Final Report
October 2020

Car Free City Centre and Ultra Low Emissions Zone: Initial Options Study

Brighton & Hove City Council
Our ref: 23909101
23909101

steer

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1 Introduction

Overview

1.1 Steer was commissioned by Brighton & Hove City Council to undertake an initial review of options for a car-free city centre to be in place by 2023, setting out the feasibility and costs of a recommended set of options as well as the necessary complementary measures to ensure the outcomes of the car free city centre are optimised.

1.2 The outputs of the commission will be used to prepare a report to councillors for the Environment, Transport and Sustainability (ETS) Committee and support the development of Brighton & Hove's fifth Local Transport Plan.

1.3 This commission follows on from Steer's work undertaking a review of appropriate transport and travel policy measures (for people and goods) in the city. This included a strategic multi-criteria assessment, resulting in a recommended set of policy options and consideration of possible Covid-19 recovery scenarios.

1.4 The key components of the work are to:

- consider a wide range of options and complementary measures for a successful expanded Ultra Low Emission Zone and a car-free city centre;
- assess options through a transparent and evidenced based process to arrive at a set of recommended options that are most appropriate for the city;
- demonstrate that due consideration of relevant national and international best practice in transport and travel has been given;
- recommend options to stakeholders and the public in a clear and informed way that enables well-informed feedback and decision taking; and
- inform the Council of the next steps and potential timescales for how any proposals for key workstreams should be developed in terms of further assessment, consultation, implementation and monitoring.

1.5 To realise the above Steer developed a method underpinned by a robust evidence base to justify recommendations and regular, in depth officer engagement to ensure that the views of a range of stakeholders are considered through the study. This involved the following stages of work:

- **Evidence base:** Develop an evidence base through review of the policy context, initial fact-finding workshops with transport and cross-council officers, analysis of socioeconomic, demographic and transport datasets and a number of national and international case studies. This was used to support option generation and assessment.
- **Option generation:** Drawing on our evidence base as well as further internal stakeholder engagement a set of Car Free City Centre and Ultra Low Emission Zone options were developed along with necessary complementary measures. An assessment framework was developed for identifying preferred options.
- **Presentation of recommended options:** The Car Free City Centre and Ultra Low Emission Zone options were assessed and recommended options will be identified including complementary measures.

1.6 This report presents the outputs of Stage 2: Option Generation and Stage 3: Option Assessment and Identification of Preferred Option.

Structure of the Report

1.7 This report sets out the pre-Strategic Outline Business Case for a Car Free City Centre and Ultra Low Emission Zone in Brighton and Hove.

1.8 The report is split into the five cases of a business case in line with HM Treasury's Green Book principles and procedures.

- **Chapter 2: Strategic Case –** This chapter draws insight from review of national, regional and local policy, from data analysis, and from council officer engagement to set out the need for intervention. This informs identification of a number of strategic outcomes and principles which frame how options are assessed in the economic case.
- **Chapter 3: Economic Case –** This chapter describes the option development and assessment process and reports on the performance of the options against the assessment criteria. This chapter concludes by identifying the preferred options for the intervention and the necessary complementary measures to support their successful delivery.
- **Chapter 4: Financial Case –** This chapter sets out the cost and revenue implications that would need to be considered in the delivery of a Car Free City Centre and Ultra Low Emission Zone.
- **Chapter 5: Commercial Case –** This chapter sets out the approach to procurement and expected delivery partners.
- **Chapter 6: Management Case –** This chapter set out how Car Free City Centre, Ultra Low Emission Zone and associated complementary measures would best be delivered.

Definitions

1.9 To support a clear understanding of the business case and recommendations some of the key terms which are referred to regularly through the document have been defined below.

- **Urban Vehicle Access Regulations** are measures to regulate vehicular access to urban infrastructure
- **Car Free City Centre** is an urban vehicle access regulation measure which bans defined categories of vehicles from entering a defined geographical area. There is no charging mechanism to allow entry into the geographical area and a number of vehicle categories are likely to be exempted from the ban.
- **Ultra Low Emission Zone** is an urban vehicle access regulation measure which seeks to limit the entry to a defined geographical area by vehicles which are not ultra low emission. This could be implemented through a vehicle ban with exemptions or through a charging mechanism.
- **Low Traffic Neighbourhoods** are groups of residential streets, bordered by main or "distributor" roads, where "through" motor vehicle traffic is discouraged or removed.

2 Strategic Case

Overview

2.1 The strategic case sets out the policy fit, the strategic rationale and the objectives of the proposal. This strategic case is split into four sections:

- **Policy review:** This section draws insight from policy documents at a national, regional and local level.
- **Drivers of change:** This section summarises the findings of transport, demographic and socioeconomic data analysis and draws out insights as to how this could influence the types of options to be considered.
- **Stakeholder engagement:** This section describes the internal council stakeholder engagement that was undertaken and reports on the anticipated outcomes of Car Free City Centre and Ultra Low Emission Zones from officers in different service areas within the Council.
- **Strategic outcomes and principles of intervention:** This section sets out the strategic outcomes and principles of intervention which frame option development and assessment in the economic case.

Policy review[1]

Overview

2.2 A literature review of local, regional and national policy as well as relevant government guidelines or legislation has been undertaken to provide the policy context for the project. This has been particularly focussed around identifying how the different policy documents might point to the need for or benefits of a certain type of Car Free City Centre or Ultra Low Emissions Zone.

2.3 Commentary has been provided as to the characteristics of Car Free City Centre and Ultra Low Emission Zone measures that each of the policy documents would best support. The findings of this policy review will direct development of options to ensure that they are in line with the most up to date policy aspirations at a local, regional and national level. The seven dimensions of a Car Free City Centre and Ultra Low Emission Zone are the following:

- Geographical scope
- Single or multiple zones
- Prohibition or charging
- Emissions standards
- Vehicle exemptions
- Operating times
- Method of enforcement.

[1] Full policy review is provided in Chapter 2 of the Brighton and Hove Car Free City Centre and Ultra Low Emission Zone Options Study - Evidence Base

2.4 Understandably not all dimensions are covered by each policy document, but where applicable commentary has been included.

Table 2.1: Policy review summary

NATIONAL POLICY	
Document name	**Commentary against dimensions**
Decarbonising Transport: Setting the Challenge (Department for Transport, 2020)	**Prohibition or charging –** suggests that prohibition is preferable as there is a need to bring private car emissions to zero, both direct and indirect. **Operating times –** Suggests continuous operation, to maximise the potential for decreasing the carbon emissions of transport.
Clean Air Strategy (Department for Environment, Food and Rural Affairs, 2019)	**Prohibition or charging –**. Aim is to significantly improve air quality, rather than improve urban realm, so reducing the number of cars moving through the city centre should be the target. Charging would provide a revenue stream to support investment in sustainable and active mode alternatives. This suggests that charging could be used in the short term, transitioning to a prohibition model. **Emissions standards –** Emissions standard should be strict to have the desired impact on air quality. **Vehicle exemptions** - Electric Vehicles (EVs)
Net Zero: The UK's contribution to stopping global warming (Committee on Climate Change, 2019)	**Prohibition or charging –** prohibition is preferable as there is a need to bring private car emissions to zero, both direct and indirect.
Future of Mobility: Urban Strategy (Department for Transport, 2019)	**Prohibition or charging –** Likely to favour charging. More effective way to help generate/balance an integrated transport system. **Emissions standards –** Emissions standards should be strict to have the desired impact on air quality and help to encourage a transition to Ultra Low Emission Vehicles (ULEVs). **Vehicle exemptions –** ULEVs. Therefore, helping to drive the transition to lower-emissions vehicles. **Operating times –** Likely to support only during the daytime, to help ensure that freight trips can be consolidated in the night/evening.
A Green Future: Our 25 Year Plan to Improve the Environment (HM Government, 2018)	**Prohibition or charging** – Aim is to significantly improve air quality, rather than improve urban realm, so reducing the number of cars moving through the city centre should be the target. Charging would provide a revenue stream to support investment in sustainable and active mode alternatives. This suggests that charging could be used in the short term, transitioning to a prohibition model. **Emissions standards –** High. Aim is to try and improve the local environment (particularly air quality).
The Road to Zero Strategy (HM Government, 2018)	**Prohibition or charging –** Charging. Is about cleaning vehicles on the road, rather than reducing the number of cars. Therefore, would need exemptions for ULEVs, rather than total ban of cars. **Emissions standards –** High. Is about cleaning the transport network, rather than reducing the number of cars. **Vehicle exemptions –** ULEVs. **Operating times –** Continuous to maximise transition of the fleet mix to ULEV.

Transport Investment Strategy (Department for Transport, 2017)	**Prohibition or charging –** Charging, with exemptions for EVs, in order to encourage the transition to ULEVs. **Emissions standards –** Emissions standard should be strict to have the desired impact on air quality. **Vehicle exemptions –**Exemptions for EVs, in order to encourage the transition.
Cycling and Walking Investment Strategy (Department for Transport, 2017)	**Single or multiple zones –** Multiple zone with 'car free corridors' which encourage people to use active transport to reach the city centre. **Prohibition or charging –** Prohibition. As much about improvements to the urban realm as about improvements to air quality and carbon emissions. **Vehicle exemptions –** Active modes. Key to eliminate anything which might pose a safety risk to these modes.
SUB-NATIONAL POLICY	
Document name	**Commentary against dimensions**
Transport Strategy (Transport for the South East, 2020)	**Prohibition or charging –** Likely to favour charging. Supports a reduction in car use rather than a total prohibition. TfSE advocates for national road user charging as part of its 2050 Vision. **Vehicle exemptions –** Electric Vehicles and freight vehicles at key times – the strategy supports developing a transport system that balances the needs of all users. **Operating times –** Daytime. When the network demand is at its highest.
Gatwick 360 (Coast to Capital LEP, 2018)	**Geographical scope –** City centre. Plan is about delivering prosperous urban centres. **Vehicle exemptions –** Freight vehicles, which have a clear link to the economy of the urban centre. **Operating times –** Daytime. In the night city should be open for wider use.
LOCAL POLICY	
Document name	**Commentary against dimensions**
Greater Brighton Strategic Objectives (Greater Brighton City Region, 2019)	**Geographical scope –** Would support measures across the local authority area to ensure that the social and environmental benefits of the measures are spread across the different communities. **Prohibition or charging –** Likely to favour charging. Supporting a reduction in the use of polluting cars and uptake of zero emissions vehicles. **Vehicle exemptions –** Supportive of some access along strategic routes for freight vehicles to help support regional retail centre.
Brighton & Hove City Plan, Part One, 2016 and Part Two (Proposed Submission) (Brighton & Hove City Council, 2020)	**Geographical scope –** Plan is clear on the need to ensure that the city centre develops sustainably, and that sustainable travel is core to new developments. Therefore, areas beyond the city centre where 'new' developments are occurring should be in scope. **Single or multiple zones –** Multiple zones would allow the environmental and social objectives to be achieved across the City, but with different regulations for areas with different land use mixes. **Prohibition or charging –** Plan is trying to ensure equitable development, which would indicate prohibition rather than charging however this needs to be reconciled with the benefits of revenue generation for investment in sustainable and active modes. **Emissions standards –** High. The plan is clear on the need to help the city significantly improve air quality in the local area. **Vehicle exemptions –** Possibly freight vehicles at key times – the plan is clear on the need to balance economic development with sustainable development.

Brighton & Hove Corporate Plan (Brighton & Hove City Council, 2020)	**Single or multiple zones –** Could be multiple. The plan seeks to improve public spaces, throughout the city. **Prohibition or charging –** Prohibition. The plan seeks to transfer space from cars to people.
Brighton & Hove Local Transport Plan 4 (Brighton & Hove City Council, 2015)	**Geographical scope –** Potentially broad, provided that management, rather than prohibition is the option which is taken. **Prohibition or charging –** Likely to favour charging. The LTP supports the development of a mixed/balanced transport network with a greater shift towards sustainable modes. **Vehicle exemptions –** Would likely support exemption of EVs. **Operating times –** Daytime, allowing vehicles to pass through in the evening for delivery/commercial purposes.
Brighton & Hove Local Transport Plan 5 Policy Measures Work (Steer report, 2020)	**Prohibition or charging –** Prohibition, in order to ensure equity objectives could be realised and to minimise both tailpipe and source emissions. However, this would need to be reconciled with the benefits of revenue generation for investment in sustainable and active modes. **Vehicle exemptions –** Exemptions for vehicles for those with impaired mobility.
Urgent Response Transport Action Plan and Policy Framework (Brighton & Hove City Council, 2020)	**Geographical scope –** Small, likely just city centre. **Prohibition or charging –** Likely prohibition as it would provide greater opportunity for land use change and urban realm improvements to encourage consumer spending. But this would have to be reconciled with the benefits of revenue generation for investment in sustainable and active modes. **Operating times –** Daytime, when consumers are likely to want to travel to the city centre.
Interim Covid-19 Response Local Cycling and Walking Infrastructure Plan (Brighton & Hove City Council, 2020)	**Prohibition or charging –** Likely to favour prohibition. Aim is to improve the safety of urban realm, which requires dramatic reduction (to close to zero) of the vehicles moving through the city centre.
Emerging 2030 Carbon Neutral Programme (Brighton & Hove City Council)	**Prohibition or charging –** Prohibition. If the city is going to achieve net zero by 2030, changes will need to be significant and strict. Both direct and indirect emissions need to be minimised. **Emissions standards –** Strict. The Climate Emergency policy promotes an ambitious programme, which will need significant changes in this area to achieve net zero.
Rights of Way improvement Plan (Brighton & Hove City Council, 2017)	**Geographical scope –** Notes that it is critical for the Rights of Way that there are clear connections between the city centre and wider rural zones (i.e. green corridors). Might encourage 'car-free network' rather than a singularly defined zone. **Single or multiple zones –** As above. **Vehicle exemptions –** Exemptions for vehicles which are performing freight delivery or maintenance work.

Visitor Economy Strategy (Brighton & Hove City Council, 2018-2023)	**Geographical scope –** Focussing on the city centre, leaving plenty of space (with good modes of transport) from the city periphery to the centre. **Single or multiple zones –** Likely to favour single, although if key cultural 'hubs' are identified which might become particular draws for tourists, then these should also be added. **Prohibition or charging –** Prohibition. Spaces should be totally exempt from cars in order to make them more 'people friendly'. **Vehicle exemptions –** Possibly exemptions for 'novelty vehicles', such as tourist trains, which could provide means of transportation for tourists. **Method of enforcement –** Would need to make sure that enforcement included non-local vehicles as well as local vehicles.
Brighton & Hove Cultural Framework (2018) (Brighton & Hove City Council, 2018)	**Geographical scope –** city centre, cultural hub should be the focus. **Single or multiple zones –** The policy supports the possibility of developing several 'cultural hubs' across it's geography. These hubs could be turned into car-free zones, which would help to enhance their offer. **Prohibition or charging –** Prohibition. Develop the city centre into a car-free zone. **Vehicle exemptions –** exemptions for freight out of core hours.
Relaxation of pavement licensing laws (Ministry of Housing, Communities and Local Government, 2020)	**Geographical scope –** city centre to capitalise on pavement licensing options. **Prohibition or charging –** Prohibition. Develop the city centre into a car-free zone. Doing so would help to ensure that the pavements are attractive sites for dining or relaxing. **Vehicle exemptions –** exemptions for freight out of core hours. **Operating times –** evening and weekends the most important as this will be the time that the majority of people would be eating out on the streets.
Brighton & Hove Health and Wellbeing Strategy (Brighton & Hove City Council / NHS, 2019-2030)	**Geographical scope –** Strategy would be Brighton and Hove-wide so would incorporate areas beyond the city centre. **Emissions standards –** High, would help to ensure that there is better public health across the city. **Operating times –** All day.
Brighton & Hove Sport and Physical Activity Strategy (Brighton & Hove City Council, 2013-2018)	**Geographical scope –** Strategy would be Brighton and Hove-wide so would incorporate areas beyond the city centre. **Operating times –** All day. By mandating that people are unable to use their cars to enter the city centre, the scheme would help to ensure that the population are encouraged to use more sustainable and active modes.

Policy review findings

2.5 The Policy Review has provided direction in the type of Car Free City Centre and Ultra Low Emission Zone scheme options that would be aligned with policy at a national, regional and local level. The following findings have been drawn from this review.

- It has given particular insight into the geographical scope that should be considered. A large proportion of the documents reviewed have a clear policy direction in favour of Ultra Low Emission Zone or Car Free City Centre measures which have **strong coverage of the city centre area** as this is the area where congestion and air quality present the greatest problems and also where sustainable alternatives to the car are widely available.
- Further insight has been drawn as to the preferred model of a vehicle access restriction. A **prohibition model**, restricting all access to the city centre to cars has been identified as the preferred option for have the maximum impact on air quality and congestion, while being more equitable than charging.

- The documents reviewed present a clear response to the types of vehicle exemptions that should exist. Many of the policy documents would support **zero emissions vehicles being exempt** from both schemes, with charging models and with prohibition models.
- The policy documents reviewed would indicate that **multiple zones** with different restriction types and emissions standards would be preferable to a single zone. This would allow different levels of restrictions to be focused in areas of high congestion or particularly poor air quality without penalising residents of areas where these are not significant problems.
- Our policy review has identified a range of different positions in terms of operating times of day. A number of policy documents focussed on air quality and carbon reduction would be supportive of **continuous operation** of Car Free City Centre and Ultra Low Emission Zone measures. However, there is also a number of policy documents with objectives around economic development which would be more supportive of **daytime only** operation to help support the night time economy.

Drivers of change[2]

Overview

2.6 Alongside wider policy context, there are several contextual drivers for change that strengthen the need for intervention and provide further direction as to the type of Car Free City Centre and Ultra Low Emission Zone options that would be best suited to the Brighton and Hove context. These drivers are explored in the following section. The drivers are the following:

- air quality;
- traffic reduction;
- modal preferences;
- parking supply and demand;
- accessibility impacts; and
- equity impacts.

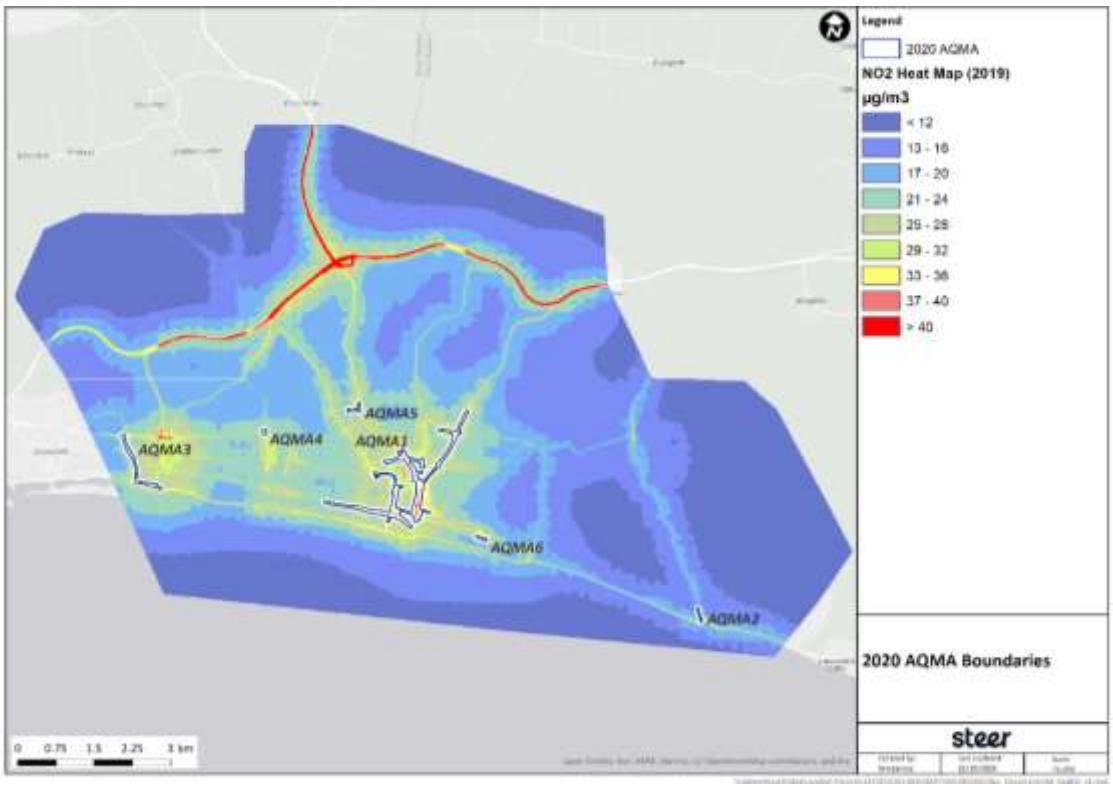
[2] A comprehensive report on the data analysis undertaken to support this study is provided in Chapter 4 of the Brighton and Hove Car Free City Centre and Ultra Low Emission Zone Options Study - Evidence Base

Air Quality

2.7 The Brighton & Hove City Council Environment, Transport and Sustainability Committee has agreed six Air Quality Management Areas. These are presented in Figure 2.1. Given that 96% of regular bus movements come together along one transport corridor a Low Emission Zone and was introduced in 2015 requiring all buses to be Euro-V emissions standard by 2020. The Euro-V standard includes diesel particulate traps that helped deliver a step change in particulate emissions.

