

# Public Document Pack

## **Supplementary Information for Scrutiny Board (Adult Social Services, Public Health, NHS) on 20 October 2015**

Pages 1-10 Agenda Item 8 Minutes of the Health and Wellbeing Board (30 September 2015)

Pages 11-116 Agenda Item 12 Air Quality Scrutiny Inquiry

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## HEALTH AND WELLBEING BOARD

WEDNESDAY, 30TH SEPTEMBER, 2015

**PRESENT:** Councillor L Mulherin in the Chair

Councillors N Buckley, D Coupar, S Golton,  
and L Yeadon

### **Representatives of Clinical Commissioning Groups**

Dr Jason Broch	Leeds North CCG
Nigel Gray	Leeds North CCG
Matt Ward	Leeds South and East CCG
Phil Corrigan	Leeds West CCG

### **Directors of Leeds City Council**

Victoria Eaton – Consultant in Public Health  
Cath Roff – Director of Adult Social Care  
Sue Rumbold – Chief Officer, Children’s Services

### **Representative of NHS (England)**

Maira Dumma - NHS England

### **Third Sector Representative**

Heather O’Donnell

### **Representative of Local Health Watch Organisation**

Linn Phipps – Healthwatch Leeds  
Tanya Matilainen – Healthwatch Leeds

### **Representatives of NHS providers**

Chris Butler - Leeds and York Partnership NHS Foundation Trust  
Julian Hartley - Leeds Teaching Hospitals NHS Trust  
Thea Stein - Leeds Community Healthcare NHS Trust

## **21 Chairs Opening Remarks**

Public Health Funding – Noting the current funding challenges, including the £200m reduction in Public Health funding; the savings required by the NHS Trust Development Agency and the recent changes to Business Rate administration requiring the Local Authority to return £6m to NHS England; the Board considered the best arena in which to discuss the impact of funding changes on front-line services. The Board noted the concerns expressed generally by commissioners, practitioners, providers and service users.

Councillor Mulherin reported that LCC had responded to the Government consultation on the proposals objecting to the cuts in principle and commenting that if the in-year cuts were to be implemented nationally, that they should reflect the fact that Local Authorities such as Leeds were already underfunded for Public Health and that some other Local Authorities were currently over funded. The Chair suggested that the Board hold an additional meeting once the outcome of the consultation and the Governments’

response was released, in order to support the Board's aim to achieve a collective approach to health and wellbeing across the city

**22 Appeals against refusal of inspection of documents**

There were no appeals against the refusal of inspection of documents

**23 Exempt Information - Possible Exclusion of the Press and Public**

The agenda contained no exempt information

**24 Late Items**

No late items of business were added to the agenda

**25 Declarations of Disclosable Pecuniary Interests**

No declarations of disclosable pecuniary interest were made, however the following additional declaration was made:

Nigel Gray (Leeds North CCG) – Agenda item 14 -Children & Young People's Oral Health Promotion Plan – wished it to be recorded that he had recently been elected Chair of Governors at Scholes (Elmet) Primary School (Federated with Wetherby St James' C of E Primary School) (Minute 35 refers)

**26 Apologies for Absence**

Apologies for absence were received from Andrew Harris (Leeds South & East CCG) and Gordon Sinclair (Leeds West CCG). Dr Ian Cameron (Director of Public Health) and Nigel Richardson (Director of Children's Services) also tendered apologies and they were represented at the meeting by Victoria Eaton (Consultant in Public Health) and Sue Rumbold (Chief Officer, Children's Services) respectively. Additionally, the Board welcomed Heather O'Donnell as a representative of the Third Sector.

**27 Open Forum**

The Chair allowed a period of up to 10 minutes to allow members of the public to make representations on matters within the terms of reference of the Health and Wellbeing Board (HWB).

Health Funding – A query was raised over any actions proposed to address the impact of the cuts being made to both NHS and Public Health funding.

The member of the public welcomed the assurance already given about the local response to the Government consultation on local health funding.

Julian Hartley (Leeds Teaching Hospitals NHS Trust) responded. He provided assurance that, despite presenting a significant challenge, negotiations seeking to minimise the impact on front line services were ongoing with the TDA (NHS Trust Development Authority) and Monitor (Sector Regulator for Health Services in England)

**28 Minutes**

**RESOLVED** – That, subject to an amendment to minute 5 to refer to 'CPAG – the NHS England Clinical Priorities Advisory Group', the minutes of the meeting held 10<sup>th</sup> June 2015 be agreed as a correct record

**29 Development of Primary Care Services (General Practice)**

Draft minutes to be approved at the meeting  
to be held on Wednesday, 20th January, 2016

The Board received a report from the three Leeds Clinical Commissioning Group Chairs providing information on the developments taking place in general practice across Leeds as part of the citywide response to the national drive to develop 7 day working and to improve access to general practice services. The report outlined the challenges faced by general practices in reconfiguring both teams and infrastructure to achieve this.

Dr Chris Mills, Clinical Lead (Leeds West CCG), gave a presentation on the key themes of the report and highlighted the drivers for change as being the changes to the population demographics, technology and the workforce

The Board discussed the following themes:

- The take up of the offer of 7 day appointments and the costs of non-attendance. It was agreed the Board should support measures encouraging take-up.
- The integration of local pharmacy provision to support 7 day general practice and the need to develop relationships between the two services
- Noted that the three Leeds CCGs had different operational models which affected patients' access to 7 day working. Additionally, 7 day working was not mandatory.

Dr Mills outlined the key considerations for the future as being:

- Preserving community elements to provide a service to meet the needs and priorities of the local community
- How that service is delivered and by whom
- Whether General Practice could commission the Third Sector to deliver more services, and how that commissioning process is undertaken
- To keep the workforce in mind during the transition period

#### **RESOLVED**

- a) To note the progress that is being made with regard to developing 7-day services across Leeds and the commitment to continue to work across the City to share the learning from individual schemes
- b) To lend support to the wider system changes required to support developing new models of care in Leeds
- c) That having considered and discussed what further action could support improvements in access to general practice services across Leeds, the Board identified measures to encourage the take-up of 7 day access to General Practice as being key.

### **30 Winter Planning and System Resilience in Leeds**

The Board received a report from the Chairs of the three Leeds Clinical Commissioning Groups which provided an overview of planning, investment, management and developments across the Health and Social Care system to achieve year round system resilience and the delivery of high quality effective services to its population.

Nigel Gray (Leeds North CCG) and Debra Taylor-Tate attended the meeting to present the report. The following matters were highlighted in discussions:

- The emphasis on encouraging all-year round resilience and the role of the System Resilience Group
- In order to react to influences and plan for eventualities, the Resource, Escalation Action Plan (REAP) had been developed
- The key priorities – the workforce, system flow and future of primary care
- The delayed transfer of care and the expectation of a multi-disciplinary approach to the assessment of both the patients' and the carers' situation.
- The need to ensure that the patient/carer perspective is reflected in building system resilience and that consultation includes patients and service users
- The need to consider the Children and Young People's Plan in order to prepare for service requests and support for children and young people with complex needs. It was agreed that representatives of LCC Children's Services and the CCG would liaise to consider this
- The need to consider a city wide 'bed plan' as well as the community strategy and to recognise that resilience should address overall care, not just measurable quantities such as beds.
- The need to discuss how to manage resilience planning across Yorkshire for mental health services/overnight provision, taking into account the impact of £2.8m budget reduction and different service models

(Linn Phipps and Thea Stein withdrew from the meeting for a short time)

HWB acknowledged the work done in preparing the report and recalled the impact of winter service requests on provision in 2014/15. Looking forward, it was reported that a review of elective surgery was being undertaken in order to better manage requests this year, putting the escalation process at the heart of integrating service responses

**RESOLVED -**

- a) To note the content of the paper and the establishment of the System Resilience Group and its commitment to continue to work across the City to maintain a resilient Health and Social Care economy
- b) To note the system challenges affecting both national and local delivery and the content of discussions of how joint working in Leeds can support these
- c) To continue to support the integration of Health and Social Care and the critical part it plays in delivering a resilient city and maintaining a positive experience for patients and service users
- d) To support the further development of a system wide Resource Escalation Action Plan (REAP), to initiate a system-wide response to the immediate pressures and achieve further Health and Social Care integration to support resilience

**31 Maternity Strategy for Leeds (2015-2020)**

The Chief Operating Officer (Leeds South & East CCG) submitted a report providing a brief overview of the Maternity Strategy for Leeds 2015-20 document. The report provided assurance in terms of the robust methodology

Draft minutes to be approved at the meeting  
to be held on Wednesday, 20th January, 2016

of its co-production, and its contribution to key outcomes and priorities of the Leeds Joint Health and Wellbeing Strategy (2013-2015).

Matt Ward (Leeds South & East CCG) presented the paper seeking ratification of the Strategy which had been produced in consultation with service users. The outcome sought to ensure consistency of care throughout pregnancy and early childcare.

The Board broadly welcomed the Strategy and noted the key areas for consideration identified in paragraph 3.1 of the submitted report. Members noted the link between the Strategy and LCC's 'Breakthrough Projects', specifically those seeking to address domestic violence and abuse; and reducing health inequalities. Members briefly discussed the comment that the midwifery service may not be able to provide a bespoke service to meet the needs of all individuals and; in noting the challenges ahead; Chris Butler (Leeds & York Partnership NHS Trust) offered to participate in future discussions which should also consider the impact of public health funding cuts.

(Tanya Matilainen withdrew from the meeting for a short while at this point)

**RESOLVED -**

- a) To note and endorse the Maternity Strategy (2015 - 2020) as critical to the delivery of the Joint Health and Well-being Strategy priority 2 'to ensure everyone will have the best start in life'
- b) That Health and Wellbeing Board members will hold each other and local partners to account to deliver the ambitions of this Maternity Programme

**32 Future in Mind, Children and Young People's Mental Health and Wellbeing**

The Chief Operating Officer (Leeds South & East CCG) submitted a report on the work undertaken in respect of the national review and publication "Future in Mind" (2015) Children and Young People's Mental Health and Wellbeing. Guidance has now been published, which sets out the requirement to submit a 5-year Local Transformation Plan (LTP) by 16 October 2015, in order to receive the allocated funds.

Matt Ward (Leeds South & East CCG) presented the report, highlighting the preparations underway in Leeds and seeking approval for the Chair of the Board to be authorised to sign off the LTP due to the tight timescales for its' submission.

The Board welcomed the Strategy, noting comments on the need to take account of the health strategies and demographics of neighbouring authorities' and the need to recognise how quickly this service would be taken up

(Matt Ward and Chris Butler withdrew from the meeting for short time at this point)

## **RESOLVED -**

- a) To note and recognise how the recent Leeds whole system review will support the content within the Leeds Local Transformation Plan (LTP)
- b) That the Chair of the Health and Wellbeing Board be authorised to sign off the LTP due to the tight timescales of the submission
- c) To note the intention to submit a full report of the LTP to a subsequent meeting

### **33 Annual Report of the Health Protection Board**

The Director of Public Health submitted the first Annual Report of the Health Protection Board. The Health Protection Board had identified emerging health protection priorities for Leeds since it was established in June 2014 and had developed an annual work plan to support the arrangements in place to protect the health of communities and meet local health needs.

Dawn Bailey presented the Annual Report highlighting the overview provided of the key priorities identified by the Health Protection Board and the work undertaken to address them. Appendix 1 of the report contained the key priorities and indicators, using the Red Amber Green rating to identify progress against the associated development plan.

The following matters were discussed by the Board:

- Cervical Screening. The indicator showed a reduction in the number of screening tests and Members considered how to encourage increased take-up of this service
- Gonorrhoea in Leeds. Whilst noting that the treatment of specific conditions was not within the remit of the HWB, Members were aware of a recent media story and considered the role of Sexual Health Service
- The new migrant health screening service and the barriers new migrants felt in accessing services
- In respect of consultation and engagement, the need to consider the additional information needed to include those people who have opted out of the system

In moving the recommendations, the Chair urged all partners to continue to work together to address the issues raised in the report

## **RESOLVED**

- a) To endorse the Health Protection Board's Annual report.
- b) To note the key priorities identified in the Health Protection Board Annual report.
- c) To continue to contribute and/or support the Health Protection Board.
- d) To note the priorities of the Health Protection Board in their planning for the refresh of the Joint Health and Wellbeing Strategy.

(Heather O'Donnell left the meeting at this point)

### **34 Leeds Let's Get Active**



The Director of Public Health presented an update report on the Leeds Let's Get Active (LLGA) initiative, including the progress made in relation to Year 1 and 2 evaluation results and consideration of future developments.

Mark Allman (LCC Head of Service for Sport) and Steve Zwolinsky (Leeds Beckett University) presented the report which highlighted the effects of physical inactivity on the general health of the population. 64,000 Leeds residents had signed up to the scheme, 15,000 of those from the most deprived areas. Importantly, 80% of those had remained active. Discussions concentrated on the following issues:

The links to employers. The Board noted that this initial scheme had been aimed at the most inactive residents, making use of facilities during day times when usage was low - which generally precluded employed residents. On a practical level, Matt Ward suggested that the scheme outcomes could be reported back to the organisations represented on the HWB – as Leeds employers.

Measurable outcomes – Members were keen to see demonstrable outcomes such as a reduction in the number of GP visits. It was reported that evaluation of the initial LLGA scheme would allow identification of behavioural trends in different areas of the city rather than specific outcomes.

Scheme access – The Board considered availability of the scheme for residents who did not live near a facility, and whether the scheme could be expanded to include the wider family group. In response, it was noted that future phases of the initiative could develop additional activities in co-production. Evaluation of results would inform future schemes and monitoring of the wider impact would be valuable, for instance, did participants also stop smoking.

The Board noted the LLGA as a good news story for the city as the initiative had a greater positive impact than expected, however its success also brought concern over its sustainability. The Board went onto consider what role it could take to encourage residents to engage with the scheme, noting that several issues influenced the take up of the offer (such as an individual's confidence, complex needs, lifestyle choices, debt management, education). It was agreed that that the issue of the Scheme's sustainability would be included on the agenda for the future additional HWB meeting.

**RESOLVED -**

- a) To note the update of Leeds Let's Get Active and evaluation findings based on research from year 1 and 2 of project delivery.
- b) To note the information outlining the updated evaluation framework for year 3 of Leeds Let's Get Active.
- c) To note the comments made on the contribution of Leeds Let's Get Active to promoting physical activity in the city and the health benefits of that.
- d) To note that the issue of the sustainability of Leeds Let's Get Active initiative post April 2016 would be discussed at the future additional HWB meeting

(Matt Ward and Thea Stein left the meeting at this point)

**35 Children and Young People's Oral Health Promotion Plan**

The Director of Public Health submitted a report presenting the Leeds Children and Young People (CYP) Oral Health Promotion Plan (2015-19) – the Best Start Plan - for discussion on the proposed priorities and indicators. The report also sought endorsement of the Plan and support for the further development of a detailed implementation plan.

The report outlined the Plan as a preventative programme from 0-19 years which aimed to ensure that every child in the city had good oral health, providing parents, carers, children and young people with access to effective oral health support and targeted interventions to support those at risk of oral health inequalities.

Steph Jorysz and Janice Burberry attended the meeting to present the report and discussed the following matters with the Board:

- Key messages about oral health were not being picked up, possibly because the mechanisms for accessing oral health, outside of visits to the dentist, were traditionally family based. It was also acknowledged that Leeds had a bad reputation for dentist availability.
- The correlation between children's oral health and their parent's oral health. This was addressed by health visitors now being tasked with providing oral health information
- Proposals for a future scheme to invest in free toothbrushes for schools in areas identified as 'in need'

**RESOLVED**

- a) To consider the content of the Plan and note the process of discussion and engagement that has taken place.
- b) To endorse the strategic Plan and to support the development of a detailed implementation plan.
- c) To agree that the Board will monitor progress as part of its Best Start priority.
- d) The HWB considered how it could lend support to the work, and agreed to assist in the co-ordination of the work and partnerships, and to endorse the emerging Best Start commitments.

**36 For Information: Better Care Fund Update**

The Health and Wellbeing Board received a joint report from the Chief Officer Resources and Strategy (LCC Adult Social Care) and the Chief Operating Officer (Leeds South & East CCG) on the implementation of the Better Care Fund in Leeds. The report identified the responsibilities of the Health and Wellbeing Board under the BCF Partnership Agreement and provided Leeds' response to the national Quarter 1 BCF reporting process which had been submitted on behalf of the Leeds Health and Wellbeing Board.

**RESOLVED** - To note the contents of the report.

**37 For Information: Progress on recommendations from the Director of Public Health Report 2013**

Draft minutes to be approved at the meeting  
to be held on Wednesday, 20th January, 2016

The Board received an update on the progress made on the recommendations from the Director of Public Health's Annual Report, 'Protecting Health in Leeds 2013'.

**RESOLVED**

- a) To note the good progress made on recommendations from the Director of Public Health Annual report, 'Protecting Health in Leeds' 2013.
- b) To note that the Health Protection Board is now established and has oversight on the priority areas outlined in this report.

**38 For Information: Delivering the Strategy**

The Board received a copy of the September 2015 'Delivering the Strategy' document; a bi-monthly report which gives the Board the opportunity to monitor the progress of the Joint Health and Wellbeing Strategy 2013-15

**RESOLVED** – To note receipt of the September 2015 'Delivering the Strategy' Joint Health and Wellbeing monitoring report

**39 Any Other Business**

Commercial Food Outlets, Leeds Teaching Hospital NHS Trust – Councillor Mulherin reported that the Trust had started a review of the food offer in Leeds' Hospitals, specifically from the commercial food outlets

Pension Fund Investment – Councillor Mulherin received the Boards' support for her to write as Chair of Leeds HWB to the Local Government Pensions SB Advisory Group urging they review the practice of investing in tobacco producing companies for the purpose of the local government pension scheme. The Board noted the suggestion that NHS representatives should also contact their respective pension scheme managers seeking a similar review

**40 Chairs' Closing Remarks**

The Chair closed the meeting by reporting that Rob Kenyon, Chief Officer, Health Partnerships, would be leaving his post to move to Kent in the New Year 2016. Councillor Mulherin expressed the Board's thanks to Rob for the significant contribution he had made to the work of the HWB

**41 Date and Time of Next Meeting**

**RESOLVED** – To note the date and time of the next formal meeting as Wednesday 20<sup>th</sup> January 2016 at 10.00 am. (There will be a pre-meeting for Board members from 9.30 am)

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**Report of Head of Scrutiny and Member Development**

**Report to Scrutiny Board (Health and Wellbeing and Adult Social Care)**

**Date: 20 October 2015**

**Subject: Air Quality – scrutiny inquiry**

Are specific electoral Wards affected? If relevant, name(s) of Ward(s):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are there implications for equality and diversity and cohesion and integration?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Is the decision eligible for Call-In?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Does the report contain confidential or exempt information? If relevant, Access to Information Procedure Rule number: Appendix number:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

**Summary of main issues**

- 1 At the beginning of the municipal year (2015/16), the Scrutiny Board identified Air Quality as a specific area for more detailed consideration.
- 2 A report on Air Quality is due to be considered by the Executive Board at its meeting on 21 October 2015. This is appended to this report for the Scrutiny Board’s consideration prior to the Executive Board meeting.
- 3 Suitable representatives have been invited to attend the meeting to introduce the report prepared for the Executive Board and address any queries from the Scrutiny Board.
- 4 In addition, a representative from Leeds Teaching Hospitals NHS Trust has been invited to the meeting to provide an outline of the potential impact of poor Air Quality.
- 5 As part of the initial guidance in scoping the Board’s inquiry, the following matters were identified as possible considerations (along with supporting data, where appropriate):
  - Air quality across the City, including particular hot spots
  - How Leeds compares to other areas – West Yorkshire; Core Cities; Other comparator groups
  - Impact of poor air quality on the City – health, environmental, financial etc.
  - Details of main causes of poor air quality
  - How to improve air quality – including a cost / benefit analysis of the improvement actions

- A summary of air quality legislation – what responsibilities the Council has; any enforcement powers available and if/how these are used.
- Details of any guidance/ good practice (e.g. NICE guidance) and how the Council performs against the guidance.

6 Any additional details to those presented in the Executive Board report are likely to be considered at a future meeting of the Scrutiny Board.

### **Recommendations**

7 The Scrutiny Board is asked to consider the details presented at the meeting and determine any further scrutiny activity or actions deemed appropriate, including any specific details required as part of the Board's inquiry.

### **Background papers<sup>1</sup>**

8 None used

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<sup>1</sup> The background documents listed in this section are available to download from the Council's website, unless they contain confidential or exempt information. The list of background documents does not include published works.

**Report of:** Director of Environment and Housing and Director of Public Health

**Report to:** Executive Board

**Date:** 21<sup>st</sup> October 2015

**Subject:** Improving Air Quality within the City

Are specific electoral wards affected?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are there implications for equality and diversity or cohesion and integration?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Is the decision eligible for call-in?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Does the report contain confidential or exempt information? If 'yes', access to information procedure rule number: Appendix number:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

### Summary of main issues

1. The seriousness of current air pollution levels and their impact on public health is now much better understood. We are all exposed to air pollution to some extent and this is having a harmful effect on the health of individuals, reducing life expectancy and increasing health inequalities.
2. The Volkswagen scandal has raised public awareness about emissions levels and the detrimental effect that diesel vehicles are having on air quality. Volkswagen admitted that almost 1.2m vehicles in the UK are impacted and this means more than one-in-10 diesel cars on Britain's roads are affected.
3. The scandal has coincided with the release of DEFRA's public consultation document, which states that currently Leeds will be one of 7 locations in England that will not meet the EU air quality standards by 2020. If the UK fail to meet the standards by 2020, it could face huge infraction fines that could be passed down to the relevant local authorities under the Localism Act.
4. Transport accounts for a minimum of 60% of all emissions where objective levels are exceeded, so there is an urgent need for the Council and other fleet operators within the City to take action to improve air quality across the city.
5. Raising public awareness of the risks of poor air quality to health and providing guidance to members of the public about what they can do to help reduce emissions is a fundamental aspect of the work that will be undertaken over the next 12 months.

6. There are areas of the city centre that exceed the 40µg/m<sup>3</sup> objective for NO<sub>2</sub> contained in the UK air quality regulations. For example, at the Corn Exchange the latest readings show that the level is at 55µg/m<sup>3</sup>.
7. The Council has therefore been exploring opportunities for reducing its own impact on Air Quality as well as considering levers and policies to influence others to make the necessary changes.
8. A West Yorkshire Low Emissions Strategy 2016 to 2021 (**WYLES**) has been written and is currently under consultation.
9. To support the WYLES, a Leeds' specific action plan has been developed to show what actions need to be taken in order to meet the proposed targets to ensure that Leeds' emissions fall within legal limits and that the public health outcomes for Leeds' citizens are improved. A high level summary of the plan can be found at appendix 1.

## **Recommendations**

10. Members of the Executive Board are recommended to:

- Note the progress the Council has made to date and its plan for expansion for its own alternative fuel vehicles and associated infrastructure;
- Endorse the WYLES and Leeds' Air Quality Action Plan;
- Adopt the targets for 2020 and 2030 for PM<sub>2.5</sub> referred to at paragraph 3.11 of this report;
- Support the allocation of parking spaces for electric vehicles in Council car parks to be implemented by the end of the financial year as part of the Cutting carbon and improving air quality breakthrough project;
- Support the enforcement of the planning conditions on new developments to increase charging infrastructure across the City. This is an on-going action that falls under the Chief Officer of Planning's responsibility to monitor for all new developments;
- Support the establishment of walking and cycling friendly infrastructure, using appropriate planning conditions to ensure new developments support alternative modes of transport;
- Support further work being carried out to determine the required scope and number of potential clean air zones within the city to ensure compliance with EU directives is met as a minimum, improving public health outcomes for the citizens of Leeds. The Director of Environment and Housing will oversee the delivery of the study and report back to Executive Board on progress as part of the breakthrough project's annual report.



## 1 Purpose of this report

- 1.1 The purpose of this report is to provide an update on progress since the report that was brought to Executive Board in December 2014 as well as to provide details on the West Yorkshire Low Emission Strategy paper, Leeds' action plan and a number of current opportunities for funding in relation to the subject matter of this report.

## 2 Background information

- 2.1 The Department of Health's Committee on the Medical Effects of Air Pollutants (COMEAP) estimate the burden of particulate air pollution in the UK to be equivalent to nearly 29,000 deaths (2008) and an associated 340,000 life years lost across the population<sup>1</sup>. For Leeds this is equivalent to 350 deaths (2010) and an associated 3,825 life years lost<sup>2</sup>. These measures are an average across the population; it is not known how the effects are distributed among individuals.
- 2.2 There is now categorical evidence that long-term exposure to everyday air pollutants contributes to cardiovascular disease (CVD, including heart diseases and stroke), lung cancer, and respiratory disease (including asthma and chronic bronchitis). The heaviest burden is borne by those with greatest vulnerability and/or exposure. The elderly, children, pregnant women and those with cardiovascular disease and/or respiratory disease are more susceptible to air pollution than others. Those who spend more time in highly polluted locations will be affected more.
- 2.3 Reducing PM by 10µg/m<sup>3</sup> would extend lifespan in the UK by 5 times more than eliminating casualties on the roads, or three times more than eliminating passive smoking.<sup>4</sup>
- 2.4 There are no absolutely safe levels of the main pollutants of concern. Any improvement in air quality will therefore have positive health consequences<sup>3</sup>
- 2.5 Asthma UK report the following:
- Two thirds of people with asthma find that air pollution makes their asthma worse, putting them at an increased risk of a potentially fatal asthma attack
  - People with asthma have told us that on days when air pollution levels are high they feel that they can't even leave the house for fear that it will trigger an attack.
  - 42% of people with asthma have told us that traffic fumes discourage them from walking or shopping in congested areas.
  - 29% of people with asthma have told us that a reduction in air pollution is the single thing that would make the most difference to their quality of life

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<sup>1</sup> COMEAP (2010) "The Mortality Effects of Long-Term Exposure to Particulate Air Pollution in the United Kingdom: A report by the Committee on the Medical Effects of Air Pollutants", [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/304641/COMEAP\\_mortality\\_effects\\_of\\_long\\_term\\_exposure.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/304641/COMEAP_mortality_effects_of_long_term_exposure.pdf)

<sup>2</sup> Public Health England (2014) "Estimating Local Mortality Burdens Associated with Particulate Air Pollution" [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/332854/PHE\\_CRCE\\_010.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/332854/PHE_CRCE_010.pdf)

<sup>3</sup> Review of evidence on Health Aspects of Air Pollution – REVIHAAP project: final technical Report, World Health Organization Office for Europe, 2013. <http://www.euro.who.int/en/health-topics/environment-and-health/air-quality/publications/2013/review-of-evidence-on-health-aspects-of-air-pollution-revihaap-project-final-technical-report>

<sup>4</sup> Miller and Hurley (2006) "Comparing estimated risks for air pollution with risks for other health effects", Institute of Occupational Medicine, Report TM/06/01

- 85% of people with asthma have told us that they are concerned about the effect that increasing traffic fumes will have on their and their family's health in the future.

2.6 The case study below illustrates how poor air quality can impact on an individual's health. This case study is typical of many cases that present in Leeds with asthma exacerbations.

#### **Case Study (provided by Respiratory Clinician at LTHT)**

**A female patient, age 24, non-smoker, had a history of well controlled asthma during childhood in New Zealand. She came to Leeds in 2013 at which point she was taking a low dose steroid inhaler and her lung function was stable. Since arriving in Leeds, and despite medical attempts to improve her stability, the patient has experienced several asthma exacerbations requiring hospital treatment. When admissions were compared with air quality, there was a definite link. Since leaving Leeds in 2014, the patient's asthma medication has reduced to the original treatment and her chest remains stable.**

- 2.7 General public awareness of the impacts of poor air quality on their health is lower compared to other health issues such as smoking or obesity. There is a requirement for levels of awareness to be raised if the City is to be able to significantly reduce its level of emissions.
- 2.8 Nationally, the government's plans to improve Air Quality in order to meet 2010 targets set by the EU were dismissed as insufficient and quashed by the Supreme Court in April 2015. The court ruled on the basis that plans would not achieve legal limits in some British cities until after 2030. Client Earth (an environmental pressure group) took the case to the Supreme Court on the basis of the government's failure to plan effectively and to further demand that the EU then expedite the case against the UK government and press for fines for failure to meet obligations. Client Earth's case concerned 16 cities and regions, with Leeds, London and Manchester being repeatedly referred to in national press coverage of this ruling.
- 2.9 A report was brought to Executive Board in December 2014 that looked at the feasibility of introducing a Low Emission Zone (**LEZ**) in the centre of Leeds. It was recommended that the required improvements to air quality should be achieved via dialogue with key transport partners rather than via enforced change but that a LEZ would remain an option if progress was not made quickly enough. DEFRA now use the term Clean Air Zone (**CAZ**) to refer to a LEZ.
- 2.10 Where pollutant levels exceed or are likely to exceed the air quality objectives, Local Authorities are required to declare Air Quality Management Areas (AQMAs) and devise Action Plans to improve air quality. Leeds currently has 6 AQMAs declared for Nitrogen Dioxide and nationally there were 613 declared at the end of 2013.
- 2.11 DEFRA has installed air quality measurement equipment as part of the Automatic Urban and Rural Network (AURN) at two sites in West Yorkshire, both of which are located in Leeds (one on Woodhouse Lane in the City Centre on land to the south of the multi-storey car park and the other at the City Council's kerbside site on Otley Road, Headingley, close to the junction with Shire Oak Road). The equipment measures NO<sub>2</sub> as well as particulate matter, specifically PM<sub>10</sub> and PM<sub>2.5</sub>. The Council have chosen to carry out the majority of additional monitoring at or in the immediate vicinity of residential properties. PM<sub>10</sub> is measured at one additional site located alongside the bus stops at the Corn Exchange,

using Council owned equipment. NO<sub>2</sub> is measured at nine sites (including both AURN sites) across the city, using automatic equipment. Hourly results from the automatic analysers is collected daily by a software package for data management held within the Council. Monthly data about NO<sub>2</sub> is also obtained from a further 70 sites, using passive diffusion tubes.

