Aberdeen City Council

Low Emission Zone Submission

February 2022

Reporting Body
Aberdeen City Council

Introduction

Following a robust option generation, appraisal and testing process, using the National Low Emission Framework (NLEF) and National Modelling Framework (NMF), and informed by ongoing engagement with members of the public and stakeholders, Aberdeen City Council (ACC) has determined the optimum Low Emission Zone (LEZ) for Aberdeen.

The LEZ seeks to address longstanding and persistent issues of poor air quality within the City Centre Air Quality Management Area (AQMA), specifically ongoing exceedance of the annual mean objective for nitrogen dioxide (NO_2).

A map of the proposed Aberdeen LEZ is shown in Figure 1 below.

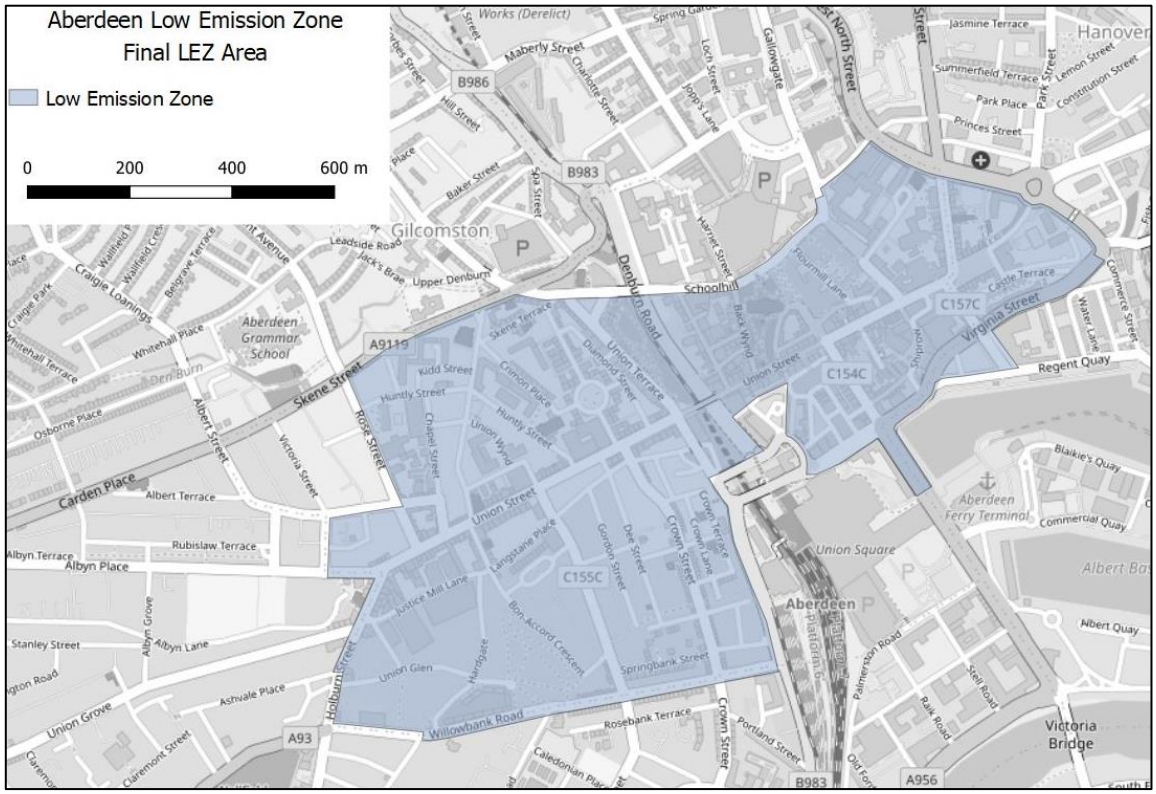


Figure 1: Proposed LEZ

A list of all roads within the proposed LEZ area is provided in Table 1. These are all public roads, with no private or special roads falling within the LEZ boundary.

Table 1 : Schedule of Streets within Proposed LEZ

Roads within LEZ Boundary	Detail
Academy Street	Full length
Adelphi	Full length
Affleck Place	Full length
Affleck Street	Full length

Albany Court	Full length
Alford Place	Full length
Back Wynd	Full length
Bath Street	Full length
Belmont Street	Full length
Bon-Accord Crescent	Full length
Bon-Accord Crescent Lane	Full length
Bon-Accord Lane	Full length
Bon-Accord Square	Full length
Bon-Accord Street	From Union Street Junction to Springbank Terrace Junction
Bon-Accord Terrace	Full length
Bridge Place	Full length
Bridge Street	From Union Street Junction to Wapping Street Junction
Broad Street	Full length
Carmelite Lane	Full length
Carmelite Street	From Hadden Street Junction to Wapping Street Junction
Castle Street	Full length
Castle Terrace	Full length
Castlehill	Full length
Chapel Street	Full length
Concert Court	Full length
Correction Wynd	Full length
Craibstone Lane	Full length
Crimon Place	Full length
Crown Lane	Full length
Crown Street	Full length
Crown Terrace	Full length
Dee Place	Full length
Dee Street	Full length
Denburn Road	From Rosemount Viaduct to Wapping Street Junction
Diamond Lane	Full length
Diamond Place	Full length
Diamond Street	Full length
East Craibstone Street	Full length
East Green	Full length
Exchange Lane	Full length
Exchange Street	Full length
Exchequer Row	Full length
Flourmill Lane	Full length

Gaelic Lane	Full length
Gallowgate	From Upperkirkgate Junction to Littlejohn Street Junction
Gilcomstoun Court	Full length
Golden Square	Full length
Gordon Street	Full length
Guild Street	From Carmelite Street Junction to Market Street Junction
Hadden Street	Full length
Hardgate	From Justice Mill Lane Junction to Willowbank Road Junction
Holburn Street	From Union Street Junction to Ashvale Place Junction
Huntly Street	Full length
Imperial Place	Full length
Justice Mill Brae	Full length
Justice Mill Lane	Full length
Justice Street	Full length
Kidd Street	Full length
King Street	From West North Street Junction to Castle Street
Langstane Place	Full length
Lindsay Street	Full length
Little Belmont Street	Full length
Little Chapel Street	Full length
Marischal Street	Full length
Market Street	From Union Street Junction to Union Square Bus Station
Market Stance	Full length
Marywell Street	Full length
Minister Lane	Full length
Netherkirkgate	Full length
North Silver Street	Full length
Oldmill Road	Full length
Peacock's Close	Full length
Poultry Market Lane	Full length
Queen Street	Full length
Rose Place	Full length
Rose Street	From Thistle Street Junction to Union Street Junction
Ruby Lane	Full length
Ruby Place	Full length
Schoolhill	From Upperkirkgate to Back Wynd Junction
Shiprow	Full length
Shoe Lane	Full length

Shore Brae	Full length
Shore Lane	Full length
Skene Terrace	Full length
South Silver Street	Full length
Springbank Street	Full length
Springbank Terrace	Full length
St John's Place	Full length
St Mary's Place	Full length
St Nicholas Lane	Full length
St Nicholas Street	Full length
Stirling Street	Full length
Strawberry Bank Parade	Full length
Summer Street	Full length
Theatre Lane	Full length
Thistle Place	Full length
Thistle Street	From Rose Street Junction to Chapel Street Junction
Trinity Lane	Full length
Trinity Quay	Full length
Trinity Street	Full length
Union Bridge	Full length
Union Glen	From Holburn Street to Bon Accord Gardens
Union Glen Court	Full length
Union Row	Full length
Union Street	Full length
Union Terrace	Full length
Union Wynd	Full length
Upperkirkgate	Full length
Virginia Court	Full length
Virginia Street	Full length
Wellington Place	Full length
Weigh-House Square	Full length
West Craibstone Street	Full length
Whitehouse Street	Full length
Willowbank Road	From Hardgate Junction to Springbank Terrace Junction
Willowgate Close	Full length
Windmill Brae	Full length
Windmill Lane	Full length

ACC intends to formally introduce the LEZ on 30th May 2022. A 2-year grace period for both residents and non-residents of the LEZ area and for all non-exempt vehicle types will commence from this date, meaning that enforcement will take place from 1st June 2024.

The LEZ will operate for 365 days a year, 24 hours a day.

Vehicles will be permitted access to the LEZ on the basis of their exhaust emissions standard, in accordance with the mandatory nationally consistent emission standards for Scottish LEZs identified in the Low Emission Zone (Emission Standards, Exemptions and Enforcement) (Scotland) Regulations 2021:

- Euro 6/VI for diesel vehicles; and
- Euro 4/IV for petrol/gas vehicles.

Aberdeen's LEZ will not apply to motorcycles and mopeds given the limited contribution these make to NO_2 emissions in the city currently. Other than motorcycles and mopeds, the LEZ will apply to all other vehicle types specified in the Regulations and detailed in Table 2 below, unless subject to a national exemption, as defined in the Regulations, or a local time-limited exemption.

Table 2: Vehicle types within scope of the LEZ

Vehicle	Vehicle Category	Description
Light passenger vehicles	M1	Vehicles designed and constructed for the carriage of passengers and comprising no more than eight seats in addition to the driver's seat.
Minibus	M2	Vehicles designed and constructed for the carriage of passengers, comprising more than eight seats in addition to the driver's seat, and having a maximum mass not exceeding 5 tonnes.
Bus and coach	M3	Vehicles designed and constructed for the carriage of passengers, comprising more than eight seats in addition to the driver's seat, and having a maximum mass exceeding 5 tonnes.
Light Goods Vehicles (LGVs)	N1	Vehicles designed and constructed for the carriage of goods and having a maximum mass not exceeding 3.5 tonnes.
Heavy Goods Vehicles (HGVs)	N2	Vehicles designed and constructed for the carriage of goods and having a maximum mass exceeding 3.5 tonnes but not exceeding 12 tonnes.
	N3	Vehicles designed and constructed for the carriage of goods and having a maximum mass exceeding 12 tonnes.

In addition to the 2-year grace period, additional time-limited exemptions may be granted for specialist vehicles that are not suitable for retrofitting or replacement. In accordance with the legislation, the LEZ may be suspended for the duration of events of local or national significance. The LEZ may also be suspended in emergency situations, such as when an incident on the wider road network requires vehicles to be temporarily diverted through the LEZ, but only where vehicles follow prescribed diversionary routes. The process and accountability behind the issuing of such exemptions is detailed in the Governance section of this submission (page 11).

Should ACC believe a vehicle is in contravention of the LEZ, it will serve a Penalty Charge Notice (PCN) on the registered keeper, in accordance with the Regulations. Enforcement will commence following the end of the 2-year grace period and will be via Automatic Number Plate Recognition (ANPR) cameras, placed at LEZ entry

points. Vehicles entering the LEZ will be subject to a check via the Driver and Vehicle Licensing Agency (DVLA) to determine their emissions standard, with non-compliant vehicles issued a PCN. Appropriate signage will be in place on the strategic and local road networks to warn drivers that they are approaching the LEZ and to identify alternative routes for non-compliant vehicles.

In accordance with the Regulations, the initial penalty charge for all non-compliant vehicles will be £60, reduced by 50% if paid within 14 days. The penalty amount will double with each subsequent breach of the rules detected in the LEZ (see Table 3). The penalty charges are capped at £480 for cars and light goods vehicles and £960 for buses and HGVs. Where there are no further breaches of the rules detected within the 90 days following a previous violation, the penalty is reset to the base tier of charge i.e. £60.

Table 3: LEZ Penalty Charges and Surcharges

Vehicle category	Initial Penalty Charge	Subsequent Penalty Charges			
	1	2	3	4	5
Light passenger vehicle	£60	£120	£240	£480	
Minibus	£60	£120	£240	£480	£960
Bus and coach	£60	£120	£240	£480	£960
Light goods vehicles	£60	£120	£240	£480	
Heavy goods vehicle	£60	£120	£240	£480	£960
Special Purpose Vehicles	£60	£120	£240	£480	

Full details of the proposed LEZ are provided in ACC's Proposal to Make a LEZ Scheme.

Strategy

The main aim of the LEZ is to reduce levels of harmful NO_2 within the City Centre AQMA, where annual mean objective limits are regularly exceeded, and which is predominantly caused by road traffic emissions (Figure 2).

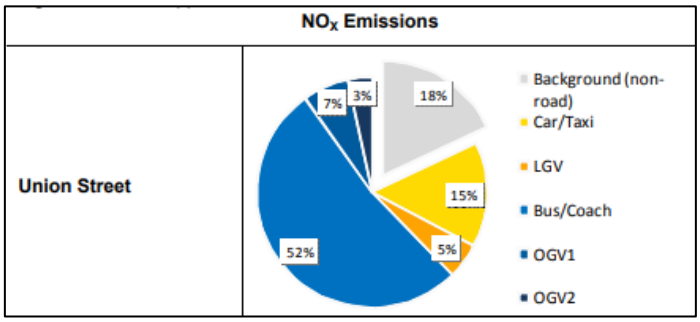


Figure 2: Nitrogen oxide source apportionment on Union Street within Aberdeen AQMAs (Source: Aberdeen Air Quality Action Plan)

It is anticipated that the impact of the LEZ will be much wider than the immediate city centre, reducing levels of NO_2 and particulate matter throughout the city (see SEPA's Cleaner Air for Scotland – National Modelling Framework: Low Emission Zone Aberdeen Evidence Report Addendum).

Air Quality Action Plan (AQAP) Annual Progress Reporting has demonstrated that the City Centre AQMA is characterised by ongoing exceedance of the NO_2 objective. Despite major infrastructure changes in Aberdeen in recent years, including the

opening of the Aberdeen Western Peripheral Route (AWPR) in early 2019, these pollution hotspots remain.

Furthermore, high-level modelling undertaken at the very beginning of the NMF process demonstrated that the air quality objectives were unlikely to be met in a reasonable timescale by the implementation of any plans or projects currently being delivered by the Council (including traffic demand management measures identified in Aberdeen's City Centre Masterplan), without tailpipe emissions also being addressed. Figure 3 is an extract from the NMF Aberdeen model which shows that, even with a 40% reduction in city centre traffic (far in excess of that envisaged by the Masterplan) and no action to address tailpipe emissions, NO_2 levels are anticipated to remain beyond legal limits in many city centre locations (those marked in red).

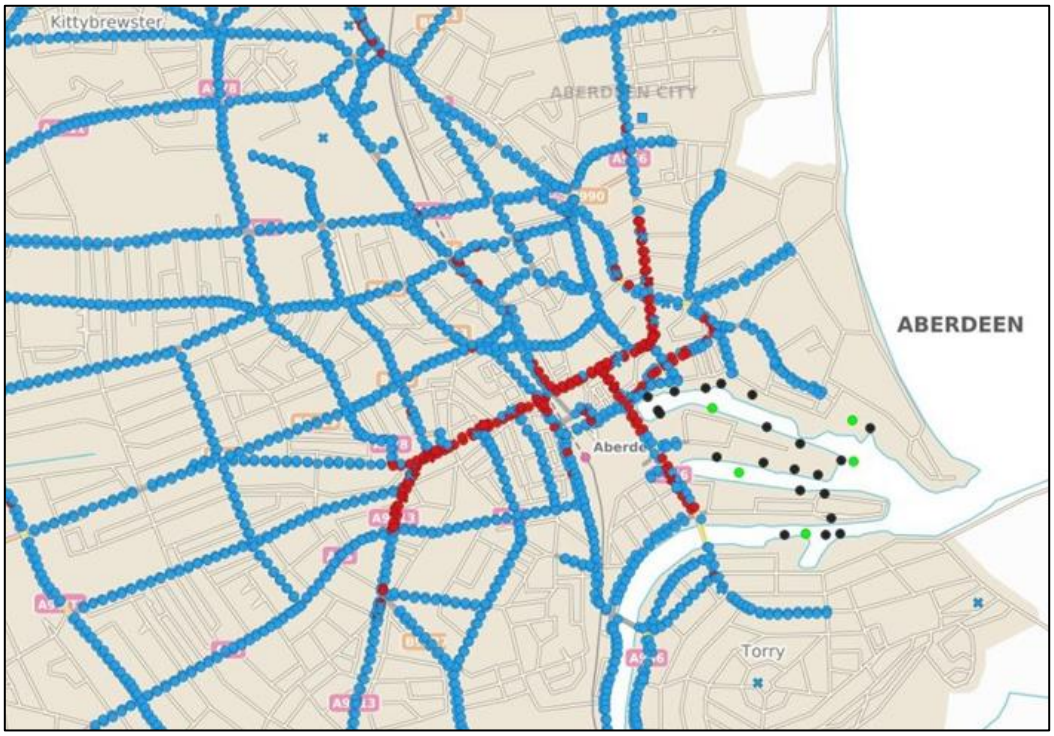


Figure 3: Modelled NO_2 exceedances at 60% traffic flow (NMF Aberdeen Model)

It was therefore determined that additional intervention, in the form of a LEZ, is required to reduce pollution levels within the City Centre AQMA to legal limits.

Various LEZ options (such as a LEZ applying only to buses) were subject to early testing, and this concluded that an all-vehicle LEZ will be required to adequately address all areas of NO_2 exceedance (see NLEF Stage 2 Report – Chapter 5). The modelling work also suggested that a LEZ alone is unlikely to bring all exceedance locations within objective limits, and that further traffic reduction measures should be introduced in tandem with the LEZ to maximise the benefits (see NLEF Stage 2 Report – Chapter 6).

It is anticipated therefore that implementation of Aberdeen's LEZ will be delivered alongside traffic reduction measures in the city centre, including the pedestrianisation of Central Union Street and supporting bus and cycle priority

around this central core. These interventions are being delivered as part of the City Centre Masterplan (CCMP) which seeks to develop a more people-focussed city centre with fewer vehicles and an enhanced public realm, to ensure the city centre maintains its position as the regional hub for employment, retail and leisure.

Improving air quality and developing a safer and cleaner city centre via the LEZ supports well the strategic vision of the CCMP. The combination of a LEZ delivered alongside the CCMP is anticipated to bring the majority of remaining locations of NO_2 exceedance in the city centre to within objective limits. SEPA's NMF Low Emission Zone Aberdeen Evidence Report Addendum concludes that implementation of the LEZ and CCMP will reduce the number of NO_2 exceedances at kerbside receptors within the City Centre AQMA to three – two on Bridge Street and one on Holburn Street (marked in black in Figure 4). These will, however, be addressed via other measures, as described in the Modelling section of this report (page 38).

