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26th June 2017

Dear Sir/Madam

REGULATORY AND LICENSING COMMITTEE

A meeting of the above mentioned Committee has been arranged to take place on **TUESDAY 4th JULY 2017 at 6.00 p.m.** in the **COMMITTEE ROOM**, District Council House, Lichfield to consider the following business.

Yours faithfully

A handwritten signature in black ink, appearing to read 'Neil Turner', is written over a light grey rectangular background.

Neil Turner BSc (Hons) MSc
Director of Transformation & Resources

To: **Members of Regulatory and Licensing Committee:**

Councillors B Yeates (Chairman), O'Hagan (Vice Chairman), Mrs Bacon, Mrs Constable, Drinkwater, Mrs Evans, Miss Fisher, Humphreys, Leytham, Salter, Miss Shepherd, Mrs Stanhope MBE, A. Yeates.



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AGENDA

1. Apologies for Absence
2. Declarations of Interest
3. To approve as a correct record the Minutes of the Meetings held on the 8th February and 11th April 2017 (copy attached)
4. Air Quality Action Plan for Lichfield (copy attached)
5. Environmental Crime Strategy for Lichfield (copy attached)
6. Work Programme (copy attached)



REGULATORY AND LICENSING COMMITTEE

8 FEBRUARY 2017

PRESENT: Councillors B.W. Yeates (Chairman), Warfield (Vice-Chairman), Mrs Baker, Mrs Barnett, Drinkwater, Mrs Evans, Miss Fisher, Humphreys, Leytham, O'Hagan, Miss Shepherd Smedley, Mrs Stanhope MBE and A. Yeates

AN APOLOGY FOR ABSENCE was received from Councillor Mrs Eagland.

193 DECLARATIONS OF INTEREST

Councillor Smedley declared personal interest in Item 5 Street Trading Policy as he is a Member of Lichfield City Council

194 MINUTES

The minutes of the meetings held on 3rd November 2016 and 30th November 2016, as printed and previously circulated were taken as read, approved as a correct record and signed by the Chairman.

195 INTERIM REVIEW OF POLLING PLACES 2017

The Committee received a report requesting recommendation to Council to approve an alternative polling place in Drayton Bassett, Lichfield District.

It was reported that a request had been received from the Headmaster and governors of Manor Primary School, Drayton Lane which was the current polling place as they felt the closure of the school on polling days was disruptive for pupils and costly for parents who have to make alternative arrangements.

It was then reported that Officers had considered and visited two alternative options and the one, the Woman's Institute Hall was discounted due to very limited off site parking and issues manoeuvring vehicles. The second option of St Peter's Church Hall had been considered suitable with adjacent parking with additional parking available on the opposite side of the road. The room itself was also considered suitable to be a polling station.

There was some concern that this request could set a precedence with other schools wishing to no longer have their buildings used as polling places. It was noted that each request would be considered on its own merits.

RESOLVED: That St Peter's Church Hall, Drayton Lane, Drayton Bassett be used as a polling place instead of Manor Primary School.

196 STREET TRADING POLICY

The Committee received a report reviewing the Street Trading Policy 12 months after its adoption.

It was reported that Special Events had been more successful than predicted with 580 traders instead of the predicted 250. It was felt that this had been largely due to the waiver in the fee which Council agreed in April 2016. It was noted that this was predicted to rise further in future years. The Committee noted that this had and would continue to be a significant burden of the Environmental Health department.

The Committee was reminded that it was agreed to subsidise the fee for Special Events to the amount of £12k from another budget within the Council.

During discussions, it was noted that a number of issues had arisen which needed to be reviewed including, poorly run events, incomplete applications and organisations who had been subsidised then rumoured to have made a considerable profit. Officer reported that there was a risk that conflict bidding between events organisers for certain dates had not been addressed in the current policy. The Committee felt that a tiered model for charging dependant on whether the trader was a charity/ information provider or profit maker.

The Committee agreed with the Officers recommendation that due to the wide amount of issues that need reviewing and investigating, a Member Task Group would be the most beneficial route as it would be advantageous to gather information from both Officers and Event Organisers and stakeholders to get the most balanced view before reporting back the Regulatory & Licensing Committee.

Members also agreed that the process should not be rushed to ensure any amendments to the policy are suitable and without gaps.

COUNCILLOR WARFIELD DECLARED A DISCLOSABLE PECUNARY INTEREST AS HIS WIFE IS THE BOWER SECRETARY AND HE LEFT THE ROOM DURING THE ITEM.

RESOLVED: 1) the progress made with the review of the Street Trading Policy be noted;

2) That a Member Task Group comprising of Councillors B. Yeates, Mrs Barnett, Miss Shephard, Mrs Baker, A. Yeates and Mrs Evans be set up to consult stakeholders and identify improvements to the Street Trading Policy and make recommendations to the Committee and the relevant Cabinet Member.

197 REVIEW OF LICENCE AND OTHER FEES AND CHARGES IN REGULATORY SERVICES HOUSING AND WELLBEING 2017/18

The Committee received a report on the proposed fees and charges for Hackney Carriage and Private Hire Licensing and other functions with Environmental Health for 2017/18.

It was reported that the European Court of Justice (ECJ) had delivered judgment in respect of the Supreme Court's request for a preliminary ruling concerning the interpretation of Article 13(2) of Directive 2006/123/EC of the European Parliament on

services in the internal market ('the Services Directive'). It was explained that the ruling stated that only an administration fee could charge at the point of application and only when that application had been approved, could a fee for running and enforcement of the regime be charged.

When asked, it was noted that Scrap Metal Dealer fees were set by Cabinet as currently the legislation stated that it was a Cabinet function. It was also noted that the Government had admitted that this had been a mistake and a review would be forthcoming.

It was reported that the Disclosure and Barring Service (DBS) checks could be moved to an online system in the future as a corporate decision and Officers felt it would be sensible to list the current application fee and the new online fee to prevent the need of a further statutory consultation and associated costs in doing that. A further formal recommendation was added to the report in respect of this.

When asked, it was noted that the Council were no longer going to chip dogs as it was now a legal requirement. The service was provided at a subsidised rate to encourage owners to have their dogs chipped.

RESOLVED: 1) That the statutory consultation for the fees and charges for the functions in Appendix A of the report for the forthcoming financial year 2017/18 be approved;

2) That the fees and charges for the functions as proposed in Appendix B of the report for the forthcoming financial year 2017/18 be approved;

3) That the Head of Regulatory Services Housing and Wellbeing in consultation with the Chairman and Vice Chairman of the Regulatory and Licensing Committee be authorised to set or amend the fees and charges detailed in Appendix A of the report in consideration of any consultation responses received;

4) That the Head of Regulatory Services Housing and Wellbeing in consultation with the Chairman and Vice Chairman of the Regulatory and Licensing Committee be authorised to set on an interim basis any new fees and charges that may arise during the year; and

5) That the Head of Regulatory Services housing and Wellbeing in consultation with the Chairman of the Regulatory and Licensing Committee be authorised to introduce an additional fee (at cost) for online Taxi Licensing DBS criminal record checks prior to the Statutory Consultation.

198 WORK PROGRAMME

The work programme was considered and it was noted that the Air Quality report and Environmental Crime Strategy would be considered in the next Municipal Year. It was reported that there would be a report to the first meeting of the next Municipal Year on Dog Orders.

RESOLVED: That the Work Programme as submitted be agreed.

199 VOTE OF THANKS

It was proposed, duly seconded and

RESOLVED: That the sincere thanks of the Committee be recorded to all the Chairmen and Vice-Chairmen for their work during the past year.

(The meeting closed at 7.15 pm)

CHAIRMAN

REGULATORY AND LICENSING COMMITTEE

11 APRIL 2017

PRESENT: Councillors B.W. Yeates (Chairman), Warfield (Vice-Chairman), Mrs Baker, Mrs Barnett, Drinkwater, Mrs Eagland, Mrs Evans, , Humphreys, Leytham, O'Hagan, Miss Shepherd Smedley, Mrs Stanhope MBE and A. Yeates

AN APOLOGY FOR ABSENCE was received from Councillor Miss Fisher

... **DECLARATIONS OF INTEREST**

There were no declarations of interest

... **PROPOSED DIVERSION OF PART OF PUBLIC FOOTPATH NO 31 IN THE PARISH OF FRADLEY WITH STREETHAY**

The Committee received a report on an application received from Prologis Developments Ltd for a proposed diversion of part of Public Footpath No. 31 in the Parish of Fradley with Streethay.

It was reported that since the confirmation of the new route for Public Footpath No.31 in June 2016, the developers had been granted alternative Reserved Matters proposals which would mean there would be a conflict with users of the footpath and HGV's and other vehicles using the site. It was therefore requested that the footpath be moved to avoid this.

It was also reported that Staffordshire County Council had noticed a discrepancy in the mapping of the footpath when it confirmed in June 2016 and it was also requested to correct these coordinates.

RESOLVED: That part of Footpath No. 31 be diverted around the periphery of the site and adjustments be made to part of the south westerly part of the footpath to maintain integrity of the network.

(The meeting closed at 5.45 pm)

CHAIRMAN

REPORT FOR DECISION

FOR: REGULATORY AND LICENSING COMMITTEE

Date: 4th July 2017

Agenda Item: 4

Contact Officers: Jack Twomey

Telephone: 01543 308734

SUBMISSION BY GARETH DAVIES – HEAD OF REGULATORY SERVICES HOUSING AND WELLBEING

AIR QUALITY ACTION PLAN FOR LICHFIELD

1. Purpose of Report

- 1.1 To seek approval for the draft 2017 Air Quality Action Plan (AQAP) for the Lichfield District prior to a consultation process and submission to DEFRA for initial appraisal.

2. Recommendation

- 2.1 That the Committee agrees the draft 2017 AQAP and the recommendations for reducing nitrogen dioxide levels at Appendix 1 in preparation for consultation with relevant stakeholders.
- 2.2 That the Head of Regulatory Services, Housing and Wellbeing be given delegated authority to amend the AQAP, in consultation with the Committee Chair and Vice Chair, should this be necessary following consultation or comments from DEFRA. Changes of a significant nature shall be brought back to this Committee.

3. Summary of Background Information

- 3.1 The Council has a statutory duty to review and assess air quality within the district under the provisions of the Environment Act 1995.
- 3.2 The monitoring of air quality within the District has previously led to two Air Quality Management Areas (AQMAs) being declared, due to nitrogen dioxide emissions from road traffic being above permitted levels.
- 3.3 The first of these AQMAs was declared in 2008 and is at Muckley Corner on the junction of the A5 & A461 Walsall Road. The second was declared in 2016 and is along a stretch of the A38, between Streethay and Alrewas.
- 3.4 An Air Quality Action Plan is required where an AQMA is declared and must detail the measures that will be used to improve air quality within that area. Both AQMAs have been considered in this AQAP.

4. Current Situation

- 4.1 The draft 2017 AQAP which has been produced outlines the actions the Council will take to improve air quality within the Lichfield District, and specifically the two AQMAs which were declared for exceedances in nitrogen dioxide, between 2017 and 2022.
- 4.2 The AQAP considers five broad topic areas, those being: (1) Transport measures (to encourage greener modes of transport and / or reduce road congestion and associated vehicle emissions); (2) leading by example measures (to encourage behavioural change in the local population with respect to travel choices); (3) education, community and partnership measures; (4) statutory measures (use of legislation and enforcement to control air pollution); (5) air quality monitoring (ensure satisfactory data is available to track the outcomes of the AQAP and effectively manage air quality).
- 4.3 The focus is on reduction of road traffic emissions as emissions from industry are not a significant contributor to the nitrogen dioxide exceedances at the AQMAs.
- 4.4 The AQAP outlines how we plan to tackle air quality issues *within our control*. It is accepted that whilst there are areas outside of our control we will still have relevant information and will continue to work with regional and central government on policies beyond the Council's direct influence.

5. Financial Implications

- 5.1 The majority of costs relating to measures such as improved traffic management, upgrading of roads etc. would be paid by others such as Highways England or Staffordshire County Council.
- 5.2 For other measures it may be possible to consider a grant application, for example to install electric charging points which the Office for Low Emission Vehicles (OLEV) provides. The Air Quality Grant Programme is also available for funding schemes to improve air quality.
- 5.3 Budget is already allocated to air quality monitoring work and it is not proposed that this is altered.
- 5.4 Additional measures to improve air quality for which external funding is not available will have to be considered on a case by case basis.

6. Sustainability and Climate Change Issues

- 6.1 Whilst the AQAP is primarily designed to deal with local air quality problems, any improvements made, except perhaps for transferring vehicles onto different roads, will inevitably reduce overall pollution levels and thereby be a small but positive step in tackling climate change.

7. Human Rights Issues

- 7.1 Nitrogen dioxide emissions from road vehicles affect human health and increase mortality rates of those living or working in the close vicinity of roads. This pollution can therefore, be considered as threatening the human "right to life" and as such any measures designed to reduce pollution can be seen as a positive influence on the human rights of those living locally.

8. Crime and Community Safety Issues

8.1 None identified.

9. Risk Management Issues

Risk	Likelihood/ Impact	Risk Category	Countermeasure	Responsibility
Delay of AQAP	Likelihood: Low Impact: Medium	Tolerable (Green)	Swift engagement and consultation with the Action Planning Steering Group to finalise the AQAP	Head of Regulatory Services, Housing and Wellbeing & Senior Environmental Protection Officer

Background Documents: Draft Air Quality Action Plan



Air Quality Action Plan



Lichfield District Council
March 2017

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DOCUMENT CONTROL SHEET

Issue/Revision	Issue 1
Remarks	Draft for Comment
Date	March 2016
Submitted to	Jack Twomey
Prepared by	Max Nancarrow (Consultant)
Signature	
Approved by	Dr Antony Wiatr (Principal Consultant)
Signature	
Project number	6332839

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DRAFT



Lichfield District Council
Draft Air Quality Action Plan

In fulfilment of Part IV of the
Environment Act 1995
Local Air Quality Management

March 2017

Local Authority Officer	Jack Twomey
Department	Environmental Protection
Address	District Council House, Frog Lane, Lichfield, Staffordshire WS13 6ZE
Telephone	01543 308734
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Report Reference number	LDC_AQAP_2017
Date	March 2017

DRAFT

Executive Summary

This Air Quality Action Plan (AQAP) has been produced as part of our statutory duties required by the Local Air Quality Management framework. It outlines the action we will take to improve air quality in Lichfield District Council (LDC - the Council), and specifically the two declared Air Quality Management Areas (AQMAs) for nitrogen dioxide (NO₂), between 2017 and 2022. These are Muckley Corner, and the second a section of the A38 in Fradley.