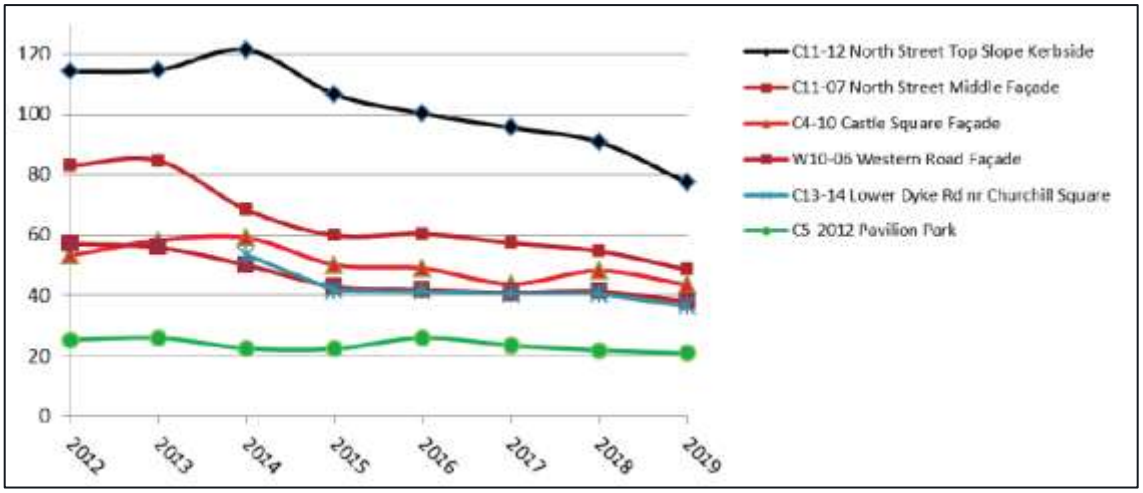
2.8 The LEZ applies to all buses frequenting Castle Square, North Street and Western Road (as far as the junction with Holland Road, Hove) along the B2066. The ULEZ (same geography) requires that all bus services entering the zone will be Euro-VI emissions standard by 2024. The Euro VI emission standard requires substantially lower emissions of oxide of nitrogen.

Figure 2.1: 2020 Air Quality Management Areas Boundary



2.9 Figure 2.1 demonstrates that the annual mean nitrogen dioxide concentrations have fallen across the B2066 Low Emission Zone since 2013/14,however, several of the monitoring sites and a significant part of the transport corridor remains above the annual mean concentrations of 40µg/m^3, the current legal limit.

Figure 2.2: Trends in annual mean NO_2 concentrations B2066 Ultra Low Emission Zone



2.10 By 1 October 2024, all buses operating in the zone will need to achieve the Euro-VI emissions standard of 400 mg NOx/kwh. The Euro VI standard became mandatory for new bus approvals from 2014 and it is estimated, on average, Euro VI buses will provide 90% improvement in reducing NOx emissions in real world driving conditions compared with Euro-V

2.11 Still, further actions beyond the existing Ultra Low Emission Zone will be required in order to achieve air quality objectives. For example, restrictions on cars accessing from side roads adjoining Western Road and North Street.

Key impacts and implications for Car Free City Centre and Ultra Low Emission Zone options

2.12 A Car Free City Centre will improve air quality levels within the zone, and to a lesser extent, on arterials into the City. There could be issues on the boundary of the zone as existing through traffic will be rerouted, causing increased congestion at some locations.

2.13 The success of the current Ultra Low Emission Zone and evidence from the Ultra Low Emission Zone introduced in London would suggest that an extended Ultra Low Emission Zone would improve air quality. However, depending on the emissions standards imposed, by 2023 the number of vehicles affected is likely to be a small proportion of total fleet. The impacts are therefore likely to be limited compared to those of the existing Ultra Low Emission Zone, but given the focus on the worst polluting vehicles, there will still be positive impacts of its implementation.

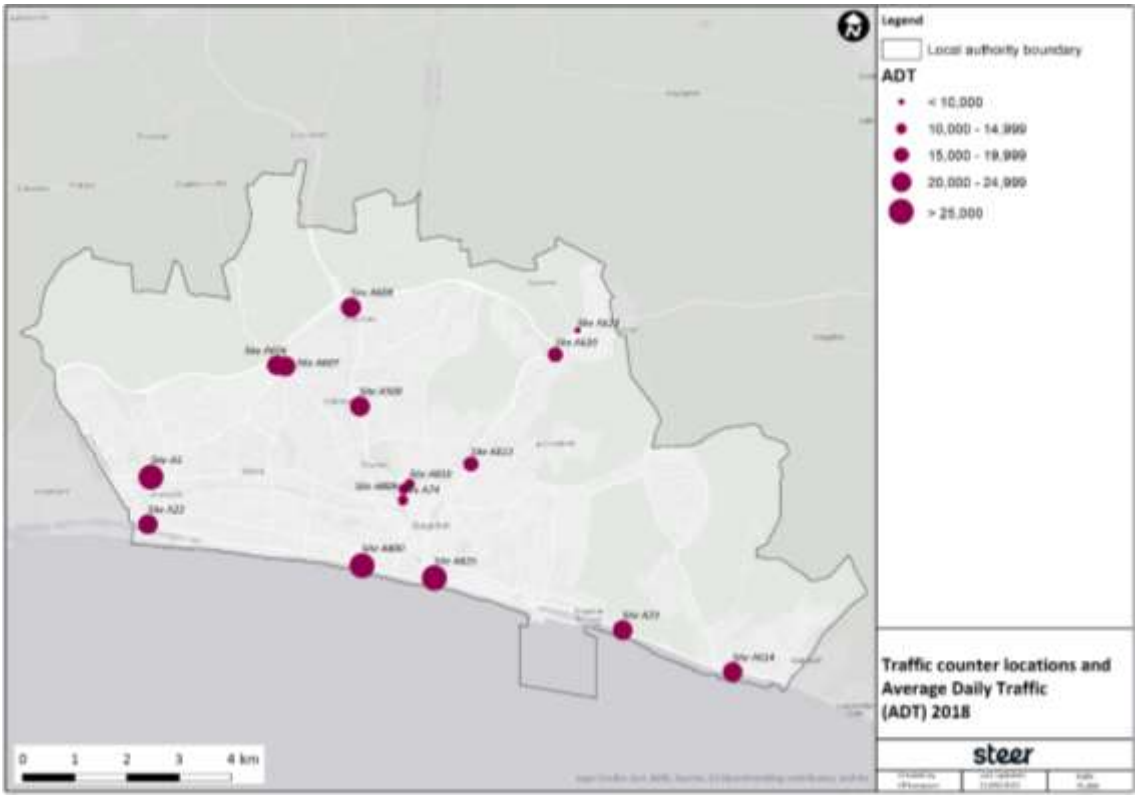
2.14 When defining the geography of both Car Free City Centre and Ultra Low Emission Zones consideration should be given to the boundaries of the Air Quality Management Area to maximising the air quality improvement that can be achieved by the measures.

2.15 Some of the AQMAs are designated along arterial routes that are last mile transport corridors connecting the city centre therefore consideration would have to be given in option development and identification of complementary measures to ensure that sufficient freight access was provided to the city centre, whilst still supporting an improvement in air quality on these routes.

Traffic Reduction

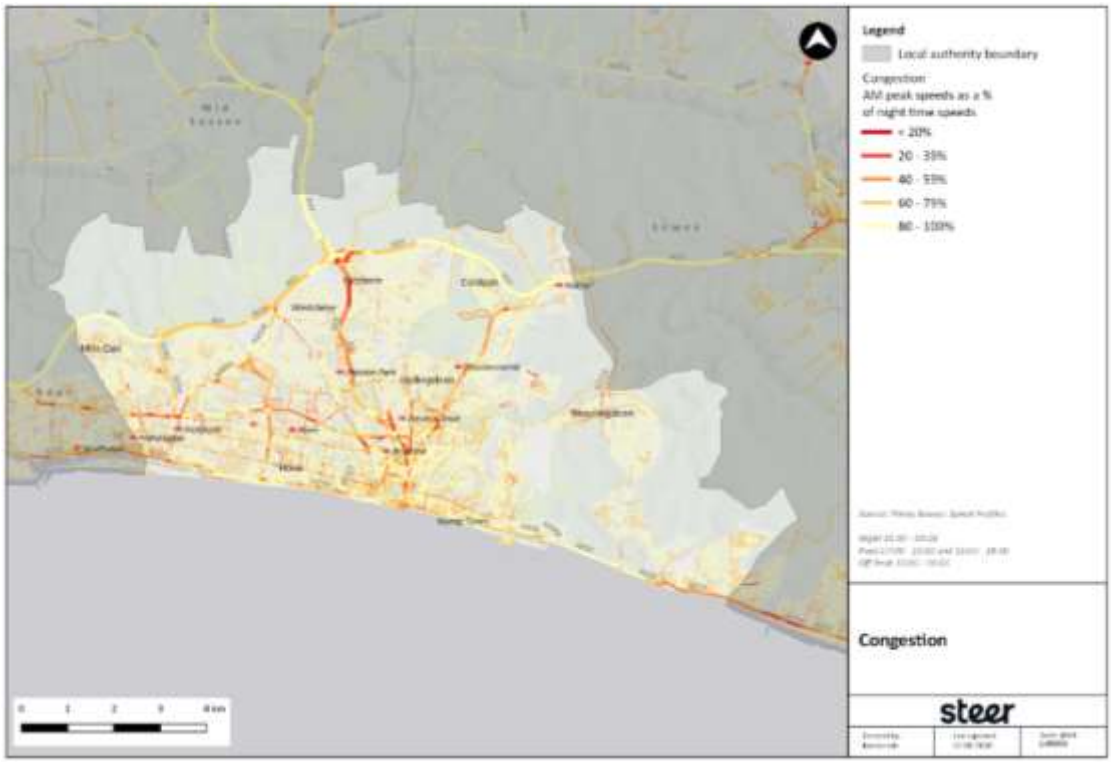
2.16 Both traffic flow data and congestion data have been analysed to understand the existing situation in Brighton City Centre and the wider local authority area. Figure 2.3 maps the 2018 average annual flows (ADT) for sixteen traffic count sites in Brighton and Hove. The flows show that in the city centre the highest flows by a significant amount are on the A259 beachfront road. Sites towards the edge of the City also tend to carry high levels of traffic except in the north east where the A270 Lewes Road is significantly lower than other A roads on the outskirts.

Figure 2.3: Average Daily Traffic (ADT) flows 2018



2.17 TomTom speed data has also been analysed to understand levels of congestion in Brighton and Hove. Congestion is defined as AM peak speeds as a percentage of free-flowing night-time speeds. Figure 2.4 shows results for the whole of the local authority area and demonstrates that most of the arterial roads see some levels of congestion, generally down to 40% of free flow conditions, including major roads such as the A23 from the north-west, and the A259 and A270 from the west, with speeds falling to 20% of free flow conditions on sections of the A23 and A270 (Lewes Road and Old Shoreham Road).

Figure 2.4: Congestion (AM peak/night-time speed), Brighton and Hove (Pitney Bowes, 2018)



Key impacts and implications for Car Free City Centre and Ultra Low Emission Zone options

2.18 A Car Free City Centre will significantly reduce traffic within the zone. It would also reduce traffic on arterial routes into the City but could lead to some increases at the boundary as traffic reroutes.

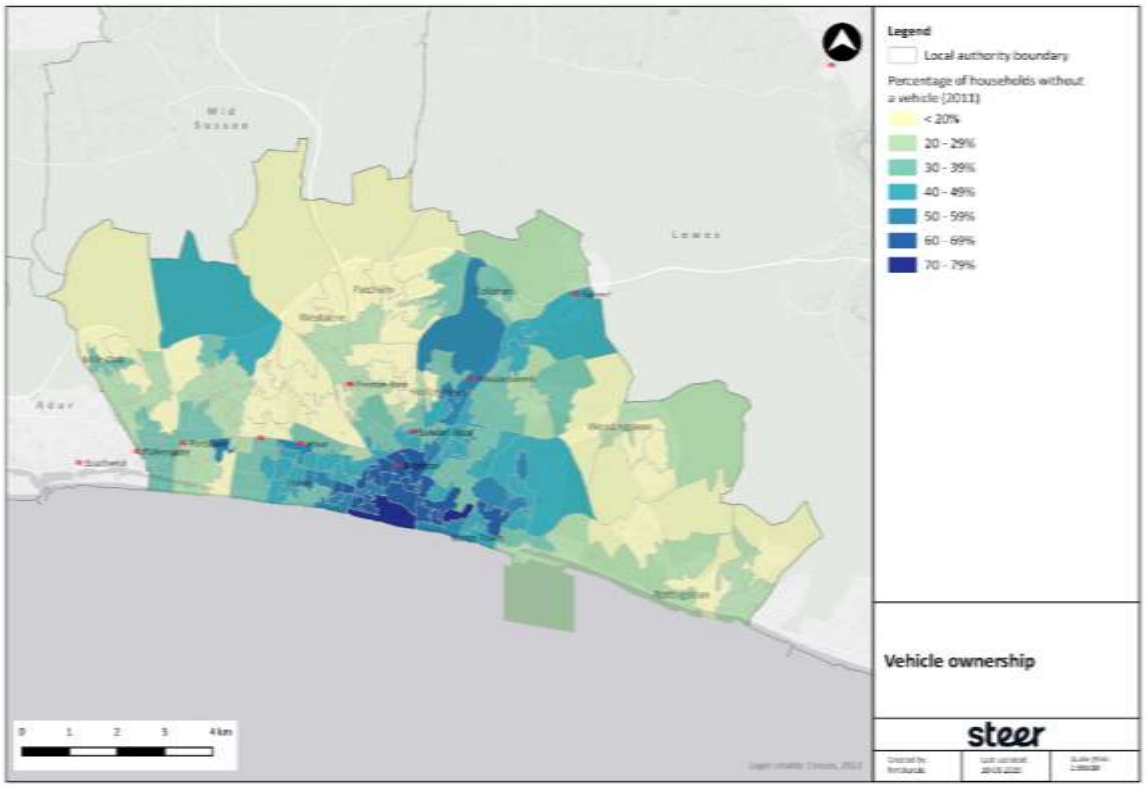
2.19 An Ultra Low Emission Zone is likely have less impact on traffic reduction in percentage terms but would be applied over a larger area. The possibility of increasing standards to capture a larger proportion of traffic could be considered.

2.20 When defining the geography of both Car Free City Centre and Ultra Low Emission Zones consideration should be given to allowing routes for residents and visitors to travel around the areas in a way which does not encourage “rat-running”.

Modal preferences

2.21 Analysis of car ownership, illustrated in Figure 2.5, demonstrates that LSOAs[3] (Lower Layer Super Output Areas) within Brighton city centre and its immediate surroundings contain a higher percentage of households which do not own a vehicle (and it should be noted that within car owning household, not everyone may have access to using the vehicle). This is expected given the limited residential car parking availability for residents in these areas, and the proximity to both public transport options and the key employment and leisure locations in the city centre which can be accessed using active or public transport modes.

Figure 2.5: Percentage of households which own a vehicle (Census, 2011)



2.22 Further, according to DfT statistics, Brighton and Hove has the highest bus use per population of any city in England outside London and Brighton Railway Station is the seventh busiest outside of London.

2.23 This is supported by analysis of Census journey to work data which shows that most people do not use a car, and instead favour walking (33%) or public transport (34%) for their commute. A further 26% drove to work in the centre of Brighton and the remaining 7% commuted by bicycle.

Key impacts and implications for Car Free City Centre and Ultra Low Emission Zone options

2.24 A Car Free City Centre will further reduce the number of employees that are able to commute to employment locations in the city centre by car however there is already high public and

[3] Super Output Areas are a set of geographical areas developed to produce a set of areas of consistent size, whose boundaries would not change (unlike electoral wards), suitable for the publication of data. Lower Layer Super Output Areas (LSOAs) typically contain 4 to 6 Output Areas with a population of around 1500.

active transport use suggesting the negative impacts on people's ability to travel by car would be outweighed by the air quality improvement and congestion reduction.

2.25 An Ultra Low Emission Zone will encourage people to either transition to less polluting vehicles or to change their travel behaviours and travel more by sustainable and active modes.

2.26 When defining both Car Free City Centre and Ultra Low Emission Zones consideration should be given complementary measures which will facilitate increased use of active and sustainable modes for all journeys in Brighton and Hove.

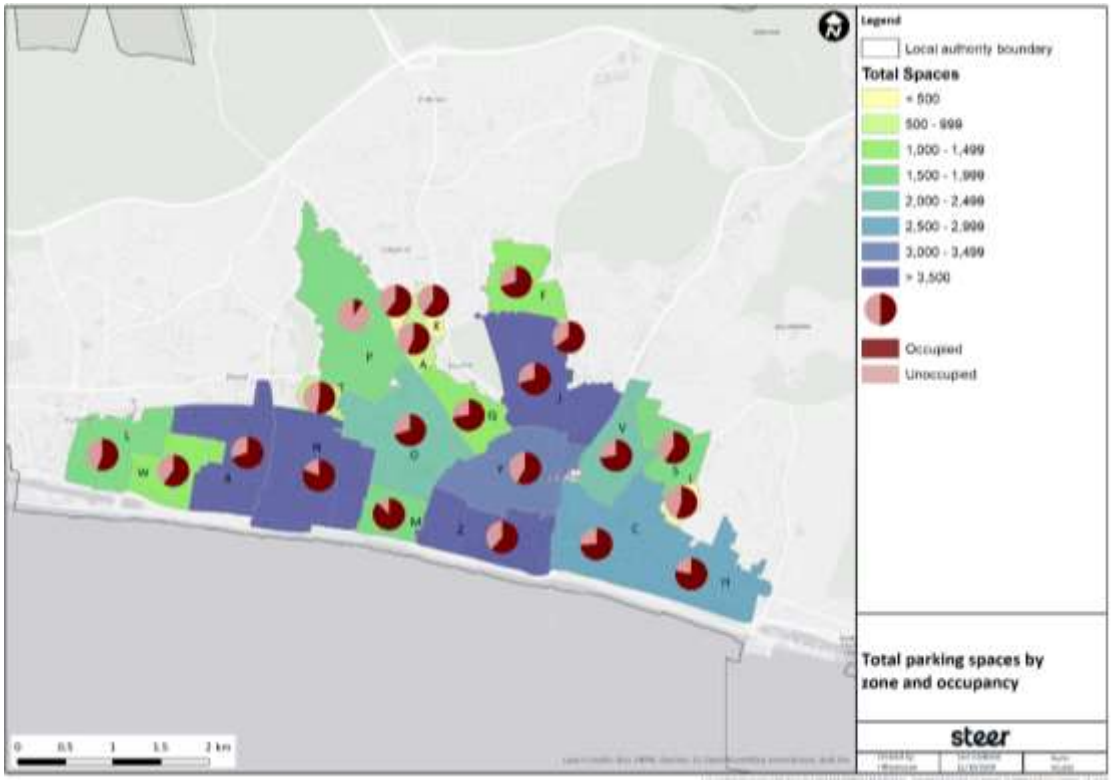
Parking supply and demand

2.27 Analysis has been carried out on on-street and off-street public parking in Brighton and Hove to assess current demand and occupancy. It should be noted that the analysis only includes car parks and parking spaces operated by Brighton & Hove as well as the large, off street, privately owned car parks for use by the general public within the central Brighton and Hove parking zones Y and Z. These are Churchill Square, Brighton Centre, Regency Mews, Brighton Theatre, North Road, Oxford Court, Vantage Point and Brighton Station. The data excludes any privately owned car parks or parking spaces outside of zones Y and Z. Analysis has demonstrated that:

- Based on 2019 data of Council owned off-street car parks, average occupancy was 66%. On-street average occupancy was higher at above 80% for all City Centre zones.
- The average occupancy of 69% suggests that there is a surplus of parking spaces across the City, particularly in outer areas.
- Zones close to the City Centre tend to have a large proportion of spaces available to visitors.
- A significant proportion of the parking supply is not owned by the council: this is privately owned public parking or private non-residential.

Note: On street surveys of resident bays are carried out during the day when generally there are more resident spaces free while residents are away at work. Evening and night-time occupancy is generally significantly higher. As a result, Figure 2.6 is likely to significantly underestimate evening/overnight demand for spaces.

Figure 2.6: Total parking spaces and average occupancy (on-street and off-street)



Key impacts and implications for Car Free City Centre and Ultra Low Emission Zone options

2.28 Access to existing off-street parking and the impact of removing or reducing on-street parking will need to be considered in the development of options for a Car Free City Centre. There are a number of residential areas close to the city centre which have on-street parking. Equally there are several large, public car parks within the city centre. If these were to remain in use then access would have be provided.

