



**TRANSPORT  
SCOTLAND**  
CÒMHDHAIL ALBA

# Coronavirus and progress toward establishing low emission zones

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## Introduction

Paragraph 13 of Schedule 4 of the Coronavirus (Scotland) (No.2) Act provides that:

- The Scottish Ministers must lay a report before the Scottish Parliament on progress towards establishing low emission zones by 4 December 2020.
- That report under must include information on:
  - a) how progress has been impeded by coronavirus
  - b) how account has been taken of the impact Low Emission Zones would have on the public health response to coronavirus.

## How progress has been impeded by coronavirus

### Background to Low Emission Zones

The Scottish Government is committed to protecting the public from the harmful effects of air pollution and have a clear vision for Scotland's air quality to be the best in Europe.

Part 2 of the Transport (Scotland) Act 2019 ("the Act") relates to Low Emission Zones (LEZs). Regulations required to implement Part 2 of the Act are being drafted with a view to laying in Parliament in early 2021. These Regulations and the provisions in Part 2 of the Act will support plans to introduce LEZ schemes in Scotland's four largest cities - Glasgow, Edinburgh, Dundee and Aberdeen.

LEZs are key to improving air quality, protecting public health and supporting Scotland's wider emission reduction ambitions by encouraging more sustainable transport options, and restricting access to the most polluting vehicles, especially in areas of public exposure. Scotland's first LEZ (with an initial focus on buses) was launched in Glasgow in 2018.

### Pausing Low Emission Zones

LEZ policy activities within the Scottish Government, including the preparation of regulations under the Act, were paused in mid-March as officials were redeployed to support the COVID-19 response.

The Cabinet Secretary for Transport, Infrastructure and Connectivity wrote to the Convenor of the Rural Economy and Connectivity Committee on the 7 May 2020 to inform the Committee that planning associated with LEZ introductions was being paused temporarily in response to the COVID-19 outbreak. The Cabinet Secretary stated that this decision was agreed within the Low Emission Zone Leadership Group, which includes representatives from the four local authorities, Public Health Scotland & SEPA, along with the Cabinet Secretary for Environment, Climate Change and Land Reform.

The Cabinet Secretary reiterated that the Scottish Government was fully committed to tackling air pollution in the quickest time possible by introducing LEZs, and that local authorities still shared this ambition, but the unprecedented impact of the COVID-19 outbreak had resulted in necessary changes to priorities across government and across our local authority partners.

Given the position at the time, it was concluded that introducing LEZs across our four biggest cities by the end of 2020 was no longer practicable.

## New LEZ introduction date

On the 26 August 2020, the Scottish Government announced that a new indicative timeline for LEZ introduction across Glasgow, Edinburgh, Dundee and Aberdeen would be set between February and May 2022. These dates reflected the point where the LEZ grace period (of at least 1 year) would start, followed by the commencement of penalty charge notice enforcement at the end of the grace period. This timetable was agreed by the LEZ Leadership Group as a way to introduce LEZs in the quickest time possible using the powers in the Act, and reaffirmed the view that the Scottish Government were absolutely committed to tackling air pollution.

The Scottish Government announcement noted that whilst other cities in the UK were pausing Clean Air Zone plans at that time, Scotland was making a statement of intent in pressing on through the provision of an indicative timeline for the introduction of LEZs. There was also recognition of [new] uncertainties that were triggered by the pandemic which had to be both acknowledged and managed in a responsible way whilst preparing for the introduction of LEZs.

The new introduction timetable was guided by, and was heavily contingent on, all Parliament and local authority committee procedural requirements that needed to be met prior to scheme introductions. A suite of essential actions were identified related to legislation, regulation production, impact assessments and consultation that needed to be published and applied before decision-makers could scrutinise and sign-off LEZ plans. As such, the new introduction timetable was informed by the following:

- Regulations need to come into force with sufficient lead in time to allow local authorities to finalise their LEZ designs.
- Local authorities must consult on proposed final scheme design following - but not before - the regulations coming into force, to ensure that scheme proposals reflect provision contained in regulations.
- Scottish Government and local authorities must agree on the application of air quality models, given that current models are based on pre-COVID-19 traffic data (see below for further commentary on this specific point).
- Local authority councillors via their respective committees must approve the scheme.
- The scheme must be submitted to and approved by the Scottish Ministers under section 10 of the Act.

What was critically important was that the enforcement dates for LEZs were still targeting commencement in the early 2020s.

## LEZ progress and support

Actions to progress the introduction of LEZs were restarted during the summer and are now developing at pace. LEZ planning within local authorities has continued during the pandemic.