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas^{1,2}.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion³. The Council is committed to reducing the exposure of people in the District of Lichfield to poor air quality in order to improve health.

We have developed actions to improve air quality in the district, and specifically the AQMAs, that can be considered against the following five broad topic areas:

- Transport measures – provision of additional transport infrastructure; changes to road layout or operation; formulation of traffic plans; with the aim being to encourage the use of greener modes of transport, and/or reduce congestion and associated vehicle emissions;
- Leading by example measures – measures that LDC will implement to encourage wider behavioural changes in the local population with respect to their travel choices;
- Education, community and partnership measures – provision of information to increase community awareness of the challenges faced on air quality within the local area, to facilitate behavioural change;

¹ Environmental equity, air quality, socioeconomic status and respiratory health, 2010

² Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

³ Defra. Abatement cost guidance for valuing changes in air quality, May 2013

- Statutory measures – use of legislation and targeted enforcement to control air pollution; and
- Air quality monitoring – ensure satisfactory air quality monitoring data is available to track outcomes of the implementation of our action plan measures and allow effective management of air quality.

Our priorities are focussed on the reduction of emissions from road traffic throughout the District. Regulation of emissions from industry have shown to be sufficient such that these sources of emissions are not the significant contributor to the problems identified by the Council in respect of the AQMAs.

In this AQAP we outline how we plan to effectively tackle air quality issues within our control. However, we recognise that there are a large number of air quality policy areas that are outside of our influence (such as roads managed by Highways England and vehicle emissions standards agreed in Europe), but for which we may have useful evidence, and so we will continue to work with regional and central government on policies and issues beyond the Council's direct influence.

Responsibilities and Commitment

This AQAP was prepared by Bureau Veritas on behalf of LDC with the support and agreement of the Senior Environmental Health Officer.

The recommendations of this AQAP will now be taken forward for consultation with the Action Planning Steering Group and the other identified statutory and non-statutory consultees, prior to implementation.

This AQAP will be subject to an annual review, appraisal of progress and reporting to the Action Planning Steering Group. Progress each year will be reported in the Annual Status Reports (ASRs) produced by the Council as part of our statutory Local Air Quality Management (LAQM) duties.

If you have any comments on this AQAP please send them to Jack Twomey at:

District Council House, Frog Lane, Lichfield, Staffordshire WS13 6ZE

T: 01543 308734

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1 Introduction

This draft Air Quality Action Plan (AQAP), provided for consultation purposes, outlines the actions that Lichfield District Council (LDC - the Council) proposes to deliver between 2017 and 2022, in order to reduce concentrations of air pollutants and exposure to air pollution; thereby positively impacting on the health and quality of life of residents and visitors to the District.

It has been developed in recognition of the legal requirement on the local authority to work towards Air Quality Strategy (AQS) objectives under Part IV of the Environment Act 1995 and relevant regulations made under that part and to meet the requirements of the Local Air Quality Management (LAQM) statutory process. The Act does not prescribe any timescale for preparing an AQAP. However, the Government expect them to be completed within 12 months following the designation of any AQMAs. The prime responsibility for preparing and submitting the AQAP rests with LDC; however, there is a requirement on other relevant stakeholders to collaborate with LDC to identify proposals in pursuit of the AQS objectives within their respective responsibilities and functions.

A dispersion modelling exercise usually provides the technical backup for the appraisal of measures targeting emissions reduction to be included within the AQAP. The AQAP should refer to the findings of this assessment in terms of source apportionment (i.e. where emissions are coming from) so that action plan measures may be targeted appropriately.

An AQAP must include the following elements:

- Quantification of the source contributions to the predicted exceedences of the relevant objectives; this will allow the AQAP measures to be effectively targeted;
- Evidence that all available options have been considered;
- How the local authority will use its powers and also work in conjunction with other organisations in pursuit of the air quality objectives;
- Clear timescales in which the authority and other organisations and agencies propose to implement the measures within its plan;

- Where possible, quantification of the expected impacts of the proposed measures and an indication as to whether the measures will be sufficient to meet the air quality objectives. Where feasible, data on emissions could be included as well as data on concentrations where possible; and
- How the local authority intends to monitor and evaluate the effectiveness of the plan.

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2 Summary of Current Air Quality in Lichfield

LDC is situated in the north of the West Midlands, close to some highly industrialised parts of the UK. To the south west lie Walsall and Birmingham. LDC is only moderately industrialised, but there are a number of major roads in the region, including the M6 Toll, A38 and A5. Consequently, road traffic is the main source of air pollution in the area. Burntwood and Lichfield are the two largest urban areas in the District⁴.

This draft AQAP has been prepared following the declaration of two Air Quality Management Areas (AQMAs) for nitrogen dioxide (NO₂), to be delivered. The first AQMA is in the Muckley Corner area, the second along the A38 in Fradley.

2.1 A5 Muckley Corner AQMA

In 2008 LDC declared an AQMA⁵ for the area encompassing the Muckley Corner Roundabout on the A5 along with a number of surrounding buildings.

Detailed dispersion modelling of the Muckley Corner Junction was undertaken prior to declaration. The junction was previously identified as showing exceedences of the NO₂ annual mean AQS objective and subsequently declared an Air Quality Management Area in 2008. Modelling was carried out for the base year 2009 and the assessment year 2010 (which includes the committed junction redesign). Source apportionment was undertaken showing the contribution of specific vehicle classes (cars, LGV, OGV1, OGV2 and PSV) and background levels of pollution make towards overall NO_x concentrations. The necessary NO_x reductions required to meet the UK annual mean NO₂ objective of 40µg/m³ were calculated for 2010 as it represented the current year at the time.

An Action Planning appraisal assessment, based on the findings of the [then] Further Assessment was also undertaken. Within this work the direct impact of the junction redesign was assessed by comparing with and without scheme scenarios for the same model year (2010). Despite this work, which is predicted to reduce local road traffic emissions and improve air quality, it is expected that the more significant improvements could be achieved through increased use of the M6 Toll Road. The

⁴ 2013 Air Quality Progress Report: Lichfield District Council

⁵ Local Air Quality Management 2010 Nitrogen Dioxide Further Assessment and Air Quality Action Plan for Muckley Corner

Council considers that should the operator of the M6 Toll Road, (Midland Express Ltd) change their pricing policy, a considerable positive impact could be achieved through reducing congestion and HGV traffic on the A5.

This base modelling and source apportionment work has subsequently been updated as part of the preparation of this draft AQAP, with source apportionment being undertaken for a more detailed breakdown of vehicles.

Figure 2.1 - Muckley Corner AQMA

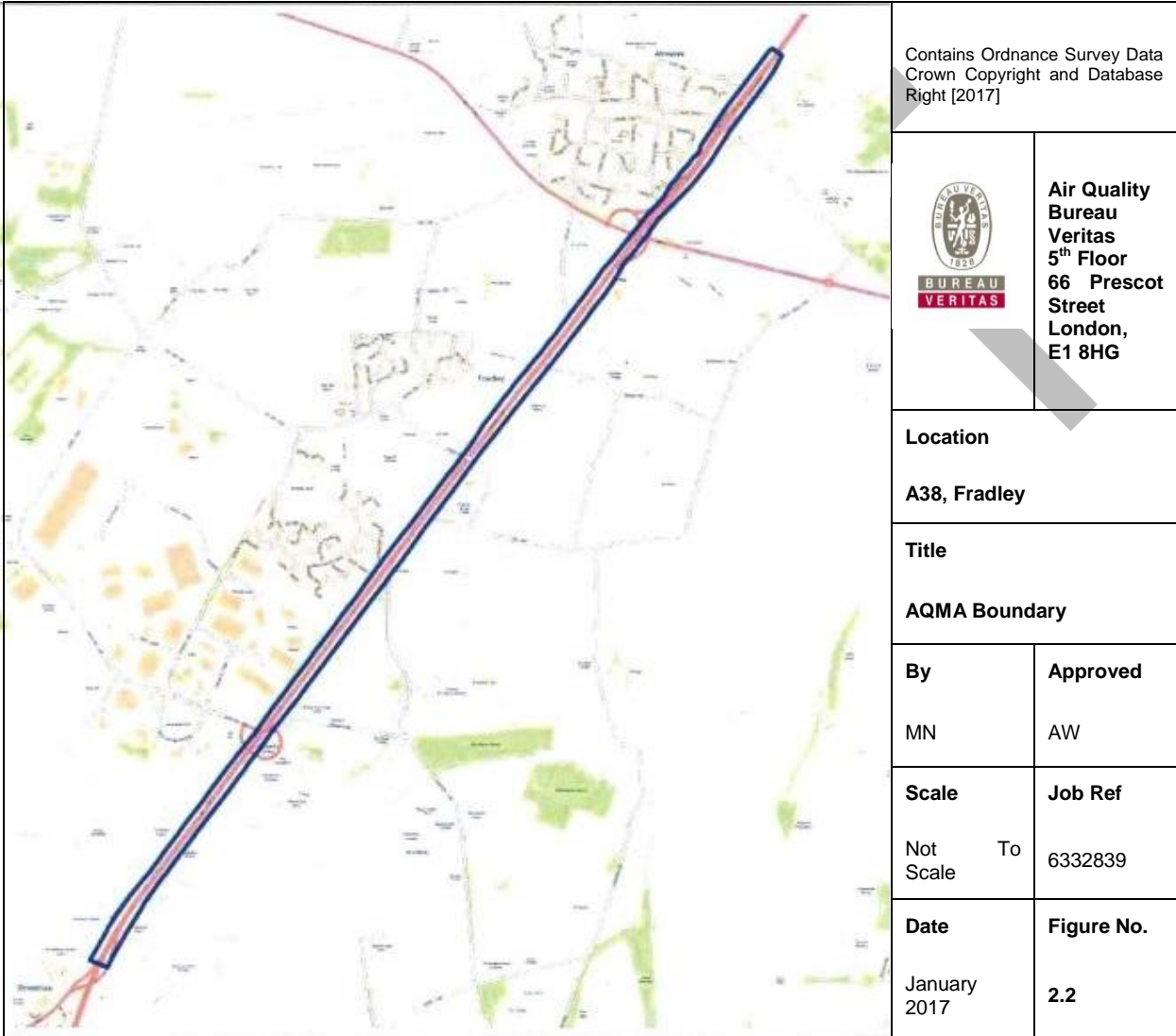


2.2 A38 Fradley AQMA

The conclusions of the 2015 Detailed Assessment of the A38 in Fradley, specifically the region in the vicinity of the Rykneld St junction, were that annual mean NO₂ concentrations were found to be exceeding the 40µg/m³ annual mean AQS objective at six locations of relevant exposure. The gridded output of the model demonstrated that the geographical extent of the exceedence covers the area along the A38 from the junction with the A5127 Burton Road to the District north boundary. The Council

declared an AQMA in this area in 2016, the extent of which is shown below in Figure 2.2. Source apportionment was conducted for this area as part of the preparation of this draft AQAP, building on the inputs of the 2015 Detailed Assessment.

Figure 2.2 - Fradley A38 AQMA



Since declaration of the Muckley Corner AQMA, the Council has taken forward a number of measures in pursuit of improving local air quality, as summarised below. More details on the measures can be found in the Local Plan (2008-2029) and Integrated Transport Strategy (2015-2029). Key completed measures are:

- Public transport services have been maintained and improved through 2014/15 with more bus services linking to Burntwood and Tamworth, and more frequent services to Burton on Trent; and
- The A5/A5148 Wall Island improvement scheme was required due to traffic congestion and queuing problems during peak periods. Works were delivered

in 2014 as part of the Highways Agency's Pinch Point Programme. Traffic signals were introduced on two junction approaches with gap closures and carriageway widening works. This has helped to alleviate daily traffic congestion and reduce journey times as well as improving road safety at the junction.

The Council expects the measures outlined in this draft AQAP, which is considered applicable to both areas given the predominant emissions source in both AQMAs is road traffic, to form the next steps in improving local Air Quality. As a minimum, this Plan will be reviewed every five years, with progress on measures set out within this Plan reported annually within the Council's ASR.

2.3 Recent Monitoring

During 2015, there were eight monitoring sites where the annual mean NO₂ objective was exceeded. Two of these sites (A38-4A/B and A38-5A/B) were outside the AQMAs. The highest annual mean NO₂ concentration was observed at the site MUC-3.

The annual mean concentrations at A38-4A/B, A38-5A/B, MUC-3, MUC-4 and MUC-5 were "distance corrected" to estimate the concentration at locations of relevant exposure. Only the sites MUC-3 and MUC-4 exceeded the annual mean NO₂ objective at the receptor façade with the concentrations of 42.2µg/m³ and 40.9µg/m³ respectively. Both these locations are within the existing Muckley Corner AQMA. Further details are available in the Council's latest statutory LAQM report on Air Quality in the District⁶.

⁶ <https://www.lichfielddc.gov.uk/Residents/Environment/Environmental-health/Pollution/Air-quality-monitoring.aspx>

3 Lichfield District Council's Air Quality Priorities

3.1 Public Health Context

The Air Quality Indicator in the Public Health Outcomes Framework (England) provides further impetus to join up action between the various local authority departments which impact on the delivery of air quality improvements.