2.29 The surplus of parking provision that is available in Brighton and Hove would indicate that some reduction in city centre parking provision could be introduced without material negative impacts.

Accessibility impacts

2.30 Analysis has been undertaken to better understand how Car Free City Centre and Ultra Low Emission Zone measures might have an impact on:

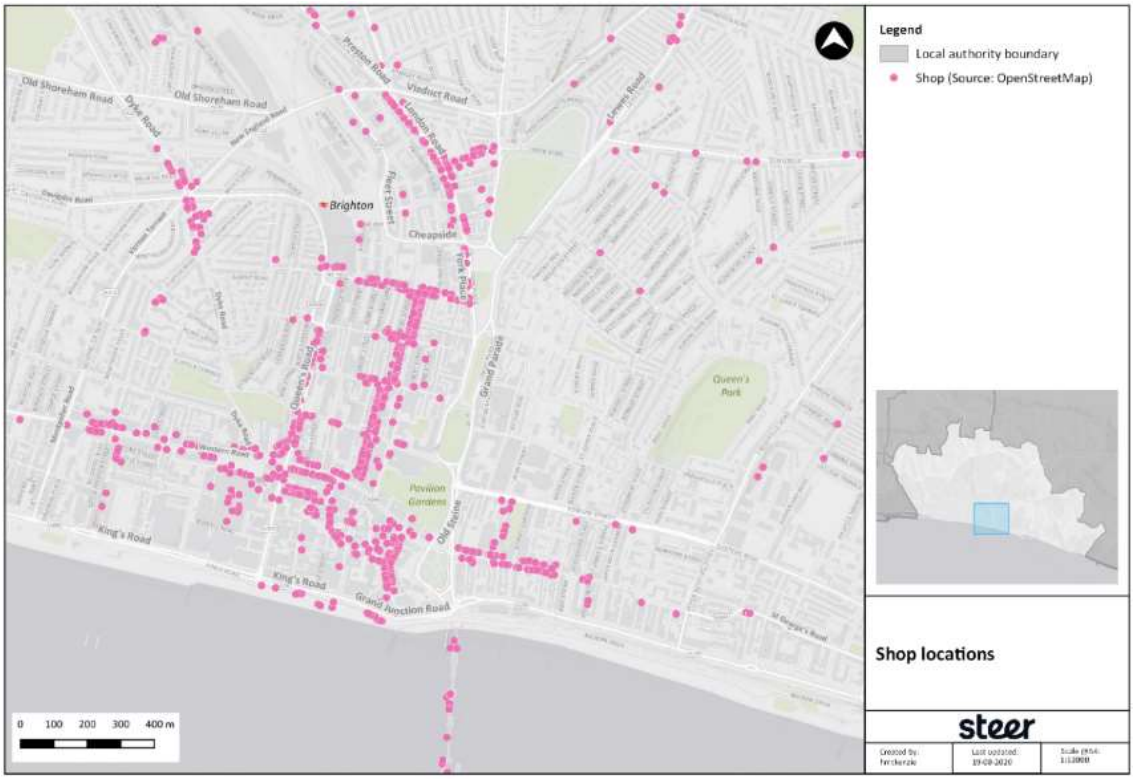
- Access to businesses
- Travel to school
- Mobility of residents with a disability.

Access to businesses

2.31 The distribution of shops across Brighton and Hove has been analysed to provide an indication as to the access needs for freight vehicles, should restrictions on HGVs be considered as part of a Car Free City Centre. Figure 2.7 below highlights the high density of shops in Brighton City Centre. The central cluster includes:

- Trafalgar Street towards the northern extent of the centre (North Laine), along Sydney Street, Kensington Gardens, Gardner Street and Bond Street , all of which run perpendicular to the seafront.
- The Lanes, south and south-west of Pavilion Gardens.
- Western Road and North Street, and extending onto St James's Street in Kemptown.
- Brighton seafront including Palace Pier
- Additional shopping hotspots exist in London Road, central Hove and Portslade to the west.

Figure 2.7: Distribution of shops in Brighton City Centre

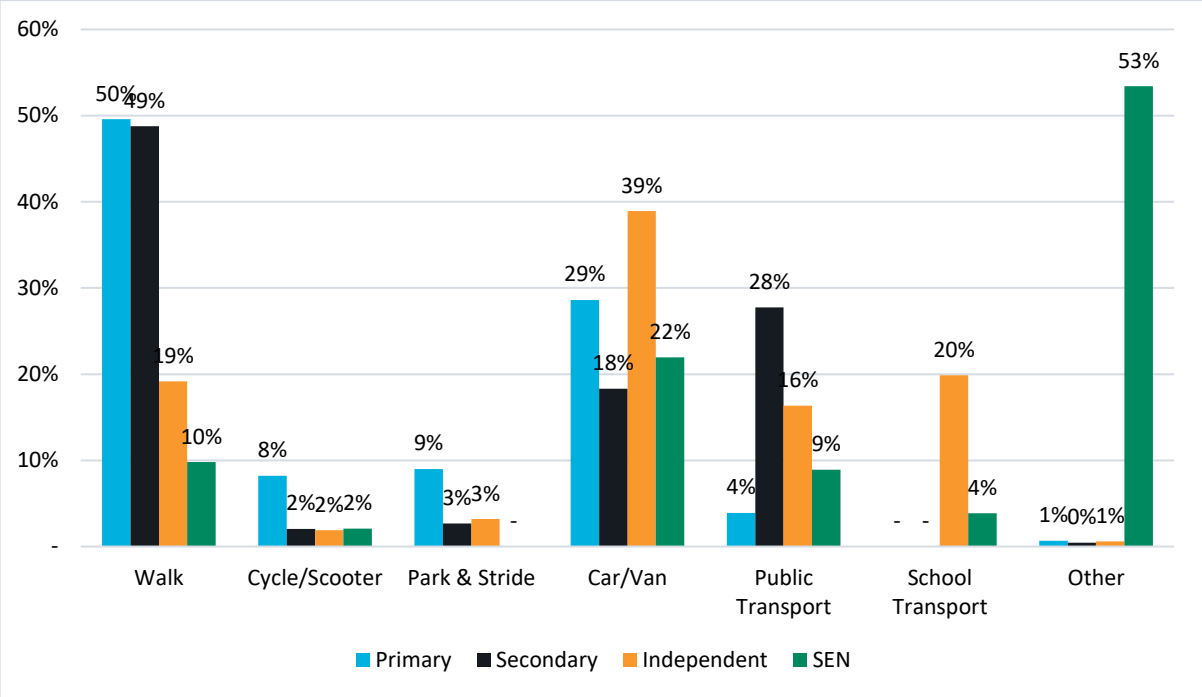


Travel to school

2.32 Figure 2.8 below presents the mode of transport of pupils across Brighton and Hove, spilt by school type. It shows that:

- Active modes form a high proportion of trips to school for primary (58%) and secondary (51%) school pupils, though generally, there is a lower percentage at independent (21%) and Special Educational Needs (12%) schools.
- Public transport mode shares vary by pupil age. Whilst only 4% of primary school pupils use public transport, over one-quarter (28%) of secondary pupils use either bus or train. At independent schools, 36% of pupils travel by either public transport (16%) or the private school transport on offer (20%).
- Travelling by car is most common among pupils at independent schools (39%), but also represents a significant number of pupils at primary (29%), secondary (18%) and SEN (22%) schools.

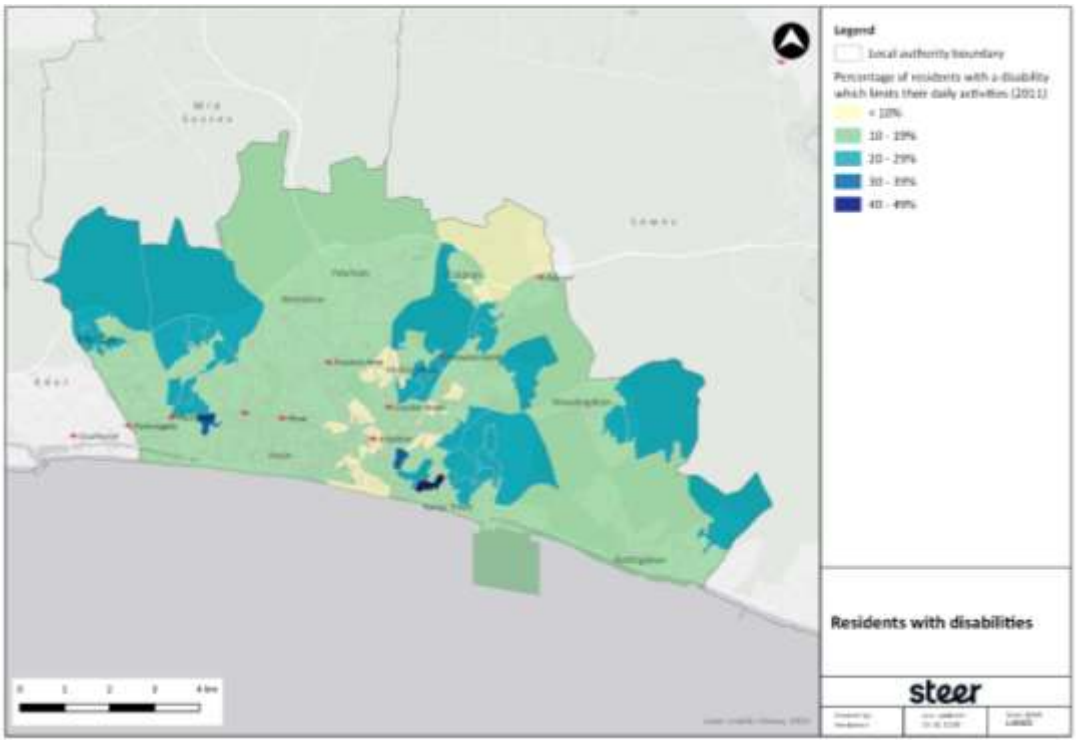
Figure 2.8: Mode of transport for journeys to school



Mobility of residents with a disability

2.33 Figure 2.9 illustrates the percentage of residents with a disability which limits their daily activities. These are residents whose day to day activities are limited because of a health problem or disability which has lasted, or is expected to last, at least 12 months. Areas with a higher percentage of residents with a disability largely reflect those areas which are within the top 10% most deprived on the Index of Multiple Deprivation (IMD) as presented in section 2.37.

Figure 2.9: Percentage of residents with a disability (Census, 2011)



Key impacts and implications for Car Free City Centre and Ultra Low Emission Zone options

2.34 In designing and implementing a Car Free City Centre, careful consideration will be needed to ensure easy access remains for shops, as well as other city centre businesses including restaurants and hotels.

2.35 For schools located in the city centre (e.g. Middle Street Primary School, St Mary's Catholic Primary School), a Car Free City Centre may negatively impact on those pupils and their parents that rely on the car for their journeys to school. This should be considered in the design and implementation of both Car Free City Centre and Ultra Low Emission Zone options.

2.36 Within both the Car Free City Centre and Ultra Low Emission Zone options, it is likely that exemptions will be in place for those with disabilities who rely on their private car for access to the city centre. The percentage of the population with a disability in the city centre is low, and therefore there will be a limited number of exemptions necessary for city centre residents. However consideration will be given to how access to the city centre is provided to people living outside of the city centre with a disability which limits their daily activities.

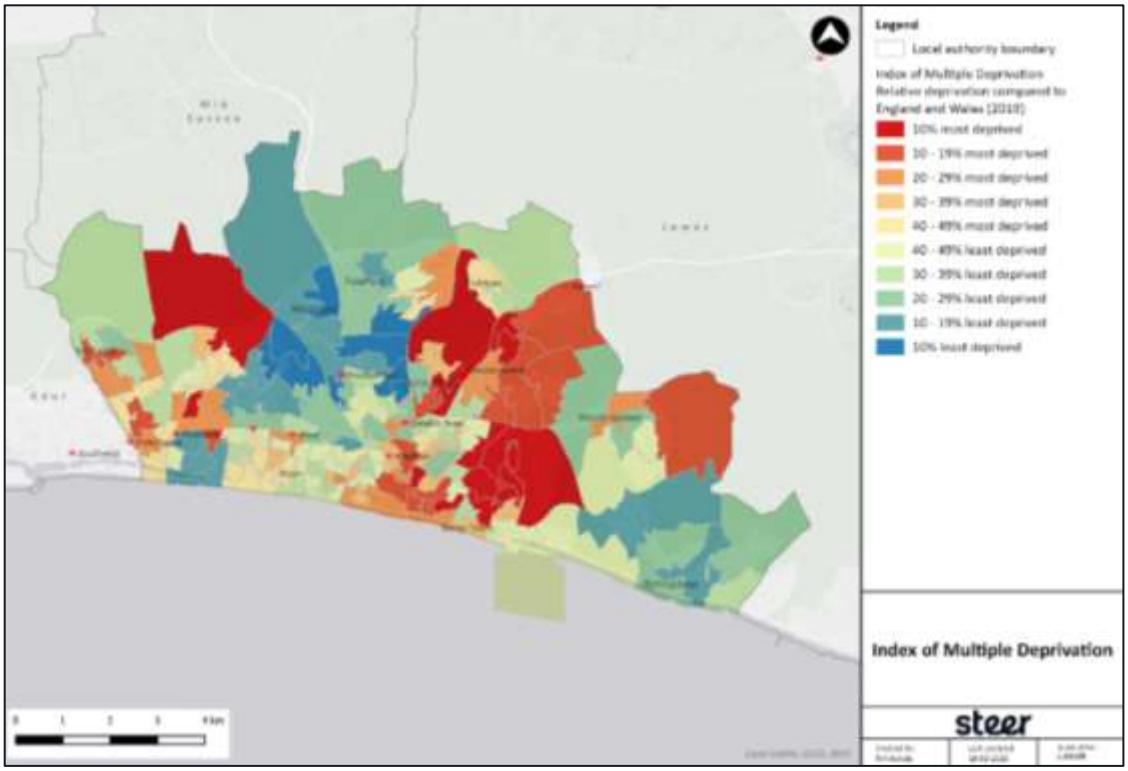
Equity impacts

Deprivation

2.37 The government's Index of Multiple Deprivation (2019) demonstrates that the level of deprivation experienced in Brighton and Hove varies significantly across the city, as follows:

- Many of the most affluent areas of the City are in the outer areas to the north, northwest and east of the City with Lower Super Output Area (LSOAs) within the 10% least deprived in England located in areas of Patcham, Withdean, West Blatchington at Saltdean.
- There are areas of relative deprivation in or close to the City Centre.
- Areas bordering the City Centre to the northeast and also West Hove have some high levels of deprivation including LSOAs within the 10% most deprived in the UK. These areas generally map to the areas of low car ownership meaning that they are less likely to be car dependent.

Figure 2.10: IMD (MHCLG, 2019)



Key impacts and implications for Car Free City Centre and Ultra Low Emission Zone options

2.38 Some of those lower income residents who do rely on a car may be less likely to be able to afford to switch to public transport or to afford to upgrade to a cleaner vehicle and therefore may be negatively impacted by both Car Free City Centre and Ultra Low Emission Zone options. Although taking into account all car running costs, PT may be cheaper, especially for local journeys.

2.39 Higher income residents are likely to be more willing to pay an Ultra Low Emission Zone charge but would also be more able to upgrade their vehicle. Therefore, higher income users would be more likely to continue driving either by upgrading or paying the charge. The response would depend on how frequently they drive within the Ultra Low Emission Zone (more frequent users are more likely to upgrade).

2.40 In the identification of complementary measures for the preferred option, consideration must be given to how affordable public transport alternatives, or more attractive active travel options for shorter journeys, can be provided to mitigate against the risk of transport poverty.

Summary and need for intervention

2.41 To summarise the drivers of change section Table 2.2 provides commentary of how the data that has been analyses frames the need for intervention. It summarises the current and future situation with regard to the six core drivers of change to demonstrate why intervention is needed now.

Table 2.2: Need for intervention

Driver of Change	Current situation	Future situation
Air quality	Despite introduction of limited Ultra Low Emission Zone, air quality in several part of the City remains poor.	Without intervention, increasing congestion is likely to worsen air quality in spite of fleet improvements.
Traffic reduction	Congestion on key strategic routes is significant and reduces journey time reliability.	Without intervention, forecast population growth is likely to result in congestion worsening.
Modal preferences	Preferences for sustainable and active modes reduce the negative impacts of implementing Ultra Low Emission Zone and Car Free City Centre measures	Without increased investment in measures to facilitate sustainable and active modes, growth may not continue at current rates.
Parking supply and demand	Currently there is a net oversupply of parking in Brighton and Hove indicating that some reduction of parking supply could be pursued without significant negative impacts.	Without intervention, parking demand may increase, making introduction of measures which reduce parking supply more unpopular amongst residents and visitors.
Accessibility impacts	For some residents and visitors, mobility can only be achieved by car. It is important that this mobility is maintained. For this reason a wide range of complementary measures will provide affordable, accessible and sustainable transport alternatives. User exemptions will also be considered as the schemes are further developed.	Provision of affordable, accessible and sustainable transport alternatives will reduce the reliance of some residents and visitors on the private car, which will reduce congestion and improve air quality.
Equity impacts	Higher income travellers are likely to be more willing to pay an Ultra Low Emission Zone charge but would also be more able to upgrade their vehicle. A wide range of complementary measures will provide affordable, accessible and sustainable transport alternatives to seek to mitigate the risk that the schemes cause increased transport poverty.	Provision of affordable, accessible and sustainable transport alternatives will reduce transport poverty and also reduce congestion and improve air quality.

Economic Impacts

Overview

2.42 Investigation of options for Car Free City Centre and Ultra Low Emission Zone is at an early stage. In addition, the insights on highway and public transport usage by, user type, journey purpose and time period that a strategic transport model provides has not been available. Therefore, there remains some uncertainty around the quantitative economic impacts of these measures.

2.43 To support the strategic case and to provide a qualitative basis for further, quantitative analysis of the transport economic impacts of the measures, an economic narrative has been developed. This provides commentary on the potential impacts of the measures on three core user types:

- Visitors;
- Businesses; and
- Workforce.

2.44 For each of these user types consideration is given to how the positive impacts of the scheme are best optimised and any downside risks can be mitigated.

Visitors

2.45 Brighton and Hove is a popular visitor destination with people travelling long distances to visit the city. The visitor economy plays an important role in the city's economic success, therefore it is important that consideration is given to the impact of Ultra Low Emission Zone and Car Free City Centre measures on:

- visitor numbers;
- duration of stay;
- spend while in the city; and
- likelihood of return visits.

2.46 It is expected that the introduction of Car Free City Centre could present an opportunity to increase the size of the visitor economy with increased availability of space in the city centre that can be dedicated to public realm, transferred from land use as highway. This could make the city centre a more pleasant place to visit, increasing visitor numbers, duration of stay, visitor spend and likelihood of return visits. To capitalise on these opportunities to increase the size of the visitor economy, complementary measures such as public realm enhancement should be implemented to ensure that economic value can be derived from the city centre land that is freed up. While an Ultra Low Emission Zone would improve the air quality in the city, enhancing the visitor experience, it is expected that benefits to the visitor economy from Car Free City Centre would be more material.

2.47 There is a downside risk that the introduction of Car Free City Centre and Ultra Low Emission Zone measures could have a negative impact on the visitor economy. People who would typically travel by private car may be dissuaded from visiting Brighton and Hove, may reduce their duration of stay, their spend or their likelihood of returning. However, it is expected that the congestion reduction in Brighton and Hove paired with the introduction of complementary measures such as Brighton Mainline Upgrade, more affordable public transport and introduction of strategic mobility hubs offering park and ride services would mitigate this risk.

This would result in more efficient and affordable journeys into the city centre and increased journey time reliability even for long distance visitors.

Businesses

2.48 Brighton and Hove is a regional retail and leisure hub and home to businesses across a wide range of sectors of the economy. Consideration should be given to the impact of Car Free City Centre and Ultra Low Emission Zone measures on:

- the likelihood of businesses to locate in Brighton and Hove,
- the likelihood of businesses currently located in Brighton and Hove expanding; and
- the success of these businesses.

2.49 It is expected that the introduction of Car Free City Centre could present an opportunity to increase the economic impact of businesses located in the city. It is expected that some of the increased availability of space in the city centre could be used for outside dining spaces to allow restaurant, bars, cafes and hotels to capitalise on recent relaxation of pavement licensing laws. Similarly, land use changes might allow new civic areas to be developed which could provide further opportunities for increased economic activity in the city centre. Moreover, freed up land, previously part of the highway network would enable increased development of new sites for business location or expansion.

