Low Emission Strategy (2018 - 2021)
Cheshire West and Chester Council

September 2018

Cheshire West and Chester

Foreword

Air pollution is increasingly associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion. There is clear evidence that $PM_{2.5}$ (particulate matter smaller than 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases. The estimated fraction of mortality attributable to particulate matter in Cheshire West and Chester is 5.2% or 161 deaths per year. This figure rises to 285 deaths per year when the effects of nitrogen dioxide (NO_2) are taken into account. Reductions in air pollution can therefore deliver significant improvements in local health outcomes.

The most significant local source of pollution in our Borough that the Council can influence is that caused by vehicle emissions. Whilst industrial emissions are heavily regulated, there are few regulations for vehicles once they leave the factory. The primary objective of this Low Emission Strategy (LES) is to reduce traffic emissions by promoting and encouraging sustainable transport including the adoption of low emission vehicles and technologies while discouraging the use of high emitting vehicles wherever possible.

Emissions of fine particulate pollution from wood burning stoves and open fires are also of increasing concern both nationally and locally. It is necessary to explore measures that we as a Council can undertake locally to minimise such emissions.

I fully support this Strategy and consider this the first important step in ensuring good air quality for all of our residents.

Councillor Karen Shore

Cabinet Member for Environment

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1. Introduction

Life expectancy in Cheshire West and Chester is slightly above the national average[1] and people living in the borough can expect to spend a higher proportion of their lives in good health than the England average and fewer years spent in poor health. However, like many places in the UK, it cannot escape pollution from cars, taxis, vans, lorries and buses and this can have a detrimental effect on health. Our understanding of the health effects of air pollution is improving all the time and with this understanding comes a responsibility to reduce these emissions and minimise their impact on health where possible. In particular emissions of nitrogen dioxide (NO_2) and particulate matter (PM_{10}) have been identified within the UK as having a significant detrimental effect on health.

There are currently three Air Quality Management Areas (AQMAs) in the Borough (see Appendix 1), which have been declared as a result of traffic pollution causing an exceedance of the annual mean NO_2 Air Quality Objective (AQO) of 40 micrograms per cubic metre (μgm^{-3}). These AQMAs are in Ellesmere Port, Chester and, Frodsham. An AQMA has also been declared in Thornton le Moors as a result of industrial emissions causing an exceedance of the sulphur dioxide (SO_2) 15-minute mean AQO.

In addition to these AQMAs, there is also recognition that whilst there is no exceedance of AQOs for PM_{10}, a general reduction in this pollutant would be beneficial for the health of residents. PM_{10} comprises tiny particles of 10micrometres or less in diameter that are inhaled into the lungs where they can become trapped. In particular there is increasing concern about $PM_{2.5}$ particles, a subset of PM_{10}, where there is now strong evidence on the health effects of inhaling them. An overarching strategy for reducing both PM_{10} and NO_2 emissions would help in efforts towards achieving compliance with the national AQO within the AQMAs and improve the general health and wellbeing of local residents.

The Cheshire West and Chester Low Emission Strategy (2018 – 2021) (LES) seeks to address these health impacts by targeting the reduction of NO_2 and PM_{10} and indirectly tailpipe hydrocarbon emissions through a variety of means whilst at the same time not compromising the Council's carbon dioxide (CO_2) objectives and targets for minimising carbon emissions and ensuring that the borough continues to thrive.

The Council LES has been developed with a broad consensus amongst stakeholders to ensure their support and help deliver a strategy that is workable. The LES is based upon three key principles for the reduction of emissions:

- Shift: change mode from cars to public transport, cycling and walking
- Avoid: reduce vehicle kilometres driven, emissions from stationary vehicles, chimneys and construction
- Improve: improve the vehicle technology to reduce emissions and specifically low emission vehicles (LEVs)

This Strategy will be reviewed in 2021 and extended, taking into account progress on measures and changes in the dynamic ultra-low emission vehicle and fuel market.

[1] Public Health England (2015). Longer Lives: See how your local authority compares.

2. Background

2.1 Population characteristics

Cheshire West and Chester contains the key city of Chester and towns of Ellesmere Port, Neston, Frodsham, Northwich and Winsford. Large parts of the south and centre of the Borough are rural in nature. The population is approximately 333,900[2] of which around 27% is the rural population. The population is expected to grow by approximately 32,800 by 2035. This growth will generate more vehicle movements and consequently more pollution unless we take appropriate steps.

The Council's Local Plan[3] aims to deliver in the region of 22,000 new homes and to support an additional 14,000 people in employment. These proposed residential and employment sites are focused on the city of Chester and towns of Ellesmere Port, Northwich and Winsford. Given the current poor air quality in discrete locations in the Borough, it is crucial that development is managed to ensure that existing issues are not exacerbated and air quality does not suffer as new developments are constructed.

2.2 Air quality monitoring

Local air quality is monitored by the Council using both automatic stations that continuously monitor concentrations of a variety of pollutants, and diffusion tubes that provide indicative measurement of NO_2 concentrations. The locations and details of these monitoring sites are available in the latest Local Air Quality Management (LAQM) Review and Assessment report, available at www.cheshirewestandchester.gov.uk/aqmanagement

2.3 Areas of poor air quality

Air quality across Cheshire West and Chester (CWAC) is generally good, but there are several locations where the AQOs are exceeded. The annual mean NO_2 AQO was exceeded at 24 of the 60 diffusion tube locations in 2015 when considering relevant exposure. The LAQM review and assessment process has identified locations where the AQO is not currently achieved. The following AQMAs (see maps in Appendix 1) have been declared due to traffic emissions:

- Whitby Road / Station Road, Ellesmere Port. AQMA declared in 2005 by the legacy authority, Ellesmere Port and Neston Borough Council, due to exceedances of the annual mean NO_2 AQO attributed to pollutant emissions from road traffic, linked to local areas of congestion
- Chester city centre. AQMA declared in 2017 due to exceedances of the annual mean NO_2 AQO attributed to pollutant emissions from road traffic, linked to

[2] Cheshire West and Chester (2017).Population Forecasts http://inside.cheshirewestandchester.gov.uk/GetFile?fileUrl=/keystatistics/population%20forecast%20report%20lh%20june%202017-06-05.pdf&extension=pdf

[3] Cheshire West and Chester Council (2015) Local Plan (Part One) Strategic Policies

local areas of congestion around the inner ring road. This AQMA covers the whole city centre located within the inner ring road and encompasses the former Boughton AQMA

- Fluin Lane / A56 junction in Frodsham. AQMA declared in 2015 by the Council, due to exceedances of the annual mean NO_2 AQO attributed to pollutant emissions from road traffic

Actions taken by the Council to reduce emissions in these areas can be found in the Council's Annual Status Report.[4] It should be noted that the assessment of air quality is ongoing and it is possible that additional AQMAs may still be identified and existing areas revoked.

Concentrations of PM_{10} are recorded at several monitoring stations. There were no recorded exceedances of the annual mean objective value of 40µgm^{-3} during 2013 – 2015, and no exceedances of the 24-hour mean AQO. Whilst no AQMAs have been declared locally for PM_{10} there are health concerns about current levels of PM_{10} and in particular $PM_{2.5}$, a subset of $PM_{10,}$ as the body of scientific evidence suggesting that the AQOs are not conservative enough and any reduction is likely to deliver improvements in health.

2.4 Sources of air pollution

There are three main manmade sources of nitrogen dioxide and particulate matter pollution within the UK

i. Vehicle

ii. Industrial

iii. Domestic solid fuel fires

Vehicle emissions are regulated at the point manufacture by requiring that they meet set emission standards however once a car leaves the production line there are no effective additional emission control measures. Emissions test required during MOTs do not include nitrogen dioxide emissions or particulate emissions other than visual checks and smoke tests. However, new test requirements entering into force in May 2018 will make it an instant fail if diesel particulate traps have been removed.

Whilst emissions from vehicles have been falling over recent years, the rate of decline has been far lower than predicted resulting from an increase in the number of vehicles on the road, an increased market share of diesel vehicles and, significantly, a failure of real world vehicle emissions to match those achieved in the laboratory.

Industrial processes that have the potential to cause pollution are strictly regulated through the Industrial Emissions Directive. This European Union Directive makes it a requirement for all such processes to operate in accordance within set emissions limits that are based on viable pollution abatement technology. These emission limits are frequently reviewed to ensure continuous improvement across all relevant industry sectors. The emission limits are combined with minimum stack height requirements to ensure ground level

[4] www.cheshirewestandchester.gov.uk/aqmanagement

concentrations are minimal. Consequently the contribution of industrial emissions tends to be significantly lower at ground level than vehicle emissions.

Domestic wood burning is now estimated to be the largest single source of $PM_{2.5}$ emissions in the UK with emissions up to 2.4 times greater than $PM_{2.5}$ emissions from traffic.[5] Sales of wood burning stoves in the UK are in the region of 200,000 per year with an estimated 1 million sold between 2010 and 2015. Consequently the improvements delivered by ever tighter industrial and vehicle emission limits risk being compromised by increasing emissions from wood burning stoves. Accordingly this strategy recognises the need to address these emissions and explores the potential to reduce emissions.

2.5 Health

Our understanding of the impacts of air pollution on health has increased significantly in recent years. In 2010 the government's air quality expert advice panel, The Committee on the Medical Effects of Air Pollution (COMEAP), estimated that the mortality burden of air pollution levels in 2008 was equivalent to 29,000 deaths and an associated loss to the population of 340,000 life-years[6].

In 2015 COMEAP reported that the evidence concerning NO_2 exposure with adverse health effects had significantly strengthened over recent years[7] and Defra (Department for Environment, Food and Rural Affairs) estimate that this has an effect on mortality equivalent to 23,500 deaths in the UK.

The burden of mortality in Cheshire West and Chester attributable to long-term exposure to $PM_{2.5}$ is estimated to be 5.2% [8] which equates to approximately 161 deaths per annum and this total rises to 285 a year when deaths attributable to NO_2 (124 deaths a year[9]) are taken into account.

Within the vicinity of the AQMAs it is noteworthy that in Boughton the age standardised rate for emergency admissions for chronic obstructive pulmonary disease (COPD) are 33% higher than expected compared to the England average.

Within Ellesmere Port deaths from circulatory disease, coronary heart disease, and respiratory diseases are significantly higher than the England Average when standardised for age (52%, 86% and 46% respectively). Air quality is not the only cause of these high figures but it is now understood that it will potentially play a significant role in many of these incidents.

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[5] British Medical Journal (2015) Air pollution in UK: the public health problem that won't go away Available at: https://www.bmj.com/content/350/bmj.h2757

[6] COMEAP The Mortality Effects of Long-Term Exposure to Particulate Air Pollution in the UK, 2010

[7] COMPEAP Interim Statement on Quantifying the Association of Long-Term Average Concentrations of Nitrogen Dioxide and Mortality – December 2015

[8] Public Health England (2014) Estimating Local Mortality Burdens associated with particulate Air Pollution

[9] Cheshire West and Chester Council Low Emission Strategy Background Document April 2017

The UK Air Quality Objective for $PM_{2.5}$ is 25μg/m^3 as an annual mean which is met across the borough. Confusingly this objective is well above the World Health Organization's guidelines of 10ug/m^3 as an annual mean and 25μg/m^3 as a 24-hour mean. In a study involving much lower levels of $PM_{2.5}$ (median $PM_{2.5}$ of 7.3μg/m^3), an increase of just 3μg/m^3 in annual $PM_{2.5}$ exposure was associated with a 9% increase in deaths from ischemic heart disease and 3-4.5% increases in all deaths.[10] This is just one of a number of studies that suggest the national air quality objective is not sufficiently protective of health and confirms the health benefits of reducing levels even when they are already below the objective.

2.6 Economic impact

Poor air quality is now understood to have an adverse impact on the economy at a cost of approximately £16 billion a year[11] resulting from lost production and increased NHS and GP surgery costs. The Defra Interdepartmental Group on Costs and Benefits (IGCB) damage cost approach[12] estimates of the costs to society of the likely impacts of changes in emissions for oxides of nitrogen (NO_X) for transport is £25,252 per tonne of emission change, and the central estimate for PM for transport is £58,125 per tonne.

The Defra emissions factor toolkit estimates[13] that 100 cars travelling 20km per day would emit 0.27 tonnes of NO_X and 0.03 tonnes of PM_{10} per year. As an example of the impact of policies relating to air quality, if these were electric vehicles (EVs) with no tailpipe emissions, the damage costs saved would be £6,837 for NO_X and £1,503 for PM_{10}.

It is noted that these figures have been refined a number of times since they were first derived and it is necessary to keep the figure under review.

2.7 Need for action

In response to the issues identified above, the Council applied to Defra for an air quality grant in late 2014 to commission consultants to produce a LES. Work began in 2015 and an Air Quality Steering Group (AQSG) was formed in September 2016 to help deliver the project. The Council's consultant produced a background document in April 2017 which provides the evidence and data that underpins this strategy[14].

Figures suggest that if the LES could reduce background $PM_{2.5}$ and NO_2 concentrations by just one microgram per cubic metre (μg/m^3), the number of deaths per year attributable to air pollution could be reduced by 10% (29 deaths).

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[10] The BMJ 2015;350;h2757

[11] Defra. Abatement cost guidance for valuing changes in air quality, May 2013

[12] Defra (2015) Air quality: economic analysis – September 2015 Update

[13] Defra - Emissions factors toolkit July 2016

[14] Cheshire West and Chester Council Low Emission Strategy Background Document April 2017

2.8 Way forward

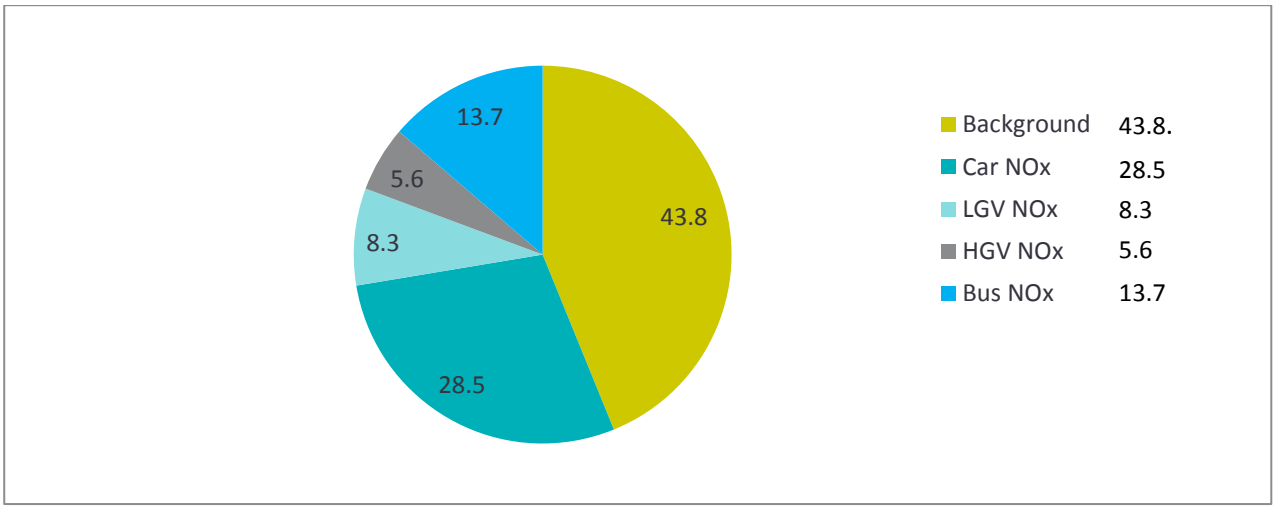
The LES background document evidences that the single largest emission source of NO_2, PM_{10} and $PM_{2.5}$ that the Council can target and take steps to reduce and manage is vehicle emissions. Industrial emission limits are set through the Industrial Emissions Directive and its associated regulations. Provided industrial operators meet these set limits, they cannot be legally compelled to reduce emissions further. Indeed by definition, those industrial operators meeting these emission limits are utilising the best emission control techniques considered financially viable, thus to request industry to go beyond is unlikely to be successful as the associated costs would compromise their ability to compete.

Within the context set out above, the Council will continue to work with the Environment Agency and Defra to ensure that companies comply with these emission limits. The Council will also keep the position on industrial emissions under review.

In respect of domestic fires and wood burning stoves, the powers to reduce these emissions have to date been very limited although the contribution to local $PM_{2.5}$ levels will be considerable; estimated to be equivalent to 1000 petrol cars[10]. The Government has recently announced additional measures to address the situation. There is a need to quantify the local impact and seek to inform potential buyers of the impact their purchase may have on local mortality. Measures are therefore included within this strategy to do this and to explore the use of the limited current and potential future legislative tools available. However as stated above, the short term objective of this strategy is to deliver the maximum improvements in local air quality with the limited resources available and therefore the primary focus of this strategy will be on reducing emissions from traffic.

Modelling work supports this stance and has identified that for NO_x (oxides of nitrogen), emissions from traffic account for over 55% of local levels[15] within the Chester AQMA as shown in Figure 2-1 below.

Figure 2-1 Source apportionment of NO_x emissions in Chester city centre AQMA



[15] Cheshire West and Chester Council Chester - Detailed assessment October 2016.

Figure 2-1 shows that over half of traffic NO_x emissions in the AQMA were from cars (including taxis and private hire) and over a quarter from buses, with light goods vehicles (LGV) and heavy goods vehicles (HGVs) comprising the rest. Regional sources, emissions from industry, housing and other transport sources not within the AQMA comprise the background contribution of 43.8%.

With regard to traffic emissions it is noteworthy that the contribution to NO_2 levels from diesel cars in Chester was found to be four times greater than that from petrol cars despite the almost equal split in numbers. Similarly emissions of PM_{10} and $PM_{2.5}$ from diesels are likely to be far higher. It is noted that the World Health Organisation has identified diesel emissions as carcinogenic. Consequently, improving emissions from cars, in particular diesels, as well as buses is identified as essential to reduce emissions within urban areas.

While the removal of diesels is important, this strategy seeks to maximise the benefit of removing diesel cars by replacing as many of them as possible with ultra-low emission vehicles (ULEVs) rather than petrol cars. It is imperative that a network of charging infrastructure is established to facilitate this transition. Diesel owners switching to petrol cars now are unlikely to consider changing their cars for a number of years which will prevent the Council from delivering the maximum benefits possible in the shortest time.

This strategy proposes to focus on incentivising and promoting ULEVs. Whilst it does not rule out introducing penalties targeted at diesel cars, it is not proposed to consider this option further until an EV charging network is in place.

While reducing NO_2 levels in AQMAs and urban areas is considered a priority, in rural areas NO_2 levels are generally considerably lower. Consequently it is not proposed to focus limited resources on reducing NO_2 in such rural locations. It is noted however that reducing PM_{10} and $PM_{2.5}$ emissions will deliver a health benefit irrespective of how low existing levels are and consequently the strategy should target PM_{10} and $PM_{2.5}$ emissions across all areas of the borough.