- 2.12 However, many of Leeds' nationally reported breaches of the EU Directive exist at publicly accessible locations where no long-term exposure is likely to occur. These include footpaths alongside the Inner Ring Road close to the former Yorkshire Post building and Armley Gyratory; adjacent to the bus station; the Meadow Road access into the city centre and the associated section of the M621 motorway.

### **3 Main issues**

#### **DEFRA Consultation**

- 3.1 DEFRA has recently published a consultation document that identified Leeds as one of seven locations in England that currently is not expected to be fully compliant with the European Directive by 2020. A stretch of 2.7km of the inner ring road, running through the Armley Gyratory, has been identified as being at risk of being non compliant in terms of NO<sub>2</sub> levels after 2020. Roads are only considered to be non compliant if there is risk of exposure to the public i.e. residential properties nearby, pedestrian access etc.
- 3.2 As extended public exposure has been the Council's main concern to date, limited monitoring has been carried out to establish baselines or changes that may be achieved by traffic management, emission reductions and other means at these specific 'EU sites', with no adjacent residential properties.
- 3.3 With the section of road that has been flagged by DEFRA, there is clearly a need to examine in closer detail how measures might be deployed as a short term expedient for meeting the European Directive by 2020. However, it is recognised that the issues identified on the 2.7km stretch of road are only symptomatic of the wider issues that have been illustrated by the work in Leeds and West Yorkshire..
- 3.4 The Council met with DEFRA on 25<sup>th</sup> September to discuss the consultation document in detail and the action plan. At the meeting it was agreed that:
- The Council will implement further air quality measurement equipment along the section of road that has been identified as at risk to verify the results of the model;
  - If the monitoring shows that the risk is lower than anticipated, the Council will review the model and support the development of a local model that is adapted to the conditions within Leeds;
  - Any monitoring methodology or changes to the model will need to be agreed to ensure that they are EU compliant;
  - In parallel with reviewing the model and measurement, the options for changing the pedestrian access along this section of road are also being reviewed.

- The Council will both respond to the formal consultation by the deadline of 6<sup>th</sup> November and provide a high level summary of what support it needs from central government to achieve compliance.

3.5 DEFRA highlighted that the planning process should also not allow any scheme which will delay compliance as well as introduce exceedance. This raises issues for consideration within the development of the plans for transport in the City Centre which may have implications for future traffic levels using the roads currently identified as non-compliant.

3.6 DEFRA reported that they as part of their action plan that will be submitted in December, they will state that Leeds can become compliant by 2020 if a clean air zone were to be implemented. It is anticipated that a Clean Air Zone (CAZ) proposal for Leeds would be used to regulate buses, coaches, taxis, HGVs and LGVs but not the domestic car. DEFRA are currently consulting on a framework for CAZs that would set the criteria that vehicles would have to meet. This suggests that the CAZ would limit petrol engines to EURO 4 and diesel engines to the Euro 6 standards. In the short term DEFRA strongly suggested that as a minimum a voluntary CAZ is considered. The publication of the DEFRA consultation and the identification of Leeds as an area of concern has increased the pressure on the Council to seriously consider the implementation of a CAZ as part of its air quality strategy if the Council's monitoring confirms DEFRA's findings.

## WYLES

3.7 A West Yorkshire Low Emission Strategy 2016 to 2021 (WYLES) has been developed through collaboration between the Councils of Bradford, Calderdale, Kirklees, Leeds and Wakefield Council as well as Public Health England and West Yorkshire Combined Authority. This document can be found at appendix 2.

3.8 The vision contained within the WYLES is:

*“A vibrant West Yorkshire economy, where people use transport and power and heat their homes and businesses in a way which improves air quality to create a safe and healthy environment for people to live, work and invest.”*

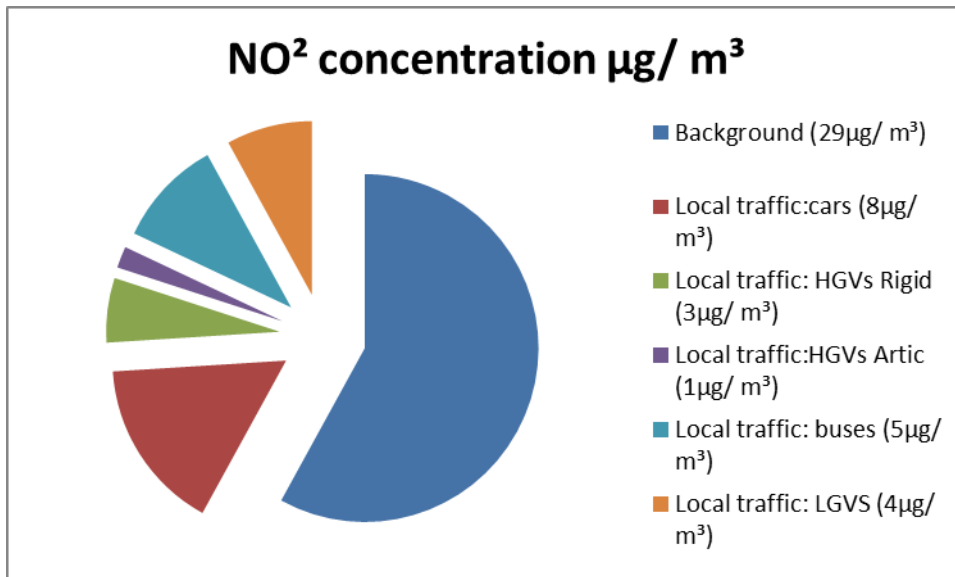
3.9 In working towards the above vision, the West Yorkshire local authorities will use the strategy to achieve the following aims:

Aim 1	Air quality in West Yorkshire will meet the air quality limit values as set out in EC Directive 2008/50/EC by 2020
Aim 2	To contribute significantly to a reduction in emissions across the region and at locations where concentrations are known to be especially high.
Aim 3	To avoid activity which has an adverse impact on air quality and to prioritise activity which delivers co-benefits of cutting carbon emissions and reducing environmental noise.

3.10 The WYLES therefore provides the framework for the specific activity that Leeds Council plans to undertake to improve air quality. The Council has developed a high level plan on

a page (appendix 1), supported by a detailed action plan to show how the Council will meet the specific targets contained within the WYLES.

- 3.11 The current target for PM2.5 particulate matter is to attain a concentration of less than 25  $\mu\text{g}/\text{m}^3$  and to reduce the 3 year rolling average by 15% from 2010 level by 2020. As this has already been achieved across the city, it is suggested that the Council adopt a target to reduce the PM2.5 by 20% from 2010 by 2020 and to aspire to meet the World Health Organisation's limit of 10  $\mu\text{g}/\text{m}^3$  by 2030.
- 3.12 The action plan is a live document with a number of identified projects. Against each project or programme, the anticipated air quality benefits will be projected. As projects are completed, actual benefits will be recorded against those projected to ensure that the overarching air quality targets will be achieved across the city. If the total benefits of the identified projects are insufficient to meet the agreed targets, additional options will be investigated to ensure that the targets are met.
- 3.13 In order to meet the targets, changes need to be made to all areas of fleet across the City, including but not limited to buses, taxis and private hire, private vehicles, HGVs and LGVs. The chart below shows that all of these sectors are major contributors to the air pollution within the City and that an action plan for each sector is required as tackling one sector in isolation will not enable the City to meet the necessary reductions.



**Chart 1**

- 3.14 The background emissions refers to emissions that are generated by domestic heating, industrial processes from both within and outside the West Yorkshire boundary as well as transport sources plus natural background levels.
- 3.15 The Council's vision for the future of transport is detailed in the Executive board report "21<sup>st</sup> Century Leeds 'A new direction in transport for a new kind of city'" also to be presented to Executive board this month and the longer term strategic aims contained within the report support the change that is required to deliver the improvement in air quality for the city.
- 3.16 West Yorkshire has been shortlisted to submit a bid for the 'Go Ultra Low City Scheme' (GUL City bid) – a £35m fund that will be split between 2 or 4 regions or cities. The scheme is designed to encourage bidders to develop ambitious, innovative campaigns to drive up the number of electric vehicles purchased in their area. These plans may take the

form of providing support for public sector fleet purchases, assisting businesses to establish business case for EV use, creating a scrappage scheme to encourage a shift from diesel to EV cars across the domestic and small business sectors as well as developing policy levers or incentives to make EV purchases more favourable. Additionally, development of 'Smart' technology to make vehicle charging easier, investigating opportunities for sustainable energy generation to support charge points and running campaigns to encourage the trial of electric vehicles amongst the public will form part of the strategy to encourage take up of EV's.

### **Measurement**

- 3.17 As the current automatic measurement of air quality is minimal, this limits the opportunities for real time use of the data to support individuals with specific health concerns to adjust their behaviour dependant on the level of emissions on any given day. It also limits our ability to see first hand the impact that certain measures have on air quality and to see whether there are any other emerging areas of concern.
- 3.18 To overcome this barrier, the Council will establish a network of measuring equipment by 2020. The Council is exploring a number of funding opportunities and links with the University of Leeds to increase the frequency and spread across the city of air quality measurement for all emission types.

### **Council's Progress**

- 3.19 In order for the Council to be able to drive change across the City, it is key that the Council leads by example. Since the report of December 2014, a review of all the Council's fleet has been undertaken to identify opportunities to replace the fleet with lower emissions vehicles. By the end of 2015/16, the Council will have increased its proportion of low emission fleet to at least 7% from 3%. Each year the annual replacement programme will be reviewed to ensure that lower emission vehicles are considered for all vehicles that are due for replacement. The replacement programme process has been redesigned so that low emission vehicles will be the default option unless these are not available or operationally unsuitable.
- 3.20 A report was also presented at Executive Board in July 2015 that focused on the development of a Compressed Natural Gas (CNG) station within the vicinity of the Aire Valley, enabling the fleet of 73 refuse collection vehicles to be converted to compressed gas by 2021. These vehicles have the highest emissions within the Council's fleet, so disproportionately contribute to the fleet's overall emissions. The CNG station will also provide opportunity for further fleet conversion, both within the Council and across other fleet operators within the City.
- 3.21 The table below shows the fleet replacement profile, the number of vehicles that will be replaced each year with an alternative type and highlights that by 2020 it is anticipated that 23% of the Council's fleet will have been replaced by alternative fuelled vehicles or hybrids.
- 3.22 The pace of change for the Council's fleet is dictated by two key elements, the ability to establish operational and economic feasibility of alternative fuel vehicles and the availability of suitable infrastructure to support the vehicles. CNG will only be available as a fuel from 2018 based on current planning, hence facilitating an accelerated transfer to gas vehicles from that date onwards. Electric charge points require sufficient power supply at depot locations, however this is a significant barrier to deployment as most sites do not have spare energy capacity, as such investment in supply is required.

Year	No of vehicles due for replacement in year	No. & % of in year replacements to be moved to alternative fuels/ hybrids	Total no. / % of fleet running on alternative fuels/ hybrids etc. by end of year
2015/16	303	50 (16.5%)	93 (7.5%)
2016/17	85	22 (25%)	115 (9.5%)
2017/18	29	20 (68%)	135 (11%)
2018/19	47	27 (57%)	162 (13.5%)
2019/2020	223	115 (51%)	277 (23%)

**Table 1 – Anticipated Council fleet replacement profile for the next 5 years**

- 3.23 As well as the Council’s fleet, work is being undertaken to examine the ‘grey fleet’ – essentially this is vehicles used in the course of business travel, such as use of employees own cars, taxis, buses and trains – and how the emissions from these can be reduced. Provision of an effective sustainable travel plan that encourages low emission travel is being developed. As part of this work an electric pool car is currently being trialled with members of staff working within a housing office.
- 3.24 Further work will also be undertaken to ensure that the Council’s procurements evaluate the supplier’s impact on air quality (e.g.. contracts using delivery vehicles etc.), as well as looking at using the car leasing scheme to influence staff behaviour.

### **Cars - Domestic Customers**

- 3.25 As well as encouraging commercial fleets to changeover to alternative fuels, it is important that work is undertaken to encourage change by private individuals. The change could be anything from leaving their car at home and choosing an alternative method of travel (e.g. walking, cycling, public transport, car sharing etc.), to buying a hybrid or electric vehicle. Work is on-going to improve the choices currently available for those who want to leave their car at home (e.g. cycle superhighway, new train stations, new park and rides, NGT etc.).
- 3.26 The Council has a key role to play to influence the shift to alternative methods of transport for domestic customers, using its parking policy to encourage people to choose more sustainable modes of travel into the city centre as well as supporting travel planning across the City.
- 3.27 It therefore remains most important as the pace of technology and innovation proceeds that the public are well informed about the choice and implications of their travel and vehicle purchasing decisions. However, there is still a lack of awareness about the public health issues caused by poor air quality, preventing the general public from making informed choices. The lack of real time data available makes it more difficult to engage with the public on an on-going basis. Public Health will continue to explore opportunities to fund awareness campaigns, albeit now in the context of the recent national announcement of a reduction in the public health grant.
- 3.28 The Council is also exploring ways to make the issue more commonly understood both internally and externally. Internally channels such as Get Connected will be used to raise employee awareness as well as using the normal communication channels to highlight the changes that the Council is making. Again the Council will work to promote Council

change externally to raise the profile of air quality as an issue and to show what can be done to reduce emissions

- 3.29 If WYCA is successful in its bid for the GUL City Bid, there will be opportunities to use the funding to improve public awareness of electric vehicles across the region.
- 3.30 People are often reluctant to buy an electric vehicle as they are concerned about how far they will be able to travel on the charge and where they will be able to recharge their car. This is known as “range anxiety”. Yorkshire and Humberside currently has the lowest number of electric vehicle charge points in the country. The Council currently operates 24 publically accessible charge points in the City, of which 8 are dedicated to Electric Vehicle (EV) drivers only. The remainder can be used by non-EV drivers, or used by EV drivers with a pre-arranged appointment. Across the City there are approximately 20 other charge points (this excludes those in car dealerships). This number will increase as planning consents are granted. Ownership of electric vehicles is also very low compared to other regions.
- 3.31 Most people who buy electric cars will primarily charge their vehicle at home and will not need to charge again to undertake their normal day to day travel as an electric vehicle can support approximately a seventy mile round trip without recharging. However, the lack of charging infrastructure is still an issue for longer journeys. The OLEV City bid will enable some improvement in infrastructure but there is likely to still be a requirement for further investment.
- 3.32 Another lever that the Council has to encourage the uptake of electric/ hybrid cars in the domestic sector is to use existing planning conditions to ensure that new houses are equipped with charging points. For houses with garages, this is a very minor additional cost as most houses will already be equipped with an external electricity supply. For developments that have car parking, it is still possible to provide a number of charge points proportionate to the number of dwellings or the amount of floor space being created.
- 3.33 Designated parking for low emission vehicles is also proposed as an additional incentive to encourage people to swap to low emissions vehicles. The Council will provide designated spaces at a number of car parks across the City, linked to charging infrastructure. The parking may either be provided free of charge or at a reduced rate.

### **Cars – Taxi and Private Hire**

- 3.34 The proportion shown in chart 1 at paragraph 3.7 for cars, also includes taxis and private hire vehicles. There are currently 3,700 private hire vehicles and 530 ‘hackney’ taxis licensed within Leeds, with the number of licensed drivers being higher as some vehicles are utilised by multiple users. The majority of these vehicles are diesel, with a very small number of petrol or hybrid vehicles currently operating. The age profile of both private hire and taxi fleets shows that licensed vehicles are typically between 3 and 9 year old. A Taxi or Private Hire vehicle may complete up to 50,000 miles in a year, compared to the average vehicle which will cover 7,900 miles annually. The age of vehicles, the fuel used and the high mileage of each contribute to the trade having a disproportionate effect on air quality relative to the number of vehicles operating.
- 3.35 Analysis of traffic flow utilising ANPR data across 4 key traffic locations demonstrated that taxi and private hire vehicles accounted for on average 6% of all traffic. The highest traffic flows of all vehicles was found along the A660, the proportion of taxi and private



hire vehicles relative to other vehicles was also highest along this route. Whilst general traffic flow peaks significantly between 6 and 9am with a slight peak across late afternoon and early evening, taxi and private hire has a less well defined cycle with a largely static volume of vehicles operating with a decline only between 2 and 5am. Across Leeds analysis found that at certain times of day (11pm to 2am) taxis accounted for 35% of the proportion of traffic flow. Taxis by their nature spend time idling at ranks, which has a negative impact on emissions, private hire vehicles will often idle when awaiting pre-booked passengers. Activity is often clustered around key sites – for example Leeds City Train Station as well as city centre pick up and drop offs, therefore concentrating the effects of emissions within areas that are already affected by traffic volumes from different vehicles (buses, private vehicles, retail deliveries and so on.)

- 3.36 There is therefore a clear case for change, if a significant number of taxi and private hire vehicles can be transitioned to low emission alternatives then there will be a measurable impact upon Air Quality. Leeds University research found that if all private hire and taxis were transferred to Hybrid Electric vehicles then reductions across the whole Leeds transport sector in CO<sub>2</sub>, NO<sub>x</sub> and PM would be 1.5%, 4.1% and 4.4% respectively.
- 3.37 As part of the GUL City Bid West Yorkshire also plans to utilise some of the potential funding to support the private hire trade by extending the scrappage scheme for small business to the trade to encourage a shift from diesel to electric or hybrid electric vehicles. Support in assessing the feasibility of running hybrid electric effectively and the required infrastructure for this will be provided through an Energy Savings Trust study for the region. Increasing the number of electric and hybrid electric vehicles in the region will also then provide a greater volume of second hand vehicles of this nature that will appeal to the private hire as well as taxi trade as they typically use second hand vehicles.
- 3.38 There is also the ‘Taxi Fund’ a £20m scheme designed to allow for subsidy to be provided to drivers or operators purchasing ultra-low emission, Hackney vehicles that have been adapted for use by disabled passengers. This scheme can also be utilised to support the development and delivery of charge infrastructure for both Hackney taxi and private hire vehicles. The West Yorkshire authorities are bidding as a region and have been awarded a fully funded feasibility study that will assist with identifying opportunities for low emission vehicles being introduced to taxi and private hire fleets. Submission of this bid will supplement the GUL City Bid in providing for support and incentives across the region for both Taxi and private hire fleets. Consultation with the trade across the region is underway that has secured support from operators for both the GUL City Bid and the Taxi Fund and is also being used to refine the measures that would be required from the trade to assist with a transition to electric or hybrid vehicles.
- 3.39 A significant challenge to transitioning Leeds fleet of Taxi and Private Hire vehicles to low emission vehicles is presented by the De-Regulation Act which came into effect from 1<sup>st</sup> October 2015. This act enables operators to subcontract work to drivers and vehicles licensed outside the district, effectively allowing vehicles and drivers licensed outside of Leeds to freely operate within the authority. As such efforts to challenge local operators to license cleaner vehicles in Leeds could be undermined by older, higher emission vehicles from other districts being driven within the city.

## **Buses**

- 3.40 West Yorkshire Combined Authority (**WYCA**) currently has limitations on its powers to require bus operators to provide services with vehicles meeting specified standards. The exception to this is where bus services are operated

under contract to WYCA. These services are, in general, those where revenue would not justify commercial operation but there is a social need, with the majority of such services being in the more rural areas of West Yorkshire or linking communities to smaller centres

3.41 There are a number of options for influencing fleet investment by bus operators operating commercial services, as set out below:

- WYCA could introduce a Statutory Quality Partnership Scheme whereby bus operators were required to meet environmental standards in return for a proportionate improvement in bus infrastructure within the City Centre. Operators can object to such a scheme if they felt that the requirement on them was not proportionate to the benefits.
- WYCA could develop a Voluntary Partnership scheme whereby there is agreement between the parties on a timetable for environmental improvements, allowing the industry to adjust to increased environmental standards over time. Whilst such a scheme has no “teeth” operators have been willing to enter into such arrangements in the past and as PLCs, by and large, they have adhered to the partnership proposals as there is a reputational risk of renegeing on the agreement.
- Signalling intent through amending the conditions of contract for procured bus services.
- Funding, within affordability constraints and State Aid rules, the additional costs of greener buses. To date WYCA has done this through bids for external funding and is currently bidding for further funding from both the Clean Bus Technology Fund, enabling bus retrofit and the OLEV Low Emission Bus Scheme for the purchase of replacement buses.

3.42 WYCA is also pursuing the inclusion of Bus Franchising powers within the Leeds City Region Devolution proposals. This would allow environmental standards to be set on all bus services as part of contract specifications, albeit within affordability constraints. It is expected that a Buses Bill will set out how these powers might be exercised, and the associated timescale.

3.43 WYLES will set out targets for cleaner bus fleet and lead to discussions and negotiation on how these could be achieved by 2020.

3.44 The Council will undertake further work to investigate the feasibility of implementing one or more Clean Air Zones across the city in the absence of finding a negotiated position with the bus companies.

### **Commercial Vehicles (HGVs and LGVs)**

3.45 The GUL City Bid will provide opportunities for SMEs to change their fleet to lower emissions alternative via the introduction of a scrappage scheme.

3.46 In addition the creation of the CNG station within the vicinity of the Enterprise Zone presents real opportunities for the HGV sector to move to a lower emission alternative. In the business case for the CNG station, money has been allocated for the marketing of the

alternative fuel to try and encourage companies to make the switch. Links are already starting to be established with potential customers within the Enterprise Zone.

- 3.47 Other options that will also be considered are the introduction of a Clean Air Zone targeted at specific categories of commercial vehicles. Further work will be undertaken to look at both the options and the likely benefits.

## **4 Corporate considerations**

### **4.1 Consultation and engagement**

- 4.1.1 A cross functional team, including representatives from HR, highways, environmental health, public health, PPPU, ICT, planning and WYCA have been involved in developing the underpinning action plan.
- 4.1.2 The Institute for Transport Studies from the University of Leeds is involved in developing the GUL City Bid.
- 4.1.3 A SmartKlub event held in July 2015 which considered the barriers and opportunities inherent in developing an alternative fuel infrastructure. Business representatives recognised the uncertainty in this field and are looking for support from the state to help establish effective delivery models. A key opportunity, but not without challenges is to establish city scale sustainable energy supplies to support transport. SmartKlub recommended that other agencies are tasked to manage these ideas into business propositions, through LEP – Smart Energy Accelerator, Open Data Institute data dives and further SmartKlub input into sustainable energy and electric vehicle charge points as a theme within the OLEV bids.
- 4.1.4 Consultation and engagement with the Taxi and Private Hire trade, both in Leeds and across the West Yorkshire Region are on-going. Initial representations have been made to the trade and members via the Taxi & Private Hire Licensing Committee Working Group. Further consultation with the trade has been undertaken via the Highways and Taxi Association meeting, a forum in which the trade regularly engage with the Council. Both of these events have been used to measure the appetite for transition to low emission vehicles and assess what level of support the trade may need to make that change. The Air Pollution Service Manager and the Institute for Transport Studies (Leeds University) have also undertaken research on the suitability of utilising hybrid electric vehicles for taxi or private hire use with the support and consultation of the trade. A workshop held in Leeds, to which representatives of the trades across West Yorkshire had been invited was undertaken in August 2015 at which the opportunities for transition to low emission vehicles were discussed. Whilst there are barriers to overcome, and more work to be done to determine a road map for the transition of taxi and private hire vehicles to low emission alternatives there is support for this from the operators. Letters of support have been submitted by trade representatives across West Yorkshire that endorse the regions bid for the Taxi Fund with operators keen to develop their understanding of both the economic and environmental opportunities that low emission vehicles may offer, as such further dialogue is planned with more detailed information to be provided to operators that will better enable business modelling to be completed.
- 4.1.5 The Executive Members for the environment, environmental health and public health and wellbeing and transport have all been consulted. An air quality session was also run for the whole of Cabinet in October.

### **4.2 Equality and diversity, cohesion and integration**

- 4.2.1 As the purpose of this report is to look to improve air quality, the benefits will be more marked in the groups that have been identified as more susceptible to the impacts of air quality according to data published by Public Health England.
- 4.2.2 An equality impact assessment was completed on 25th August 2015 and is attached at appendix 3.

### **4.3 Council policies and the best council plan**

- 4.3.1 The successful implementation of the air quality action plan contributes to the Council's cutting carbon and improving air quality breakthrough project, directly contributing to the sub area of making low carbon Leeds a reality by planning for a more sustainable future and setting a revised and improved carbon target for 2050. It will also make a significant contribution to the reduction of harmful emissions from the council's fleet and will therefore also support the sub area of delivering air quality improvements by transforming the Council's fleet of vehicles and establishing a green transport infrastructure.
- 4.3.2 The aims of WYLES should also support and influence the rethinking the City Centre breakthrough project in terms of ensuring any redesign focuses on improving air quality within the City. This will complement and support policies being developed by WYCA as part of the forthcoming new Single Transport Plan for West Yorkshire.
- 4.3.3 The development of the related green infrastructure directly contributes to the Council's forward looking commitment of introducing 21<sup>st</sup> Century infrastructure.
- 4.3.4 The use of alternative fuels will directly contribute to a reduction in the Council's carbon emissions, a measurable KPI included in the Best Council Plan.

### **4.4 Resources and value for money**

- 4.4.1 To successfully deliver improved air quality for the city, a cross Council approach is required as it cuts across so many areas of work (e.g. public health, planning, parking, transport, environmental health). This work has been incorporated into the Cutting Carbon Breakthrough Project team's work programme, managed by PPPU.
- 4.4.2 Where possible, the team are identifying and bidding for grants to support the development of this work.
- 4.4.3 The replacement of the Council's own fleet for alternative fuel vehicles will be done as part of the normal vehicle replacement cycle and supported by individual business cases to show the benefit over the whole life of the vehicle.

### **4.5 Legal implications, access to information and call-in**

- 4.5.1 There are no legal implications to note in respect of this report.

### **4.6 Risk management**

- 4.6.1 The Council has focused on dealing with air quality within residential areas, where there is the potential for prolonged exposure under the UK Air Quality Regulations. However, DEFRA also have to comply with an EU Directive that focuses on the areas with poor air quality but where there is more limited opportunity for exposure. This creates a potential challenge between meeting the Council's primary objectives to protect the health of its citizens as effectively as

possible and the pressure that it may be put under by Central Government to tackle areas where prolonged exposure is lower.

- 4.6.2 If WYCA is unsuccessful in securing funding from the GUL City Bid that will enable the region to accelerate the growth of electric vehicles, then this will be a major set back in the City's plans. However, the Council will still be able to promote the growth of CNG vehicles and in parallel look for opportunities to work with the commercial sector/ LEP to investigate other ways to incentivise faster growth in the region of alternative fuelled vehicles.
- 4.6.3 As there is evidence to suggest that certain groups (elderly, children, pregnant women, disabled) are more adversely affected by poor air quality, there is a risk of challenge under the public sector duty of the Equality Act 2010 should the Council fail to take action to address air quality, particularly from those that reside in areas designated as Air Quality Management Areas.

## **5 Conclusions**

- 5.1 Long term it is very clear that only concerted action across a range of measures will provide the kind of comprehensive solutions to the air quality issues within the City.
- 5.2 As part of the cutting carbon and improving air quality breakthrough project an annual report is taken to executive board annually to show progress to date. Within this report it is intended to incorporate an update on the work towards the improvement of air quality so that progress and the associated action plan can be monitored annually.

## **6 Recommendations**

Members of the Executive Board are recommended to:

- Note the progress the Council has made to date and its plan for expansion for its own alternative fuel vehicles and associated infrastructure;
- Endorse the WYLES and Leeds' Air Quality Action Plan;
- Adopt the targets for 2020 and 2030 for PM2.5 referred to at paragraph 3.6 of this report;
- Support the allocation of parking spaces for electric vehicles in Council car parks to be implemented by the end of the financial year as part of the Cutting carbon and improving air quality breakthrough project;
- Support the enforcement of the planning conditions on new developments to increase charging infrastructure across the City. This is an on-going action that falls under the Chief Officer of Planning's responsibility to monitor for all new developments;
- Support the establishment of walking and cycling friendly infrastructure, using appropriate planning conditions to ensure new developments support alternative modes of transport;

- Support further work being carried out to determine the required scope and number of potential Clean Air Zones within the city to ensure compliance with EU directives is met as a minimum, improving public health outcomes for the citizens of Leeds. The Director of Environment and Housing will oversee the delivery of the study and report back to Executive Board on progress as part of the breakthrough project's annual report.