To help facilitate this, Defra commissioned research to develop a toolkit to help local authorities and public health professionals tackle air pollution in their area⁷. The toolkit provides a one-stop guide to the latest evidence on air pollution, guiding local authorities to use existing tools to appraise the scale of the air pollution issue in its area. It also advises local authorities how to appropriately prioritise air quality alongside other public health priorities to ensure it is on the local agenda.

Integral to a successful process is the development of communication methods for localised air quality and health impact information. Communication guides were developed through a series of workshops and interviews. Participants included Directors of Public Health, public health professionals, local authority air quality managers and members of the public.

The toolkit comprises the following key guides:

- Getting to grips with air pollution – the latest evidence and techniques;
- Understanding air pollution in your area;
- Engaging local decision-makers about air pollution;
- Communicating with the public on air pollution; and
- Air Pollution: an emerging public health issue: Briefing for elected members.

For LDC, the fraction of mortality attributable to air pollution⁸ is 5%, which is similar to the national average of 5.1%. When combined with age standardised mortality rates per 100,000 in Lichfield given by the office of national statistics⁹, an estimate of approximately 47.3 deaths per 100,000 per year is attributable to air pollution. This is

⁷ <http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=18580>

⁸ Specifically anthropogenic pm_{2.5}

⁹ <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsregistrationsummarytables/2015>, 2014 used as was the year of PHOF indicator

comparable to the number of deaths from cancers considered preventable in persons under the age of 75, at 65.8. Thus, air pollution is a considerable public health issue in the District. It should be noted that this figure only accounts for one pollutant (PM_{2.5}) for which stronger scientific evidence on links with mortality exist, and not NO₂, for which the AQMAs are declared, so the true figure is possibly even higher.

3.2 Planning and Policy Context

There are a number of related policies and strategies at the local and regional level that can be tied in directly with the aims of the AQAP. A majority of these policies and strategies are focused on transportation issues and, therefore are likely to help contribute to overall improvements in air quality across the LDC area. The review of these strategies and policies also assists in not duplicating the work within this AQAP, but instead focus on direct measures outside those considered within these strategies and policies, but that still contribute toward their overall aims.

3.2.1 Local Transport Plan 2011-2026

Staffordshire County Council (SCC) is responsible for producing a statutory Local Transport Plan (LTP) which sets out the Council's strategy for transport. The LTP covers all aspects of transport such as walking, cycling, public transport as well as proposed road building and improvements to existing roads and bridges.

A third LTP (LTP3), covering the period from 2011 to 2026, was submitted to the Department for Transport in March 2011. The Plan is split into the following two documents:

The Strategy Plan¹⁰

The strategy Plan sets out the County Council's proposals and policies for transport provision within the county, including walking, cycling, public transport, car based travel and freight, together with the management and maintenance of local roads and footways.

The County Council's Transport vision in the county is:

A transport system that supports Staffordshire's economy, and safely and conveniently connects people and services within Staffordshire and beyond; it

¹⁰ Reference has been made to the Staffordshire LTP 2011 –Strategy Plan in writing Section 3.1 <http://www.staffordshire.gov.uk/transport/transportplanning/localtransportplan/staffordshirelocaltransportplan2011-strategyplan.pdf>

provides opportunities for services and jobs to be accessed in a sustainable way, and makes sure that any adverse effect of transport on Staffordshire's rich environment and on residents' quality of life is minimised.

The Implementation Plan¹¹

The Implementation Plan for Staffordshire's third LTP is split into two parts; the first part sets out how available funding will be used in order to deliver the LTP objectives over the period (2011/12 to 2014/15). The second part describes the arrangements that have been put in place for overseeing LTP delivery and ensuring that it remains on track to meet its objectives.

▪ Existing Road Network and Future Transport Pressures¹²

Within LDC there are a number of major link roads, including the M6 Toll, A38 and A5. Consequently, road traffic is the predominant source of air pollution in the area. Considering the wider region, Staffordshire is a diverse county situated near the geographical centre of England and has the greatest population of all the shire counties in the West Midlands. It shares borders with 11 other strategic authorities and influences traffic into the East Midlands and the North West. To the south of the county the economies of the Black Country and Birmingham strongly influence work travel patterns, as do the economies of Stoke-on-Trent, Cheshire and Derbyshire in the north and east of the county. Conversely, Staffordshire influences travel to work patterns in these areas, with 16% of the county's workforce living outside of the county.

The current and future challenges and constraints on regional traffic and transport are set out in the following sections:

▪ Local Transport Plan Objectives

- *Supporting Growth and Regeneration**
 - Stimulating areas of generation and deprivation.
 - Supporting rural communities.
 - Facilitating tourist activity.

¹¹ Reference has been made to the Staffordshire LTP 2011 - **Implementation Plan** in writing Section 3.1 <http://www.staffordshire.gov.uk/transport/transportplanning/localtransportplan/implementationplan.pdf>

¹² Local Air Quality Management 2010 Nitrogen Dioxide Further Assessment and Air Quality Action Plan for Muckley Corner.

- Maximizing the impact of events on traffic movement.
- Managing network capacity.
- Keeping the highway in good state of repair.
- Improving the efficiency of freight distribution.

- *Maintaining the Highway Network**
 - Ensuring the maximum benefit from the highway.
 - Delivering better street lightening
 - Designing for maintenance.
 - Delivering winter services.
 - Delivering sustainable highway maintenance.
 - Improving communication.
 - Ensuring better co-ordination of activities and joint working.

- *Making Transport Easier to Use and Places Easier to Get to**
 - Improving integration between transport and land-use planning
 - Improving bus services
 - Supporting residents with mobility impairments and those without access to private motor vehicle
 - Improving and integration 'other' transport services.

- *Improving Safety and Security*
 - Delivering engineering measures
 - Delivering road safety education, training and publicity
 - Supporting road safety enforcement.
 - Reducing crime fear of crime and anti-social behavior.
 - Planning for and responding to damage caused to transport infrastructure.

- *Reducing Road Transport Emissions and Their Effects on the Highway Network*
 - Promoting alternatives to private motor vehicles
 - Promoting the use of low-emitting vehicles and vehicle efficiency
 - Leading by example

- Improving the resilience of the transport network to climate change.
- *Improving Health and Quality of Life*
 - Getting more people walking and cycling.
 - Supporting access to services.
 - Enabling community cohesion.
 - Reducing the number and severity of road traffic collisions.
 - Reducing the impact of traffic noise.
 - Reducing emissions from road transport.
 - Reducing the impact of artificial light.
- *Respecting the Environment.*
 - Reducing road transport emissions.
 - Reducing the negative impact of artificial light.
 - Minimising flooding, soil erosion and pollutants entering watercourses.
 - Minimising the risk of soil contamination.
 - Improving townscapes and heritage assets on the highway.
 - Enhancing the quality of rural landscapes and the associated biodiversity.
 - Protecting the network of internationally significant nature conservation sites.

Considering the above in the context of regional air quality improvement, the LTP3 sets out the following policies:

Policy 5.1: Promote alternatives to private motor vehicles

This will be achieved by:

- Investing in measures to improve conditions for pedestrians and cyclist particularly in urban areas.
- Encouraging major employers to develop travel plans as a way of managing travel to and from work in a sustainable way.
- Encouraging local planning authorities to secure development patterns and mixes that reduce the need to travel and enable the use of smarter travel modes.

- Supporting new development that includes or is located in areas with good public transport links.
- Working with local planning authorities and developers to mitigate impacts of development in less sustainable locations but which is essential to support regeneration and economic growth.
- Promoting the financial and environmental benefits to businesses of adopting flexible working practices.
- Ensuring transport and access is considered at an early stage in service design and delivery.
- Raising awareness of the financial, environmental and social benefits of taking services to communities/people.
- Sharing information about improving local air quality through the Staffordshire Air Quality Forum (SAQF).
- Promoting the financial, environmental and health benefits of smarter travel modes to Individuals.
- Promoting (and running) schemes that encourage the take up of smarter travel modes.
- Encouraging local planning authorities to keep their car parking strategies under review.
- Introducing Traffic Regulation Orders (such as clear zones, low-emission zones and no stopping/parking zones), subject to there being suitable alternative routes, especially in urban areas, AQMAs, and areas given specific environmental designation such as Special Areas of Conservation (SAC) and Areas of Outstanding Natural Beauty (AONB).

Policy 5.2: Promote the use of low-emitting vehicles and vehicle efficiency

This will be achieved by:

- Investigating measures that will encourage the adoption of low-emitting vehicles such as the installation of electric vehicle charging points in pilot areas.
- Encouraging individuals to purchase low-emitting vehicles and undertake eco-driver training.
- Investigating the possibility of giving low-emitting vehicles greater road priority.

- Encouraging businesses with a company car fleet that when replacing vehicles they consider purchasing lower emitting vehicles, put their drivers through eco-driver training and minimise their business mileage.
- Encouraging public transport operators that when replacing vehicles they consider purchasing lower emitting vehicles and put their drivers through eco-driver training.
- Lobbying Government, Network Rail and train operating companies to electrify more of the county's rail lines.
- Creating Freight Quality Partnerships where partners are willing and benefits are identifiable.

Policy 5.3: Leading by example to reduce Staffordshire Road Transport Emissions

This will be achieved by:

- Replacing the county council vehicles (when required) with ones that are less polluting and more fuel efficient, wherever possible.
- Assessing the County Council essential car user criteria to ensure that it is fit for purpose.
- Reviewing the County Council staff car parking facilities
- Continuing to develop initiatives, such as flexible working, that reduce the need for employees to use their cars to get to work.
- Investigating the introduction of eco-driver training for some essential car users.
- Ensuring all main council offices have access to a pool bicycle and/or car.
- Using recycled and locally sourced materials whenever possible in County Council highway construction and maintenance schemes.
- Delivering other priorities contained within the County Council's Travel Plan (available on request)

Policy 5.4: Improve the resilience of the transport network to changing climatic conditions

This will be achieved by:

- Delivering the priorities contained within the Council's Climate Change Adaptation Strategies (www.staffordshire.gov.uk).

- Assessing, managing and minimising risks posed by climate change to people and property where it relates to the transport network.
- Managing disruption and ensuring rapid recovery of the transport network from the impact of a climate change related event.
- Encouraging all owners of the transport network to manage, maintain and develop it with climate change in mind.
- Supporting new development that has been designed with climate change in mind by, for example, including green space, tree planting and artificial shade.

3.2.2 Lichfield Climate Change Strategy

There are a number of policy's and strategies at regional and local level that support or require the reduction and impacts of climate change to be addresses in the development of planning policies.

At county level, Staffordshire County Council has published a corporate climate change strategy "Green Shoots" 3rd edition in 2013. This sets the ambitious target of 80% reduction in CO₂ emissions by 2050 from 1990 levels¹³.

The key projects in the action plan of the this climate change strategy that will be undertaken by the county council over the next five years, in order to fulfil the carbon reduction targets are:

- Renewable Energy:
 - Installation of solar Photo Voltaic (PV) across school estate.
 - Installation of biomass heating systems on schools estate
 - Installation of solar PV across corporate estate.
 - Renewable energy delivery plan.
- Energy Efficiency
 - Ensure insulation is 270mm in corporate buildings.
- Travel
 - A reduction in business mileage by 10%.
 - Revision of Sustainable Travel Plan.
 - Changes to the specification of leased vehicles.

¹³Staffordshire County Council _Corporate Climate Change Strategy "Green Shoots" 3rd Edition _2013
<http://www.staffordshire.gov.uk/environment/climatechange/Green-Shoots-Final-Version2.pdf>

- Road Lighting
 - Reduced hours / levels of street lighting
- Energy Efficiency
 - White light technology
 - Carbon Trust Collaborative Low Carbon Schools Service
- Information and Communications Technology (ICT)
 - Replacement of desktop personal computers to thin clients.
- Waste and Recycling
 - Improved Recycling Rates and Joint Municipal Waste Management Strategy Refresh
- Procurement
 - Revision of sustainable procurement policy
- Communications
 - NUS Green Impact Programme
 - Science for Sustainability
- Partnership Working
 - Staffordshire Climate Change Partnership and Student Placements
- Energy Efficiency
 - Community Energy Audits
- Supporting Local Businesses
 - Support local businesses to reduce their energy bills and make them more resilient to climate change

3.2.3 Lichfield Local Plan Strategy February 2015

The Lichfield District Local Plan: Strategy was submitted for examination in March 2013. In 3 September 2013, following hearings in June-July 2013, main modifications were recommended. The Lichfield Local Plan Strategy was adopted, after modification, in February 2015.

This document provides the broad policy framework and establishes a long-term strategy to manage development, provide services, deliver infrastructure and create sustainable communities. The Strategic priorities related to air quality in the LDC's Local Plan Strategy is as follows:

Strategic Priority 3: Climate Change

To create a District where development meets the needs of our communities whilst minimising its impact on the environment and helps the District to mitigate and adapt to the adverse effects of climate change.

Strategic Priority 5: Sustainable Transport

To reduce the need for people to travel by directing most growth towards existing sustainable urban and rural settlements and by increasing the opportunities for travel using sustainable forms of transport by securing improvements to public transport, walking and cycling infrastructure.

The following core policies will have a direct impact on local air quality and are to be delivered in the context of the above strategic goals.

Core Policy 3: Delivering Sustainable Development

The Council will require development to contribute to the creation and maintenance of sustainable communities, mitigate and adapt to the adverse effects of climate change, make prudent use of natural resources, reduce carbon emissions, enable opportunities for renewable energy and help minimise any environmental impacts.

Within this, also directly relevant is:

Policy SC2: Renewable Energy - Biomass Energy Development

- minimise pollution from noise, emissions and odours;
- minimise emissions and waste products, including airborne emissions, emissions to watercourses and ash

Core Policy 5: Sustainable Transport

The Council will continue to work with partners to improve accessibility, by enhancing sustainable transport opportunities and encouraging development that reduces the need to travel and changes to travel behaviour through a balance of transport measures. Future development within the District will be focused on the most accessible settlements and locations to reduce the need to travel.