2.50 There is a downside risk that the introduction of Car Free City Centre and Ultra Low Emission Zone could have a negative impact on businesses in Brighton and Hove. Business may be concerned about the increased costs. For example, freight companies will need to absorb the Ultra Low Emission Zone charges into their operating costs. This could result in reduction of business location or expansion in Brighton and Hove. However, it is expected that the congestion reduction in Brighton and Hove paired with the introduction of complementary measures such as Brighton Mainline Upgrade, more affordable public transport and introduction of strategic mobility hubs offering delivery consolidation services would mitigate this risk. This could result in more efficient and affordable journeys into and around Brighton and Hove, increased journey time reliability and a reduction in the overall cost of business travel.

Workforce

2.51 Brighton and Hove has a resident population of just under 300,000 and is one of the largest built up urban areas in the south east. The city is home to a large number of people working in Brighton and Hove, but many people choose to live in Brighton and Hove and commute to work in London or to other locations outside of Brighton and Hove. There are also significant numbers of people who live outside of Brighton and Hove and commute in for work. This is due in part to the relatively good transport connectivity from Brighton and Hove to the north, east and west. Car Free City Centre and Ultra Low Emission Zone will affect the economic impact of employees living or working in Brighton and Hove and these effects should be given consideration as scheme development continues.

2.52 It is expected that the introduction of Car Free City Centre and Ultra Low Emission Zone could present an opportunity to encourage more people to locate or to work in Brighton and Hove. Increased availability of space in the city centre can be dedicated to public realm, transferred from land use as highway, making the city centre a more pleasant place to spend time. Moreover, freed up land, previously part of the highway network would enable more residential development increasing the supply of housing in the city. Introduction of

complementary measures such as Brighton Mainline Upgrade, Coastway improvements and more affordable public transport as well as a likely reduction in congestion in the city could result in more efficient, affordable and reliable commuting journeys into, around and out of Brighton and Hove.

2.53 There is a downside risk that the introduction of Car Free City Centre and Ultra Low Emission Zone could have a negative impact on the number of people wanting to locate or to work in Brighton and Hove. People may be concerned about the increased costs. For example, the need for residents to upgrade their vehicle to ensure compliance with emissions standards requirements of the Ultra Low Emission Zone. However, the likely road safety and air quality improvements from both measures will be important factors in mitigating this downside risk and attracting more people to live and work in the city.

Summary

2.54 This qualitative assessment gives an indication as to the types of economic impact which may be derived from the introduction of Car Free City Centre and Ultra Low Emission Zone measures. Further analysis and investigation would required to quantify the potential economic impacts of Ultra Low Emission Zone and Car Free City Centre measures.

2.55 In the next chapter where options for intervention are assessed, a qualitative assessment of the potential economic impacts of different options has been considered when determining which Car Free City Centre and Ultra Low Emission Zone option should be taken forward for further investigation.

Stakeholder engagement

Overview

2.56 To build our evidence base and to ensure that key stakeholders across the council are involved in the initial development of options for Car Free City Centre and Ultra Low Emission Zone we conducted a number of stakeholder workshops with transport and cross-council officers across Brighton & Hove, representing service areas including City Clean, Economic Development, Equalities, Events, Planning, Private Hire Licensing, Public Health, Sustainability, Seafront and Tourism & Venues.

Workshop findings

2.57 A record of the discussions in these workshops and a summary of comments and suggestions against each of the discussion areas is set out below.

Desired outcomes and objectives for a Car Free City Centre.

Carbon reduction

- Reduce the city's carbon emissions

Health and Air Quality

- Improve health through increased use of active travel (walking and cycling):
  - increased physical activity
  - improved air quality
- Compliance with and surpassing of air quality requirements across the city and particularly in the city centre

Public realm and place-making

- Support transfer of space from car to active and sustainable transport modes
- Provision of more space for outside dining / gathering
- Improvement of public realm:

  - improve quality of life
  - improved accessibility and legibility of city centre

Equity and access for all

- Give due consideration to different users of the transport network, and reassurance that it remains a very accessible city
- Consideration of the propensity to travel by car for different sociodemographic groups and protected characteristics
- Provide more affordable public transport
- Maintain access to employment and schools to ensure social inclusion and equality

Visitor economy

- Support sustainable and affordable access to the city
- Vibrant cultural centre and visitor economy

Connectivity

- Support public transport connectivity and efficiency benefits
- Result in improved active (walking and cycling) transport network

Safety

- Allow safer journeys within the city centre
- Facilitate young people to make more independent journeys safely
- Reduce road collisions

Key issues and opportunities for a Car Free City Centre.

Council affordability

- The cost to replace the council's fleet with zero emissions vehicles.
- Consideration must be given to how to mitigate loss of parking revenues.
- City centre car parks could be repurposed to provide an alternative capital asset or revenue source.
- The material used to construct the adapted streetscape must be fit for purpose, but also be affordable to maintain.
- Strong enforcement would optimise realisation of benefits and ensure charges were collected and paid.

Deliverability issues

- Consideration needs to be given to how delivery, servicing and waste collection will be conducted.
- Changing the bus network to avoid a defined City Centre would present difficulties. (E.g Would Churchill Square no longer be a principal bus interchange?)
- Consideration must be given to how bus punctuality targets continue to be met were there changes to the network.
- Brighton Main Line improvements programme is underway, but substantial benefits will not be realised in time for planned implementation of a Car Free City Centre, and disruption to travel during construction likely to be encountered.
- Medium size events are typically accessed by locals via public transport, but larger events have a greater car mode share. Consideration must be given to these current peaks in city centre car use.

Exemptions

- Currently taxis need to be a minimum Euro 4 for petrol and Euro 6 for diesel therefore consideration should be given to them being exempt from minimum emissions standards.

- Events contractors should be exempted to service events.
- Waste, delivery and collections could be limited to certain times of the day.
- Buses could be exempt from the restrictions or there could be a change to the bus network to stop entry into North Street and have them rerouted around this area.

Transport and Land use planning opportunities

- It would allow for accommodation of social distancing and increase commercial space (e.g. cafes using pavements and road space).
- Consideration must be given to east west connectivity. (E.g. there is currently no bus service along the seafront, this could provide the opportunity to open this area up to bus routes.)
- Optimise the connectivity provided by the twittens.
- A Car Free City Centre would remove traffic so residential land use could be permitted on the ground floor in areas where air quality is currently too poor to permit this.

Building public support

- This provides an opportunity to create (a) civic centre space(s).
- The scheme must bring people and businesses along with it and get support through engagement and articulation of the benefits to these different city user types.
- Brighton and Hove's visitor economy can capitalise on characterising the city as a centre of health and wellbeing.
- Through the commissioning of street art, the cultural strategy can be linked to the development of an improved public realm.

Sustainable, affordable alternatives

- Consideration must be given to how the impacts of transport poverty are mitigated

Complementary measures to a Car Free City Centre that should be considered.

- Delivery consolidation centre
- Park and Ride
- Improved, more affordable public transport
- Focus on high quality public realm (e.g. surfacing, seating, planting.)
- Sustainable Urban Drainage Systems
- Expansion of BikeShare
- Shared e-scooters schemes
- Review of bus routes (east west connectivity)
- Behavioural change measures
- Electric vehicle charging infrastructure
- Workplace Parking Levy
- Secure bike parking
- Park Active
- Construction environment management plans
- Potential red routes

Key insights and implications for option generation

Geographical scope

2.58 Discussions around the need for east west connectivity and the opportunities for diverting bus routes along the A259 indicate that there are high levels of support that the southern limit of a Car Free City Centre would be the A259 (excluding this road). Apart from this there were no

further insights with regard to geographical scope of the scheme to be drawn from the workshops.

Single or multiple zones

2.59 There was no discussion about whether single or multiple zones should be considered in any of the workshops.

Prohibition or charging

2.60 A number of officers from both City Transport and also from non-transport service areas expressed a concern that limiting access to the city centre would substantially reduce parking revenue. There was a high level of support for the scheme being revenue generating to both help to make up any shortfall caused by the removal of parking spaces, and to fund the delivery of sustainable and active mode alternatives for accessing the city centre.

Emissions standards

2.61 A number of officers discussed Brighton & Hove's net zero carbon by 2030 target and the urgent need to reduce private vehicle emissions to zero. However, this needs to be reconciled with the fact that hackney carriage and private hire vehicles regulations in Brighton and Hove only require Euro 4 petrol vehicles and Euro 6 diesel vehicles. Similarly, the cost of council fleet replacement with zero emissions vehicles is expected to be prohibitively expensive were it required in a single year.

Vehicle exemptions

2.62 There were a number of suggestions for vehicle types or road users which could be exempt including: buses; events contractors; hackney carriages and private hire vehicles. In option development these suggestions must be reconciled with other views suggesting that, for example, changes to the bus network could allow bus routes to avoid North Street or principal shopping streets and so remove the need for buses to enter this zone.

Operating times

2.63 Some of the key benefits of the scheme, as articulated by officers, are the opportunities for public realm improvements and place-making. A Car Free City Centre, operating 24 hours a day, 365 days a year would ensure that the transfer of land use from road to public realm could be embedded in land use planning and in people's perceptions.

Method of enforcement

2.64 There was a high level of support for the measures to be based on charging and it was suggested by a number of officers that strict enforcement would ensure that charges were collected and paid. This would point towards a method of enforcement using ANPR or CCTV.

Strategic outcomes and principles of intervention

Strategic Outcomes

2.65 On the basis of the policy review, drivers of change and stakeholder engagement summarised above, a number of strategic outcomes have been developed to support generation and assessment of Car Free City Centre and Ultra Low Emission Zone options. These have been developed to flow logically from policy aspirations at a national, regional and local level and are well aligned with the provisional strategic outcomes of Brighton & Hove's Fifth Local

Transport Plan. The strategic outcomes for Car Free City Centre and Ultra Low Emission Zone options are:

- support carbon reduction
- improve health and air quality
- enhance public realm and place-making
- facilitate increased equity and access for all, especially disabled people
- stimulate the visitor economy
- strengthen active and sustainable mode connectivity
- increased safety for all

Principles of Car Free City Centre and Ultra Low Emission Zone

2.66 In addition to the strategic outcomes, a number of principles for a Car Free City Centre and Ultra Low Emission Zone have been identified which respond primarily to the concerns and priorities that stakeholders expressed through our engagement. These are aspects or attributes which should be part of any recommended option for a Car Free City Centre of Ultra Low Emission Zone. These principles are the following:

- A legible system which is understandable to residents and visitors.
- A system that addresses the AQMA Zones both in terms of geography, but also times of day of greatest emissions.
- Geographical scope and operating times which do not create perverse incentives which have material negative impacts.
- Accompanied by complementary measures providing affordable, accessible and sustainable transport alternatives.
- Equity of social and distributional impacts considered and mitigated where appropriate.

2.67 In the Economic Case, the framework against which the Car Free City Centre and Ultra Low Emission Zone options have been assessed reflects the strategic outcomes and principles of intervention identified through the evidence base.

Interdependencies

2.68 This section sets out the key interdependencies that would be expected to exist in the delivery of Car Free City Centre and Ultra Low Emission Zone measures.

The Current Ultra Low Emission Zone

2.69 There would be an interdependency between the preferred Car Free City Centre and Ultra Low Emission Zone options and the current Ultra Low Emission Zone that is in place. This interdependency presents an opportunity as there is already some infrastructure in place to support enforcement of the current Ultra Low Emission Zone. To capitalise on this opportunity, it is expected that the current Ultra Low Emission Zone would increase in size and be converted to a Car Free City Centre. The new Ultra Low Emission Zone would be developed separately to cover a far larger area with consequent significantly increased infrastructure requirements.

Complementary Measures

2.70 The delivery of the Car Free City Centre and Ultra Low Emission Zone will be dependent upon the delivery of a number of complementary measures to ensure that affordable, accessible and sustainable transport alternatives are provided. This presents a clear interdependency as

the case for both the package of complementary measures and Car Free City Centre and Ultra Low Emission Zone measures will be closely linked.

Powers and Consents

2.71 This section sets out the key powers or consents required for the delivery of Car Free City Centre and Ultra Low Emission Zones measures.

Ultra Low Emission Zone

2.72 For emissions based charging, the government's Clean Air Zone framework sets out the principles for the operation of Clean Air Zones in England. It provides the expected approach to be taken by local authorities when implementing and operating a Clean Air Zone – following this framework would be the recommended approach to implementing a new Ultra Low Emission Zone in Brighton and Hove.

Car Free City Centre

2.73 The Traffic Management Act 2004 provides the legislative framework for implementation of city centre access control measures. As noted by DfT Traffic Advisory Leaflet 4/97, bollards and other obstructions under sections 92 (outside London) of the Road Traffic Regulation Act 1984 (RTRA) may include obstructions of any description whatsoever. It follows from this that rising bollards are lawful as movable obstructions if they prevent the passage of vehicles where this is prohibited by a traffic order.

3 Economic Case

Overview

3.1 The economic case sets out the options development and assessment process leading to the identification of a preferred option that is an optimum balance between scheme impacts and downside risks. This also includes consideration of the complementary measures for successful delivery of the preferred option. The economic case is split into four sections:

- **Option development:** this section sets out the process by which a range of options for a Car Free City Centre and Ultra Low Emission Zone were identified and describes the outputs of this exercise.
- **Option assessment:** this section describes and reports the results of the option assessment process.
- **Preferred options:** this section describes the preferred options and provides some commentary on the ways in which they will deliver better outcomes than the options which are discounted.
- **Complementary measures:** this section sets out the complementary measures which are recommended to be necessary for the successful delivery of the preferred options.

Option development process

Stakeholder workshops

3.2 For the initial development of options it was a priority to continue the involvement of key officers. In recognition of the fact that the costs and benefits of a Car Free City Centre will be perceived differently by different sectors of society, representation from a wide range of service areas was sought. We held workshops with transport officers and with cross-council officers to maximise the voices that we heard and to encourage continued “buy in” to the study and objectives.

3.3 The objective of the workshops was to identify a number of different geographical scope options from a Car Free City Centre and for an Ultra Low Emission Zone.

Workshop outputs

3.4 Four geographical scope options for a Car Free City Centre were identified. These ranged in size from the smallest geographical area covering just The Lanes area, to the largest geographical area covering The Lanes, North Laine, St James’s Street, Regency, Clifton Hill, West Hill and the New England Quarter.

3.5 Five geographical scope options for an Ultra Low Emission Zone were identified. The smallest geographical area was (east to west) from the administrative boundary with Adur District to Brighton Marina and extending approximately 1.5km northwards. The largest geographical area covered all of the Brighton & Hove City Council area to the south of the A27.

3.6 Further detail of these geographical scope options is provided in the next section.

Option detail

3.7 The stakeholder workshops resulted in a number of maps defining the different geographical scope options for a Car Free City Centre and an Ultra Low Emission Zone. The next stage of option development was to provide sufficient detail about the characteristics and attributes of each option so that they could be assessed.

3.8 A list of variables which determine the characteristics and attributes of the options was identified. These variables are the following:

- Number of Zones
- Operating Times
  - Days of week
  - Times of day
- Treatment of Through Traffic
- Treatment of City Centre Parking
- Charging vs. Prohibition
- Charging Mechanism
- Technology requirements for enforcement and access controls
- Vehicle exemptions

3.9 For each of these variables a number of options was set out, (e.g. for days of week the following options were identified Mon – Fri, Mon – Sat, Every day). For each geographical scope option for a Car Free City Centre and Ultra Low Emission Zone the optimal option for each variable was selected and justification for that selection was provided.

3.10 The output of this exercise was a list of four Car Free City Centre options and five Ultra Low Emission Zone options with the detail related to the variables above being specifically tailored to the geographical scope of each option.

3.11 The detail and outputs of this assessment process are set out in the section below.

Variables

3.12 Before considering the geographical scope of potential options, a high-level sifting exercise was undertaken to consider the options for the variables being considered. The purpose of this initial sift is to consider these variables in general terms; consideration of how they could relate more specifically to the Car Free City Centre or the Ultra Low Emission Zone is captured in the subsequent step.

Number of zones

3.13 Potential options for the number of zones are shown in Table 3.1 below, with the options considered to be feasible highlighted in green. It can be seen that the most feasible option is to have two separate zones: one for the Car Free City Centre and one for the Ultra Low Emission Zone.

Table 3.1: Options for number of zones

Options	Commentary
One	Simplest solution, but does not enable a distinction between the very different conditions in the City Centre and other parts of the council area

Two - one Car Free City Centre, one Ultra Low Emission Zone	Slightly more complex, but clear distinction can be made between Car Free City Centre and Ultra Low Emission Zone
As many as AQMA	Enables measures to be better targeted, but multiple zones likely to be difficult to understand

Day of week

3.14 Potential options for day of week are shown in Table 3.2 below, with the options considered to be feasible highlighted in green. It can be seen that the most feasible options are to have the zones applying either on weekdays, or seven days a week.

Table 3.2: Options for day of week

Options	Commentary
Mon - Fri	Likely to primarily target 'everyday' travel (commuting, shopping, personal business, etc), whilst having less impact on leisure trips (including by visitors)
Mon - Sat	The nature of the economy in Brighton means that Sundays are unlikely to have significantly less activity than a Saturday
Every day	Simplest solution, targeting all types of trips

Time of day

3.15 Potential options for time of day are shown in Table 3.3 below, with the options considered to be feasible highlighted in green. Given the nature of Brighton and Hove, it is suggested that the hours of operation cover most of the day (including peak hours and the evening), potentially going up to 24-hour operation. In addition, time window(s) for essential trips should be considered. As noted above, this is just an initial sift, and the most appropriate time windows may vary for the Car Free City Centre and Ultra Low Emissions Zone, and also based on which days of the week are chosen.

Table 3.3: Options for time of day

Options	Commentary
10am - 3pm	Likely to disproportionately impact on trip purposes such as shopping and personal business, whilst not targeting commuting and education trips (recognising that these may be a small proportion of car trips, especially to the city centre)
9am - 5pm	Likely to encourage many commuting trips to simply shift time to just before and after the charging hours
7am - 8pm	Likely to cover the majority of trips, although there may be some shifting of trips to just before and after the charging hours
6am - 11pm	Covers almost all trips
7-10am and 4-7pm (e.g. peak operation only)	Likely to disproportionately impact on trip purposes such as commuting and education, which may be seen as more essential
24 hours	Simplest solution, but measures unlikely to be required overnight when very few trips are being made
Window(s) for essential trips (e.g. deliveries, moving house)	Could be considered in conjunction with any of the options

Options for treatment of through traffic

Potential options for treatment of through traffic are shown in Table 3.4 below, with the options considered to be feasible highlighted in green. In general, consideration should be given to suitable routes for through traffic, although it is unlikely that the A2010 (Queens Road / West Street) would be suitable.

Table 3.4: Options for treatment of through traffic

Options	Commentary
None	Only suitable if zone is very small
A23	Potentially suitable as a north-south route that skirts the western edge of the City Centre
A259	Provides a strategic route along the southern edge of the council area, but may lead to conflict with people using the seafront
A2010	Key route between the railway station and seafront, so less suitable for exclusion
A270	Could be suitable to allow for east-west trips without requiring drivers to divert to the A27
B2122	Potentially suitable as a north-south route that skirts the western edge of the City Centre

Options for treatment of city centre parking

3.16 Potential options for treatment of city centre parking are shown in Table 3.5 below, with the options considered to be feasible highlighted in green. Blanket removal of parking is unlikely to be feasible, both due to financial implications where private car parks are affected, and also because some parking will always be necessary for certain residents and visitors (eg blue badge holders). However, a significant reduction in car parking could be considered.

Table 3.5: Options for treatment of city centre parking

Options	Commentary
Removal of all city centre parking	Unlikely to be financially feasible due to the need to compensate private car park owners
Removal of all city centre on-street parking	Unlikely to be feasible, as some on-street space is likely to be required for residents, blue badge holders, etc
Removal of all city centre off-street parking	Unlikely to be financially feasible due to the need to compensate private car park owners
Removal of all city centre private non-residential parking	Unlikely to be financially feasible due to the need to compensate private car park owners
Significant reduction in city centre on-street parking	Likely to be most feasible to remove pay-and-display bays
Significant reduction in city centre off-street parking	Likely to be more feasible to target council-owned car parks, but likely to have financial implications due to a reduction in car park income; may be more feasible if car parks are suitable for redevelopment
Significant reduction in city centre private non-residential parking	Unlikely to be financially feasible due to the need to compensate private car park owners, although could be feasible for some car parks that are suitable for redevelopment

Options for charging vs prohibition

3.17 Potential options for charging vs prohibition are shown in Table 3.6 below, with the options considered to be feasible highlighted in green. It is suggested that all of the options could be feasible, except for the two options with no exemptions. This is because all schemes will need to have at least some exemptions, to cater for particular types of vehicles (eg emergency services).

3.18 An issue to consider for all of the charging options is the level of the charge. It could be so high that it effectively becomes a 'fine', or so low that it becomes a charge that most people are willing to pay.