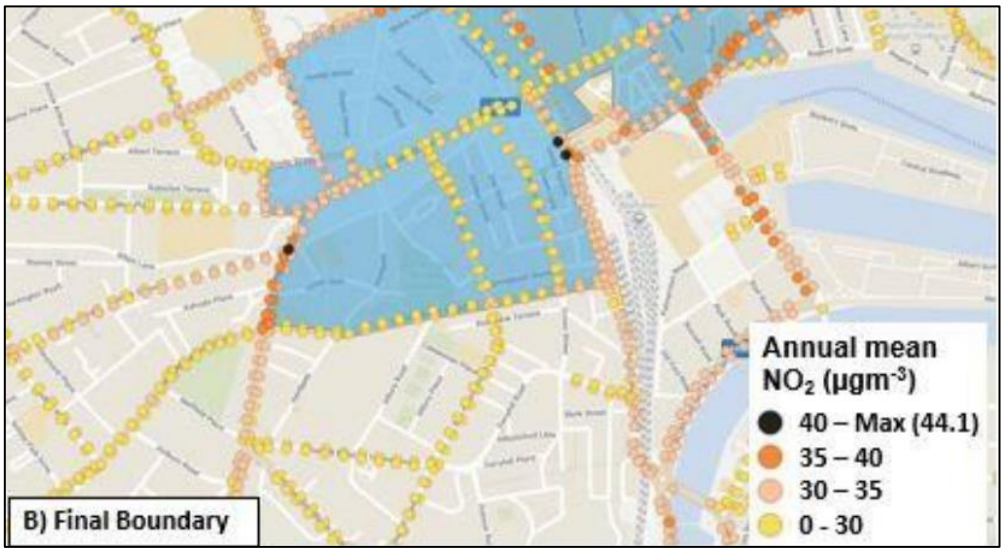


Figure 4: Predicted NO_2 concentrations at kerbside receptors in the city centre area for the Final LEZ Boundary (Source: NMF Low Emission Zone Aberdeen Evidence Report Addendum)

Full details of the option appraisal and testing process is described in the NLEF Stage 2 Report and accompanying Option Testing Report.

The LEZ complements the transport strategy for the wider city. Interventions in the city centre will be enhanced by the delivery of additional active travel and bus priority measures on key transport corridors, in accordance with the revised North East Scotland Roads Hierarchy, thus facilitating and encouraging modal shift to active and sustainable modes of transport for trips to and from the city centre.

The Roads Hierarchy also aims to discourage through-traffic from the city centre, to enhance the role of the centre as a destination rather than a through-route for traffic. The LEZ will contribute towards this by reducing traffic levels in the area (improving safety for people walking and cycling) and restricting through-movement of non-compliant vehicles (see Appendix D of the Option Testing report), while ensuring that any residual vehicles in the city centre are as clean as possible.

The LEZ therefore complements Aberdeen's strategic vision for transport, both in the city centre, and more widely throughout the city.

Governance

Aberdeen LEZ option appraisal work and implementation has been, and continues to be, guided by a local Delivery Group, comprising representatives of:

- Aberdeen City Council (including Transport Strategy, Environmental Health, Traffic Management and Road Safety, Planning, Enforcement, Communications, and Licensing teams);
- Aberdeenshire Council (as neighbouring local authority);
- Nestrans, the Regional Transport Partnership for the Aberdeen and Aberdeenshire areas;
- NHS Grampian Public Health Directorate;
- Transport Scotland;
- SEPA (Scottish Environment Protection Agency); and
- SYSTRA (ACC's modelling and appraisal consultants).

This group is responsible for guiding option development, testing and appraisal work; determining and implementing a communications and engagement strategy; and determining the optimum options to be put forward to decision-makers for approval at various stages of the LEZ development process.

A Project Manager has been appointed from the Council's Transport Strategy and Programmes team to lead the appraisal, modelling and consultation work, supported by the Delivery Group. The Project Manager is responsible for overall delivery of the project, including chairing Delivery Group meetings, liaison with Transport Scotland and the other LEZ cities, managing consultants, co-ordinating engagement activities, reporting to Council Committee, monitoring the project programme and expenditure, and co-ordinating this submission to Ministers.

Progress on LEZ delivery is monitored by the Council's Transport Programme Board which meets on a monthly basis, chaired by ACC's Chief Officer – Strategic Place Planning. The Board is responsible for monitoring progress on all of the Council's major transportation projects and authorising changes to scope, budget, timescales, etc. Progress is also reported to the main funding bodies (Transport Scotland and Nestrans) at regular intervals, including updates on incurred and planned expenditure, to ensure that funding awarded is being spent in an appropriate and transparent manner.

ACC is represented on the national LEZ Consistency Group, Enforcement Working Group and Communications Group, along with representatives of Transport Scotland and the other LEZ cities.

The Council's Transport Spokesperson sits on the national LEZ Leadership Group, with representatives of the Scottish Government, Transport Scotland, NHS, SEPA and senior Councillors from the other LEZ cities. The group is responsible for monitoring and overseeing the implementation of LEZs in the 4 Scottish cities.

Aberdeen City Council's City Growth and Resources Committee has responsibility for approving the Council's actions for city growth and place planning. The Committee has approved progress of the LEZ at key stages, including:

- Agreeing the scheme's objectives (December 2019);
- Providing approval to consult on LEZ options (October 2020); and
- Agreeing a preferred option (June 2021) for final consultation.

At their meeting in June 2021 the Committee agreed to: *Delegate authority to the Chief Officer – Strategic Place Planning, in consultation with the Leader of the Council and the Convenor of the City Growth and Resources Committee, to publish the proposed LEZ scheme following the consultation period, and to formally submit Aberdeen's LEZ proposal to Scottish Ministers.*

Approval was subsequently granted from the Council Leader and the Convenor of the City Growth and Resources Committee to formally publish the scheme in November 2021 for the objection period, and to make this submission to Scottish Ministers.

It is anticipated that, following approval of the LEZ, responsibility for implementation of the enforcement camera system and subsequent LEZ enforcement will fall to the Council's City Wardens team, who are already responsible for enforcing car parking and bus lane violations. A back-office system for the recording, checking and issuing of PCNs is already established for this purpose and it is anticipated that the LEZ will follow a similar process as currently takes place for the enforcement of bus lane violations in terms of:

- A potential violation being recorded by ANPR camera;
- Screening potential violations against national and then local exemption databases and whitelists;
- Liaising with the DVLA to determine whether any residual vehicles are not compliant with the LEZ;
- Manual checks of ANPR records if required;
- Issuing of PCNs to registered keepers of non-compliant vehicles; and
- Processing payments and addressing appeals.

Once the LEZ is operational, the following monitoring and reporting responsibilities are anticipated:

- ACC City Wardens - financial reporting in terms of PCN income and expenditure incurred in maintaining the enforcement system and enforcing the LEZ;
- ACC Environmental Health - responsible for air quality monitoring;
- ACC Transport Strategy and Environmental Health – responsible for AQAP annual reporting, including analysis of the performance of the LEZ against the scheme objectives. The outcomes of the AQAP reporting will determine whether any more detailed review of the LEZ performance is required and whether or not any amendments to the scheme are necessary; and
- ACC Transport Strategy and Traffic Management teams - responsible for monitoring the impacts of the LEZ (particularly on sensitive streets outwith the LEZ that may see an increase in traffic) and determining whether or not further mitigation to reduce these impacts is required. The traffic modelling

has already suggested some areas which could see an unacceptable increase in traffic as a result of displacement caused by the LEZ, and has helped to identify appropriate mitigation measures (summarised in Chapter 6 of the Option Testing Report). However, given the uncertainties inherent in traffic modelling, ongoing monitoring of traffic displacement will be required to ensure any unforeseen negative impacts are identified and addressed.

The Council's Chief Officer – Strategic Place Planning will be responsible for the issuing of any time-limited exemptions from and suspensions of the LEZ.

In addition to the 2-year grace period, an additional time-limited exemption may be granted for a limited number of specialist vehicles that are not suitable for replacement or retrofitting. Those wishing to apply for such an exemption will be required to submit to the Council details of:

- The vehicles they feel should be exempt from the LEZ:
- The purpose and / or function of such vehicles, particularly in terms of their specialist nature and use;
- Typical usage of the LEZ (including routeing patterns and duration of stay within the LEZ);
- Supporting evidence of why the vehicle(s) is / are unsuitable for retrofit or replacement within the established grace period; and
- A future fleet replacement and renewal programme or strategy, clearly demonstrating that efforts are being made to comply with the LEZ in the quickest time possible.

Upon receipt of this information, the LEZ Delivery Group will review the application and make a recommendation to the Chief Officer – Strategic Place Planning, who will determine whether or not the exemption will be granted. In accordance with the Regulations, such an exemption can only be granted for a maximum of one year. Should the applicant wish to renew their exemption for an additional year, the above process must be repeated.

In emergency situations, where prior approval cannot be granted, any vehicle owner receiving a PCN will be able to appeal on the grounds that entry to the LEZ was required for emergency purposes. Such appeals will be determined by the Council's City Wardens on a case-by-case basis.

In accordance with the legislation, the LEZ may be suspended for the duration of events of local or national significance. Although none are foreseen at present, should such a situation arise, a suspension would require to be agreed by the Aberdeen LEZ Delivery Group and approved by ACC's Chief Officer – Strategic Place Planning, in a manner consistent with the exemption process described above. In such cases, any violations of the LEZ for the agreed duration of the event would not be enforced.

In all such examples described above, records will be kept of recommendations and decisions made in order to ensure transparency in the decision-making process and confidence in the integrity of the scheme.

The LEZ may also be suspended in emergency situations, such as when an incident on the wider road network requires vehicles to be temporarily diverted through the

LEZ, but only where vehicles follow prescribed diversionary routes. Again, in such cases, any violations of the LEZ would not be enforced.

Summary of Air Quality, Climate Change and Transport issues

Air Quality

Aberdeen has declared 3 Air Quality Management Areas (AQMAs) due to exceedances of the annual mean national air quality objectives for nitrogen dioxide (NO_2) and particulate matter (PM_{10}).

- The City Centre (Figure 5);
- Wellington Road (Figure 6); and
- Anderson Drive and Auchmill Road (Figure 7).

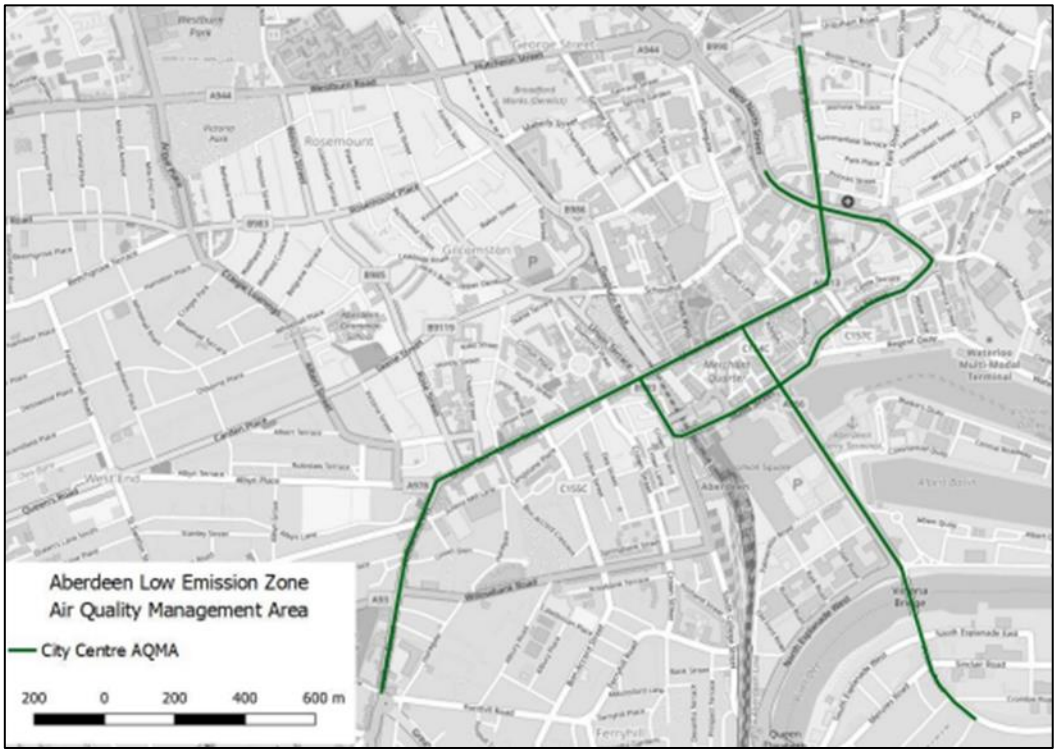


Figure 5: City Centre AQMA

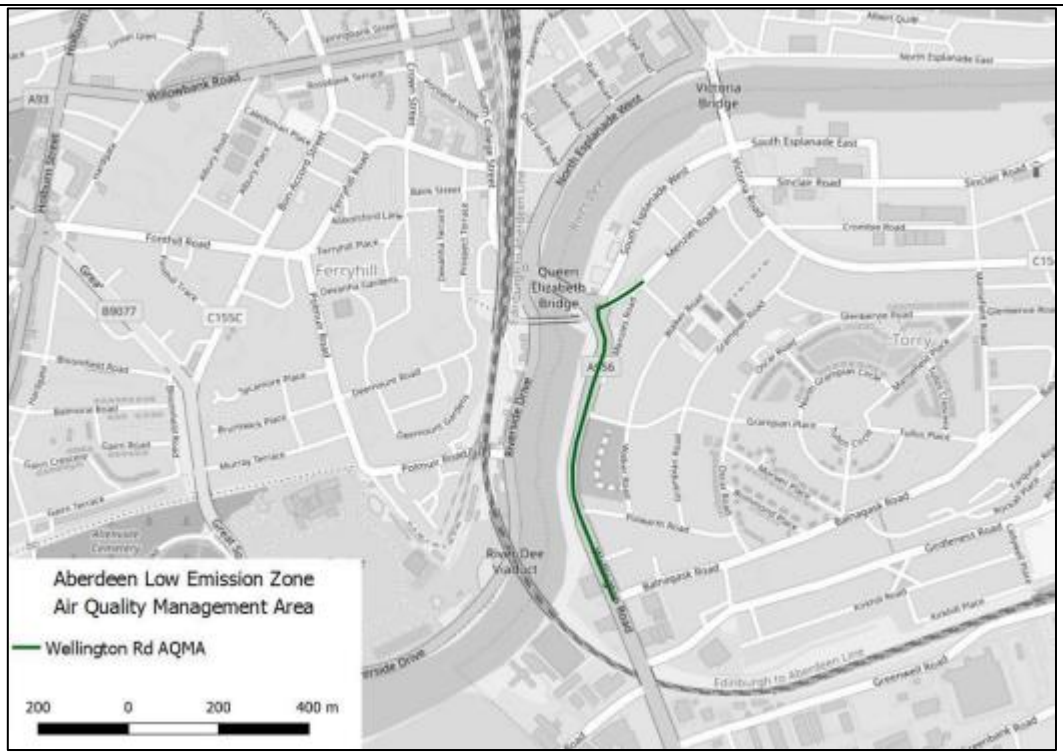


Figure 6: Wellington Road AQMA



Figure 7: Anderson Drive AQMA

Ongoing monitoring of NO_2 and PM_{10} concentrations in Aberdeen since the first AQMA was declared in 2001 confirmed the need for continuance of the AQMAs and the requirement for ACC to publish an Air Quality Action Plan (AQAP).

The AQAP showed NO_2 concentrations in excess of the mandatory annual mean limit value existed at a number of the main roads and junctions in Aberdeen. The

main areas of concern, where concentrations were well in excess of the annual mean limit value, were Haudagain roundabout, Union Street and Market Street. Exceedances of the hourly averaged limit value were also measured on Union Street and Market Street. The AQAP also confirmed PM_{10} concentrations were in excess of the Scottish annual mean objective at numerous locations including Market Street, Union Street and Wellington Road.

At the time of publishing in 2011, the AQAP suggested that in the most polluted areas, traffic emission reductions of the order of 50-75% would be required for compliance with the mandatory NO_2 annual mean limit value.

Since the introduction of the AQAP there has been significant reductions in traffic emissions. The AQAP Annual Progress Reports (APRs) provide detailed updates on the implementation of the measures identified in the AQAP and their impact in improving air quality in the AQMAs.

ACC currently undertakes automatic (continuous) monitoring of: nitrogen oxides (NOx), namely nitric oxide (NO) and nitrogen dioxide (NO_2); Particulate Matter (PM), both coarse (PM_{10}) and fine ($PM_{2.5}$); and ground-level ozone (O_3). Automatic monitoring is undertaken at 6 sites: Union Street, Market Street, Anderson Drive, Wellington Road, King Street and Errol Place. The sites at Union Street, Market Street, Anderson Drive and Wellington Road are located within AQMAs, with Union Street and Market Street within the City Centre AQMA. Non-automatic (passive diffusion tube) monitoring of NO_2 is undertaken at a further 70 sites throughout the city.

The 2020 AQAP APR (reporting on 2019 pollution levels – the most recent dataset considered 'typical' and unaffected by movement restrictions introduced as a result of the COVID-19 pandemic) shows that NO_2 concentrations at all automatic sites were below the annual mean Air Quality Objective (AQO) of 40 µg/m^3 for the second year running. Generally, NO_2 levels monitored across Aberdeen were marginally lower than previous years.

Data from the diffusion tube network, however, shows that exceedances of the annual mean objective still occur in the City Centre AQMA. In total, there are 8 locations where annual mean concentrations of NO_2 exceed the AQO and a further 7 sites where annual mean concentrations of NO_2 exceed 36 µg/m^3 (Figure 8).