The approach adopted by the LES is based upon three key principles for the reduction of emissions:

- Shift: change mode from cars to public transport, cycling and walking
- Avoid: reduce vehicle kilometres driven, emissions from stationary vehicles, chimneys and construction
- Improve: improve the vehicle technology to reduce emissions and specifically low emission vehicles

The LES will complement individual Air Quality Action Plans (AQAPs) that are required under Part IV of The Environment Act for each AQMA. These AQAPs set out how the Council will target the air quality issues that are specific to that area and so deal only with NO_2 emissions. The AQAPs may require additional measures within the AQMAs that go beyond the measures identified within this strategy.

3. The strategic framework

The EU Ambient Air Quality Directive and fourth Daughter Directive contain target values and limit values with which the UK must comply. The Air Quality (Standards) Regulations 2010 transpose the requirements of the directives into English law and set limits for certain pollutants in ambient air and which form the basis for the declaration of the AQMAs within the borough.

The Council Plan 2016 – 2020[16] outlines the Council's vision of a thriving borough with a thriving economy, thriving residents and a thriving community. It sets out the Council's overall direction until 2020 and informs the allocation of resources. Resources are allocated in line with the ten stated priorities.

Priority four forms part of the thriving communities theme and identifies the need to deliver the 'Cleanest, safest and most sustainable neighbourhoods in the country'. Improving air quality across the borough by 2020 is one of the key measures of success for this priority.

The Low Emission Strategy will contribute significantly to achieving this measure by providing a co-ordinated approach to improving air quality, complementing policies and priorities relating to air quality contained within the following strategies and action plans:

- the Health and Well Being Strategy 2015 - 2020[17]
- the Sustainable Community Strategy 2010-2026[18]
- the Energy and Carbon Reduction Strategy 2016-2020[19]
- the Local Plan[20]
- the Local Transport Plan 2011 - 2030[21]
- the Chester Transport Strategy[22]
- the Winsford Transport Strategy[23]
- the Ellesmere Port Air Quality Management Area Action Plan[24]

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[16] https://www.cheshirewestandchester.gov.uk/your-council/policies-and-performance/council-plans-and-strategies/council-plan.aspx

[17] http://inside.cheshirewestandchester.gov.uk/GetFile?fileUrl=/KeyStatistics/Health%20and%20Wellbeing%20Strategy%202015-2020.pdf&extension=pdf

[18] https://www.cheshirewestandchester.gov.uk/pdf/Sustainable%20Community%20Strategy%202010%20-%202026_Final_Update_June10.pdf

[19] https://www.cheshirewestandchester.gov.uk/documents/energy-documents/home-energy/documents-2017/Energy%20&%20Carbon%20Reduction%20Strategy.pdf

[20] http://inside.cheshirewestandchester.gov.uk/policies_plans_and_strategies/planning_policy/local_plan/local_plan__part_one

[21] http://inside.cheshirewestandchester.gov.uk/policies_plans_and_strategies/local_transport_plan_20112026

[22] https://www.cheshirewestandchester.gov.uk/documents/parking-roads-and-travel/public-transport/transport-strategies/documents/Chester%20Transport%20Strategy%20-%20Summary%20Report.pdf

[23] http://cmttpublic.cheshirewestandchester.gov.uk/documents/s48945/Appendix%20B%20Winsford%20Transport%20Strategy.pdf

- The Cycling Strategy[25]

The LES recognises the need to ensure a strong growing economy. It also recognises the fiscal pressure that the Council faces, which will continue to 2020 and possibly beyond. This strategy will seek to deliver improvements in air quality by increasing the effectiveness of existing policy and current operational practice through improved coordination and prioritisation of effort, the identification of additional funding streams and working in partnership with other public sector organisations, local businesses and the community. It will make a real and substantial contribution to delivering cleaner, safer and more sustainable neighbourhoods and in particular providing improved air quality across the borough while assisting in reducing levels of nitrogen dioxide, $PM_{10,}$ $PM_{2.5}$ and by default, tail pipe unburnt hydrocarbons.

[24] https://www.cheshirewestandchester.gov.uk/documents/pests-pollution-food-safety/pollution-and-air-quality/air-quality-review-and-assessment/action-plan-ellesmere-port.pdf

[25] https://www.cheshirewestandchester.gov.uk/documents/parking-roads-and-travel/cycling/cycling-strategy/cycling-strategy.pdf

4. Shift – mode change from cars

4.1 Summary

Shift measures focus on encouraging change to achieve emission reductions. Modal shift is the term to describe a change in the mode of transport to a more sustainable alternative such as public transport, cycling or walking. Modal shift is incredibly difficult to deliver successfully and it is necessary to take a long term approach to assess the success of such measures. To enable modal shift a viable alternative means of transport must be available. In rural areas commuters often have no alternative as public transport provision may be poor and the distances to walk are too far, or else the roads have no pavement or cycle lane. These issues can exist in urban areas as well but there is greater potential to achieve success where there are more alternatives.

Options to improve the chance of success in modal shift are:

- to develop and support detailed policy potentially for inclusion within the Local Plan (Part Two)[2] to achieve improved planning outcomes, and guiding the use of section 106 funds and Community Infrastructure Levy (CIL) to ensure safer pavements, traffic calming, subsidising public transport and better cycle routes
- the use of travel plans
- increased availability of public transport by locating new developments within areas well served by public transport
- improved public transport facilities

This strategy endorses the use of these policies through the Local Plan and Local Transport Plan.

4.2 Shift measures

Policy measures

The policy means to deliver modal shift measures already exist. The National Planning Policy Framework (NPPF), CWAC Local Plan[26], Local Transport Plan (LTP)[27], Parking Standards Supplementary Planning Guidance (SPD)[28] and Travel Planning Guidance SPD[29] contain a number of policies that relate to the reduction of the need to travel, the reduction of emissions and the encouragement of walking and cycling.

[26] Cheshire West and Chester Council (2015) Local Plan (Part One) Strategic Policies

[27] Cheshire West and Chester Council (2011) Local Transport Plan Integrated Transport Strategy 2011-2026

[28] Cheshire West and Chester Council: Parking Standards Supplementary Planning Document (May 2017)

[29] Cheshire West and Chester Council (2016) Travel Planning Guidance SPD (March 2016)

The Local Plan provides the planning development framework to support the priorities identified in other Council plans and programmes such as the LTP. Part 1 of the plan was adopted on 29th January 2015 and provides the Council's vision and strategic objectives. The Council is currently developing Part 2 of the Local Plan, which will contain land allocations and detailed development management policies. The inclusion of detailed policy to deliver modal shift measures in line with those identified above is critical to the long-term success of this Strategy. Work is already underway to address this matter.

The following policies are therefore supported to minimise demand for travel by private motor vehicles and encourage transport by ultra-low emission modes, new development proposals should:

- be located so as they are accessible to local services and facilities by a range of transport modes including walking and cycling
- include appropriate provision for access to public transport and other alternative means of transport to the car
- seek to maximise use of sustainable (ultra-low emission) modes of transport and improve health and wellbeing by incorporating high quality facilities for pedestrians, cyclists and public transport
- seek to reduce reliance on individual-owned cars by supporting the use of car clubs (particularly those using ultra-low emission vehicles (ULEVs))
- include travel plans to promote the benefits of walking and cycling and associated measures, in particular, walking to school, and encourage a reduction in the proportion of single occupancy car trips
- accommodate the efficient delivery of goods and supplies, consider the potential for a freight consolidation centre with ultra-low emission last mile deliveries
- promote active travel and give priority to pedestrian and cycle movements, and have access to high quality public transport facilities
- create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones
- consider the needs of people with disabilities by all modes of transport

Measure	Summary	Action number	Detail
(A) - Local Plan	Developments should provide access to local services and public transport, and maximise the use of sustainable modes of transport.	1	Ensure that the importance of existing policy to improve public health is understood and given appropriate consideration in the development management process.
		2	Ensure that detailed policy and land allocation in accordance with these strategic objectives and policies are proposed and tested through the Local Plan Part 2 process.

Availability of buses

Within Cheshire West and Chester, approximately 90% of the bus network is commercial and operates without subsidy. However a number of routes are not able to operate without local authority financial support due to low levels of patronage. Often these routes serve rural communities which have no other means of public transport available. This budget is therefore critical in protecting service provision and ensuring alternative means of travel exist.

Measure	Summary	Action number	Detail
(B) - Bus service subsidy	The availability of public transport is critical for enabling modal shift. Subsidies play an important role in facilitating this.	3	That the Council seeks to maintain the current level of subsidy and where possible enhance it exploring other potential funding sources.

Bus priority measures

Bus priority measures aim to reduce the journey time associated with using the bus and therefore make them more attractive as a means of transport. Such measures include:

- the use of bus lanes where appropriate
- tackling inappropriate parking
- bus only link roads and turning lanes
- traffic signal controls
- bus stop and network improvements
- improved interchange facilities

Studies show that such measures can be implemented without having a detrimental effect on car journey times and it is important that such measures, if utilised, do not increase congestion or emission levels at hotspots. Targeting of bottle necks, heavily used corridors and high patronage routes should be considered. Section 106 (S106) can and is used for this purpose. CIL funding should also be considered to help address such issues.

The use of enhanced bus quality partnerships, through the Bus Services Act offers further opportunity for the Council to work directly with bus operators and agree infrastructure improvements.

Measure	Summary	Action number	Detail
(C) - Bus priority measures	Reductions in journey time and improvements in the customer experience are proven to increase local transport patronage.	4	Undertake an assessment of potential bus priority improvement measures for bus routes within AQMAs.
		5	To explore the use of CIL and other funding for tackling congestion hotspots on major

		bus routes.
	6	Utilise the powers provided under the Bus Services Act and explore the potential for enhanced bus quality partnerships to deliver infrastructure improvements for specific services.

Traffic speed limits

The Council has a policy for the reduction of speed limits from 30mph to 20mph on residential roads around schools in order to reduce traffic collisions and encourage more children to walk to school and reduce pollution. A study undertaken by Imperial College London determined that NO_X emissions were lower from diesel vehicles travelling at 20 mph than those travelling at 30mph[30]. The potential for reducing speed limits in built-up areas from 30mph to 20mph to reduce emissions by reducing acceleration and encouraging smoother driving has been identified and the phased introduction has begun. This measure also has numerous other benefits, such as improving safety, reducing noise, sharing road space more equitably between modes, and making streets more pleasant. Creating a safer environment for walking and cycling is an important element of this strategy to promote alternative and sustainable forms of local travel.

Measure	Summary	Action number	Detail
(D) - 20mph zones	Reductions of speed limits to 20 mph not only reduce accidents but encourage the use of walking and cycling by creating a safer road environment.	7	That the existing plan to reduce targeted 30mph roads to 20mph be implemented as per the approved schedule.
		8	All residential roads in new developments shall have a 20 mph speed limit where appropriate. Criteria shall be developed for this purpose.

Cycling improvement measures

Cycling can play an important role in reducing emissions if it used as an alternative form of transport to motor vehicles. It has the added advantage that it offers health benefits and regular cycling can assist people lose weight, reduce stress, improve overall fitness and reduce the risk of chronic illness. The Council's Cycling Strategy identifies the need to challenge people's perceptions about cycling and make it safer by building new improved infrastructure and improving awareness of the benefits and promoting a cycle friendly culture. The LES supports the introduction of measures that promote cycling over car use resulting in an increase in shorter trips to access jobs, education, public transport and local services by bike. Cycling measures are unlikely to deliver a measurable reduction to emissions in anything but the long term but this only reinforces the need that measures

[30] Transport and Environmental Analysis Group, Centre for Transport Studies, Imperial College London (2013) An evaluation of the estimated impacts on vehicle emissions of a 20mph speed restriction in central London

should be assessed for implementation sooner so that those benefits can be realised in the shortest timeframe possible.

Measure	Summary	Action number	Detail
(E) – Cycling initiatives	To support and enhance existing policy to increase cycling as a means to undertaking shorter trips to access jobs, education and local services by improving safety, challenging people's perceptions of cycling and promoting a cycle friendly culture.	9	Review potential cycle priority improvement measures for improving safe access of town centres, employment sites and other local services and prioritise delivery.
		10	Explore the use of CIL and other funding streams to enable improvements to be delivered.
		11	Develop and promote cycle friendly culture

Walking Improvement Measures

Walking is an essential means of transport for many people accessing local shops, work and other local services but the walking environment is not always ideal. Walking is in many situations a viable alternative to a short car journey and fewer car journeys mean better air quality and often a safer road environment making a place more pleasant to live. However sometimes walking is not a viable alternative because the local infrastructure is not conducive. Walking should be easy, safe and pleasant with pathways connecting residents to key local destinations, services and public transport with the added benefit of improving general health.

Connecting to other forms of public transport increases the viability of walking to a variety of destinations, there is potential that integrated travel tickets may increase this viability.

Walking is the ultimate ultra-low emission travel option with negligible emissions of carbon dioxide, NOx and particulates as well as no tailpipe hydrocarbons. Like cycling, walking is unlikely to deliver measurable benefits to emission reduction in anything but the long term but this strengthens the case that measures should be introduced sooner rather than later.

Measure	Summary	Action number	Detail
(F) – Walking initiatives	To increase walking as a means of undertaking shorter trips to access jobs, education, public transport and local services by improving safety.	12	Review potential walking measures for improving safe access of town centres, employment sites and other local services and prioritise delivery.
		13	Explore the use of CIL and other funding streams to enable improvements to be delivered.
		14	Explore integrated travel pass potential.

Awareness raising

The National Institute for Health and Care Excellence (NICE) guidance Air pollution: outdoor air quality and health (2017) recommends raising awareness of local air quality issues with the general public and businesses. In particular they recommend providing information on how:

- health is affected by air pollution
- travel choices contribute to pollution and exposure to levels of local pollution
- low emission vehicles now offer viable alternative to petrol/diesel cars
- engine idling and driving style affects air quality in the vehicle as well as outside
- exposure can be minimised by altering travel habits or routes
- Healthy sustainable travel options such as walking and cycling

Consideration should also be given to promoting information about

- Fuel additives
- Wood burning stoves and the associated emissions
- Smoke control areas and smoke control area Defra approved appliances

Information is presently provided to the public through a variety of means including the Council website. There is a need to create a one-stop shop of information for residents and businesses to reliably inform them on air quality and the measures they, the Council and other stakeholders can and are taking to improve local air quality. Developing the message and ensuring it reaches its target audience in a way that resonates is a key element of this.

There is also a need to ensure that the information provided is clear and accurate. There is a lot of contradictory information available on many of the above issues and this can lead to confusion. Accurate, reliable and accessible information is crucial to informing residents, businesses and other stakeholders of low emission options and opportunities.

Measure	Summary	Action number	Detail
(G) - Awareness raising	Raising awareness of the issue empowers people and companies to take independent action that support the aims and objectives of this strategy.	15	Explore options for raising awareness of these issues, and in particular consider key messages for the community. Options for a sustained Council campaign, providing clear and accurate information is essential and consideration will be given to working with other local public service partners.

5. Avoid – reduce emissions from vehicle kilometres driven, stationary vehicles and construction sites.

5.1 Summary

Introducing and supporting measures that can reduce and prevent the release of emissions is considered critical and can deliver significant improvements in air quality. Where new compulsory measures are introduced, an appropriate level of consultation may be required to allow affected individuals and companies to take appropriate steps.

Options to avoid the release of emissions include the following:

- use of planning policy to minimise the impact of new development on air quality and create more sustainable communities
- the introduction of Clean Air Zones (CAZs)
- the expansion and effective enforcement of Smoke Control Areas (SCAs)
- the introduction of vehicle anti-idling measures

This strategy endorses the further consideration of such measures within the LES implementation plan.

5.2 Avoid measures

Planning policy - new development

New development should comply with the policy requirements set out in the Local Plan. The spatial planning system has an important role to play in improving air quality and, as a minimum, policy should aim to ensure that new development does not have a negative effect on air quality. Within AQMAs, where possible, planning policy should contribute to toward meeting the national air quality objectives.

It is important that planning policy provides clear guidance to developers on:

- the requirements to meet good design best practice;
- when an air quality assessment is required; and
- the extent to which additional mitigation measures may be necessary to enable the development

Environmental Protection UK (EPUK) / Institute of Air Quality Management (IAQM) guidance[31] suggests screening criteria whereby any development that does not meet the 'major development' definition is screened out. The following classes of development may require an air quality assessment:

- 10 or more residential units or a site area of more than 0.5hectares; or

[31] EPUK / IAQM Land-Use Planning and Development Control: Planning for Air Quality – May 2015

- more than 1000m^2 of floor space for all other uses or a site area greater than one hectare
- coupled with any of the following:
- The development has more than 10 parking spaces
- The development will have a centralised energy facility or other centralised combustion process.

Additionally an assessment may be required for development which introduces new relevant exposure within an AQMA or results in an increase in emissions within the AQMA defined as 'slight' or greater within the EPUK/IAQM guidance.

Development in designated Air Quality Management Areas must take account of existing air pollution and include measures to mitigate its impact on existing residents, other sensitive receptors and future occupiers and be consistent with other policies of the Development Plan such as those on climate change, best practice and design. Similarly development outside of an AQMA but with the potential to impact on an AQMA shall be subject to the same criteria.

Measure	Summary	Action number	Detail
(H) - Local Plan	Major development applications and all development that introduces new exposure within an AQMA, and/or has a 'slight' or greater impact on air quality as defined by EPUK/IAQM guidance shall provide an air quality assessment which meets the standards detailed within the same guidance.	16	Ensure that appropriate detailed policy is proposed and tested through the Local Plan Part 2 process.

Identifying mitigation measures

For development meeting the requirement of needing an air quality assessment the Council will seek, through the planning process, to require the developer to provide details of mitigation measures aimed at minimising any detrimental effects on air quality. Such measures may include:

- car club provision or support of a local car club
- incentives for increasing the uptake of low emission technologies and fuels
- contribution to local walking and cycling initiatives
- support cycle / smart driving training awareness schemes
- provision of free or subsidised public transport for an agreed period of time

- improved pedestrian links to public transport
- provision of new bus stop infrastructure including shelters, raised kerbing and information displays
- supporting improving information systems for public transport
- contribute toward shuttle service to public transport interchange facilities
- subsidising provision of local low emission bus and/or waste collection service
- differential parking charges depending on vehicles emissions
- requirement for commercial vehicles to comply with the current or previous European emission standard – currently Euro 6 for light-duty vehicles and Euro VI for larger vehicles
- support air quality monitoring programmes
- marketing aimed at promoting modal shift to sustainable forms of transport

This list is not exhaustive and it should be noted that this requirement is in addition to any of the requirement to install EV infrastructure as set out in the Parking Standards SPD.

The extent of the mitigation required will be assessed using a damage cost approach such as using damage costs per tonne of emissions provided by Defra[32]. This provides a transparent, simple method for calculating costs to society of a change in emissions (from both vehicles and other combustion sources) of different pollutants[33], and calculation of the additional emissions generated by the proposal. Damage cost calculations should only be carried out for sites that are predicted to have an impact on local air quality that is greater than negligible.

Measure	Summary	Action number	Detail
(I) - Development mitigation measures	Air quality damage cost calculations should be carried out for major schemes and others identified as necessary, to determine appropriate mitigation measures to offset detrimental effects on air quality.	17	Explore the use of damage cost calculators, best practice and incorporation into detailed policy to be tested through the Local Plan Part 2 process.
		18	Irrespective of whether a development is 'major', mitigation requirements for developments shall be established and tested through the Local Plan Part 2 process.

[32] Defra (2015) Air quality: economic analysis - https://www.gov.uk/guidance/air-quality-economic-analysis

[33] https://www.gov.uk/air-quality-economic-analysis#damage-costs-approach

Control of dust

The IAQM Guidance on the assessment of dust from demolition and construction[34] seeks to reduce emissions of dust, PM_{10} and $PM_{2.5}$ from construction and demolition activities. It sets out the methodology for assessing the air quality impacts of construction and demolition identifying good practice with the over-arching aim of protecting public health and the environment. Developers and contractors should follow the guidance set out when drafting their construction plans and measures to minimise air pollution during the demolition and construction process.

Measure	Summary	Action number	Detail
(J) - Control of dust during construction and demolition	Developers and contractors should identify and employ appropriate mitigation measures set out in IAQM guidance when drafting their construction plans and measures	19	Ensure that detailed policy is proposed and tested through the Local Plan Part 2 process.
		20	Review current planning enforcement arrangements and ensure resources are aligned to deliver policy objective.

Non-road mobile machinery (NRMM)

NRMM used in demolition and construction is a significant source of pollution. Diesel or petrol powered plant items emit higher levels of PM and NO_X than electric equivalents. Therefore, wherever possible, renewable, mains or battery powered plant items should be used.

Exhaust emission from NRMM are controlled through the NRMM regulation (Regulation (EU) 2016/1628 of the European Parliament). Consideration should be given to the adoption of emission standards for NRMM based on these directives.

Measure	Summary	Action number	Detail
(K) - Non-road mobile machinery	Introduction of NRMM standards in line with Stage IIIA of the EU NRMM Regulation	21	Investigate development of NRMM standards and where feasible, ensure that detailed policy are proposed and tested through the Local Plan Part 2 process.

Exposure reduction

Developments should not increase the area of exceedance of EU established health-based standards and objectives for NO_2 (CWAC AQMAs). Where new developments are introduced into areas where the standards and AQOs are exceeded, developments should be designed to minimise and mitigate increased exposure to poor air quality. The potential for green infrastructure should be duly considered.

[34] IAQM Guidance on the assessment of dust from demolition and construction, February 2014.

This can be achieved through internal arrangement and good design to create distance between the source and receptors. As a last resort, and where the requirement for the housing is considered essential the incorporation of a ventilation strategy to ensure that polluted air is not drawn into the development.

Measure	Summary	Action number	Detail
(L) - Exposure reduction	Where new developments are introduced into areas where the AQOs are exceeded or are likely to be exceeded, developments should be designed to minimise exposure to poor air quality.	22	Ensure that detailed policy is proposed and tested through the Local Plan Part 2 process.
		23	Developments brought forward by the Council shall adhere to this design principle where possible.
		24	Consider green infrastructure to trap particulates

Master planning

Joint Institute of Air Quality Management and Environmental Protection UK guidance[35] states that "wherever possible, new developments should not create a new street canyon or a building configuration that inhibits effective pollution dispersion". In particular, bus and taxi facilities should be designed to avoid the build-up of pollution.

New developments should also provide adequate, appropriate, and well located green space and infrastructure to help reduce pollutant concentrations and deliver public spaces that encourage walking and cycling. Research has shown that the appropriate use of green infrastructure can be used to improve air quality. This should be considered at the planning design stage.

Measure	Summary	Action number	Detail
(M) - Master planning	Developments' design should not inhibit dispersion of pollutants and should provide adequate, appropriate, and well located green space and infrastructure	25	Suitable policy to be proposed for inclusion within Part 2 of the Local Plan, to be tested by the Local Plan process.
		26	Developments brought forward by the Council shall adhere to this design principle where possible.

[35] IAQM / EPUK Land-Use Planning and Development Control: Planning for Air Quality – May 2015

Clean air zones

The government published guidelines in May 2017[36] for the creation of CAZs. One measure is the option to charge for certain vehicles entering the CAZ. Other measures include:

- active support for ultra-low emission vehicles
- a programme of awareness raising and data sharing
- a programme for improving bus, taxi and private hire emissions; and
- the support of healthy and active travel measures.

Many of these measures are considered separately elsewhere within this document

Measure	Summary	Action number	Detail
(N) - CAZ	Implement CAZs within the borough	27	Explore the feasibility of introducing CAZs within the borough.

Anti-idling legislation

The Road Traffic (Vehicle Emissions) (Fixed Penalty) (England) Regulations 2002 provide powers to councils to tackle idling vehicles. These powers should be used by the Council to ensure that idling is minimised, particularly in the designated AQMAs. This message should be reinforced by signage at key locations (where exposure to road-traffic-related air pollution is high[37], such as rail stations) and the adoption of anti-idling legislation[38]. A reduction in idling will deliver an immediate improvement in air quality throughout the borough but particularly in urban centres where there is a high concentration of vehicles.

Measure	Summary	Action number	Detail
(O) - Anti-idling	Issue FPNs (fixed penalty notices) to drivers of idling vehicles who refuse request to switch of idling engine – borough wide.	28	That the powers to issue FPNs are utilised and identified officers trained for that purpose.
		29	Consider a signage and publicity strategy to support this proposal.

[36] Defra Clean Air Zone Framework – Principles for setting up Clean Air Zones in England, May 2017.

[37] NICE (2016) Air pollution: outdoor air quality and health – Consultation Draft

[38] Vehicle idling is an offence against the Road Traffic (Vehicle Emissions) (Fixed Penalty) (England) Regulations 2002.

Smoke control areas (SCAs)

Smoke control legislation has led to the creation of a number of SCAs within the borough where only the burning of an authorised fuel or the use of exempt appliances is permitted. There is scope to extend the coverage of SCAs. It is noted that there is increasing evidence that emissions from solid fuel burners nationally are increasing and the Government's Air Quality Expert Group (AQEG) identifies that domestic wood consumption could be responsible for almost a third of all UK $PM_{2.5}$ emissions representing a significant increase since 1990. But they confirm that more robust data is needed to overcome current levels of uncertainty.[39] Whilst there is some uncertainty as to the total contribution to the national atmospheric emissions inventory, there is now no doubt those emissions from solid fuel appliances are significant and must be targeted. Whilst it is acknowledged that the new Eco-design Directive[40] which enters into force in 2022 will halve emissions from new stoves and even more for new biomass boilers, it will be many years before appliances are replaced by new ones without an incentivisation scheme or legal requirement.

Measure	Summary	Action number	Detail
(P) - SCA	Explore the use of SCAs across the borough to reduce PM_{10} and $PM_{2.5}$ emissions	30	Conduct a feasibility study to expand the use of SCAs.
		31	Assess potential for policy to declare all new developments SCAs.
		32	Assess enforcement options for ensuring compliance.
		33	Publicise health concerns around use of such appliances and ensuring potential customers have access to clear information.

[39] Air Quality Expert Group: The potential air quality impacts from biomass combustion (August 2017)

[40] Ecodesign of Energy Related Products Directive 2009/125/EC

6. Improve – improve the vehicle technology to reduce emissions.

6.1 Summary

Technology improvements, particularly with regard to ultra-low emission vehicles offer significant potential for improving air quality. The government has set a target for conventional car and van sales to end by 2040, and for almost every car and van on the road to be a zero emission vehicle by 2050. Current trends suggest that there is significant potential for expansion of this market and that there is scope for the Council to accelerate the rate of uptake locally.

The Council endorses a technology neutral approach but favours those technologies which deliver ultra-low emissions and do not compromise our carbon reduction obligations. Cenex undertook a review of the market and available technologies and importantly, fuel availability and how this is expected to change overtime. Presently pure electric vehicles are considered the most viable way forward as the fuelling infrastructure is relatively cheap to deliver and has few constraints. Figure 6-1 below shows the increasing numbers of electric vehicle in Cheshire West and Chester.

Figure 6-1: Plug-in-grant vehicle growth in Cheshire West and Chester (without intervention)

Year	**Number of plug-in cars licensed**
2012	14
2013	31
2014	86
2015	203
2016	343
2017	516
2020	1310 (projected)

Source (2012-2017): Vehicle licensing statistics, table VEH0131

It is noted however that there is an ever growing choice of ultra-low emission vehicles on the market albeit at different stages of technology maturity. Presently hydrogen fuel cell technology is unlikely to be available in the UK outside of a very limited number of trial areas and the infrastructure is expensive and present production of hydrogen is both expensive and can result in additional greenhouse gas production. Compressed natural gas (CNG) fuelled vehicles are certainly viable but are not generally available in the UK at the moment, except for a limited number of HGV operators trialling its use. Again the emissions of greenhouse gases associated with CNG are not yet considered acceptable.

This situation is clearly shown in the availability of alternative low emissions cars and small vans commercially available by fuel type shown in Figure 6-2. It demonstrates that only

hybrids and EVs are feasible for wider use presently but this strategy will be reviewed in 2020 to reassess this market.

Figure 6-2: Types of vehicle currently available

Ultra-low vehicle type	**No of models in commercial production**
Plug-in hybrid	26
Pure battery electric	45
Compressed natural gas	0
Liquid natural gas	0
Compressed natural gas hybrids	1
Hydrogen	0

It is anticipated that both the CNG and hydrogen fuel cell technology will develop in the UK market between 2020 and 2025 and the Council will seek to support related developments that come forward within the Borough where planning policy allows. The Council will review this matter in 2020 but presently this strategy considers that pure electric and plug-in hybrid vehicles are the only viable ultra-low emission vehicles widely available.

Options to improve vehicle technology to reduce emissions include:

- providing appropriate infrastructure for residents and business
- incentivising the uptake of electric vehicles
- review of the procurement evaluation framework for council vehicles
- measures to remove the oldest most polluting buses from the local fleet
- measures to encourage the uptake of ULEV taxis and private hire vehicles

Evidence suggests that accessible charging infrastructure helps to alleviate ‘range anxiety’, which can otherwise limit the utility of EVs and also raises public awareness of ULEV products. The provision of such infrastructure also makes the borough accessible for EV drivers from outside the region which can deliver economic benefits and this is increasingly likely to be the case.

6.2 Improvement measures

Public electric vehicle charging infrastructure

Whilst sales of EVs continue to rise locally, this strategy aims to accelerate this growth and providing a good network of public charging points across the borough has been identified

as critical to deliver this. The Low Emission Strategy background document recommends that suitable Council controlled car parks are identified for EV charging infrastructure installation and that installation is appropriately programmed (for example, to coincide with refurbishment, resurfacing or other works). This is the extension of the EU Directive 2014/94/EU on the deployment of alternative fuels infrastructure.

The Council's Parking Strategy supports the transition to EVs by signalling the introduction of reduced parking charges where appropriate. It is recommended that suitable Council-controlled car parks are identified for EV charging infrastructure installation and that installation is appropriately programmed (for example, to coincide with refurbishment, resurfacing or other works).

In addition to Council-controlled car parks, on-street provision, commercial leisure and retail destinations and train stations have been identified as locations where there will be a benefit resulting from the installation of EV charging infrastructure.

It is recommended that the Council undertake a strategic assessment of the charging requirements and varying needs across the borough along with the identification of potential locations for installation, focussing on the car parks in the Council's ownership, and potential third party partners both in the public and private sector. The strategy will need to consider the type of chargers required and the best model of delivery and subsequent maintenance and management going forwards.

The LES background document has identified the strategic need to install rapid chargers at the Wrexham Road and Boughton Heath park and ride Council-controlled sites. These are strategic locations close to the A55 and A41, facilitating inter-region travel. Any strategic assessment will need to take account of this and consider further potential for provision near the M6, M56, M53 and other A-roads.

Measure	Summary	Action number	Detail
(Q) - Public charging network	To increase the public charging network across the borough.	34	Undertake a strategic assessment of ULEV infrastructure requirements across the borough, including current needs and predicted need over 5 and 10 years. Identify potential suitable locations borough-wide for EV charging points and potential third party partners, by end of 2017.
		35	Assessment of delivery, management and public charging models and associated costs and selection of preferred option by Q1 2018/19.
		36	Identify funding opportunities available to assist in delivery of action 34.

Council workplace electric vehicle charging infrastructure

The use of ULEVs in the Council and its contractors' fleets is not possible at this moment in time as there are no means to charge such vehicles. To facilitate this it is recommended as a priority that a Council-wide infrastructure be installed at all major locations. A strategic assessment of the potential needs for each location should be undertaken and

options to fund the installation will need to be explored in detail. This assessment should seek to work in partnership with other public sector providers where possible and take account of likely future needs.

Additionally there is currently no provision for staff or visitor EV charging at any Council facility. The absence of such facilities is likely to restrict the use of EVs by staff, particularly those who use their private vehicles for work purposes, and also discourage visitors, particularly those from outside the region, from using an EV. There is a need to consider options to provide EV charging points for staff and visitors and where possible promote ULEV use by Council employees. The use of ULEVs by staff has the potential to reduce the cost of mileage claims and consideration should be given to incentivising their use. Priority should be given to Wyvern House in Winsford and Civic Way offices in Ellesmere Port as the two main office locations. Civic Way offices are located in close proximity to the Ellesmere Port AQMA and will deliver the added benefit of reducing nitrogen dioxide levels within the AQMA. Similarly, consideration should be given as to provision of EV chargers for staff who work in Chester city centre, particularly as there is an AQMA covering the city centre.

Measure	Summary	Action number	Detail
(R) - Visitor and workplace charging	The installation of work place recharging infrastructure at Council depot locations for operational fleet and at Council buildings for staff and visitor usage.	37	Undertake a strategic assessment of workplace and visitor ULEV infrastructure needs, both current needs and predicted need over the next 10 years. Identify potential suitable locations by the end of Q1 2018/19
		38	Assess management and funding options for installation of charging facilities at Council facilities and other public sector partners.
		39	Produce an implementation plan at the earliest opportunity.

New development

The Council adopted a Supplementary Planning Document (SPD)[41] in May 2017 recommending guidelines for parking provision for new developments. Provision of infrastructure for home charging will help remove a potential barrier to purchasing an ULEV whilst at the same time adding very little cost to the developer, future proofing development and raising the profile of ULEVs at the same time. It is proposed to introduce this guidance as planning policy within Part 2 of the Local Plan.

Appendix 1 of the SPD provides recommended best practice and detailed guidance for the provision of electric vehicle charging infrastructure within new developments including:

- houses and development of flats with dedicated off-street parking

[41] Cheshire West and Chester Council: Parking Standards Supplementary Planning Document (May 2017)

- residential developments of 10 or more flats with unallocated parking
- non-residential development – staff parking (10 or more spaces)
- retail / leisure development – customer parking (10 or more parking spaces)

Measure	Summary	Action number	Detail
(S) - EV charging infrastructure in new development	The installation of EV charging infrastructure in new residential and commercial developments as standard.	40	That the recommendations and guidance contained within Appendix 1 of the Parking Standards SPD be proposed as detailed policy in Part 2 of the Local Plan and be tested through the Local Plan process.

On-street parking

The LES background document confirms that the majority of EV owners primarily charge their vehicles at home, with public charging tending to be the exception. There are many properties in the borough without driveways that do not have the capability of home charging and consequently are considerably less likely to make their next new vehicle purchase a ULEV. Addressing this matter is critical for promoting the uptake of ULEVs.

There are a range of issues that complicate this matter ranging from the unallocated nature of on-street parking to the risk of trip hazards from trailing cables. Learning from the experience of other authorities will be essential to tackle these obstacles.

Measure	Summary	Action number	Detail
(T) – On-street public charging network	To develop the on-street charging network across the borough.	41	Assessment of barriers to the provision of on-street EV charging infrastructure for residential properties, identify suitable delivery and charging models and implement accordingly.
		42	That consideration is given to providing incentives to for ULEV users such as discounted resident parking permits.

Public procurement

There are currently a small number of low emission hybrid vehicles currently in use by the Council. These vehicles do not need charging infrastructure. Although emissions are lower than conventional petrol/diesel vehicles, they are considerably greater than pure EVs. Assuming an appropriate EV charging network, all vehicle procurement should be based on total cost of ownership (TCO) principles and not lowest purchase price. This will require changes in capital provision as the upfront costs will be higher but adoption of such an approach will deliver considerable financial savings to the Council. The default purchasing hierarchy for managers should be electric, plug-in hybrid, hybrid, petrol then diesel in this order unless it can be demonstrated a ULEV is not suitable.

To further promote the uptake and usage of ULEVs, it recommended that the procurement framework takes greater account of the following criteria:

- life cycle sustainability performance
- noise emissions
- vehicle safety
- supplier sustainability credentials

The application of this framework should extend to outsourcing of contracts and buying of services that require the use of vehicles, including school contracts requiring taxi or bus services.

In addition, it is recommended that the framework is monitored and reviewed annually in order to ensure that the procurement framework is kept up to date with the dynamic landscape of ULEVs.

Measure	Summary	Action number	Detail
(U) - Public procurement of LEVs	All vehicle procurement should be based on total cost of ownership principles and not lowest purchase price. Departments should be required to prove why an ULEV is not suitable.	43	That an evaluation is undertaken to identify the information required enabling robust lifetime cost comparison between ULEVs and non-ULEVs as part of the procurement process; and that a programme to routinely report this information centrally is rolled out to relevant departments.
		44	That the Council's evaluation framework for the procurement of vehicles is revised to reflect total lifetime costs over three, five or 10 years depending on the purpose of the vehicle.
		45	That all Council vehicle procurement, including contract procurement that involves the use of vehicles, are subject to the revised Evaluation Framework.

Private bus operators

The local bus network is predominantly operated by commercial operators without subsidy and therefore operates beyond the direct control of the Council. However, the Council has regular liaison meetings with all bus operators. The Council will use these discussions to promote and encourage the uptake of EV buses and seek to work in partnership with operators where funding opportunities arise.

Measure	Summary	Action number	Detail
(V) - Improve	Working with local bus	46	The Council consider the powers provided

emissions from local bus fleet and promote use of ULEV buses.	operators to help promote the use of low emission buses.		under the Bus Services Act and explore the potential for enhanced bus quality partnerships to agree emission improvements over time on key routes.
		47	Undertake an audit of the age of buses in use locally and work with local operators to improve the age profile.
		48	Continue to explore funding opportunities for retro-fitting buses to support the local operators.

Park and Ride low emission vehicles

The Council is responsible for the park and ride service operated in Chester. The Council submitted a bid to the Office of Low Emissions (OLEV) for the conversion of the entire fleet to electric vehicles but delays in the announcement by Defra meant that for contractual reasons, it was not possible for the Council to take advantage of the grant. However buses on this route currently operate to the highest diesel emission standard of Euro VI.

It is the Council's medium-long term objective to support the introduction of electric buses across the park and ride service and the Council will continue to explore opportunities to convert the fleet within the context of the Park and Ride service contract.

Measure	Summary	Action number	Detail
(W) - Introduction of electric buses across the park and ride service.	Conversion of park and ride fleet to electric vehicles and installation of associated infrastructure	49	Ongoing discussions with OLEV and the park and ride operator on fleet conversion under the current contract.
	Introduction of electric vehicles under the new park and ride contract (from 2020 or 2022)	50	Assessment of costs, suitable vehicles and funding options and preparation of specification by 2019 or 2021

Taxi / private hire vehicle licensing

The vehicle age policy in the Council's Licensing Policy[42] ensures vehicles entering the system must be under five years old and will not be licensed after they have reached 10 years old; or 15 years old in the case of wheelchair accessible vehicles. This rolling programme means all taxis licensed since January 2017 meet Euro 6 standard. This policy is considered an example of best practice regarding age entry. Consideration should

[42] CWAC (2016) Statement of licensing policy for Hackney carriages, private hire vehicles, drivers, and private hire vehicle operators – 17 August 2016 (Version 8)

be given to the inclusion in future policy of incentives to operators who wish to operate ULEVs in their fleet and ways in which the Council will work with local operators to use ULEVs.

Measure	Summary	Action number	Detail
(X) – Promoting low emission Taxis and private hire	Incentivisation for the use of ULEVs by taxi and private hire operators within the Borough.	51	That the Council work with local operators to identify and, where possible, remove barriers limiting the use of ULEVs. Also to provide incentives to encourage ULEV use and explore funding opportunities.

Business / freight policies

There are a large number of haulier companies located in the borough servicing large industrial and commercial sites. A gold fleet operator recognition scheme (FORS) accreditation would deliver improvements in emissions.

One of the measures included in the LES is to explore the feasibility of introducing clean air zones (CAZs) in the borough (see measure N / action 27). If this were taken forward, and dependent on the type of CAZ proposed, the potential impact upon HGV fleet operators would need to be carefully considered. Opportunities to incentivise and support the introduction of necessary infrastructure (for example, alternative refuelling / charging infrastructure) would need to be explored.

Measure	Summary	Action number	Detail
(Y) - Business / Freight policies	Working with commerce to improve emissions from delivery and service vehicles.	52	Consider options for the introduction of a FORS targeting local hauliers.

Health in all areas

The Health and Wellbeing Board supported the need for a LES and in particular the principle of health in all areas[43]. The proposal was that decisions that could potentially have a detrimental effect on air quality should quantify this cost to enable for the real cost of the decision to the public purse to be considered. Utilisation of a life cycle cost assessment framework for vehicle procurement is seen as the first step to delivering this as it ensures the real health costs to the public purse and wider economy are taken into account. Consideration should be given to expanding this concept and the use of damage costs to other applicable areas.

[43] Health impacts of air pollution in Cheshire West and Chester, 15 July 2015.

Measure	Summary	Action number	Detail
(Z) - Health in all areas	That broader health costs are accounted for in Council decision making process.	53	Explore the life cycle TCO approach beyond just vehicle procurement.

7. Implementation, reporting and funding

The strategy identifies 53 measures to improve air quality across the borough. As resources are limited and there is competition from other priorities within the authority it is necessary to ensure that:

- resources are prioritised and focused where they can deliver the most improvement in air quality
- measures are viable
- opportunities from central government grants are identified and secured

Council projects designed to deliver air quality improvements should continue to be considered under the Council's priority outcomes funding framework and any subsequent scheme(s). Low emissions criteria need to be integral to the decision-making processes relating to improving facilities and infrastructure for vehicular transport. For new building projects, further means of achieving this may, in due course, be to review the Community Infrastructure Levy (CIL) such that a wider range of CIL-funded infrastructure projects support air quality improvement.

Measures will be prioritised according to the following traffic light criteria:

Table 7.1: Assessment criteria

Criteria					
	Positive		**Neutral**		**Difficult**
Potential to improve air quality	Potential for significant improvements or to enable significant improvements- > 0.5ugm^3		Moderate improvements likely or potential to enable moderate improvements ≤ 0.5ugm^3 ≥ 0.1ugm^3 /		Minimal improvement likely or unmeasurable
Timeframe to realise improvements	1 – 2 years		3 – 5 years		5 years +
Initial capital outlay low / grant available	Low / grants available		Moderate capital outlay. £5K - £10k		Significant capital outlay
Staff resource	Low, provided as part of existing functions		Low but is in addition to existing duties		Additional staff required
Ongoing costs	Low / grants available		Moderate ongoing costs		Significant ongoing costs
Overall viability	Will deliver significant improvements at low cost		Some improvements at moderate cost Significant improvements at moderate cost		Limited improvements at high cost or significant improvement at prohibitive costs

Once complete these prioritised measures will be assessed by the Council's air quality steering group (AQSG) against resources and an implementation plan will be produced specifying key targets and completion timeframes for high priority measures. Progress will be reported quarterly to the AQSG and an annual report will be produced at the end of the April each year to report progress against the plan and inform relevant committees of progress against priority six of the Council Plan. Overall responsibility for implementation rests with the Director of Place Operations.

It is recognised that elements of the ULEV market are very dynamic and costs and funding opportunities are changing. To this end the strategy will be reviewed in 2021 to consider technology changes and be realigned with Council priorities.

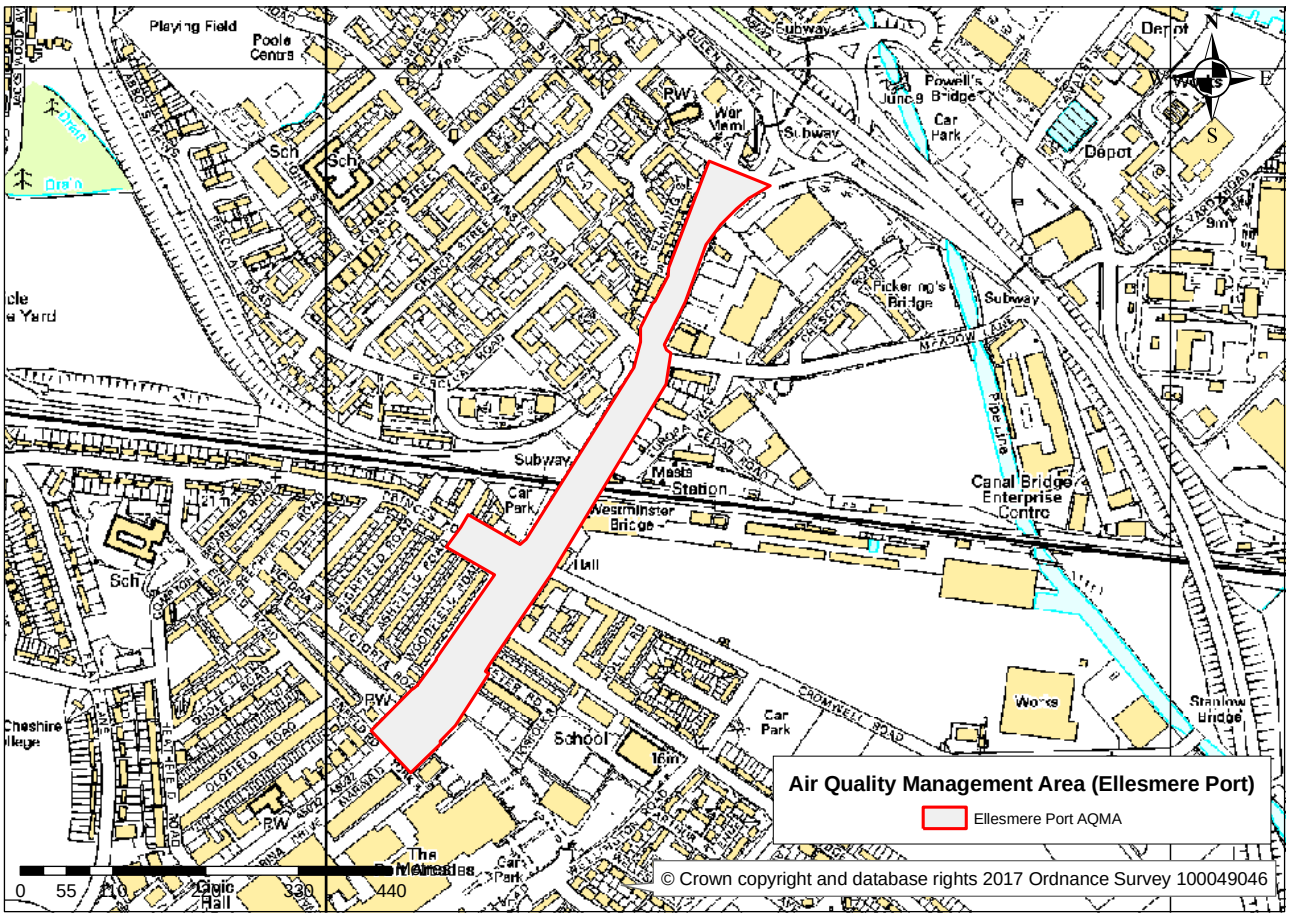
8. Abbreviations

Abbreviation	Definition
μgm^{-3}	Micrograms per cubic metre
AQMA	Air quality management area
AQO	Air quality objective
AQSG	Air quality steering group
CAZ	Clean air zone
CIL	Community Infrastructure Levy
CNG	Compressed natural gas
CO_2	Carbon dioxide
COMEAP	Committee on the Medical Effects of Air Pollution
CWAC	Cheshire West and Chester Council
Defra	Department for the Environment, Food and Rural Affairs
EPUK	Environmental Protection UK
EU	European Union
EV	Electric vehicle
FPN	Fixed penalty notice
FORS	Fleet operator recognition scheme
HGV	Heavy goods vehicle
IAQM	Institute of Air Quality Management
LAQM	Local air quality management
LES	Low emission strategy
LEV	Low emission vehicle
LGV	Light goods vehicle