Table 3.6: Options for charging vs prohibition

Options	Commentary
Prohibition based model (no exemptions)	Easiest to understand and will have largest impact, but having no exemptions is unlikely to be acceptable or practical
Prohibition based model (with exemptions)	More complex to administer, but exemptions may help to mitigate impacts on those who may find it harder to switch to other travel options
Prohibition - emissions based	Will target most polluting vehicles, but impact will lessen over time as vehicle fleet becomes cleaner
Charging - all vehicles (no exemptions)	Easiest to understand and will have largest impact, but having no exemptions is unlikely to be acceptable or practical
Charging - all vehicles (excluding exemptions)	More complex to administer, but exemptions may help to mitigate impacts on those who may find it harder to switch to other travel options
Charging - emissions based	Will target most polluting vehicles, but impact will lessen over time as vehicle fleet becomes cleaner
Charging - variable by category/partial exemption	Will enable charges to be more proportionate to impacts of different vehicle categories (for example cars, light goods vehicles, heavy goods vehicles), or to mitigate the impacts on certain user groups who may find it more difficult to avoid the charge (for example charities)
Charging - variable by day of week/time of day	Theoretically enables the charge to be more economically optimal, but will be more difficult to understand

Options for charging mechanism

3.19 There are a number of potential charging mechanisms that could be applied, which are not necessarily mutually exclusive; potential options are listed below. This would need to be considered as any scheme is developed in more detail.

- Online/App
- Telephone
- Postal/Council Office
- In advance
- Once in zone / within 24 hours
- Daily charge
- Per hour/unit time charge
- Reduced charge for residents
- No charge for residents

Options for enforcement and access

3.20 Potential options for enforcement and access are shown in Table 3.7 below, with the options considered to be feasible highlighted in green. It is suggested that ANPR (Automatic Number Plate Recognition) is used as the primary enforcement mechanism.

Table 3.7: Options for enforcement and access

Options	Commentary
ANPR	Likely to be the most appropriate enforcement mechanism for an area-wide scheme (already used by many other schemes), although initial set-up costs can be high
Civil Enforcement Officer Beats	May be required to supplement ANPR

Options for vehicle exemptions

3.21 There are various categories of vehicles that could potentially be exempted, including the categories listed below. The need for such exemptions and the specific conditions attached to them would need to be considered in more detail in due course.

- Residents
- Local businesses
- Blue Badge Holders
- Cycles including e-bikes
- E-scooters
- Powered two-wheelers
- LGVs
- HGVs
- Buses
- Coaches
- Dial-a-Ride and other demand responsive transport
- Hackney Carriages
- Private Hire Vehicles
- Council fleet vehicles
- Council contractor vehicles
- Emergency services
- NHS vehicles
- Delivery and Servicing Vehicles
- Bullion vehicles
- Roadside recovery vehicles
- Food delivery

Option description

Overview

3.22 Building on the high-level sifting exercise undertaken above the next section provides the detail of the four shortlisted Car Free City Centre options and the five Ultra Low Emission Zone options.

Car Free City Centre

3.23 A range of options was developed for the Car Free City Centre, based on consideration of two dimensions.

3.24 Firstly, the city centre was divided into a series of smaller geographical areas. The indicative boundaries of these will need to be refined following more detailed work, but they provide a useful series of spatial building blocks reflecting both the structure of the city centre street road network, as well as the unique characteristics (eg land uses, presence of visitor attractions) of each.

- The Lanes
- North Laine / Cultural Quarter
- Western Road
- Regency
- St James's Street
- Clifton Hill
- West Hill
- New England Quarter

3.25 Secondly, a number of operational concepts were developed, that could be considered for application to the areas, in order to reflect their characteristics. It should be emphasised that these are generalised concepts only, and they would not necessarily be applied in a uniform manner; rather, the details of how they operate would need to be adapted to suit each area. These operational concepts are summarised in Table 3.8 below, which illustrate how the level of managed access and other restrictions increase from a 'low traffic neighbourhood' to a 'car-free' area.

3.26 Indicative locations for modal filters are shown on these plans. Modal filters are either physical barriers (such as bollards or planters) or camera-enforced, that prevent motorised traffic from passing them, whilst allowing access by pedestrians and cyclists. Emergency vehicles are generally allowed access, and exemptions can also be provided for buses. The locations of the model filters shown are indicative only, in order to illustratively show where a series of modal filters could potentially be located in order to make the areas in question unattractive to through traffic. More detailed work would be required to confirm whether these locations are optimal and technically feasible.

3.27 Based on these two dimensions, the four options that were developed are shown in Figure 3.1 to Figure 3.4 below.

Table 3.8: Operational concepts

Low traffic neighbourhood	Managed access	Car-free
Increasing Vehicle Restrictions		
• Modal filters (e.g. bollards or planters) split the area into traffic cells to remove direct through movement across the area for vehicles. • Combined with the removal of on-street pay-and-display parking, this naturally removes the incentive for almost all vehicles to enter the car-free zone (except for residents' vehicles and loading / servicing). • Largely self-enforcing (only requires continued on-street parking enforcement). • Blue Badge holder provision maintained. • Off-street car parks remain. In the long-term, rationalisation or removal would further reduce traffic. • Buses exempt from modal filters as existing bus routes cross them, although the bus network could also be restructured in response to the Car Free City Centre. • Cyclists exempt from modal filters. • For simplicity and legibility, modal filters could operate at all times (given that they do not prevent access to any areas, they simply discourage use by through traffic).	All features of Low Traffic Neighbourhood cells plus: • Access restricted to resident permit holders and loading / servicing. • Enforced by ANPR. • Blue Badge holder provision maintained. • Managed access could be in place at all times, or the majority of the time (for example 6am–11pm) depending on the context of the area.	All features of Low Traffic Neighbourhood cells plus: • Loading and servicing restricted to certain time windows. Enforced by ANPR (or manual enforcement) or bollards. Exemptions required for emergency access, disabled access, etc. • Appropriate time windows will depend on the context of each area, and based on the needs of local businesses. A starting point could be between 8am and 11am, which is the window provided in some existing pedestrianised areas. It may be also appropriate to provide an evening window, where this does not conflict with the night-time economy or residential areas. • On-street permit parking removed and relocated to off-street car parks. • Blue Badge holder provision maintained.
• All offer the opportunity to reallocate carriageway space to other uses, for example to improve the urban realm.		

Note: These are generalised concepts only, and their operational details would need to be adapted to suit the specific characteristics of each area.

Figure 3.1: Car Free City Centre: Option 1

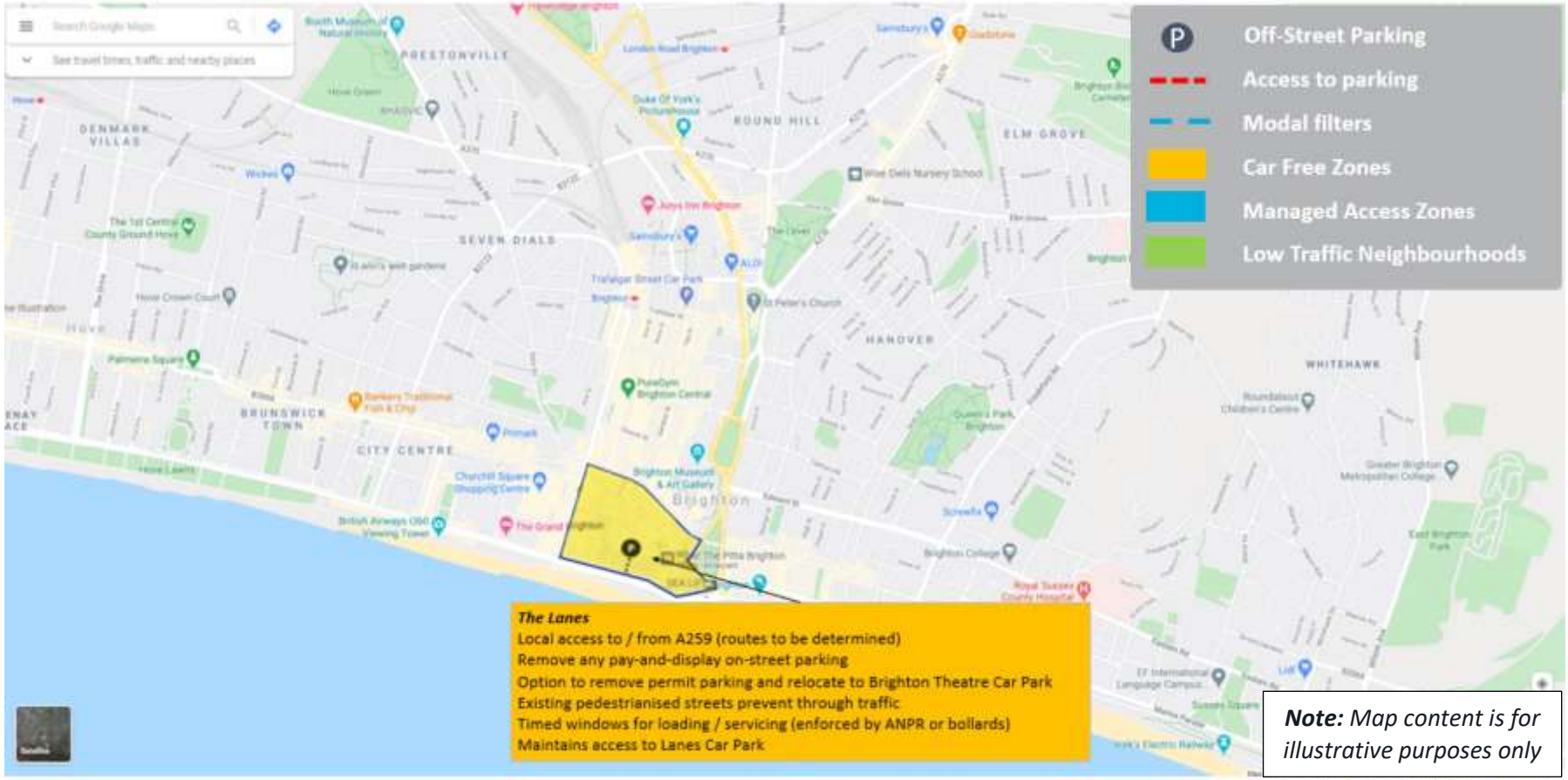


Figure 3.2: Car Free City Centre: Option 2

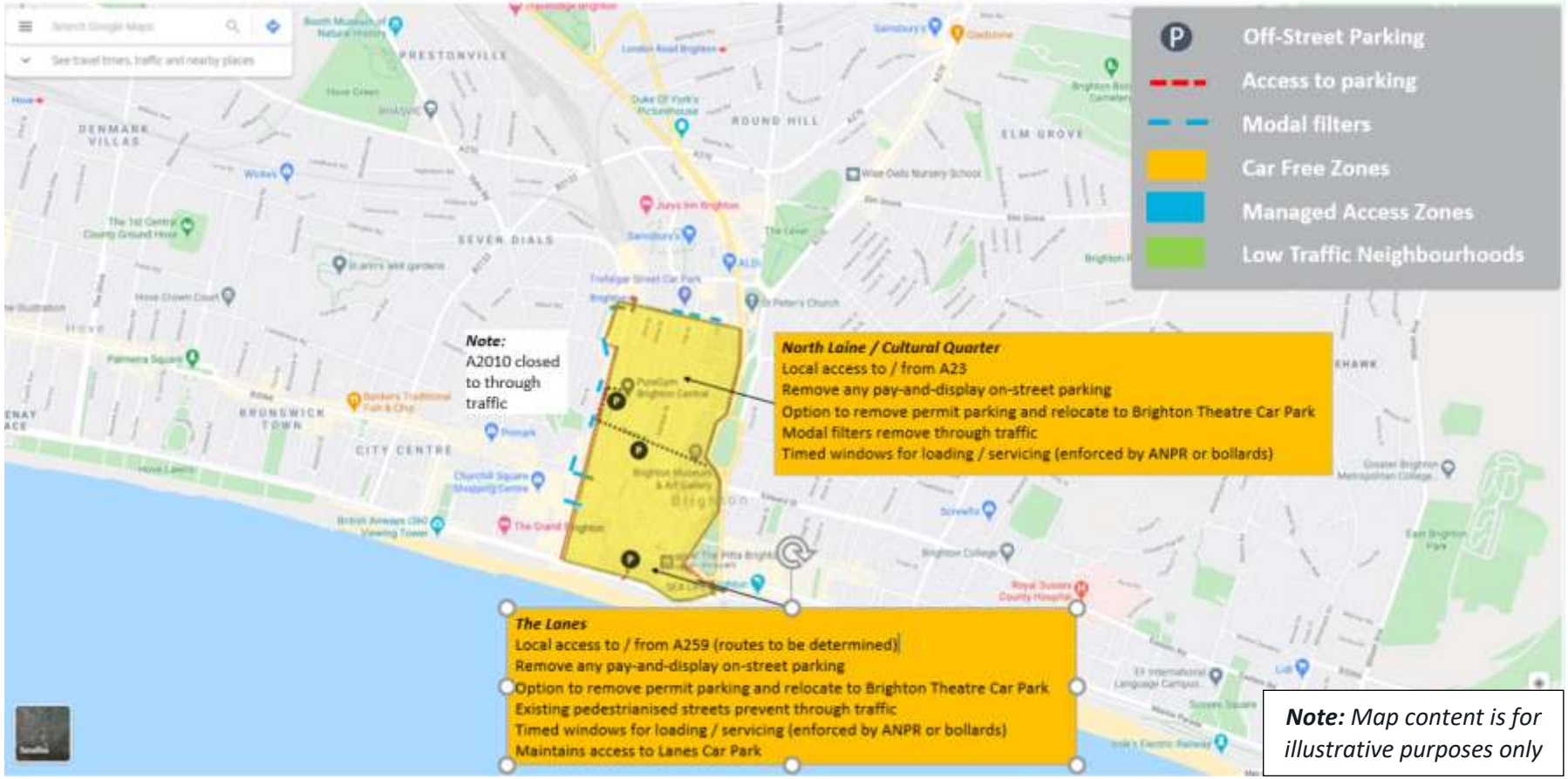


Figure 3.3: Car Free City Centre: Option 3

Figure 3.4: Car Free City Centre: Option 4

Ultra Low Emission Zone

3.28 Figure 3.5 to Figure 3.9 below show the indicative geographical scope of the five Ultra Low Emission Zone options. Table 3.9 then provides further detail on the implementation variables of each of the five options.