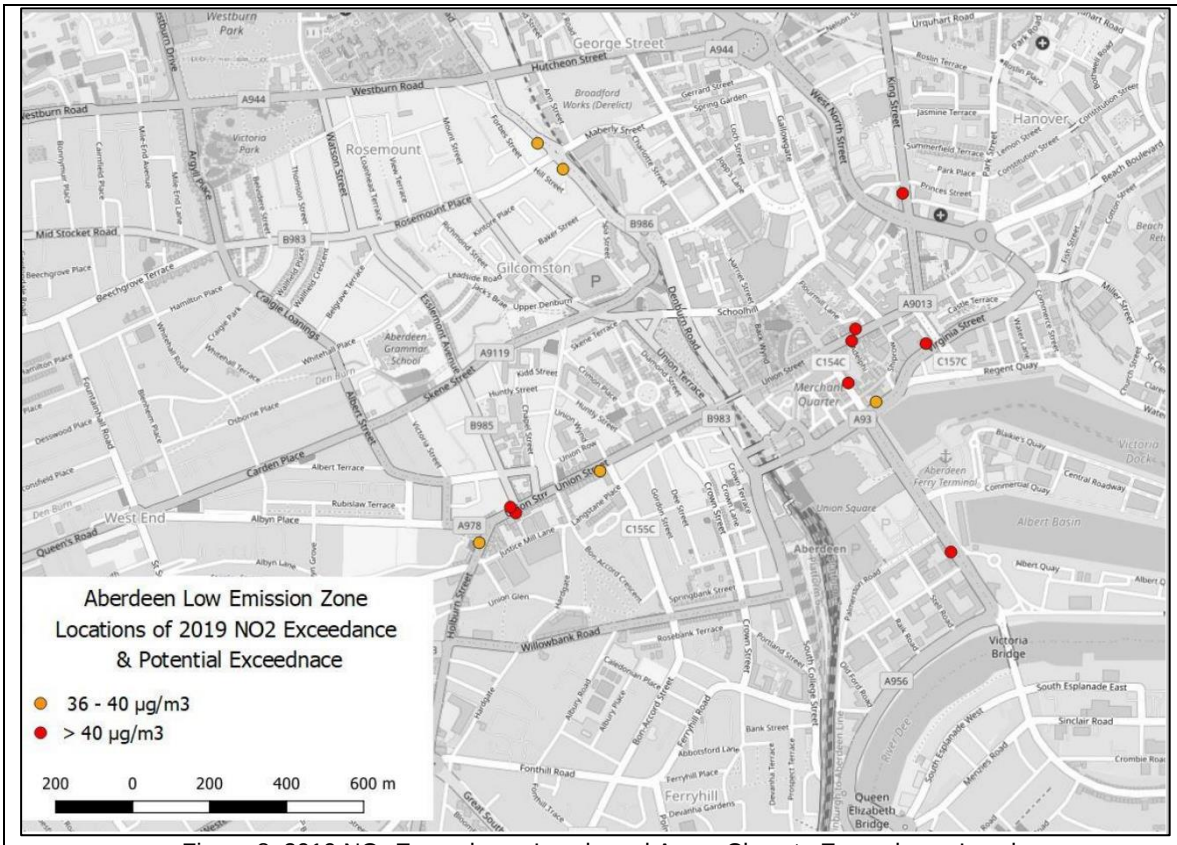


Figure 8: 2019 NO_2 Exceedance Levels and Areas Close to Exceedance Levels

The 2020 APR also compares the continuously monitored NO_2 hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year, and reports that no exceedances of the hourly mean objective were identified at automatic monitoring locations in 2019.

There were no exceedances of the PM_{10} annual mean objective or 24 hour mean objective, or of the $PM_{2.5}$ annual mean objective, observed at any of the continuous monitoring sites in 2019.

The 2020 APR therefore shows that, while pollution levels within the Wellington Road and Anderson Drive AQMAs remain within objective limits, the City Centre AQMA continues to observe regular exceedance of the NO_2 objective. Despite major infrastructure changes in Aberdeen in recent years, including the opening of the AWPR, these pollution hotspots remain and are not anticipated to be resolved in a reasonable timescale via the implementation of any existing projects identified in current transport strategies. It has therefore been determined that additional intervention, in the form of a LEZ, is required to further reduce NO_2 levels within the City Centre AQMA to an acceptable level.

<u>Climate Change</u>

In common with cities throughout the world, Aberdeen is increasingly vulnerable to the impacts of climate change and cognisant of our duties to act now to avert future catastrophe. ACC recognises that transport remains a key contributor to carbon dioxide (CO_2) emissions and is one of the few sectors where emissions continue to increase (Figure 9).

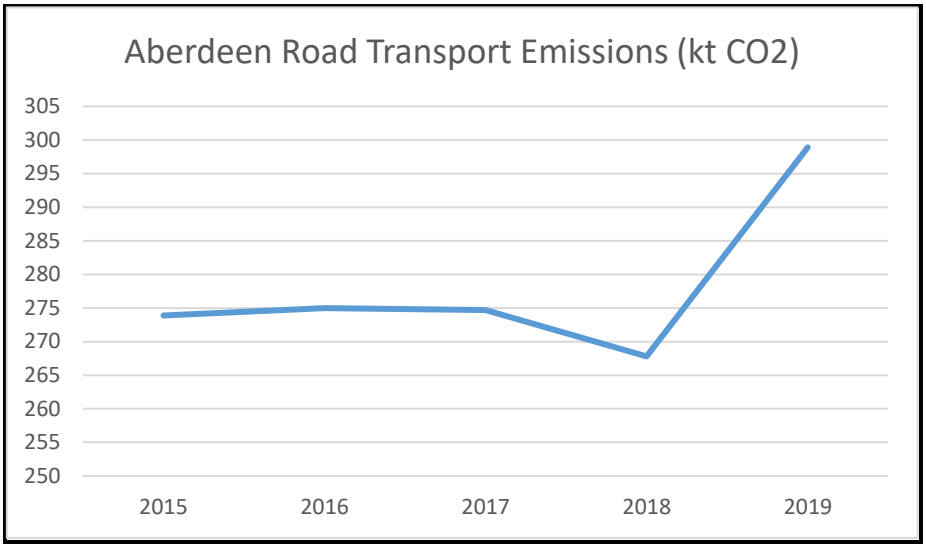


Figure 9: Road Transport Emissions in Aberdeen, 2015-2019
Source: Department for Business, Energy and Industrial Strategy, UK local authority and regional carbon dioxide emissions national statistics

ACC is committed to addressing climate change and in 2020 adopted a Net Zero Vision: *We want Aberdeen to become a climate positive city, at the same time helping to lead the world on the rapid shift to a net zero future by leveraging its unique assets and capabilities to support the global energy transition.*

The Net Zero Vision was accompanied by a supporting Strategic Infrastructure Plan which identifies a range of infrastructure projects which will contribute to the city's energy transition from fossil-based to net carbon zero. Sustainable Mobility is identified as a Strategic Infrastructure Goal with critical success factors identified as:

- Improved use of electric vehicles and infrastructure;
- Extend alternative fuel use (hydrogen) for transport;
- Full pedestrianisation of urban streets; and
- Connected transport for ease of access to employability in low carbon sectors.

In terms of projects, the Plan identifies *City Centre Regeneration* as a priority, to encompass traffic management measures and network improvements to support pedestrianisation and cycling opportunities accompanied by a 20% reduction in traffic demand. The contribution of the LEZ to achieving this priority project is noted in the Plan.

The LEZ therefore will contribute towards CO_2 reduction targets within the LEZ area by reducing the volume of older and dirtier vehicles driven in the city centre, encouraging vehicle and fleet renewal (including a switch to low or zero emission fuels), and encouraging modal shift to more sustainable transport choices.

Transport

Compared to other cities in Scotland, car ownership and usage has traditionally been high in Aberdeen, with bus patronage declining in recent years. While walking as a transport mode remains popular, cycling levels have not increased in line with other parts of Scotland.

Success, however, has been achieved in terms of alternative fuel technology. Aberdeen is one of Europe's pioneering hydrogen cities, with ACC having developed a cluster of hydrogen activity encompassing two publicly accessible hydrogen refuelling stations and one of the largest and most varied fleets of hydrogen vehicles in Europe, including buses, cars, vans, road sweepers and waste trucks. The city is the deployment location for the world's first fleet of fuel cell double decker buses. The Council also continues to invest in electric vehicle charging infrastructure, with over 100 charge points within ACC's control, while bus operators are also proving proactive in terms of fleet electrification.

A car club operates in Aberdeen, with (at the time of writing) 47 low emission vehicles available for the public to use on a pay as you go basis. The LEZ is a further means to accelerate the take-up of low and zero emission vehicles amongst businesses and individuals, with Aberdeen currently well placed to support an increase in uptake.

In recognition of the contribution of transport to climate change and poor air quality, the Council has a Local Transport Strategy 2016-2021 which identifies a number of policies and actions that seek to reduce the need to travel and, where travel is necessary, to enable this to be undertaken by active travel, public transport or low emission vehicles. The proposed LEZ can support these aspirations by encouraging modal shift, especially if delivered in tandem with active travel and bus priority improvements. The Strategy is currently being revised to reflect the updated policy and strategy position and further strengthen our commitment to net zero and active travel.

The Aberdeen City Centre Masterplan was adopted by ACC in 2015 and outlines a 25-year development strategy for the city centre to support economic growth by transforming Aberdeen as a place to live, visit, work and do business. A key focus of the CCMP is that the city centre should become a destination, with access to it by active travel and sustainable modes becoming more attractive with the private car playing a smaller role. The Plan outlines a series of transport projects that will be delivered to achieve this goal, with an emphasis on reducing vehicle numbers in the city centre, prioritising active and bus travel, and improving the public realm by giving more space to people.

The Council's Sustainable Urban Mobility Plan (SUMP) expands on the transport elements of the CCMP, outlining plans for significant active travel and bus priority measures in the city centre.

In the context of COVID-19 recovery, the CCMP was reviewed in 2021 with a reprioritisation of projects taking place. In November 2021, ACC agreed to fully pedestrianise Union Street and implement significant bus priority around the central core. Such measures should see the removal of all non-essential traffic from key city centre streets (up to 90% in some instances), bringing additional air quality improvements to the LEZ. Further information on current CCMP proposals is provided within Chapter 4 of the CCMP Phase 1 Traffic Management Plan.

Throughout the LEZ option development process, cognisance has been given to the need to integrate the LEZ with the CCMP and SUMP and these have been found to

complement one another well. Early in the option development process, high-level modelling suggested that addressing tailpipe emissions alone via a LEZ would not be sufficient to bring all instances of NO_2 exceedance in the city centre to within objective limits, and that additional traffic reduction measures would also be required (NLEF Stage 2 Report – Chapter 5). The LEZ was therefore tested in combination with various CCMP projects with the CCMP Union Street scheme (full or part-pedestrianisation) delivered in combination with a LEZ predicted to bring the majority of remaining problem areas within objective limits (proposals for addressing the residual problem areas are described in the Strategy section). ACC therefore views the CCMP and LEZ as part of a package of measures to improve air quality, and the LEZ modelling work played in a key role in determining the recommendation to accelerate the pedestrianisation of Union Street in tandem with LEZ delivery.

Following the opening of the AWPR in 2019, ACC and regional partners undertook a series of revisions to the local Roads Hierarchy to provide a network that reflects the role of the city centre as a destination (rather than a through-route) and makes effective use of AWPR for distributing traffic around the city to the most appropriate radial route to reduce cross-city traffic movements. Essentially, the revised network seeks to encourage as much strategic traffic as possible to use the new bypass, thus freeing up space on urban roads for active travel and bus priority measures, and prevent through-routeing in the city centre. Again, cognisance of the Roads Hierarchy has been made throughout the LEZ option development and appraisal process to ensure complementarity. The proposed LEZ integrates well with the strategic approach, contributing to the realisation of the Roads Hierarchy by restricting opportunities for non-compliant traffic to route through the city centre and relocating such traffic onto orbital bypass routes. The LEZ boundary has also been developed with the principles of the Roads Hierarchy very much in mind, to ensure as far as possible that non-compliant traffic is encouraged to route appropriately and in accordance with the hierarchy.

LEZ Objectives

The following objectives for the LEZ have been agreed by ACC.

- Primary Objectives:
  - Improve air quality in Aberdeen by reducing harmful emissions from transport and delivering on the Scottish Government's statutory air quality objectives (prescribed under section 87(1) of the Environment Act 1995);
  - Support climate change targets (as set out in Part 1 of the Climate Change (Scotland) Act 2009) by reducing road transport's contribution to emissions.
- Secondary objectives:
  - Protect public health and wellbeing;
  - Support local and regional transport strategies by contributing to the development of a vibrant, accessible and safe city centre, where the volume of non-essential traffic is minimised and active and sustainable transport movements are prioritised; and
  - Contribute to ongoing transformational change in Aberdeen, helping promote the city as a desirable place to live, visit and invest in.

LEZ Appraisal

As outlined in previous sections, there are longstanding and stubborn instances of poor air quality in Aberdeen city centre, which a number of large-scale infrastructure projects delivered in recent years, such as the AWPR, have not been able to fully address. While ACC has ambitious plans to significantly reduce traffic volumes in the city centre via implementation of the CCMP, high-level modelling has suggested that this will also be insufficient to bring NO_2 levels in the AQMA to within appropriate limits unless tailpipe emissions are also addressed (see Figure 3, page 7).

ACC has therefore undertaken a wide-ranging and robust LEZ option development, sifting and appraisal process (described in detail in the NLEF Stage 2 Report) to determine the optimum solution for Aberdeen. This has encompassed:

- Identification of a longlist of possible LEZ options which were sifted into a manageable number of realistic options for appraisal;
- Ongoing and iterative sifting and appraisal of options against a range of criteria and informed by traffic and air quality modelling; and
- Public and stakeholder engagement on options to understand the likely impacts on residents and businesses.

This work has been overseen by the Aberdeen LEZ Delivery Group.

Following an unconstrained option generation exercise, 16 potential geographic LEZ boundaries were identified, subsequently reduced to 8 when appraised against logic and feasibility. Five potential vehicle type restrictions were also identified, resulting in 40 options overall. A high level appraisal of these 40 options was then undertaken, with their likely impact on the air quality objective the main factor at this stage of appraisal (summarised in Chapters 8 and 9 of the NLEF Stage 2 Report).

In terms of vehicle types to be addressed by the LEZ, it was concluded that:

- Improvements to the local bus fleet would bring the largest reduction in NO_2. NMF model results show that if all buses in Aberdeen were of Euro VI standard there would be an average 6.3% predicted reduction in total network-wide NO_2 across all on-street monitoring locations from the 2019 base, resulting in a 47% reduction in modelled roadside points where NO_2 levels are predicted to exceed the objectives;
- The inclusion of diesel cars and taxis (an average 2.2% decrease in total network-wide modelled NO_2) in addition to buses would allow exceedances to fall closer to air quality standards;
- HGVs (1.7% average reduction), LGVs (0.9% average reduction) and petrol cars and taxis (0.1% average reduction) do not bring sufficient benefit on their own but do bring further pollution benefits to a LEZ which includes buses and diesel cars. Bringing all vehicles to LEZ standard sees a 89% reduction in modelled roadside points where NO_2 is predicted to exceed the objectives (see NLEF Stage 2 Report Chapter 5)

From this it was concluded that Aberdeen's LEZ should encompass buses, HGVs, LGVs, and diesel and petrol cars and taxis in order to maximise the air quality benefits.

Eight all-vehicle LEZ options were identified to proceed to detailed traffic modelling and public and stakeholder consultation:

- 1A – Union Street Area, including Denburn Road;
- 1B – Union Street Area, excluding Denburn Road;
- 2A – Union Street & George Street Area, including Denburn Road;
- 2B – Union Street & George Street Area, excluding Denburn Road;
- 3A – CCMP East including Denburn Road;
- 3B – CCMP East excluding Denburn Road;
- 4A – CCMP, including Denburn Road; and
- 4B – CCMP, excluding Denburn Road.

Consultation took place during September and October 2020 and responses were invited from members of the public and stakeholders. This took the form of an online survey and, given COVID-19 restrictions, online workshops with a range of stakeholders, including bus, taxi and freight operators, the local business community, active travel representatives, environmental bodies and equalities groups. Further details of the engagement undertaken is provided in the Consultation, Engagement and Stakeholder Input section of this submission.

The consultation identified a clear preference for options at the opposite ends of the scale, with Option 4A (the largest option) receiving the highest number of preferred option votes, closely followed by Option 1A (one of the smallest options). When considering overall average rankings, Option 1A emerged as the most popular option, with a general preference for the smaller options. Those options excluding Denburn Road from the LEZ were less well received, with 2B, 3B and 4B being the least preferred options.

The LEZ options were also subject to detailed traffic modelling in a revised City Centre Paramics microsimulation model, which resulted in the further sifting and rationalisation of options (with further details provided in the next section).

This process culminated in Options 1A and 4A proceeding to initial appraisal against the LEZ objectives and the STAG (Scottish Transport Appraisal Guidance) criteria: Environment, Economy, Safety, Integration, and Accessibility and Social Inclusion. While Option 4A performed best in air quality terms, the appraisal identified potential negative impacts on the Economy and Accessibility and Social Inclusion criteria, given the scale of this option (described in Chapter 13 of the NLEF Stage 2 Report) In response to this, a hybrid Option 5 was developed which looked to combine the benefits of Options 1A and 4A, while reducing some of the identified negative impacts on local residents and businesses.

Options 4A and 5 proceeded to detailed appraisal, with Option 5 emerging as the most promising option for further detailed testing (see Chapter 13 of the NLEF Stage 2 Report). This included consideration of supporting measures to enhance the benefits of the LEZ and reduce any negative impacts on surrounding streets. Again, this necessitated an iterative process of adjustments to the boundary to identify a final option that is feasible and deliverable, that best meets the scheme objectives and which reduces any negative impacts in other areas of the city. This resulted in the below LEZ option boundary being presented to Committee for formal consultation in June 2021 (Figure 10).

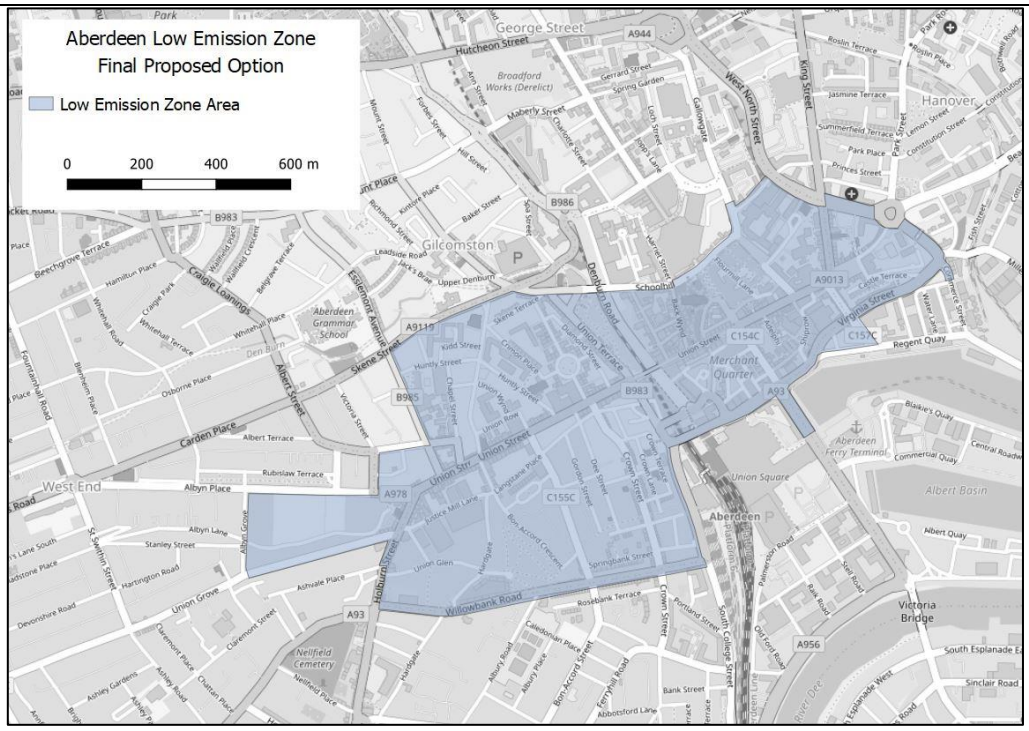


Figure 10: Preferred LEZ for Consultation

The option proposed was considered feasible and deliverable, striking an appropriate balance between maximising the air quality and public health benefits and minimising disbenefits, in terms of traffic displacement and impacts on local residents and businesses. In traffic and air quality modelling terms (elaborated upon in the next section), this option performed well, with the transport network predicted to comfortably cope with the anticipated traffic flow changes (albeit with some minor mitigation) and a net decrease in city-wide congestion and localised air pollution predicted to result. This option was also assumed to have a high degree of public acceptability compared to the other options, given that it is essentially a hybrid of the most popular options to emerge from the previous consultation.