The preparation of Scottish LEZs - and the associated funding being offered by the Scottish Government, as outlined below - is already generating tangible measurable air quality improvements by reducing harmful transport emissions ahead of LEZs being introduced e.g. from emission abatement retrofitting of buses in Glasgow, in tandem with the pandemic lockdown restrictions.

- Read more information about the [Glasgow Low Emission Zone](#)

In May 2020, the LEZ Leadership Group discussed the impact of the pandemic on LEZ planning and called for LEZs to be designed in a bold and ambitious way that would support cities to witness a green recovery from the pandemic in line with COVID-19 recovery plans.

The LEZ Consistency Group - which comprises officials from local authorities and Transport Scotland - has met regularly during the pandemic to discuss issues such as modelling, enforcement and impact assessments. Modelling work for LEZs is based around the outcomes from the National Modelling Framework, but this approach is now being informed by a Modelling Uncertainty position statement, as prepared by the LEZ Consistency Group (as shown in Annex A).

Funding provision from the Scottish Government to local authorities to support LEZ design work was unaffected by the pandemic. Calls for funding were issued in May, with grant offer letters issued in July, providing over £0.5M in 2020/21 to local authorities to support their LEZ design work.

Funding provision available for businesses and individuals via various grant schemes was unaffected by the pandemic. New grant schemes were designed and launched during this time and existing grant schemes were maintained. For example:

- Bus Emissions Abatement Retrofit (BEAR) Programme Phase 3 was re-booted in July (following confirmation of a successful notification to the European Commission to increase the state aid grant threshold) with applications closing in August and grant awards being made between August and September. During the pandemic, the Scottish Government has continued to support bus operators of all sizes to retrofit their fleets ahead of the introduction of LEZs. The Scottish Government has provided £9.75 million via BEAR Phase 3 to support the emission abatement retrofitting of over 590 buses and coaches.
- The LEZ Support Fund provides targeted grant funding over 2019-2022 to four transport groups including households in relative poverty and microbusinesses. The 'Mobility Fund' and 'Retrofit Fund' elements of the Low Emission Zone Support Fund were designed during the pandemic and were launched by Energy Saving Trust in September 2020. The fund aims to help those who will have the most difficulty in making the transition to the introduction of a LEZ, and targets specific cohorts of both commercial and private vehicle owners (with a focus on heavy goods vehicles and micro-businesses) in tandem with households in

relative poverty. The taxi retrofit element of the LEZ Support Fund was launched earlier in 2020.

## How account has been taken of the impact Low Emission Zones would have on the public health response to coronavirus

### Air pollution and COVID-19

The relationship between air pollution and health is extremely complex, and it is not possible to say with any certainty what impact air pollution can have on a specific individual. The illnesses that air pollution can exacerbate can also be affected by multiple other factors.

A number of studies during 2020 have identified an association between air pollution and both exacerbated symptoms and mortality levels attributed to COVID-19. [The UK Air Quality Expert Group published research on this issue](#) in July 2020.

Long term data covering the full period of the pandemic and beyond will be required in order to draw robust conclusions on the overall impacts of air pollution on total cases and numbers of deaths in relation to Covid-19.

### LEZs and COVID-19

Many of the actions that are being carried out in support of, and in preparation for, the introduction of the LEZs will have a positive effect on levels of pollution within the four major cities. Such actions will reduce levels of harmful air pollution in our cities which adversely affects the old, young and those with underlying health conditions, including those suffering from COVID-19.

Funding for businesses and organisations to prepare for LEZs (such as BEAR and the LEZ Support Fund) is enabling businesses and individuals to take up low-emission options such as emission retrofitting and active travel grants that will help to reduce air pollution now (rather than just when the LEZ penalty regimes begin).

It is too early now to measure the impact that LEZs would have on the public health response to coronavirus, and the evaluation of LEZs in relation to environmental and health metrics that show positive impacts as a sole result of the LEZ is an ongoing standalone challenge. However, reduction of air pollution emissions could contribute to risk minimisation associated with coronavirus, albeit noting that that promotion of public transport is a key facet of LEZs.

In November 2020, the Leadership Group discussed the relationship between LEZs and COVID and how this element should be considered by designers and decision-makers when approving a LEZ scheme. The key observations were as follows:

- There is an opportunity (at present) to consider how we could rethink the approach to LEZs in relation to a post-COVID economic recovery, noting that the designs of LEZs are already well developed. The Group felt that it was appropriate to review the LEZ policy in relation to COVID, and perhaps to revisit

the expectations on LEZs so that they are able as far as reasonably practicable to fit into the emerging post-COVID transport system in Scotland.