Figure 3.5: Ultra Low Emission Zone Option 1

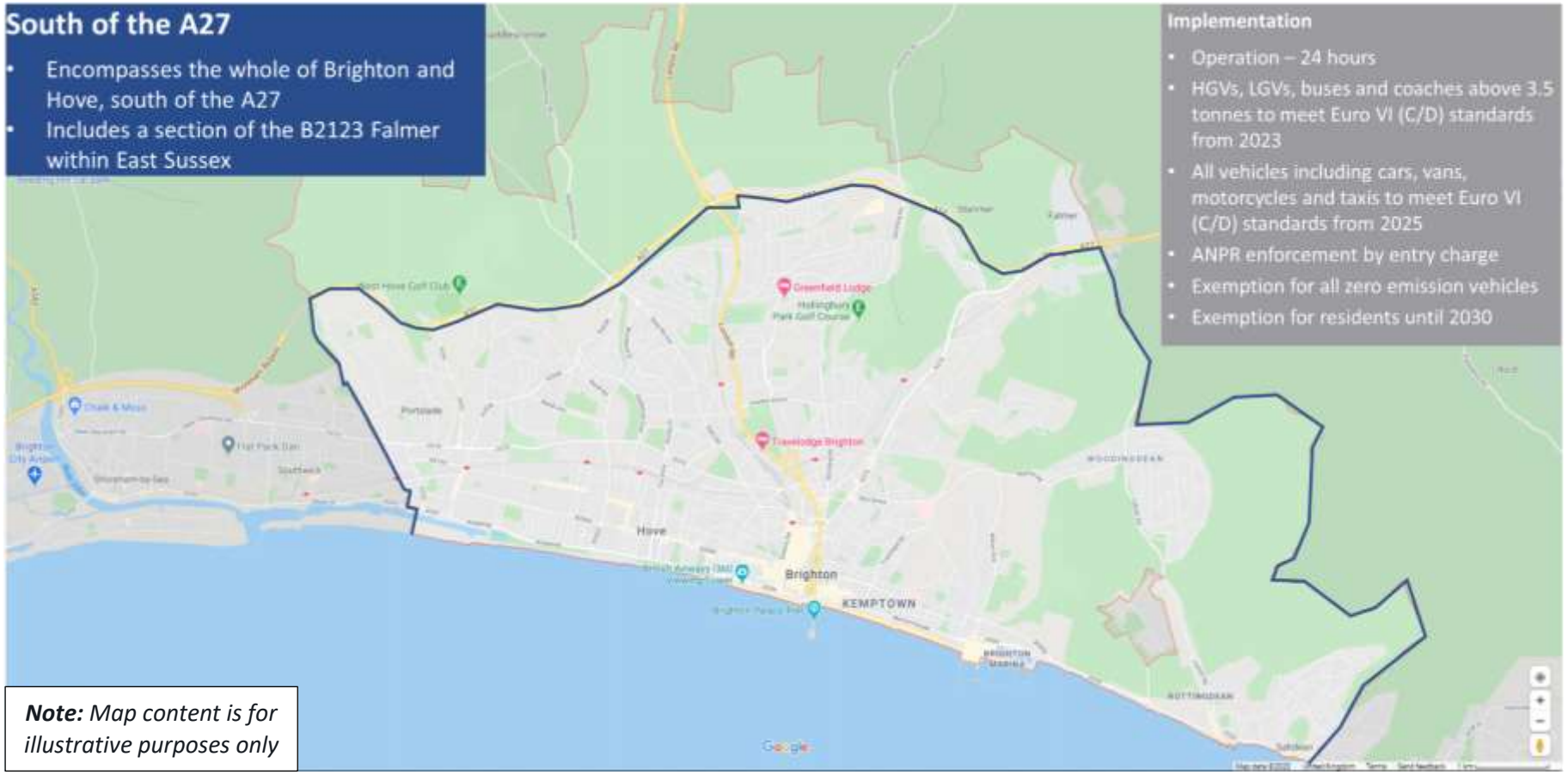


Figure 3.6: Ultra Low Emission Zone Option 2

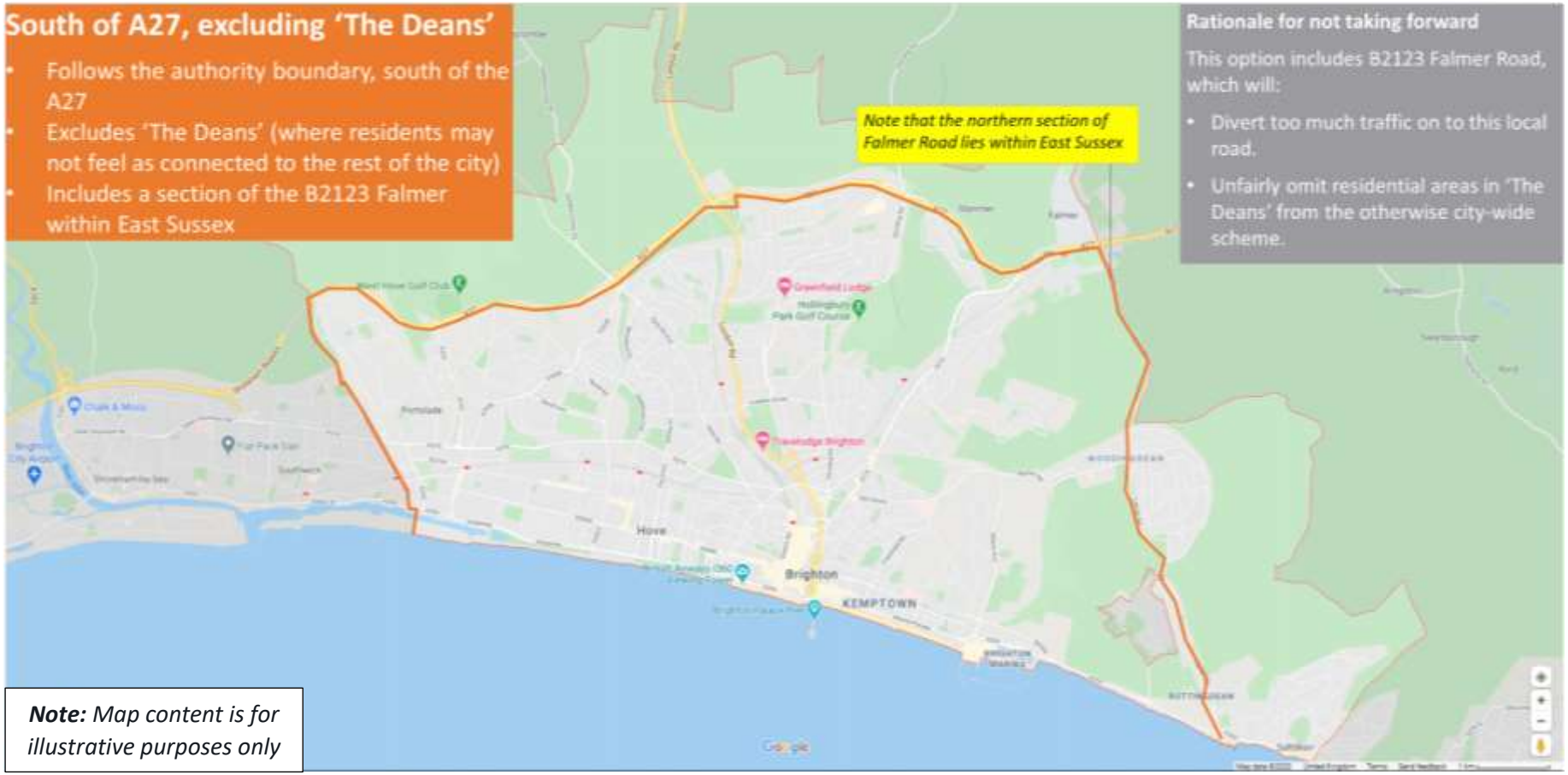


Figure 3.7: Ultra Low Emission Zone Option 3

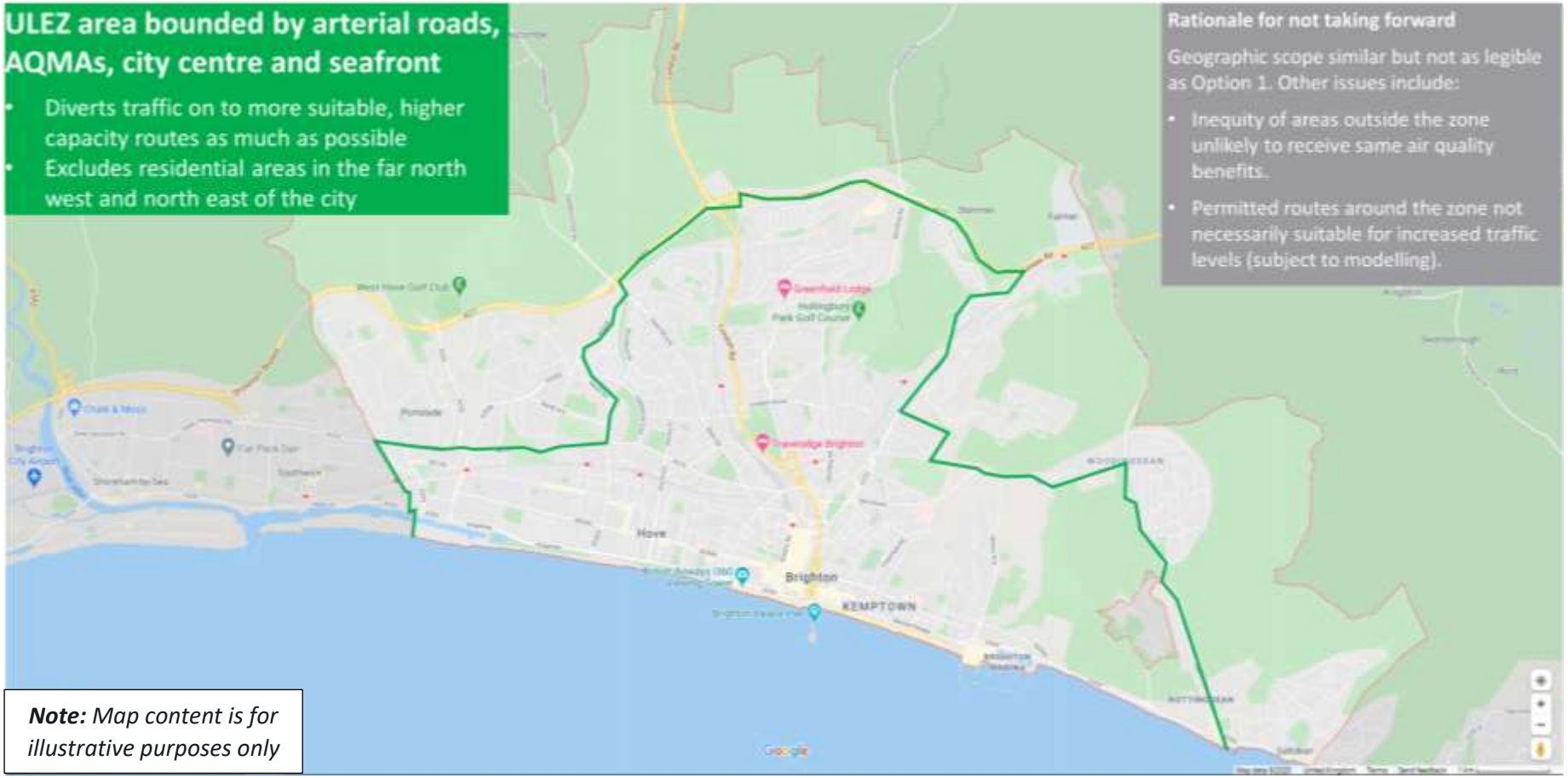


Figure 3.8: Ultra Low Emission Zone Option 4

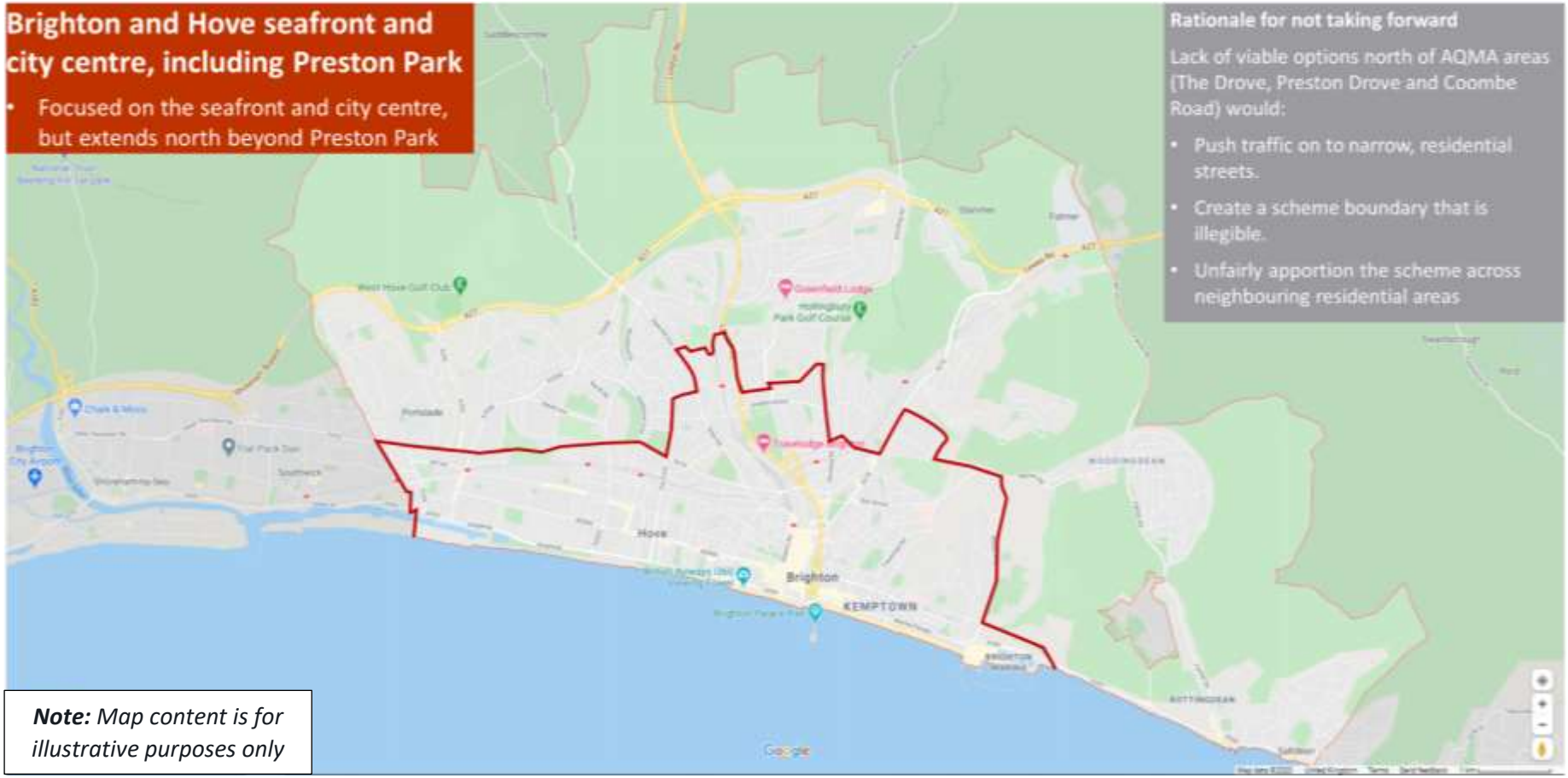


Figure 3.9: Ultra Low Emission Zone Option 5

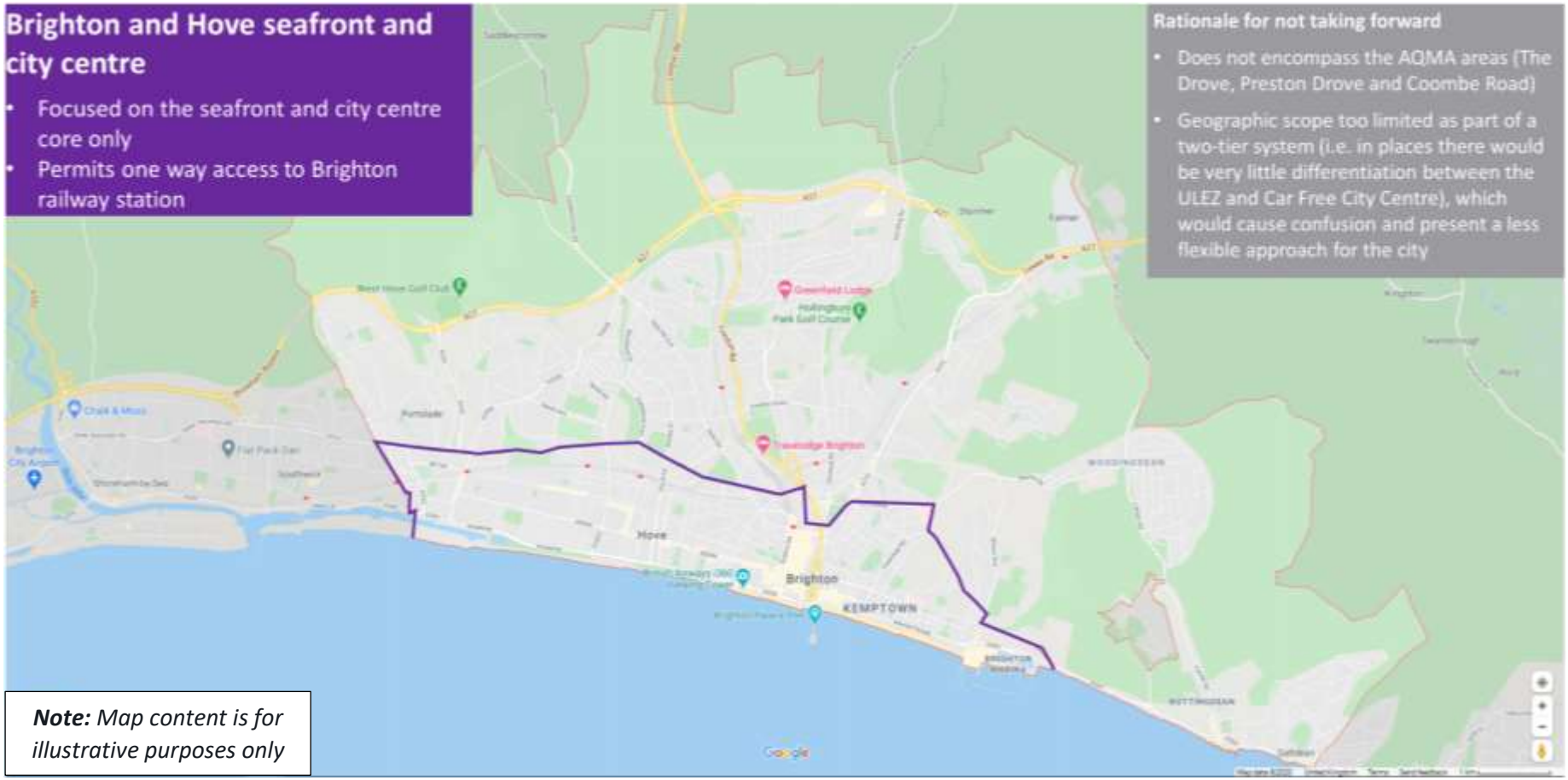


Table 3.9: Summary of Ultra Low Emission Zone options, including geographic scope and implementation variables

	Option 1	Option 2	Option 3	Option 4	Option 5
Geographic scope	• **South of the A27** • Encompasses the whole of Brighton & Hove, following the local authority boundary • Includes a section of the B2123 Falmer within East Sussex	• **South of A27, excluding 'The Deans'** • Follows the authority boundary, south of the A27 • Excludes 'The Deans' (where residents may not feel as connected to the rest of the city) • Includes a section of the B2123 Falmer within East Sussex	• **ULEZ area bounded by arterial roads, AQMAs, city centre and seafront** Diverts traffic on to more suitable, higher capacity routes as much as possible • Excludes residential areas in the far north west and north east of the city	• **Seafront and city centre, including Preston Park** • Focused on the seafront and city centre, but extends north beyond Preston Park	• **Seafront and city centre** • Focused on the seafront and city centre core only • Permits one way access to Brighton railway station
Implementation variables	• Operation – 24 hours • HGVs, LGVs, buses and coaches above 3.5 tonnes to meet Euro VI (C/D) standards from 2023 • All vehicles including cars, vans, motorcycles and taxis to meet Euro VI (C/D) standards from 2025 • ANPR enforcement by entry charge • Exemption for all zero emission vehicles • Exemption for residents until 2030	• Operation – 24 hours • HGVs, LGVs, buses and coaches above 3.5 tonnes to meet Euro VI (C/D) standards from 2023 • All vehicles including cars, vans, motorcycles and taxis to meet Euro VI (C/D) standards from 2025 • ANPR enforcement by entry charge • Exemption for all zero emission vehicles • Exemption for residents until 2030	• Operation – 24 hours • HGVs, LGVs, buses and coaches above 3.5 tonnes to meet Euro VI (C/D) standards from 2023 • All vehicles including cars, vans, motorcycles and taxis to meet Euro VI (C/D) standards from 2025 • ANPR enforcement by entry charge • Exemption for all zero emission vehicles • Exemption for residents until 2030	• Operation – 24 hours • ANPR system • Tiered emissions-based charging, with zero emission vehicles exempt • Larger vehicles prohibited (HGVs and coaches) unless meeting Euro VI standards • By 2030 applies to all vehicles, with lower charges for residents	• Operation – 24 hours • ANPR system • Tiered emissions-based charging, with zero emission vehicles exempt • Larger vehicles prohibited (HGVs and coaches) unless meeting Euro VI standards • By 2030 applies to all vehicles, with lower charges for residents

Option assessment

Overview

3.29 Steer's in-house Multi Criteria Assessment Framework tool was customised to provide Brighton & Hove City Council with a robust, proportionate assessment. The tool was used to assess the Ultra Low Emission Zone and Car Free City Centre options against strategic fit and feasibility and deliverability criteria.

Multi Criteria Assessment Framework

3.30 The Multi Criteria Assessment Framework has been developed to enable assessment of performance of options against two areas:

- **Strategic assessment** – will the intervention provide a solution that is applicable to Brighton and Hove at a strategic level? Interventions are assessed in terms of their contribution to delivery of a number of strategic outcomes.
- **Feasibility and deliverability assessment** – can the intervention be delivered effectively? Interventions are assessed in terms of the risk that factors such as affordability and ease of implementation present to delivery of the intervention.

Strategic Assessment

3.31 The criteria for assessment of alignment with strategic outcomes are the following (as set out in chapter 2):

- Support carbon reduction
- Improve health and air quality
- Enhance public realm and place-making
- Facilitate increased equity and access for all, especially disabled people (this is considered at an aggregate level at this point, should a scheme be taken forward there will be more specific and localised impacts to consider as part of the scheme design)
- Stimulate the visitor economy
- Strengthen active and sustainable mode connectivity
- Increased safety for all.

3.32 A qualitative assessment has been made of how well aligned each of the options is to each of the strategic outcomes. This assessment is made on a scale from "negligible" to "high". A proportionate approach has been taken to this assessment, with the scoring seeking to both emphasise the relative level of impact of each option, whilst also providing an indication of the absolute level of impact. Commentary is then provided justifying the way in which each of the assessment criteria has been assessed.

Feasibility and Deliverability Assessment

3.33 The criteria for assessment of feasibility and deliverability are the following:

- **Redistribution of traffic** (ease / suitability of likely alternative routes)
- **Deliveries and servicing** (considers both the impact on directness and convenience of access for motorised vehicles making deliveries and servicing, as well as the relative number of businesses affected)
- **Local access (residents)** (impact on directness and convenience of motorised vehicle access for residents, as well as the relative number of residents affected)

- **Off-street car park access** (impact on directness and convenience of motorised vehicle access to off-street car parks, as well as the relative number of car parks affected)
- **Legibility** (whether the scheme boundaries and alternative routes are easy to understand for drivers)
- **Cost** (capital and operating costs)
- **Public acceptability**
- **Ease of implementation and operation**

3.34 A qualitative assessment has been made of how the scale of risk that each of the criteria presents to successful delivery of the options. This assessment is made on a scale from "negligible risk" to "high risk", in order to highlight the relative level of risk in each options, whilst also providing an indication of the absolute level of risk. Commentary is then provided justifying the way in which each of the assessment criteria has been assessed.

Assessment results

3.35 The results of the MCAF assessment for the Car Free City Centre options are shown in Table 3.10 below and for Ultra Low Emission Zone options in Table 3.11.

Table 3.10: Car Free City Centre MCAF assessment

	Option 1	Option 2	Option 3	Option 4
Alignment with outcomes				
Support carbon reduction	Negligible	Medium	High	Very high
Improve health and air quality	Negligible	Medium	High	Very high
Enhance public realm and place-making	Negligible	High	Very high	Very high
Facilitate increased equity and access for all	Negligible	Medium	High	Very high
Stimulate the visitor economy	Negligible	High	Very high	Very high
Strengthen active and sustainable mode connectivity	Negligible	Medium	High	Very high
Increased safety for all	Negligible	Medium	High	Very high
Summary	The streets in The Lanes area are already extensively pedestrianised, with only a few streets accessible by motor traffic. Whilst this option builds on these existing measures, it will not have a large impact on traffic levels, and hence its contribution towards achieving the outcomes is minimal.	In addition to the impacts of Option 1, this option will help to reduce traffic in the North Laine / Cultural Quarter area, which has a very high concentration of shops and cafes/restaurants. In addition, it removes through traffic from the busy A2010. It also covers some portions of the AQMA in the city centre. As such, it will help to reduce the negative impacts of motorised traffic in this key area, whilst supporting the local economy by enabling public realm and place-making improvements (as almost all visitors get around by foot once they reach Brighton).	In addition to the impacts of Option 2, the option will extend to the Western Road / Regency areas to the west, and the St James's Street area to the east. These have high concentrations of shops and employment, and it covers more of the AQMA areas in the city centre compared to Option 1. Removing through traffic will therefore reduce the negative impacts of motorised traffic in these areas and offer the potential to support the local economy through public realm and place-making improvements.	In addition to the impacts of Option 3, this option will extend to the Clifton Hill and West Hill areas (which are more residential in nature), as well as the New England Quarter which has mixed activity and is part of the AQMA. Removing through traffic will therefore reduce the negative impacts of motorised traffic in these areas.