**7 Background documents<sup>4</sup>**

None

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<sup>4</sup> The background documents listed in this section are available to download from the council's website, unless they contain confidential or exempt information. The list of background documents does not include published works.

# LEEDS AIR QUALITY ACTION PLAN (DRAFT)

Vision: Towards a city where transport and industry has a positive impact on health

## AIMS

1. Improved air quality
2. Improved health and wellbeing and reduced health inequalities
3. Lower carbon pollution and reduced noise impacts
4. Leeds developed as a skills and business base for low emission technology

## CONTRIBUTING TOWARDS

1. A city that is fair, open and welcoming
2. An economy that is prosperous and sustainable
3. A city where all communities will be successful

## ENABLERS

**E1**  
Increase the use of sustainable modes of transport

**E2**  
Clean the Public Transport Fleet

**E3**  
Accelerate the uptake of cleaner vehicles within the domestic market

**E4**  
Reduce emissions from industry and businesses and the public sector

**E5**  
Building a Low Emission City

**E6**  
Improved Promotion and Profile

**E7**  
Developing our Capability

## OBJECTIVES

**E1.1** Increase bus patronage through improved bus priority measures

**E1.2** Increase public transport usage through the creation of new public transport options including NGT, new train stations and P+R

**E1.3** Improve cycling and walking infrastructure and develop training

**E1.4** Encourage the use of car sharing

**E1.5** Encourage the use of sustainable modes through travel planning

**E1.6** Promote the use of alternative modes (rail/water) for freight

**E2.1** Promote electric trains

**E2.2** Promote the adoption of retrofit equipment to reduce emissions

**E2.3** Promote the conversion of buses to low emission alternatives

**E3.1** Develop incentives for low emission vehicle take-up

**E3.2** Improve traffic flow conditions and promote Eco-driving

**E3.3** Promote the use of low emission vehicles for community groups and car clubs

**E4.1** Promote the conversion of taxis to low emission alternatives

**E4.2** Promote the conversion of HGVs to low emission alternatives

**E4.3** Convert the Authority's vehicle fleet to low emission vehicles

**E4.4** Work with partners to support the conversion of other public sector fleets for example NHS

**E4.5** Consider staff incentives to change their own vehicles

**E4.6** to add—Cleaning up emissions from industry e.g. construction / energy.

**E5.1** Development of public EV recharging and gas refuelling infrastructure

**E5.2** Development access to a Public Transport Smart Card for charging vehicles

**E5.3** Develop a City Centre transport strategy that reduces through traffic

**E5.4** Promote EV recharging in residential & commercial premises through partnership working with developers and through planning

**E5.5** Promote sustainable modes through partnership working with developers and through planning

**E5.6** Develop ways to smarten the grid to adapt to future vehicle technology needs

**E5.7** Increase the creation and use of green spaces

**E6.1** Capitalize on national events to raise awareness

**E6.2** Increase social media engagement.

**E6.3** More targeted marketing and communications plans.

**E6.4** Engage with Government to influence national plans and funding

**E6.5** Engage with the LEP, WYCA and neighboring authorities to ensure that there is a coordinated & strategic approach

**E6.6** Develop our own staffs' understanding of air quality issues

**E7.1** Improving measurement of air quality

**E7.2** Develop an apprenticeship programme to skill vehicle repairers and servicing staff

**E7.3** Engage with business to understand how Leeds can become a centre of excellence for technology innovation

**E7.4** Work with the universities to set out a research programme that could aid our understanding and be ready to bid for funding.

**E7.5** Maximise funding and resources through partnerships and effective bids.

**E7.6** Engage with partners in other sectors to reduce emissions, including Health and Third Sector

PRIMARY SUCCESS MEASURES  
KEEPING ON THE RIGHT TRACK

Increased awareness of air quality issues.  
Reduced emissions from transport

Increased numbers using sustainable modes of transport  
Increased number of children walking and cycling to school.

Increased take-up of low emission vehicles  
Associated life years lost

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# **West Yorkshire Low Emission Strategy**

**(WYLES)**

**2016-2021**

**Draft\_v2 for Public Consultation**

**October 2015**

## About the West Yorkshire Low Emission Strategy

The West Yorkshire Low Emission Strategy (WYLES) has been developed through collaboration between the West Yorkshire local authorities (Bradford MDC, Calderdale MBC, Kirklees MDC, Leeds CC and Wakefield MDC); West Yorkshire Combined Authority (WYCA) and Public Health England (PHE), with each organisation having an input and contributing to the content of the strategy.

With funding from the Department for the Environment and Rural Affairs (DEFRA) the WYLES project has been managed by Bradford MBC, with technical support provided by Low Emissions Strategies Ltd. and Public Health England and specific acknowledgements are given for their contribution to the development of this Strategy.

The WYLES is intended to influence and shape other local and regional strategies, plans and policies to facilitate a reduction in emissions, mainly from vehicles, and improve air quality, resulting in a healthier place for people to live, work and visit.

The Strategy sets out specific aims and objectives to be achieved over the next five years, although it is recognised that further action will continue to be required beyond the timeframe of this Strategy. The Strategy will be kept under review and will be renewed towards the end of the five year period to take into account changing needs, technologies and priorities.

A West Yorkshire Task Group will be set up to deliver the objectives within this Strategy and provide annual progress reports to each of the West Yorkshire local authorities and to the West Yorkshire Combined Authority.

## Consultation on the WYLES

This draft WYLES has been developed with input from technical experts from their respective fields, including air quality; transport policy and public health, however for the WYLES to be successfully delivered, wider stakeholder and public consultation is required to help shape the final version of the strategy. We are therefore inviting responses, initially from interested groups and subsequently through public consultation. This consultation phase is with key stakeholder groups with a closing date of 7<sup>th</sup> August 2015.

A consultation pro-forma is attached and responses can be made on-line: <https://www.surveymonkey.com/r/WYLES-Stakeholder>








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<b>West Yorkshire Bus Emission Strategy</b>	

**Foreword**

 <p>City of Bradford MDC www.bradford.gov.uk</p>	<p><i>Insert text here from relevant Member / Lead from each authority.</i></p>	<p>Photo Signature Name Title</p>
 <p>Calderdale Council</p>	<p><i>Insert text here from relevant Member / Lead from each authority.</i></p>	<p>Photo Signature Name Title</p>
 	<p><i>“The Strategy is an excellent opportunity to work with colleagues across West Yorkshire to reduce emissions and improve air quality whilst at the same time maintaining a strong economic growth, resulting in a healthier place for people to live, work and visit.”</i></p> <p>Cllr Peter McBride Cabinet Member for Transportation, Skills, Jobs and Regional Affairs</p>	
 <p>Leeds CITY COUNCIL</p>	<p><i>Insert text here from relevant Member / Lead from each authority.</i></p>	<p>Photo Signature Name Title</p>
 <p>Wakefield Council working for you</p>	<p><i>Insert text here from relevant Member / Lead from each authority.</i></p>	<p>Photo Signature Name Title</p>
 <p>WEST YORKSHIRE COMBINED AUTHORITY</p>	<p><i>Insert text here from relevant Member / Lead from each authority.</i></p>	<p>Photo Signature Name Title</p>

**Public Health England has collaborated on the development of the West Yorkshire Low Emissions Strategy and is fully supportive of it.**

## 1. Executive Summary

- 1.1. Most of West Yorkshire benefits from very good air quality and, overall, air quality has improved relative to air pollution levels experienced by previous generations. However, traffic in our urban centres and on busy roads result in levels of air pollution which have a significant impact on the health of the population, with those having underlying health conditions being most at risk. There are two pollutants of greatest concern: Nitrogen Dioxide (NO<sub>2</sub>) and Particulate Matter (PM<sub>n</sub>), which have an adverse affect on health and are a mainly a problem because of vehicle exhaust emissions, with diesel exhaust emissions contributing most to the air pollution problem.
- 1.2. Unlike the smoke and smog problems of the past, nitrogen dioxide and particulate matter are invisible, leading to a perception that the air is “clean”. However, particulate matter is so fine that it is inhaled deep into the respiratory tract and, in the case of very fine particles and nitrogen dioxide may transfer into the blood stream. A range of health problems are attributed to exposure to high levels of nitrogen dioxide and particulate matter, the most obvious being respiratory conditions, asthma and cardio-vascular disease, but evidence is now also showing an association with cancer, strokes, low birth-weight babies and even childhood cognitive development. These health conditions impact both on quality of life and life expectancy. The Public Health Outcomes Indicator for air pollution points to the equivalent of one in twenty deaths in West Yorkshire each year being attributable to poor air quality.
- 1.3. Nitrogen dioxide and particulates, together with other air pollutants, have been set an upper air quality limit value that the general population should not be exposed to and are legally binding through EU and UK law. The urban areas of West Yorkshire have been identified as having some of highest levels of air pollution in the UK, with only London showing higher levels at a regional level. Current projections indicate that concentrations of nitrogen dioxide will not fall below the limit values in some parts of West Yorkshire until after 2030. Continued failure to meet the limit values will put the UK Government at risk of legal action being taken against it under European law, with the further risk of any fine imposed on the UK Government being passed down to local authorities if their action, or in-action, has contributed to the limit value being exceeded. Legal action has already been taken against the UK Government by Client Earth for the continued breach of the limit values in both the European Courts and UK Supreme Court. It is therefore important, not least for the protection of public health, that all public bodies work together to achieve compliance with the limit values by the earliest possible date.
- 1.4. We know that traffic-related air pollution is the main reason why people are exposed to levels of air pollution which can damage health, but our society and economy is structured around the effective and efficient movement of people

and goods. The challenge is to reduce emissions, without adversely impacting on the economy and our social expectations. Conversely, this is also an opportunity for our society and economy to benefit from the innovation and activity that will lead us to a low emission future.

- 1.5. We already know a lot about the concentrations of air pollutants in the region and where air pollution is highest, however, we need to build on our existing knowledge to help inform decision-making so that the most cost-effective and viable options to deliver air quality improvements are made, which do not have unintended adverse economic, social or environmental impacts.
- 1.6. No single action will lead to improved air quality, but a range of actions and activity is required at a local, regional, national and European level in order to achieve the desired reduction in emissions. This Strategy considers the local and regional activity required to reduce emissions, having regard to the national and European context. The Strategy is a collaboration between West Yorkshire authorities and recognises that the actions that will have greatest impact are ones which are implemented across the region, such as regional transport policy, economic growth, housing, spatial planning, infrastructure developments and behaviour change.
- 1.7. This Strategy has four main themes:
  - ***Evidence for Change***
  - ***Creating a Low Emission Future***
  - ***Reducing Transport Emissions***
  - ***Controlling Emissions from non-Transport Sources***
- 1.8. The first theme: ***Evidence for Change***, explores the evidence which is driving the need for change, including the impact on health and the legal consequences of not taking action. Evidence arising from Low Emission Zone feasibility studies and work by local authorities in their role in assessing local air quality has identified where air quality is poor and what causes the main air pollution problems. We know that older diesel vehicles cause the most significant air quality issues and exposure to poor air quality is highest in urban areas, and when people live near to busy roads areas of traffic congestion. Evidence suggests that action targeting the most polluting vehicles which operate mainly in urban areas, for example older diesel buses, will achieve the most significant air quality and health benefits. Action to improve air quality can, in most cases, also deliver additional benefits by reducing carbon dioxide emissions and reducing environmental noise.
- 1.9. The second theme: ***Creating a Low Emission Future***, considers what needs to be done to shape the places where we live and work, how we travel and the

choices we make so that low emission travel becomes part of normal everyday life. The WYLES will help inform other strategies and policies to achieve this. Notable strategic plans include the Single Transport Plan and Strategic Economic Plans developed by WYCA, and Local Development Plans produced by Planning Authorities, but other policies and plans, for example on Carbon Management, Procurement and Commissioning of Services can also influence how the low emission future is achieved and how the places where we work and live are shaped. An *Air Quality & Planning Technical Guide* has been developed as part of the WYLES to assess the air quality impact from new development and help quantify the level of mitigation required to make developments sustainable. The West Yorkshire Authorities will use this Guide to help shape new developments, for example by creating electric charging infrastructure, so that ultra-low emission vehicles become a realistic and viable alternative for more people.

- 1.10. Changing behaviour is a key element of delivering a low emission future. The car has become, and will continue to be, a part of everyday life for most people, but increasingly people are interested in alternative travel options and journey planning, with active travel (walking and cycling) – the ultimate low emission vehicle – being increasingly important. The WYLES can be used to compliment the travel planning and active travel strategies across West Yorkshire.
- 1.11. The WYLES will also help raise awareness of the impact that emissions, particularly from vehicles, have on air quality and health. It can be confusing picture: for many years diesel engines have been seen as better for the environment because of their lower CO<sub>2</sub> emissions compared to petrol, but we know that diesel engines emit higher levels of nitrogen dioxide and particulates than their petrol equivalent and so contribute more to air quality problems. The WYLES will help to educate and inform so that everyone, from key decision makers to individuals considering their next vehicle purchase, will be better informed about the health and environmental consequences of the choices and decisions they make.
- 1.12. Low Emission Zones (LEZ) are one way in which local authorities can regulate emissions from vehicles in urban centres, by only allowing vehicles into zoned areas which emit a low level of exhaust emissions. Most modern towns and cities benefit from some form of traffic management, for example pedestrianised areas, cycle-only routes, bus-lanes and bus-gates are now an integral part of town and city centres. However, outside London, there are very few traffic management areas based on vehicle emission standards and there are complexities around implementing such schemes. Low Emission Zone feasibility studies have been carried out for Leeds and Bradford and these are considered in the WYLES. Although LEZs can reduce vehicle emissions within a defined area, more work needs to be undertaken in terms of the practical implementation and economic impact of implementing Low Emission Zones, but

remain an option for regulatory control if voluntary measures fail to achieve the aims of this Strategy.

1.13. Creating a Low Emission Future will also require public authorities to lead by example. Local authorities operate over 3,000 fleet vehicles and employ over 30,000 thousand people across the region which provides the potential to influence the uptake of low emission vehicles, both as part of their business operations and in the wider population. Local authorities will carry out fleet reviews to see how low emission vehicles can be incorporated into the vehicle mix, and will promote the uptake of ultra-low emission vehicles with their own employees. Public authorities can also influence others through the commissioning of services and the procurement of goods and so consideration will be given to how this influence can be used to encourage contractors and service providers to reduce their emissions when awarding contracts.

1.14. Theme 3 – **Reducing Transport Emissions**, considers each of the main transport modes which contribute to local air pollution problems. The emphasis is on reducing overall emissions by moving to cleaner fuels and technologies, such as electric, hybrid-electric, natural gas, LPG and hydrogen, and also reducing emissions from conventional diesel and petrol driven vehicles. There are many factors to be taken into account when choosing a new vehicle, whether this be an individual, bus company, taxi driver or fleet manager. Decisions are heavily influenced by previous purchase choices and affordability – particularly initial purchase price. Because alternative fuels and technologies are relatively new to the market there is greater uncertainty about choosing something different and initial purchase costs can seem prohibitive. Work is required to better understand the barriers to ULEV uptake and work with individuals and companies to make low emission vehicles a viable and affordable alternative. The following transport modes are considered in the WYLES:

- **Private Cars** – Car use is a part of everyday life for most people, but with nearly one million cars in the region, accounting for 78% of the 9.8 billion miles driven on West Yorkshire roads each year, they are a significant contributor to overall emissions which impact on air quality. Diesel cars have also grown in popularity, with a three-fold increase in the last decade, however diesel cars can produce 22 times more particulate exhaust emissions and four times more NO<sub>x</sub> emissions than petrol cars, which is one of the reasons why air quality targets have not been achieved across the UK. Ultra-low emission vehicles, such as plug-in electric cars, are becoming increasingly popular as more people are seeing the benefits that ULEVs can bring, including: lower running costs, zero road tax, Government “plug-in grant” towards purchase costs as well as the environmental benefits. However, ULEVs still represent less than 0.05% of cars in West Yorkshire and more work needs to be done to promote ultra-low emission vehicles as a



viable option for more people. Emissions from traditional (diesel and petrol) engine technology will reduce as new cars come into the market, but this will take a long time and therefore the WYLES will support the growth of ultra-low emission fuels and technologies in the region.

- **Buses** – as a public transport option, buses are part of the solution, but, because they are mainly diesel powered, also contribute to the air pollution problem; particularly in towns and cities where air quality is poorest. Bus companies typically operate buses for a long time and older buses produce higher emissions than modern equivalents. The majority of bus services are operated by private companies on a commercial basis, however, the WYLES will be used to support bus operators to accelerate bus replacement programmes; operate newer, cleaner buses in urban areas; fit NOx and particulate abatement technology on buses; and consider low emission alternatives in order to reduce emissions from buses.
- **Trains** – trains, like buses, are part of the public transport solution, however, a considerable number of train routes in the region have not been electrified and therefore diesel engines continue to be used and contribute to the overall air pollution problem, particularly in urban stations, such as Leeds and Bradford. The WYLES supports the move to electrify more train routes in the region and reduce the reliance on diesel engine trains.
- **Commercial Vehicles and Freight** – West Yorkshire has some of the busiest strategic motorway networks in the UK and is a hub for major logistics and distribution companies. Consequently, the number of HGVs on the road network contribute significantly to overall air pollution. Recent years have also seen an increase in the number of light goods vehicles (LGVs), which may be attributed to an increase in internet sales, home deliveries and growth in the independent service sector and trades. The commercial sector can be difficult to influence, but they understand the need to reduce their carbon footprint, improve their “green” credentials and be socially responsible for the impact they have on the environment. The WYLES will aim to support the commercial sector to reduce emissions from their fleet operations, for example by supporting driver training programmes to reduce fuel costs and assisting companies to understand whole-life costs of vehicles and support alternative, low emission fuels and technologies such as compressed natural gas (CNG), liquefied natural gas (LNG), dual fuel, electric and plug-in electric and hydrogen fuel options.
- **Taxis and Private Hire Vehicles** – Nearly 11,000 thousand taxis and private hire vehicles operate West Yorkshire region and most are diesel cars or vans. The majority of journeys are short journeys in town and city centres and therefore contribute to overall air pollution. However, as well as being a contributor to the pollution problem, taxis and private hire can be part of the

solution, by show-casing the potential for low-emission vehicles and “normalising” their use to the thousands of passengers they carry each year. The WYLES will encourage and support taxi and private hire operators to switch to low emission alternatives and consider what policy incentives will support taxi and private hire operators to make the change.

- **Local Authority Fleet** – local authorities operate over 3,000 cars, vans and heavy goods vehicles, such as refuse disposal and highway maintenance vehicles as part of their fleet operations. Local authority employees also use their own cars, the so-called “grey fleet”, for business journeys. The WYLES will seek to increase the number of low emission vehicles and ultra-low emission vehicles in both the local authority fleet and grey fleet. The West Yorkshire Low Emissions Procurement Guide has been developed in support of the WYLES to assist with the whole life costing of vehicles to balance potentially higher purchase costs, but lower running costs of low emission vehicles compared to traditional fuel types and help inform procurement decisions. Policy incentives, such as salary sacrifice schemes for low emission vehicles, will also be considered to incentivise uptake of privately owned ultra-low emission vehicles.

1.15. Theme 4 – ***Controlling Emissions from non-Transport Sources***, considers the other contributing factors to air quality problems in West Yorkshire. The focus of this Strategy is predominantly around reducing emissions from transport, but there are also other sources which contribute to air pollution. Some emerging initiatives intended to reduce CO<sub>2</sub> emissions, including Combined Heat & Power and District Heating schemes and the trend for biomass or wood burning, may have unintended consequences in terms of making air quality worse. The WYLES will raise awareness of these potential conflicts and promote sustainable energy and heat production which do not have an adverse impact on air quality.

## 2. WYLES Vision, Aims and Objectives 2016 – 2021

### 2.1 Vision

***A vibrant West Yorkshire economy, where people use transport and power and heat their homes and businesses in a way which improves air quality to create a safer and healthier environment for people to live, work and invest.***

### 2.2 Aims

In working towards achieving the above vision the West Yorkshire local authorities and West Yorkshire Combined Authority will use this Strategy to achieve the following aims:

<b>Aim 1</b>	Air quality in West Yorkshire will meet the air quality limit values as set out in EC Directive 2008/50/EC by 2020.
<b>Aim 2</b>	Contribute significantly to a reduction in emissions across the region and at locations where concentrations are known to be especially high.
<b>Aim 3</b>	To avoid activity which has an adverse impact on air quality and to prioritise activity which delivers co-benefits of cutting carbon emissions and reducing environmental noise.

### 2.3 Objectives

The West Yorkshire local authorities (WYLA) and West Yorkshire Combined Authority (WYCA) will work together to achieve the above aims and will commit to the following strategic objectives:

<b>Objectives - Theme 1: Evidence for Change</b>		<b>By When</b>	<b>By Who</b>
<b>T1A</b>	We will use the best available evidence, or develop new evidence where any gaps exist, to support policy making, funding decisions, and action planning to reduce transport and other emissions in the region in order to deliver the WYLES aims.		
<b>T1B</b>	We will carry out relevant assessments to ensure actions to deliver the WYLES aims do not result in any unintended adverse economic, social or environmental impact.		

<b>T1C</b>	We will build on the work undertaken as part of the Low Emission Zone Feasibility Studies to improve transport and air quality modelling capability for the region.		
<b>T1D</b>	We will review local air quality management arrangements across the region to ensure they provide an effective means of supporting decision-making and action planning.		
<b>T1E</b>	We will establish a clear performance monitoring framework in order to review progress towards achieving the aims of the WYLES.		

<b>Objectives - Theme 2: Creating a Low Emission Future</b>		<b>By When</b>	<b>By Who</b>
<b>T2A</b>	We will raise awareness of the WYLES with key stakeholders in order to influence other key strategies, policies and plans that have an impact on air quality.		
<b>T2B</b>	We will work together to identify funding opportunities and set out an annual spending plan to deliver the aims and objectives of the WYLES.		
<b>T2C</b>	Working with health professional and academics, we will raise awareness of air quality and the other environmental and health impacts from emissions from transport and other sources to influence perceptions and encourage behaviour change to increase active travel and low emission travel.		
<b>T2D</b>	We will use the West Yorkshire Air Quality and Planning Technical Guide to help deliver sustainable developments in the West Yorkshire area.		
<b>T2E</b>	We will lead by example by promoting the uptake of ultra-low emission vehicles within local authority fleets and by local authority employees.		
<b>T2F</b>	We will use existing networks with key employers in the region to promote low emission vehicle alternatives in public and private fleet operations and vehicles used by employees.		

<b>T2G</b>	When commissioning and procuring goods and services we will promote the use of low emissions criteria when awarding contracts under the principles of social value and sustainable procurement.		
<b>T2H</b>	We will review the need to implement one or more Low Emission Zones within urban areas of the region.		

<b>Objectives - Theme 3: Reducing Transport Emissions</b>		<b>By When</b>	<b>By Who</b>
<b>T3A</b>	We will carry out research to better understand potential barriers to the uptake of ultra-low emission vehicles by individuals and develop a package of measures that would overcome these.		
<b>T3B</b>	We will work together implement the package of measures identified in objective T3A and seek funding opportunities and partnership arrangements to achieve this wherever possible.		
<b>T3C</b>	We will work with West Yorkshire bus operators to accelerate the investment in newer buses and/or emissions abatement technology to reduce bus emissions in line with option 2 or 3 as outlined in this Strategy.		
<b>T3D</b>	We will work with Rail North to promote electrification of key railway routes within the West Yorkshire region and engage with train operating companies to replace older diesel trains operating within urban areas of the region.		
<b>T3E</b>	We will work with the freight and logistics sector within the region to better understand how to support businesses to reduce emissions from their fleet operations and support fleet operators to switch to low emission alternatives, including developing the necessary refuelling infrastructure to support this.		
<b>T3F</b>	We will work with the freight and logistics sector to review how more goods may be transported by alternatives to road transport, including rail and water transport for long-haul journeys and urban “last-mile” deliveries.		
<b>T3G</b>	We will work with hackney carriage and private hire operators to determine how they may be supported to reduce emissions from taxi and private hire fleet, including demonstrating financial benefits; supporting funding bids and considering policy incentives to promote uptake of low emission taxis.		

<b>T3H</b>	We will use the West Yorkshire Low Emissions Procurement Guide to review our fleets and assess whole-life costs of vehicles to compare low emission alternatives to diesel, and switch to low emission vehicles where the business case supports this.		
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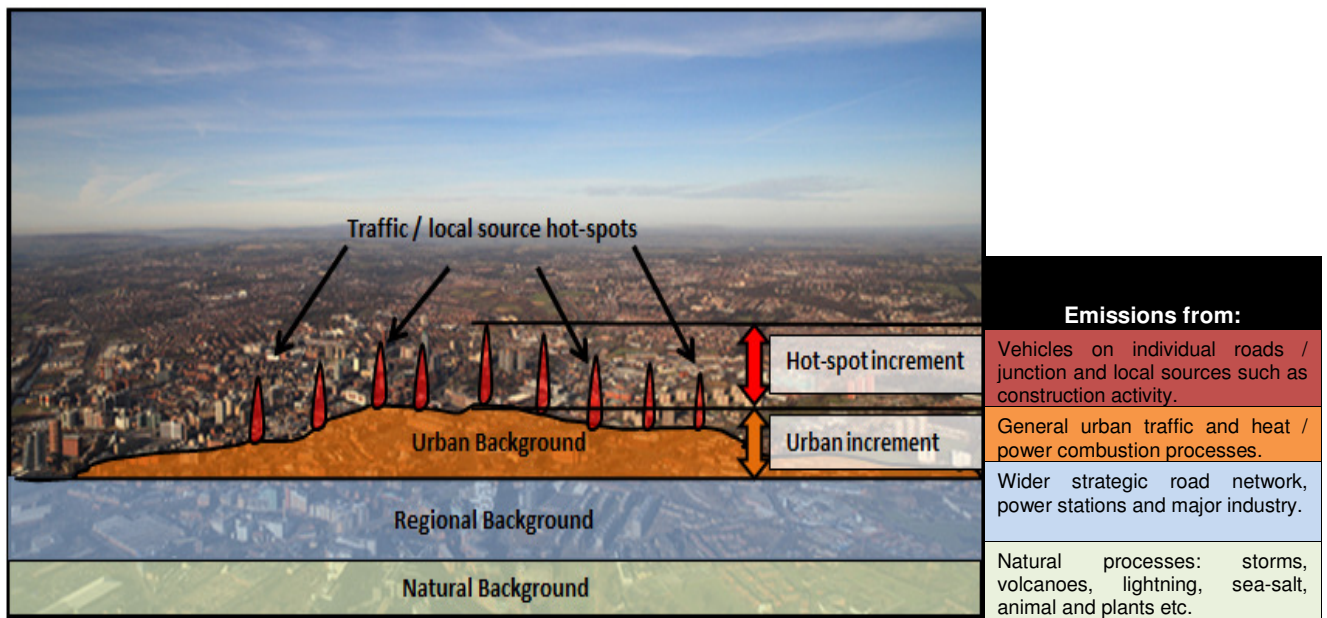
<b>Objectives - Theme 4: Controlling Non-transport Emissions</b>		<b>By When</b>	<b>By Who</b>
<b>T4A</b>	We will raise awareness with key stakeholders of potential air quality impacts from the introduction of urban combined heat and power (CHP) plants, and biomass and wood-burning to ensure that these do not adversely compromise local air quality.		
<b>T4B</b>	We will work with industry and regulators to reduce emissions from industrial processes in the region and ensure emissions do not result in any exceedance of air quality limit values.		

Consultation

### 3. Introduction

- 3.1. Breathing clean air, which does not adversely affect health, should be a basic requirement of any modern society. Air quality has improved significantly over recent decades from the days when thick smogs and smoke could be seen coming from chimneys in the region, however, we cannot yet say that the air which people breath in some part of West Yorkshire does not have a negative impact on their health.
- 3.2. The “quality” of air describes its composition, and breathing clean air, without harmful pollutants, is something that we would all wish to achieve. Some pollutants occur naturally, while others are a result of human activities, which we have all become used to in today’s society, such as driving a car, heating our homes and businesses, generating electricity and power, industrial and manufacturing processes and transporting goods.
- 3.3. It is not possible to eliminate air pollution altogether, but steps can be taken to minimise the amount of pollution created and to control exposure to levels of pollution which negatively impact on people’s health. Figure 1 illustrates how air quality becomes a problem in urban areas, as local hot-spots of pollution from traffic or other localised emission sources adds to background pollution resulting in overall air pollution levels which have a negative impact on health.