Development proposals will, either individually or collectively, have to make appropriate provisions for:

- Reducing the need to travel;

- Widening travel choices and making travel by sustainable means of transport more attractive than the private car;
- Improving road safety; and
- Improving air quality and reducing the impact of travel upon the environment, in particular reducing carbon emissions that contribute to climate change.

Core Policy 10: Healthy & Safe Lifestyles

The District Council will ensure that the current high standard of air quality in the District is monitored and maintained and, where possible, improved with no decline in standards being deemed acceptable as a result of new development.

3.3 Source Apportionment

The AQAP measures presented in this report are intended to be targeted towards the predominant sources of emissions within the Council's area, with specific focus on those emissions sources which contribute to the exceedences of the annual mean AQS objective for NO₂ within the AQMAs.

To better understand the contribution of various emissions sources to the total annual mean NO₂ concentrations, a source apportionment exercise was undertaken, for both NO_x and NO₂.

The methodology to achieve this involves dispersion modelling of road traffic emissions. Emissions are attained using traffic data obtained from the Department for Transport (DfT)¹⁴, input into version 6.0.2 of the Emissions Factor Toolkit¹⁵, set up under 'Detailed Option 2'. To enable source apportionment of Road-NO_x emissions, the 'breakdown by vehicle' and 'source apportionment' additional outputs were utilised.

Road-NO_x contributions for each source type at receptor locations are then modelled using the ADMS-Roads (Version 4.0) atmospheric dispersion model developed by Cambridge Environmental Research Consultants (CERC), utilising various other inputs including meteorological data.

¹⁴ Department for Transport – Traffic Counts (2014) <http://www.dft.gov.uk/traffic-counts/>

¹⁵ EFT_v6.0.2 available at - <http://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html>

Background pollutant concentrations, as derived for the area from UK-Air, have been added to the ADMS-Roads modelled road source output to calculate predicted total annual mean concentrations of NO_x and NO₂. Both pollutants can then be apportioned appropriately. NO_x is converted to NO₂ concentrations, following the methodology in Defra's Local Air Quality Management Technical Guidance, LAQM.TG(16)¹⁶; and using the NO_x to NO₂ conversion tool (version 4.1¹⁷) published by Defra for consistency with previous model outputs for Fradley. For further details consult Appendix D.

Local sources contributions have then been defined by modelling local traffic emissions. The vehicle splits are as follows:

- Cars;
- Buses/Coaches;
- LGVs;
- HGVs; and
- Motorcycles.

LAQM.TG(16)¹⁶ also recommends the separation of regional background (over which local authorities do not have control), local background contribution (over which authorities should have some influence) and local sources (the principal sources for the local authority to control).

For each location the total NO_x from all vehicle classes as well as the percentage attributable to background sources has been therefore been predicted.

Separate exercises have been conducted for each of the two AQMAs.

A source apportionment study for the Muckley Corner AQMA was initially carried out as part of the Further Assessment completed following declaration, as then required by the LAQM regime. This has been updated with 2014 data as part of this AQAP, requiring a base model set up and a new verification exercise (the details of which are presented in Appendix D).

¹⁶ Department for Environment, Food and Rural Affairs (Defra) Local Air Quality Management Technical Guidance (TG16), April 2016, available at <http://laqm.defra.gov.uk>. Used under Open Government Licence v.3. © Crown copyright 2016

¹⁷ <http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html#NOxNO2calc>

A source apportionment study has also been undertaken for the A38 Fradley AQMA, subsequent to the Detailed Assessment that led to its declaration, building on the base model used in that assessment. For the full verification and methodology of that modelled domain, consult the Detailed Assessment⁶.

Source apportionment results for modelled NO_x concentrations are presented in the following sections, separated for NO_x and NO₂, as follows:

- An illustration of the high level source apportionment of NO_x concentrations averaged across all modelled locations, providing information regarding:
 - The regional background, which the Council is unable to influence;
 - The local background, which the Council should have some influence over; and
 - Other local sources (explicitly modelled), which the Council should have full control over.
- A more detailed source apportionment of the local source contributions to NO_x concentrations, based on:
 - The average across all modelled locations. This provides useful information when considering possible action measures to test and adopt. It will however understate road NO_x concentrations in problem areas;
 - The average across all locations with NO₂ concentration greater than 40µg/m³. This provides an indication of source apportionment in areas known to be a problem (i.e. only where the AQS objective is exceeded). As such, this information should be considered with more scrutiny when testing and adopting action measures; and
 - The location where the maximum road NO_x concentration has been predicted. This is likely to be in the area of most concern and so a good place to test and adopt action measures. Any gains predicted by action measures are however likely to be greatest at this location and so would not represent gains across the whole modelled area.
- The source apportionment results for NO₂ concentrations use the same approach as was undertaken for NO_x, as follows:

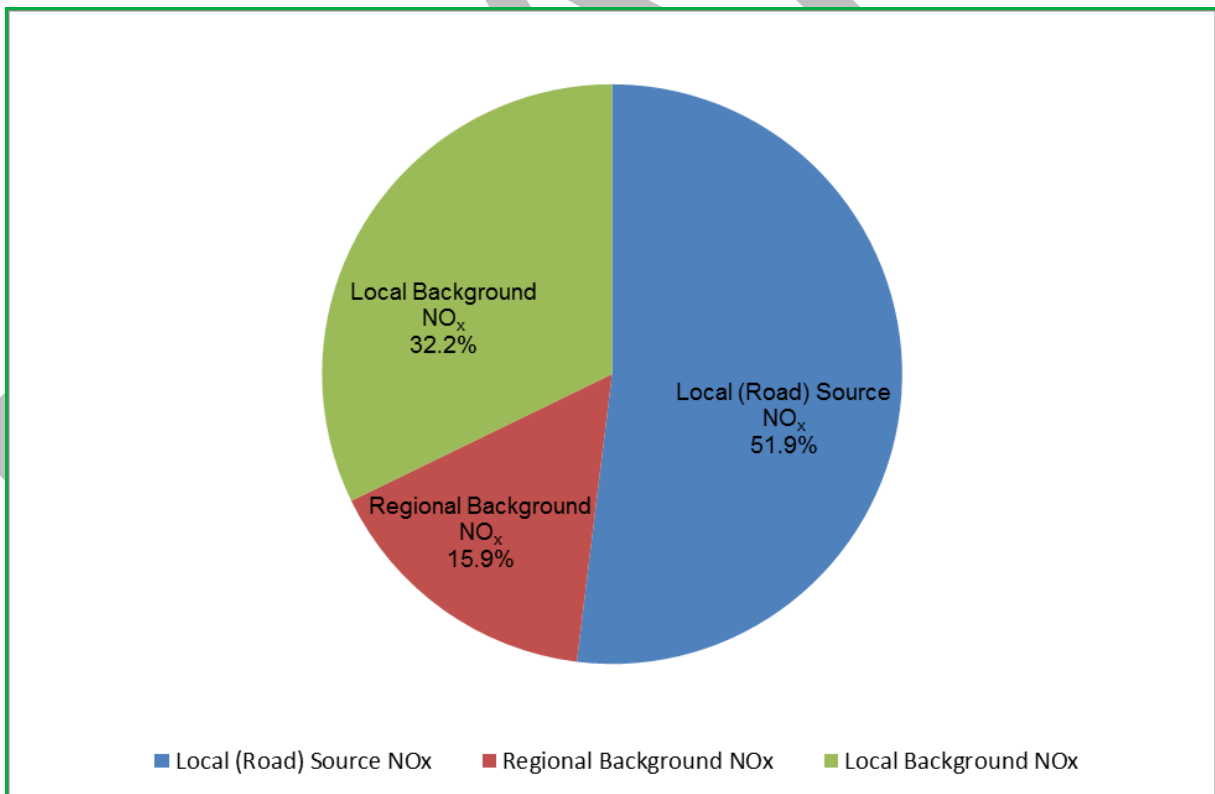
- High level source apportionment of NO₂ concentrations averaged across all modelled locations; and
- More detailed source apportionment of the local sources contribution to NO₂ concentrations, based on the average across all modelled locations; the average at all locations with NO₂ concentration greater than 40µg/m³; and at the location where the maximum road NO₂ concentration has been predicted.

3.3.1 Muckley Corner

The following section describes the source apportionment results in the Muckley Corner area, presented first for NO_x and then for NO₂.

For NO_x, Figure 3.1 demonstrates the contributors to NO_x concentrations at a high level.

Figure 3.1 - High Level Source Apportionment of NO_x Concentrations Averaged Across All Modelled Locations at Muckley Corner



Local road sources have the largest contribution at 51.9%, followed by local background at 32.2%, then regional background at 15.9%. This means the Council may be able to either directly and indirectly influence 84.1% of total NO_x

concentrations with targeted intervention measures and policies (i.e. the sum of the local road sources and the local background) within the Muckley Corner area.

As demonstrated in Table 3.3, when considering the average NO_x concentration across all modelled locations, road traffic accounts for 46.4µg/m³ (66.9%) of total NO_x (54.2µg/m³). Of this total average NO_x, HGVs account for the greatest contribution (25.3%) of any of the vehicle types on average, followed by Cars (15.3%).

When considering the average NO_x concentration at locations with an NO₂ concentration greater than 40µg/m³, the road traffic contribution is much higher, accounting for 61.3µg/m³ (70.1%) of total NO_x (87.5µg/m³). Of this 87.5µg/m³, HGVs account for the greatest contribution (38.9%) of any of the vehicle types, followed by Cars (17.8%).

At the location with the maximum road NO_x concentration (77.9µg/m³ out of a total NO_x of 104.1µg/m³, predicted at 'DT7'), road traffic accounts for 74.9% of the overall NO_x. Of this 104.1µg/m³, HGVs account for the greatest contribution (44.9%) of any of the vehicle types, followed by Cars (17.3%).

Table 3.1 - Detailed Source Apportionment of NO_x Concentrations – Muckley Corner

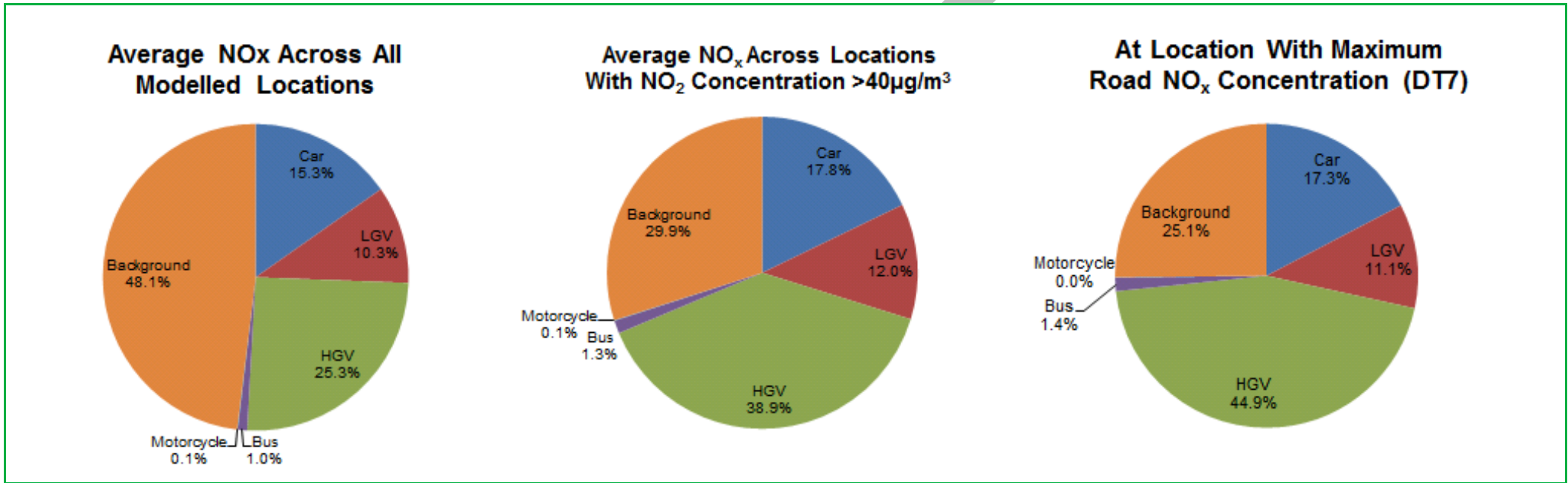
Metric	All Vehicles	Car	LGV	HGV	Bus	Motorcycle	Background
Average Across All Modelled Locations							
NO _x Concentration (µg/m ³)	28.2	8.3	5.6	13.7	0.5	0.0	26.1
Percentage of Total NO _x	51.9%	15.3%	10.3%	25.3%	1.0%	0.1%	48.1%
Percentage Contribution to Road NO _x	100.0%	29.4%	19.9%	48.7%	1.9%	0.1%	-
Average Across All Locations With NO₂ Concentration Greater Than 40µg/m³							
NO _x Concentration (µg/m ³)	61.3	15.6	10.5	34.0	1.2	0.0	26.2
Percentage of Total NO _x	70.1%	17.8%	12.0%	38.9%	1.3%	0.1%	29.9%
Percentage Contribution to Road NO _x	100.0%	25.5%	17.1%	55.5%	1.9%	0.1%	-
At Location With Maximum Road NO_x Concentration (DT7)							

NO_x Concentration (µg/m³)	77.9	18.0	11.6	46.8	1.5	0.0	26.2
Percentage of Total NO_x	74.9%	17.3%	11.1%	44.9%	1.4%	0.0%	25.1%
Percentage Contribution to Road NO_x	100.0%	23.2%	14.8%	60.0%	1.9%	0.0%	-

Figure 3.2 illustrates the detailed source apportionment of NO_x concentrations in pie chart format.