	Option 1	Option 2	Option 3	Option 4
		As this option covers an area that is more deprived and has low levels of car ownership, it is likely to have a positive impact on equity and access for all in aggregate. However, the more detailed design of the scheme would need to consider specific impacts on particular groups, and how these can be mitigated to enhance equity.	As with Option 2, this option covers an area that is more deprived and has low levels of car ownership but to a larger extent. The aggregate impact on equity and access for all is likely to be positive, but again the details of the scheme will need to avoid any specific negative impacts.	As with Options 2 and 3, this option covers an area that is more deprived and has low levels of car ownership but to a larger extent. The aggregate impact on equity and access for all is likely to be positive, but again the details of the scheme will need to avoid any specific negative impacts.
Feasibility and deliverability				
Redistribution of traffic (ease / suitability of likely alternative routes)	Negligible risk	High risk	Medium risk	Low risk
Deliveries and servicing	Very low risk	Medium risk	Medium risk	Medium risk
Local access (residents)	Negligible risk	Low risk	Medium risk	Medium risk
Off-street car park access	Very low risk	Low risk	High risk	High risk
Legibility	Very low risk	Medium risk	Medium risk	Medium risk
Cost (capital and operating costs)	Very low risk	Medium risk	High risk	Very high risk
Public acceptability	Very low risk	Low risk	High risk	Very high risk
Ease of implementation and operation	Low risk	Medium risk	Medium risk	Medium risk

	Option 1	Option 2	Option 3	Option 4
Summary	Very low volume of traffic affected and no through traffic routes affected, therefore most risks are very low. Access to only one off-street car park affected (access retained, but limited to a single access route). Ongoing enforcement / management required to manage timed windows for loading / servicing, although this can be done using proven methods. Removal of on-street permit parking may be controversial.	In addition to issues associated with Option 1, in this option the closure of the A2010 to through traffic may displace traffic to minor residential roads immediately to the west. Without a clear through route immediately alongside the western edge of the area, north-south drivers may be confused and seek to work their way through residential roads. Access to three off-street car parks affected (access retained, but limited to a single access route to each). Ongoing enforcement / management required to manage timed windows for loading / servicing, although this can be done using proven methods. Removal of on-street permit parking may be controversial.	Access to nine off-street car parks affected (access retained, but limited to a single access route to each). In addition to the issues associated with Option 2, the impact this option has on arrangements in the St James's Street area will affect more residents, and permitted north-south access routes through this area may be confusing, as some will involve 'dog legs', and enforcement may be complex. Expansion to the Western Road and Regency areas poses fewer risks.	Access to eleven off-street car parks affected (access retained, but limited to a single access route to each). In addition to the issues associated with Option 3, expansion to the West Hill and Clifton Hill areas encompass residential areas further from commercial areas, which may reduce acceptability. Access arrangements to the station will need careful consideration. Additional areas covered by this option will largely be self-enforcing.
Overall summary	Incremental changes to an area which is already mostly pedestrianised, so little impact expected.	Significantly reduces traffic in a key visitor and shopping area, reducing the negative impacts of transport in this area. However, may displace traffic to residential streets to the west.	Further reduces traffic in areas with a high concentration of shops, reducing the negative impacts of traffic in these areas. However, there are some operational complexities associated with the St James's Street area.	Most extensive option, which is expected to have the most impact on reduced motorised traffic in the city centre. Inclusion of extensive residential areas may pose challenges.

Table 3.11: Ultra Low Emission Zone MCAF assessment

	Option 1	Option 2	Option 3	Option 4	Option 5
Alignment with outcomes					
Support carbon reduction	Very high	High	Medium	Medium	Low
Improve health and air quality	Very high	Very high	High	High	Medium
Enhance public realm and place-making	Negligible	Negligible	Negligible	Negligible	Low
Facilitate increased equity and access for all	High	Medium	Medium	Low	Low
Stimulate the visitor economy	Negligible	Negligible	Negligible	Negligible	Negligible
Strengthen active and sustainable mode connectivity	Medium	Medium	Medium	Medium	Medium
Increased safety for all	Medium	Medium	Medium	Medium	Low
Summary	The extensive geographic scope of this option, which covers the whole of the city south of the A27, means that it performs well against all outcomes (including carbon reduction and improving air quality, active travel and safety) and is the most equitable option, considering that it includes all areas of the city consistently.	Similar to Option 1, the extensive geographic scope of this option, which covers most of the city, means that it performs well against all outcomes (including carbon reduction and improving air quality, active travel and safety). However, it is less equitable than Option 1 because it excludes a small number of residential areas and the boundary location on the east would likely cause increased traffic on B2123 Falmer Road.	As this option covers a fairly large geographical area and the boundary runs along arterial routes as much as possible, it would support outcomes effectively (including carbon reduction and improving air quality, active travel and safety), whilst forming a logical boundary that excludes residential areas furthest from the city centre, which would make sense from an equality perspective, though resulting in a less equitable solution than Option 1.	This option is a smaller version of Option 3, with the boundary moved further south and west. With a lesser geographic extent, it does not perform as well against all outcomes. The nature of the road layout limits the legibility of the boundary and could divert increased traffic on to surrounding residential streets, with possible negative impacts in these areas.	With the smallest geographic area, this option does support outcomes but to a lesser extent than others (including carbon reduction and improving air quality, active travel and safety). The boundary would be legible and the scheme would impact those closest to the city centre and seafront only, where the air quality / congestion issue is most highly concentrated.

Feasibility and deliverability					
Redistribution of traffic (ease / suitability of likely alternative routes)	Negligible risk	Medium risk	High risk	Very high risk	High risk
Deliveries and servicing	High risk	High risk	High risk	Medium risk	Medium risk
Local access (residents)	High risk	High risk	High risk	Medium risk	Medium risk
Off-street car park access	Negligible risk	Negligible risk	Negligible risk	Negligible risk	Negligible risk
Legibility	Very low risk	Low risk	Medium risk	High risk	Medium risk
Cost (capital and operating costs)	Medium risk	Medium risk	High risk	Medium risk	Medium risk
Public acceptability	High risk	High risk	High risk	Very high risk	Medium risk
Ease of implementation and operation	Medium risk	Medium risk	High risk	High risk	High risk
Summary	The extensive geographic scope of this option means that access for all residents will be impacted, which poses a risk to deliverability that is offset by the fact that it is the most legible solution. Delivery and servicing vehicles would need to meet the required standards, which poses a medium risk.	Similar to Option 1, the extensive geographic scope of this option means that access for nearly all residents will be impacted, which poses a risk to deliverability that is offset by the fact that it a legible solution. However, there is a higher risk of public acceptability by excluding residents in 'The Deans' only. Delivery and servicing vehicles would need to meet the required standards, which poses a medium risk.	As this option covers a fairly large geographical area and the boundary runs along arterial routes as much as possible, there would be a medium risk to legibility and a high risk to public acceptability because some residents are excluded while others are not, and there would be some - but limited - traffic displacement on to local roads. Delivery and servicing vehicles would need to meet the required standards, which poses a medium risk.	This option is a smaller version of Option 3, with the boundary moved further south and west. The road network layout would create a less legible scheme boundary and likely displace traffic on to residential streets, impacting local access and public acceptability. Delivery and servicing vehicles would need to meet the required standards, which poses a medium risk.	With the smallest geographical area, this option would impact fewer residents, which would mitigate risk to local access and public acceptability. The city centre and seafront focus would pose some risks to ease of implementation and legibility. Delivery and servicing vehicles would need to meet the required standards, which poses a medium risk.
Overall summary	The most extensive and legible option that will best meet outcomes.	An extensive and legible option that will cause some equity issue and traffic displacement.	Medium geographic scope and legibility, causing some equity / acceptability issues.	Medium geographic scope, poor legibility causing equity/acceptability issues and traffic displacement.	Small geographic scope. Fairly legible and acceptable, but limited contribution to outcomes.

Preferred options

Car Free City Centre

3.36 The assessments above indicate that in general, the latter options that cover a larger spatial area are likely to have a greater impact on reducing motorised traffic in the city centre and will therefore contribute to achieving the outcomes to a greater extent. On the other hand, this also means that they are likely to come with greater challenges, particularly in terms of their deliverability (these are not expected to be insurmountable technically, although overcoming them may require intensive stakeholder engagement).

3.37 This implies that if there is a desire to achieve the outcomes, then Option 4 performs the best. However, implementing this option in a single phase may be challenging, in terms of the capacity to address all of the issues that are associated with it.

3.38 Rather, a multi-phased approach to implementation is likely to be more practical, as this is likely to align better with capacity and resources to address challenges, whilst still working towards achieving the benefits associated with Option 4. An approach to this may be:

- **Phase 1**: Implement Option 1. Although this option has low benefits, it has lower delivery risks, and therefore serves as a stepping stone to further phases.
- **Phase 2**: Building on Option 1, implement Option 3. It is suggested that Option 2 is skipped, as it creates the risk of displacing traffic to minor residential streets. On the other hand, jumping straight to Option 4 is likely to be too big a leap.
- **Phase 3**: Building on Option 3, implement Option 4.

3.39 It is recommended that a "prohibition based" (rather than pricing) model is adopted, that is not directly emissions-related. There would be large scale removal of Pay & Display on-street parking, but major off-street car parks retained. To maximise the benefits, there would be 24/7 operation with a window in Car Free City Centre zones for deliveries and servicing.

3.40 Community engagement and further analysis is required to determine sequencing, zones, vehicle restrictions and exemptions. Given the time required to progress this, delivery would be by 2023 at the earliest (subject to funding availability). This would require model development and surveys, followed by a Strategic Outline Business Case and Outline Business Case.

Ultra Low Emission Zone

3.41 The preferred option is Option 1. This option:

- Scored the highest in the MCAF assessment, indicating it to be the most suitable and feasible of the options.
- It is the most extensive option, which means that it is expected to contribute the most to achieving the desired outcomes, in particular 'support carbon reduction' and 'improve health and air quality'.

3.42 The entire northern boundary of the zone in Option 1 is formed by the A27. This is a very clear and legible boundary, both in terms of being clear to drivers, as well as separating the generally built-up areas to the south of it from the less built-up areas to the north. It is also a suitable diversion route for traffic seeking to avoid the zone, although the potential impacts of this would need to be discussed with Highways England. Whilst this northern boundary is also the same in Option 2, the latter is less equitable as it excludes some residential areas to the south of the A27.

3.43 For Option 3, whilst the central part of the northern boundary also follows the A27, some residential areas to the north-east and north-west are outside the zone. This would reduce legibility for drivers, and also reduces equity as some residential areas within the city fall within the zone whilst others would fall outside it.

3.44 Finally, the relatively small geographic extent of Options 4 and 5 mean that they are likely to have less of an impact on achieving the desired outcomes.

3.45 At least initially, there would be a charge for access to the zone, that is emissions-based. A residents' exemption would be in place until the late 2020s or 2030. Other exemption categories are possible. The charge would be scalable, both in terms of its level and link to vehicle emission classes.

Complementary Measures

3.46 As has been demonstrated through our evidence base and in line with our principles of a Car Free City Centre and an Ultra Low Emission Zone, these initiatives will only be successful when accompanied by a suite of complementary measures. These will serve to optimise the benefits of a Car Free City Centre and an Ultra Low Emission Zone and mitigate any downside risks.

3.47 The impacts of a Car Free City Centre and an Ultra Low Emission Zone will be felt differently by different user groups and in different geographies, and the range of complementary measures must be responsive to this. To encompass these different user groups and geographies we have specified a number of journey types. These journey types are:

- **Journeys within the city centre**: these are journeys which take place within the city centre geography as defined by Car Free City Centre Option 4.
- **Journeys between the wider Brighton and Hove area and the city centre:** these are journeys which take place between the city centre geography as defined by Car Free City Centre Option 4 and other part of the Brighton & Hove City Council area.
- **Journeys around the wider Brighton and Hove area:** These are journeys which take place within the Brighton & Hove City Council area but outside of the city centre geography as defined by Car Free City Centre Option 4.
- **Long distance journeys:** These are longer distance journeys to the Brighton and Hove City Council area from locations outside of the council area, excluding freight. These will often be journeys by visitors.
- **Freight journeys:** These are journeys made for the purpose of delivery of goods or servicing to, from and within the Brighton & Hove City Council area.

Mobility Hubs

3.48 A complementary measure which is expected to support optimisation of benefits and mitigation of downside risks of a Car Free City Centre and Ultra Low Emission Zone to all journey types is the introduction of a number of strategic and local mobility hubs located throughout the city. Mobility hubs are points of multi modal interchange for people and goods and can be developed at a range of scales, sizes and scopes of service to be tailored to the areas or people they serve. They would be designed to offer a network of hubs which could provide seamless interchange and facilitate door to door journeys of people and goods.

3.49 A local mobility hub offers a single site for the location of neighbourhood based services such as “click and collect”, a bus stop, BTN Bikeshare Hubs, car club vehicles, electric vehicle infrastructure and local convenience shops. These sites would be located at some of Brighton and Hove’s smaller railway stations and within local neighbourhood centres to provide the interchange between the different modes offered by the facility.

3.50 At a larger scale, strategic mobility hubs would be located at the intersection of major highway routes in the city or at major train stations. They would provide a “one stop shop” for a number of transport services such as a large bus interchange, BTN Bikeshare hubs, electric vehicle infrastructure and opportunities for “Park & Ride” services. Bus routes starting from or passing through this location would offer sustainable access into the city centre as well as other key attractions located close to Brighton and Hove. The strategic location of these mobility hubs means that they could also be appropriate sites for delivery consolidation centres and possibly visitor coach parking.

3.51 Delivery of a network of strategic mobility hubs of different sizes and service offers would be key to realising the air quality and carbon reduction benefits of a Car Free City Centre and Ultra Low Emission Zone while also delivering on equity objectives, enabling residents and visitors to more easily travel around the city without their private car.

Recommended complementary measures

3.52 Below we present our recommendations for the necessary and desired complementary measures. The complementary measures are grouped by policy area and then for each complementary measure there is a short description and identification of journey types which they will serve.

These complementary measures have been drawn from officer engagement, policies and interventions identified in Brighton & Hove’s Fourth Local Transport Plan and initial identification of policies and interventions for inclusion in Brighton & Hove’s Fifth Local Transport Plan.

Table 3.12: Complementary measures

Policy Area	Complementary measure	Description	Journey type
Promote and facilitate the use of zero emission passenger vehicles	Electric vehicle charging infrastructure	Provision of electric vehicle infrastructure to enable use of battery-powered electric vehicles. Charging points will be provided to accommodate the requirements of private vehicles and taxi and private hire vehicles.	• Long distance journeys • Journeys around the wider Brighton and Hove area
	Shared e-scooters schemes	The introduction of shared e-scooter hire / loan schemes will be encouraged.	• Journeys around the wider Brighton and Hove area • Journeys between the wider Brighton and Hove area and the city centre • Journeys within the city centre
	Grant for retrofit or scrappage of more polluting vehicles	Provision of a grant to bus companies to either retrofit their most polluting vehicles to convert them to zero emissions buses or for scrappage.	• Journeys around the wider Brighton and Hove area • Journeys between the wider Brighton and Hove area and the city centre
Manage demand for parking in the city	Emission-based parking charges	Build on the emissions-based parking charges which are already in place. Introducing a surcharge on standard emissions vehicles, increasing the surcharge on higher emissions vehicles and increasing the discount on low emissions vehicles.	• Long distance journeys • Journeys around the wider Brighton and Hove area • Journeys between the wider Brighton and Hove area and the city centre
Increase public transport use	Brighton Main Line Improvement Project	A Network Rail led project to increase reliability of journey times on the Brighton Main Line. This would help increase the number of visitors to Brighton and Hove who make their journey by sustainable modes.	• Long distance journeys
	Bus network review	In collaboration with the bus companies, undertake a review of the bus network to identify changes which could support realisation of the benefits of a Car Free City Centre.	• Long distance journeys • Journeys around the wider Brighton and Hove area • Journeys between the wider Brighton and Hove area and the city centre

Policy Area	Complementary measure	Description	Journey type
	Coastway rail improvements	Support work to improve journey time, reliability and connectivity provided by the East Coastway Line towards Eastbourne, Bexhill and Hastings and the West Coastway Line towards Worthing, Chichester and Portsmouth.	• Long distance journeys • Journeys around the wider Brighton and Hove area • Journeys between the wider Brighton and Hove area and the city centre
	Improved, more affordable public transport	A reduction in the cost of bus travel to incentivise mode shift from car to bus. This could be delivered through a change in policy at a national level and increase in resource and capital funding to facilitate greater subsidy of bus services.	• Journeys around the wider Brighton and Hove area • Journeys between the wider Brighton and Hove area and the city centre
	Mass transit for Greater Brighton	Delivery of a bus-based rapid transit system which connects Brighton Marina, through Hove and Shoreham and on to Worthing.	• Long distance journeys • Journeys around the wider Brighton and Hove area • Journeys between the wider Brighton and Hove area and the city centre
	Public transport priority measures	Introduction of a package of priority measures to increase reliability and improve journey times of public transport in line with the council's Bus Network Review. This may include traffic light design which prioritises bus and taxi movements over private car movements.	• Journeys around the wider Brighton and Hove area • Journeys between the wider Brighton and Hove area and the city centre
	Strategic mobility hubs	Subject to planning requirement and land availability, development of facilities where people can easily interchange between a range of different modes. These could be located around principal railway stations which have onward travel options including bus and taxi as well as bike and e-bike hire provision, or near key highway intersections. These hubs could also include "click and collect" and micro-consolidation freight facilities, as well as other co-location of services. Such sites can "face" multiple directions (i.e. not only serve city centre bound travellers but be "gateways" to other areas including the South Downs National Park).	• Freight • Long distance journeys • Journeys around the wider Brighton and Hove area • Journeys between the wider Brighton and Hove area and the city centre • Journeys within this city centre

Policy Area	Complementary measure	Description	Journey type
Create an accessible and integrated transport system	Improve interchange between the eight city railway stations and other transport	Building on the work undertaken at Brighton Gateway Station, improvements to station access and interchange with bus, taxi, cycle hire and the strategic cycling network will be implemented (as part of mobility hubs) at all of the city's railway stations.	• Journeys around the wider Brighton and Hove area • Journeys between the wider Brighton and Hove area and the city centre
	Increase step free access across the public transport network	Work in collaboration with private sector operators to deliver an improvement in accessibility for all across the public transport network.	• Long distance journeys • Journeys around the wider Brighton and Hove area • Journeys between the wider Brighton and Hove area and the city centre
	Local mobility hubs	Planning and development of local integrated facilities within local neighbourhoods offering a range of transport services such as high speed electric vehicle charging points, bike and e-bike hire and 'click and collect' collection points.	• Journeys around the wider Brighton and Hove area • Journeys between the wider Brighton and Hove area and the city centre • Journeys within the city centre
	Retain and ideally improve Blue Badge access	Maintain and look for opportunities to increase parking provision for Blue Badge holders.	• Journeys around the wider Brighton and Hove area • Journeys between the wider Brighton and Hove area and the city centre • Journeys within the city centre
Develop a public realm that encourages and enables active travel	Establish low traffic neighbourhoods	Defined areas within the city will have through-traffic restricted by barriers or planters to reduce 'rat running' and make journeys quicker and more safe by foot or cycle.	• Journeys around the wider Brighton and Hove area • Journeys between the wider Brighton and Hove area and the city centre • Journeys within the city centre
	Establish strategic cycling networks with better cycle parking	Development of a high quality, segregated, cycle network connecting key locations within the city to each other. An increase in both the amount of cycle parking and its quality will be provided at appropriate locations throughout the network.	• Long distance journeys • Journeys around the wider Brighton and Hove area • Journeys between the wider Brighton and Hove area and the city centre • Journeys within the city centre

Policy Area	Complementary measure	Description	Journey type
	Expansion of BikeShare	Building on the success of BTN BikeShare, an extension both in geographical coverage and number of bikes in circulation. E-bikes will also be made available.	• Journeys around the wider Brighton and Hove area • Journeys between the wider Brighton and Hove area and the city centre • Journeys within the city centre
	High quality public realm	Capitalising on the space that was previously occupied by highway space being freed up through introduction of a Car Free City Centre, an initiative to develop a high quality public realm, including surfacing, seating, public spaces and planting.	• Journeys within the city centre
	Strategic walking network	Development of a high quality, walking network with high levels of legibility connecting key locations within the city to each other.	• Journeys around the wider Brighton and Hove area • Journeys between the wider Brighton and Hove area and the city centre • Journeys within the city centre
	Sustainable travel behaviour change campaign	A public information campaign to encourage greater use of sustainable transport to residents, commuters and visitors.	• Longer distance journeys • Journeys around the wider Brighton and Hove area • Journeys between the wider Brighton and Hove area and the city centre • Journeys within the city centre
Promote the use of ultra low and zero emission goods and servicing vehicles	Delivery and Servicing Plans to require use of sustainable transport	New developments will be required to have Delivery and Servicing plans which require the use of sustainable transport.	• Freight

Policy Area	Complementary measure	Description	Journey type
	Micro-consolidation centres with sustainable last mile delivery	Planning and development of facilities outside of the city centre where deliveries can be transferred from larger goods vehicles to enable the final stage of delivery to be undertaken using sustainable modes. The facilities can take a number of forms and can be combined with other services, such as strategic mobility hubs including Park & Ride.	• Freight
	Promote the purchase and use of cargo bikes and small electric vehicles	The use of e-cargo bikes and small electric vehicles for deliveries and servicing will be encouraged.	• Freight

Complementary measures by journey type

Journeys within the city centre

3.53 To optimise the benefits and mitigate the downside risks of a Car Free City Centre and Ultra Low Emission Zone for journeys within the city centre, the focus would be firstly on supporting the use of active travel modes. This would include measures such as expansion of the BTN Bikeshare scheme, establishment of local traffic neighbourhoods to create safer and more pleasant environments for cycling and walking, and development of a strategic walking network linking up key locations with clearly signposted walking routes, making better use of the Twittens. Local mobility hubs will offer a single location for the transport mode interchange.

3.54 Secondly, the space freed up by the removal of vehicles would be subject to urban realm improvements which improve the way in which residents and visitor experience the city centre. This would include the establishment of high quality public realm with increased seating, planting, public spaces and children's play areas in sites which would previously have been occupied by the highway.