**Figure 1 - Illustration of how air pollution builds up in urban areas**



- 3.4. In busy town and city centres areas the overall urban background concentrations can exceed levels which impact on health and so all the population in that area can be exposed to high pollution levels. In other cases

the urban background levels will be below threshold levels which impact on health and only the population near to busy roads or other localised hot-spot will be exposed to harmful levels of pollution.

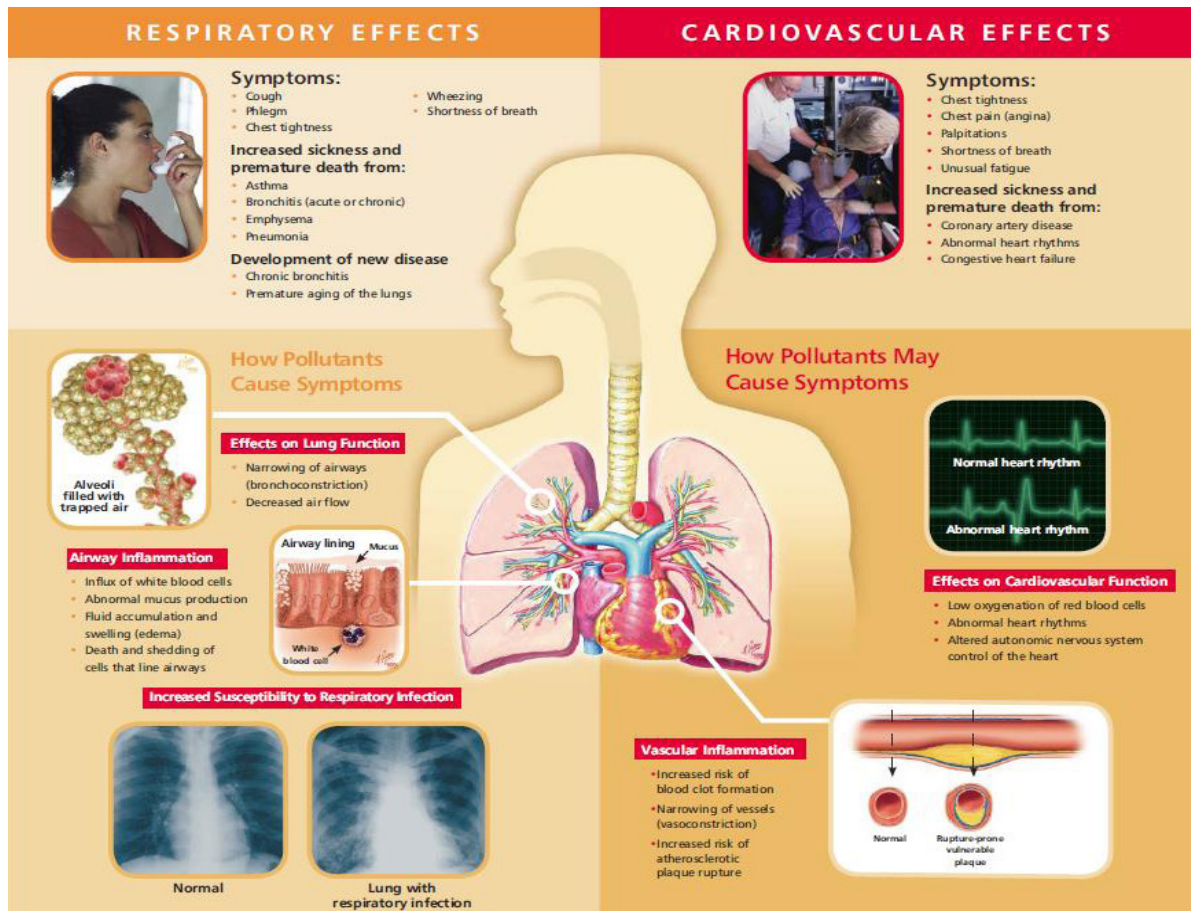
- 3.5. We know that exhaust emissions from traffic, and particularly from diesel vehicles, contributes most to urban background and localised air pollution and, therefore, the focus for the West Yorkshire Low Emission Strategy (WYLES) is on reducing transport-related exhaust emissions over the next five years and beyond. However, the WYLES will also look to shape regional and local policy to create a future where low emission technology becomes a normal part of everyday life for people and businesses in the region, and also considers other, non-transport emissions which may emerge as potential threats to air quality in the coming years.
- 3.6. Everyone in West Yorkshire has a role to play in improving air quality, including individuals, businesses, public sector organisations and local and national Government. However, the local Councils in West Yorkshire, together with the West Yorkshire Combined Authority (WYCA), recognise that together they play a key role in shaping how the region develops moving forward through the development of economic, social and environmental policy and the allocation of funding. The intention of the WYLES is to provide the strategic commitment from the West Yorkshire Council's and WYCA to implement a range of actions, both at a policy level and practical level, to improve air quality for the people of West Yorkshire.



## 4. Theme 1 – Evidence for Change: Health Impact

4.1. Poor outdoor air quality is a contributing factor to many health problems as well as damaging ecosystems, biodiversity and valued habitats. The adverse health effects from short and long-term exposure to air pollution range from premature deaths caused by heart and lung disease to worsening of respiratory symptoms (i.e. asthma, chronic obstructive pulmonary disease (COPD, commonly known as chronic bronchitis), which lead to a reduced quality of life and increased health care costs. There is also evidence linking air pollution with a range of cancers<sup>1</sup> (lung and bladder in particular), low birth weight babies<sup>2</sup> and subsequent neurodevelopment problems in children<sup>3</sup>. In 2013, the World Health Organisation (WHO) classified diesel exhaust emissions as carcinogenic to humans<sup>4</sup>. The main health effects associated with the inhalation of vehicle emissions are shown in Figure 2 below:

Figure 2: Main health effects of vehicle pollutants



<sup>1</sup> [http://www.iarc.fr/en/media-centre/iarcnews/pdf/pr221\\_E.pdf](http://www.iarc.fr/en/media-centre/iarcnews/pdf/pr221_E.pdf)

<sup>2</sup> [http://www.thelancet.com/journals/lanres/article/PIIS2213-2600\(13\)70192-9/abstract](http://www.thelancet.com/journals/lanres/article/PIIS2213-2600(13)70192-9/abstract)

<sup>3</sup> <http://www.ncbi.nlm.nih.gov/pubmed/25229653>

<sup>4</sup> [http://terrance.who.int/mediacentre/audio/press\\_briefings/](http://terrance.who.int/mediacentre/audio/press_briefings/)

4.2. The two main pollutants of concern in urban areas are nitrogen dioxide ( $\text{NO}_2$ ) and particulate matter ( $\text{PM}_n$ ). Studies have shown an association between nitrogen dioxide in outdoor air with adverse health effects, including reduced life expectancy, however, it has not been clear if these effects were caused by  $\text{NO}_2$  itself or other pollutants (such as particulate matter) emitted from the same source: for example traffic will produce both  $\text{NO}_2$  and  $\text{PM}_n$  emissions. In a statement<sup>5</sup> recently published by the Government Committee on the Medical Effects of Air Pollutants (COMEAP), the evidence that  $\text{NO}_2$  itself is responsible for adverse health effects such as asthma, respiratory conditions and increased cardiovascular risk has strengthened substantially.

4.3. Particulate matter is categorised by the particle diameter and three main descriptors are used:

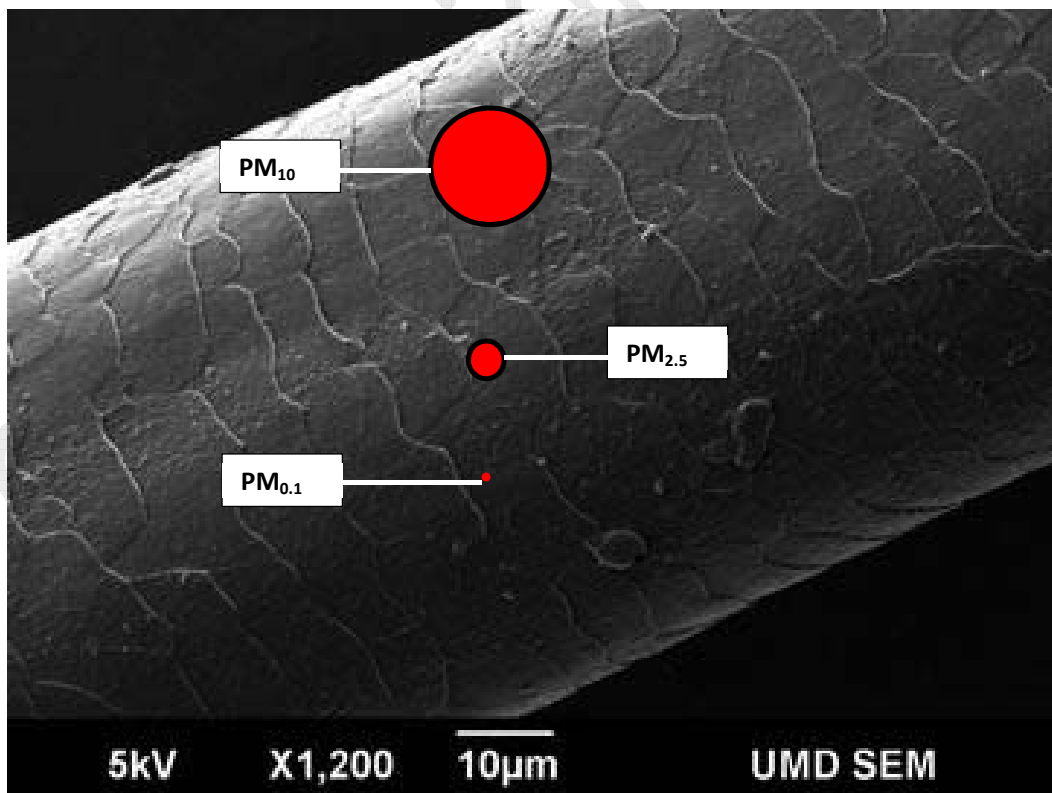
$\text{PM}_{10}$  – particles smaller than 10 microns (0.01mm)

$\text{PM}_{2.5}$  – particles smaller than 2.5 microns (0.0025mm)

$\text{PM}_{0.1}$  – particles smaller than 0.1 microns (0.0001mm)

Figure 3 below illustrates the size of this particulate matter relative to a human hair.

**Figure 3: Particle size relative to human hair.**



<sup>5</sup> Statement on the Evidence for the Effects of Nitrogen Dioxide on Health, COMEAP (March 2015)

4.4. The small particle size means that that these pollutants are inhaled deep into the lung tissue and the smallest particles can pass into the bloodstream and be circulated around the body. Although much remains to be understood about the toxicity of different particle sizes, chemical composition and particle structure, COMEAP reports<sup>6</sup> a clear causal link between exposure to particulates and adverse impacts on health, with a clear recommendation that reducing the concentration of particulate matter in air will benefit public health.

4.5. Public Health England (PHE) have developed a methodology<sup>7</sup> for assessing the equivalent number of deaths and life years lost that can be attributed to long term exposure to particulate air pollution arising from human activity. Using this methodology, PHE calculate that particulate air pollution in West Yorkshire has a health impact equivalent to approximately one in twenty of all deaths: equating to around one thousand deaths and 11,000 life years lost each year. These figures do not represent the actual number of individuals whose life has been shortened as a direct consequence of exposure to air pollution, rather the combined impact which air pollution has on the wider population: i.e. exposure to air pollution contributes a small amount to the deaths of a larger number of people.

4.6. The Department for Health and Public Health England use the Public Health Outcomes Framework<sup>8</sup> (PHOF) to determine the relative health of the population and includes an indicator for the number of deaths attributable to long term exposure to fine particulate (PM<sub>2.5</sub>) air pollution based on the PHE methodology. Table 1 below shows the most recent figures from the PHOF indicator for West Yorkshire and the equivalent life years lost.

**Table1: Estimated fraction of mortality attributable to particulate air pollution (2012 data).**

	Percentage mortality attributable to PM <sub>2.5</sub>	Number of registered deaths (over 30*)	Equivalent number of deaths attributable to exposure to air pollution (PM <sub>2.5</sub> )
<b>West Yorkshire</b>	<b>4.9%</b>	<b>18,378</b>	<b>901</b>
Bradford	4.7%	4,028	189
Calderdale	4.4%	1,797	80
Kirklees	4.7%	3,437	162
Leeds	5.0%	6,108	306
Wakefield	5.4%	3,008	163
*The PHOF indicator excludes deaths from lower age groups as long-term exposure to air pollution is unlikely to have been a contributory factor.			

<sup>6</sup> Statement on the Evidence for Differential Health Effects of particulate Matter According to Source or Components, COMEAP (March 2015)

<sup>7</sup> Estimating Local Mortality Burdens Associated with Particulate Air Pollution, Public Health England, 2014

<sup>8</sup> Public Health Outcomes Framework: Indicator 3.01 – Fraction of all-cause adult mortality attributable to anthropogenic particulate air pollution (measured as fine particulate matter, PM<sub>2.5</sub>) (Public Health England).

- 4.7. The indicator shows that some local authority areas have slightly higher mortality rates due to air pollution than others, which is indicative of the differences in pollution sources and proximity to where people live: for example the Wakefield district has a greater proportion of heavy vehicles (which emit more particulates) on the strategic motorway network than other areas.
- 4.8. In 2010 COMEAP<sup>9</sup> produced a detailed report on the mortality effects on the long-term exposure to air pollution which produced some significant headlines, including that, in 2008, particulate matter had an effect on mortality in the UK equivalent to 29,000 deaths, with an associated total loss of life of 340,000 life-years.
- 4.9. The Department for the Environment and Rural Affairs (DEFRA), the Government department with responsibility for air quality, also report<sup>10</sup> that air pollution reduces life expectancy of every person in the UK by an average of six months, with an estimated annual cost to society of up to £16 billion per year.
- 4.10. Premature death is the ultimate health impact associated with air pollution, but poor air quality particularly affects people with pre-existing respiratory and cardiac problems. It can be seen from Table 2 that the number hospital admissions for asthma, coronary obstructive pulmonary disease (COPD), and heart conditions (in this instance myocardial infarctions), in West Yorkshire are considerably higher than those for England as a whole. If the incidence rates for England were to apply in West Yorkshire there would be 678 fewer asthma admissions, 1,245 fewer for COPD and 463 fewer heart attacks. These figures give an indication of the levels of ill health and the size of the 'high risk' population that will benefit most from improvements in air quality in the region.

**Table 2: West Yorkshire hospital admissions for Asthma, COPD and MI 2012/13**

Cause of Admission to Hospital 2012/13	Admissions per 1000 population		Additional admissions in West Yorkshire compared to England
	West Yorkshire	England	
<b>Asthma</b>	1.39	1.09	678
<b>COPD</b>	2.63	2.07	1,245
<b>Myocardial Infarction</b>	1.39	1.18	463

<sup>9</sup> The Mortality Effects of Long-Term Exposure to Particulate Air Pollution in the United Kingdom, COMEAP (2010)

<sup>10</sup> Protecting and Enhancing our Urban and Natural Environment to Improve Public Health and Wellbeing, DEFRA, (accessed May 2015).

4.11. In addition to the more predictable health impacts from exposure to air pollution such as those linked to respiratory and cardiac function, studies also suggest associations with other adverse health outcomes, including strokes<sup>11</sup>, which increases the risk of vascular dementia, low birth-weight babies<sup>12</sup> and cognitive development in schoolchildren<sup>13</sup>.

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<sup>11</sup> Short term exposure to air pollution and stroke: systematic review and meta-analysis, BMJ March 2015; 350:h1295

<sup>12</sup> Maternal Exposure to Particulate Air Pollution and Term Birth Weight: A Multi-Country Evaluation of Effect and Heterogeneity, Environmental Health Perspectives, (March 2013)

<sup>13</sup> Association between Traffic-Related Air Pollution in Schools and Cognitive Development in Primary School Children: A Prospective Cohort Study, PLOS Medicine (March 2015)

## 5. Theme 1 – Evidence for Change: *Legal Requirements*

5.1. Although improving public health is the main driver for the WYLES, there is also a legal imperative to improve air quality. Air Quality Directive 2008/50/EC<sup>14</sup> sets out the obligations for Member States in terms of assessing ambient air quality and ensuring Limit Values (LV) for certain pollutants are not exceeded. The requirements of the Directive have been transposed into domestic law through the Environment Act 1995 and subordinate regulation<sup>15,16</sup>.

5.2. The UK Government is responsible for assessing ambient air quality and for meeting the Limit Values and targets set out in the Air Quality Directive. In addition, local authorities are required to carry out a Local Air Quality Management (LAQM) function to review and assess air quality within local authority administrative boundaries. The LAQM function requires local authorities to determine whether national Air Quality Objectives (AQO) are being achieved; declare Air Quality Management Areas (AQMA) where AQOs are being exceeded, and to work towards achieving compliance with the AQOs by implementing and Air Quality Action Plans (AQAP). The Air Quality Objectives which local authorities are required to work towards are very similar as the Limit Values which the UK Government is required to achieve. Appendix 1 shows a table of the National Air Quality Objectives Levels and EU Limit Values for all pollutants. Table 3 shows the levels for the two most relevant pollutants: nitrogen dioxide and particulate matter.

**Table 3: Summary of Air Quality Objectives, Limit Values and Targets**

Pollutant	National Air Quality Objectives	Date to be achieved / retained	EU Limit Value	Date to be achieved / retained
<b>NO<sub>2</sub> (annual mean)</b>	40µgm <sup>-3</sup>	31/12/2005	40µgm <sup>-3</sup>	1/1/2010
<b>PM<sub>10</sub> (annual mean)</b>	40µgm <sup>-3</sup>	31/12/2004	40µgm <sup>-3</sup>	1/1/2005
<b>PM<sub>2.5</sub> (annual mean)</b>	N/A	<b>Stage 1:</b>	25µgm <sup>-3</sup>	1/1/2015
		<b>Stage 2:</b>	20µgm <sup>-3</sup>	1/1/2020

5.3. It is important to note that the above limit values and objective levels do not mean that levels below these values do not affect human health. For example, the World Health Organisation (WHO) clearly state<sup>17</sup> that there is no “safe” level of air pollution and therefore policy makers determine air quality limit values on the basis of the acceptability of risk, which may differ

<sup>14</sup> DIRECTIVE 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe, 21 May 2008

<sup>15</sup> Air Quality Standards Regulations 2010

<sup>16</sup> Air Quality (England) Regulations 2000

<sup>17</sup> Air Quality Guidelines – Global Update 2005 (World Health Organisation)

between different societies. The National Objective Levels and European Limit Values for particulate matter in Table 3 are above those recommended by the World Health Organisation; who suggest guideline values of  $20\mu\text{gm}^{-3}$  and  $10\mu\text{gm}^{-3}$  for  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$  respectively. Even still, a review<sup>18</sup> of the evidence on which the air quality guidelines were based have shown that exposure to levels of particulate air pollution below  $10\mu\text{gm}^{-3}$  can have shown adverse health effects and demonstrate that there is no safe threshold of exposure.

5.4. The National Objective Levels and EU Limit Values are therefore set in a policy and legal context, rather than a pure health-based context, in order to achieve a staged reduction in the level of particulate air pollution. Member States are required to achieve a reduction in  $\text{PM}_{2.5}$  exposure relevant to a 2010 baseline Average Exposure Indicator (AEI). The 2010 AEI baseline was calculated to be  $13\mu\text{gm}^{-3}$ , and the UK is required to achieve a 15% reduction by 2015, with a further reduction by 2020. These targets, even though they are above the WHO Guideline values, are considered to be challenging and policy makers will be required to make difficult decisions in order to achieve these targets within the above timeframe.

5.5. The latest DEFRA reports<sup>19,20</sup> indicate that the West Yorkshire Urban Area (one of 43 zones in the UK used for EU reporting on air quality) is meeting the targets for  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$ , although recognises that reducing particulate exposure continues to be a challenge. However, the annual mean limit value for nitrogen dioxide continues to exceed the EU Limit Values. The latest DEFRA predictions indicate that parts of the region have a maximum annual mean level of  $73\mu\text{gm}^{-3}$  in 2015, falling to  $53\mu\text{gm}^{-3}$  by 2020. Only the Greater London zone is predicted to have higher concentrations of nitrogen dioxide in the UK and the West Yorkshire zone is only one of three of the 43 zones in the UK where the Limit Value of  $40\mu\text{gm}^{-3}$  is not anticipated to be met until after 2030 (more than 20 years after the original date for compliance).

5.6. The European Commission has commenced infraction proceedings against the UK Government for failing to meet the Limit Value for nitrogen dioxide and has indicated that it would like [the UK Government] “to achieve full compliance with existing air quality standards by 2020 at the latest”. More recently, in a case brought by Client Earth<sup>21</sup>, the Supreme Court ruled that the UK Government should submit new Air Quality Plans to the European Commission by the 31<sup>st</sup> December 2015 on how it intends to achieve compliance with the limit value for nitrogen dioxide in the shortest possible time. The implication being that continued failure to meet the limit value

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<sup>18</sup> REVIHAAP Project: Technical Report, World Health Organisation (2013)

<sup>19</sup> Updated projections for Nitrogen Dioxide (NO<sub>2</sub>) compliance, DEFRA, July 2014

<sup>20</sup> Air Pollution in the UK, DEFRA, September 2014

<sup>21</sup> R (on the application of ClientEarth) (Appellant) v Secretary of State for the Environment, Food and Rural Affairs (Respondent) [2015] UKSC 28, 29 April 2015

beyond 2020, would result in further legal action and possible infraction fines against the UK Government.

- 5.7. Meeting air quality obligations is not the role for Government alone. Achieving air quality improvements will require input from a range of stakeholders including: transport planning, land-use planning, economic development, public health as well engagement and support from private and other public sector organisations.
- 5.8. DEFRA has written to all local authorities seeking their co-operation in achieving compliance with the air quality limit values, adding: ***“we feel we ought to remind you of the discretionary powers in Part 2 of the Localism Act under which the Government could require responsible authorities to pay all or part of an infraction fine”***. Given that the West Yorkshire zone is not predicted to achieve compliance with the limit value for nitrogen dioxide until after 2030, there is an urgent need to ensure that responsible local authorities are doing all that they can to achieve compliance with the limit value by 2020 as any further delay in achieving the air quality limits could lead to EU fines being passed to local authorities.
- 5.9. Any EU fine may be a lump sum amount and further on-going penalty for continued non-compliance. A complex methodology applies to determining the level of fine and is affected by the relevant Member States' GDP, the seriousness of the breach and the length of time the breach has been ongoing. The UK Government has, to date, never been fined under infraction proceedings and so there is no UK precedent, although examples cited in Government guidance<sup>22</sup> includes a French fishing case in which a fine of €20m lump sum and a further fine of €58m every six months was imposed until compliance was achieved.

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<sup>22</sup> Policy Statement for Part 2 of the Localism Act 2011, Department for Communities and Local Government (2012)



## 6. Theme 1 – Evidence for Change: *Where is Air Quality a Problem?*

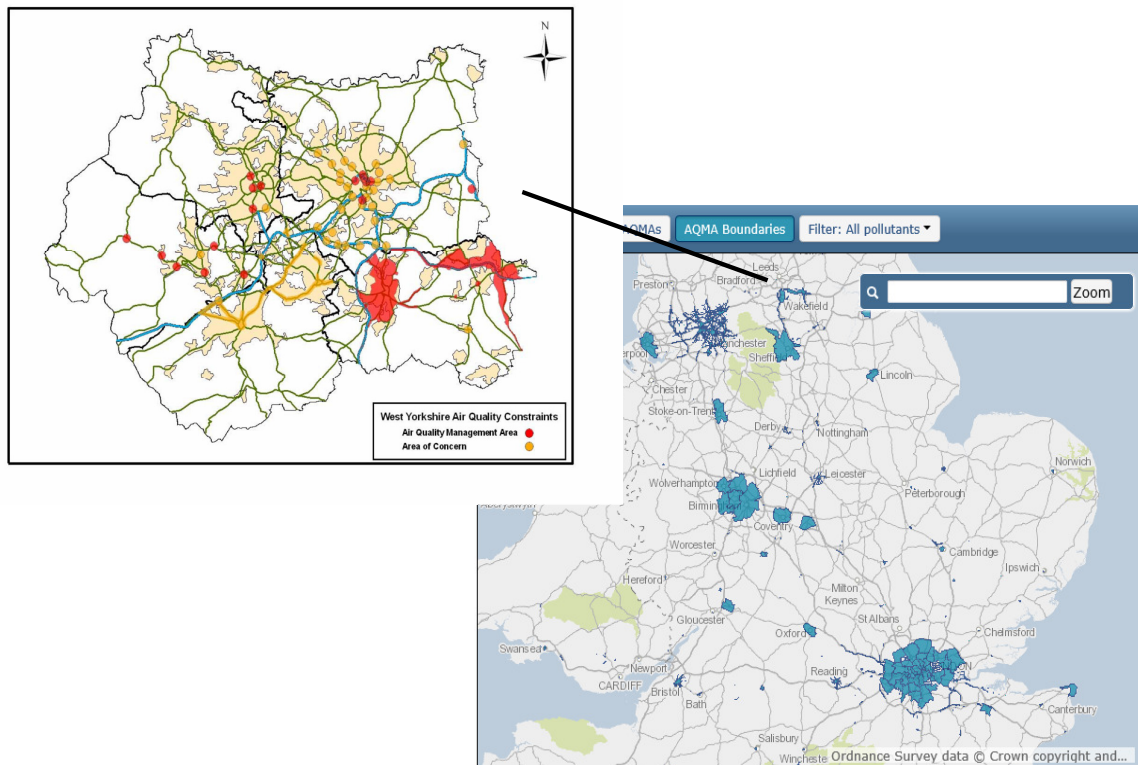
6.1. There is no single defining map which clearly shows air quality in the West Yorkshire region, however a number of sources can be used to better understand where air quality is of greatest concern.

### Local Air Quality Management Information

6.2. As outlined above, local authorities have responsibility to review and assess air quality in their areas. A combination of measuring the concentration of pollutants at locations which are of concern and computer modelling software using data, for example traffic data, is used to determine air pollution levels. Whereas the reports and modelled data provided by DEFRA at a national level are at a relatively large scale (1km<sup>2</sup>), local air quality monitoring and modelling can provide information at a local level and identify “hot-spot” locations.

6.3. When local authorities identify locations where air pollution levels exceed the National Air Quality Objectives (Appendix 1 and Table 3 above) they must declare an Air Quality Management Area (AQMA). Twenty-nine AQMAs have been declared in the West Yorkshire area declared, 28 because of NO<sub>2</sub> concentrations and one because of particulate (PM<sub>10</sub>) concentrations. Figure 4 below is an extract from DEFRA's interactive map of AQMAs declared in England, together with a map of the AQMAs and areas of concern within West Yorkshire.

**Figure 4: Air Quality Management Areas Declared by Local Authorities**

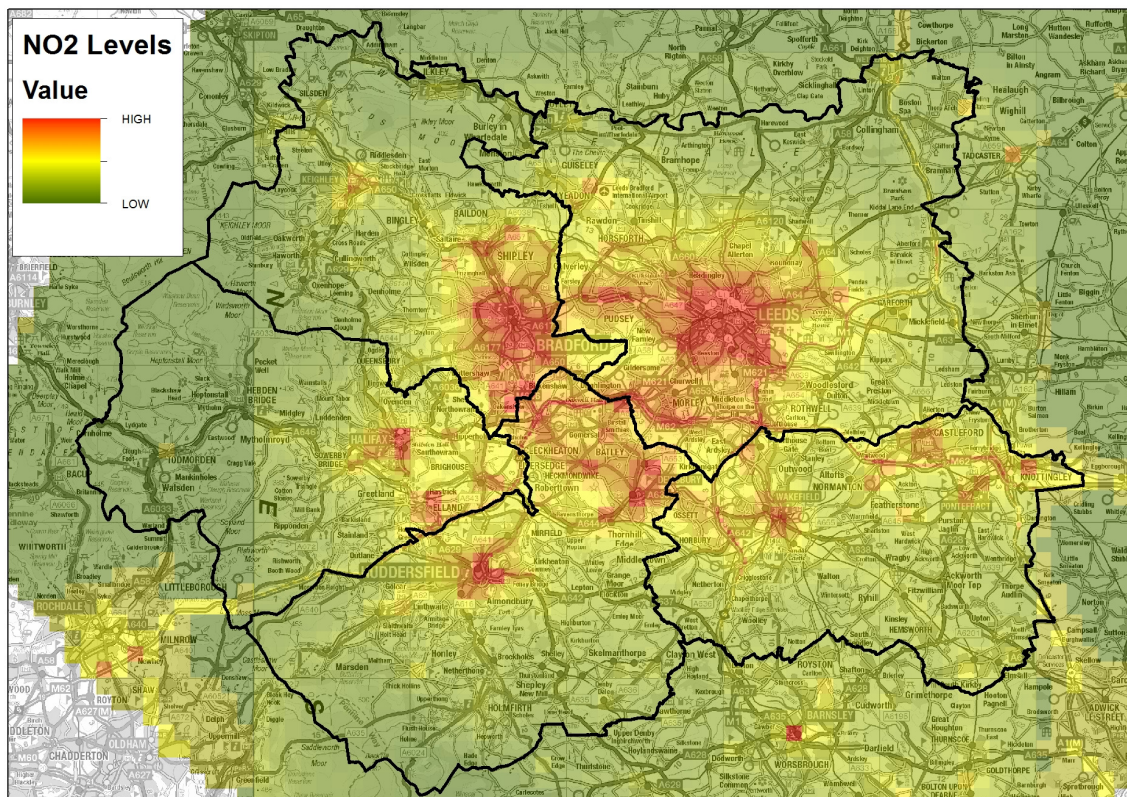


- 6.4. The way in which individual local authorities declare AQMAs does differ, for example some authorities declare only the specific area where exposure exceeds Air Quality Objectives, whereas others, such as some AQMAs declared by Wakefield Council, cover not only the area of exposure, but also the surrounding area and road network which contributes to the Air Quality Objective being exceeded at a location. This difference in approach, when considered in a regional context, can give a skewed impression of where air quality problems are most significant and do not necessarily assist decision-making at a West Yorkshire level. Further work is proposed to provide a consistent approach across the region in order to aid decision-making.
- 6.5. What the local air quality monitoring and modelling work does show is that there are a number of localised hot-spots within urban areas and along the arterial road network and at road junctions where air pollution is of greatest concern.