During consultation, the maximum grace periods were the most popular options for both residents (45%) and non-residents (48%), although there was significant support for grace periods closer to the minimum, with 30% preferring a 1-2 year grace period for residents and 41% preferring the same for non-residents. Given there is a reasonably high level of support for grace periods of 1-2 years and considering the public health implications of continuing poor air quality on the most vulnerable members of society, the Council considers a short grace period appropriate to improve city centre air pollution in the quickest time possible. At the same time, the Council recognises that the ability of residents and businesses to comply with a 1-year grace period could be challenging even in normal times, and these challenges have been exacerbated by recent economic hardships arising from the COVID-19 pandemic.

Clearly, the longer the grace period, the more the benefits of the LEZ will be diluted. A balance must be struck, however, between achieving air quality and public health improvements in the quickest possible timescale, and allowing sufficient time for members of the public and businesses to comply with the LEZ in the context of COVID-19 recovery. It is likely that the pandemic has impacted on traditional fleet

renewal programmes and the ability of individuals and businesses to upgrade their vehicles or change mode of travel to become LEZ-compliant.

In response to such concerns, additional engagement took place with city centre businesses and bus operators in March and April 2021 to understand their ability to comply with a 1-year grace period. The outcome of these discussions was that the ability of these key sectors to comply with a one-year grace period would be extremely challenging, whereas a two-year period, although still challenging, was considered broadly achievable. This is particularly the case for local bus operators who have benefited from significant funding via Transport Scotland's BEAR (Bus Emissions Abatement Retrofit) fund, with Aberdeen operators the main beneficiary of this in 2021/22. And as the Integrated Impact Assessment notes, the impacts of the LEZ will be further mitigated by the availability of funding from Transport Scotland to support residents and small businesses become LEZ-ready.

Taking all of the above into account, therefore, the Aberdeen LEZ Delivery Group determined that a grace period of 2 years for both residents and non-residents was appropriate and strikes a balance between improving air quality and public health in the quickest time possible and being sympathetic to the ongoing impacts of COVID-19 on residents and businesses. A uniform grace period for both residents and non-residents will also be simpler from an enforcement point of view and will simplify communications by having one single 'start date' for all members of the public and stakeholders to become familiar with. Discussions with the national LEZ Consistency Group also suggested that the other LEZ cities (aside from Glasgow) were opting for a two-year grace period, thereby allowing a degree of national consistency and again an opportunity to simplify national communications. The Delivery Group therefore made a recommendation to Elected Members, who agreed in June 2021 that 2 years is an appropriate grace period to enable residents, businesses and visitors time to comply with LEZ requirements.

In June 2021, the Council's City Growth and Resources Committee agreed that the above LEZ boundary and proposed 2-year grace period should proceed to further consultation. Again, this was undertaken via online survey and stakeholder workshops, with all key stakeholders, including those specified in the Low Emission Zone (Scotland) Regulations 2021, made aware of the proposals and how to provide feedback. Further details are provided in the Consultation section (from page 39).

During the consultation period, a number of comments were received in opposition to the proposed boundary. The majority of these related to the eastern boundary, specifically the inclusion of East North Street, Commerce Street, Virginia Street and Market Street within the LEZ. The proposed option at that point restricted access to Aberdeen Harbour for non-compliant vehicles from the north, potentially pushing this traffic onto unsuitable roads around the periphery of the LEZ, including the beachfront area. It also prevents north-south routeing around the city centre for non-complaint vehicles of all types. The initial proposed eastern boundary, with West North Street, Commerce Street and Virginia Street within the LEZ is shown in Figure 11 (Option A).

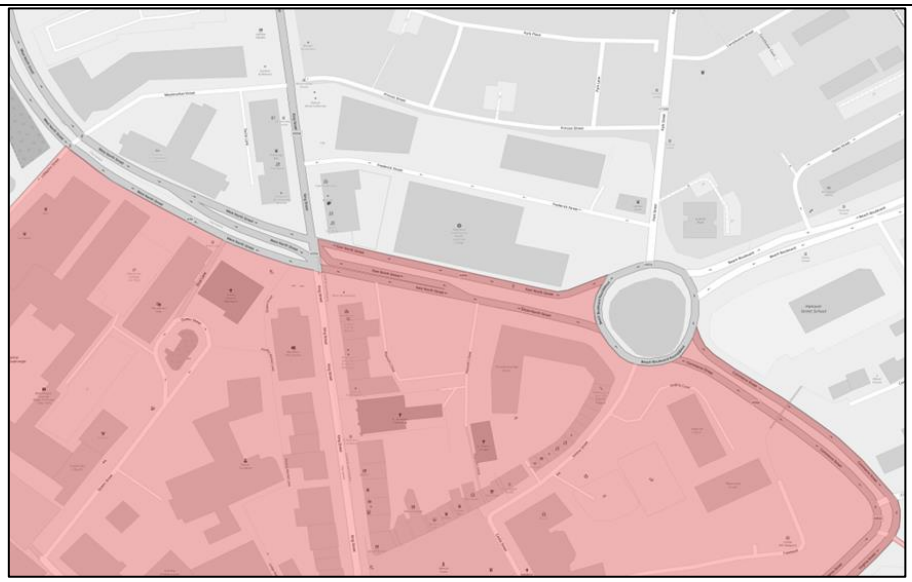


Figure 11: Eastern Corridor Option A

In response to the consultation findings, two additional variations of the eastern boundary were tested in the traffic and air quality models:

- Option B: Removal of East North Street and Commerce Street from the LEZ – this ensures full accessibility to the harbour for all vehicles via these routes but still prevents through-routeing of non-compliant vehicles (Figure 12);
- Option C: Removal of the entire eastern corridor (East North Street, Commerce Street, Virginia Street and Market Street (south)) from the LEZ, allowing full access through the corridor for all vehicles (Figure 13).

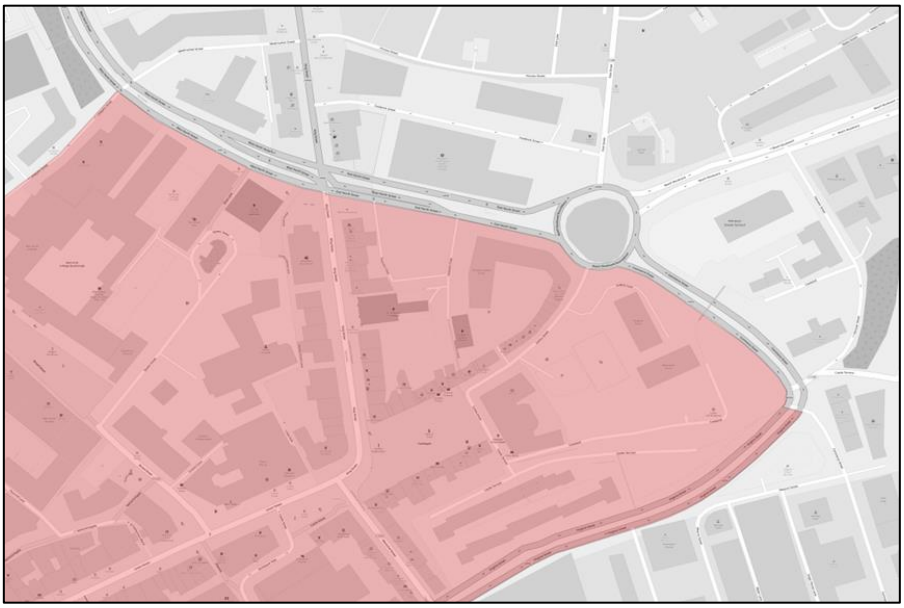


Figure 12: Eastern Corridor Option B

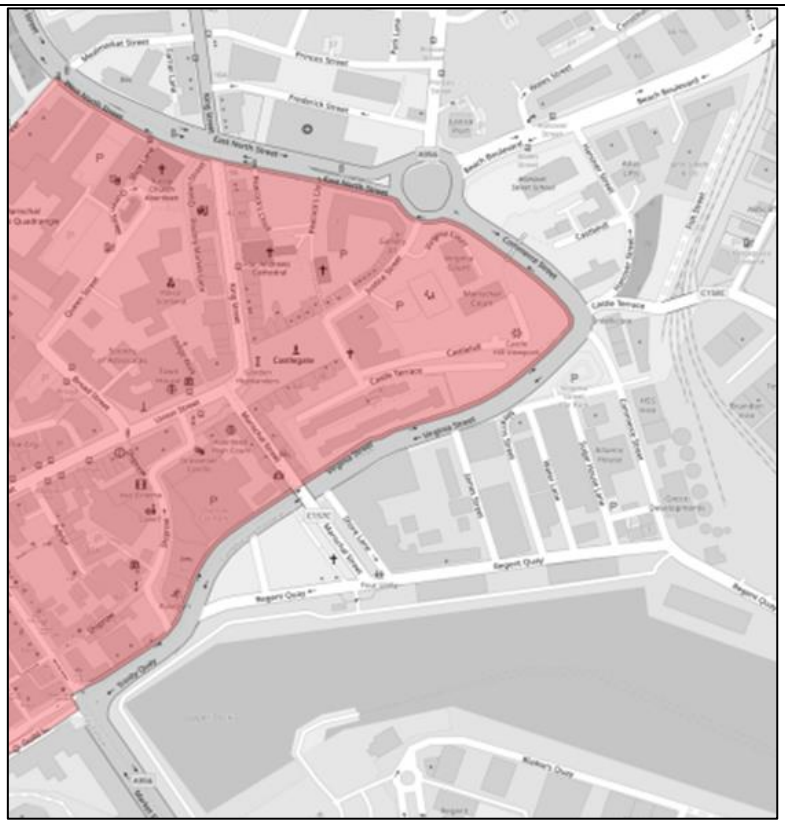


Figure 13: Eastern Corridor Option 3

The resulting air quality analysis (summarised in Chapter 10 of the Option Testing Report) suggested that:

- For Option A, all receptors are anticipated to be within objective limits, although some are near the upper levels of those limits;
- For Option B, all receptors are anticipated to be within objective limits, although near the upper levels of those limits; and
- For Option C, a number of receptors are anticipated to exceed objective limits.

From an air quality perspective therefore, Option C is not desirable. While Option B has fewer air quality benefits than Option A, this must be balanced against maintaining access to the harbour from the north, and all receptors are forecast to be within objective limits.

Although the consultation was not inviting formal objection at this stage, an objection was nevertheless received from representatives of the Trinity Mall and Q-Park, on the grounds that this is the only shopping centre (and associated car park) within the LEZ boundary and so the only one impacted significantly by LEZ proposals.

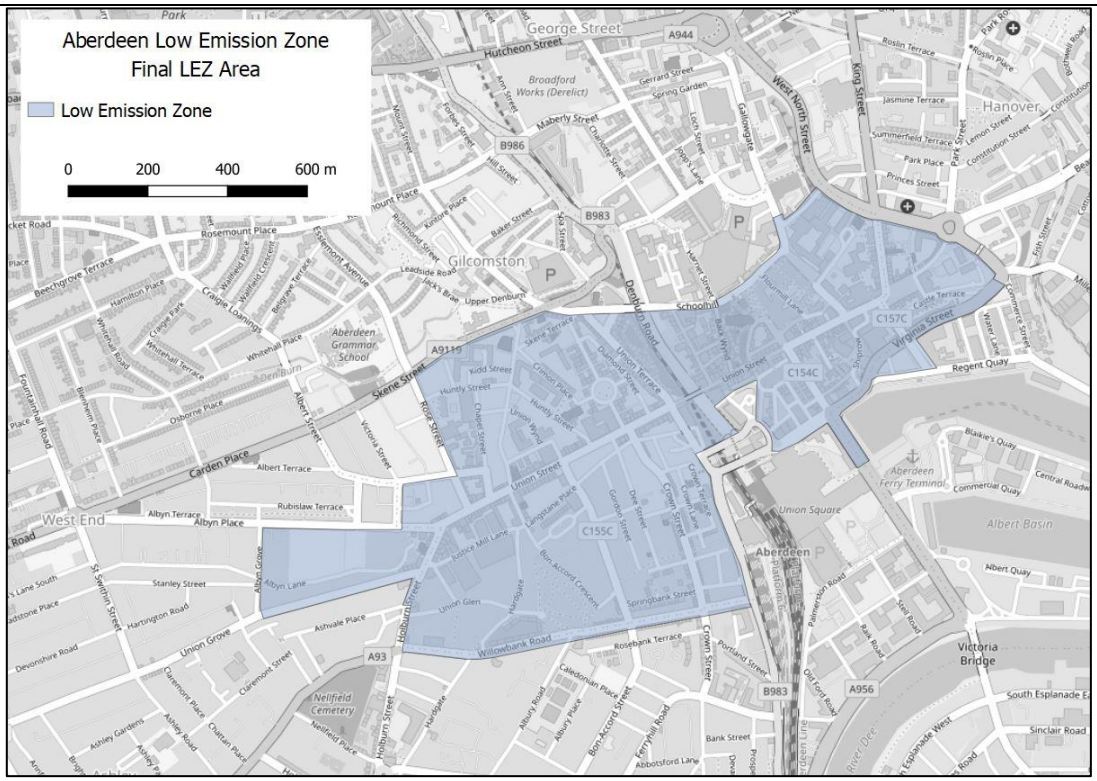
In response to this, the option of removing the Wapping Street gyratory and Rennie's Wynd from the LEZ (and hence maintaining access to the Trinity Mall car park and servicing area from the south for all vehicles) was tested in the traffic model (Figure 14).



Figure 14: Southern boundary amendment

This noted that, as the inclusion of Denburn Road in the LEZ prevents through-routeing of non-compliant vehicles, the only additional non-compliant vehicles entering this area (compared to the consultation boundary) would be those accessing the Trinity Mall car parking and servicing area. As this is a limited number, it would be unlikely to generate significant air quality concerns. In addition, amending the boundary in this location has a further benefit in that non-compliant vehicles who find themselves travelling northbound along College Street have a better opportunity of navigating away from the LEZ as they can now use the Wapping Street gyratory to do so (see Chapter 10 of the Option Testing Report).

Based on the outcomes of the consultation therefore, the Delivery Group agreed to the removal of East North Street, Commerce Street, Rennie's Wynd and the Wapping Street gyratory from the proposed LEZ boundary. These changes were subsequently agreed by ACC's Council Leader, Convenor of the City Growth and Resources Committee, and the Chief Officer – Strategic Place Planning. The revised boundary, which proceeded to formal publication and the objection period is shown in Figure 15.


Aberdeen Low Emission Zone
Final LEZ Area
Low Emission Zone
0
200
400
600 m
George Street
Hutcheon Street
Broadford Works (Derelict)
Maberly Street
Gilcomston
Rosemount Place
Beechgrove Terrace
Hamilton Place
Aberdeen Grammar School
Skene Street
Carden Place
Albert Terrace
Albyn Terrace
Albyn Place
Rubislaw Terrace
West End
Union Street
Union Square
Aberdeen
Albert Basin
Albert Quay
Regent Quay
Virginia Street
Schoolhill
Upperkirkgate
Broad Street
Marischal College
Castlegate
Market Street
Guild Street
Commercial Quay
Blaikie's Quay
Aberdeen Ferry Terminal
Victoria Bridge
Union Terrace
Crown Street
Crown Place
Gordon Street
Dee Street
Langstane Place
Chapel Street
Huntly Street
Rose Street
Victoria Street
Albert Street
Holburn Street
Willowbank Road
Rosebank Terrace
Springbank Terrace
Bon-Accord Crescent
Bon-Accord Street
Caledonian Place
Albury Road
Albury Place
Ferryhill Road
Abbotsford Lane
Bank Street
Portland Street
Hardgate
Nellfield Cemetery
Nellfield Place
Union Grove
Harrington Road
Stanley Street
Albyn Lane
Albyn Grove
Ashvale Place
Claremont Street
Claremont Place
Ashley Gardens
Ashley Road
Chattan Place
Devonshire Road
St Swithin Street
Fountainhall Road
Whitehall Place
Whitehall Terrace
Whitehall Road
Crimon Place
Skene Terrace
Union Wynd
Union Glen
Justice Mill Lane
Schoolhill
Upperkirkgate
Broad Street
Marischal College
Castlegate
Market Street
Guild Street
Commercial Quay
Blaikie's Quay
Aberdeen Ferry Terminal
Victoria Bridge
Union Terrace
Crown Street
Crown Place
Gordon Street
Dee Street
Langstane Place
Chapel Street
Huntly Street
Rose Street
Victoria Street
Albert Street
Holburn Street
Willowbank Road
Rosebank Terrace
Springbank Terrace
Bon-Accord Crescent
Bon-Accord Street
Caledonian Place
Albury Road
Albury Place
Ferryhill Road
Abbotsford Lane
Bank Street
Portland Street
Hardgate
Nellfield Cemetery
Nellfield Place
Union Grove
Harrington Road
Stanley Street
Albyn Lane
Albyn Grove
Ashvale Place
Claremont Street
Claremont Place
Ashley Gardens
Ashley Road
Chattan Place
Devonshire Road
St Swithin Street
Fountainhall Road
Whitehall Place
Whitehall Terrace
Whitehall Road
Crimon Place
Skene Terrace
Union Wynd
Union Glen
Justice Mill Lane
Hanover
Jasmine Terrace
Summerfield Terrace
Park Place
Princes Street
Constitution Street
Lemon Street
Park Street
King Street
West North Street
Gallowgate
Loch Street
Pipe's Lane
Charlotte Street
Hill Street
Richmond Street
Kintore Place
Baker Street
Jack's Brae
Upper Denburn
Leadside Road
Esslemont Avenue
Rosemount Viaduct
Berryden Terrace
Wallfield Crescent
Wallfield Place
Crooms Loanings
Crimon Place
Osborne Place
Beechgrove Terrace
Hamilton Place
Whitehall Place
Whitehall Terrace
Whitehall Road
Fountainhall Road
Albyn Place
Albyn Terrace
Rubislaw Terrace
Albert Terrace
Carden Place
Skene Terrace
Union Square
Aberdeen
Albert Basin
Albert Quay
Regent Quay
Virginia Street

- Removal of Albyn Lane and Union Grove from the LEZ to maintain access to properties for non-compliant vehicles while still preventing onward routeing of non-compliant vehicles onto Holburn Street and Union Street (Figure 18). This is unlikely to impact on the operation of the LEZ as it was largely included for reasons of boundary logic – given the opposition to this it has been determined that this can be better addressed via careful signage around the LEZ boundary.

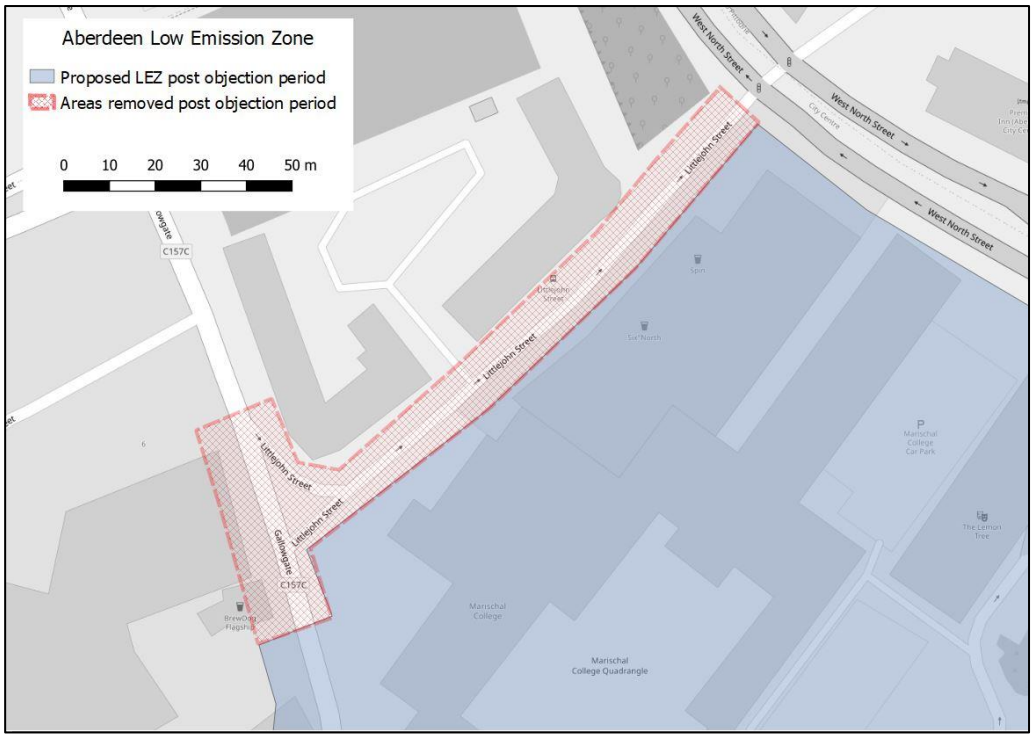


Figure 16: Revised boundary at Littlejohn Street / Gallowgate

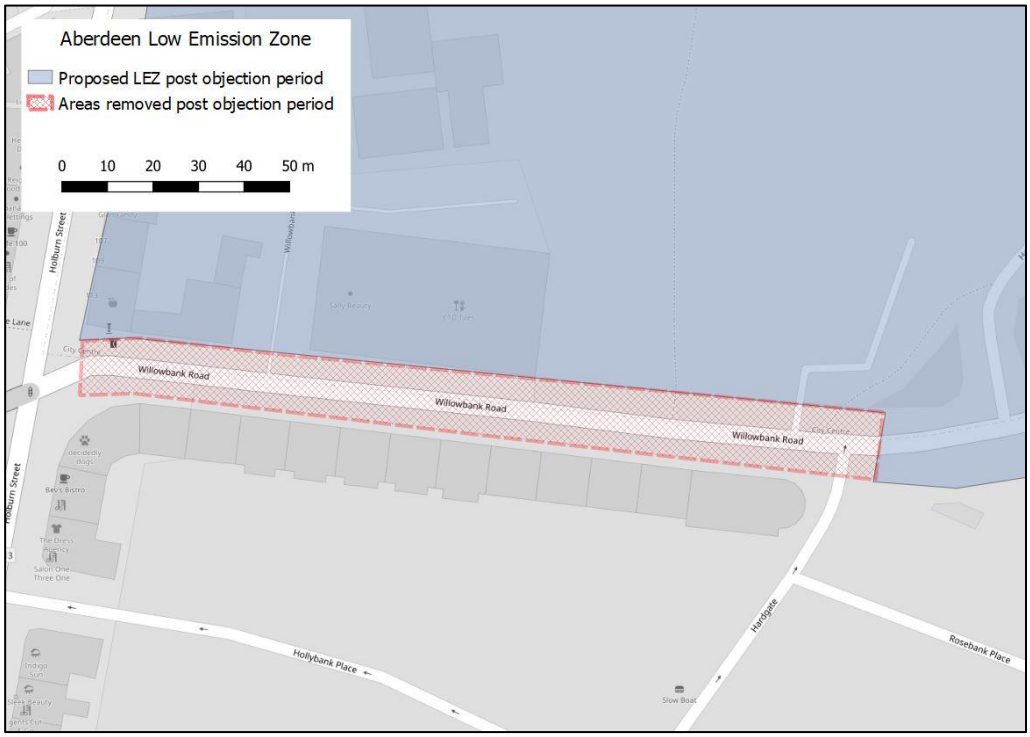


Figure 17: Revised boundary at Willowbank Road / Hardgate

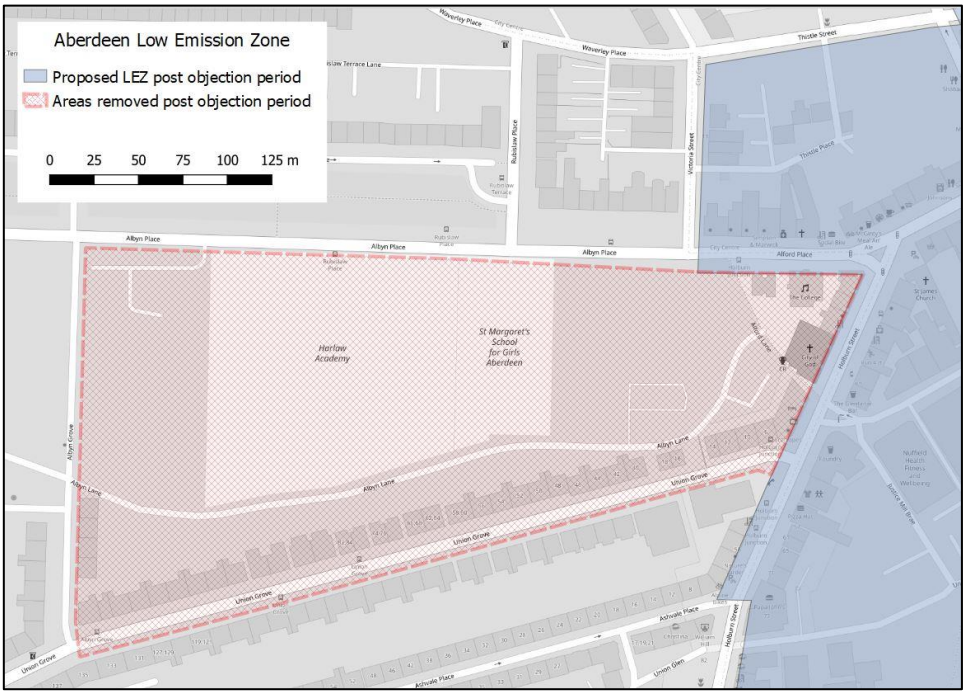


Figure 18: Revised western boundary

These changes were agreed by ACC's Council Leader, Convenor of the City Growth and Resources Committee and the Chief Officer – Strategic Place Planning, resulting in the final revised proposed boundary as shown in Figure 19 below.

Full details of the LEZ option appraisal process are contained in the NLEF Stage 2 Report and supporting Option Testing Report.

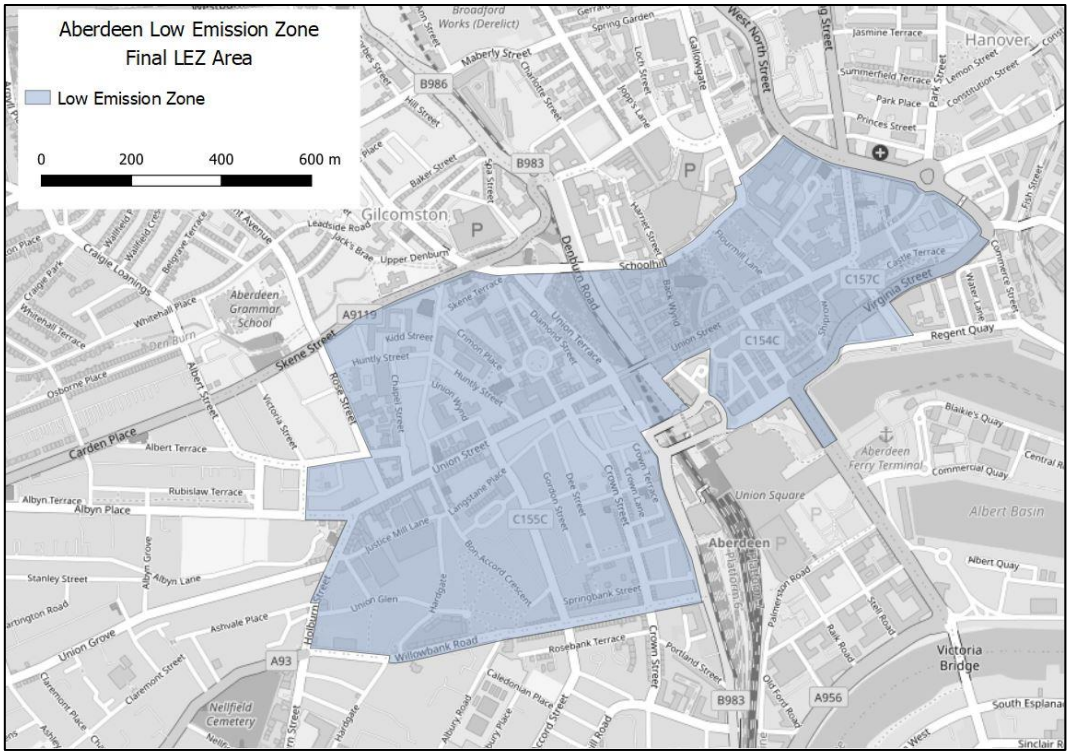


Figure 19: Revised LEZ boundary (December 2021)

The NLEF report has considered locations for boundary signage around the LEZ but this is currently being revised to take account of the recent boundary adjustments, as well as the additional traffic management changes resulting from implementation of the CCMP. A wider LEZ Signage Strategy, considering requirements on both the strategic and local road network, is currently in development, taking into account the outcomes of work taking place at national level to determine the optimum form of LEZ signage, which all of the LEZ cities are inputting to.

Locations for the placement of ANPR cameras have been established (Figure 20), one at each of the LEZ entry points to capture all vehicles crossing the LEZ boundary.

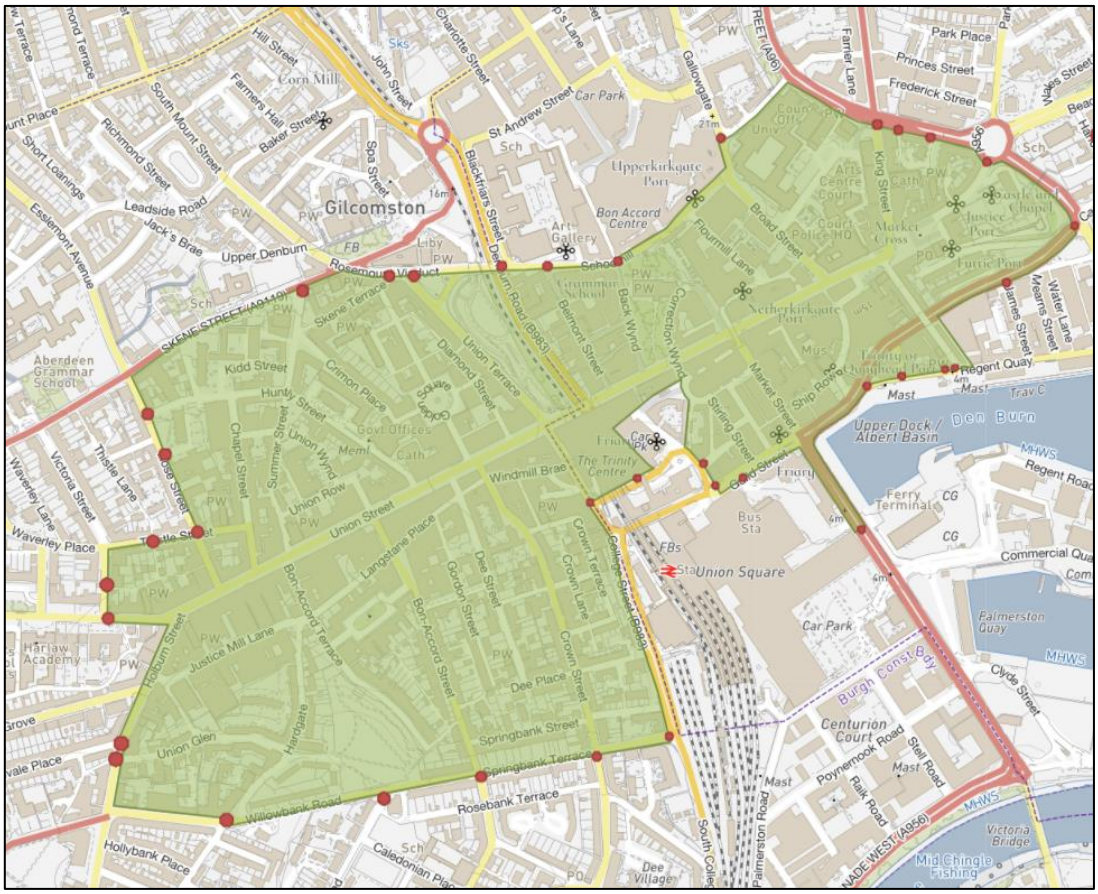


Figure 20: Proposed ANPR camera locations

Modelling / Validation

As part of the NMF and NLEF, a bespoke Aberdeen NMF air quality model was developed by SEPA and its performance validated against air quality monitoring data. The principles and methodology underpinning the model development is set out in SEPA's Aberdeen Air Quality Modelling Pilot Project Technical Report.

Air quality modelling has continued to follow the NMF approach and methods outlined in the 2017 report, ensuring a consistent approach amongst all LEZ cities, including:

- The use of ADMS-Urban (Atmospheric Dispersion Modelling System) and EMIT (Atmospheric Emissions Inventory Toolkit) as used in previous NMF work;
- Processing traffic model outputs in the same way that detailed data from traffic data collection surveys was processed earlier in the NMF process;
- Running the air quality models of each city using identical methods and default model settings as used previously;
- Using the same sources of data for input into the model, such as road layout, road width and building heights;
- Using appropriate meteorological and background emission data obtained from a common source;
- Combining traffic data with published emission information to derive consistent emission estimates;
- Applying more accurate emission information, where available, in a consistent way;
- Ensuring that observations and lessons learned from one city are applied in other cities; and
- Processing, visualising and reporting on modelling output in a consistent and informative way.

The model has been assessed against measurement data to ensure it performs well, including updating emissions calculations based on ANPR data to account for fleet turnover and localised bus fleet data. The ADMS-Urban software has been updated recently with the newest version of ADMS-Urban (version 5) used for the final air quality modelling. Further detail on the air quality modelling methodology can be found in the Cleaner Air for Scotland – National Modelling Framework: Low Emission Zone Aberdeen Evidence Report.

The NMF model shows that the city centre currently experiences the highest number of NO_2 exceedances scattered throughout the area and the highest levels of exceedance (see Figure 21 where the pink areas show modelled NO_2 levels above the objective limit and the black areas levels significantly over the limit).

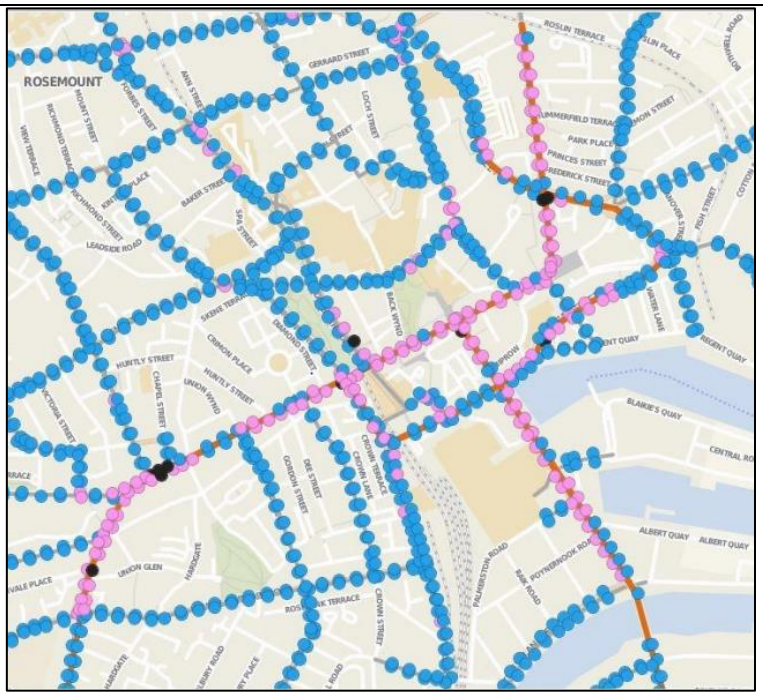


Figure 21: Modelled NO_2 in the city centre

The information from the NMF model therefore informed the selection of the City Centre AQMA as the most appropriate location for Aberdeen's LEZ.

During the early stages of LEZ development, high-level NMF modelling was undertaken which helped define the vehicles in scope of the LEZ. This suggested that improving the bus fleet to Euro VI standard brings the largest reduction in network-wide NO_2 (an average 6.3% improvement) and that this reduction is significantly more than any other individual vehicle type. However this improvement is not, in itself, enough to remove all air quality exceedances, and further reductions could be gained by restrictions on HGVs, LGVs and petrol and diesel cars and taxis (see Appraisal section above).

Furthermore, the NMF modelling showed that even if all vehicles in Aberdeen (city wide and regardless of the LEZ area) were compliant with LEZ emission standards, this would still not be sufficient to address all exceedance locations as a result of the volume of traffic on the network, although remaining exceedances are significantly reduced from current levels and closer to legal limits (see Figure 22 where the pink areas show modelled NO_2 levels above the objective limit – these are all around heavily trafficked streets and junctions in the city centre).

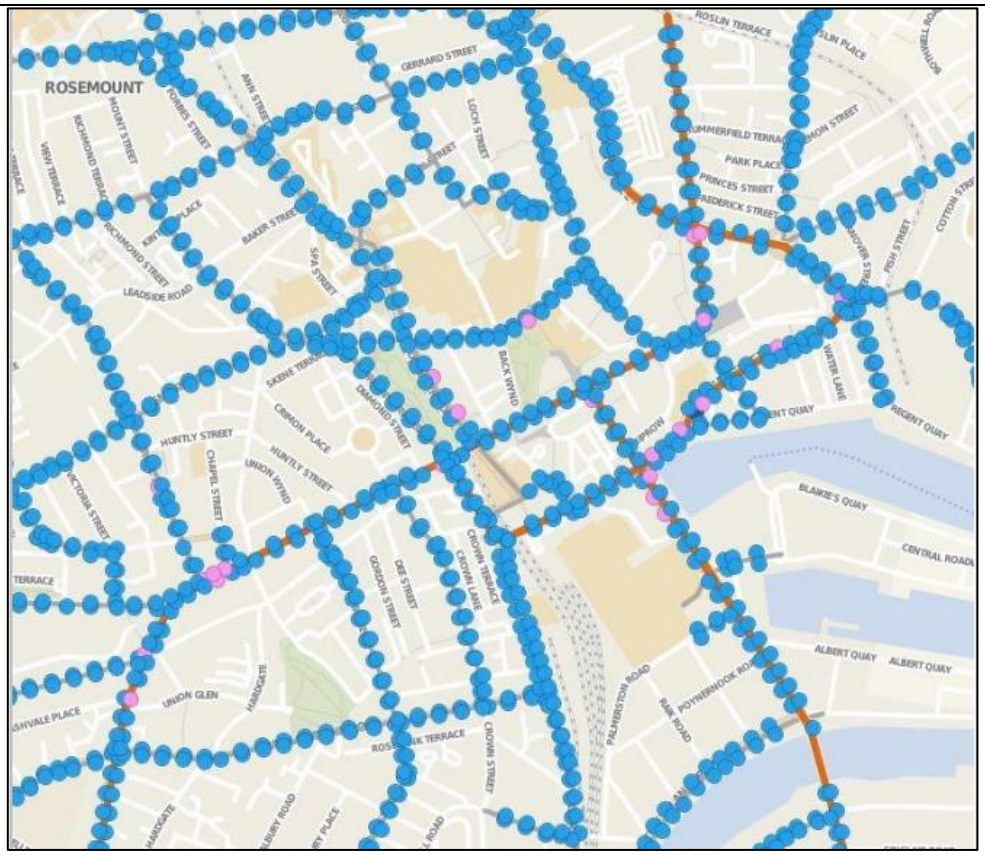


Figure 22: Modelled NO_2 in the city centre under all vehicle LEZ scenario

The NMF therefore clarified at this stage, prior to any LEZ option development, that Aberdeen's LEZ should include all vehicle types and be delivered alongside traffic demand management measures if all exceedances of the air quality objectives were to be addressed (see Chapter 5 of the NLEF Stage 2 Report).

In order to test the traffic impacts of different LEZ scenarios, a revised City Centre S-Paramics microsimulation traffic model (ACCPM24) was developed using data captured from wide-ranging traffic surveys, including ANPR surveys undertaken in 2019. The model network coverage is shown in Figure 23.

The model took 2024 as its reference case year on the assumption that 2024 was a reasonable estimate of when the LEZ would be fully operational. The model therefore includes committed infrastructure changes and Local Development Plan (LDP) forecasts to 2024.

The model was developed by transport consultants SYSTRA with the initial base model development detailed in the Aberdeen City Centre Paramics Model Upgrade 2019 Report, and the development of the future year Reference Case model detailed in the Aberdeen City Centre: Future Year (2024) Model Development Report. The model was independently audited and validated and judged fit for purpose.



Figure 23: Traffic Model Network Coverage

The higher tier strategic traffic model, ASAM14 (Aberdeen Sub Area Model) was utilised to provide the strategic impact of future committed developments and infrastructure proposals on the 2024 network. The model includes planning data from the TELMoS14 Land-Use model for both Aberdeen City and Aberdeenshire Councils (reflecting the 2018 Strategic Development Plan). This resulted in an uplift of 6 to 8% over the 2019 traffic levels being applied to the ACCPM24 (although note alternative futures testing discussed later in this section). ASAM14 was also utilised to identify the strategic impact of different LEZ scenarios.

Consistent with the other LEZ cities, a series of assumptions were made to help model the impact of a LEZ on the traffic network. These include:

- 2024 Fleet Composition – derived by SEPA / ANPR Data;
- Mode Shift Assumption - no consideration of mode shift as a direct result of LEZ implementation. Essentially this was to ensure that the 'worst case scenario' traffic impacts could be identified;
- LEZ Adherence Level – 100% of non-compliant vehicles adhere to the LEZ restriction i.e. no non-compliant vehicles can enter the LEZ area;
- All buses, LGVs, HGVs, and taxis that have an origin or destination within the LEZ are assumed to be compliant; and
- All cars that have an origin or destination within the LEZ are assumed to be compliant, with the exception of off-street car parking, where non-compliant cars were relocated to car parks with available capacity out-with the LEZ area; and
- All non-compliant vehicles will divert around the LEZ boundary.

As described in the Appraisal section, initial appraisal work resulted in 8 options proceeding for consultation and testing in the traffic model:

- 1A – Union Street Area, including Denburn Road;
- 1B – Union Street Area, excluding Denburn Road;
- 2A – Union Street & George Street Area, including Denburn Road;
- 2B – Union Street & George Street Area, excluding Denburn Road;
- 3A – CCMP East including Denburn Road;
- 3B – CCMP East excluding Denburn Road;
- 4A – CCMP, including Denburn Road; and
- 4B – CCMP, excluding Denburn Road.

The model appraisal of each of the LEZ scenarios included consideration of:

- Traffic demand level that the model was able to run at;
- Traffic flow changes at the 2019 NO_2 exceedance locations;
- Alignment with the North East Scotland Road Hierarchy;
- City centre accessibility; and
- Residential impact.

This resulted in the further sifting and rationalisation of options:

- Options 2B and 3A were sifted out as they were judged unlikely to cope with future forecast traffic demand without resulting in increased congestion in sometimes sensitive locations. Based on the consultation findings, they also had a low level of public acceptability compared to other options;
- Options 3B and 4B also had relatively low public acceptability and were projected to increase traffic (particularly non-compliant traffic) in the Hutcheon Street / Skene Square area. NO_2 emissions have been hovering near exceedance levels for a number of years here and any increase in traffic would likely see further breaches of air quality objectives and potentially a new AQMA being declared, in obvious contradiction to LEZ objectives;
- The remaining options were then subject to screening against modelled traffic flow changes at 2019 exceedance locations, with Options 1A, 1B and 2A not anticipated to meet the NO_2 objectives without significant additional interventions not historically considered;
- None of the remaining options aligned fully with the revised Roads Hierarchy. A process took place to see if these conflicts could be mitigated by traffic management measures and / or revisions of the LEZ boundary;
- In addition, concerns emerged during the appraisal about the accessibility of the city centre under Option 4A, where only 1 city centre car park would be accessible to non-compliant vehicles, and the resulting implications on social inclusion, the city centre economy and the large number of residents who would be living in the LEZ area;
- During the option testing and sifting process, a ‘hybrid’ of options 1A and 4A, Option 5, was introduced, to combine the benefits of both the smaller and larger options. Option 5:
    - Has a fairly tight boundary (like Option 1A) but encompasses more areas of air quality exceedance;
    - Will have less impact on residents and businesses than 4A;
    - Better maintains accessibility to the wider area for non-compliant vehicles than 4A:
    - Restricts through access for non-complaint vehicles in accordance with the Roads Hierarchy;

    - Better encourages routeing choices in line with the Hierarchy;
    - Can cope better at predicted traffic demand levels; and
    - Potentially reduces congestion at key locations compared to the other options.
- Options 4A and 5 therefore proceeded to more detailed appraisal against the LEZ objectives and STAG criteria;
- Option 4A was found to perform less well against certain criteria, namely accessibility, social inclusion and the economy, particularly in the context of COVID-19 recovery;
- Option 5 therefore emerged as the most promising option and proceeded to further detailed testing. This included consideration of supporting measures to enhance the benefits of the LEZ and reduce any negative impacts on surrounding streets. Again, this necessitated an iterative process of adjustments to the boundary to identify a final option that is feasible and deliverable, that best meets the scheme objectives and which reduces unintended negative impacts in other areas of the city.

However, as discussed previously, the traffic and air quality model outputs suggested that a LEZ alone, under any of the option scenarios, is unlikely to be sufficient to bring all NO_2 exceedance locations in the City Centre AQMA within objective limits – for example, areas of Union Street, King Street and Market Street are anticipated to remain near or over the objective limit even though they are within the LEZ. The LEZ was therefore tested in combination with the strategic transport elements of the CCMP and it was determined that the objectives of the LEZ could be better met if delivered in combination with the CCMP project to restrict traffic on the central section of Union Street between Bridge Street and Market Street, with supporting traffic restrictions on Union Terrace. This intervention was shown to complement the LEZ, with the combination of the LEZ and CCMP Union Street Scheme predicted to significantly reduce emission levels at all 2019 observed NO_2 exceedance locations (see Option Testing Report – Chapter 5).

The traffic modelling also indicated that non-compliant traffic displaced by the LEZ could migrate to streets around the periphery of the zone which may be inappropriate for accommodating this additional traffic, specifically Ferryhill Road and Fonthill Road to the south of the LEZ. Various options were tested in the model to mitigate these impacts, including bus gates, junction treatments, banned turns and extensions of the LEZ. The most effective and appropriate intervention to address this issue proved to be access restrictions (in the form of right-turning bans for all vehicles) to and from Millburn Street at its junction with South College Street / Palmerston Place. These were shown to significantly reduce traffic volumes through the Ferryhill area (see Option Testing Report – Chapter 6).

The outcome of the modelling and appraisal process was therefore that the preferred LEZ Option encompasses: the Option 5 boundary (with some adjustments to ensure all areas of NO_2 exceedance in the city centre fall within the LEZ and to support non-compliant traffic routeing around the LEZ); restrictions to general traffic (in the form of the CCMP project to restrict traffic to the central section of Union Street and Union Terrace); and a revised junction layout at South College Street / Millburn Street with restricted movements to and from Millburn Street (Figure 24). This was the boundary that was therefore recommended by the Delivery Group to

the City Growth and Resources Committee for consultation, with the Committee agreeing the preferred option boundary in June 2021.

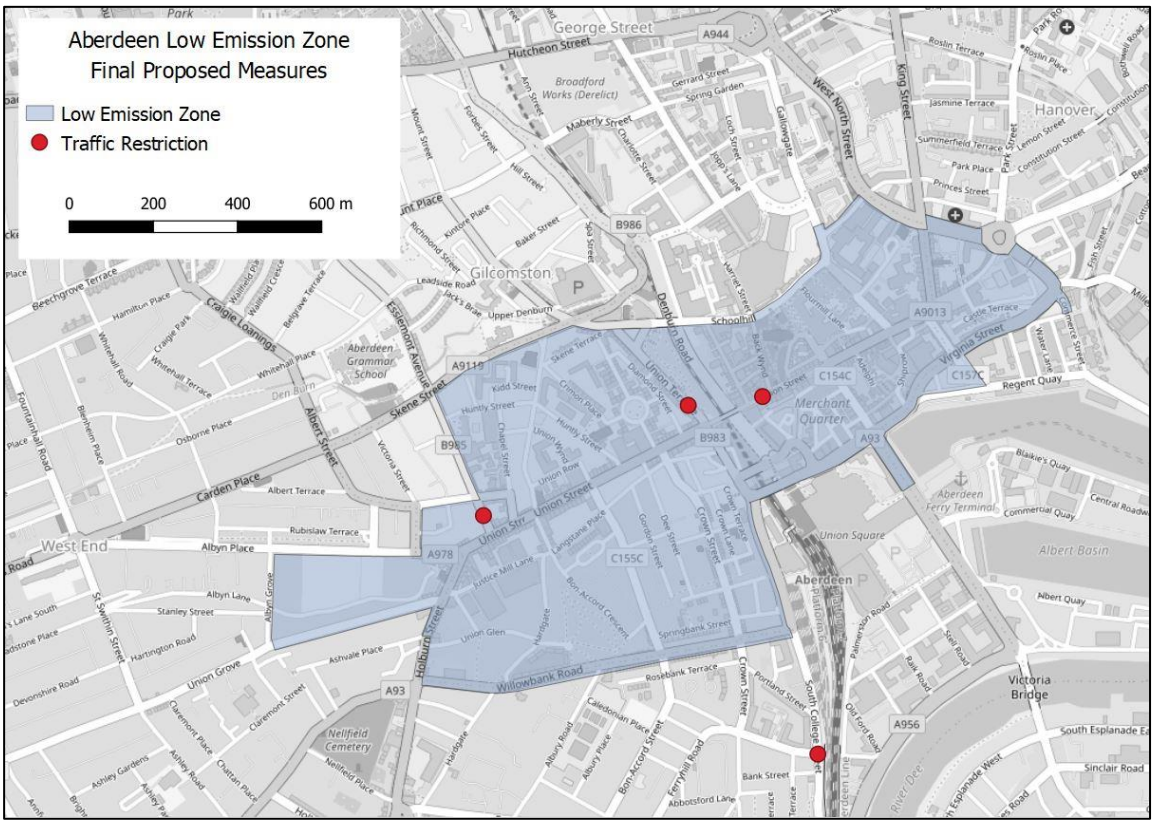


Figure 24: Preferred LEZ Option for Consultation

In recognition of the uncertainties around the medium to long-term impacts of COVID-19 on traffic levels and transport behaviour, Transport Scotland commissioned research to better understand these uncertainties and how policies to address these could interface with LEZ proposals. Four plausible futures were identified, reflecting varying degrees of economic recovery and the permanency of changes initiated by the pandemic. This Scenario Planning exercise concluded that the impact of the LEZs will vary between each city depending on their specific traffic levels and fleet composition, but LEZs will nevertheless protect city centres under various plausible future scenarios by preventing non-compliant vehicles from entry and reducing emissions compared to pre-LEZ levels. This work helped to identify ACC's preferred LEZ option, while further sensitivity testing of the option was undertaken to ensure that the LEZ remains relevant in all plausible scenarios and robust to variations in network conditions that may occur in a post-pandemic world.

For each of the LEZ cities, the four identified plausible futures were considered against the model assessments undertaken to date. From this, to address uncertainty, further sensitivity testing of the LEZ scheme was proposed. Three of the four plausible futures were identified for Aberdeen:

- SP1: LDP Growth - Fleet projections follow pre-COVID trends and traffic growth is in line with current LDP allocations / uptake;
- SP2: Economic Downturn - Following an economic downturn, fleet projections are lower than pre-COVID trends and traffic shrinkage is experienced, similar to the 2010 downturn; and

- SP3: Brave New World - Fleet projections follow pre-COVID trends however behavioural change results in traffic levels remaining consistent with pre-COVID levels.

SP1 is essentially the scenario on which the ACCPM24 and the modelling to date was based on, leaving 2 alternative futures to be tested.

Under SP2, there are traffic reductions anticipated across each of the NO_2 exceedance locations compared to the 2019 baseline. This is due to a combination of the traffic network shrinkage applied and the LEZ itself. When these changes are considered as a predicted impact to the NO_2 exceedances, the CCMP measures are not necessarily required to further reduce NO_2 levels below the exceedance threshold at this point in time. However, under this economic downturn scenario, the traffic fleet will certainly improve over time. As fleet compliance levels increase, the volume of traffic within the LEZ area will increase thus impacting on the NO_2 emission levels (even although these are compliant vehicles). The LEZ delivered alongside the CCMP will therefore protect the city centre from the almost certain changes to fleet compliance levels over time.

Under SP3 traffic reductions are anticipated across each of the exceedance locations compared to the baseline but not to the extent of the reductions observed in SP2. This result is expected as the traffic demand levels in SP3 are the same as the 2019 baseline so the flow changes are a direct result of the LEZ alone. At each of the exceedance areas, there are fewer vehicles due to removal or diversion of non-compliant vehicles. When these changes are considered as a predicted impact to the NO_2 exceedances, the results suggest that there are still locations where NO_2 levels are predicted to be near the exceedance threshold. These locations are consistent with the high growth scenario SP1 which suggested there would be NO_2 exceedances at King Street and Union Street. Whilst the results of SP3 without the CCMP suggest that there would be some locations where the NO_2 levels would be near the threshold, if traffic growth occurs beyond the opening date of the LEZ, then there is a strong possibility that these and other NO_2 levels would increase to a point beyond the exceedance threshold

In both alterative futures, therefore, the combination of the LEZ and the CCMP measures are predicted to positively impact the NO_2 emission levels at each of the locations of concern.

From these results, the proposed LEZ package of measures is predicted to meet the objectives of the study under different future scenarios. Whilst there is the possibility that the CCMP measures may not initially be required to provide additional air quality benefits under certain futures, the CCMP proposals will protect the city centre area from potential future changes to traffic growth and fleet compliance levels.

An alternative view is to consider the committed objective to implement the CCMP over the next 15 years. The CCMP carries its own benefits relating to placemaking, sustainable transport and the attraction of the city centre to boost the local economy. The various future scenario tests all suggest that the LEZ reduces traffic levels within the city centre to facilitate the implementation of key aspects of the CCMP.

Therefore, the LEZ and CCMP core measures complement each other to provide benefits to air quality and placemaking.

Continued monitoring of the traffic network post-COVID will be undertaken to understand network recovery and fleet change over time, and network behaviour will continue to be monitored after the LEZ is implemented to determine if the areas identified through modelling, or other locations, require additional mitigation.

Emissions analysis was undertaken of the preferred LEZ option, with SEPA's Cleaner Air for Scotland – National Modelling Framework: Low Emission Zone Aberdeen Evidence Report Addendum concluding that implementation of the LEZ combined with traffic restrictions on Union Street will reduce the number of NO_2 exceedances within the City Centre AQMA to three – two on Bridge Street and one on Holburn Street (Figure 4, page 8).

These remaining exceedances will be addressed by means other than the LEZ. Plans are currently progressing to make Bridge Street a bus, taxi and cycle only street which will have air quality benefits by significantly reducing general traffic in this area (by approximately 88% based on traffic model outputs). This change should be delivered by summer 2022. Similarly, work is underway, as part of the Bus Partnership Fund Ellon to Garthdee multimodal transport corridor study, to look at opportunities for further active travel and bus priority measures on Holburn Street, which is also likely to see a reduction in general traffic on this corridor. This study will be progressing to Outline Business Case stage during 2022.