Journeys between the wider Brighton and Hove area and the city centre

3.55 To optimise the benefits and mitigate the downside risks of a Car Free City Centre and Ultra Low Emission Zone for journeys between the wider Brighton and Hove area and the city centre there would be a focus on increasing public transport provision and affordability and increasing the extent of infrastructure supporting active travel.

3.56 Public transport improvements would be delivered through a further bus network review to ensure that bus service provision is sufficient given a significant reduction in private car options between the wider Brighton and Hove area and the city centre. Mass Transit for Greater Brighton would further increase the availability of high quality public transport provision. Increased step free access across the public transport network would ensure that increased numbers of people could change their modal preferences from car to public transport.

3.57 To support an increase in cycling, a strategic cycle network would be established providing direct connectivity between the wider Brighton and Hove area and the city centre along high quality, safe and segregated cycle routes. This would be accompanied by expansion of the BTN Bikeshare scheme, with local mobility hubs offering a single location for the transport mode interchange.

Journeys around the wider Brighton and Hove area

3.58 In addition to the measures set out above to optimise the benefits and mitigate the downside risks of a Car Free City Centre and Ultra Low Emission Zone, there would be a greater focus on encouraging residents to transition to zero emissions vehicles.

3.59 To support this, measures introducing widespread charging infrastructure would be pursued. Local and strategic mobility hubs would be a key element in providing this infrastructure. Furthermore, the bus network review would consider the need for an increase in the number of radial routes serving the communities outside of the city centre and improve frequency and journey times offered by the existing services.

Long distance journeys

3.60 To optimise the benefits and mitigate the downside risks of a Car Free City Centre and Ultra Low Emission Zone for long distance journeys to the city, including journeys which support the visitor economy, there would be a focus on providing high quality sustainable transport options. Also supporting these journeys would be measures to encourage the use of zero emissions vehicles to access Brighton and Hove.

3.61 Sustainable transport measures would include improvements to the Brighton Main Line, currently being delivered by Network Rail, which will improve reliability of journey times. Also crucial will be improvements to the Coastway Line making journeys to Brighton and Hove by rail more reliable from the east and west. The introduction of strategic mobility hubs offering "Park & Ride" services would also reduce the need for the "last mile" of long distance journeys to be completed in private cars.

3.62 To encourage use of zero emissions vehicles for long distance journeys to Brighton and Hove measures introducing widespread charging infrastructure would be pursued (including at strategic mobility hubs) as well as the extension of emission-based parking charges to discourage the use of more polluting vehicles. Improvements to the strategic cycle network will improve options for cycling from the east and west of the city boundary. There will be a need to work with the city's tourism sector to encourage more visitors to travel to the city by sustainable travel options and provide clear information on travel options within the city.

Freight journeys

3.63 To optimise the benefits and mitigate the downside risks of a Car Free City Centre and Ultra Low Emission Zone for freight journeys to, from and within the Brighton & Hove City Council area the focus is on reducing the need for highly polluting goods and servicing vehicles to enter the Ultra Low Emission Zone. Measures to support this would include the introduction of strategic mobility hubs including micro-consolidation centres which would allow "last mile" deliveries to be made by sustainable modes. This would also include the promotion and purchasing of electric-cargo bikes and other small delivery vehicles to ensure that shorter-distance freight journeys, within Brighton and Hove can be made sustainably and in compliance with the emissions standards of the Ultra Low Emission Zone.

Summary

3.64 The Economic Case chapter has set out the option development and assessment process and identified the preferred Car Free City Centre and Ultra Low Emission Zone options to take forward as well as the necessary complementary measures for their delivery. The next chapter will set out how these options could be funded and delivered.

4 Financial case

Overview

4.1 This section examines the cost of implementing the recommended Ultra Low Emission Zone and Car Free City Centre options, their deliverability and a high-level implementation timeline. At this time, we do not present full scheme costs but rather give an idea of the costs involved and, in the case of the Ultra Low Emission Zone, present some relevant quantified examples from around the UK.

4.2 The costs set out exclude additional (and possibly significant) costs relating to other areas including changes to council staff resources (particularly parking, enforcement and Traffic Control Centre teams), loss of parking revenues, and administration costs of issuing permits and processing exemptions.

Ultra Low Emission Zone Costs and Operational Revenue

4.3 To understand the likely costs and funding mechanisms for the Ultra Low Emission Zone, a review of similar schemes elsewhere in the UK was undertaken. This covered proposed Clean Air Zones in Bath, Birmingham, Bristol, Leeds and Sheffield. Information was gathered relating to the nature and coverage of the scheme, capital and operating costs, the delivery mechanism, key partners and procurement. The review includes a selection of comparable cities but does not include all proposed CAZs in the country.

Coronavirus and CAZ proposals

The status of CAZ proposals has been affected by the coronavirus pandemic (key influences being changes in travel demand and political sensitivities of implementing potentially unpopular measures during difficult economic times) and also by changes in air quality, such that some schemes may not proceed as originally planned.

Leeds
In October 2020 Leeds City Council announced that it was no longer pursuing a CAZ, citing significant air quality improvements that were expected to continue – a return to previously illegal levels of air quality is not expected, regardless of whether travel demand returns to pre-pandemic levels. Formal confirmation by Councillors was awaited at the time of writing. Preparations for the CAZ in Leeds by transport operators (bus, private hire and taxi, commercial vehicles) included upgrading vehicle fleets to lower emission vehicles to avoid the proposed CAZ charge. In that sense, the CAZ proposal has achieved its aim of improved air quality without ever being implemented (only preparatory work has been undertaken including installation of ANPR cameras).

Other cities
CAZ proposals in other cities have been delayed but are expected to go ahead, including: Bath in March 2021, Birmingham in June 2021 and Manchester in 2022

4.4 The costs presented focus on the core capital costs of equipment required to implement the Ultra Low Emission Zone and operating costs. Costs for complementary measures are provided where available, but these vary in scale and nature and are not fundamental to the technical

feasibility of implementation of either Ultra Low Emission Zone or Car Free City Centre but are key to the effectiveness and success.

4.5 A summary of each scheme, the estimated capital and operating costs and expected revenues has been derived from publicly available information and has been summarised in Table 4.1. The information presented in the table is taken from various sources. Information was not necessarily available for each cost item for each city so it is not always possible to compare costs across the cities shown. The table provides an indication of the scale and nature of CAZ costs for different elements.

4.6 In summary, over the period appraised for each CAZ (usually ten years) revenues from the CAZ are expected to exceed capital and operating costs in most cases. Over the same period, revenues are expected to decline, as an increasing number of vehicles are compliant with the emissions criteria. Apart from in Bristol and Birmingham, private cars are exempt from the charge applied – if private cars were included, revenues would be significantly greater. While operating costs would increase to cover monitoring and enforcement of a much higher number of vehicles, the capital costs are less likely to increase significantly, as the same access control/camera systems would be required regardless of who is charged.

Table 4-1: Capital and operating costs and expected revenues of UK schemes

City	Scheme		Capital cost	Operating cost	Expected revenues
Birmingham	Proposed Clean Air Zone. Charges will be applied to all vehicle types that do not meet emissions criteria, **including private cars**.	**8km²** Area bordered by inner ring road	**£14.4m** total implementation cost (+£3.2m Optimism Bias) which includes: design and Installation (£7.6m), IT (£1.5m), staff resourcing (£1.9m), additional measures (£1.0m) and, contingency (£2.3m).	**£5.7m per year** CAZ operational cost (+0.9m optimism bias). This includes: maintenance (0.9m), processing (2.2m), air quality monitoring (0.08), staff resourcing (2.5m) and communications (0.05m).	Approx. £17m per year
Bristol	Proposed Clean Air Zone. Charges will be applied to vehicles (HGVs, buses and coaches, taxi and private hire) that do not meet emissions criteria. **Charges for private cars are not proposed**. plus a small area with a diesel car ban.	**8km²** (including diesel car ban area) City centre and inner suburbs	**£10.5m** Enforcement system **£8.2m** Street Works **£88.2m** Non charging measures **£6.5** Quantified Risk	**£33.6-38m** across 10-year appraisal period, equivalent to around **£3.5m per year**.	£10m per year
Bath	Proposed Clean Air Zone. Charges will be applied to vehicles (HGVs, buses and coaches, taxi and private hire) that do not meet emissions criteria. **Charges for private cars are not proposed**. with traffic management at Queen Square.	**2.5km²**	**£6.3m** Enforcement system and street works **£0.9m** Core scheme design and management **£2.8m** Risk **£14.1m** Mitigation measures	**£14.6m** over 10 year appraisal period for the core scheme and £2.6m for the mitigation measures, equivalent to around **£1.7m per year**	Average of £2.4m (for the whole scheme) per year tapering from £5.2m in year 1 to £0.01m in 2030.

City	Scheme		Capital cost	Operating cost	Expected revenues
Leeds	Originally proposed Clean Air Zone no longer expected to be implemented). Charges will be applied to vehicles (HGVs, buses and coaches, taxi and private hire) that do not meet emissions criteria. **Charges for private cars are not proposed**.	**90km²** enter a zone bordered by the Outer Ring Road (an area approximately half the size of the proposed zone for Brighton and Hove).	Only the cost for ANPR cameras is available: 100 cameras using ANPR technology implemented at CAZ access points only at a cost of **£2.9m** Procured elements: - network of ANPR cameras - ICT system to receive data captured by the cameras - image review suite	Operation & Maintenance contract of **£2.3m** over 36 months awarded to Siemens (being reviewed to allow light touch maintenance of the camera network), equivalent to around **£1.5m per year**.	Unknown
Sheffield	Proposed Clean Air Zone. Charges will be applied to vehicles (HGVs, buses and coaches, taxi and private hire) that do not meet emissions criteria. **Charges for private cars are not proposed**.	**2km²** Area bordered by inner ring road.	The business case for the scheme anticipates the following costs: • Design, Supply & Install ANPR Cameras **£2.2m** Camera installation, ongoing maintenance, local sign supply and installation are assumed to be delivered through the existing term contractor.	OPEX **£8.8m** including £5.6m contingency and £2m enforcement. This includes: Operation & Maintenance of ANPR Cameras & associated Software at £1.4m and Back office enforcement system **at £600k** Back office costs are assumed to be covered by CAZ income once the scheme is established.	£6-7m per year
Glasgow	Figures are based on a review of the potential costs of implementing a Low Emissions Zonein Glasgow.	Costs provided for a LEZ ranging from **0.5km² to 3km²**.	0.5 km²: **£0.3m** design costs and **£0.5m** implementation costs (including optimism bias and discounting, 2019 prices). 3km²: **£0.4m** design costs and **£0.9m** implementation costs (including optimism bias and discounting, 2019 prices).	0.5 km²: **£0.2m** (year one operating costs) 3km²: **£0.8m** (year one operating costs)	No indication given

Car Free City Centre costs

4.7 To understand the range of costs for implementing the proposed Car Free City Centre, costs for the elements of access restriction and control itemised in Option 4 have been estimated based on the precedents from other areas in the UK. Those elements are set out in Table 4-2. Again, the core costs are presented and exclude complementary measures such as urban realm improvements which are not fundamental to the technical feasibility.

Table 4-2: Car Free City Centre costs

Components	Indicative cost	Brighton Assumptions (based on current estimates)
Modal filters	**£50k to £150k** for 5-6 modal filters. This is based on a cost of between £10,000 to £30,000 per filter from the Waltham Forest Mini-Holland programme.	6 will be required. (West Hill, Clifton Hill, Western Road, Regency, New England Quarter and North Laine/Cultural Quarter)
Removal of pay and display	Loss of on-street pay & display parking will result in loss of income estimated in the region of **£150k-300k per annum**, offset to some degree by reduced cost of management/maintenance. Physical removal of equipment assumed to be done with in-house resources.	Approximately two zones (Zone Y and Zone Z, Central Brighton North and South respectively, plus part of Zone C, Queen's Park) will be lost.
Traffic regulation Orders	**<£100k**	Required, though there is the potential to use in-house resources.
Additional traffic signage	**<£100k**	Required
ANPR / Rising bollard installation	Estimated at **£500k** to **£750k** for installation of multiple sets of access control equipment and associated software. Lead-in time and installation costs of bollards are generally higher and increase further if anti-terrorist levels of protection are required.	Required at three locations (North Lane/Cultural Quarter, St James and The Lanes).
ANPR / Rising Bollard operating costs	Dependent on nature of system implemented, likely to be in the region of **£100k-200k per annum**	Required at three locations (North Lane/Cultural Quarter, St James and The Lanes).

4.8 As the Car Free City Centre does not include revenue generation, alternative approaches to fund implementation may be required. The implementation of the Car Free City Centre may release sites currently used for car parking for alternative development within the central area, providing an opportunity for developer contributions e.g. through section 106. For Council-operated parking, income from the sale of parking sites could contribute towards Car Free City Centre / complementary measures, though this would be offset by losses from parking income.

4.9 Depending on the nature of the access control mechanism, there may also be income from enforcement of the Car Free City Centre. If physical measures such as rising bollards and modal filters are used to prevent access, it becomes close to impossible for drivers of non-authorised vehicles to gain access resulting in minimal income from enforcement.

4.10 A camera-based control system could yield greater enforcement income (if no physical barrier is in place to stop drivers from entering the restricted zone there is greater potential for issuing enforcement notices/fines). However, this must be balanced against the negative elements of unauthorised vehicles circulating within the Car Free City Centre which is contrary to the Car Free City Centre objectives.

5 Commercial Case

Overview

5.1 This section sets out the key commercial considerations that would have to be made in the procuring, contracting and delivery of Ultra Low Emission Zone and Car Free City Centre measures. It details the overall high-level commercial approach, commercial risks and principles that would guide the procurement of the required goods and services and would need to be reviewed and updated in line with more detailed scheme development.

Commercial approach

5.2 Both an Ultra Low Emission Zone and Car Free City Centre would be led by the local authority with procurement of access control equipment and back office software from specialist providers. Staffing of back office management of the system could be through in-house resources or outsourced. Likely partners for implementation include specialist access control hardware and software providers, term contractors/consultants.

Commercial risks

5.3 Key commercial risks include lack of income from Ultra Low Emission Zone charges due to:

- An increasing number of vehicles being compliant with emissions criteria and not being eligible for the charge.
- Non-payment of enforcement fines/additional resources required to collect them and any costs associated with an appeals process.
- Contractual arrangements with private sector providers not providing protection to the Council in the event of system/process failure.

5.4 Implementation of the Car Free City Centre does not raise any revenue through access charges and may result in a loss of direct income from car parking. While there are likely to be indirect benefits of a more attractive city centre for tourism and trade, the commercial risk for the Council is that cost of implementation and management required of the Car Free City Centre is greater than Council resources will allow.

Commercial principles to guide the procurement

5.5 The key commercial principle to guide the procurement of an Ultra Low Emission Zone is to recognise the potentially short time-span for commercial viability of the scheme, given that the increased number of vehicles that will comply with legislation means that revenues will decline over time.

5.6 The benefits of outsourcing all elements of access control and enforcement versus the benefits of procuring equipment and software to be managed in-house need to be considered at an early stage.

5.7 Other considerations include:

- Engage the market at an early stage.
- Reward mechanisms based on value added in exceeding the outcomes rather than seeking the lowest cost for a component.
- Measure commercial performance in alignment with delivery of outcomes to the customer/end user.
- Ensure that delivery risk is allocated appropriately through procurement to optimise the value for money for public sector investment.

6 Management case

Overview

6.1 The management case sets out the key considerations for delivery of the Ultra Low Emission Zone and Car Free City Centre measures. This includes consideration of the legislation requirements, how the Car Free City Centre and Ultra Low Emission Zone could best be sequenced, the deliverability of complementary measures and finally a high level programme to inform delivery of the Car Free City Centre and Ultra Low Emission Zone. This would need to be reviewed and updated in line with more detailed scheme development.

Legislation requirements

6.2 Part III and Schedule 12 of the Transport Act 2000, as amended by the Local Transport Act 2008, provide for the introduction of road charging outside London. Charging schemes may only be made "*if it appears desirable for the purpose of directly or indirectly facilitating the achievement of policies in the charging authority's local transport plan*". Local Transport Plans (LTPs) contain the strategic transport priorities of the relevant charging authority. For emissions based charging, the government's Clean Air Zone framework sets out the principles for the operation of Clean Air Zones in England. It provides the expected approach to be taken by local authorities when implementing and operating a Clean Air Zone – following this framework would be the recommended approach to implementing an Ultra Low Emission Zone in Brighton and Hove.

6.3 The Traffic Management Act 2004 provides the legislative framework for implementation of city centre access control measures. As noted by DfT Traffic Advisory Leaflet 4/97, bollards and other obstructions under sections 92 (outside London) of the Road Traffic Regulation Act 1984 (RTRA) may include obstructions of any description whatsoever. It follows from this that rising bollards are lawful as movable obstructions if they prevent the passage of vehicles where this is prohibited by a traffic order.

Sequencing of Car Free City Centre and Ultra Low Emission Zone

6.4 From a technical point of view (not considering aspects of political acceptability), implementation of an Ultra Low Emission Zone and its associated access control and enforcement infrastructure and software at the scale envisaged, has a significantly longer lead-in time than the Car Free City Centre. Elements of the Car Free City Centre could be introduced within a relatively short timescale and delivered in-house (for example within 6 to 12 months for installation of modal filters and removal of pay and display parking).

6.5 Access control elements of the Car Free City Centre which require procurement of hardware (ANPR cameras/rising bollards) and associated software which involve external providers, are more technically challenging, and will require longer lead-in times. There may be cost savings of procuring access control systems for Ultra Low Emission Zone and Car Free City Centre concurrently, if ANPR is used for example, and this could be explored with systems providers prior to procurement.

6.6 Clean Air Zones in other cities are being implemented over 2-3 years, although implementation plans have been delayed by the Covid-19 pandemic. Implementation of an Ultra Low Emission Zone could be achieved within similar timescales.

Delivery of complementary measures

6.7 Complementary measures should be implemented to increase public and political acceptability of the Car Free City Centre and Ultra Low Emission Zone. Although they are not technically essential for implementation of either scheme to work they play a key role in supporting the shift from use of polluting vehicles to cleaner vehicles and from private car use to use of other modes. From the review of application of Clean Air Zones and Ultra Low Emission Zones elsewhere in the UK, the amount of funding allocated to complementary measures is highly variable depending on the nature of those measures.

6.8 For Ultra Low Emission Zones, the types of complementary measures include financial support to users of commercial vehicles (HGV operators, bus operators, taxi and private hire companies) to transition to less polluting vehicles. The experience of Leeds shows that the provision of this type of support to operators of vehicle fleets (alongside plans for a Clean Air Zone in this case) can stimulate rapid and wholesale changes in vehicle fleets to reduce emissions and improve air quality. Other incentives may include support to encourage private use of low emission private vehicles (free charging points for example), encouraging active travel modes such as cycling, changes to parking systems (free parking or lower parking tariffs) and behaviour change campaigns to encourage the use of public transport.

6.9 For Car Free City Centres, the removal of private vehicles from the city centre offers a unique opportunity to improve the attractiveness of the city centre. Freeing up street space currently used for vehicle circulation and parking allows for significant improvements to the streetscape within the Car Free City Centre to enhance the pedestrian experience, making Brighton city centre a more appealing place to visit and improving quality of life for its residents. To ensure that there are suitable and attractive options for people who previously visited the city centre by car, complementary measures may also include improvements to accessing to the Car Free City Centre: by public transport (for journeys within and from outside the city), Strategic Mobility Hubs with Park & Ride facilities (for car journeys made from outside the city) and active modes. Active mode improvements may include cycling facilities, improved footways and wayfinding.

6.10 There may be a need to frontload delivery of complementary measures to ensure that the transport system is capable of accommodating users transitioning from polluting to non-polluting modes, which would require up-front capital investment by the Council. Hypothecating the revenues from Ultra Low Emission Zone charges in future would support additional complementary measures.

Car Free City Centre and Ultra Low Emission Zone delivery programme

6.11 An indicative **high level** Car Free City Centre and Ultra Low Emission Zone delivery programme **is presented below.**

Figure 6.1: Indicative Car Free City Centre and Ultra Low Emission Zone delivery programme

Time period	Ultra Low Emission Zone	Car Free City Centre
Short term (0-1 years)	Further scheme development, including surveys and modelling, and development of Outline Business Case. Market engagement with providers, preparation of a tender.	Further scheme development, including surveys and modelling, and development of Outline Business Case. Trial implementation – for example, "Traffic Management Act 2004: network management in response to COVID-19" enables trialling of modal filters. Market engagement with providers, preparation of a tender.
Medium term (1 to 3 years)	Introduction of complementary measures including strategic and local mobility hubs	
	Tendering and implementation of access control equipment. System launch and communications with end users.	Tendering and implementation of access control equipment. Complementary measures introduced Phased introduction of access restrictions.
Longer term (3-10 years)	Ongoing review and monitoring. Additional complementary measures. Assess emissions criteria after 5 years of operation.	Ongoing review and monitoring. Additional complementary measures.

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