### Low Emission Zone Studies

- 6.6. In 2014 Leeds and Bradford Council's carried out Low Emission Zone feasibility studies (see Section 7), which included modelling emissions from transport and other sources. This has subsequently been extended to provide information across the West Yorkshire region. Figure 5 shows a map of modelled concentrations of NO<sub>2</sub> across the region.

**Figure 5: Modelled Nitrogen Dioxide Concentrations in West Yorkshire (2015)**



6.7. The above maps show that for most of the geographical area of West Yorkshire air quality is relatively good, however, it is also clear that air quality is a problem in some towns and cities and, with the exception of a small number of industrial operations, is largely due to emissions from traffic within urban areas along major roads.

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## 7. Theme 1 – Evidence for Change: *Low Emission Zone Studies*

7.1. Low Emission Zones (LEZ) are a method of traffic management which restrict access to a controlled Zone, so that only the cleaner vehicles can enter the Zone, or more polluting vehicles are subject to a financial penalty. Traffic management in and around towns and city centres is not unusual and there are many examples of bus lanes, bus gates, pedestrianised zones and access restrictions being placed on public highways using Traffic Regulation Orders (TRO). Low Emissions Zones are common across Europe<sup>23</sup> and can be found in cities such as London<sup>24</sup>, Oxford<sup>25</sup> and Norwich. London is also currently consulting on plans to introduce an Ultra-Low Emission Zone<sup>26</sup> to limit access to the centre of London to only the cleanest of vehicles from 2018 onwards.

7.2. LEZ's can apply to different types of vehicles and emission standards, but deciding which restrictions should apply in order to deliver the greatest air quality benefits is done through modelling of various scenarios. DEFRA<sup>27</sup> has developed a Cost v Benefit assessment tool: Marginal Abatement Cost Curve (MACC) to test out relative scenarios that could be implemented through a LEZ approach in order to accelerate compliance with meeting the NO<sub>2</sub> limit values. DEFRA have tested many different scenarios, but found that targeting a LEZ at the most polluting heavy duty vehicles (lorries and buses), would deliver the most significant reduction in NO<sub>2</sub> emissions relative to the cost to implement the scheme. The DEFRA study recognised that testing various options that would deliver air quality benefits would be only the first step and further feasibility work would be required at a local level to determine whether a scheme would be practical and acceptable to implement.

7.3. In 2014, LEZ feasibility studies were carried out by Bradford and Leeds Councils, involving joint working with public health professionals. The Studies involved the collection detailed traffic data for the Leeds and Bradford areas with subsequent modelling of various scenarios to determine the impact on vehicle emissions and air quality. All the scenarios which were tested can be found in Appendix 2, however, four scenarios were identified that would lead to the most cost effective air quality improvements, these are:

- Reducing emissions from buses in urban areas.
- Reducing emissions from Heavy and Light Goods Vehicles.
- Reducing emissions from diesel cars (including taxis / private hire) in urban areas.
- Reducing all vehicle journeys in urban areas by 10%.

7.4. The air quality improvements associated with each scenario was subsequently used to inform a Health Impact Assessment (HIA). The HIA was able to quantify the specific health benefits that each scenario could bring as a result of lowering

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<sup>23</sup> [www.lowemissionzones.eu](http://www.lowemissionzones.eu)

<sup>24</sup> <https://www.tfl.gov.uk/modes/driving/low-emission-zone>

<sup>25</sup> <http://www.oxford.gov.uk/PageRender/decEH/OxfordLowEmissionZone.htm>

<sup>26</sup> <https://consultations.tfl.gov.uk/environment/ultra-low-emission-zone>

<sup>27</sup> Air Quality Plans for the achievement of EU air quality limit values for nitrogen dioxide (NO<sub>2</sub>) in the UK, draft Overview Document, Defra, June 2011

PM<sub>2.5</sub> and NO<sub>2</sub> emissions for future years compared with the 2012 baseline. The HIA findings for each scenario can be seen in Table 4 below. It should be noted that not all health benefits associated with air quality improvements are included in current HIA methodologies, for example increased uptake of active travel and health impacts with weaker associations to air quality, are not taken into account, and therefore these results are likely to under-estimate the actual health benefits.

**Table 4: Estimated Health Benefits from Low Emission Zone Scenarios<sup>28</sup>**

	<b>LEZ Modelled Scenario</b>			
	All pre-euro 4 HGVs and buses upgraded to euro6 by 2016	All pre-euro 5 buses upgraded to euro 6 by 2021	Reduction in number of diesel cars from 50% to 20% (as in the year 2000)	10% reduction in number of car journeys by 2021
<b>Approximate health benefit across Leeds and Bradford population</b>				
Deaths (PM <sub>2.5</sub> )	-15	-18	-18	-19
Cardiopulmonary deaths (PM <sub>2.5</sub> )	-8	-11	-10	-10
Coronary events (PM <sub>2.5</sub> ) (Bradford only)	-24	-45	-45	-45
Low birth weight babies <2500g (PM <sub>2.5</sub> )	-12	-14	-14	-15
Pre-term births (PM <sub>2.5</sub> )	-3	-4	-4	-4
Low birth weight babies <2500g (NO <sub>2</sub> )	-19	-38	-45	-37
Childhood asthma development <18yrs (NO <sub>2</sub> )*	-254	-506	-596	-494
Annual years of life gained for newborns (all births combined)	+267	+322	+321	+346
* Childhood asthma development is a 'one-off' health impact and is not additive on an annual basis				

7.5. The above scenarios show direct health benefits to individuals, but, preventing ill-health also provides an economic benefit by saving on healthcare costs to the NHS and Social Services. The University of York, Centre for Health Economics (funded by the Collaboration for Leadership in Applied Health Research and Care - Yorkshire and Humber) used health economics methodology to quantify the economic benefit the above scenarios could potentially bring. The methodology uses an approach commonly used by the NHS to determine the relative cost effectiveness of different health interventions. The technique uses the concept of

<sup>28</sup> Cooper D et al, West Yorks LEZ Feasibility Study, HIA Methodology & Preliminary Findings, April 2014

Quality Adjusted Life Years (QALY) and assigns a notional cost (or saving) per QALY of £20,000 to £30,000. Table 5 shows the key findings of the potential health economic benefits from the various Low Emission Zone scenarios.

**Table 5: Health Economic Benefits from Low Emission Zone Scenarios<sup>29</sup>**

	<b>LEZ Modelled Scenario</b>			
	All pre-euro 4 HGVs and buses upgraded to euro6 by 2016	All pre-euro 5 buses upgraded to euro 6 by 2021	Reduction in number of diesel cars from 50% to 20% (as in the year 2000)	10% reduction in number of car journeys by 2021
	<b>Approximate health benefit across Leeds and Bradford population</b>			
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Low birth weight babies <2500g (PM <sub>2.5</sub> )	-12	-14	-14	-15
Pre-term births (PM <sub>2.5</sub> )	-3	-4	-4	-4
Low birth weight babies <2500g (NO <sub>2</sub> )	-19	-38	-45	-37
Childhood asthma development <18yrs (NO <sub>2</sub> )*	-254	-506	-596	-494
Annual years of life gained for newborns (all births combined)	+267	+322	+321	+346
<b>Annual Health Cost Saving</b>	<b>£3,880,242</b>	<b>£5,514,536</b>	<b>£5,530,811</b>	<b>£5,682,536</b>
<b>One-off health Cost Saving – Cases of Childhood Asthma*</b>	<b>£4,322,064</b>	<b>£8,610,096</b>	<b>£10,141,536</b>	<b>£8,405,904</b>
* Childhood asthma development is a 'one-off' health impact and is not additive on an annual basis				

7.6. This data shows the potential economic benefits to health and social care provision by taking action to improve air quality. It should be noted that the figures only represent data provided as part of the Leeds and Bradford Low Emission Feasibility Studies and therefore the savings would be much higher if implemented across West Yorkshire.

<sup>29</sup> Costs and Benefits Associated with Emissions: Case Study exploring the Health Impacts of West Yorkshire Low Emission Zone. Loma et al, University of York, Centre for Health Economics (2014)

- 7.7. Studies in California, where there have been aggressive emission reduction policies on place for the last 20 years support these findings<sup>30</sup>. Where they have reduced air pollution they have seen improvements in health and lung function and lung growth in children.
- 7.8. Tables 4 and 5 above show that different scenarios can be tested to better understand the relative impact that each has in order to help inform decision-making. However, implementation of any particular scenario has to be seen in a wider context of the economic, social and environmental considerations as well as the deliverability of any preferred option.
- 7.9. The evidence from the LEZ studies suggests that implementing a LEZ traffic management scheme would appear to be an effective mechanism for targeting the most polluting vehicles and improving air quality in urban areas. However, before deciding whether to implement a LEZ and if so, what type of vehicles should it apply to, what emission standard should apply and when should it be implemented (to allow sufficient lead-in time). In addition, concerns regarding potential economic impacts, practical implementation considerations, and possible unforeseen consequences, such as increased fares on buses and potential displacement of more polluting vehicles would all need to be considered before implementing a LEZ.
- 7.10. Both Leeds and Bradford Councils have considered the findings of the Low Emission Feasibility study and have concluded that further detailed work is required to understand the impacts, benefits and practical issues around the implementation of Low Emission Zones. Before any final decision is made on using the LEZ approach air quality improvements are to be pursued through a Low Emission Strategy approach and increased partnership working with key stakeholders. This WYLES takes forward the recommendations from Leeds and Bradford LEZ feasibility studies at a regional level.

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<sup>30</sup> <http://www.nejm.org/doi/full/10.1056/NEJMoa1414123>

## **8. Theme 2 – Creating a Low Emission Future: *Influencing Policy, Strategies and Plans***

- 8.1. The WYLES should be used to help inform and influence other relevant strategies and policies, both at a regional and local level. Figure 7 illustrates how the WYLES cuts across and can be used to inform a range of strategies, policies and plans that different public bodies are engaged in delivering. Some of the key policy areas which the Strategy can inform and influence are discussed below, but these are by no means exhaustive.
- 8.2. Transport is fundamentally linked to economic growth through the movement of people and goods and the delivery of services. Economic growth and employment delivers significant benefits, not least the benefits to health, and the aim of the WYLES is to support sustainable economic growth by providing the regional context for what is needed to improve air quality moving forward. Decision-makers at all levels should use the WYLES to influence their own strategies, policies and plans, and West Yorkshire Combined Authority's Strategic Economic Plan and Single Transport Plan, provides a real opportunity to translate the objectives of the WYLES into positive action.
- 8.3. Local authorities are required to produce Local Plans and policies which determine where development, such as housing and employment, is required. The underlying theme of development is that it should be sustainable, having regard to the relevant economic, social and environmental factors. This Strategy should be used to inform local authorities when making local plans and taking planning decisions.
- 8.4. The WYLES focuses on air quality, with a primary focus on transport emissions, because this has the most direct and significant impact on health. The number of deaths attributable to poor air quality is one of a number of relevant public health indicators that Directors of Public Health and other health professionals are focussed on improving. The WYLES should therefore be used to help inform health professionals working across the region in what they can do to contribute to the objectives contained within the Strategy and ultimately improve health outcomes.
- 8.5. The aims and objectives within this Strategy look to improve air quality, but emissions from transport also make a significant contribution to carbon dioxide emissions and climate change. Policy makers, businesses and individuals are aware of the need to reduce their carbon footprint and this strategy can be used to deliver co-benefits of improving air quality and helping to tackle climate change. Policy decisions should be taken which maximise these co-benefits, but where



there is a potential for policy conflict, the option which has the greatest benefit, or least impact, on public health should be chosen.

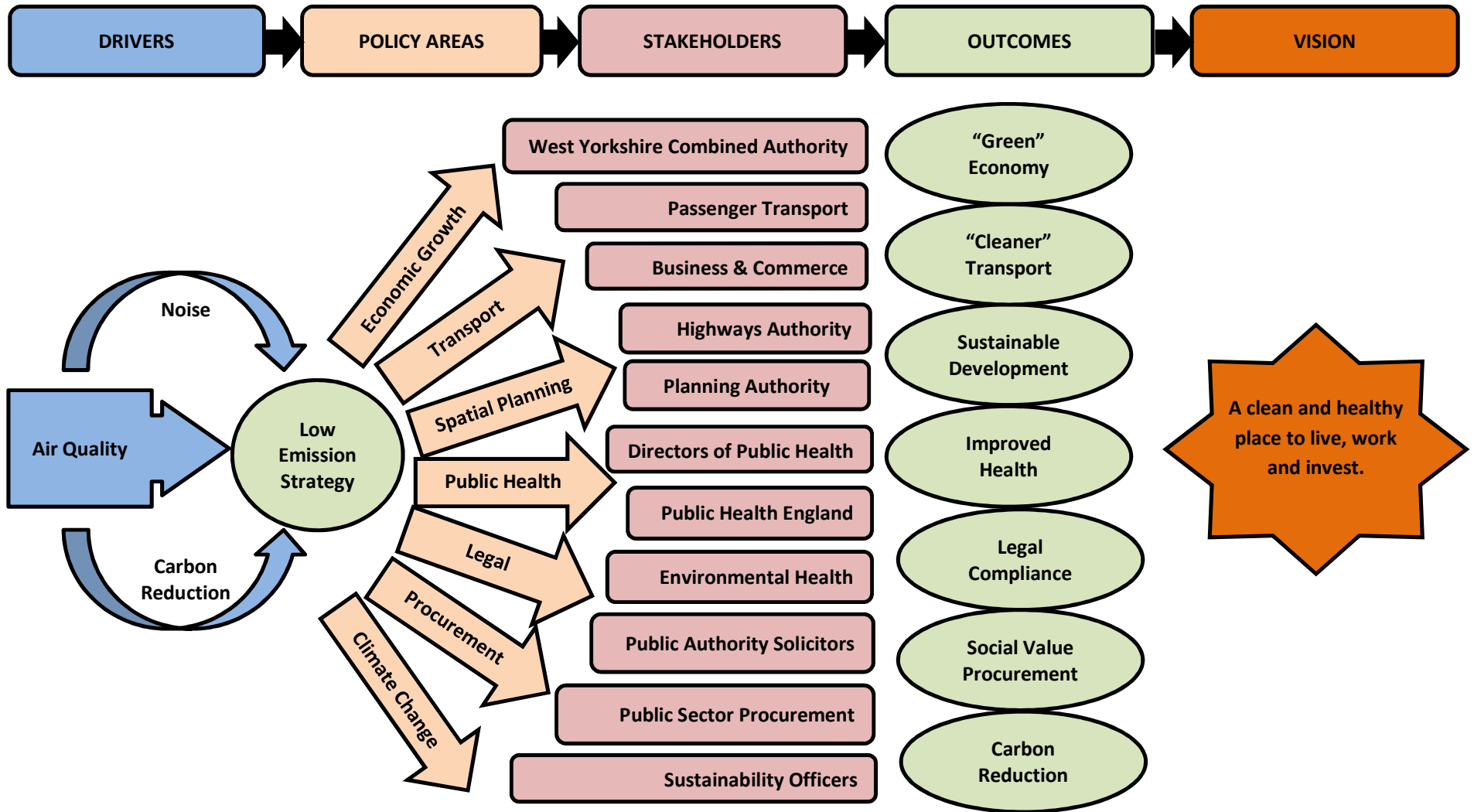
8.6. In the way that the WYLES can deliver improvements to the climate change agenda, the same can also be said of the potential co-benefits for reducing environmental noise, for which there is a growing evidence-base as having an adverse impact on health<sup>31</sup>. DEFRA have produced maps<sup>32</sup> of the roads which cause the highest noise exposure levels: unsurprisingly there is a strong correlation between these roads and the traffic on roads which produce emissions which also impact on air quality. Highways Authorities are required to take action in areas where people are exposed to high noise levels from road traffic and although not all actions to improve air quality will necessarily result in improvements in noise it is very unlikely that there would be any negative impact and more likely that there would be positive beneficial impact of reducing noise.

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<sup>31</sup> Public Health Outcomes Framework – Indicator 1.14: Noise Complaints and Exposure to Noise, Public Health England

<sup>32</sup> Noise Maps for England, DEFRA: <http://services.defra.gov.uk/wps/portal/noise/>

Figure 6: West Yorkshire Low Emission Strategy and links to other key Policy Areas



## 9. Theme 2 – Creating a Low Emission Future: *Place-Shaping*

### Planning Policy

9.1. Sustainability is at the heart of national planning policy, whereby the environmental, social and economic impact of development must be taken into account when making Local Plans and when taking planning decisions. The National Planning Policy Framework (NPPF)<sup>33</sup> recognises the importance of air quality and sustainable transport when deciding where new development is needed and when determining individual planning applications.

9.2. The NPPF states that planning policies should:

*“Sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with local air quality action plans”.*

9.3. National Planning Practice Guidance (NPPG)<sup>34</sup> provides further detailed guidance and states Local Plans should:

- Consider the potential cumulative impact on air quality from developments.
- Consider the impact of point-sources of air pollution, for example industrial emissions.
- Where air quality may be unacceptable, identifying measures for offsetting the impact including supporting measures in an air quality action plan or **low emissions strategy**.

9.4. West Yorkshire local authorities are at various stages in their production of their Local Plans, with some authorities having already adopted their Plans and others in the development and consultation phases. Planning authorities are guided by NPPF in the preparation of their Local Plans and this Strategy can help shape their development and implementation to ensure developments are sustainable moving forward.

### Development Management

9.5. As well as considering air quality impact when making Local Plans, it is also a material consideration when determining individual planning applications. The National Planning Guidance further states:

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<sup>33</sup> <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

<sup>34</sup> <http://planningguidance.planningportal.gov.uk/>

- If a proposed development will lead to an unacceptable risk of air pollution or prevent sustained compliance with EU Limit values or national objectives then Planning
- Authorities should consider how the development can be made acceptable (for example through mitigation) or whether permission should be refused.

9.6. Examples of mitigation are suggested in the Guidance, including:

- Infrastructure to promote modes of transport with low impact on air quality;
- Contributing funding to measures, including those identified in air quality action plans and **low emission strategies**, designed to offset the impact on air quality.

9.7. Given that the West Yorkshire region is failing to meet the EU obligations on air quality it is clear that planning authorities have a significant role to play in ensuring future development will not make air quality worse and will also make a positive contribution to meeting the air quality objectives moving forward.

9.8. One key strand of the WYLES has been the development of an Air Quality & Planning Technical Guide to assist developers, consultants, air quality officers and planning authorities to ensure that the principles of sustainable development, with particular reference to air quality, are satisfied when making planning decisions.



9.9. The Guide has the following key elements:

- It takes account of the cumulative impact from developments.
- It provides guidance on appropriate mitigation having regard to the scale and kind of development.
- For major developments it provides a systematic way of assessing the health damage costs arising from increased air pollution and uses this to determine the level of mitigation required to make the development sustainable in air quality terms.
- It focuses effort on practical measures to protect and improve air quality

9.10. The approach taken provides clarity and certainty to developers and planners so that it is easy to understand how air quality will be considered during the planning application process. The Guide also encourages designers to

consider appropriate mitigation at the design stage so that mitigation becomes an integral part of the development and not an after-thought.

9.11. Making appropriate land-use decisions includes:

- Separating sources of air pollution away from those who could be affected by air pollution.
- Making active travel choices the easiest option wherever possible.
- Connecting the places where people live, work, shop and relax by sustainable transport modes.
- Building the necessary infrastructure to enable ultra-low emission vehicles to become a normal part of everyday life.

9.12. The Technical Guide uses evidence from HM Treasury to quantify the damage cost attributable to air quality impact from increases in air pollution (NO<sub>2</sub> and PM<sub>2.5</sub>) and provides a notional cost to this impact in monetary terms. This figure is then used to determine the scale and kind of mitigation that would be required to mitigate or off-set the increase in air pollution. Figure 7 below provides an example of the methodology used.

**Figure 7: Air Quality Mitigation - Example**

*Proposal: 150 house residential development in an urban location and within an Air Quality Management Area.*

*Development Classification: "Major"*

*Increase in Traffic = 288 vehicle trips (6%)*

*Increase in NO<sub>x</sub> = 0.27 tonnes per year*

*Increase in PM<sub>10</sub> = 0.032 tonnes per year*

*Equivalent Health Damage Cost (5 years) = £12,941*

*Mitigation to offset impact:*

- *EV Charging Points in each property.*
- *S106 Contribution to cycle infrastructure.*
- *S106 Contribution to City Car Club.*
- *Travel Plan for Site.*
- *Public Transport infrastructure / services*

9.13. Using the Guide, only developments categorised as “major” or where air quality is already known to be poor would require a full air quality impact assessment. Smaller developments, which may introduce only moderate increases in traffic would not require a full assessment, but, in recognition of the cumulative air quality impact from such development, standard mitigation would be required including features such as EV Charge Points, Cycling provision and Travel Planning schemes. The type of mitigation required will vary from development to development in discussion with the Local Planning Authority, Environmental Health, Highways Authority and Transport Authority. Two mitigation requirements will usually be required are: the provision of electric vehicle (EV) charging points (See Table 6 below) and the control of particulate (dust) emissions during demolition and construction.

**Table 6 – EV Charge Point Provision for New Developments**

Development Type	Electric Vehicle Charging
<b>Residential</b>	One EV charge point per unit (dwelling with dedicated parking) or 1 EV charge point per 10 spaces (unallocated parking)
<b>Commercial / Retail</b>	EV charging for 10% of car parking spaces.

9.14. The West Yorkshire Planning Authorities, supported by specialist advice from air quality officers, travel planning officer and highway officer, will use the Air Quality & Planning Technical Guide to mitigate against adverse impacts on air quality from new developments in order to ensure sustainable development across the region. The Air Quality & Planning Technical Guide is supporting document to the WYLES.

### Single Transport Plan

9.15. The Single Transport Plan 2015 to 2035<sup>35</sup> is being developed by West Yorkshire Combined Authority as a long-term plan for the future transport provision in West Yorkshire. Creating cleaner, healthier places to work, visit and live in is at the heart of the Plan, which has five core principles:

- **One system, HS2/HS3 ready:** a core ambition being a ‘metro-style’ public transport network that integrates all modes, into one-system that is easily understood, easy to access by a range of options and offers quick, convenient connections within the city region. The public transport

<sup>35</sup> Single Transport Plan (Draft), West Yorkshire Combined Authority (January 2015): <http://www.westyorks-ca.gov.uk/transport/>

network would reduce pressure on roads and facilitate the efficient movement of freight than cannot be transported by rail, canal or pipeline.

- **Place making:** interventions to make our cities, towns and neighbourhoods more attractive places to invest, live and work - *delivering improvements to air quality and health through Low Emission Vehicles for the movement of people and goods and encouraging people to switch to cycling and walking for shorter journeys.*
- **Smart futures:** using technology for enhanced customer relationships and retail opportunities and for efficient management of the transport network(s), as well providing open data as part of a wider city region initiative.
- **Effective use of resources:** pooling resources between services and sectors to address financial constraints and deliver shared objectives - particularly in respect of rural communities with a lower level of public transport provision , and for young people to access education, employment and training.
- **Effective asset management:** to adequately maintain all of our transport system: roads, bridges, street lights, public transport stations and shelters, footways and cycle routes, to gain maximum value for money and meet the needs of users and Plan objectives.

A further cross-cutting theme of **Carbon Reduction** is also included within the STP.

- 9.16. The Single Transport Plan clearly states its ambition to reduce transport emissions and reduce air quality and this Strategy is considered to be a key supporting document that will be used to help deliver this ambition.

## 10. Theme 2 – Creating a Low Emission Future: *Travel Choice and Active Travel*

### Active Travel

10.1. Active travel is an approach to travel and transport that focuses on physical activity (walking and cycling) as opposed to motorised and carbon-dependent means. Active travel is cheap, inclusive and accessible, but is also the ultimate “low emission vehicle”. Choosing to walk or cycle over motorised transport will not only reduce air pollutants, congestion and climate change impacts (20% of car-related CO<sub>2</sub> emissions are from journeys <5km), it will also:

- Improve health and well-being for the individual - Inactivity has a health effect comparable in scale to that of air quality. Eliminating inactivity in the UK would cut mortality rates by 7.5%<sup>36</sup>.
- Promote a vibrant local economy
- Benefit community cohesion

10.2. Figure 8 below shows the economic benefits each year of getting just one child to walk or cycle to school<sup>37</sup>.

**Figure 8 – Illustration of the health benefits from walking and cycling**



<sup>36</sup> [http://www.panorama.am/en/current\\_topics/2015/01/15/inactivity-deaths/](http://www.panorama.am/en/current_topics/2015/01/15/inactivity-deaths/)

<sup>37</sup> Kings Fund infographic 2014



- 10.3. The local authorities in West Yorkshire encourage the uptake of active travel through the provision of infrastructure and behaviour change programmes, this work has seen a steady increase in the number of people choosing to walk and cycle for shorter journeys in West Yorkshire.
- 10.4. Studies in other parts of the UK have indicated that reducing urban speed limits and introducing 20 mile per hour zones have potential to increase the number of people choosing to walk and cycle. The West Yorkshire local authorities are currently undertaking research to understand the benefits of varying speed limits through a combination of research and evaluated trial projects.
- 10.5. Active travel offers excellent opportunities for health improvement for the individual and will go some way to reduce the number of vehicles on the road and therefore emissions. It is also relevant that individuals undertaking active travel can reduce their own exposure to pollutants (exposure is around 5 times higher in a vehicle than on the pavement). This Strategy recognises the importance of active travel, but acknowledges that it is unlikely that enough people will switch from using motorised transport to walking and cycling to make the difference to air quality that is required to protect health and achieve air quality targets. The WYLES is supportive of any action which promotes active travel, but, in order to achieve the scale of change necessary to improve air quality, the WYLES focus will be on reducing transport emissions.

## Travel Planning

- 10.6. A Travel Plan is a long-term management strategy for integrating proposals to promote and encourage sustainable travel. Travel Plans are a tool particularly aimed at reducing the need to travel, gaining economic efficiencies, reducing the impact of car travel and encouraging greater use of public transport, cycling and walking.
- 10.7. The West Yorkshire Travel Plan Network supports over 200 major employers in the region to promote more sustainable ways of travel to work through a wide variety of free support packages and initiatives. The Network is supported by the West Yorkshire Combined Authority to provide the following:
  - **Walking** – health information (walking the way to health initiative WHI), pedometer loans and journey planners.
  - **Public transport** – information, journey planners, timetables and public transport passes (Metrocard schemes)

- **Cycling** - information about the benefits of cycling, cycle training, bike maintenance and cycling, route planners, ride for rewards scheme (awards bike miles which can be redeemed)
  - **Mopeds and motorbikes** – sustainability and CO2 information, free bike parking locations, free 1 hour bike trials and bike training information
  - **Car journeys** – information on car sharing (WYcarshare.com), eco-driving and new car sustainability information, car parking, car clubs and fleet management information from the energy savings trust.
- 10.8. Employers are also encouraged to employ smart working practices to reduce the need for journeys altogether, for example: flexible working, home working and using remote tele/video conferencing facilities.
- 10.9. The current travel-planning model focuses on reducing journeys by car, however, the approach can also be used to encourage emission reductions. The WYLES will therefore use the existing Travel Plan Network to engage with key employers, providing access to over 200,000 employees in the region to promote the uptake low emission vehicles when developing travel plans.
- 10.10. In addition to businesses, local authority education departments work with schools to develop school travel plans for children, parents and teachers. Traffic issues associated with schools is a common cause for concern and authorities already work with schools to influence school travel behaviour. As part of the WYLES we will look to take this one step further by raising awareness of air quality issues associated with school travel and engaging with parents, schoolchildren and teachers to support alternative school travel options.
- 10.11. Travel planning is also important when new housing and business developments are taking place because people are considering new ways of travel and are more likely to consider alternative travel options. Travel Planning is already a key feature of the development management process and developers are often required to produce travel plans for new developments. The Air Quality and Planning Technical Guide will add further weight to travel planning as a tool to offset and mitigate against the impact of air quality from new developments.

