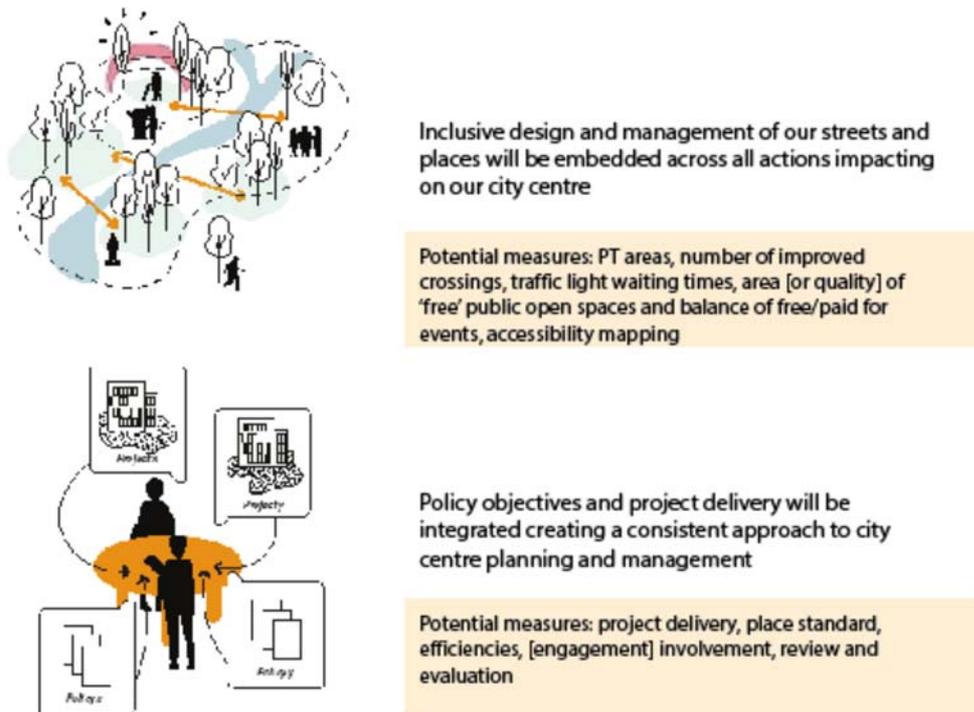


Figure 6: The Six Key Principles

3.7 Development of a scenario-based approach

The three inter-related strategic plans of the City Mobility Plan, Low Emission Zone(s) and City Centre Transformation will together fundamentally shape decisions about the city's transport network, sustainable travel choices, health and liveability of neighbourhood streets, and the civic, cultural and economic vibrancy of Edinburgh's city centre. The close working of the project teams and gateway decision points is helping ensure continued policy alignment, despite each project having a range of short and longer-term milestones for delivery. In line with European best practice in preparing Sustainable Urban Mobility Plans, a series of 'appraisal scenarios' has been taken forward, recognising the shared geographies, policy objectives and stakeholders between the projects.

Three interrelated appraisal scenarios have been developed for the City Centre Transformation (with a variation of this approach also being used within the City Mobility Plan) to help explore and test different future changes in the city, allowing for the different demands that may be placed upon the city's streets, public spaces and its transport network. Each 'appraisal scenario' sets out different levels and mixes of possible interventions. All reflect themes identified through engagement to date, as well as evidence from citywide trends and the benchmarking against international comparator cities. The scenarios have been used to help to evaluate how different combinations of interventions might affect Edinburgh's citizens, environment and economy, whether positively or negatively.

The baseline for appraisal scenarios includes the following assumptions based on the allocations within the Adopted Edinburgh Local Development Plan (2016) Transport Scotland data:

- Active travel will continue to increase in line with agreed targets in the Active Travel Action Plan (2016);
- Parking constraint will continue to mean that private vehicle trips to the city centre are unlikely to increase significantly;
- Public transport growth is likely to be significant across the city and bus demand in the city centre forecast to increase by 10%;

- Tram demand is forecast to increase from 7 million passengers in (2019) to 15 million passengers (2023) subject to delivery of the Newhaven extension; and
- Network rail estimates that Waverley station footfall will double by 2040; this growth will be reflected across the city centre with significant increases in footfall and cycle journeys expected.