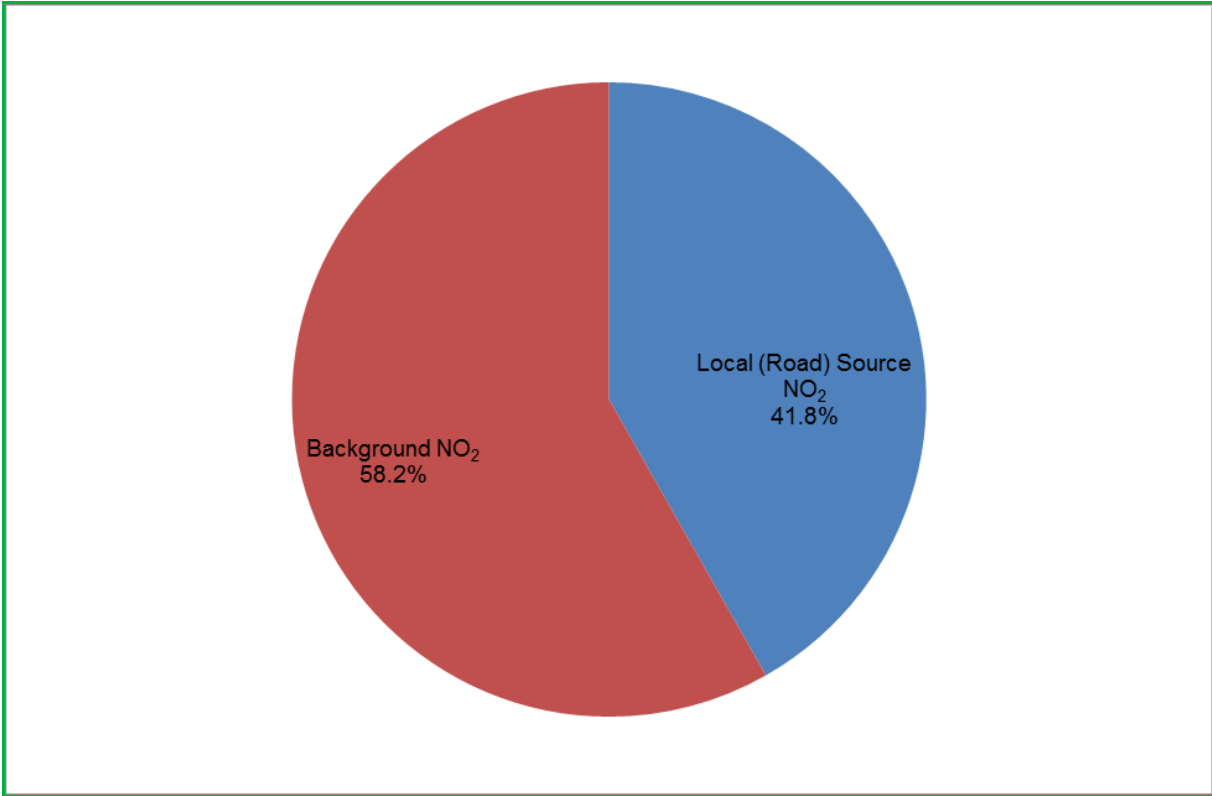
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Figure 3.2 - Detailed Source Apportionment of NO_x Concentrations in Muckley Corner



For NO₂, Figure 3.3 demonstrates the contributors to NO₂ concentrations at a high level.

Figure 3.3 - High Level Source Apportionment of NO₂ Concentrations Averaged Across All Modelled Locations at Muckley Corner



At a high level, the background component has the greater contribution to total NO₂ concentrations at 58.2%, whilst local road sources contribute the remaining 41.8%. It should be noted that it is not possible to separate out the regional and local components of the overall NO₂ background contribution. This means that Council actions could potentially have a direct impact on 41.8% of the total NO₂ concentrations within the Muckley Corner area.

As demonstrated in Table 3.2, when considering the average NO₂ concentration across all modelled locations, road traffic accounts for 13.2µg/m³ (41.8%) of total NO₂ (31.6µg/m³). Of this total average NO₂, HGVs account for the greatest contribution (20.2%) of any of the vehicle types on average, followed by Cars (12.4%).

When considering the average NO₂ concentration at locations with an NO₂ concentration greater than 40µg/m³, the road traffic contribution is much higher, accounting for 27.1µg/m³ (59.5%) of total NO₂ (45.6µg/m³). Of this 45.6µg/m³, HGVs

account for the greatest contribution (33%) of any of the vehicle types, followed by Cars (15.1%).

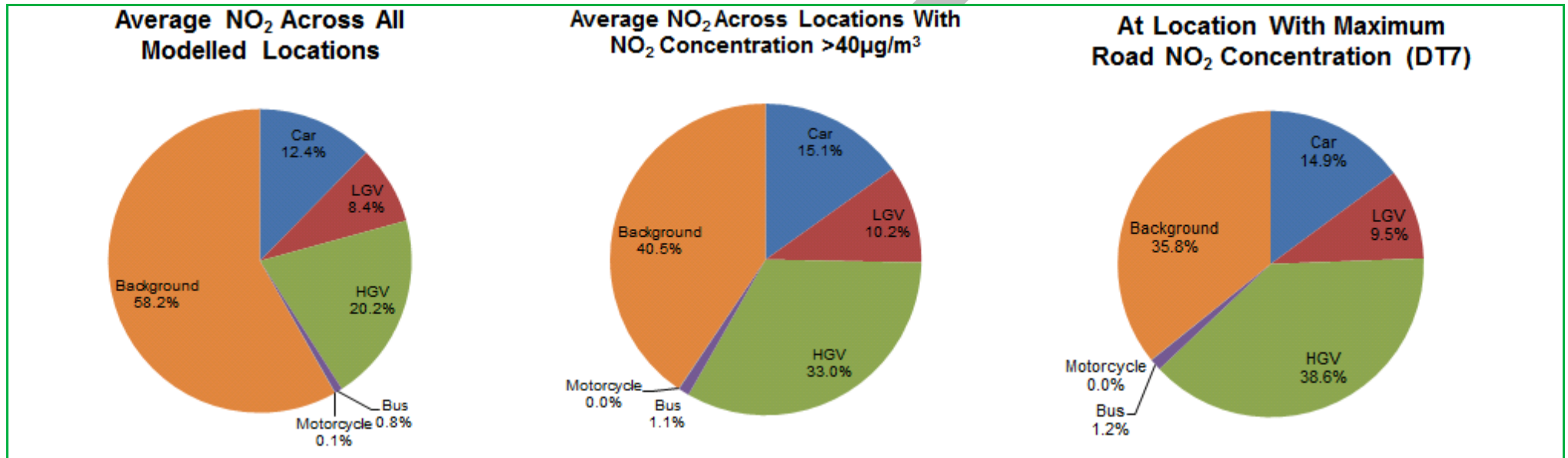
At the location with the maximum road NO₂ concentration (33.2µg/m³ out of a total NO₂ of 51.7µg/m³, predicted at 'DT7'), road traffic accounts for 64.2% of the overall NO₂. Of this 51.7µg/m³, HGVs account for the greatest contribution (38.6%) of any of the vehicle types, followed by Cars (14.9%).

Table 3.2 - Detailed Source Apportionment of NO₂ Concentrations – Muckley Corner

Metric	All Vehicles	Car	LGV	HGV	Bus	Motorcycle	Background
Average Across All Modelled Locations							
NO ₂ Concentration (µg/m ³)	13.2	3.9	2.6	6.4	0.3	<0.1	18.4
Percentage of Total NO ₂	41.8%	12.4%	8.4%	20.2%	0.8%	0.1%	58.2%
Percentage Contribution to Road NO ₂	100.0%	29.6%	20.0%	48.4%	1.9%	0.1%	-
Average Across All Locations With NO₂ Concentration Greater Than 40µg/m³							
NO ₂ Concentration (µg/m ³)	27.1	6.9	4.6	15.0	0.5	<0.1	18.5
Percentage of Total NO ₂	59.5%	15.1%	10.2%	33.0%	1.1%	<0.1%	40.5%
Percentage Contribution to Road NO ₂	100.0%	25.5%	17.1%	55.4%	1.9%	0.1%	-
At Location With Maximum Road NO₂ Concentration (DT7)							
NO ₂ Concentration (µg/m ³)	33.2	7.7	4.9	19.9	0.6	<0.1	18.5
Percentage of Total NO ₂	64.2%	14.9%	9.5%	38.6%	1.2%	<0.1%	35.8%
Percentage Contribution to Road NO ₂	100.0%	23.2%	14.8%	60.0%	1.9%	<0.1%	-

Figure 3.4 illustrates the detailed source apportionment of NO₂ concentrations in pie chart format.

Figure 3.4 - Detailed Source Apportionment of NO₂ Concentrations in Muckley Corner

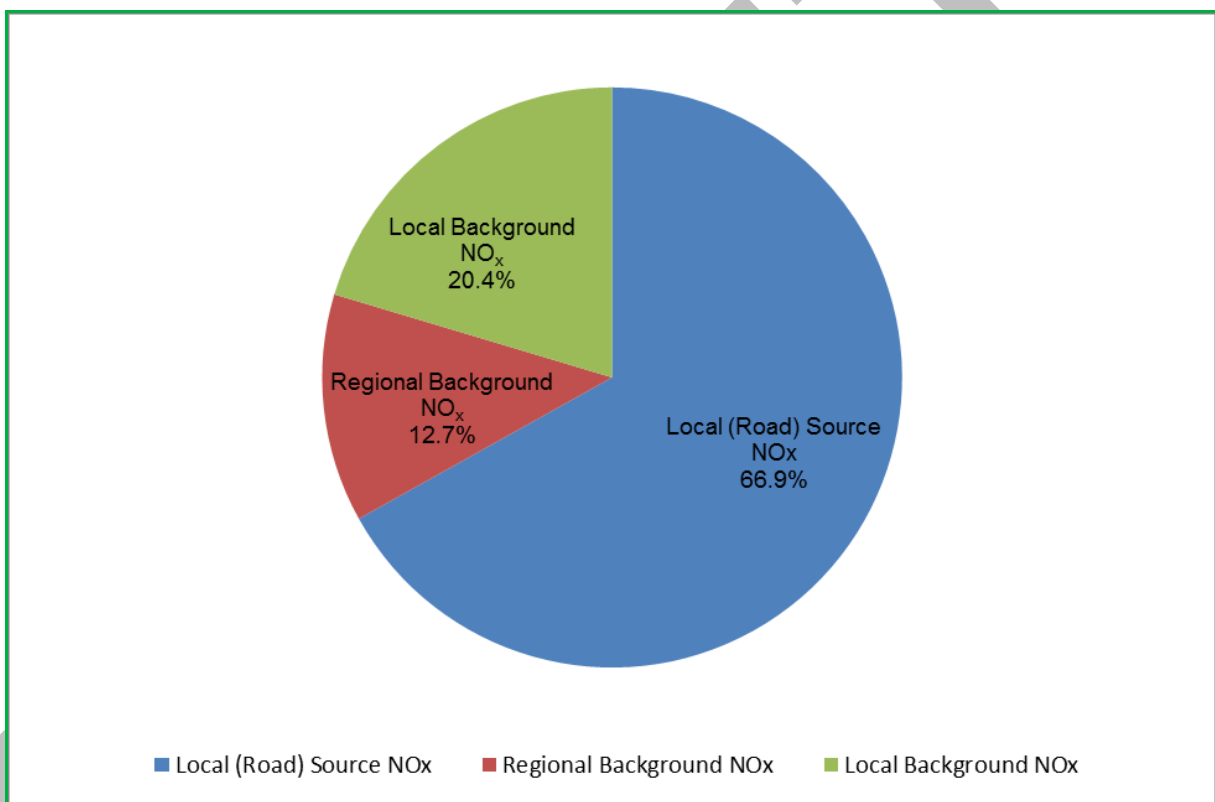


3.3.2 Fradley

The following section describes the Source Apportionment results in the Fradley area, presented first for NO_x and then for NO₂.

For NO_x, Figure 3.5 demonstrates the contributors to NO_x concentrations at a high level.

Figure 3.5 - High Level Source Apportionment of NO_x Concentrations Averaged Across All Modelled Locations in Fradley



Local road sources have the largest contribution at 66.9%, followed by local background at 20.4%, then regional background at 12.7%. This means the Council may be able to either directly and indirectly influence 87.3% of total NO_x concentrations with targeted intervention measures and policies (i.e. the sum of the local road sources and the local background) within the Fradley AQMA.

As demonstrated in Table 3.3, when considering the average NO_x concentration across all modelled locations, road traffic accounts for 46.4µg/m³ (66.9%) of total NO_x (69.4µg/m³). Of this total average NO_x, Cars account for the greatest

contribution (28.9%) of any of the vehicle types on average, followed by HGVs (24.3%).

When considering the average NO_x concentration at locations with an NO₂ concentration greater than 40µg/m³, the road traffic contribution is much higher, accounting for 58.2µg/m³ (71.3%) of total NO_x (81.6µg/m³). Of this 81.6µg/m³, Cars account for the greatest contribution (29.8%) of any of the vehicle types, closely followed by HGVs (27.3%).

At the receptor with the maximum road NO_x concentration (85.7µg/m³ out of a total of 108.5µg/m³, predicted at 'R2'), road traffic accounts for 79% of the overall NO_x. Of this 108.5µg/m³, Cars account for the greatest contribution (38.2%) of any of the vehicle types, followed by HGVs (22.1%).

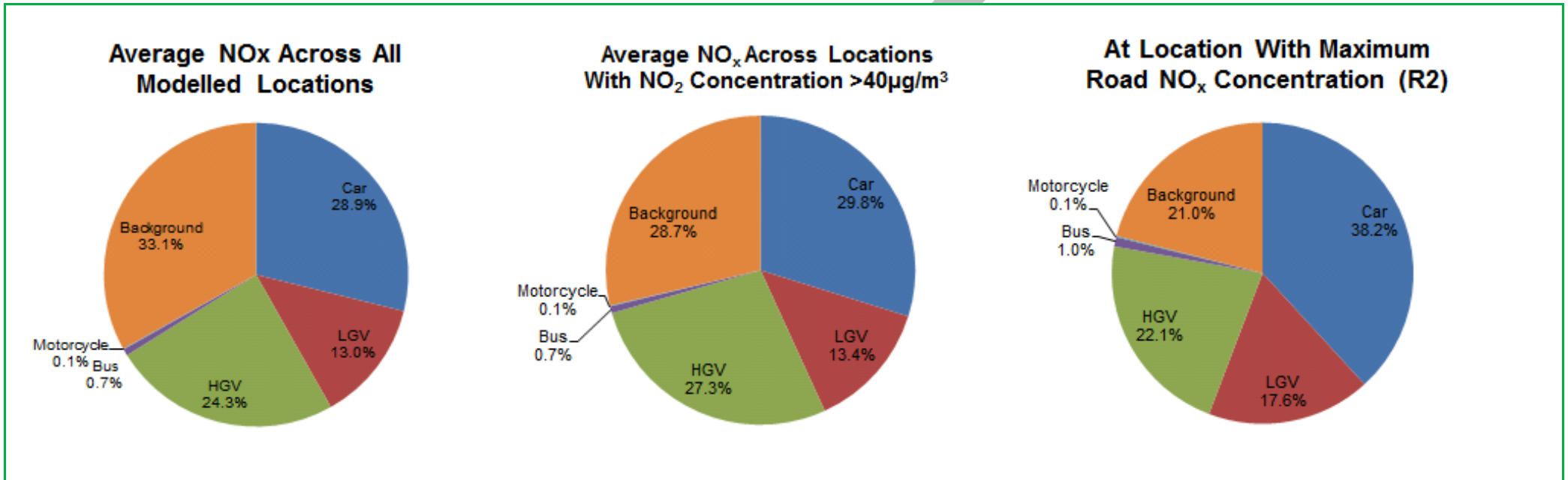
Table 3.3 - Detailed Source Apportionment of NO_x Concentrations - Fradley

Metric	All Vehicles	Car	LGV	HGV	Bus	Motorcycle	Background
Average Across All Modelled Locations							
NO _x Concentration (µg/m ³)	46.4	20.0	9.0	16.9	0.5	0.1	23.0
Percentage of Total NO _x	66.9%	28.9%	13.0%	24.3%	0.7%	0.1%	33.1%
Percentage Contribution to Road NO _x	100.0%	43.1%	19.4%	36.3%	1.1%	0.1%	-
Average Across All Locations With NO₂ Concentration Greater Than 40µg/m³							
NO _x Concentration (µg/m ³)	58.2	24.3	10.9	22.3	0.6	0.1	23.4
Percentage of Total NO _x	71.3%	29.8%	13.4%	27.3%	0.7%	0.1%	28.7%
Percentage Contribution to Road NO _x	100.0%	41.8%	18.7%	38.3%	1.0%	0.1%	-
At Location With Maximum Road NO_x Concentration (R2)							
NO _x Concentration (µg/m ³)	85.7	41.4	19.1	23.9	1.1	0.1	22.8
Percentage of Total NO _x	79.0%	38.2%	17.6%	22.1%	1.0%	0.1%	21.0%
Percentage Contribution to Road NO _x	100.0%	48.4%	22.3%	27.9%	1.3%	0.2%	-

Figure 3.6 illustrates the detailed source apportionment of NO_x concentrations in pie chart format.

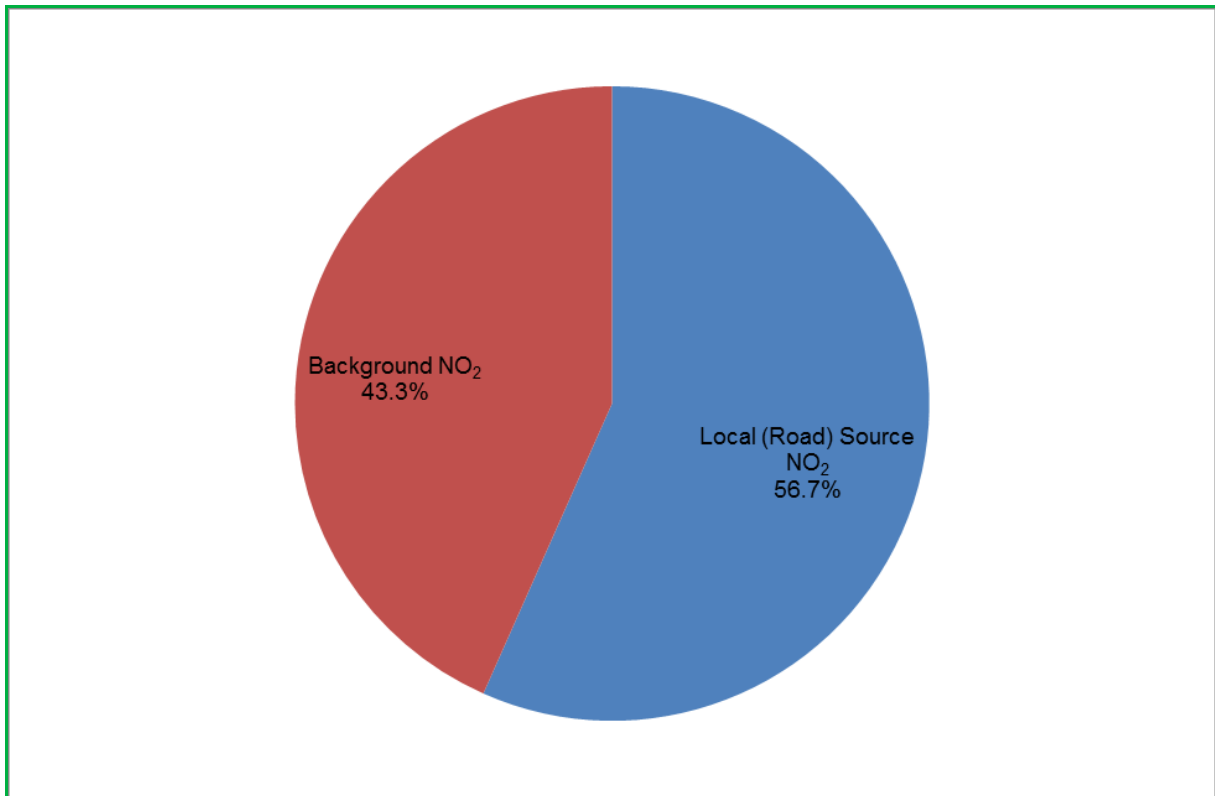


Figure 3.6 - Detailed Source Apportionment of NO_x Concentrations in Fradley



For NO₂, Figure 3.7 demonstrates the contributors to NO₂ concentrations at a high level.

Figure 3.7 - High Level Source Apportionment of NO₂ Concentrations Averaged Across All Modelled Locations in Fradley



At a high level, the local road component has the greater contribution to total NO₂ concentrations at 55.7%, whilst the background contributes the remaining 43.3%. It should be noted that it is not possible to separate out the regional and local components of the overall NO₂ background contribution. This means that Council actions could potentially have a direct impact on 56.7% of the total NO₂ concentrations within the Fradley area.

As demonstrated in Table 3.4Table 3.2, when considering the average NO₂ concentration across all modelled locations, road traffic accounts for 21.4µg/m³ (56.7%) of total NO₂ (37.8µg/m³). Of this total average NO₂, Cars account for the greatest contribution (24.4%) of any of the vehicle types on average, followed by HGVs (20.6%).

When considering the average NO₂ concentration at locations with an NO₂ concentration greater than 40µg/m³, the road traffic contribution is much higher, accounting for 26.3µg/m³ (61.2%) of total NO₂ (42.9µg/m³). Of this 42.9µg/m³, Cars

account for the greatest contribution (25.5%) of any of the vehicle types, closely followed by HGVs (23.5%).

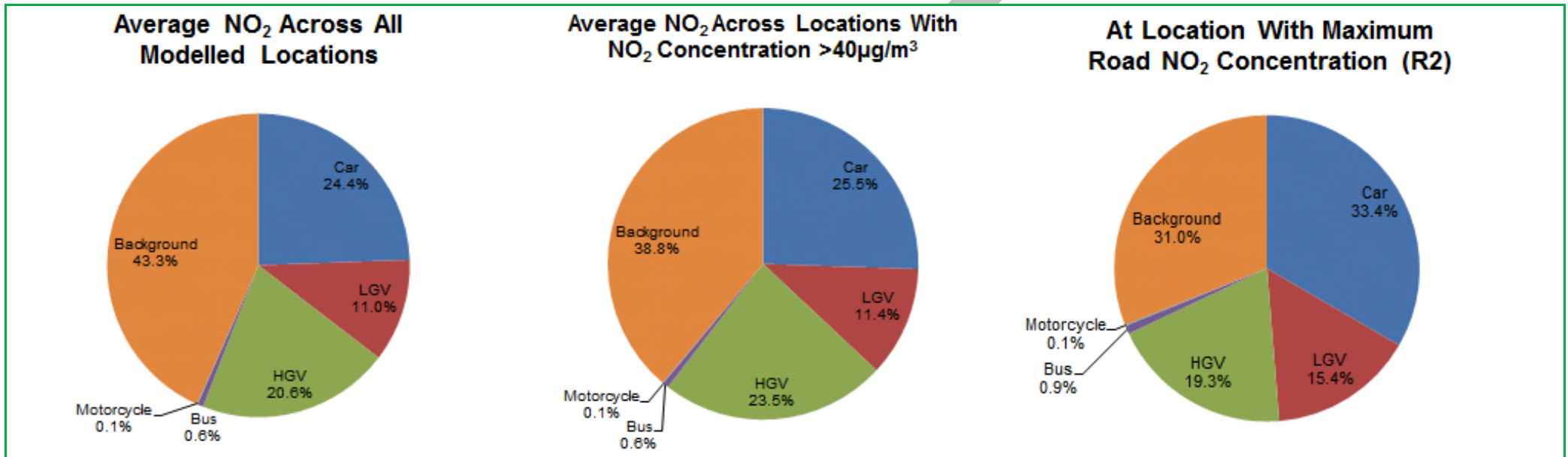
At the location with the maximum road NO₂ concentration (36.2µg/m³ out of a total NO₂ of 52.5µg/m³, predicted at 'R2'), road traffic accounts for 61.2% of the overall NO₂. Of this 52.5µg/m³, Cars account for the greatest contribution (33.4%) of any of the vehicle types, followed by HGVs (19.3%).

Table 3.4 - Detailed Source Apportionment of NO₂ Concentrations - Fradley

Metric	All Vehicles	Car	LGV	HGV	Bus	Motorcycle	Background
Average Across All Modelled Locations							
NO ₂ Concentration (µg/m ³)	21.4	9.2	4.2	7.8	0.2	<0.1	16.4
Percentage of Total NO ₂	56.7%	24.4%	11.0%	20.6%	0.6%	0.1%	43.3%
Percentage Contribution to Road NO ₂	100.0%	43.1%	19.4%	36.3%	1.1%	0.1%	-
Average Across All Locations With NO₂ Concentration Greater Than 40µg/m³							
NO ₂ Concentration (µg/m ³)	26.3	11.0	4.9	10.1	0.3	0.0	16.7
Percentage of Total NO ₂	61.2%	25.5%	11.4%	23.5%	0.6%	0.1%	38.8%
Percentage Contribution to Road NO ₂	100.0%	41.7%	18.7%	38.5%	1.0%	0.1%	-
At Location With Maximum Road NO₂ Concentration (R2)							
NO ₂ Concentration (µg/m ³)	36.2	17.5	8.1	10.1	0.5	0.1	16.3
Percentage of Total NO ₂	69.0%	33.4%	15.4%	19.3%	0.9%	0.1%	31.0%
Percentage Contribution to Road NO ₂	100.0%	48.4%	22.3%	27.9%	1.3%	0.2%	-

Figure 3.4 illustrates the detailed source apportionment of NO₂ concentrations in pie chart format.

Figure 3.8 - Detailed Source Apportionment of NO₂ Concentrations in Fradley



3.4 Required Reduction in Emissions

In line with the methodology presented in Box 7.6 of LAQM.TG(16)¹⁶, the necessary reduction in Road NO_x emissions required to bring each AQMA into compliance is calculated below. This is done at each worst-case exposure location.

3.4.1 Muckley Corner

Metric	Value (Concentrations as µg/m ³)
Worst-Case Relevant Exposure NO ₂ Concentration	51.1
Equivalent NO _x Concentration	102.4
Background NO _x	26.2
Background NO ₂	18.5
Road NO _x - Current	76.3
Road NO _x - Required (to achieve NO ₂ concentration of 39.9µg/m ³)	57.2
Required Road NO _x Reduction	19.1
Required % Reduction	25.0%

3.4.2 Fradley

Metric	Value (Concentration as µg/m ³)
Worst-Case Relevant Exposure NO ₂ Concentration	52.5
Equivalent NO _x Concentration	108.5
Background NO _x	22.8
Background NO ₂	16.3
Road NO _x - Current	85.7
Road NO _x – Required (to achieve NO ₂ concentration of 39.9µg/m ³)	51.1
Required Road NO _x Reduction	34.5
Required % Reduction	40.3%

3.5 Key Priorities

Based on the above information, the proposed AQAP measures should be divided into five targeted categories, although there is often considerable overlap between some of the categories:

- Transport measures – provision of additional transport infrastructure, changes to road layout or operation, formulation of traffic plans, with the aim being to encourage the use of greener modes of transport and/or reduce congestion and associated vehicle emissions;
- Leading by example measures – measures that LDC will implement to encourage wider behavioural changes;
- Education, community and partnership measures – provision of information to increase community awareness to facilitate behavioural change;
- Statutory measures – use of legislation and targeted enforcement to control air pollution; and
- Air quality monitoring – ensure satisfactory air quality monitoring data and evidence base is available to allow effective management of air quality.