- LEZs are still regarded as an appropriate air pollution mitigation solution for Scotland's 4 major cities, based on the existing SEPA National Modelling Framework evidence. There is still the ambition to introduce LEZs as previously stated, and LEZ design work by the local authorities should not stop, but the expectations of LEZ should be reshaped - or be able to be reshaped as new evidence arises - in light of the pandemic.
- We must remember, reiterate and reaffirm what LEZs are about – principally air quality with secondary objectives on climate change. In this regard, LEZs should still aim to reduce vehicle/car movements, and help to avoid the default to using private cars as much as possible in a post COVID-19 world.
- The Group considered a number of questions that naturally derive from the pandemic impact:
  - 1) are thresholds for LEZs still relevant?
  - 2) do we need to consider other policies (to address air pollution) that manage behaviour (and thus reduce emissions) other than LEZs?
  - 3) do we need to revisit our thinking on LEZs, to work through the impact caused by the pandemic and think about where we are going with LEZs?
  - 4) how can we achieve our core outcomes (from the LEZ), noting that we may struggle to get people back onto public transport in the short to medium term?
- There is general uncertainty in relation to COVID and transport e.g. some areas are seeing short term travel pattern reductions but there would appear to be rebound back towards pre-pandemic levels across some modes, such as private car journeys. It is challenging to predict how people are going to behave (in terms of travel habits) in a post pandemic world, and this aspect will create challenges for the whole transport sector, not just the policy around LEZs.
- The Group acknowledged that there is a question around how elastic transport models will be compared to the pre-COVID landscape e.g. will people who travel return to old habits? It is difficult to quantify the change in behaviours around daily travel and work patterns at present - given lockdown conditions - but it may be sensible to presume that public transport levels will not return to pre-COVID levels in the short to medium term. There was recognition that use or adoption of pre-COVID models is probably not defensible when designing LEZs now. As such, COVID uncertainty modelling work has been commissioned by Transport Scotland with workshops planned in Aberdeen, Dundee, and Edinburgh in late 2020 to develop this research into 2021 (as outlined in Annex A). This work will need to understand the elasticity of travel patterns in relation to model development.
- LEZs should be designed in a way that supports and maintains the “baked in” unintended gains or positive changes that have happened (within the transport

sector) since the start of the pandemic, such as the initial decline in private car use, or the creation of temporary pop-up cycle lanes, neighbourhood road closures and school car free zones.

- In terms of parallel design work, there is a need to fold in action on concepts such as 20 minute neighbourhoods (to create more liveable neighbourhood and support modal shift as mentioned in the recent Programme for Government) into LEZ design work. The Group are clear that LEZs should work in tandem with other such schemes to create radical change; it should not be an either/or situation. LEZ should be taken forward within the context of mobility plan and city centre transformation planning, with LEZs (that will look different post COVID) being an important piece of the toolkit to deliver reimagined city centres
- Advice on these issues outlined above will be included in the forthcoming LEZ Guidance, to offer direction on the treatment of COVID in relation to the design phase and the operational phase.



## ANNEX A

# COVID-19 and modelling - Position Statement

### Introduction

COVID-19 has had, and continues to have, a dramatic impact on travel demand across various modes. Transport supply, capacity and demand figures in Scotland are covered by the Transport Transition Plan.

Transport professionals debate questions such as ‘what will travel look like’ post COVID-19. In relation to air quality, production of, and decision making on, Scottish Low Emission Zone (LEZ) designs are being informed by air quality modelling produced by SEPA via their National Modelling Framework (NMF) which are in turn informed by a number of traffic models for current and future forecasts of road traffic. The NMF outputs are based on 2017 to 2019 traffic data (e.g. pre-COVID-19). As such, questions outlined below are emerging around what impact COVID-19 will have on model application toward transport scheme designs.

This position statement aims to provide Scottish local authorities with an update on the use of, and potential modification to, NMF model outputs in the development of LEZ design in a post-COVID world. It seeks to ensure that consistency is applied across all LEZ design work where models are used as part of the decision making process during – and following – the COVID-19 recovery phase.

This statement also seeks to provide insight to Reporters who may be called to chair an examination of a LEZ scheme; in doing so, they will need to understand how scheme developers treated the evidence base (including models) to shape their LEZ proposals.

### Models and uncertainty

Modelling aims to predict future air quality over time, based on a myriad of aspects such as, but not limited to, travel behaviours, people movements, technology shifts and changes to the public realm. Examples of changing travel habits are outlined below.