## 11. Theme 2 - Creating a Low Emission Future – *Leading by Example*

11.1. In order to create change it is important that key organisations, including local authorities and other public sectors organisations and socially responsible companies lead by example. Local Authorities in West Yorkshire operate over 3,000 fleet vehicles and are significant employers in the region, generating many thousands of business miles each year and are responsible for spending public money when procurement of goods and services. These represent significant opportunities for influencing change, both within local authority organisations and beyond, including employees and the many private, public and voluntary sector organisations who engage with local authorities on a daily basis.

### Local Authority Fleet

11.2. Although many factors need to be taken into account when deciding what type of vehicle is most suitable for a particular job it is a legal requirement<sup>38</sup> that public bodies must consider the energy and environmental impact that a vehicle will have during the length of its operational life, which include taking into account emissions which impact on air quality. Initial purchase costs for low emission vehicles and associated infrastructure can be expensive relative to conventional vehicles and fuels, however over the life of a vehicle, because running costs are typically much lower for low emission vehicles than conventional equivalents, the whole-life costs can be lower and therefore represent good value to the taxpayer. The Department for Transport has produced guidance<sup>39</sup> on what authorities need to do in order to comply with the Regulations and, as part the WYLES, this Guidance has been used to develop a West Yorkshire Low Emission Procurement Guide to assist fleet managers to purchase or lease vehicles having regard to the environmental impacts for the whole life of the vehicle. This Guidance is available as a supporting document to the WYLES.

11.3. West Yorkshire local authorities already run a number of electric and electric-hybrid vehicles, but will continue to review their fleets and use the West Yorkshire Low Emission Procurement Guide to determine whether more fleet vehicles should be replaced with low emission and ultra-low emission alternatives. Public sector fleet procurement is discussed in more detail under Theme 3: *Reducing Vehicle Emissions*.

### Local Authority Employees

11.4. The public sector is a major employer in the region and most of those employees will drive vehicles of their own, in their personal life, but also on business carried out on behalf of their public sector employers – the so-called “grey fleet”. The WYLES will seek to support and incentivise employees to consider ultra-low

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<sup>38</sup> The Cleaner Road Transport Vehicles Regulations 2011

<sup>39</sup> <https://www.gov.uk/government/publications/guidelines-for-the-directive-on-the-promotion-of-clean-and-energy-efficient-road-transport-vehicles-2009-33-ec>

emission and ultra-low emission vehicles in the future. Opportunities to support and incentivise the uptake of low emission vehicles could include:

- Salary Sacrifice and Car Lease schemes for LEVs and ULEVs.
- Providing ULEV pool cars so that employees become familiar with “new” technology.
- Providing electric vehicle charge-points in workplaces.

### **Local Authority Spending**

- 11.5. The purchasing power of the public sector is significant across West Yorkshire, which is an opportunity to influence the providers of goods and services to ensure the vehicles used by the providers emit the lowest possible emissions
- 11.6. Public Sector organisations must follow strict procurement rules, but included within those rules is a duty<sup>40</sup> to consider “social value” as part of the procurement process. This means that when procuring goods and services authorities must take into account social and environmental considerations and can set criteria when awarding contracts and procuring service how these may be improved. For example this could include incorporating minimum vehicle emission standards when awarding contracts.
- 11.7. It is recommended that the following standards are integrated into tendering and contract award evaluation:
  - All contracting of goods and services where vehicles will be required to access urban areas should include provision for meeting the current and previous European Emission Standard.
  - Additional weight should be given in award criteria to tenders that can demonstrate best practice in minimising vehicle emissions and the use of low and ultra-low emission vehicles.

### **Local Sourcing**

- 11.8. Sourcing goods and services from local suppliers could contribute to reducing emissions, both from the overall number of miles travelled, but also the type of vehicle typically used: for example, local suppliers would tend to use light-goods vehicles rather than heavy goods vehicles, which might be expected from a regional distributor. Local sourcing therefore offers the potential to reduce transport emissions in the supply chain. Supporting local businesses to invest in low emission vehicles and how to incorporate their environmental advantage when tendering or quoting for contracts, coupled with a procurement strategy

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<sup>40</sup> The Public Services (Social Value) Act 2012

which rewards those with good environmental credentials, would provide the opportunity to reduce overall emissions and support the local economy.

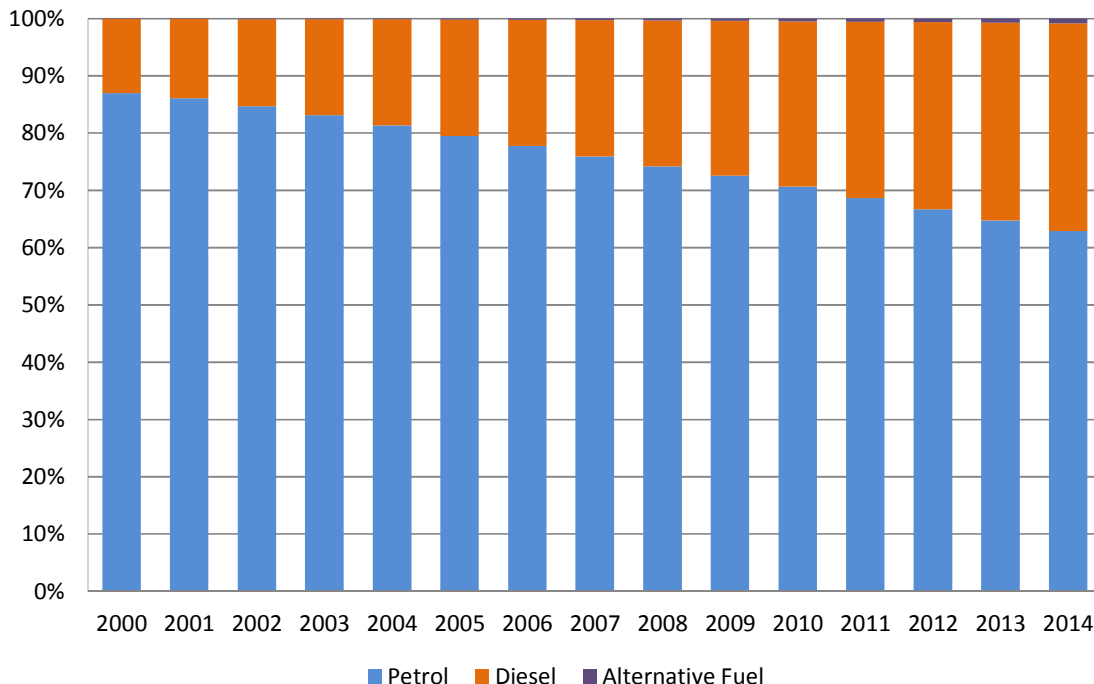
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## 12. Theme 3 – Reducing Vehicle Emissions: *Private Cars*

### What are the issues?

- 12.1. There are nearly one million cars<sup>41</sup> registered in the West Yorkshire region and cars account for 78% of the 9.8 billion miles<sup>42</sup> driven on West Yorkshire roads each year. Cars therefore contribute significantly to vehicle exhaust emissions and impact on air quality in the region.
- 12.2. One key issue has been the significant growth of diesel cars driven on our roads. As can be seen from Figure 9, diesel cars now account for more than a third of all cars on our roads, compared to a little over 1 in 10 at the start of the millennium. The growth of diesel cars is perhaps not surprising because of their relative fuel-efficiency and lower Vehicle Excise Duty, which supports vehicles with low CO<sub>2</sub> emissions: diesel cars produce less CO<sub>2</sub> per kilometre than their petrol equivalents. Unfortunately, this may have led to a public perception that diesel is more “environmentally friendly” than petrol, when, in fact, diesel cars, particularly older diesel cars, produce significantly higher emissions of NO<sub>x</sub> and PM than their petrol equivalents.

**Figure 9: Cars Licensed in Great Britain by Fuel Type 2000 - 2014**



<sup>41</sup> [Licensed vehicles by body type, by local authority, Great Britain, annually from 2010](#), VEH0105, Dft (June 2015)

<sup>42</sup> [Motor vehicle traffic \(vehicle miles\) by Local Authority in Great Britain, annual from 1993](#), TRA8901, Dft (May 2015)

12.3. Vehicle emissions are controlled under law through Euro Standards. New vehicles must comply with Euro emission standards under test conditions. Table 7 shows a simplified version of the Euro Standards for diesel and petrol cars and how the emissions standards for NOx and particulates (PM) have changed over time.

**Table 7: Euro Standards for New Petrol and Diesel Cars (NOx and PM)**

Year	Euro Std	NOx (g/km)		PM (g/km)	
		Petrol	Diesel	Petrol	Diesel
1992	Euro 1	0.97*	0.97*	n/a**	0.14
1996	Euro 2	0.5*	0.7*	n/a**	0.08
2000	Euro 3	0.15	0.50	n/a**	0.05
2005	Euro 4	0.08	0.25	n/a**	0.025
2009	Euro 5	0.060	0.180	0.005***	0.005
2014	Euro 6	0.060	0.080	0.005***	0.005

\* For Euro 1 and Euro 2 NOx emissions also included hydrocarbons (HC).  
 \*\*No specified PM limit for petrol engines as emissions are negligible.  
 \*\*\*Applies only to petrol vehicles with direct injection engines.

12.4. It can be seen from above Table that emissions from diesel cars have been significantly higher than their petrol equivalent under test conditions. Studies<sup>43</sup> have also shown that emissions can be higher in real-world driving conditions, with diesel vehicles emitting up to 22 times more particulate matter and 4 times more NOx than their petrol equivalent. The latest Euro 6 standard will result in emissions being reduced, although it is still too early to assess whether emissions under test conditions will translate to the same emissions under real-world driving conditions. It also takes time to for people to replace their vehicles and therefore, unless there is a personal incentive to change a vehicle earlier than planned, older, more polluting cars are likely to remain on the roads in West Yorkshire for some time to come.

12.5. The growth in diesel car ownership, coupled with higher NOx and PM emissions, means that privately owned cars are a significant contributor to poor air quality in the region. The number of people driving cars means that everyone has a role to play in reducing emissions and even small changes at an individual level can result in a very significant change when taken collectively.

**What can be done?**

12.6. If the West Yorkshire region is to play a part in meeting EU air quality obligations in relation to air quality then steps must be taken to reduce emissions from car

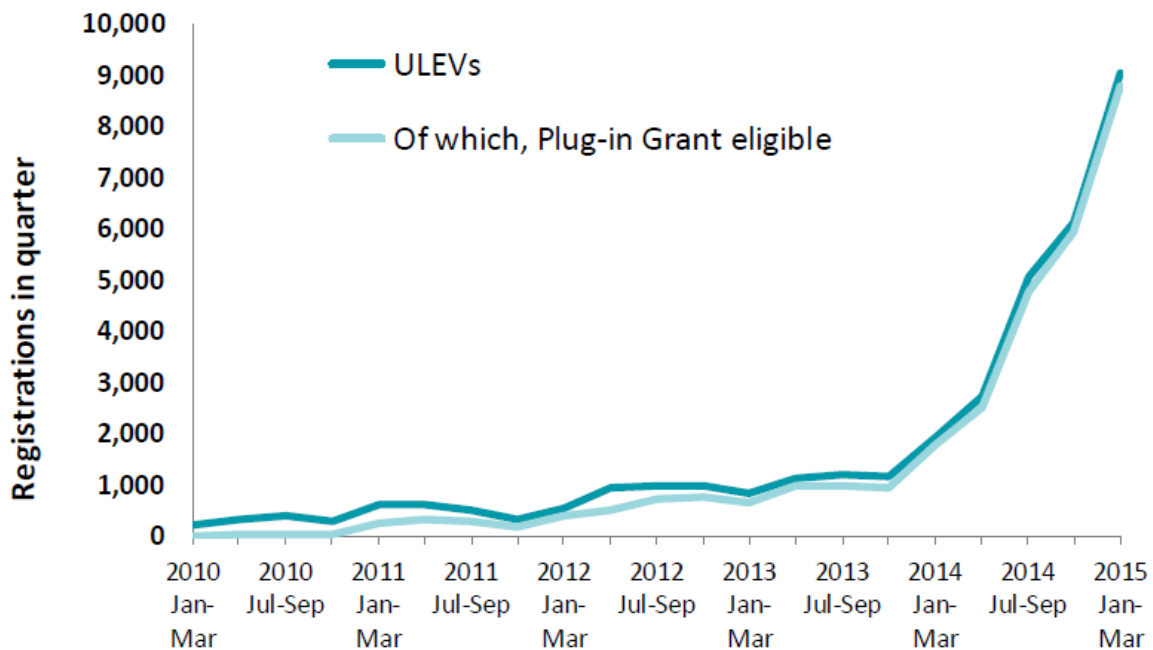
<sup>43</sup> Recent Evidence Concerning Higher NOx Emissions from Passenger Cars and Light Duty Vehicles, Carslaw et al, (2011)

exhausts. The Government's strategy: *Driving the Future Today*, has set a target that by 2050 nearly all cars and vans in the UK will be an ultra-low emission vehicle (ULEV). This will mean a shift-change in the traditional internal combustion engine (ICE) as the predominant power source for vehicles, and although the ICE is likely to remain a feature of the vehicle market for many years to come, other alternative powered vehicles, such as Battery Electric Vehicles (BEV), Fuel Cell Electric Vehicles (FCEV) and Plug-in Hybrid Electric Vehicles (PHEV), are likely to play a much more significant role if the ULEV target is to be achieved.

12.7. As Figure 9 above shows, there is currently very little penetration of alternative fuelled vehicles into the UK car market and considerable effort will be required to change the way people think when choosing a car, how cars fit into overall journey-planning, and developing the necessary infrastructure to re-charge / refuel with alternative powers sources, such as electricity, gas or hydrogen fuel cell technology.

12.8. However, as Figure 10 below shows, there are early signs of the developing ULEV market, and although ULEVs still only account for a small percentage of cars overall it is a sign of potential growth in this area, which has, in part, been stimulated by the Government's plugged-in grant scheme for ultra low emission cars and vans.

**Figure 10: New Ultra Low Emission & Electric Vehicles: UK 2010 – Q1 2015<sup>44</sup>**



<sup>44</sup> Vehicle Licensing Statistics: Quarter 1 (Jan – Mar) 2015, DfT (June 2015)



12.9. The Government has announced £500m funding between 2015 and 2020 to support a range of initiatives to further stimulate the ULEV market. This is an opportunity to increase the number of ultra-low emission cars on the roads of West Yorkshire and the WYLES will be used to support the growth of the ULEV market and access Government funding to support initiatives to achieve this, including:

- Carrying out research to help inform decision-making to promote the take up of ultra-low emission vehicles.
- Raising awareness and exposing more people to ultra-low emissions vehicles, for example through increasing the number of ULEVs within local authority fleets, pool cars, lease car schemes and car clubs.
- Developing and supporting electric vehicle recharging infrastructure and alternative fuel refuelling stations that are fit for purpose: understanding the market and having infrastructure which supports ULEV growth.
- Building ULEVs as part of wider journey-planning, including public transport, car clubs and active travel with smart-card technology with integrated payment and journey planning information.
- Consider policy initiatives, such as preferential parking, free EV charging and low emission zones / routes as a means to promote ULEVs.

### 13. Theme 3 – Reducing Vehicle Emissions: *Buses*

13.1. The application of increasingly stringent EU standards has resulted in reduced emissions from newer buses (see Figure 11). For instance, NOx emissions from Euro VI buses are only 5% of those from Euro I buses.

**Figure 11: Euro Emission Standards for Buses**

Stage	Date	Test	CO	HC	NOx	PM	PN	Smoke
			g/kWh				1/kWh	1/m
Euro I	1992, ≤ 85 kW	ECE R-49	4.5	1.1	8.0	0.612		
	1992, > 85 kW		4.5	1.1	8.0	0.36		
Euro II	1996.10		4.0	1.1	7.0	0.25		
	1998.10		4.0	1.1	7.0	0.15		
Euro III	1999.10 <i>EEV only</i>	ESC & ELR	1.5	0.25	2.0	0.02		0.15
	2000.10		2.1	0.66	5.0	0.10 <sup>a</sup>		0.8
Euro IV	2005.10		1.5	0.46	3.5	0.02		0.5
Euro V	2008.10		1.5	0.46	2.0	0.02		0.5
Euro VI	2013.01	WHSC	1.5	0.13	0.40	0.01	8.0×10 <sup>11</sup>	

a - PM = 0.13 g/kWh for engines < 0.75 dm<sup>3</sup> swept volume, per cylinder and a rated power speed > 3000 min<sup>-1</sup>

13.2. However, as with cars, real-world driving conditions have also resulted in higher emissions than under test conditions, although the latest Euro VI standard is likely to perform much better than predecessor standards in this regard.

13.3. It is not uncommon for buses to be operated for ten to fifteen years and therefore older buses, which produce higher emissions, can continue operating for many years. The West Yorkshire bus fleet is older than the national average (although younger than the average if London is excluded). Table 8 below shows the current West Yorkshire bus fleet profile by Euro Standard and indicates that a significant proportion of the bus fleet is operating to emission standards which came into effect more than ten years ago. It is estimated that current investment levels in the bus fleet replacement programme will not be sufficient to achieve the objectives of this Strategy.

**Table 8: West Yorkshire Bus Fleet by Euro Standard (2015)**

Euro Standard	%
Euro I	1.2
Euro II	25.3
Euro III	20.8
Euro IV	27.3
Euro V	24.4
Euro VI or equivalent	1.0

13.4. Buses are also more prevalent in urban areas: this is inevitably so because it is where people need to be and where bus station and transport hubs are located. The same buses will also make repeat journeys into urban areas as part of their route. Consequently, relative to the total number of vehicles on the roads, buses can have a significant contribution to emissions in urban areas. For example, the Low Emission Zone Feasibility Studies (see *Theme 1: Evidence for Change*)



estimated that diesel buses account for 43% of NOx emissions within the Bradford Inner Ring Road.

- 13.5. Targeted action to reduce emissions from these buses can result in the most significant reduction in emissions relative to the costs of implementation: this has been the conclusion of both local and national Low Emission Zone feasibility studies.

**What Can be Done?**

- 13.6. Provision of good public transport is critical to improving air quality by providing a viable alternative to car use and reducing the number of individual car journeys, however, buses also contribute to air quality problems because they operate in the most populated areas and can produce some of the highest exhaust emissions of all vehicles.
- 13.7. Buses in West Yorkshire are mainly operated by private bus companies, such as FirstGroup, Arriva, Transdev and a number of other smaller independent operators. Most bus services are operated on a commercial basis, with little intervention from local authorities or WYCA. There is, however, a strong working relationship with bus operators in the region and authorities will work with operators to reduce emissions from the bus fleet in West Yorkshire. Figure 12 shows some of the initiatives that bus operators working with local authorities have achieved.

**Figure 12: Recent Initiative to reduce bus emissions.**

<p><b>165 “Yellow” school buses go green by fitting NOx and Particulate abatement technology to reduce exhaust emissions – resulting in older buses now achieving emission standards better than Euro VI and protecting the health of children.</b></p>	
	<p><b>Arriva introduce 12 hybrid buses and FirstGroup introduces 22 hybrid buses in the region, with further hybrid buses being introduced in Bradford and Calderdale.</b></p> <p><b>Bradford Council work with FirstGroup and Transdev to fit exhaust abatement technology on 25 buses operating on urban routes resulting in at least 95% of buses going to the Bradford interchange being Euro IV or better by 2016.</b></p>

## Strategy for reducing bus emissions

13.8. West Yorkshire has densely populated towns and cities, such as Leeds and Bradford, surrounded by large rural areas (the largest rural area of any metropolitan region). In rural areas air quality is significantly less of an issue than the urban areas. The strategy has therefore focussed on bus services which frequently operate in towns and cities. An assessment, based on the frequency of bus services in towns and cities, has identified nine hundred buses, which should be targeted for emission reduction.

13.9. Three options are outlined below:

### **Option 1: Euro III by 2020 (Business as Usual)**

13.10. Under business as usual it has been assumed that bus operators will replace 6.7% of their fleet every year (normal investment practice in the bus industry) and when doing so will replace the oldest, poorest emission buses within their fleet. This level of investment would mean that although Euro I and Euro II buses would likely to be taken out of bus fleets, Euro 3 buses would continue to be in operation.

### **Option 2: Minimum Euro III with abatement technology by 2020 (Euro III+)**

13.11. This option would mean that Euro I or Euro II buses would not operate on urban routes and that all other buses operating on urban routes would need to be replaced with either newer buses, alternative fuel technology or fitted with emission abatement technology (Euro III+) by 2020. This option assumes accelerated investment in new fleet, retro-fitting of Euro III, Euro IV and Euro V buses with “clean bus” technology and all pre-Euro III buses removed from urban routes.

13.12. The following minimum standards would apply:

- Alternative Low Emission Fuel (“Tank to Wheel”) - e.g. Electric / Hydrogen / Biomethane / Natural Gas.
- Euro VI diesel electric hybrid.
- Euro VI diesel
- Euro V diesel electric hybrid
- Euro V diesel with thermally effective SCR (selective catalytic reduction)
- Euro IV diesel with effective SCR & DPF (diesel particulate filter)
- Euro III with SCR & DPF

13.13. This option requires a greater proportion of investment (estimated £6.5m) on retro-fitting emission abatement technology across the wider bus fleet to reduce emissions than on investing in new buses.

### **Option 3: Minimum Euro IV with abatement technology by 2020 (Euro IV+)**

13.14. This option would mean that Euro I, Euro II and Euro III buses would not operate on urban routes and that all other buses operating on urban routes would need to be replaced with either newer buses, alternative fuel technology or fitted with emission abatement technology (Euro IV+) by 2020. This option assumes accelerated investment in new fleet, retro-fitting of Euro IV buses with “clean bus” technology and all pre-Euro IV buses removed from fleets.

13.15. The following minimum standards would apply:

- Alternative Low Emission Fuel (“Tank to Wheel”) - e.g. Electric / Hydrogen / Biomethane / Natural Gas.
- Euro VI diesel electric hybrid
- Euro VI diesel
- Euro V diesel electric hybrid
- Euro V diesel
- Euro IV diesel with SCR & DPF

13.16. This option requires greater investment in newer buses and less (estimated £2.5m) on retrofitting abatement technology.

13.17. Each of the above options is predicted to have a different impact on bus emissions and Table 9 below indices the relative percentage emission reduction from each option.

**Table 9: Estimated Emission Reduction from each Option**

<b>Scenario</b>	<b>NOx</b>	<b>PM</b>
<b>Option 1: Euro III by 2020</b>	-44%	-75%
<b>Option 2: Euro III+ by 2020</b>	-89%	-88%
<b>Option 3: Euro IV+ by 2020</b>	-79%	-85%

13.18. Option 1 (investment under business as usual conditions) is not predicted to achieve the necessary reduction in emissions to meet the aims of this Strategy and consequently greater investment under either Option 2 or 3 will be required.

13.19. Option 2 achieves a slightly better reduction in emissions than option 3 (particularly NOx emissions), with less capital cost, but the bus fleet would be slightly older than if Option 3 was implemented.

13.20. Option 3 would result in slightly less improvement in emissions compared with Option 2 and would have a higher capital cost, but this option would result in a

relatively newer bus fleet, with possible consequential benefits of increased bus patronage.

### **Working with Bus Operators**

13.21. West Yorkshire Combined Authority is the lead organisation who works with bus operators to provide bus services in the region. WYCA have produced a West Yorkshire Low Emissions Bus Strategy, which is produced as a supporting document to the WYLES. WYCA will lead engagement with the region's bus operators to accelerate the investment in new buses, alternative fuels and abatement technologies, and assist with potential funding streams, in order to achieve the emission reductions through the implementation of Option 2 or Option 3 above.

Consultation Version

## 14. Theme 3 – Reducing Vehicle Emissions: *Trains*

### What are the Issues?

- 14.1. Diesel trains emit high levels of particulates and NO<sub>x</sub>, however, when considered on the basis of pollution per passenger per kilometre travelled, emissions are much less than other forms of transport including cars and buses. Trains are therefore part of the solution to reducing transport related emissions. This is not to say that trains do not produce emissions, such as NO<sub>x</sub>, particulates, CO<sub>2</sub> and noise, with emissions from trains being most significant at train stations in urban locations such as Leeds and Bradford train stations. Therefore, any action to reduce emissions from trains will benefit air quality and the quality of our environment.
- 14.2. The impact of trains on local air quality varies according to the type of rail vehicle in use. Older trains emit more pollution so renewing train fleets will help reduce emissions. Electric vehicles impose minimal impact on local air quality compared to diesel trains and therefore the most effective way to ensure that trains do not contribute to local air quality problems and reduce passenger exposure is to support calls for electrification of the regional rail network.

### What can be done?

- 14.3. The procurement and deployment of rail rolling stock is generally determined at a national level as part of the rail franchising process. As with bus operations, WYCA is the lead organisation at a regional level which engages with train operating companies and Network Rail. Acting through Rail North, WYCA is seeking to influence decisions regarding rail rolling stock and to advance the process of replacing older, more polluting trains with newer, cleaner rolling stock.
- 14.4. Whilst electric trains operate between Leeds and Wakefield, and connect Leeds and Bradford with Shipley, Keighley, Skipton and Ilkley, the remainder of the West Yorkshire rail network is operated by diesel trains. Many of the diesel rail vehicles in use in West Yorkshire are over 30 years old and do not benefit from modern engine technologies. Incremental improvements in emissions can therefore be obtained by replacing older diesel vehicles with electric trains or cleaner, newer diesels.
- 14.5. Electrification of the Transpennine rail route between York, Leeds, Huddersfield and Manchester planned for 2019/20 will replace diesel vehicles with electric providing a commensurate benefit to air quality. Further electrification is subject to funding however the Leeds – Harrogate and Leeds, Bradford, Halifax lines are high in the regional priority for electrification in the early 2020s.
- 14.6. In addition to the plan to electrify more of the rail network, plans to replace older diesel trains are included in the revised Northern and Transpennine rail franchises which will start in 2016. These plans involve the replacement of the older “Pacer”

trains with brand new diesel vehicles with improved emission control. It is anticipated that the new rolling stock will be in service from 2019 onwards.

- 14.7. A step change improvement in the content and quantity of emissions from rail vehicles is therefore expected from 2019/2020 onwards.

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## 15. Theme 3 – Reducing Vehicle Emissions: *Commercial Vehicles & Freight*

### What are the issues?

- 15.1. Freight represents a low proportion of traffic flows at around 8% of traffic in the West Yorkshire region<sup>45</sup>, but produces a disproportionate amount of emissions. Road freight is not just about Heavy Goods Vehicles (HGVs), Light Goods Vehicles (LGVs) such as vans have seen significant growth, rising by 46% between 2000 and 2009.
- 15.2. West Yorkshire is a prime location for the distribution of goods, having an excellent strategic road network from North to South (M1 and A1) and East to West (M62). It is not surprising that many distribution centres and logistics operators are located within the region, with the freight sector contributing about 25% of the region's economy. Road freight is the most used mode for freight movements in West Yorkshire, moving around 1,900 million tonnes of freight in West Yorkshire (2008 data). Motorways account for the majority of freight trips by length of journey, specifically the M1, M621 and M62. Freight can account for up to 16% of traffic flows by mode on the motorway network<sup>46</sup>.
- 15.3. The West Yorkshire Local Transport Plan: Freight Strategy (2012) recognises the importance of the freight sector to the West Yorkshire economy and also recognises the disproportionate contribution that road freight has in terms of emissions compared with non-road freight. The WYLES supports the Freight Strategy by promoting actions to reduce emissions from freight and commercial vehicles.

### What can be done?

- 15.4. Freight and commercial activity is potentially one of the most difficult for local authorities to directly influence, given that decisions in relation to the procurement of fleet vehicles is entirely a commercial decision. However, commercial organisations are required to report on CO2 emissions and are encouraged to reduce their emissions and the West Yorkshire authorities will seek to support commercial operators to reduce transport emissions.
- 15.5. Examples of what can be done include:
  - Seeking opportunities to increase the take-up of alternative fuels and technologies by HGV and LGV operators, for example a recent Gas Infrastructure Feasibility Study commissioned by Wakefield Council found that three strategic LNG/CNG gas refuelling stations could be supported at key locations near to the M1 (j41), M62 (j30) and the A1 (Barnsdale Bar) highway networks.

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<sup>45</sup> West Yorkshire Freight Study 2010

<sup>46</sup> West Yorkshire LTP Freight Strategy 2012

- Working with commercial fleet operators to use whole-life costing during vehicle procurement to promote the economic as well as environmental and health benefits from low emission HGVs and LGVs.
- Using the West Yorkshire Air Quality & Planning Technical Guide to ensure new commercial developments incorporate facilities for ultra-low emission vehicles, such as electric charging points and minimum Euro emission standards for fleet vehicles.
- Encourage more freight to be transported by rail for long-haul journeys.
- Exploring the potential for the regions' canals and waterways for the transport of goods.
- Using sustainable procurement criteria to reward those businesses which have a lower environmental impact.
- Minimising emissions in urban areas from HGVs and LGVs – the so-called “last mile” of deliveries – for example through the use of freight consolidation centres and consideration of Low Emission Zones.
- Supporting fleet operators to reduce emissions through improved driver training, fuel management and the adoption of accreditation scheme such as “Eco Stars” to reduce transport emissions.