Through consultation with the steering group and the Council's EHO, and based on the source apportionment information, three Transport measures have been identified as a strong priority, and for each of these a direct appraisal of the quantitative impact of these intervention scenarios will be undertaken¹⁸. As both the A38 and A5 are Highways England managed roads¹⁹, there is little the Council itself can affect by way of intervention measures. However, these are initiatives that Highways England and the Council can jointly support. Whilst a number of assumptions are made under the appraisal of each scenario, this enables the impact of each policy to be quantified to demonstrate its relative effectiveness in advance of implementation. The three priority measures and scenarios that will be assessed in this way are;

- Implementation of the EcoStars Project;
- Alteration to traffic flows based on increased use of the M6 Toll Road; and
- Upgrade of A-Roads to Expressway status

The above scenarios will account for quantifying the individual effects associated with each of the intervention measures in isolation. A detailed description of these priority measures is given in Section 5. The modelling of any additive, cumulative or

¹⁸ Completed post-consultation and confirmation of engagement with measures

¹⁹ <https://www.gov.uk/government/publications/roads-managed-by-the-highways-agency>

synergistic air quality impacts associated with the various combinations and permutations of multiple AQAP measures are not accounted for.

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4 Development and Implementation of Lichfield DC's AQAP

4.1 Consultation and Stakeholder Engagement

Local authorities are required to consult on their AQAP. To facilitate this process, an Action Planning Steering Group was formed to provide an appropriate forum for developing the AQAP. The composition of the Steering Group was carefully considered to ensure the efficacy of the AQAP.

It is also important for the success of the AQAP to seek involvement from all local stakeholders including local residents, community groups and local businesses in the drawing up of the AQAP, in addition to their active participation in achieving the AQAP measures.

The following is a list of statutory and non-statutory consultees to which the final draft Plan is to be sent:

- Department for Environment, Food and Rural Affairs;
- Highways Agency;
- Staffordshire County Council;
- LDC Councillors and Officers;
- Clinical Commissioning Groups;
- Neighbouring local authorities;
- Local residents within and bordering the AQMA;
- Relevant local businesses, community groups and forums; and
- Other relevant local stakeholders.

All comments from both statutory and non-statutory consultees received on the draft AQAP will be considered and incorporated where appropriate into the final AQAP. It is recommended that the consultation period be no less than 6 weeks in duration to enable consultees the opportunity to contribute to the process. The Plan will be

presented to LDC for endorsement and subsequently placed on the Council's website²⁰.

Following consultation and the formal adoption of the AQAP, the Council is also required to submit annual AQAP progress reports (in the form of summary table within the regular ASR), and also revise the AQAP appropriately when circumstances influence the content and progress of the plan.

4.2 Steering Group

The draft AQAP has been led principally by the EHO at LDC, with support from the appointed consultants. Other parties have been drawn upon as necessary, including the managers of the EcoStars project²¹ and regional representatives from Highways England. This core group has formed the basis of the project direction.

This will be opened up to wider statutory consultees in due course prior to final publication.

4.3 Keeping the AQAP up to date

The success of this AQAP is dependent upon the on-going assessment and reporting of progress in the implementation of measures, as well as the evidence acquired from on-going evaluation of the impacts of measures. The use of monitoring to show the decline in pollutant concentrations attributed to the implementation of measures is an obvious basis of evidence. However, for some measures, such as the EcoStars project, alternative indicators, such as the number of vehicles and companies registered, should also be used.

The Council will ensure an AQAP Steering Group continues to have regular meetings after the adoption and implementation of measures contained within their AQAP in order that a review of the AQAP and its progress is undertaken. This progress will be reported within the Council's statutory ASR report, which forms the basis of the LAQM reporting requirements since 2016.

Where, in undertaking review, evidence shows that unforeseen barriers to progress have arisen, or measures are no longer suitable, the AQAP should be updated to

²⁰ <https://www.lichfielddc.gov.uk/>

²¹ Specialist Transport Consultants TRL, <http://www.stoke.gov.uk/ccm/content/environment/environmental-health/pollution/air-quality/eco-stars-project.en>

reflect the local authority's position. The AQAP will be maintained as a "live" strategy. Where necessary, updates to source apportionment will be considered.

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5 AQAP Measures

Table 5.1 shows Lichfield's AQAP measures. It contains:

- a list of the actions that form part of the plan;
- the responsible individual and departments/organisations who will deliver this action;
- estimated cost of implementing each action (overall cost and cost to the local authority);
- expected benefit in terms of pollutant emission and/or concentration reduction;
- the timescale for implementation; and
- how progress will be monitored.

A full summary of each measure is provided below the table, organised by the category of the measure. Please see future ASRs for regular annual updates on implementation of these measures.

Table 5.1 - Air Quality Action Plan Measures

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	Ecostars	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	Lichfield DC and supporting Third Party	N/a	On-going	Reduction in fuel consumption & emissions	< tbc after quantitative appraisal >	On-going	On-going	http://www.ecostars-uk.com/
2	Increase the volume of through traffic using M6 Toll	Traffic Management	UTC, Congestion management, traffic reduction	M6 Toll operators and Lichfield DC	Planning	Not yet commenced	Reduction in HGV % in AQMAs	< tbc after quantitative appraisal >	Preliminary discussion with Highways England	2020	Subject to Highways England engagement
3	Upgrading Trunk A-Roads to Expressways	Traffic Management	UTC, Congestion management, traffic reduction	Highways England and Lichfield DC	Planning	Not yet commenced	Reduction in traffic congestion	< tbc after quantitative appraisal >	Preliminary discussion with Highways England	2020	Subject to Highways England engagement
4	Improvement of A38 through UTMC	Traffic Management	Strategic highway improvements	Lichfield DC	On-going	On-going	Implementing UTMC	Contribute toward 40.3% and 25.0% reductions required respectively	On-going	On-going	Impacts both Muckley Corner and Fradley AQMAs
5	Freight Quality Partnership / Ban on HGVs in AQMA during Peak Periods	Freight and Delivery Management	Delivery and Service plans	Lichfield DC	2017/18	2018-2022	HGV #s in peak hours	Reducing emissions contribution from HGVs	Planning Phase	On-going	Discuss with members of EcoStars for best possible solution
6	Freight Consolidation Centre	Freight and Delivery Management	Freight Consolidation Centre	Lichfield DC	2017/18	2018-2022	HGV # usage	Reducing emissions contribution from HGVs	Planning Phase	On-going	Investigate other FCC programmes in first instance
7	Encouraging Modal Shift	Promoting Travel Alternatives	Other	Lichfield DC	2017	2018-2022	Reduction in overall AADT	Proportionate to achieved vehicle reduction	Planning Phase	On-going	Must be a Council-wide initiative

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
8	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles and EV recharging	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	Lichfield DC/OLEV	2017/18	2018-2022	# Charging Points Installed	Reducing emissions contribution from cars	Planning Phase	2022	Consider OLEV or AQ grant application funding
9	Bus Fleet Upgrades	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	Lichfield DC and Staffordshire CC	2017/18	2018-2022	# Low/Zero Emission Buses Procured	Reducing emissions contribution from buses (and in turn cars if bus service uptake improves)	Planning Phase	2022	Consider OLEV or AQ grant application funding
10	Reduction in Idling Traffic	Traffic Management	Anti-idling enforcement	Lichfield DC	2017	2018-2022	Installation of signage	Reducing idling emissions from all vehicles	Planning Phase	2018	Consider options for enforcement (volunteers, penalties?)
11	Improvements to Lichfield Trent Valley rail station	Promoting Travel Alternatives	Promote use of rail and inland waterways	Network Rail/ London Midland/ DfT	2016 - Completed	2017	Train usage footfall increase	Indirect	Construction On-going	End 2017	Led by Network Rail/London Midland and DfT funded
12	Pollution abatement equipment for HGVs	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	Lichfield DC/OLEV	2017/18	2018-2022	# vehicles retrofitted	Reducing emissions contribution from HGVs	Planning Phase	2022	Consider OLEV or AQ grant application funding
13	Replacing older vehicles	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	Lichfield DC/OLEV	2017/18	2018-2022	# vehicles replaced (in addition to normal fleet turnover)	Reducing emissions from all council owned vehicles	Planning Phase	On-going	Consider OLEV or AQ grant application funding
14	Travel planning amongst LDC employees	Promoting Travel Alternatives	Workplace Travel Planning	Lichfield DC	2017	2018-2022	Implementing travel plan by end 2018	Reducing emissions from LDC employees	Planning Phase	2019	Requires employee education and engagement

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
15	Education Initiatives	Public Information	Other	Lichfield DC	2017/18	2018-2022	Implementing campaign by end 2018	Through public awareness	Planning Phase	2019	Requires employee education to inform public correctly
16	Real-time AQ information	Public Information	Other	Lichfield DC	2017/18	2018-2022	Installation across district by end 2018	Through public awareness	Planning Phase	2019	Investment required unclear. Consider AQ grant funding application
17	Staffordshire Air Quality Forum	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	County-wide	Completed	On-going	Full LA engagement across the group + Regular Meetings	N/a	On-going	On-going	Partnership to continue indefinitely
18	Use the planning regime to minimise impact of new developments on AQMAs	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Lichfield DC/ Staffordshire Air Quality Forum	On-going	On-going	Implementing Supplementary planning Guidance	By restricting emissions + impact of new development	On-going, discussions around partnership joint guidance to follow	2018/2019	Requires buy in from other Staffordshire Authorities
19	Inspect under the Environmental Permit regime and enforce legislation to reduce combustion processes	Environmental Permits	Introduction/increase of environment charges through permit systems and economic instruments	Lichfield DC	Completed	On-going	Installations adhering to permits and enforcement/penalties for breaches	By restricting emissions from industrial processes	On-going	Continual	Requires employee education and engagement
20	Air quality monitoring	Public Information	Other	Lichfield DC/Defra	On-going	On-going	# monitoring locations and On-time submittal of ASRs	Through EHO/public awareness	On-going annually	Annual	Possibly liaise with Defra regarding need for additional monitoring and/or AURN funding. Consider continuous monitoring and AQ grant application

5.1 Transport Measures

As discussed in Section 3.3, in the Muckley Corner AQMA 41.8% of NO₂ concentrations are contributed by road traffic, and in the A38 Fradley AQMA the figures are even higher at 56.7%. Therefore, pollution concentrations in both the AQMAs can be tackled by reducing traffic volumes, smoothing the flow of traffic (to reduce the stop-start acceleration cycle), removing the most polluting vehicles and modal shift towards vehicles with cleaner technologies. The following measures have therefore been considered for inclusion in the finalised AQAP:

5.1.1 EcoStars Project

ECO Stars (Efficient and Cleaner Operations) Fleet Recognition Scheme encourages and helps operators of HGVs, buses, coaches, vans and taxis to run fleets in the most efficient and sustainable way.

The scheme provides recognition for best operational practices, and guidance for making improvements. The ultimate aim is to reduce fuel consumption which naturally leads to fewer vehicle emissions and has the added benefit of saving money.

Members are awarded an ECO Star rating when they first join - ranging from 1 Star to 5 Stars - based on an assessment of their current operational and environmental performance. One of the ECO Stars team (all industry experts with years of transport experience) rates each individual vehicle and how the fleet is run as a whole.

The ECO Stars assessment is based on six key pillars which make up fleet operational efficiency:

- Fleet composition;
- Fuel management;
- Driver skills development;
- Vehicle specification and preventative maintenance;
- IT support systems; and
- Performance, monitoring and management.

Lichfield joined the scheme in 2015 as part of the eight Boroughs of Staffordshire and Stoke working in partnership with fleets to improve air quality in the Staffordshire

area and uptake has been excellent, with 32 entities becoming members²². A majority of these achieved a 4 star rating, so whilst standards are already high in the District there is significant scope for improvement.

The impacts of the project on air quality are to be quantified using uptake data from the scheme, and applying some modifications to the default fleet assumptions within the calculations of vehicle emissions along the route. Whilst there are some assumptions inherent in the estimates, which will be detailed in Appendix C, it is considered that the impacts of upgrading the members of the scheme will be demonstrably positive.

This measure is in direct support of LTP3 Policy 5.1: promoting alternatives to private motor vehicles and Policy 5.2: Promote the use of low-emitting vehicles and vehicle efficiency, as well as Core Policy 5: Sustainable Transport, of the Lichfield Local Plan Strategy.

5.1.2 Alteration to traffic flows based on increased use of M6 Toll;

The source apportionment exercise highlights a disproportionate contribution from HGVs (20.2% of overall NO₂ across all modelled locations in the Muckley Corner area) across both locations, although particularly in the Muckley Corner AQMA. It is considered that a contributory factor to this has been the cost of using the M6 Toll road, with freight operators sending their vehicles on alternative routes, such as the A5, rather than the new motorway due to high fees. HGVs were specifically targeted with higher levies than regular vehicles, which appears to result in their avoiding the route and using other trunk roads.

Highways England has an ambition to redress the balance of how M6 Toll and A5 work together, but at present their engagement is largely focused on reviewing Operation Freeway in light of a fatal incident on the M6 in early 2016. By price incentivising the use of the M6 Toll Road, it is possible that both total traffic and HGV contributions will be reduced in the A5/A38 corridor, which would bring about significant improvements in air quality in Lichfield, as the source apportionment information demonstrates.

²² Figures as of February 2016

The possible benefits are to be demonstrated by reducing the percentage of HGVs operating in both the Muckley Corner and Fradley areas, the details of which will be specified in Appendix C.