Model assumptions generally rely on previous trends related to such aspects, but the COVID-19 pandemic creates uncertainties that may radically change model projections.

Within the transport sector, we face a long list of uncertainties and possibilities as a result of COVID-19 around space reallocation, provision and use of public transport services and shifts in both demand and behaviour, with these issues being heavily governed by both the actual and perceived risk of infection associated with COVID-19.

Significantly, undertaking more modelling (or model runs) will not reduce the uncertainty created by COVID-19. It may therefore be of use to consider the approach in the Futures Toolkit which provides a set of tools to help embed long-term strategic thinking within the policy process, and explains how to ensure they have real impact. The toolkit summarises what futures thinking is, and describes a

series of tools that can be used by policy makers to manage in uncertainty and identify future actions.

While in some areas traffic movements are almost back to pre-COVID-19 levels we cannot assume that travel demands, behaviours and fleet mixes will return to pre-COVID-19 levels. It is simply too soon to robustly quantify the impact of COVID-19 on the travel demand and travel type within and beyond Scotland. This messaging is echoed in a [recent article in Nature](#) which states that we should apply principles to modelling (as outlined below) with ‘...modellers and decision makers seeking to establish new social norms but without projecting more certainty than their models deserve’.

## Position statements

Current modelling forecasts developed before the COVID pandemic, that support the LEZ design work, while sufficient to continue assessment work at this time, are unlikely to be suitable in their current form to solely endorse and defend the final scheme proposal.

However, it is acknowledged that COVID-19 is creating unprecedented uncertainty in the application of models. On-going changes in traffic and behaviour will need to be monitored in order to make an informed decision in the future. Thus, **we must undertake additional work around the NMF inputs [rather than the outputs] to address these uncertainties arising from COVID-19.**

We will also consider end-on sensitivity testing or wholesale model re-runs as the COVID-19 impact becomes clearer.

Consistent modelling timescales related to COVID-19 impacts around and beyond the provisional LEZ enforcement dates will be a key factor in supporting decision making around LEZ designs.

Permanent traffic patterns rather than temporary traffic patterns should be the primary data sets accounted for in any revisions to the NMF models. In addition, other transport schemes in the cities may alter in design, shape, size or timescale in the coming years as a result of COVID-19 impacts, so these aspects should be taken into account in the NMF models as per current practice.

Uncertainties around fleet changes across freight, light good vehicles, fleet cars, private cars etc. based on confidence of certain factors, disruptors and turnover for each type already exist in NMF models. We should apply a confidence range to each part of the fleet individually, and then build on that through sensitivity analysis to understand the consequences of each uncertainty.

If new air pollution exceedances are identified via the modelling in the post-COVID world, the LEZs plans must be amended to address such exceedances.

The Scottish Government will seek to fund additional data collection and modelling work should there be a need to go beyond the current ‘pre-COVID reference case scenario’.

We must collectively arrive at a common decision on the acceptability of the modelling outputs; it is anticipated that this can be done via the LEZ Consistency Group informed by the Local Delivery Groups and Modelling sub-group. The Consistency Group will also periodically review this Position Statement.

## Questions

When considering the broad aspect of: 'what will travel look like post COVID', a mix of questions arise, including:

- Will travel demand return to pre-COVID-19 levels?
- Will COVID-19 trigger fundamental changes to travel patterns, and if so why, where, when and how will we travel in the future?
- Will pre-COVID-19 fleet profiles change following COVID-19 recovery, would the previously established baseline enforcement dates now being put back mean that if retained it is worst case scenario?
- What will happen in the future to any temporary reallocation of road-space via the Spaces for People scheme?
- How will COVID-19 derived schemes such as Spaces for People impact on travel patterns in the lead-up to, and following commencement of, LEZ enforcement?

When considering how COVID-19 is impacting on model application, a mix of questions arise, including:

- Are the NMF outputs still sufficiently robust (valid) to support LEZ design decision-making?
- If yes, would current NMF models be defensible should a future potential challenge arise to LEZ proposals?
- If no, how should NMF models be updated to support LEZ design decision-making?
- What are the implications of a LEZ scheme surviving a challenge based on the use of models to inform decision making. If the air quality exceedance area is now reduced what is the justification for larger area LEZs?
- Is there still a 'case for change' for implementing LEZ, and if so, what changes – if any - are needed to the LEZ design option(s) in the post-COVID world, to meet Ministerial aspirations?
- What are the key [new] uncertainties (such as road space and bus fleets) that need to be considered within LEZ modelling scenarios?
- If a scenario based modelling approach is adopted, what do these scenarios look like, and how many are there?
- If updated modelling showed that a LEZ is not needed in some scenarios, how would this be progressed?