Consultation Version

## 16. Theme 3 – Reducing Vehicle Emissions: *Taxis and Private Hire Vehicles*

### What are the Issues?

- 16.1. There are approximately 11,000 taxis (hackney carriages and private hire vehicles) operating in the West Yorkshire region, with more than 90% of these being diesel cars and vans. Most taxi journeys take place within and between the regions' towns and cities, with some high-use taxis covering in excess of 100,000 miles each year. Although they make up only a small proportion of the overall vehicle numbers in the region, taxis do emit a higher proportion of NOx and particulate emissions so contribute disproportionately to poor urban air quality.
- 16.2. Taxis and private hire vehicles are also used by many people, which creates the opportunity for them to be used to expose passengers to new alternative fuels and technologies, such as electric vehicles.

### What can be done?

- 16.3. As with other commercial operations, local authorities have a limited influence over the types of car which taxi and private hire operators buy. However, there are opportunities to influence taxi and private hire operators to reduce emissions from the vehicles they operate. Areas that could include the following:
- Work with taxi and private hire companies to apply for Government funding (for example the £20m ULEV Taxi Grant Scheme announced in 2015<sup>47</sup>) to support ULEV taxis and private hire vehicles.
  - Using the local authority taxi licensing function to promote incentivise the uptake of ultra-low emission taxis and private hire vehicles, for example by designating ULEV taxi ranks in high demand areas.
  - Demonstrating the potential fuel savings and financial benefits from operating ULEV taxis and private hire vehicles (see Figure 13 for a summary of a recent Leeds / Institute for Transport Studies case-study).
  - Working with taxi and private hire operators to develop rapid electric charge-point network in suitable locations.
  - Using public sector transport contracts to promote low emission taxis.
- 16.4. If encouragement is not effective or widely supported, then the local authority licensing function remains an option for specifying minimum emission standards of taxi and private hire cars.

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<sup>47</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/382190/taxis-preliminary-guidance.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/382190/taxis-preliminary-guidance.pdf)

**Figure 13: Taxis Case Study by Leeds Council and Institute for Transport Studies.**

**Aim: to demonstrate the economic and environmental benefits of low emission taxis and private hire vehicles compared to diesel equivalents.**

**Taxis and PHVs in Leeds:**

- **537 Hackney Carriages**
- **3,500 Private Hire Vehicles**
- **Approx. 90% Diesel**

**Study:**

**Using a Petrol Hybrid Electric Vehicle typical taxi and private hire journeys have been simulated within Leeds city centre, while exhaust emissions and fuel consumption are monitored and recorded. Data gathered will quantify the relative cost and emissions under real-world driving conditions.**

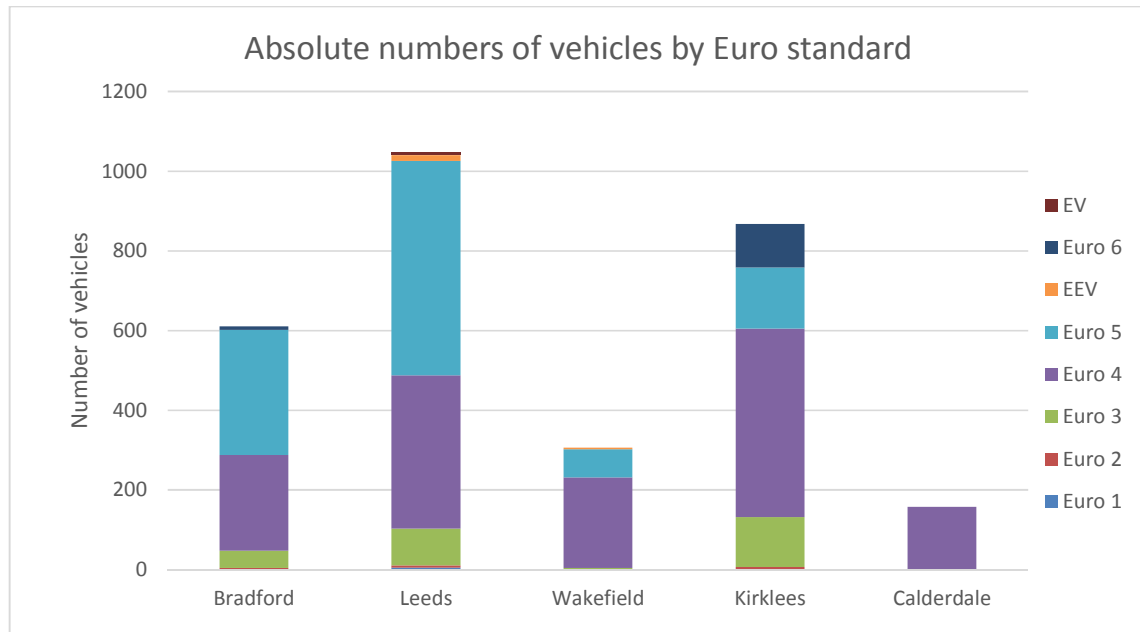
**The information will be available in Autumn 2015 and will be used to demonstrate the business case to taxi and private hire operators for switching to low emission technology.**

Consultation

### 17. Theme 3 – Reducing Vehicle Emissions: *Local Authority Fleet*

- 17.1. Local authority fleet operations are an ideal opportunity to 'lead by example' and influence public vehicle purchasing decisions.
- 17.2. West Yorkshire local authority currently operate approximately 3,000 fleet vehicles of which the overwhelming majority are diesel vehicles of varying Euro Standard (see Figure 14).

**Figure 14: West Yorkshire Local Authority Fleet – vehicles by Euro Standard**



- 17.3. The fleet emission profile of purchased vehicles tends to be below that of leased fleet vehicles. All West Yorkshire Authorities have demonstrated low emission vehicle alternatives and some are beginning to look at more intensive fleet transformation to use cleaner fuels and technologies. Appendix 3 provides further guidance on Low Emission Vehicles and alternative fuels and the impact on air quality.
- 17.4. The Cleaner Road Transport Vehicles Regulations 2011 require public sector organisations to consider the energy use and environmental impact of vehicles they buy or lease. A key concept of the Regulations is the consideration of **whole-life costs** whereby the operational costs over a vehicle life, including pollution damage costs, are taken into account rather than just the purchase price. This helps to redress the issue of low emission vehicles costing more than conventional vehicles, while potentially having lower operating costs that outweigh the purchase increment.
- 17.5. In order to achieve compliance with the above Regulations and to support local authority procurement teams a West Yorkshire Low Emission Procurement Guide has been produced as a supporting document to the WYLES.

17.6. As part of the WYLES project, a public sector fleet benchmarking exercise was also carried out, including:

- Review of fleet emission profiles.
- Review of vehicle emission strategies and feedback from low emission vehicle demonstration projects.
- Assessment of opportunities and barriers to ULEV take-up.
- An understanding of whole life costs, including standard diesel and ULEV alternatives.
- Sharing knowledge and expertise in vehicle procurement frameworks and contracting requirements.
- Explore possibilities for shared infrastructure.
- Consideration of the use of 'off-set' funding secured through the planning process (see section 7) to help develop low emission refuelling infrastructure.

17.7. Several barriers were identified to the take up of low emission vehicles, including:

- Fleet managers with capital budgets did not have sufficient resources to cover the incremental cost of procuring certain low emission technologies as they would not benefit from any operational cost savings as these budgets were controlled by separate client departments.
- Some low emission vehicles did not meet the specifications required by specialist vehicles.
- Where significant operational cost savings could be made, the incremental capital cost of certain vehicles was considered to be prohibitive.
- Lack of information regarding the performance and maintenance of new technologies.
- Cost of infrastructure for certain technologies was seen as prohibitive.
- Existing contracts and framework prevented the take-up of certain low emission vehicle technologies in the short to medium term.

17.8. Local authorities will continue to share knowledge and seek opportunities to establish best practice by regularly appraising available low emission vehicle alternatives to standard technology, demonstrating suitable low emission vehicles and incorporating whole life cost considerations into procurement processes. This should include annual appraisal and assessment of all feasible LEV and ULEV options as follows:

- A re-assessment of previous LEV / ULEV technology that has previously been deemed 'unsuitable' for public sector use
- Any new vehicles and technology that have come onto the market since the previous study and an assessment of whether such vehicles would be 'fit for purpose' within the fleet. Where LEV / ULEVs are identified as being fit for purpose there will be a study undertaken to identify the whole life cost and total cost of ownership of the current vehicle use in comparison to the LEV / ULEV options to include the pros and cons of each option in terms of suitability, emissions (NO<sub>x</sub>, PM and CO<sub>2</sub>) and costs.

### ***Funding for Ultra-low Emission Vehicles***

17.9. The Government recognises that public sector organisations are leaders within their communities and funding streams do become available to assist with the capital funding of ultra-low emission vehicles, for example under the Governments Plugged-in-Fleets initiative<sup>48</sup>. West Yorkshire local authorities will use these available funding streams as a means of reducing emissions from their fleet operations.

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<sup>48</sup> <https://www.gov.uk/government/publications/ultra-low-emission-vehicles-getting-wider-public-sector-fleets-ready>



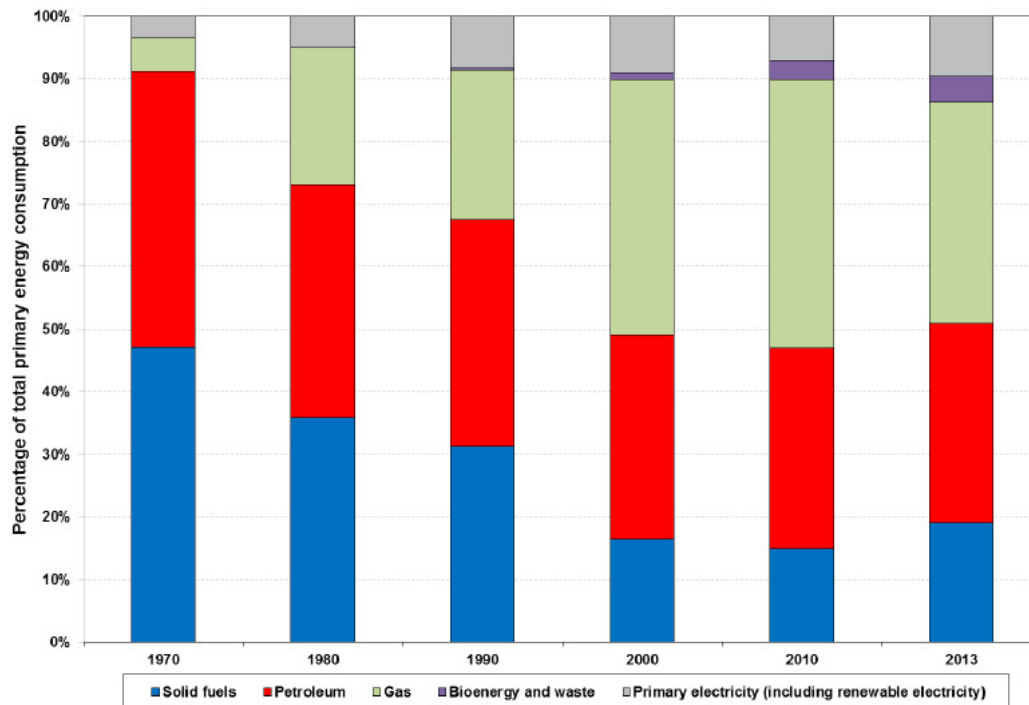
## 18. Theme 4 – Controlling Emissions from Non-Transport Sources

18.1. Although the focus of the WYLES is to reduce transport emissions, it is important to recognise other non-transport emission sources within this Strategy. In terms of the pollutants of concern: Oxides of Nitrogen (NO<sub>x</sub>) and particulates (PM<sub>10</sub> and PM<sub>2.5</sub>), energy generation, industrial emissions and domestic combustion are the other main sources of concern. Domestic and European laws have brought in tighter emission controls, particularly for the industrial and energy sectors, which have seen significant reductions in most air pollutants from these sectors over recent decades

### Energy & Industry

18.2. Emissions from the energy and industrial sectors have reduced over recent years due to a combination of moving away from traditional fossil fuel combustion and improved abatement technology. Figure 15 shows how the fuel mix for primary energy consumption over the decades has changed, with a significant shift away from solid fuels, growth in the use of gas, and in more recent years an increase in the proportion of biofuels and waste as a source of energy.

**Figure 15: Total Primary Energy Consumption in the UK, 1970 to 2013**



Source: DECC, ECUK Table 1.02

18.3. The growth in the use of waste and biofuels is positive in terms carbon reduction, but we also need to be aware of the potential for increase in NO<sub>x</sub> and particulate emissions from these types of fuel. Although controlling emissions from the energy sector and large-scale industry sits mainly with national bodies, such as the Environment Agency, rather than local authorities, we will seek to ensure that

emissions from these sectors, including the increased use of waste and biofuel, do not have an adverse impact on air quality in the region.

### **Combined Heat & Power (CHP)**

- 18.4. As can be seen from Figure 15, power stations and major industry produce emissions which are widely dispersed and contribute mainly to background air quality. In terms of health impact, local sources of air pollution can be of greater concern and in recent years we have seen an increase in the number of combined heat and power (CHP) plants being installed to serve the heating and electricity needs to single buildings or clusters of buildings at a local level. CHP plants are considered beneficial for carbon reduction because they are more efficient because energy is produced closer to where is used.
- 18.5. Because the energy generation is carried out at a local, rather than regional level, there is greater potential for the emissions from CHP plant to have an impact on local air quality and impact on the health of the local population: energy generation becomes a potential local air quality “hot-spot”, rather than part of the regional background (see Introduction).
- 18.6. Careful consideration therefore needs to be given to where CHP plants are installed: where air quality is good, the carbon reduction benefits may outweigh air quality concerns, but where air quality is a problem then introducing a further and potentially significant source of pollution to add to the problem should be avoided. West Yorkshire local authorities have a role to play in ensuring that the air quality impacts of CHP plants are fully considered when carrying out their planning and regulatory functions to ensure that air quality is not made worse in the region.

### **Biomass and Wood-burning**

- 18.7. Over the last half a century there has been a significant shift in the fuel used by domestic consumers. Local authorities have played a significant role in reducing emissions from the domestic sector through the introduction of smoke control areas and the use of other pollution control legislation. The most significant benefits from this have been reductions in sulphur dioxide and smoke emissions, which had a devastating impact on health and the environment.
- 18.8. As described above, the main source of local air pollution is now urban traffic, but this does not mean that we should ignore the domestic sector altogether. An emerging concern in relation to local air quality is the increased trend in the use of biomass boilers and wood-burning on domestic heating appliances: perceived to have good carbon reduction credentials (with some appliances benefiting from the Government’s Renewable Heat Incentive Scheme). Burning wood or biomass results in more particulate emissions and this is a cause for concern to local authorities as existing controls available through clean air legislation and planning may not be sufficient to prevent the increase in emissions from these appliances.

18.9. Local authorities will use existing powers to control emissions from domestic heating appliances, including wood-burning appliances, raise awareness of the potential impact on local air quality with installers and consumers and, if existing regulatory control prove insufficient, will consider what alternative regulatory controls may be available to prevent harmful emissions to the environment.

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## List of Abbreviations

AEI	Average Exposure Indicator: the baseline indicator used to report on progress on meeting PM <sub>2.5</sub> reduction targets.
AQAP	Air Quality Action Plan: local authorities are required to produce an air quality action plan when they have declared an air quality management area (AQMA).
AQMA	Air Quality Management Area: a geographical area declared by local authorities when they have determined that air quality is exceeding air quality objectives.
AQO	Air Quality Objective: concentration levels for certain prescribed pollutants that have been determined in UK law.
COPD	Coronary Obstructive Pulmonary Disorder
CVD	Cardio-vascular Disease
DEFRA	Department for the Environment and Rural Affairs
LAQM	Local Air Quality Management: the term used to describe the function of local authorities to review and assess air quality in their areas and declare AQMAs and produce AQAPs.
LEV	Low Emission Vehicle: the general term used for vehicles which produce lower emissions (usually referred to in relation g/km Carbon). LEVs may include internal combustion engines.
LEZ	Low Emission Zone: a designated area, usually in towns or cities where a traffic regulation order restricts access except for vehicles which meet a specified emissions criteria.
LV	Limit Value: refers to the Limit Values set out in EU Directive 2008/50/EC
MACC	Marginal Abatement Cost Curve: a tool used to assess the cost-v-benefits of introducing various abatement options.
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Oxides of Nitrogen – including Nitrous Oxide (NO) and Nitrogen Dioxide (NO <sub>2</sub> )
NPPG	National Planning Policy Guidance
NPPF	National Planning Policy Framework
OLEV	Office for Low Emission Vehicles: part of the Department of Transport set up to increase the number of ULEVs.
PHE	Public Health England
PM <sub>n</sub>	Particulate Matter with a diameter of “n” (usually in microns) including PM <sub>10</sub> , PM <sub>2.5</sub> and PM <sub>0.1</sub> .
QALY	Quality Adjusted Life Year
TRO	Traffic Regulation Order: a regulation made by local authorities to manage traffic on the roads.
ULEV	Ultra Low Emission Vehicle: vehicles which emit very low emissions (usually referred to in g/km Carbon) and used to determine eligibility for plugged in grants: <a href="https://www.gov.uk/plug-in-car-van-grants/overview">https://www.gov.uk/plug-in-car-van-grants/overview</a>

## Appendix 1 – National Air Quality Objectives and EU Limit and Target Values

National air quality objectives and European Directive limit and target values for the protection of human health								
Pollutant	Applies	Objective	Concentration measured as <sup>10</sup>	Date to be achieved by and maintained thereafter	European obligations	Date to be achieved by and maintained thereafter	New or existing	
Particulates (PM <sub>10</sub> )	UK	50µg.m <sup>-3</sup> not to be exceeded more than 35 times a year	24 hour mean	31 December 2004	50µg.m <sup>-3</sup> not to be exceeded more than 35 times a year	1 January 2005	Retain existing	
	UK	40µg.m <sup>-3</sup>	annual mean	31 December 2004	40µg.m <sup>-3</sup>	1 January 2005		
	Indicative 2010 objectives for PM <sub>10</sub> (from the 2000 Strategy and 2003 Addendum) have been replaced by an exposure reduction approach for PM <sub>2.5</sub> (except in Scotland – see below)							
	Scotland	50µg.m <sup>-3</sup> not to be exceeded more than 7 times a year	24 hour mean	31 December 2010				Retain existing
	Scotland	18µg.m <sup>-3</sup>	annual mean	31 December 2010				
Particulates (PM <sub>2.5</sub> ) Exposure Reduction	UK (except Scotland)	25µg.m <sup>-3</sup>	annual mean	2020	Target value 25µg.m <sup>-3</sup> <sup>12</sup>	2010	New (European obligations still under negotiation)	
	Scotland	12µg.m <sup>-3</sup>		2020	Limit value 25µg.m <sup>-3</sup>	2015		
	UK urban areas	Target of 15% reduction in concentrations at urban background <sup>11</sup>		Between 2010 and 2020	Target of 20% reduction in concentrations at urban background	Between 2010 and 2020		
Nitrogen dioxide	UK	200µg.m <sup>-3</sup> not to be exceeded more than 18 times a year	1 hour mean	31 December 2005	200µg.m <sup>-3</sup> not to be exceeded more than 18 times a year	1 January 2010	Retain existing	
	UK	40µg.m <sup>-3</sup>	annual mean	31 December 2005	40µg.m <sup>-3</sup>	1 January 2010		
Ozone	UK	100µg.m <sup>-3</sup> not to be exceeded more than 10 times a year	8 hour mean	31 December 2005	Target of 120µg.m <sup>-3</sup> not to be exceeded more than 25 times a year averaged over 3 years	31 December 2010	Retain existing	

National air quality objectives and European Directive limit and target values for the protection of human health							
Pollutant	Applies	Objective	Concentration measured as	Date to be achieved by and maintained thereafter	European obligations	Date to be achieved by and maintained thereafter	New or existing
Sulphur dioxide	UK	266 $\mu\text{g.m}^{-3}$ not to be exceeded more than 35 times a year	15 minute mean	31 December 2005			Retain existing
	UK	350 $\mu\text{g.m}^{-3}$ not to be exceeded more than 24 times a year	1 hour mean	31 December 2004	350 $\mu\text{g.m}^{-3}$ not to be exceeded more than 24 times a year	1 January 2005	
	UK	125 $\mu\text{g.m}^{-3}$ not to be exceeded more than 3 times a year	24 hour mean	31 December 2004	125 $\mu\text{g.m}^{-3}$ not to be exceeded more than 3 times a year	1 January 2005	
Polycyclic aromatic hydrocarbons	UK	0.25 $\text{ng.m}^{-3}$ B[a]P	as annual average	31 December 2010	Target of 1 $\text{ng.m}^{-3}$	31 December 2012	Retain existing
Benzene	UK	16.25 $\mu\text{g.m}^{-3}$	running annual mean	31 December 2003			Retain existing
	England and Wales	5 $\mu\text{g.m}^{-3}$	annual average	31 December 2010	5 $\mu\text{g.m}^{-3}$	1 January 2010	
	Scotland, Northern Ireland	3.25 $\mu\text{g.m}^{-3}$	running annual mean	31 December 2010			
1,3- butadiene	UK	2.25 $\mu\text{g.m}^{-3}$	running annual mean	31 December 2003			Retain existing
Carbon monoxide	UK	10 $\text{mg.m}^{-3}$	maximum daily running 8 hour mean/in Scotland as running 8 hour mean	31 December 2003	10 $\text{mg.m}^{-3}$	1 January 2005	Retain existing
Lead	UK	0.5 $\mu\text{g.m}^{-3}$	annual mean	31 December 2004	0.5 $\mu\text{g.m}^{-3}$	1 January 2005	Retain existing
		0.25 $\mu\text{g.m}^{-3}$	annual mean	31 December 2008			

## Appendix 2: Low Emission Zone Feasibility Study – Modelled Scenarios

SCENARIO NAME	DESCRIPTION
2012 base	Existing fleet mix
2016 base	Projected fleet mix do minimum
2016 fuel split	Projected fleet but with the petrol/diesel mix for cars and N1 vans returned to Year 2000 ratios
2016 all buses Euro VI	Projected fleet but all buses (including Euro IV and Euro V) become Euro VI buses
2016 all HGV Euro VI	Projected fleet but all HGV (including Euro IV and Euro V) become Euro VI
2016 all bus and HGVs Euro VI	Projected fleet but all buses and HGVs (including Euro IV and Euro V) become Euro VI
2016 All vans Euro 6	Projected fleet but all vans replaced with Euro 6
2016 E2&E3 retrofit	Projected fleet but with Euro II and Euro III buses retrofitted with "non TFL DPF and SCR" technology
2016 all Pre Euro IV buses Euro VI	Projected fleet but all buses older than Euro IV are replaced with an Euro VI
2016 all Pre Euro IV HGV Euro VI	Projected fleet but all HGV older than Euro IV are replaced with an Euro VI
2016 Pre Euro IV bus and HGVs to Euro VI	Projected fleet but all buses and HGVs older than Euro 4 are replaced with Euro VI
2016 10% reduction in car use	Projected fleet with 10 % reduction in car use resulting from measures to promote walking and cycling
2021 base	Projected fleet mix do minimum
2021 fuel split	Projected fleet but with the petrol/diesel mix for cars and N1 vans returned to year 2000 ratios
2021 All buses to Euro VI	Projected fleet but with all buses (including Euro IV and Euro V) become Euro VI buses
2021 All HGVs to Euro VI	Projected fleet but with all HGVs (including Euro IV and Euro V) become Euro VI
2021 All bus and HGVs to Euro VI	Projected fleet but with all buses and HGVs (including Euro V) become Euro VI
2021 All vans to Euro 6	Projected fleet but all vans replaced with Euro 6
2021 All pre Euro V buses to Euro VI	Projected fleet but with all buses older than Euro V are replaced with Euro VI buses
2021 All pre Euro V HGV to Euro VI	Projected fleet but all HGVs older than Euro V are replaced with Euro VI
2021 All pre Euro V bus and HGVs to Euro VI	Projected Leeds fleet but All Pre Euro V buses and HGVs become Euro VI
2021 10% reduction in car use	Projected fleet with 10 % reduction in car use resulting from measures to promote walking and cycling

## Appendix 3: Low Emission Vehicles Guidance

### What is a Low Emission Vehicle?

In considering what a low emission vehicle is, it is necessary to first consider what 'emissions' should be considered, and then how low counts as 'low'.

In the context of vehicles, emissions fall into two types. The first is emissions affecting air quality – currently<sup>49</sup> these are the oxides of nitrogen (NOx) and particulate matter (PM). The second is greenhouse gas (GHG) emissions, mainly carbon dioxide (CO<sub>2</sub>) but also methane, nitrous oxide and some others, usually measured together with CO<sub>2</sub> as overall CO<sub>2</sub>e (equivalent).

### Air quality

The emerging definition of 'low' emissions, in terms of NOx and PM, is the Euro 6/VI<sup>50</sup> standard. Figures 1 and 2 below show how the European statutory standards have progressed over time, for cars and heavy duty vehicles (trucks and buses) respectively<sup>51</sup>.

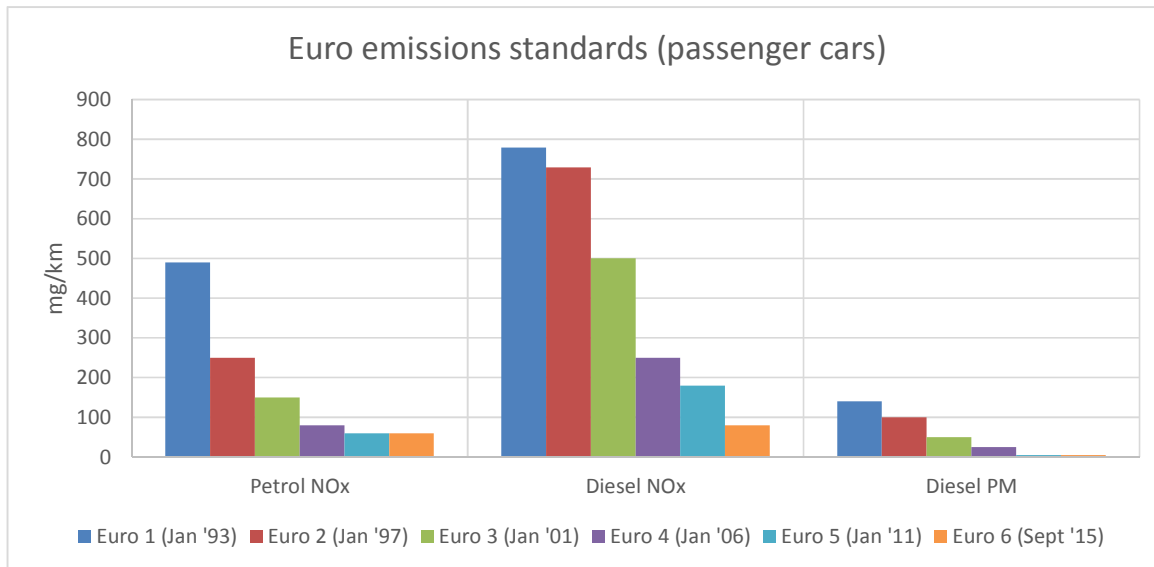


Figure 1: Evolution of Euro emissions standards for passenger cars

Three key points can be noted from the graph above. First, diesel cars have far higher NOx emissions than petrol cars, although the latest Euro 6 standard is only slightly higher for diesel than petrol. Second, there is no PM standard for petrol engines – this is because PM emissions from petrol engines are inherently very low. Finally, the Euro 6 standard for NOx for diesel cars is less than half the Euro 5 standard.

<sup>49</sup> There are several other types of exhaust emission that are regulated because of air quality concerns, especially carbon monoxide (CO) and unburned hydrocarbons (HC). However, effective technologies to control these have been in place for many years, and so they are not a current policy/technology issue.

<sup>50</sup> Euro emissions standards for cars and vans are represented by numbers 1-6, whereas for heavier vehicles they are designated by Roman numerals I-VI.

<sup>51</sup> There are separate standards for vans at various GVW, but these are similar to those for cars and are not shown for the sake of clarity. It should be noted that for heavy duty vehicles, only the engine is tested, and pollutants are measured in terms of mg per unit of power (mg/kWh) rather than per km in the case of cars/vans.