LTP	Local Transport Plan
NICE	National Institute for Health and Care Excellence
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
NPPF	National Planning Policy Framework
NRMM	Non-road mobile machinery
OLEV	Office for Low Emission Vehicles
PHEV	Plug-in hybrid electric vehicles
PM_{10}	Particulate matter less than ten micrometres (µm) diameter
$PM_{2.5}$	Particulate matter less than 2.5 micrometres (µm) diameter
SCA	Smoke control area
SO_2	Sulphur dioxide
SPD	Supplementary planning document
TCO	Total cost of ownership
ULEV	Ultra-low emission vehicle

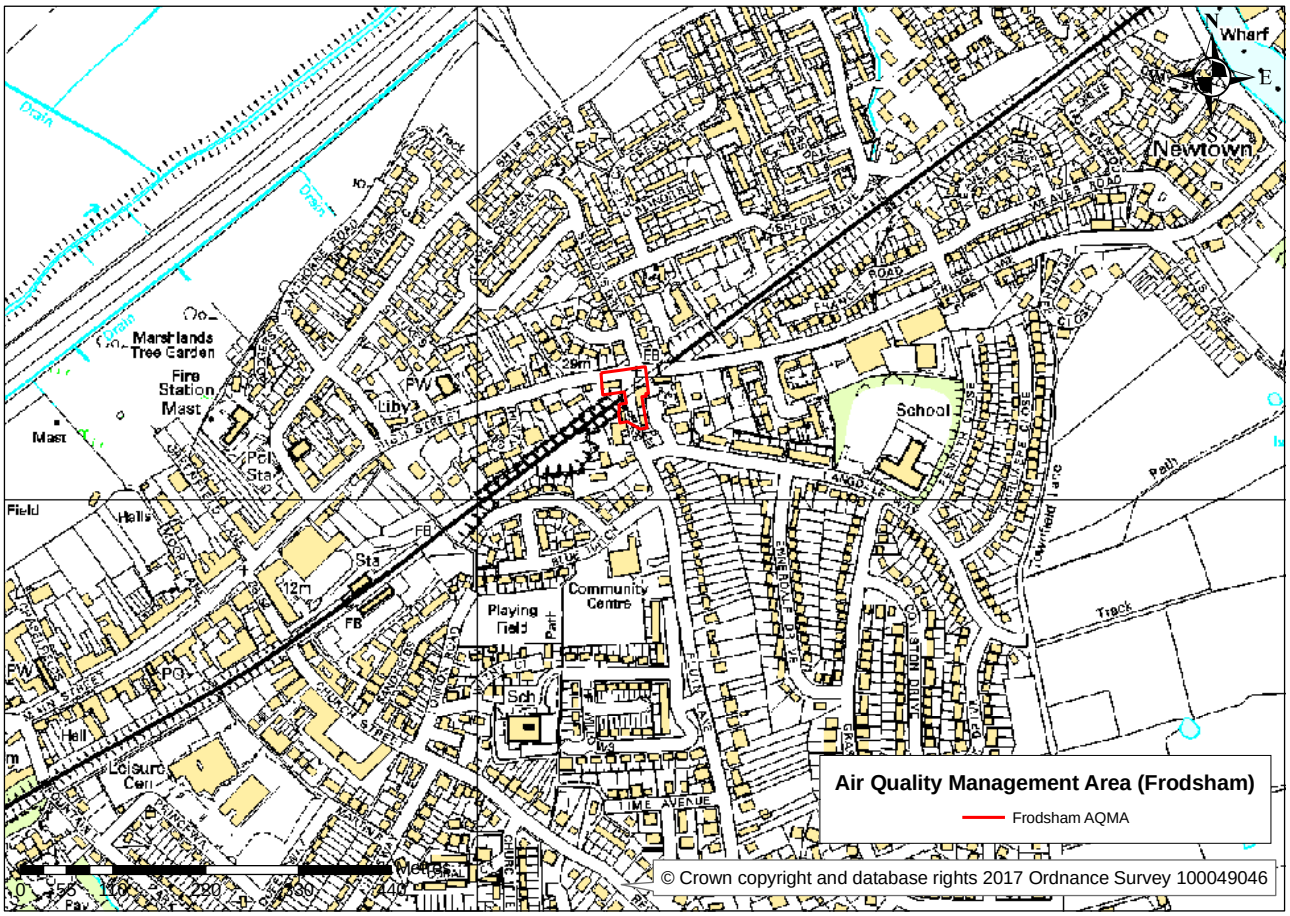
Appendix 1 – Air quality management areas

Figure A1 Ellesmere Port AQMA



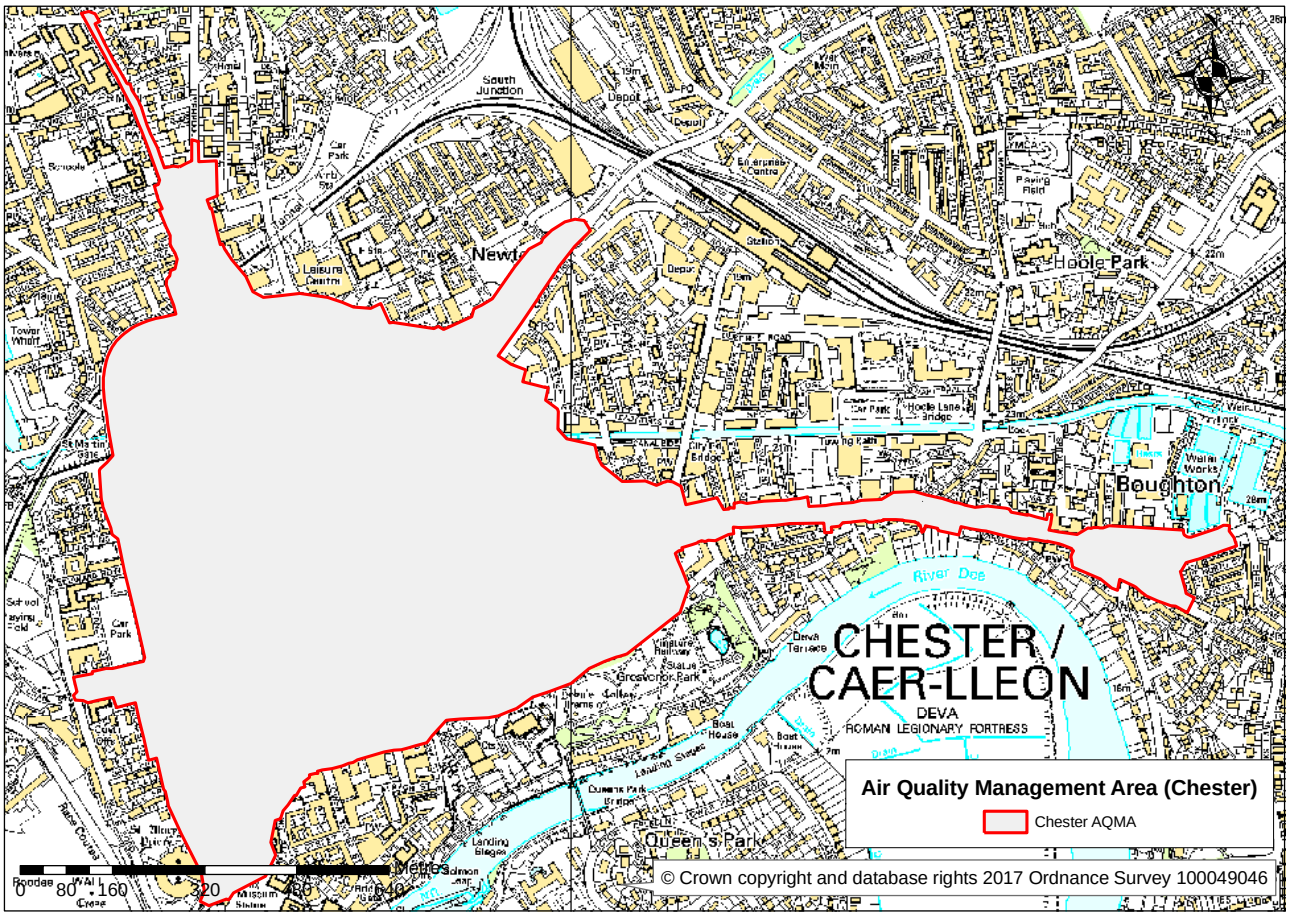
Map showing the extent of the air quality management area in Ellesmere Port encapsulating Whitby Road from Enfield Drive junction to Station Road; and Station Road. The area is outlined in red.

Figure A2 Fluin Lane, Frodsham AQMA



Map showing the extent of the air quality management in area in Frodsham encapsulating a section of Fluin Lane between the A56 extending south towards Langdale Way and a small section of the A56 / High Street. The area is outlined in red.

Figure A0 Chester city centre AQMA



Map showing the extent of the air quality management area in Chester city centre encapsulating all land within the inner ring road, the Boughton gyratory, the Liverpool Road and Parkgate Road gyratory and a section of Hoole Way.