- How can decision making around extension, or a move to permanence, of schemes implemented under Spaces for People and Bus Rapid Deployment Fund projects be incorporated into models?
- What are the impacts of these temporary schemes on:
  - 1) LEZ modelling, and
  - 2) the achievement of future air quality objectives?

## Changes in behaviours

[Changes in travel behaviours and habits](#) are outlined below but these may vary in type and significance between cities/geographies:

- **Changes to public transport services (and fares)** - reductions in services due to losses incurred during lock-down and changes in post-Covid-19 demand, possible increases in frequency to cope with the capacity constraints of social distancing, changes to ownership, less frequent travel reducing applicability of season tickets etc.
- **Social Distancing on public transport** - effective capacity of individual public transport vehicles reduced, albeit perhaps only in a short-term period.
- **Mode choice parameters** - Popularity of certain modes may shift, with active travel becoming more popular and public transport less popular. Could also witness some increase in car and taxi use at the expense of public transport. However, the length of time that such shifts will last for is uncertain and could also be influenced by seasonal weather.
- **Travel demand to/from existing premises** - Variations in commute (reduced employment and more home working), business travel (economic downturn and more 'virtual' meetings), shopping (economic downturn and more on-line shopping), other leisure (reduced levels of disposable income and loss of leisure facilities).
- **Age profile of vehicle fleets** - reduced vehicle purchases during lock-down and alteration in fleet renewal programmes.
- **Car Ownership** - reduced (e.g. due to economic down-turn) or increased (e.g. replacing use of public transport with second hand private car).
- **New Developments** - delay in future-year land-use developments coming on-stream (e.g. due to lock-down), lower rents in existing premises, potential permanent changes in the future land-use -and/or Local Plans.
- **Delay in transport schemes previously assumed in the Reference Case in Year X** - direct impacts of the lock-down and diversion of Government/scheme promoter resources
- **Light Commercial Vehicle increase in fleet numbers** - An accelerated shift to more 'white van' services as the desire or need for personal delivery services, such as food, is increased.

- **Variable economic impact** - Differing impacts on economic sectors, where some see a bounce back effect and others retract due to recession impacts.
- **Homework or flexible working** - An increase in working from home or a more diverse set of working patterns, leading to a reduction in business travel.
- **Socio-economic impacts in the vehicle market** – Higher incomes individuals may see this as the time to upgrade to lower emission vehicles, however lower income groups may have to stick with, or move to, older, more polluting vehicles.
- **Commuting** - Commuting to city centre locations decreases due to economic downturn (commercial, leisure, personal business etc.), leading to reduced employment, particularly in the city centre.
- **Public/political acceptability of emissions-related measures** - may drop significantly as a result of the list above.

## Assumptions

While the Scenario Analysis to be undertaken will detail the assumptions that go into considering the future it would seem reasonable to presume that:

- traffic levels return to pre-COVID-19 levels, or could be even be higher in the immediate recovery phase.
- Traffic levels on an aggregate level will rise during the COVID-19 recovery to higher than pre-COVID-19 levels given the preference to using private cars, with public transport capacity down by 30-40%.
- City centres will see some of the biggest structural changes to travel behaviours.

## Principles

[A Nature article from June 2020](#) outlined five principles to be applied to modelling in a post-COVID world:

- **Mind the assumptions** - Assess uncertainty and assumptions by applying sensitivity analysis, with the model results being described adequately and made accessible to stakeholders.
- **Mind the Hubris** - Complexity can be the enemy of relevance, so be aware that as more parameters are added, uncertainty can build up, with errors potentially increasing to the point at where predictions become useless. We must seek to find the optimum balance with error.
- **Mind the Framing** - Results from models will at least partly reflect the interests, disciplinary orientations and biases of the developers, so modellers should not hide the normative values or assumptions of their choices. As such, we must apply a set of 'social norms' to cover how the model was produced, assess its uncertainty and communicate the results.
- **Mind the consequences** - Quantification can backfire, where number production can push a discipline away from being roughly right towards being precisely

wrong. Don't let key numbers overshadow other possible explanations and estimates; opacity about uncertainty damages trust and thus usefulness of the model.

- **Mind the unknowns** - We should acknowledge ignorance by communicating what is not known just as much as what is known.



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Published by Transport Scotland, May 2021

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