Although some vehicle displacement around the edge of the LEZ is expected, this is not anticipated to result in any new pollution hotspot areas.

Following consultation on the preferred LEZ option in summer 2021, which identified some concerns from stakeholders in relation to the eastern boundary (West North Street, Commerce Street, Virginia Street and Market Street) and the area around the Trinity Mall, additional sensitivity tests were undertaken to understand the impacts of minor boundary changes. This concluded with a recommendation that West North Street, Commerce Street, Wapping Street and Rennie's Wynd be removed from the LEZ, as described in the Appraisal section above. The impacts of the removal of Wapping Street and Rennie's Wynd were not considered to be significant enough to warrant additional modelling as the change only serves to make the Trinity Mall car park and servicing area accessible to non-complaint vehicles, while still restricting through-movements to compliant vehicles. Various permutations of the eastern boundary were tested in the traffic and air quality models and the recommended change was considered an acceptable compromise in terms of balancing the air quality objectives with maintaining accessibility to key destinations in and around the city centre.

This revised boundary was agreed to proceed to formal publication, with the traffic and air quality modelling updated to reflect the boundary changes.

As mentioned in the previous section, following the objection period, Albyn Lane, Union Grove, Littlejohn Street and a section of Willowbank Road (Holburn Street to Hardgate) were removed from the LEZ boundary. These were considered

reasonable adjustments in response to public and stakeholder concerns, with minimal impacts on the air quality objectives. Upon agreement of the final boundary for formal submission, final modelling exercises were undertaken and the impacts of the changes, compared to the previously modelled scenario, judged to be minimal (see SEPA's Cleaner Air for Scotland – National Modelling Framework: Low Emission Zone Aberdeen Evidence Report Addendum).

The final LEZ Option Testing Report concludes that the LEZ stops the most polluting vehicles from operating within the city centre of Aberdeen. The road network operates with small increases to average journey distance travelled and average journey times for non-compliant vehicles, although this impact is balanced against the significant predicted reductions in NO_2 levels and traffic flows inside the LEZ. Congestion overall is anticipated to reduce across the network.

The Cleaner Air for Scotland – National Modelling Framework: Low Emission Zone Aberdeen Evidence Report Addendum concludes that, via delivery of the proposed LEZ package:

- The majority of current NO_2 exceedances inside the LEZ will be removed – remaining exceedances will be addressed via implementation of additional measures described above;
- Some localised NO_2 exceedances may remain outside of the LEZ, despite small decreases in NO_2 concentrations due to the LEZ - these will be addressed via delivery of enhanced active travel and bus priority measures on key corridors to and from the city centre, currently being appraised as part of Bus Partnership Fund works;
- The LEZ is expected to lead to substantial reductions in tailpipe emissions of PM_{10}, most notably on bus routes inside the LEZ;
- CO_2 emissions are likely to reduce within the LEZ although may increase in areas outside of the LEZ as a result of traffic displacement – this is anticipated to be a short-term impact however and will be addressed via ongoing delivery of the Council's Local Transport Strategy (with a revised strategy currently in development) which seeks to achieve city-wide modal shift and a reduction in private car usage.

Consultation, Engagement and Stakeholder Input

As mentioned in previous sections, upon completion of the Interim NLEF Stage 2 Report, which identified 8 potential LEZ options, these options were taken forward for public and stakeholder consultation to understand the impacts of each on different groups, and to help inform the identification of a preferred option. Feedback was also sought on preferred grace periods and whether any additional time-limited exemptions would be required.

This initial consultation took place during September and October 2020. An online questionnaire ran for 6 weeks, supplemented with workshops held with a range of stakeholders, including Community Councils, transport operators and groups with an interest in health, equalities and the environment.

The survey received 506 responses with a further 10 submissions received by email.

Considering the options identified by respondents as their preferred option, there was a clear preference for options at the extreme ends of the scale, with Option 4A receiving the most preferred option votes overall (22%), followed by Option 1A (19%). Combining all the rankings given in each response, the smallest option, Option 1A, emerged as the most popular. This helped inform the 'public acceptability' element of the appraisal and the identification of a hybrid option, as outlined above from page 20, to take forward for detailed appraisal.

Respondents were asked what they thought were appropriate grace periods for residents and non-residents. The maximum grace periods were the most popular (45% for residents and 48% for non-residents) although there was significant support for a grace period of 1 or 2 years (30% for residents and 41% for non-residents). These findings helped inform the identification of suitable grace period to propose at the next stage of the LEZ development process.

Asked to provide further responses in an open question, a strong theme to emerge in the public consultation was that a LEZ must not be delivered in isolation but must be supported by complementary measures (such as improved public transport and active travel priority) to ensure it achieves its objectives and maximises the benefits. Delivering the LEZ in combination with the CCMP will contribute to this.

The 2020 Consultation Report can be downloaded from here.

A range of workshops with key stakeholders were held concurrently with the online survey. Five workshops were held and the format involved a presentation on the LEZ options, followed by a question-and-answer session. The stakeholders represented at the workshops were:

- Bus industry representatives - Stagecoach East Scotland, First Aberdeen, Bains Coaches and the Confederation of Passenger Transport;
- Local freight industry representatives;
- Aberdeen Harbour;
- Community Councils - George Street, Rosemount and Mile End, Castlehill and Pittodrie;
- Environmental / active travel interest groups - Friends of the Earth, Aberdeen Cycle Forum, Asthma UK and British Lung Foundation Partnership, Aberdeen Environment Forum; and
- Taxi representatives.

Main findings were:

- No stakeholder expressed views against the LEZ. Some stakeholders expressed support for a LEZ while others stated they were accepting that a LEZ was to be introduced;
- The LEZ should not create problems elsewhere in the city, whether via new air quality exceedances or increased congestion. If required, the LEZ should be delivered with complementary measures to ensure this does not happen;
- Grace periods, particularly for residents of the LEZ and those on a lower income / income support, should be as long as possible;
- Bus and coach operators are in a very difficult financial position due to the impact of COVID-19 and will not be able to ensure all vehicles meet LEZ

standards if current level of income continues. There is a need for a collective understanding of the difficulties faced by the industry when deciding on the date and impact of the implementation and enforcement of the LEZ;
- The majority of HGVs will be compliant by 2024, as such vehicles have an average lifespan of 7/8 years (this is supported by local fleet compliance predictions in Chapter 2 of the Option Testing Report, which anticipate 93% of HGVs in Aberdeen being compliant by 2024) ;
- The vast majority of taxis are likely to be compliant by 2024, as vehicles in Aberdeen must be less than five years old at date of first registration, therefore no significant concerns were raised from taxi representatives.

A report on the Stakeholder Workshop outcomes is available here.

Although attempts were made, ACC was unable to effectively engage with the business community at this time, likely as a result of COVID-19 recovery being this sector's priority. Additional workshop discussions were therefore offered to the business community and bus operators in March 2021.

Combined with the modelling outcomes, outcomes of this initial engagement helped inform the identification of a preferred LEZ option and a preferred grace period, which was subsequently agreed by ACC's City Growth and Resources Committee in June 2021 for further consultation.

ACC launched a further eight-week consultation from 28th June 2021 to 22nd August 2021 on its proposed LEZ scheme, which consisted of the following elements:

- Email correspondence to statutory consultees (including all groups and individuals specified in the Regulations and Guidance) and organisations advising of LEZ proposals;
- Workshops with bus and coach operators, freight and harbour representatives, the business community, and environmental and health groups;
- Online survey seeking views on the proposed LEZ option;
- Information flyer delivered to residents and businesses in the proposed LEZ area.

Approximately 1,800 members of the public and stakeholders took part in the consultation, with the main themes being:

- Comments on the proposed boundary, in particular the eastern boundary;
- Concerns about traffic displacement and resulting congestion and emissions;
- Concerns about the impacts of the LEZ on certain groups who may have difficulty complying;
- The requirement for the LEZ to be delivered in combination with other demand management measures; and
- Concerns that the LEZ is too small and not ambitious enough.

The full report on the second consultation is available here.

As detailed in previous sections, a number of comments were received during the consultation period in opposition to the proposed LEZ boundary, and adjustments were made in response to these, to the eastern boundary and around the Trinity Mall, where the impacts of these changes were considered acceptable in air quality terms. The consultation resulted in a revised option boundary to proceed to the next stage of the process, as shown in Figure 25.

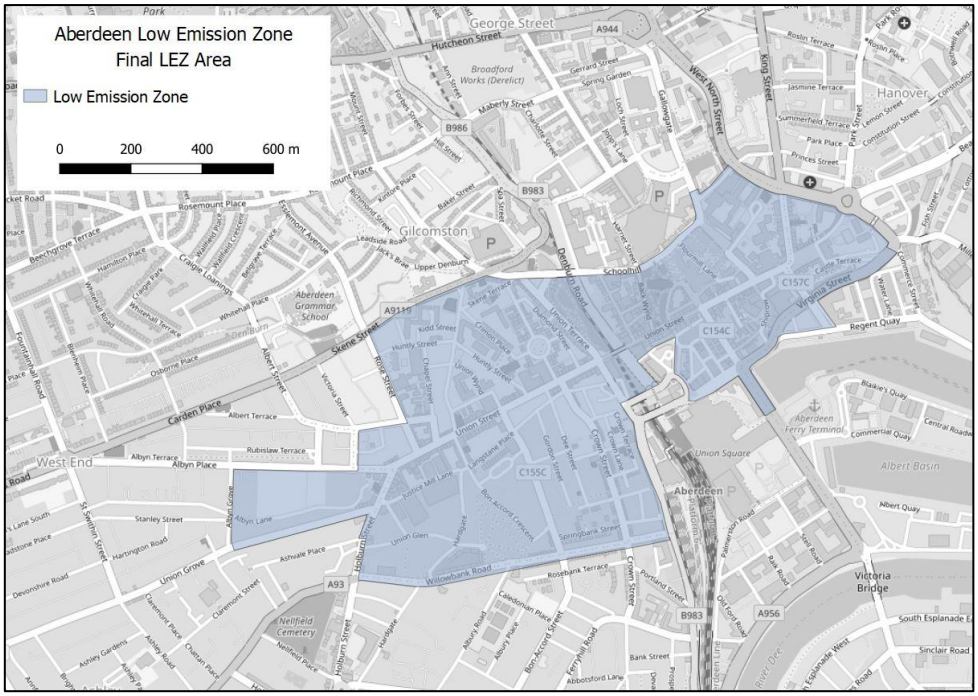


Figure 25: Revised LEZ Boundary

A range of views were also expressed on the 2-year grace period, with 37% agreeing with this and the remaining responses split between this thinking this too long and those considering it too short. As mentioned previously, given the need to act urgently to address air pollution for the benefit of public health, ACC considers 2 years an appropriate grace period.

Outwith formal consultation periods, ACC has regularly engaged with key regional partners and groups via attendance at meetings of:

- The North East Bus Alliance;
- The Regional Freight Forum;
- The Aberdeen Taxi and Private Hire Car Consultation group;
- Community Council Forum.

Officers have also participated in webinars hosted by the Energy Savings Trust to raise awareness of the LEZ and the funding opportunities available to the taxi and logistics industries to help them to comply.

The above boundary and proposed grace period proceeded to the formal objection period which took place between 1st and 28th November 2021. A dedicated web page (https://consultation.aberdeencity.gov.uk/planning/lez-publication/) was established where interested parties could view proposals, supporting documentation, and advised how formal objections could be made. All documentation was also available for viewing by appointment in the main Council

headquarters of Marischal College to cater for those unable to access or use the internet.

In accordance with the Regulations and Guidance the formal publication of the scheme was advertised via:

- Direct email to stakeholders and prior consultation respondents;
- ACC's website;
- Notice in a local newspaper;
- Notices on streets within the proposed LEZ;
- Information leaflet distributed to all properties within the LEZ boundary (Figure 26); and
- Social media.



Aberdeen City Council Low Emission Zone (LEZ)

In accordance with the Transport (Scotland) Act 2019, The Low Emission Zones (Emission Standards, Exemptions and Penalty Charges) (Scotland) Regulations 2021 and The Low Emission Zones (Scotland) Regulations 2021, Aberdeen City Council (ACC) proposes to introduce a Low Emission Zone (LEZ) in Aberdeen from 30th May 2022.

The LEZ will be an area of Aberdeen City Centre where the most polluting vehicles will be unable to enter. The aim of the LEZ is to improve air quality within the City Centre Air Quality Management Area to ensure compliance with the Scottish Government's air quality objectives, particularly for nitrogen dioxide (NO_2) emissions, which pose a public health risk, especially for the most vulnerable members of society.

Following consultation on the preferred LEZ option during summer 2021, a revised option boundary is proposed based on the feedback received from members of the public and stakeholders.

Full proposals can be viewed:

- **Online:** https://consultation.aberdeencity.gov.uk/planning/lez-publication/; or
- **By appointment:** Customer Service Centre, Marischal College, Broad Street, Aberdeen AB10 1AB at the following dates and times: 9:00am – 1.00pm on Monday 1st November, Monday 8th November, Monday 15th November and Monday 22nd November. Please call (01224) 523863 to make an appointment in advance of attending.

The Council will accept any formal objections to the proposed LEZ between **Monday 1st November 2021 and Sunday 28th November 2021.** Objections must be made in writing, stating the grounds of the objection, and can be submitted via:

- **Email:** transportstrategy@aberdeencity.gov.uk; or
- **Letter:** Transport Strategy and Programmes, Aberdeen City Council, Business Hub 4, Ground Floor North, Marischal College, Broad Street, Aberdeen AB10 1AB.

All objections received will be considered prior to the Council submitting the final LEZ scheme to Scottish Ministers.

Funding support is available from the Scottish Government to support individuals and businesses comply with the requirements of the LEZ:

https://www.lowemissionzones.scot/funding

Figure 26: LEZ Information Leaflet

A total of 79 submissions were received, mostly from members of the public. Similar issues arose as in previous consultations regarding, for example, concerns around the eastern boundary, the inclusion of certain streets within the LEZ and the impact on local residents and businesses. As a result of the feedback received the LEZ was further amended to:

- Remove Littlejohn Street as a result of opposition from residents and businesses;

- Remove Albyn Lane and Union Grove from the LEZ to maintain access to properties for non-compliant vehicles while still preventing onward routeing of non-compliant vehicles onto Holburn Street and Union Street; and
- Remove a section of Willowbank Road between Hardgate and Holburn Street to allow traffic exiting Hardgate (which has a one-way restriction) to route away from the LEZ.

The outcomes of the objection period have therefore informed the final LEZ boundary (Figure 27), with reasonable adjustments made in response to submissions where these can be achieved without compromising the air quality objectives.

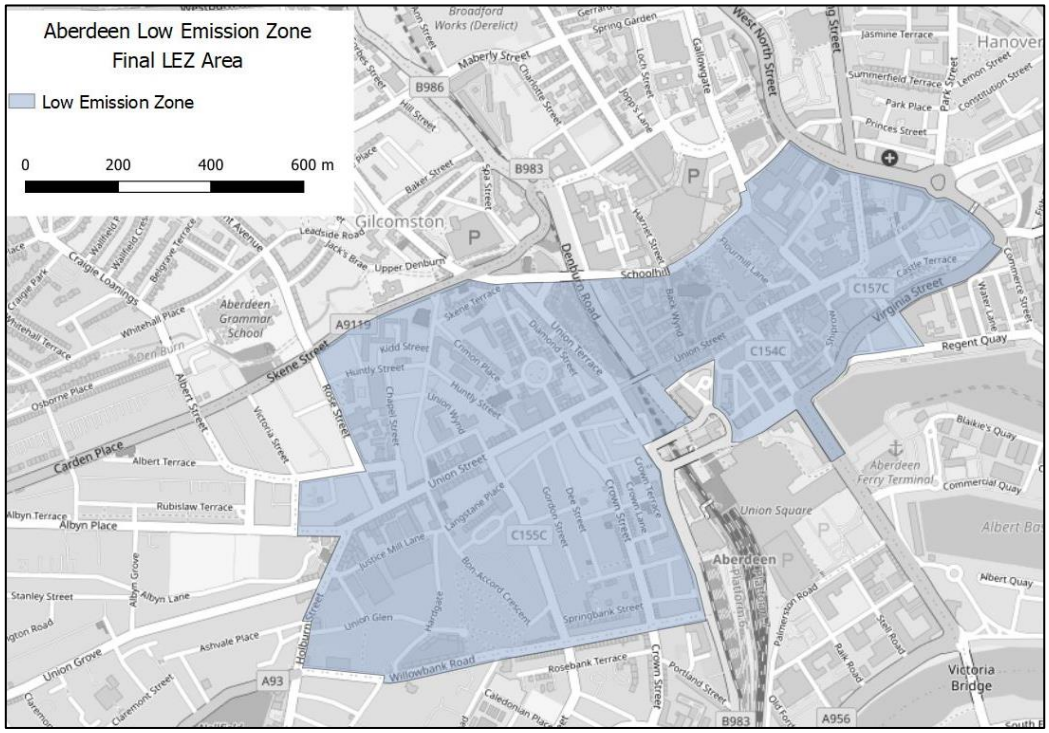


Figure 27: Final Proposed LEZ Boundary

Grace Periods

It is ACC's intention to introduce the LEZ on 30th May 2022. A 2-year grace period for both residents and non-residents of the LEZ area and for all non-exempt vehicle types will commence from this date, meaning that enforcement will take place from 1st June 2024. The grace period has been informed by engagement with members of the public and stakeholders, as described above.

Wider Considerations

A Strategic Environmental Assessment (SEA) Screening Assessment was undertaken and concluded that the introduction of a LEZ will not result in significant impacts on the wider environment and that a full SEA is not required. The main environmental impact will be on air quality, which is captured in the NMF report. A Screening Report was submitted to the Consultation Authorities (SEPA, NatureScot, Historic Environment Scotland) who agreed with this view. The LEZ has in any case already been subject to SEA as part of wider assessments of the impacts of the Aberdeen Local Transport Strategy and Nestrans Regional Transport Strategy.

The LEZ was also subject to an Integrated Impact Assessment (IIA) using the NHS Lothian IIA guidance as an effective mechanism for meeting requirements of the NLEF and the Equality Act 2010 (Specific Duties) (Scotland) 2014.