Appraisal scenarios will factor-in the city's projected 17% increase in population growth by 2040 and will also need to consider growth in the wider region, as allocated in Strategic Development Plan (2013). The City has some experience in stress testing the transport network through temporary arrangements linked to the delivery of large-scale redevelopment and tram infrastructure and during the summer and winter festival periods. Therefore, practical knowledge is also being applied.

The three scenarios that have been applied to the City Centre Transformation are set out in the following sections and illustrated below.

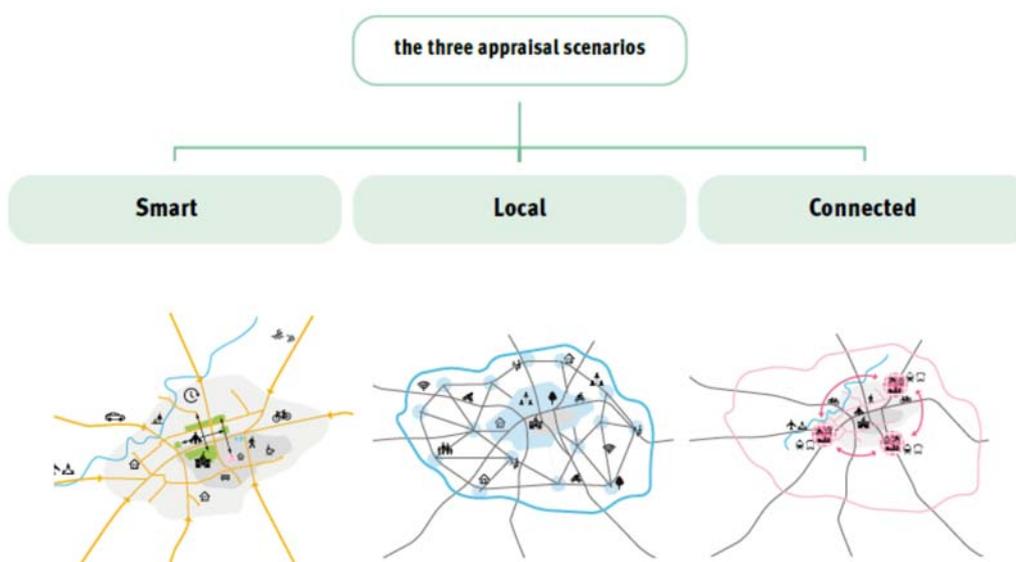


Figure 3: The Three Appraisal Scenarios

3.7.1 Appraisal scenario "Smart"

This scenario explores how existing assets could be better utilised to optimise movement, city functions, quality of life and environmental quality, through improved management and maintenance of street space and public realm. It assumes that there will be no net growth in traffic levels in the city centre, despite city growth. Traffic levels will be managed through a continuation and further development of measures to discourage private vehicle use to and through the city centre with priority being given instead to walking, cycling and public transport, supplemented by parking policies that prioritise off street provision for residents and short stay. It adopts the position that air quality has improved through implementation of a Low Emission Zone and that strengthening of existing parking and loading restrictions has eased congestion and improved conditions for pedestrians and cyclists.

Appraisal scenario "Smart" reflects workshop and survey feedback that called for better maintenance and management of the existing streets, spaces and transport infrastructure ahead of more radical changes.

3.7.2 Appraisal scenario “Local”

This scenario explores liveability as a central theme: the potential to transform the city centre, its value to residents and role as place for retail, culture, business, leisure and play through public realm improvements and reduction in private vehicle through-traffic in the city centre by c15%, targeting through traffic in particular. Roll out of integrated ticketing across public transport services in the city makes journey planning easier and multiple trips more affordable. It is combined with improvements in the citywide walking and cycling network and enhancing town centre streets to enhance conditions for healthy lifestyles and social interaction close to people’s homes, supporting the trend towards home-working and flexible office space. The potential introduction of some form of work place parking levy in the city centre is also considered in this scenario. These measures begin to further tackle air quality exceedances by reducing traffic volumes on main transport corridors and enclosed streets.

Appraisal scenario “Local” relates to workshop and survey responses which seek the renewal of our town centres and city centre around community and civic needs, as part of targeted investment in key locations to improve mobility and quality of life.