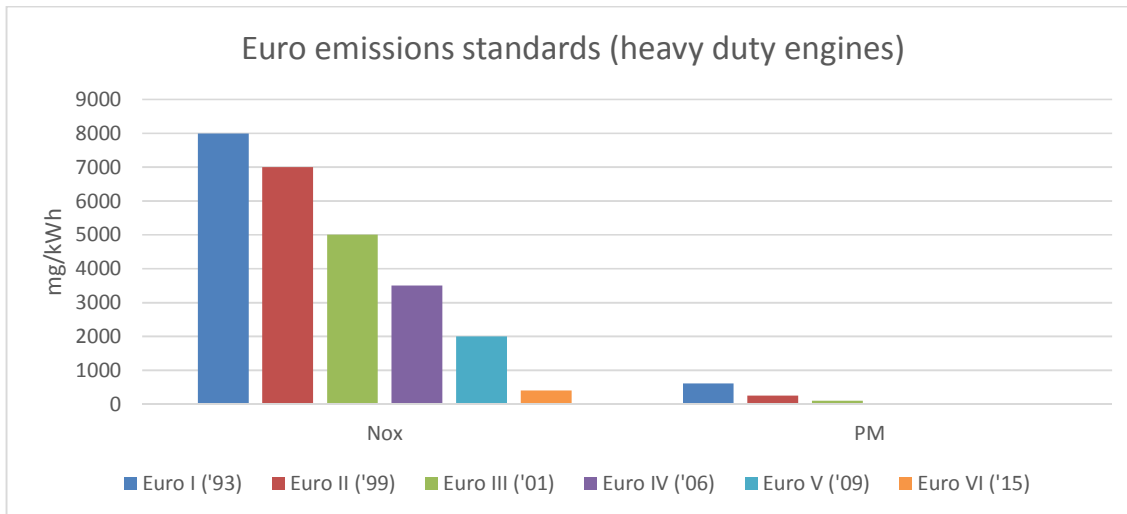


Figure 2: European emissions standards for heavy duty engines (mg/kWh). These will mostly be diesel, but the same standards would apply to larger engines running on other fuels such as gas or biofuels.

The key thing to note from Figure 2 above is that the standard for NOx has been lowered even more from Euro V to Euro VI than was the case for passenger cars.

The standards shown above are those that vehicle and engine manufacturers are required to meet over a standard test cycle. It has always been acknowledged that these standard cycles were not a perfect representation of real world driving, but the full effect of this has only recently become apparent, as the introduction of Euro 4 and 5 vehicles failed to improve air quality as expected. More recently still, portable emissions monitoring (PEMS) has become easier and cheaper, and so several studies have tested vehicles in real world driving to assess the true difference between the test cycle and on-road performance.

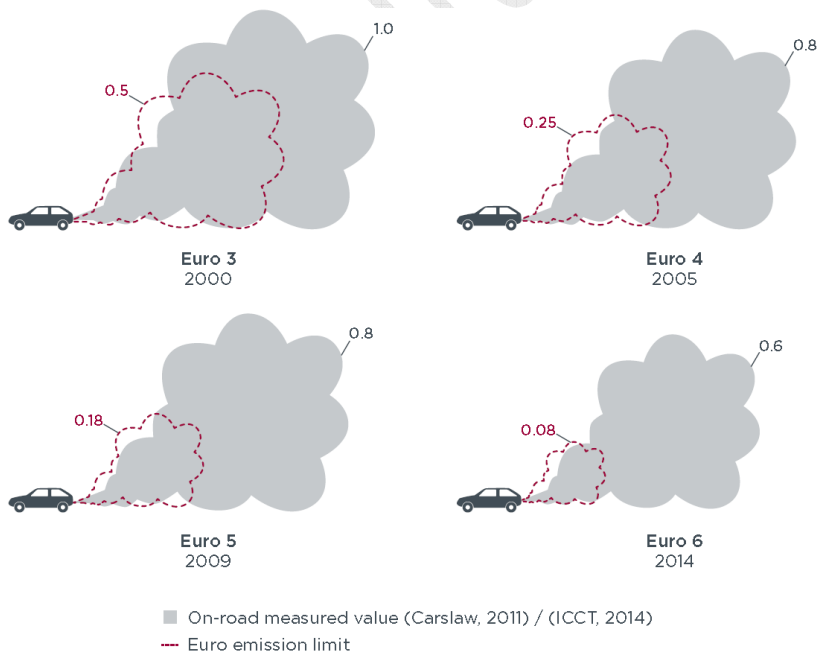
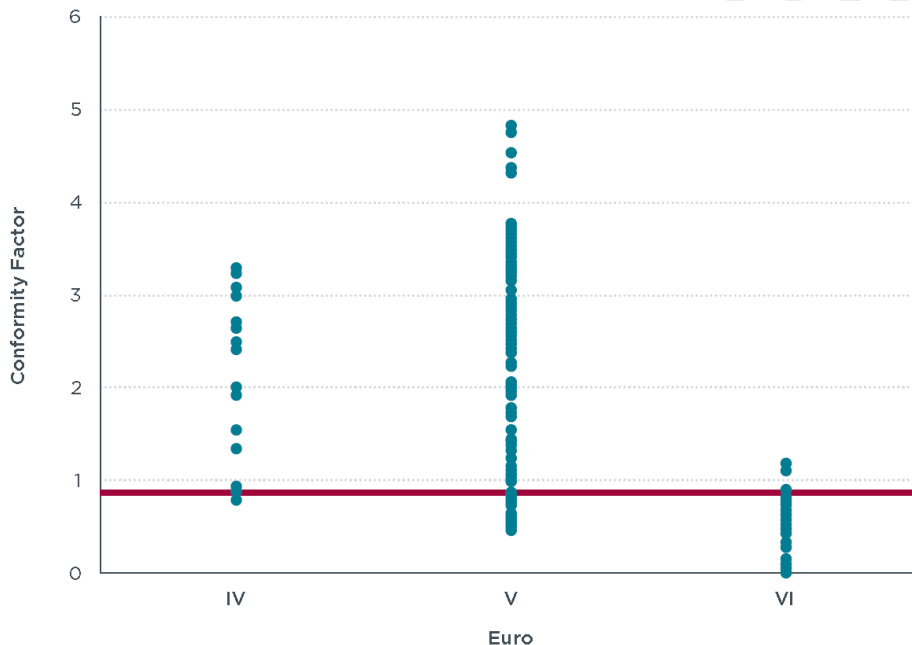


Figure 3: Real world NOx emissions of passenger cars (g/km) vs Euro standards

Figure 3 above shows the results of two studies on the real world performance of diesel cars. It can be seen that from Euro 3 to Euro 6, the emissions limits for NOx were lowered by 85%, and yet the actual NOx emitted in real world driving has only decreased by about 40%. The graphic above was taken from an ICCT study<sup>52</sup>, in which 15 new Euro 6 cars were tested. Although most of the vehicles failed to meet the standard in real world driving, one of them did achieve it, showing that the technology does exist. There are plans to introduce an element of PEMs into the Euro 6 test process from 2017, and this will hopefully force all manufacturers to improve their approach.

The picture for heavy duty vehicles is more optimistic, as can be seen in Figure 4 below. Taken from a separate report by the ICCT<sup>53</sup>, this shows the results of 210 tests on 38 different vehicles, including buses, rigid trucks and articulated trucks. Each dot represents a test, with 22 tests of Euro IV, 133 of Euro V and 55 of Euro VI. The 'conformity factor' is the ratio of the result to the standard limit, so a value of '2' means the vehicle was emitting double what it should for its Euro standard, and any value under '1' would mean it was cleaner than its Euro standard would require.



*Figure 4: Performance of heavy duty engines against Euro standards*

The figure clearly illustrates the problem with Euro IV and V – these vehicles are typically emitting several times what they should, with Euro V particularly bad. Research suggests the reason for this is that the standard test cycle includes very little driving with the engine at low temperatures or idling, where the catalysts used are less effective, despite this being common in real world urban use.

The picture for Euro VI is much more optimistic. For Euro VI, changes were made in the test cycle, and manufacturers were also required to include monitoring equipment that

<sup>52</sup> "Fact sheet: Real-world emissions from modern diesel cars", October 2014, [www.theicct.org](http://www.theicct.org)

<sup>53</sup> "Briefing: Comparison of real-world off-cycle NOx emissions control in Euro IV, V, and VI", March 2015, [www.theicct.org](http://www.theicct.org)

would constantly monitor exhaust gases in use, and put the engine into partial shut-down if limits were exceeded. It would appear from the results in Figure 4 that this has been effective, and indeed that at Euro VI level heavy duty vehicles may for the first time be less polluting than passenger cars and vans.

For the fleet manager or policy maker looking to promote ‘low emission vehicles’ with a view to improving air quality, there are the following take-away messages:

- Diesel cars, even brand new models, probably still have poor emissions performance (although this is likely to improve after 2017).
- Petrol cars are a better option. Emissions will be broadly related to fuel consumption, so more efficient cars, and hybrids, will be better. ‘Zero emissions’ vehicles, i.e. electric (or hydrogen), emit nothing during driving so are the best choice for urban areas.
- In the case of buses and trucks, Euro VI is very clean in practice. As with cars, emissions will be related to fuel consumption, so more efficient vehicles will further improve emissions performance.

**Greenhouse Gas (GHG) emissions:**

The definition of ‘low’ GHG emissions is more difficult to pin down. Air quality is a local problem, so emissions control is mainly a concern on the vehicle itself, at point of use. Climate change is a global problem, so GHG emissions need to consider the whole lifecycle of the fuel – an electric car can’t have ‘low’ emissions if the GHG emissions at the power plant are more than an equivalent car would have generated running on petrol.

A low GHG emissions technology needs to offer a significant reduction in emissions compared to the best available ‘conventional’ technology, which is usually a modern diesel engine. For several recent funding opportunities, the UK government has required a minimum GHG saving of 15% vs diesel to qualify, on a ‘well-to-wheels’ basis (i.e. taking the whole lifecycle of the fuel/energy into account). Some technologies just manage about 15%, whereas others can achieve considerably more, which is why the latest round of funding for low emission buses has moved to a sliding scale.

A wide range of technology approaches are available to lower GHG emissions, most of which lower energy use and therefore running costs as well. The principles of the main technologies are explained in the table below, followed by a table that summarises the technology options by vehicle type, along with their main costs and benefits.

**Low emission technologies:**

Parallel hybrid  (Hybrid Electric Vehicle HEV)	or	This is the type of vehicle most synonymous with the term ‘hybrid’, with the Toyota Prius the most well-known example. This type of hybrid has a conventional engine drive-train driving the wheels, but has a separate, parallel, electric drivetrain (battery and motor(s)) also helping to drive the wheels. Commonly one set of wheels is driven by the conventional engine and the other by the electric
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	<p>motor. All of the energy used by the electric drivetrain is gathered from regenerative braking – i.e. allowing the wheels to push the electric motor, generating electricity while using the electrical resistance of the motor to slow the car.</p> <p>The electric motor will generally operate at times of peak load, such as acceleration. The biggest benefit in terms of fuel economy is to allow the vehicle to have a downsized conventional engine, thus saving fuel all the time while still having the performance of a vehicle with a larger engine.</p> <p>This type of hybrid is best suited to urban driving, with frequent acceleration and deceleration. For this reason the Toyota Prius is one of the most popular taxis in the UK. In motorway conditions however, there is little opportunity to collect electrical energy, and the downsized engine may be less efficient than a larger equivalent.</p>
<p>Plug in hybrid (PHEV)</p>	<p>The term plug-in hybrid normally refers to a parallel hybrid fitted with a larger battery pack, and the ability to charge from an external source of electricity. The ‘plug-in’ Prius, for example, has a battery about four times larger than the non-plug-in Prius, meaning it can be driven just by the electric motor for 12.5 miles.</p> <p>Since most journeys, especially in urban areas, are quite short, this type of vehicle can operate in pure electric mode for much of the time. However, if necessary it can be used for longer journeys, operating in the same way as a parallel hybrid once it’s all electric range is used up.</p>
<p>Series hybrid (or Range Extended Electric Vehicle - REEV)</p>	<p>Like a parallel hybrid, a series hybrid has an electric drivetrain and a ‘conventional’ engine. However, in a series hybrid the conventional engine is only used to generate electricity to extend the range of the battery, not to directly drive the wheels. The Vauxhall Ampera and BMW i3 are the best known series hybrids in the UK market.</p> <p>The advantage of the series approach is that in theory the conventional engine can be redesigned once it no longer has to drive the wheels. As it is only generating electricity, it can be made smaller, lighter, and more efficient at a single power output. Meanwhile only the very efficient electric motor(s) are actually used to drive the wheels.</p> <p>In practice, series hybrids tend to have larger batteries than plug-in (parallel) hybrids, hence they are seen as Range Extended Electric Vehicles (REEVs). Charged from the mains, the Ampera has a range of around 50 miles before the range extender needs to kick in. This type of vehicle offers more opportunity to redesign the chassis and the conventional engine, and manufacturers are only</p>

	<p>just starting to exploit these possibilities fully, particularly BMW with the i3.</p>
Battery electric (BEV)	<p>A Battery Electric Vehicle (BEV) is a straightforward electric vehicle with only electric motors driving the wheels and a battery to store energy. Typical range on one charge is around 100 miles, but the top of the range Tesla S can achieve 270 miles (with a £90,000 price tag).</p> <p>The battery of a BEV is charged from an external source. Most BEVs (cars) can charge from a standard plug socket, but this usually takes 6- 8 hours, and a heavy duty (blue) plug is recommended for regular use. Dedicated charging posts are able to deliver a 'fast' charge in 3-4 hours. 'Rapid' chargers can deliver an 80% charge in around 30 minutes, but not all BEVs can accept this level of charge, and installing rapid chargers is expensive as they draw so much current that local electricity grids often need upgrading to support them.</p>
Gas	<p>Internal combustion engines can run on natural gas from the UK gas grid. A modern gas engine is very similar to the latest petrol engines, using spark plugs to ignite the gas, and a 3-way catalyst to remove CO, hydrocarbons and NOx from the exhaust. The efficiency is also similar to a petrol engine.</p> <p>Natural gas, or methane, is the cleanest burning fossil fuel in terms of carbon emissions. 'Biomethane' is methane produced through anaerobic digestion of organic material, and so is a renewable fuel with very low lifecycle greenhouse gas emissions.</p> <p>Gas can be stored on a vehicle either in compressed or liquefied form. Compressed gas needs to be stored in pressurised tanks, and takes up over three times as much volume as petrol or diesel (for the same amount of energy), which will limit the practical range of the vehicle on a single fill. Liquefied gas has double the energy density of compressed gas, giving longer vehicle range, but must be stored in a special tank at -162°C. Over a period of days, the gas will warm up and 'boil off' so such vehicles need to be in constant regular use.</p>
Hydrogen fuel cell	<p>A hydrogen fuel cell vehicle is driven by electric motors, but uses a fuel cell in place of a battery. A fuel cell is a device which can create electricity continuously through the chemical reaction of a fuel. A hydrogen fuel cell reacts hydrogen with oxygen in a controlled way, to create a stream of electrons (rather than an explosion and lots of heat, as usually happens when hydrogen reacts with oxygen).</p> <p>The advantage of a fuel cell vehicle is that it is essentially an electric</p>



	<p>vehicle that can be refuelled at a filling station.</p> <p>There are still several major obstacles to fuel cell vehicles. The most immediate is the cost of fuel cells themselves, which is still very high. The second is the ability to store hydrogen – compressed hydrogen has a very low energy density, so several tanks are needed to achieve the same range as a conventional fuel tank. This need not be a huge problem if fuelling stations are common, but as yet there are very few they are quite expensive. Finally, hydrogen is only really an energy ‘carrier’ – the well-to-wheel emissions reductions achieved by a hydrogen vehicle depend on the way the hydrogen is created.</p>
<p>Novel hybrid (flywheel, air, hydrogen)</p>	<p>While most hybrid vehicles use an electric drivetrain, this does require a battery, which is both heavy and expensive. For this reason many engineers have looked at alternative ways of harvesting braking energy and re-using it to improve overall vehicle performance.</p> <p>Flywheels store kinetic energy by accelerating a spinning wheel to tens of thousands of RPM. Although automotive flywheels have been considered theoretically for a long time, they were first made a practical reality with the KERS (Kinetic Energy Recovery System) developed for Formula 1. Since proving the concept in racing, they have been further developed for buses, which have a continuous stop-start drive-cycle well suited to the technology. Two different manufacturers are in the process of bringing these buses to market.</p> <p>Another way of storing braking energy is to use it to compress air in a small pressurised tank. This air can then be used to give a moderate engine efficiency boost by driving a supercharger. A more ambitious system, soon to be put into production by Peugeot, is a full parallel hybrid with a larger compressed air tank and a hydraulic motor which can drive the wheels. Similar to an electric plug-in hybrid, the compressed air tank can be charged/filled from an external source, and the vehicle can drive for short distances on air alone.</p> <p>One novel system uses electrical energy from regenerative braking to generate hydrogen using a small electrolyser. This hydrogen is then fed back into the engine along with the fuel, boosting engine performance and thus reducing fuel consumption.</p>

**Other technologies that don't quite count as 'low emission':**





LPG (liquid petroleum gas)	<p>Liquid Petroleum Gas is a mixture of propane and butane, and is a co-product of the production of refined petrol and/or natural gas (methane). Like natural gas it can be used in an engine very similar to a petrol engine – in fact since manufacturers no longer produce LPG-specific vehicles, all LPG vehicles are now converted from petrol. LPG attracts a lower rate of fuel duty than petrol and diesel, and there is a national network of filling stations, so there are still a significant number of people choosing it on cost grounds.</p> <p>LPG offers around a 15% GHG saving vs petrol, and was supported as a low emissions option by the government. Given that diesel engines are inherently more efficient than petrol, the rise of diesel in the car market has wiped out most of the benefit from using LPG. However, new sources of renewable LPG have become available recently, as a by-product of some biofuel production processes, which could offer significant extra GHG reductions.</p>
Mild hybrid	<p>‘Mild’ hybrids capture energy from regenerative braking, and feed it back into the electrical systems of the vehicle. This recovered electrical energy is not therefore used to directly power the wheels, but will increase fuel economy by reducing the work the engine has to do to recharge the battery via the alternator.</p> <p>In vehicles where the engine has to support a high auxiliary electrical load, mild hybridisation can have a big impact on fuel consumption. This would be true for passenger cars in hot countries where the air conditioning is in constant use. This approach is increasingly being used in larger vehicles, switching refrigeration units to run on batteries for example, and switching refuse truck compactors and bin lifts from hydraulic systems powered by the engine, to electrical operation with much of the energy coming from the continuous stopping and starting of this type of vehicle.</p> <p>The advantage of this approach is that the energy collected from braking can be used without fitting a second, expensive, electric drivetrain. However, the benefits to be gained are limited unless there are significant demands for electricity in the vehicle.</p>
Dual fuel	<p>One drawback of both gas and LPG is that although they are cheaper and cleaner than diesel, they require an ignition source. Diesel engines are more efficient than petrol engines because diesel can be made to ignite when compressed, whereas petrol requires a spark. Due to the different thermodynamics of the processes involved, ‘compression ignition’ engines are about 25% more efficient than ‘spark ignition’ engines, which is why diesel vehicles are cheaper to run even though diesel is more expensive than petrol.</p>



	<p>'Dual fuel' engines attempt to burn gas or LPG with diesel efficiency, by injecting a mixture of diesel and gas into the cylinder. The droplets of diesel ignite under compression, thereby also igniting the gas.</p> <p>Dual fuel engines can only substitute gas for diesel effectively when operating at a high, steady load, such as motorway driving. Dual fuel systems for modern engines are only coming onto the market in small numbers as yet, and the effect of the systems on emissions, especially NOx and methane, is still poorly understood.</p>
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Low emission vehicles – suitability and availability by vehicle type

Cars	 <p>[BMW i3]</p>	<ul style="list-style-type: none"> <li>• Passenger cars are available in a full range of hybrid and electric models.</li> <li>• From an urban air quality point of view, vehicles that can run in full electric mode in urban areas (BEV, PHEV, REEV) are the surest option until Euro 6 tests are improved, but any small petrol car will be very clean.</li> <li>• For fleets running vehicles every day in urban environments, BEVs already offer a good economic payback.</li> </ul>
Taxis	 <p>[Toyota Prius]</p>	<ul style="list-style-type: none"> <li>• [See notes for cars above, which also apply to taxis.]</li> <li>• Due to their mostly urban use, the Toyota Prius has already become one the most popular choices for taxis.</li> <li>• While gas is not really an option for private cars, due to a lack of fuelling infrastructure, black cabs with gas engines are available and being used where access to a fuelling station can be arranged. (As in Reading, where taxis have been given access to the bus company's fuelling station.)</li> </ul>



<p>Small vans</p>	 <p>[ENV200]</p>	<ul style="list-style-type: none"> <li>• There are several all electric small vans available from Nissan, Renault and Peugeot, but no hybrids.</li> <li>• The VW Caddy is available in the UK in a gas variant.</li> <li>• There are currently no factory production hybrid or electric vans in the 2.5-3.5t GVW range (Transit size).</li> </ul>
<p>Large vans and minibuses</p>	 <p>[Fuso Canter hybrid]</p>	<ul style="list-style-type: none"> <li>• In the 3.5-7.5t GVW range there are a small number of hybrid options, notably the Fuso Canter (pictured).</li> <li>• Gas versions of the Mercedes Sprinter and Iveco Daily are available and can offer cost savings vs diesel.</li> </ul>
<p>Rigid trucks (15-26t)</p>	 <p>[Eurocargo CNG]</p>	<ul style="list-style-type: none"> <li>• Gas is the only low emissions technology available for this type of vehicle – the Iveco Eurocargo is the only readily available model.</li> <li>• Typical mileages for this type of truck are too low to offer economic payback on this type of gas truck if the cost of a fuelling station is included. However, it may be economic for a mixed fleet, where more of the cost of refuelling infrastructure is recovered from other vehicle types using more fuel.</li> </ul>
<p>Refuse collection vehicles</p>	 <p>[Econic CNG]</p>	<ul style="list-style-type: none"> <li>• Mercedes and Scania make gas fuelled RCVs. The high fuel consumption of these vehicles makes economic payback relatively quick, even with the cost of refuelling infrastructure.</li> <li>• Some manufacturers, including Volvo, are developing hybrid options, as this is suited to the stop-start nature of their use. Recovered braking energy may also be used to power bin-lifts and compactors, rather than the vehicle.</li> </ul>

<p>Buses</p>	 <p>[Optare Solo Flybus]</p>	<ul style="list-style-type: none"> <li>• A full range of low emission technologies are available for buses – hybrid, plug-in-hybrid, electric, flywheel hybrid, gas and hydrogen.</li> <li>• The stop-start drive-cycle and high mileage make all options suitable for buses – the best fit needs to be assessed on a case-by-case basis.</li> </ul>
<p>HGVs</p>	 <p>[Volvo FM methane-diesel]</p>	<ul style="list-style-type: none"> <li>• Electric and hybrid are not suitable technologies for long-haul trucks as the batteries required would be too heavy, and there is little opportunity to recover braking energy.</li> <li>• Gas is a viable option, but is limited as most hauliers require engines of 400+ bhp, and the most powerful gas engines currently available are around 330 bhp.</li> <li>• Several hauliers are switching to dual fuel vehicles, as these offer cost and emissions savings while still providing the safety net that they can run on diesel if the gas runs out.</li> </ul>

# Equality, Diversity, Cohesion and Integration Screening



As a public authority we need to ensure that all our strategies, policies, service and functions, both current and proposed have given proper consideration to equality, diversity, cohesion and integration.

A **screening** process can help judge relevance and provides a record of both the **process** and **decision**. Screening should be a short, sharp exercise that determines relevance for all new and revised strategies, policies, services and functions.

Completed at the earliest opportunity it will help to determine:

- the relevance of proposals and decisions to equality, diversity, cohesion and integration.
- whether or not equality, diversity, cohesion and integration is being/has already been considered, and
- whether or not it is necessary to carry out an impact assessment.

<b>Directorate:</b> Strategy & Resources	<b>Service area:</b> PPPU
<b>Lead person:</b> Polly Cook	<b>Contact number:</b> 0113 3952484

## 1. Title: Leeds' Air Quality

Is this a:

Strategy / Policy
  Service / Function
  Other

If other, please specify

## 2. Please provide a brief description of what you are screening

The proposal is to define the Council's role in addressing the city's air quality problem, and to develop a strategy to positively contribute to improving air quality in Leeds, taking into account the policy levers available to the Council, the impact on businesses and the economy, and public health.

## 3. Relevance to equality, diversity, cohesion and integration

All the council's strategies/policies, services/functions affect service users, employees or the wider community – city wide or more local. These will also have a greater/lesser relevance to equality, diversity, cohesion and integration.

The following questions will help you to identify how relevant your proposals are.

When considering these questions think about age, carers, disability, gender reassignment, race, religion or belief, sex, sexual orientation. Also those areas that impact on or relate to equality: tackling poverty and improving health and well-being.

<b>Questions</b>	<b>Yes</b>	<b>No</b>
Is there an existing or likely differential impact for the different equality characteristics?	X	
Have there been or likely to be any public concerns about the policy or proposal?	X	
Could the proposal affect how our services, commissioning or procurement activities are organised, provided, located and by whom?	X	
Could the proposal affect our workforce or employment practices?		X
Does the proposal involve or will it have an impact on <ul style="list-style-type: none"> <li>• Eliminating unlawful discrimination, victimisation and harassment</li> <li>• Advancing equality of opportunity</li> <li>• Fostering good relations</li> </ul>		X

If you have answered **no** to the questions above please complete **sections 6 and 7**

If you have answered **yes** to any of the above and;

- Believe you have already considered the impact on equality, diversity, cohesion and integration within your proposal please go to **section 4**.
- Are not already considering the impact on equality, diversity, cohesion and integration within your proposal please go to **section 5**.

#### **4. Considering the impact on equality, diversity, cohesion and integration**

If you can demonstrate you have considered how your proposals impact on equality, diversity, cohesion and integration you have carried out an impact assessment.

Please provide specific details for all three areas below (use the prompts for guidance).

- **How have you considered equality, diversity, cohesion and integration?** (think about the scope of the proposal, who is likely to be affected, equality related information, gaps in information and plans to address, consultation and engagement activities (taken place or planned) with those likely to be affected)

Yes. The information available to us from various sources that confirms some specific equality strands are disproportionately affected by Air Quality issues, such as disabled people (asthma/COPD), elderly people (poorer immune systems and less reserve) and pregnant women (low birth weight babies and increased maternal complications). The following information is extracted from a presentation delivered by a clinician specialising in respiratory conditions in June 2015:

The statistics are as follows:

Increased rates of asthma development with air pollution.

- 30% increase in adult onset asthma for every 1- $\mu\text{g}/\text{m}^3$  increase in the concentration of traffic-generated PM10
- Increased risk of COPD

A 7- $\mu\text{g}/\text{m}^3$  increase in the 5-year mean PM10 concentration was associated with a 33% increase in the development of COPD and a 5.1% decline in forced expiratory volume.

There are also increase risks of:

- Pneumonia in adults
- Lung cancer
- General mortality

The recommendations contained in the main Executive Board report have been designed with the intention of delivering tangible outcomes that will improve air quality in Leeds, and consequentially improve conditions for the afore mentioned groups.

- **Key findings**

(think about any potential positive and negative impact on different equality characteristics, potential to promote strong and positive relationships between groups, potential to bring groups/communities into increased contact with each other, perception that the proposal could benefit one group at the expense of another)

As above, the negative impacts are health related, and the positive impacts brought about by improving air quality will have a positive effect on all members of the public, therefore there are only advantages for all by implementing the recommendations detailed in the main report.

- **Actions**

(think about how you will promote positive impact and remove/ reduce negative impact)

N/A.

**5. If you are **not** already considering the impact on equality, diversity, cohesion and integration you **will need to carry out an impact assessment.****

Date to scope and plan your impact assessment:	
--	--

Date to complete your impact assessment	
---	--

Lead person for your impact assessment (Include name and job title)	
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**6. Governance, ownership and approval**

Please state here who has approved the actions and outcomes of the screening

Name	Job title	Date
Polly Cook	Executive Programme Manager	25 <sup>th</sup> August 2015
<b>Date screening completed</b>		

**7. Publishing**

Though **all** key decisions are required to give due regard to equality the council **only** publishes those related to **Executive Board, Full Council, Key Delegated Decisions** or a **Significant Operational Decision**.

A copy of this equality screening should be attached as an appendix to the decision making report:

- Governance Services will publish those relating to Executive Board and Full Council.
- The appropriate directorate will publish those relating to Delegated Decisions and Significant Operational Decisions.
- A copy of all other equality screenings that are not to be published should be sent to [equalityteam@leeds.gov.uk](mailto:equalityteam@leeds.gov.uk) for record.

Complete the appropriate section below with the date the report and attached screening was sent:

For Executive Board or Full Council – sent to <b>Governance Services</b>	Date sent:
For Delegated Decisions or Significant Operational Decisions – sent to appropriate <b>Directorate</b>	Date sent:
All other decisions – sent to <a href="mailto:equalityteam@leeds.gov.uk">equalityteam@leeds.gov.uk</a>	Date sent: