Calderdale Low Emissions Strategy 2017-2022

Policy Context

Calderdale's 5 year Low Emission Strategy's aim is to ensure that we improve the air quality for residents and visitors to Calderdale and protect our sensitive environment. The evidence points to vehicle emissions as the most significant contributor to poor air quality in Calderdale. For this reason our strategy focuses on reducing transport vehicle emissions.

The Low Emissions Strategy (LES) complements the Calderdale Transport Strategy and ambitions for sustainable growth as set out in the Local Plan. It also addresses the exigent need to comply with EU directives and UK Air Quality objectives.

Calderdale's LES sits within the framework of the West Yorkshire Low Emissions Strategy 2016-2021 (WYLES). This strategy outlines what the key challenges are in relation to air quality within West Yorkshire and how, together, we can deliver cleaner air for all to create a healthier place for people to live, work and visit.

WYLES has 3 strategic aims:

1. Accelerate improvements in air quality, above that which would occur without intervention, to achieve air quality limit values set out in law in all parts of West Yorkshire by 2020 at the latest.

2. Working within the wider economic, social and environmental context for West Yorkshire, to create a Low Emissions Future that will maximise opportunities to improve air quality, minimise risks of worsening air quality and create healthier places to live, work and visit.

3. Immediate focus on tackling transport emissions, targeting interventions that will deliver the most significant air quality improvements in the areas of greatest concern.

The aim of Calderdale's Air Quality Action Plan 2009 is to identify how Calderdale Council will use its existing powers and work together with other agencies, organisations and the local communities in pursuit of the achievement of air quality objectives in the declared Air Quality Management Areas (AQMAs) within the district.

The programme of actions are categorised as: specific measures in each AQMA; general district wide measures; and proposed measures.

Calderdale's Energy Future Strategy sets out how the Council and our partners can support a resilient low carbon economy to achieve a 40% reduction in carbon emissions by 2020 from a 2005 baseline.

Key deliverables include: an enhanced building stock, upgraded appliances and energy systems in both homes and buildings, large scale renewable infrastructure, an enhanced transport system

which provides less carbon intensive alternatives to current modes and reduces the need to travel, skills provision to provide access for jobs within a low carbon economy, space for children to grow food, aligned policy and financial agendas, a finance mechanism to support these developments and a plan to deliver an 80% reduction in carbon emissions by 2050.

The Calderdale Transport Strategy 2016-2031 focuses on sustainable growth, enhancing connectivity and enhancing the environment and peoples quality of life by providing an environment conducive to walking and cycling. The Transport Strategy, if delivered, will support a shift away from high emissions and towards improved air quality.

The Local Plan 2017-2032 adheres to the principals in this strategy:

- Siting new buildings and estates so that the need for motorised travel is minimised.
- Minimising the exposure of vulnerable groups to air pollution,
- Providing infrastructure to support low- and zero-emission travel
- Planting of appropriate trees and vegetation in open spaces.
- All proposals that have the potential to increase local air pollution either individually or cumulatively must be accompanied by proportionate evidence

Collectively these strategies and policies have created a robust policy context to enable the reduction in emissions across the Borough.

Monitoring air pollution across the Borough is an on-going process. The pollutant of most concern in Calderdale is nitrogen dioxide, mainly associated with road traffic. Calderdale's Environmental Health service publishes an Annual Status Report (ASR). It gives a summary of all the work the council has been doing to improve air quality. It discusses

- The background and the association of air pollution and poor air quality with adverse health impacts.
- Levels of air pollution and how we measure them
- What we are trying to do about air pollution
- How the public can get involved in the issue.

While ambient monitoring in Calderdale indicates that levels of particulate matter are below the air quality objectives, the annual mean objective for nitrogen dioxide is currently (2017) being exceeded in seven areas of the Borough. These areas have been declared Air Quality Management Areas (AQMAs) and in each AQMA road traffic is the major contributor to the levels of nitrogen dioxide.

Low Emission Strategy

The Low Emissions strategy outlines the strategic direction and policy approach to reducing high levels of pollution associated with vehicle emissions, particularly aimed at nitrogen dioxide and particulate matter.

VISION

Calderdale Council's vision for the future of transport emissions:

'To be fully compliant with all its air quality legal obligations and significantly reduce the health

and economic impacts of roadside air pollution.'

Relationships with other strategies

To have an impact on air quality the Council needs to take a holistic approach; there are many areas across the council that can impact air quality from transport to planning. Therefore air quality will need to be a consideration in many different strategies and policies throughout Calderdale Council

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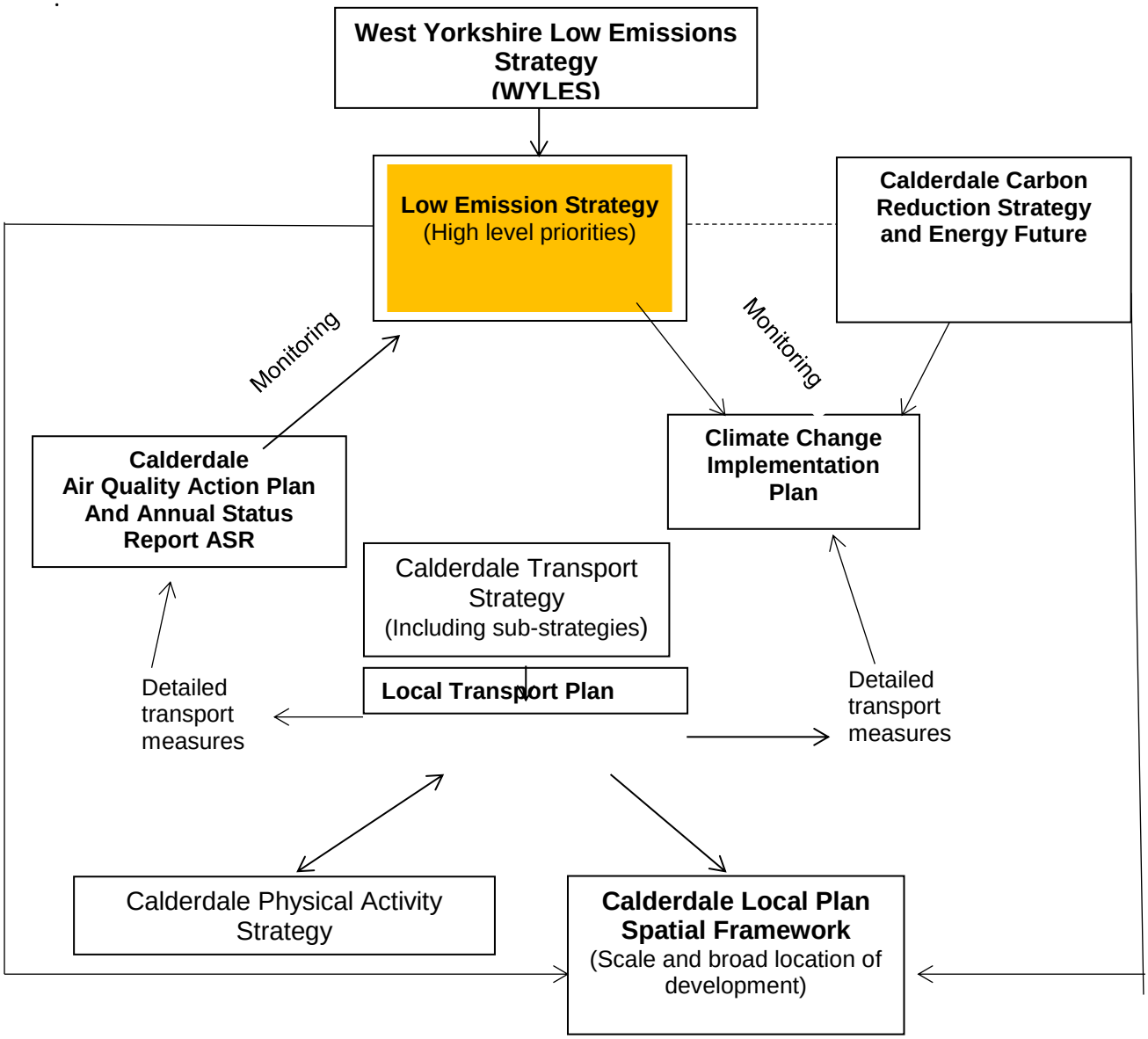
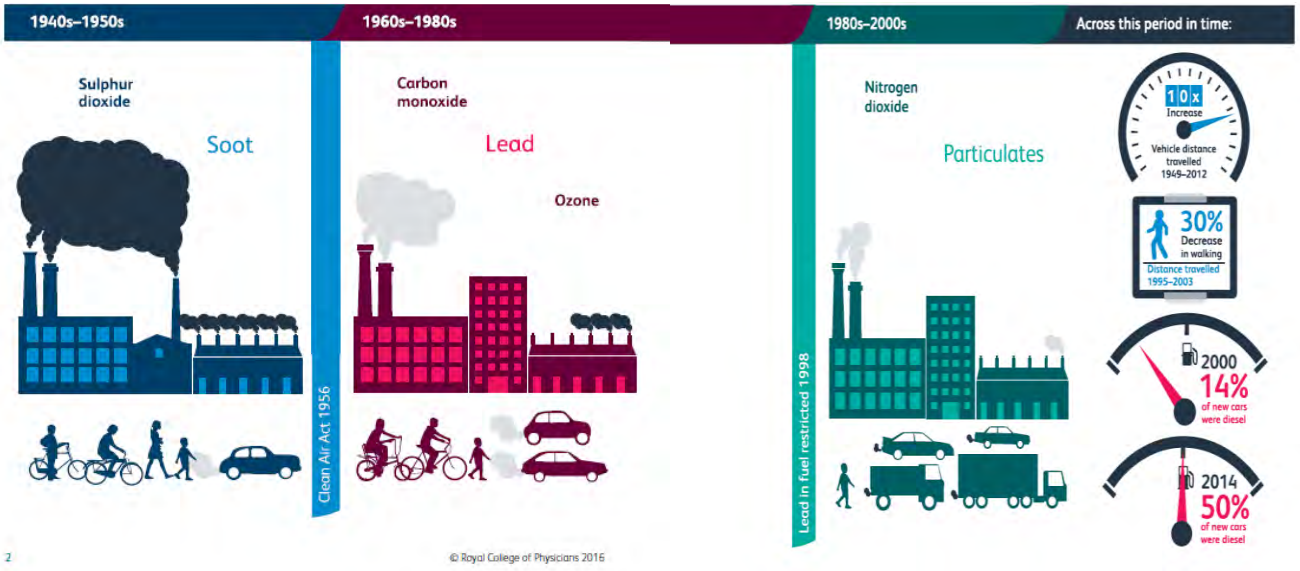


Background

Although there have always been many sources of air pollution, including natural sources such as volcanoes and natural fires, air pollution in towns and cities is seen as a detrimental side effect of modern life. Where once industrial emissions from burning coal and oil were the predominant source of air pollution; now road transport produces the bulk of harmful emissions. The evidence from our Annual Status Report demonstrates that this is true also for Calderdale.



The way we use transport has a significant effect on our health and the local economy

The combustion process results in significant production of nitrogen oxides and fine particulate matter. Small particles can penetrate deeply into sensitive lung tissue and damage it, causing premature death in extreme cases. Inhalation of such particles may cause or worsen respiratory diseases and aggravate heart diseases. [i]

It has been estimated that 40,000 excess premature deaths in the UK in 2016 were attributable to long-term exposure to air pollution[ii]. Calderdale had the equivalent of 86 deaths a year or 4.5% mortality (WYLES).

Poor air quality has effects on the local economy. Although there are no Calderdale specific figures the National Air Quality Strategy (DEFRA 2007) stated that poor air quality costs society between £8.5 billion and 20.2 billion a year nationally.

Areas with low car dominance tend to thrive and Calderdale's Transport Strategy supports 'walkable, cycle-able district centres' as a key objective with multiple positive outcomes. Successful places whether they are town centres, neighbourhoods or single spaces such as public squares all share a number of key characteristics. The most successful places, the ones that flourish socially and economically, tend to have certain qualities in common.

- They have a distinct identity.
- Their spaces are safe and pleasant.
- They are easy to move around, especially on foot.
- And visitors feel a sense of welcome.

Particulate matter

Local Authorities have been given flexibility to set their own approaches to reducing $PM_{2.5}$ emissions [Local Air Quality Management Technical Guidance TG16 (DEFRA April 2016)]. The objective for this pollutant is phrased in terms of working towards reducing emissions and concentrations. A numerical limit has been set for Scotland (annual mean 10□gm^{-3}) but this does not apply to England. No safe lower exposure level has been identified for fine particulate matter, although there is a European Air Quality Standard for fine particles ($PM_{2.5}$) of 25□gm^{-3}. [Fine Particulate Matter (PM2.5) in the United Kingdom, Air Quality Expert Group 2012]

Nitrogen Dioxide

Studies have shown associations with Nitrogen Dioxide in outdoor air with adverse effects on health, including reduced life expectancy.[iii] The UK is currently subject to legal proceedings for failing to meet European Limit Values for NO2, as discussed below. Calderdale persistently exceeds these limits in certain heavily trafficked areas of the Borough.

Legal Requirements

Another reason that we must look to improve air quality in Calderdale is that there is currently a legal requirement through European law (Air Quality Directive 2008/50/EC) and then written into domestic law to do so (Air Quality (England) Regulations 2000, as amended by the Air Quality (England) (Amendment) Regulations 2002). If we do not achieve the limit values by the target dates set out in Table 1a and b below Calderdale Council could face financial penalties.

European – Limit values

Table 1: Air Quality Directive 2008/50/EC – Limit Values and Target Dates for Compliance for Nitrogen Dioxide and Particulate Matter			
		Limit Value (annual mean)	Target Date
Nitrogen Dioxide (NO2)k		40 µg/m^3[iv]	1st January 2010
PM10		40 µg/m^3	1st January 2005
PM2.5	**Stage 1**	25 µg/m^3	1st January 2015
	Stage 2	20 µg/m^3	1st January 2020

We are currently in compliance on PM but persistently exceed the NO2 limits in seven areas. These are all associated with high traffic levels.

UK – Air Quality Objectives

Pollutant	**Table 1: Air Quality Objective**[v][1]	
	Concentration	**Measured as**
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m^3	Annual mean

Air quality monitoring has been carried out in Calderdale for many years and the latest monitoring is evaluated in the Air Quality Annual Status Report 2016 (ASR)

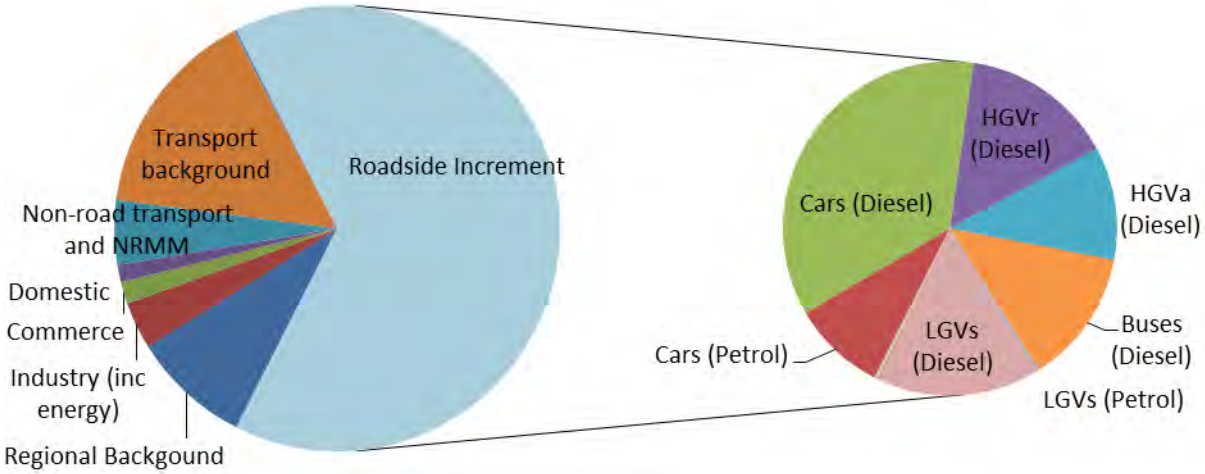
There are seven Air Quality Management Areas (AQMA's) in Calderdale **all** related to road traffic emissions. An AQMA is a geographical area where monitored concentrations exceed the limits set out in Table 1b above. The AQMA's in Calderdale are outlined in Table 2 below:

Table 2: air quality management areas declared for Nitrogen Dioxide 2016

AQMA Name	Area	Brief Description
Calderdale No.1	Salterhebble, Halifax	A629 corridor, Salterhebble and Skircoat
Calderdale No.2	Sowerby Bridge	A58 corridor through Sowerby Bridge and Bolton Brow
Calderdale No.3	Hebden Bridge	A646 through Hebden Bridge centre
Calderdale No.4	Luddendenfoot	Residential properties along A646 in Luddendenfoot centre
Calderdale No.5	Stump Cross, Halifax	Small group of residential properties at Junction A58/A6036, Stump Cross
Calderdale No.6	Brighouse, Town Centre	Town Centre properties along A641, A643, A644 and A6025 in Brighouse
Calderdale No.7	Hipperholme	Properties alongside A58 and A644/649.

Specific measures to reduce the emissions in each AQMA are outlined in Calderdale's developing Air Quality Action Plan; this document will outline the process for improving air quality across all areas.

Transport emissions represent over 70% of air pollution in Calderdale



(Defra 2015)

Creating a low emissions future

Calderdale must be a place where lower emissions vehicles are used commonly, we have a modern bus and freight fleet, public transport and active travel are used much more often as a travel choice and our network is operating much more efficiently.

Act now, think long term. As a community, we must act now, and with urgency, to protect the health, wellbeing and economic sustainability of our communities and future generations.

In order to create a low emission future in Calderdale we need to concentrate our efforts on the measures that will be most effective. As the evidence on the previous pages have suggested and what national research tells us (DEFRA) the main contributing factor to poor air quality in the borough is due to transport emissions.

There are 3 things we can do to reduce the air pollution from transport emissions:

1. **Reduce Traffic** – *reduce the number of cars on the road*
2. **Improve flow** – *introduce systemic strategies to keep traffic moving*
3. **Reduce emissions** – i*mprove vehicles on the road so fewer emissions are released.*

Reduce Traffic

Active travel

In order to reduce traffic we need to make a modal shift from travelling by car to public transport or active travel. To do this, the roads must both feel safe and become safer for vulnerable road users. The infrastructure must be coherent. We must do everything we can to make active travel a first choice for those who can be more active.

Research suggests that when the walking environment is pleasant, people will walk further. We must identify and protect areas that could be used to create segregated paths (greenways), ensure traffic speeds are appropriate and that planning tools are used to ensure new developments create access to amenities and contribute overall to a network which supports active travel.

Public Transport

In Calderdale use of public transport is integral to daily life. The percentage of people who own cars has reduced among the younger generation. Rail use has increased significantly with a doubling and tripling of passenger numbers in many areas. Bus patronage is in decline but is still the only option for many people and represents over 10% of all journeys made in the Borough.

However, travel by public transport must be seamless. Services need to go where people want to travel at the times they want to go. The cycling and walking routes must integrate with public transport networks. Ticketing should respond to the demand for 'mobility as a service', with one type of payment for parking, Electric Vehicle car hire, cycle hire, bus and rail tickets. Public transport

travel needs to be more affordable to compete in price with the family car. Information presented must be intuitive and accessible.

These are huge barriers to overcome and can only be achieved through sustained work with public transport operators, Government departments and reallocation of the road space to improve network efficiency.

Highways and Transportation have secured significant funding to improve the highway network to make journey times for all modes more reliable especially buses which are currently caught in traffic congestion. Evidence shows that to achieve a modal shift away from the car, public transport journey times should be 25% faster than the same car journey. For example the journey time from Halifax to Manchester should be 25% faster by train than the route for a car journey. To achieve this type of express service for key destinations by bus is a significant challenge, but the prize is big, as this, combined with other initiatives as described above, could result in many people choosing public transport as a viable option. This in turn can contribute to reduced traffic on our highway and improved air quality.

Demand Management

In transport, managing demand can be a cost-effective alternative to increasing highway capacity with the potential to deliver better environmental outcomes, improved public health, stronger and more prosperous places.

Transport Demand Management (TDM) is often used as a 'stick' to reducing car use and smoothing out peak crowding on public transport, and has proven to be very effective. For example, high parking charges, tolls, peak pricing all have a strong influence on when we travel and our choice of mode.

The use of TDM will need to be an important consideration if we are to reduce traffic and resulting emissions. We will need to give buses priority (hold the green time at signals for buses), enforce bus lane infringements and ensure parking charges are high enough to deter unnecessary car use. We need to explore other ways of TDM such as providing real time traffic information and introducing a 'smart highway' with active speed management to smooth flow similar to the 'smart motorway'.

Pedestrianisation, crossing facilities, and end-to-end cycle infrastructure (including parking and showers) are demand management techniques and are integral to sustainable transport practice.

Public Awareness and Engagement

Poor air quality is an issue which affects everyone and in order to make real lasting changes in Calderdale we need to engage with the residents of Calderdale to make them aware of the issues and the possible solutions. By doing this we can empower people to take personal ownership over the decisions they make that affect air quality.

Our requirements for travelling are irregular and using a car eases this burden and can improve our quality of life. But some journeys can be made easily by leaving the car at home and can benefit us in a number of ways, for example, by giving us time (rail and bus) or improving our mental well-being (bike or walk).

We must find imaginative ways to engage the public. In April 2017 Calderdale launched a new **one in five campaign**. Outdoor advertising is aimed at regular commuters as well as bus adverts to try and encourage people to leave their car at home one day in a (commuting) week. By replacing one day's car travel with a sustainable mode, traffic would reduce by up to 20%.

'Swap one car journey a week to help us reduce pollution in Calderdale'

Improve Flow

Active Network Management

The stop-start nature of traffic flow causes significant transport emissions. High emissions are also related to varying speed. Vehicles idling spew excessive fumes into the air. In 2015 there were 22 road closures on the M62 affecting our local highway. Our district centres are generally car dominated and this creates a real and perceived danger to pedestrians and cyclists.

Our utilities are generally located in the roads or in the pavement and access to maintain these utilities are essential as is regular highway repairs and maintenance. Best efforts are used to manage and regulate the network to ensure it operates efficiently. A new West Yorkshire Urban Traffic Management Control Centre and a well-managed Key Rote Network are key outcomes required to support better traffic management.

However more can be done to improve the flow of traffic, including the increased application of systemic strategies.

> A *systemic strategy* to influence transportation emissions focuses neither on the technology of the vehicles using the transport network, nor on the choice of individuals using that technology, rather, it addresses the network itself in order to change the conditions of traffic flow so that vehicles can operate at their technical optima in terms of both pollutant emissions and energy efficiency.

A good example of this is the 'smart motorway'. This systemic intervention acts to increase or decrease the capacity of the transport network. Changes made to the capacity of a network can help to increase average speeds of vehicles running along the network, as well as reduce the amount of stop-and-go traffic. Both of these changes are associated with increased operating efficiency of vehicles –that is, a reduction in energy intensity–as well as a reduction in pollutant emission rates.

A systemic strategy must be linked to other strategies. Increasing capacity can lead to induced demand for travel, that is, an increase in overall levels of activity and, in some cases, shifts to modes benefiting from a capacity increase.

Intelligent Traffic Management

Intelligent transport systems vary in technologies applied, from basic management systems such as car navigation; traffic signal control systems; container management systems; variable message signs; automatic number plate recognition or more advanced applications that integrate live data and feedback from a number of other sources, such as parking guidance and information systems; weather information; bridge de-icing systems; and the like. Additionally, predictive techniques are being developed to allow advanced modeling and comparison with historical baseline data.

Connected and autonomous vehicles are in the near future and will bring both challenges and opportunities for traffic management. A **connected vehicle** is a vehicle with technology that enables it to communicate and exchange information wirelessly with other vehicles, infrastructure, other devices outside the vehicle and external networks. An **autonomous vehicle** is a vehicle that is, in the broadest sense, capable of driving itself without human intervention.

These technologies will deliver

- Cleaner mobility and reduced emissions;
- Improved traffic flow and efficiency and reduced fuel consumption

Taking further advantage of these technological opportunities is vital if we are to rapidly move to a low emissions future.

Speed and Freight Management

A comprehensive review of speeds along our entire network is needed to ensure that speeds are appropriate to the surrounding environment. Vehicle speed is the most important contributor to road casualties and may deter people from walking and cycling. We have to deepen our understanding of the effects of speed on the environment and our economy.

Freight vehicles, such as Heavy Goods Vehicles (HGV's) and Light Goods Vehicles (LGV) are the greatest contributor to road side emissions in Calderdale.

The Local Authority can help limit the effects of freight movements by developing a better understanding of freight movements and signing freight traffic appropriately. This means developing a better working relationship with Highways England and our neighbouring authorities on traffic management.

Reduce Emissions

Clean Air Zone or Low Emission Zone

A Clean Air Zone (CAZ) or Low Emission Zone (LEZ) is a designated area where certain restrictions are placed on certain types of vehicles. They are designed to place penalties on higher polluting vehicles to encourage individuals or companies to upgrade to vehicles with lower emissions.

The introduction of a non-charging Clean Air Zone or LEZ in Calderdale could have a high impact on reducing emissions and fits with our overall objectives. The declaration of a CAZ will also open funding opportunities. Consideration for a non-charging CAZ will be taken forward pending Cabinet approval.

Retro fitting Buses and Taxis

Buses have a disproportionate impact on vehicle emissions compared to cars. There is a particular problem in Calderdale as the fleet of buses used are relatively old and therefore more polluting. Evidence to support this. Even though buses alongside other public transport can be part of the solution to reducing air pollution they are also significantly contributing factors to poor air quality in Calderdale. There are two main reasons for this:

1. The fleet of vehicles used by local bus operators are old and very polluting
2. Buses are quite often on the busy routes and therefore are stopping often and idling increasing the amount of pollution they emit.

Diesel-hauled trains also contribute to emissions overall although do not specifically effect any AQMA's in Calderdale.

Taxis are a very important mode of transport for residents of Calderdale and improvements in the emissions from taxis will have a positive impact on air quality. As the licencing authority we can set emissions standards as part of licencing requirements.

Our overall aim is to ensure that all buses and taxis in Calderdale will be compliant with the requirements of a Clean Air Zone. Specifically this may involve:

- Restricting the age of licenced vehicles
- Being complaint with specific emissions standards (e.g. euro 5 petrol and euro 6 diesel)
- Having no minimum engine size

Passenger Cars

In order to reduce the emissions from passenger cars we must encourage the uptake of vehicles with lower emissions such as electric, hydrogen and hybrid vehicles.

Low emission vehicles such as electric cars emit no Nitrogen Dioxide, no Particulate Matter and no Carbon Dioxide at source.

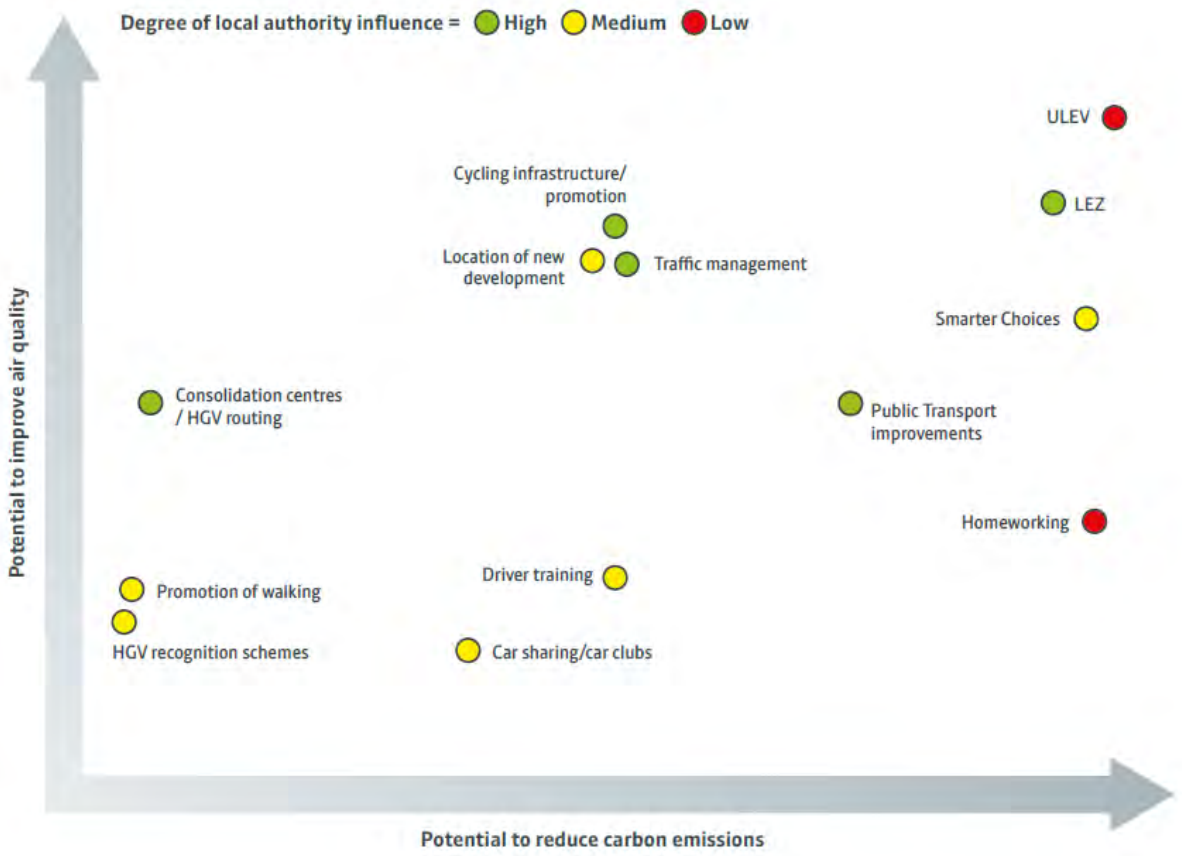
We must work with National Government to influence policies that will encourage the update of these vehicles. Locally, through planning policy we can ensure all new developments provide

infrastructure which begins to support a wider national connected system supporting these cleaner technologies.

Procurement and Contracts

Any procurement of council owned fleets or those services outsourced by the Council should wherever practical; stipulate the use of Electric Vehicles or hybrids to support the objectives of this strategy.

Relative Impact of all Measures



Monitoring and Review

The Council has a programme of monitoring air quality and the results of this monitoring are published annually in the ASR. The council will continue to do this to have an understanding of air quality in Calderdale and whether actions to tackle it need to be changed.

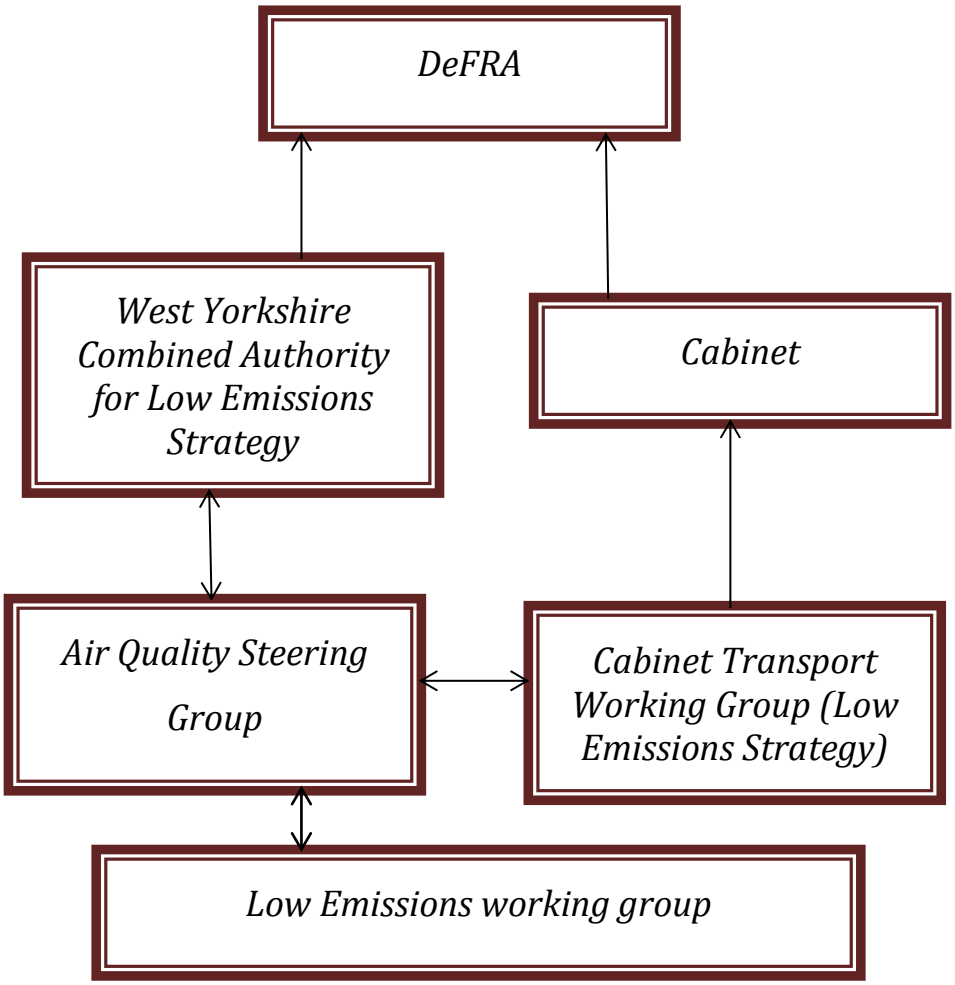
The actions identified in this strategy will be monitored through the Air Quality Action Plan 2017

Governance and Resources

Currently a cross-directorate steering group has ownership of this Low Emissions Strategy with the Director of Economy and Environment as the Senior Responsible Officer. Councillor Dan Sutherland holds the portfolio.

It is recommended that the monitoring and evaluation of the Low Emissions Strategy in Calderdale is overseen by the Cabinet Transport Working Group.

Suggested Governance and reporting structure



There are currently no additional resources allocated to delivering on this agenda. In order to make sure that we capitalise on any funding opportunities that are available, the council has created a working group with the aim of pursuing the aims of this strategy. The working group is cross directorate and will look to capitalise on any available funding and share resources where necessary.

Next Steps

1. Establish Low Emissions Working Group
2. Identify a budget and funding opportunities to deliver against these objectives
3. Seek opportunities across the organisation to deliver against these objectives

Conclusion

Calderdale Council has a robust framework established for delivering against the objectives in this strategy. The challenges are significant but must not be shied away from if we are to reduce emissions and protect the health and well-being of our communities.

The way to a low emission future is an evolving process and will take a degree of cultural change for both the way we operate and manage our networks, for how we choose to travel and the vehicles we drive.

But the prize is huge and it is our duty and responsibility to do our best in achieving this future.

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[i] Statement on the Evidence for the Effects of Nitrogen Dioxide on Health, COMEAP 2015
[ii] Every breath we take: the lifelong impact of air pollution; 2016 Royal College of Physicians
[iiiiii] COMEAP
[iv] The units are micrograms of pollutant per cubic metre of air (µg/m^3).
[v] http://www.eea.europa.eu/publications/air-quality-in-europe-2016