3.7.3 Appraisal scenario “Connected”

This scenario relies on major investment in public transportation to improve accessibility from areas of the city which are poorly served by public transport and to improve links to the region. It assumes a c25-30% reduction in traffic through the city centre, and that new approaches to dealing with waste, deliveries, and parking have opened up the historic core to provide an attractive network of cycleways and pedestrian priority streets, with central public spaces regained for use by residents, workers and visitors and overcrowding reduced. Integrated ticketing and public transport hubs allow greater flexibility of public transport uses across modes, with greater potential for orbital routes and a potential second cross-city centre tram link/loop associated with further expansion of the tram network. Park and Ride opportunities by bus, tram and rail are significantly expanded and a wider work place parking levy considered. Integrated ticketing and public transport hubs allow greater flexibility of public transport uses across modes, with greater potential for orbital routes and an inner-city centre public transport loop.

Appraisal scenario “Connected” reflects feedback that more widespread and ambitious changes to mobility and placemaking are required, including better public transport connections across the city and region.

3.7.4 Supporting Measures

Appraisal scenario “Smart” relies on City Centre Transformation and delivery of a Low Emission Zone. Appraisal scenarios “Local” and “Connected” would rely on wider citywide actions to be delivered via the City Mobility Plan and subsequently by City Plan 2030, alongside regional measures.

Measures to promote inclusion and improve accessibility for those with physical or sensory impairments were applied to all appraisal scenarios in line with the key principles set.

3.8 Multi-criteria Analysis

A detailed multi-criteria analysis (MCA) decision support process was developed which included a range of indicators linked to key principles of the CCT strategy and through these to the wider aims, objectives and working principles. As part of the MCA, alternative packages of interventions (grouped under the three scenarios) have been appraised against these key criteria.

This decision support process has also been supported by a Strategic Environmental Assessment and Integrated Impact Assessment which fed into the MCA process and provided a high-level assessment against a wider set of criteria. Real value has been obtained in integrating the statutory assessment

process within the wider methodology at all stages including stakeholder engagement, policy review and appraisal.

The outcomes of these assessments and the core MCA were presented at an MCA workshop with the project and client team resulting in a recommended overall package of interventions to be taken forward into the Strategy and accompanying Delivery Plan.

The purpose of the MCA in this case was to support the identification of preferences between packages of interventions and scenarios and identify the high-performing measures within each package that can be taken forward to develop a cohesive, optimised set of interventions for the emerging CCT Strategy. In that context it served to both help identify which packages could deliver the optimal outcome but also identify trade-offs or impacts which would require mitigation. In this way a clear record of the assessment process was created and impacts across all criteria were considered in a demonstrable way.

This form of MCA was adopted given the very wide range of potential interventions (encompassing land-use, environmental, social equity and educational measures as well as transportation measures and, policy and management and service type interventions as well as infrastructure schemes).

The MCA process was undertaken in several steps, summarised as follows:

Step 1 – Decision Context; in this case it is to identify the best-performing packages of interventions across the scenarios as well as the high-performing interventions within each package to be taken forward for the emerging CCT Strategy.

Step 2 – Scenarios and Packages of Interventions; the three scenarios (Smart, Local, Connected) were as previously agreed and interventions were then grouped into packages of related measures (Optimising Open Space/Green Links, Street Space Allocation, Public Transport Services, Parking, Operations and Management) so that each package could be scored as a group.

Step 3 – Criteria and Indicator Development; for the purpose of the MCA the criteria adopted were based on the CCT working principles. A series of indicators were developed that are observable, measurable changes which collectively reflect achievement of the working principles. This included outputs from the microsimulation and accessibility modelling undertaken.

A range of interventions are emerging from the MCA process categorised under several key headings. These are now being developed into the strategy and the accompanying Delivery Plan and these will be highlighted in the presentation at the STAR conference.

4 Conclusions

This paper has outlined the approach and methodology adopted in taking forward an ambitious transformational strategy for the city centre of Edinburgh and how this has been effectively integrated with the wider suite of ambitious strategies and projects being undertaken within the wider city. It has highlighted the key roles of stakeholder engagement, policy and data analysis and a range of modelling techniques within an imaginative scenario-based approach. The conference presentation will highlight how this approach and methodology are now feeding into an ambitious strategy to shape the future of this great city centre (and accompanying delivery plan) that will then be taken out to public consultation over the Summer.