The IIA method was chosen due to the overlapping nature of the assessment, where the IIA consists of a combined framework of the following assessments:

- Equality Impact Assessment (EqIA);
- Child Rights and Wellbeing Impact Assessment (CRWIA); and
- The Fairer Scotland Duty (FSD)

The Equality Act 2010 (Specific Duties) (Scotland) 2014 requires public bodies to assess the impact of applying a proposed new or revised policy or practice to fulfil the requirements of the Public Sector Equality Duty (PSED) as set out in Section 149 of the Act. In addition, The FSD places a legal responsibility on public bodies in Scotland to actively consider how they can reduce inequalities of outcome caused by socio-economic disadvantage when making strategic decisions. As such an IIA is an effective mechanism of meeting these legal requirements by considering the needs of different groups and to assess proposals for potential equality impacts to prevent unlawful discrimination.

The IIA also covers much of the content and detail of a Business and Regulatory Impact Assessment (BRIA) therefore a separate BRIA has not been undertaken.

The IIA concluded that the LEZ has the potential to cause a range of positive and negative impacts, from improving health to potentially reducing access to the city centre for those who rely on private vehicle transport. The most significant impact of the LEZ will be the improvement in air quality and the resulting health benefits to residents, visitors and workers. The LEZ also has a potential positive health impact through encouraging the use of active travel and public transport for certain trips and changing existing travel behaviours.

Given the focus of the IIA to look at how protected groups are potentially differentially affected there are instances where the LEZ could disproportionately affect some groups in society. For example, those who have a diminished ability to upgrade to a compliant vehicle due to low income, including people on benefits, single parents, or disabled people. Those on lower incomes may experience reduced access to locations and in turn the goods, services or employment opportunities available to them. Community transport providers rely on cars and minibuses that may be subject to a LEZ, therefore the services they provide to a range of protected groups (such as youth groups and those receiving care) may be affected.

The assessment therefore concluded that, despite the health benefits, protected members of society can be negatively impacted by the LEZ but that these impacts can be removed or mitigated through considerate decision-making at national and local level. For example each of the following will reduce any negative impacts of LEZs:

- The national exemption for blue badge holders will mitigate impacts on this vulnerable group;

- Transport Scotland's LEZ Support Fund, which provides grants for households on lower incomes and microbusinesses to dispose of or retrofit vehicles that do not meet the LEZ standards;
- Retrofitting schemes introduced by Transport Scotland to support the costs of retrofitting buses, taxis and goods vehicles; and
- The proposed 2-year grace period which allows additional time for residents and businesses to comply with LEZ requirements.

Given that the LEZ boundary skirts the harbour area, which provides passenger ferry services to the Orkney and Shetland Islands, an Islands Communities Impact Assessment was undertaken to determine whether the LEZ would have differential impacts on island communities. As the ferry terminal access and egress point is outwith the LEZ boundary, there are no differential impacts anticipated and therefore no further mitigation proposed.

Costs / Funding

The costs incurred to date, and projected expenditure in 2021/22, for LEZ modelling, appraisal, communications, engagement, impact assessments and design works, are identified in Table 4.

Table 4: LEZ spend to date

2019/20	£191,654
2020/21	£217,114
2021/22	£195,088 (estimated)
TOTAL	**£603,856**

Implementation and operating costs for LEZ enforcement over a ten-year period are estimated (based on a number of assumptions, including a requirement to replace the camera system in year 5) in Table 5. Further elaboration of these assumptions can be provided by ACC if required.

Table 5: Projected LEZ Running Costs

	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32
Hardware and software purchase and installation	520,000	0	0	0	0	603,000	0	0	0	0
Hardware and software commissioning and setup	28,500	0	0	0	0	33,039	0	0	0	0
Ongoing software provision and maintenance support	0	180,660	180,660	186,080	191,662	197,412	203,334	209,434	215,717	222189
Camera power	0	10000	10000	10000	10000	10000	10000	10000	10000	10000
Staffing requirement	0	0	37,000	37,000	37,000	37,000	37,000	37,000	37,000	37,000
Additional back-office costs	0	0	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
DVLA checks	0	0	967,615	725,711	544,283	408,213	306,159	229,620	172,215	129,161
PCN Stationary costs	0	0	400	400	400	400	400	400	400	400
Mailing of PCNs	0	0	9676	72575	5442	4082	3061	2296	1722	1291
External grant contribution (confirmed)	-548,500	0	0	0	0	0	0	0	0	0
PCN Income (assumed)	0	0	-568958	-426,718	-320,039	-240,029	-180,022	-135,016	-101,262	-75,947
TOTAL	**0**	**190,660**	**646,393**	**549,730**	**478,750**	**1,063,117**	**389,933**	**363,734**	**345,792**	**334,094**

Risks and Uncertainty

ACC's current Risk Register, identifying risks and mitigation measures, for the LEZ is provided below.

Risk	Impact	Likelihood	Score	Mitigation	Impact	Likelihood	Score
LEZ Subject to Examination.	4	2	8	Robust case for change has been established via the NLEF process and LEZ has been informed by 2 rounds of public and stakeholder engagement. Objections received have all been responded to and/or addressed.	4	2	8
Scottish Ministers reject proposed scheme.	4	2	8	Engage with Ministers to understand concerns and address any issues raised in sufficient time.	4	2	8
Lack of agreement between ACC and Ministers of proposed scheme.	4	2	8	Engage with Ministers and ACC Elected Members to understand concerns and address any issues raised.	4	2	8
Funding is not available to cover scheme maintenance and running costs.	5	2	10	Continue to engage with Transport Scotland and Ministers on opportunities for ongoing revenue support. Ensure LEZ costs are reflected in ACC's future budgeting.	5	2	10
ACC does not achieve May target date for declaring LEZ.	3	2	6	Submission of LEZ proposals to Ministers in a timely manner.	3	2	6
Public transport operators react to increased financial pressures by reducing services or increasing costs.	5	4	20	Significant BEAR funding awarded to North East operators in September 2021. Engage with Transport Scotland to encourage additional funding in future years. Implement CCMP and the outcomes of the Bus Partnership Fund corridor studies to make bus travel more attractive through achieving faster and more reliable journey times. Continue to work with operators on the further deployment of hydrogen buses in Aberdeen, and to identify further measures to increase the attractiveness of bus travel through achieving faster and more reliable journey times.	5	2	10
Increased costs to individuals as a result of LEZ implementation.	4	4	16	Continue to raise awareness of various funding streams available to assist with the cost of compliance. 2-year grace period identified to allow for additional time to comply with LEZ requirements.	4	3	12
Increased costs to businesses as a result of LEZ implementation.	4	4	16	Continue to raise awareness of various funding streams available to assist with the cost of compliance. 2-year grace period identified to allow for additional time to comply with LEZ requirements.	4	3	12
Negative impacts on the City Centre economy.	4	3	12	2-year grace period identified, following engagement with businesses, to allow for additional time to comply	4	2	8

				with LEZ requirements. LEZ has been designed to ensure the majority of key city centre destinations remain accessible to all. LEZ will be accompanied by wider placemaking projects to improve the attractiveness of the city centre for all.			
Negative impacts on accessibility for certain users.	4	4	16	LEZ has been designed to ensure the majority of key city centre destinations remain accessible to all. Suitable diversionary routes around the LEZ will be identified for non-compliant vehicles. National exemption granted to blue badge holders.	4	2	8
Resistance to LEZ proposals amongst stakeholders and / or members of the public.	3	5	15	LEZ has been informed by the outcomes of two consultation periods and the formal objection period. Continue to raise awareness of the benefits of the LEZ and the various funding streams available to assist with the cost of compliance. 2-year grace period identified to allow for additional time to comply with LEZ requirements. LEZ has been designed to ensure the majority of key city centre destinations remain accessible to all. Suitable diversionary routes around the LEZ will be identified for non-compliant vehicles.	3	4	12
Issues with procurement of enforcement camera system.	3	3	9	Early engagement with Procurement team to determine procurement route, and with suppliers. Compliance with Procurement legislation	3	2	6
Problems booking road/footway space for the safe installation of enforcement cameras and signs.	3	3	9	Early engagement with relevant teams.	3	2	6
Given the large number of camera sites, an extended handover and testing period may be required.	2	2	4	Ensure adequate time built into testing phase,	2	2	4
Poorly designed LEZ that results in a large number of challenges when enforcement commences.	4	3	12	Careful placement of signs and enforcement cameras. Advance publicity of LEZ enforcement commencing.	4	2	8
Additional manpower and training required for LEZ enforcement.	3	4	12	Additional staffing costs included in future cost projections. Relevant staff training.	3	3	9
Faulty / poor performing enforcement camera system.	5	2	10	Use of known and trusted suppliers. Resilient systems and service levels put in place to minimise (or eliminate where possible) downtime of the LEZ Establish maintenance regime to ensure continuous operation of the LEZ.	5	1	5
Handling of personal data for LEZ enforcement.	5	2	10	Compliance with legislation and guidance. All data to be stored and (where required) transferred in a secure manner. All data and data management processes shall be compliant with the requirements of the Data Protection Act 2018.	5	2	10

The LEZ results in unacceptable traffic increases in sensitive parts of the city.	5	4	20	Some mitigation identified, informed by traffic model predictions. Monitoring of the LEZ once operational to identify and respond to any undesirable traffic increases. Specific areas for monitoring identified in the traffic modelling report.	5	3	15
LEZ results in a reduction in air quality elsewhere in the city.	5	2	10	Predicted impacts noted during NMF process. Real impacts to be monitored once LEZ operational and mitigation identified if required.	5	2	10
The LEZ appeals process is not established within regulations in time for enforcement to begin.	5	2	10	Continue to engage with Transport Scotland and partners.	5	2	10
The DVLA database with Euro Emission Standards, and subsequent data sharing agreements are not in place in advance of enforcement starting.	5	2	10	Continue to engage with Transport Scotland and partners.	5	2	10
Section 104 Order not in force in time for enforcement of LEZs.	5	2	10	Continue to engage with Transport Scotland and partners.	5	2	10
The LEZ does not achieve the desired level of emissions reduction.	5	2	10	Ongoing monitoring and reporting on the performance of the LEZ. Opportunity exists to amend the LEZ in the future.	5	1	5
LEZ planning based on pre-COVID traffic data and behaviours, and it is not clear whether this will revert to pre-pandemic levels.	5	3	15	Testing of the LEZ under alternative futures already undertaken. Ongoing monitoring and reporting on the performance of the LEZ. Opportunity exists to amend / revoke the LEZ in the future.	5	2	10

Building upon the final risk identified in the table above, and as outlined in the traffic modelling section of this submission, the key uncertainty facing LEZs at present is the long-term impacts of the COVID-19 pandemic which are still unclear. The pandemic has had a dramatic impact on travel across all modes and specifically travel in Scotland's city centres. Research commissioned by Transport Scotland identified a number of plausible futures and this has informed additional sensitivity tests to look at the impacts of the LEZ under different future scenarios and to ensure that the LEZ remains relevant in each scenario and robust to variations in network conditions that may occur in a post-pandemic world. Full details of the outcomes of these tests are provided in Chapter 9 of the LEZ Option Testing Report, with a summary provided in the Modelling section (page 36).

This work concluded that the LEZ would serve to reduce traffic levels and thus protect the city centre under different scenarios and is predicted to meet the objectives under each of the future scenarios.

Once the LEZ is operational and some form of travel stabilisation has been achieved, the performance of the LEZ will be closely monitored to ensure that the LEZ remains the optimum option for Aberdeen.

There is a degree of uncertainty over the longer-term requirement for LEZs given commitments to phase out the purchase of new petrol and diesel vehicles, and uncertainties over short to-medium term uptake in electric or hydrogen vehicles, both of which could reduce the need for a LEZ over the next 15-20 years. Again, this will be addressed via ongoing monitoring of the performance and impact of the LEZ (see next section). There is scope in the legislation to amend and / or revoke LEZs should there be a case for doing so, therefore ACC does have recourse to this if deemed an appropriate response at any time.

Monitoring and Reporting

Monitoring and reporting on the performance and effectiveness of the LEZ will take place in accordance with the Transport (Scotland) Act 2019 and associated LEZ Guidance.

In particular, the performance of the LEZ in reducing levels of air pollution, alongside concurrent interventions, will be monitored and reported via the Local Air Quality Management (LAQM) process and published within Aberdeen's Air Quality Action Plan Annual Progress Reports. These will continue to detail pollution levels recorded at automatic monitoring sites and diffusion tube locations.

Although it is acknowledged that identifying the impact of the LEZ alone is challenging in the context of other interventions that may be delivered in the area and / or wider city at the same time, attempts will be made to, where possible, separate the impact of the LEZ from that of wider interventions, and to identify the direct contribution of the LEZ by looking at before and after data at key periods such as, for example, the launch of a retrofitted bus fleet, the end of the grace period, etc.

ACC will use the above data, and any other data at its disposal (including data from partners such as NHS Grampian) to evaluate the effectiveness of the LEZ across the following criteria as identified in the Guidance:

- Air pollution reduction trends and how the scheme contributes to CO_2 reduction targets;
- Transport vehicle demographics, including the monitoring of variation in vehicle emission standard profiles;
- Health benefits that could be attributed to the LEZ;
- Transport modal shift (particularly to active and public transport) that could be attributed to the LEZ.

In accordance with the Act, ACC will furthermore prepare an annual report on the operation and effectiveness of the LEZ, share this with Ministers and publish on our website. In accordance with the Guidance this will cover, as a minimum:

- The scheme size, boundary location, vehicle scope, date of scheme introduction and grace period start / end dates;
- A summary of the operation and effectiveness of the scheme including an assessment of: the costs of proposing, making and operating the scheme; the number and details of penalties issued; the number of appeals received and a summary of their outcomes; gross and net revenue gathered by the authority from the operation of the scheme; details of how the revenue has been used to facilitate the achievement of the scheme's mandatory and discretionary objectives; and
- Any modifications to the scheme in the past 12 months.

In accordance with the Act and Regulations, ACC will keep and publish annual accounts in connection with the LEZ for the duration of a scheme's operation, with a 'statement of accounts' published in ACC's annual accounts. They will identify:

- The costs of proposing, making and operating the scheme and the calculation method and actual figures related to gross and net revenue and expenditure of the scheme, to include all of the costs incurred for, or in

connection with, planning, procuring, implementing, maintaining, repairing, improving, administering, managing, enforcing and promoting the scheme; and

- Any grant provisions provided by Scottish Ministers in relation to the LEZ scheme.

The accounts will aim to align with the financial year and will be published:

- In ACC's annual accounts for the applicable financial year; and
- Within the LEZ annual report.

Conclusions

ACC has identified a preferred LEZ boundary for Aberdeen (Figure 28) following a robust option appraisal process, supported by detailed traffic and air quality modelling, public and stakeholder engagement, relevant impact assessments and alternative futures scenario planning.

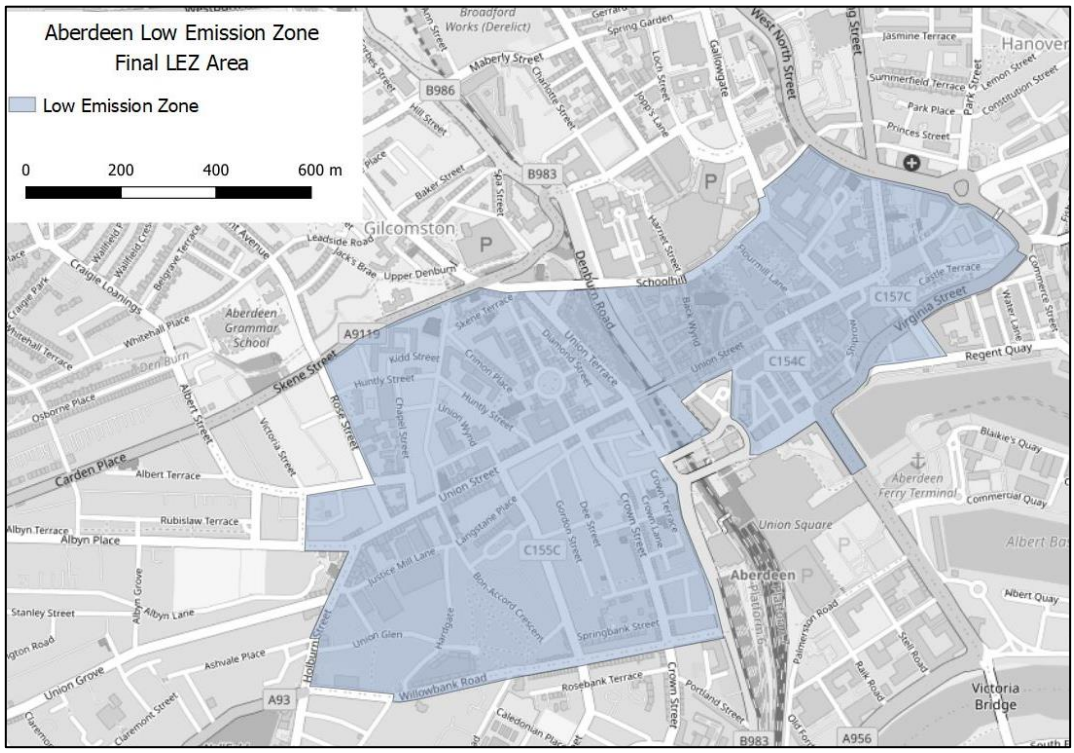


Figure 28: Proposed LEZ

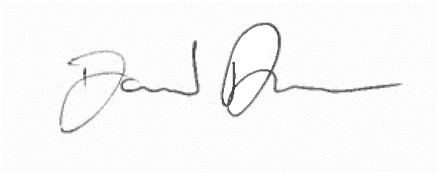
ACC intends to formally introduce the LEZ on 30th May 2022. A 2-year grace period for both residents and non-residents of the LEZ and for all non-exempt vehicle types will commence from this date, meaning that enforcement will take place from 1st June 2024.

The LEZ will operate for 365 days a year, 24 hours a day. In accordance with the legislation, it may be suspended for the duration of events of local or national significance. The LEZ may also be suspended in emergency situations, such as when an incident on the wider road network requires vehicles to be temporarily diverted through the LEZ, but only where vehicles follow prescribed diversionary routes.

Vehicles will be permitted access to the LEZ on the basis of their exhaust emissions standard, in accordance with the mandatory nationally consistent emission standards for Scottish LEZs identified in the Regulations. The LEZ will apply to all vehicle types specified in the Regulations, other than motorcycles and mopeds and those subject to a national or local time-limited exemption. A process for the issuing of the latter has been established, with authority residing with the Council's Chief Officer - Strategic Place Planning.

Should ACC believe a vehicle is in contravention of the LEZ, it will serve a Penalty Charge Notice (PCN) on the registered keeper, in accordance with the Regulations. Enforcement will commence following the end of the 2-year grace period and will be via Automatic Number Plate Recognition (ANPR) cameras. Penalty charges will be issued in accordance with the Regulations, described in the Introduction.

Full details of the proposed LEZ are provided in ACC's Proposal to Make a LEZ Scheme.



David Dunne
Interim Chief Officer, Strategic Place Planning

21 February 2022