This measure is in direct support of LTP3 Policy 5.1: promoting alternatives to private motor vehicles and Policy 5.2: Promote the use of low-emitting vehicles and vehicle efficiency, as well as Core Policy 5: Sustainable Transport, of the Lichfield Local Plan Strategy.

5.1.3 Upgrade of A-Roads to Expressway status

Over a five year programme, Highways England is upgrading key A-roads into “Expressways” – a new classification between an A-road and a Motorway.

The fundamental principal is to get traffic flowing more freely. To do this, junctions are modernised, with roundabouts and traffic lights removed and emergency refuge and maintenance areas provided. In addition, advanced technology can be used to detect and help clear incidents more quickly and get traffic moving.

On inception, 18 major routes were initially set to become Expressways, with a further seven projects being considered. However, the Council is aware that the Expressways concept work is progressing, but that publicly available information is limited at present. Although elements of the Expressways are inspired by work which is already completed (e.g. the technology provision which has been rolled out on the motorway network), fitting these into the existing trunk road network is laborious and complex. There are many aspects of the concept which Highways England are still finalising before Expressways will be brought forward.

That said, whilst neither of the sections of the A38 nor the A5 relevant to the Council's AQMAs are currently targeted for this upgrade (to the Council's current knowledge), it is considered that this would be of major benefit to the AQMA areas, especially Muckley Corner where congestion is consistently formed around the roundabout. The Council will engage with Highways England to ensure these routes are targeted for upgrade in the future.

As such, the potential impacts of an upgrade to Expressway status will be modelled in both areas, by making improvements to the dimension of junctions and the speed at which they are approached within the models. This has the effect of reducing overall emissions, despite the absolute vehicle numbers remaining constant.

This is in direct support of LTP3 Policy 5.1: promoting alternatives to private motor vehicles and Policy 5.2: Promote the use of low-emitting vehicles and vehicle efficiency, as well as Core Policy 5: Sustainable Transport, of the Lichfield Local Plan Strategy.

5.1.4 Improvement of A38

The A38 is a major arterial route through the District forming the basis of the Fradley AQMA, and feeding into the A5 and Muckley Corner. The source apportionment exercise and emissions reductions calculations identify the need for significant emissions reductions on the A5 of up to 40.3%, so this route must be targeted as a priority. The Council will consider implementation of an Urban Traffic Management and Control (UTMC) System for the A38 as a priority, which could be extended to the A5 if successful. UTMC is instigated by the DfT to implement Intelligent Transport Systems (ITS) in urban areas to tackle traffic and air quality issues, and is already installed in several other urban centres. The UTMS would aim to provide an overarching system to manage and control traffic in order to improve air quality. Additionally, it will provide integrated information to policy makers on relationships between traffic congestion and air quality, times and weather conditions. The main objectives of the UTMC will be to control traffic in order to:

- Reduce congestion;
- Improve traffic flows;
- Free traffic restraints;
- Provide information on route diversion; and
- Provide variable message signs and parking.

This is in direct support of LTP3 Policy 5.1: promoting alternatives to private motor vehicles and Policy 5.2: Promote the use of low-emitting vehicles and vehicle efficiency, as well as Core Policy 5: Sustainable Transport, of the Lichfield Local Plan Strategy.

5.1.5 Freight Quality Partnership / Ban on HGVs in AQMA during Peak Periods

The source apportionment suggests that HGVs contribute 33% and 23.5% NO₂ concentrations at locations over 40µg/m³ in Muckley Corner and Fradley

respectively. This is a significant source in both areas, but particularly so in Muckley Corner. Therefore, any reduction in HGV flows is likely to decrease pollution concentrations. Options such as removing HGVs from peak hours, considering alternative delivery arrangements and how these may impact HGV flows during certain hours, or removing through traffic of HGVs could be considered.

LDC will explore the possibility of formulating a Freight Quality Partnership (FQP) with the support of relevant stakeholders such as the Freight Transport Association, local businesses and large operators. HGV time restrictions through the AQMAs will be investigated as part of the FQP and review of HGV routes in the AQMAs. Investigation of AQMA freight transport movements, notably with respect to the largest operators, to develop a freight transport strategy for the town and area, will also be considered.

Removing or reducing HGVs from traffic flows would have two key benefits that are likely to help improve air quality. HGVs are the most polluting vehicles, especially when moving at low speeds, so allowing them to only access the AQMA when traffic is flowing more freely is likely to reduce emissions. In addition, removing HGVs from roads during peak hours is likely to reduce congestion when traffic flows are highest.

Given the potential effectiveness of this measure to lead to air quality improvements within the Muckley Corner AQMA, LDC will investigate the feasibility for implementing a HGV ban within peak hours in this AQMA and consider extending to Fradley if effective. Although this alone will not result in compliance with the AQS objective, it can go a long way towards its future achievement, accomplishing a significant proportion of the required reduction by targeting the most polluting vehicles. This investigation could take the form of a consultation with EcoStars partners, who will be stakeholders in the decision, as to the best solution for all parties.

This is in direct support of LTP3 Policy 5.1: promoting alternatives to private motor vehicles and Policy 5.2: Promote the use of low-emitting vehicles and vehicle efficiency, as well as Core Policy 5: Sustainable Transport, of the Lichfield Local Plan Strategy.

5.1.6 Freight Consolidation Centre

As mentioned above, HGVs contribute 33% and 23.5% NO₂ concentrations at locations over 40µg/m³ in Muckley Corner and Fradley respectively. To reduce HGV

traffic in the AQMA, the Council will consider and explore options and feasibility for a Freight Consolidation Centre (FCC). The FCC will aim to consolidate small loads and consignments into smaller number of full loads for delivery into the town centre. Low emission vehicles could be selected to deliver these full loads. The Council will benefit from the experience of such FCCs across Britain. In addition to reducing HGV emissions, a FCC will also improve flow of traffic and reduce congestion as a removal of large HGVs from the fleet in the AQMAs, in direct agreement with of LTP3 Policy 5.2: Promote the use of low-emitting vehicles and vehicle efficiency.

5.1.7 Encouraging Modal Shift

Encouragement to use different modes of transport to cars is likely to improve local air quality concentrations. In Fradley, cars are the principal source of emissions at locations with concentrations over $40\mu\text{g}/\text{m}^3$, contributing 33.4% of the concentrations. The Council will consider potential for encouraging modal shift from Private Car to Public Transport, Cycling and Walking by improved parking control and by developing alternative travel plans for residents, achieved through the implementation of a Sustrans Personalised Travel Planning (PTP) project²³, which aims at reversing the trend towards increased car use and tackling its impacts on climate, public health and quality of life. Sustrans' PTP projects in other areas have succeeded in reducing car use, consistently achieving an 11% reduction in car driver trips and increases in walking, cycling and public transport trips of between 15% and 33%.

Implementation of travel concessionary schemes can also increase the shift from the use of the car to greener forms of public transport. The County Council could consider supporting such a scheme, through development of a prepayment travel scheme to work throughout the partnership area, with the aim to encouraging greater use of public transport through interoperable ticketing, better integration and simplified discounts and fare structures, similar to how the Oyster ticketing system operates in London.

Cycling is already promoted by the "Cycle Rides for All" programme, re-implemented in 2017. This is a regular monthly Sunday cycle rides programme, and is run in partnership by LDC, Freedom Cycles and Lichfield ReCycle. To find out more, or to

²³ <http://www.sustrans.org.uk/our-services/what-we-do/personalised-travel-planning>

check whether a ride is taking place if the weather is uncertain, please call Freedom Cycles on 01543 411633. The Council will investigate extending this programme through to more regular usage, to discourage car journeys and move toward more sustainable transport, as well as investigating the efficacy of the introduction of safe cycle lanes and routes in either AQMA.

The above also has synergies with Lichfield's Physical Activity and Sport Strategy²⁴, which promotes active travel, including cycling and walking. Environmental Health will investigate policies within this strategy that can be applied to direct air quality benefits.

This measure is in direct support of LTP3 Policy 5.1: promoting alternatives to private motor vehicles, as well as Strategic Priority 5: Sustainable Transport and Core Policy 10: Healthy & Safe Lifestyles, of the Lichfield Local Plan Strategy.

5.1.8 Procuring alternative refuelling infrastructure to promote Low Emission Vehicles and EV recharging

Low emission vehicles are defined on their exhaust emissions in relation to those from comparable 'conventional' models. Technologies that are defined as low emission include: battery electric, hybrid petrol, plug-in hybrid and CNG, LNG and hydrogen (as single or dual fuel versions). Many vehicles require a fuelling/charging infrastructure to be installed as well to ensure the vehicles' full low emission properties can be realised. The Council considers this a possible point of investment and consideration for the future, as the charging infrastructure is currently very limited. Ideally the areas in and around the two AQMAs would be targeted for investment to encourage uptake of zero or low emissions vehicles in these areas, though this would be subject to a feasibility study. Avenues for exploration include installation in Council owned parking lots, and through partnership with local businesses. Vehicle charging points can also be enforced as part of planning conditions, which the Council will consider for large developments. This is in direct support of LTP3 Policy 5.2: Promote the use of low-emitting vehicles and vehicle efficiency, as well as Core Policy 5: Sustainable Transport, of the Lichfield Local Plan Strategy.

²⁴ <https://lichfielddc.gov.uk/Residents/Leisure-and-culture/Physical-Activity-and-Sport-Strategy.aspx>

5.1.9 Bus Fleet Upgrades

Whilst contributions from bus fleets are relatively minimal in the AQMAs, 1.1% and 0.6% for Muckley Corner and Fradley, respectively, at locations with NO₂ concentrations greater than 40µg/m³, improvements in the Councils' bus fleet should have only minor impacts on AQMA concentrations. Nonetheless, LDC and Staffordshire County Council will consider feasible changes in the bus fleet composition to ensure that any buses passing through the AQMAs are cleaner and meet the highest possible emissions standards. The options to be considered will be dependent on the current bus fleet and the improvements in EURO standards that could be reasonably achievable. This could be implemented through the implementation of a Quality Bus Partnership (QBP) between the Council and bus operators.

These voluntary schemes are informal agreements between relevant bus operators and local authorities that are not enshrined in legislation. Such partnerships are usually formed between one or more local authority and bus operator(s) but may also include large organisations or institutions (e.g. businesses). In these partnerships, each party makes a commitment to improvements that will result in enhancements to bus services in a given area through measures such as better, cleaner vehicles. Numerous local authorities have already developed voluntary agreements with bus operators.

Exact scenarios could be determined in future years on annual review of this AQAP, when the current fleet has been analysed. For example, the impact of swapping all Euro II buses to Euro IV buses or better, or retrofitting Selective Catalytic Reduction (SCR) technology to existing buses, could be considered and directly quantified at a later date.

In addition, the County council can look at improving the existing service and provide more regular arrivals. Currently the relatively low source contributions indicate that this is not a large proportion of the overall fleet, meaning that perhaps local residents do not see bus transport as a viable alternative. Whilst increasing bus numbers would obviously increase the emissions from this source group, the net benefit would be in reducing the overall dependency on private vehicles, which is of particular relevance in the Fradley area. This AQMA will therefore be targeted for strategic review of the bus network servicing this route as a priority.

Given the relatively low source contributions of Buses, this measure is not considered of highest priority, but should be investigated as a viable alternative to private vehicle use nonetheless.

This is in direct support of LTP3 Policy 5.1: promoting alternatives to private motor vehicles and Policy 5.2: Promote the use of low-emitting vehicles and vehicle efficiency, as well as Core Policy 5: Sustainable Transport, of the Lichfield Local Plan Strategy.

5.1.10 Reduction in Idling of Traffic

The emissions from idling vehicles result in unnecessary burden to pollutant concentrations. This is even more important in areas of poor air quality, such as AQMAs, and around junctions such as Muckley Corner, where idling is common.

The Council, in implementing this measure, will consider the following options:

- To declare both the Muckley Corner and Fradley AQMA as a 'No idling Zone';
- To provide 'No Idling' signage in the both the Muckley Corner and Fradley AQMAs and surrounding roads; and
- To prepare material for bus and taxi operators about idling and the benefits of not idling.

The Council considers this may be difficult to enforce, but will explore options for doing so. This could include volunteers or local residents, either on a full time or ad-hoc basis. We will also consider the imposition of on-the-spot fines (if viable) for idling in the zone, which could be re-invested into other air quality projects.

This is in direct support of LTP3 Policy 5.2: Promote the use of low-emitting vehicles and vehicle efficiency.

5.1.11 Lichfield Trent Valley Railway Station Improvement Works

Significant improvement works are underway and Lichfield Trent Valley Railway station, building on £900,000 developments already implemented in 2013. Secured under the DfT's "Access for All" funding, the project by Network Rail and London Midland will improve accessibility on the split-level station which serves passengers using the Cross City line and West Coast Main Line. Two lifts will be installed at either side of the lower level so that all platforms will be connected and easily accessible, encouraging the use of the station and by consequence reducing road

traffic. This is in direct support of LTP3 Policy 5.1: promoting alternatives to private motor vehicles, as well as Strategic Priority 5: Sustainable Transport, of the Lichfield Local Plan Strategy.

5.2 Leading by Example Measures

To minimise and control air pollution from the fleet, LDC gives a commitment to the following, in line with LTP3 Policy 5.3: Leading by example to reduce Staffordshire Road Transport Emissions:

5.2.1 Fit pollution abatement equipment if necessary to older Heavy-Goods Vehicles and Buses to help minimise pollution

Retrofitting of old Council owned HGVs and Buses with pollution abatement equipment will be considered by the Council where technically and financially feasible.

5.2.2 Establish and implement a rolling programme for replacing older more polluting vehicles with newer cleaner vehicles

Where this is not possible, the Council will look to replacing old vehicles within the fleet with more modern cleaner vehicles, which comply with the prevailing EURO standard. This will be extended to all Council owned vehicles.

5.2.3 Investigate options for better travel planning amongst Lichfield District Council employees

This measure would aim at reducing vehicle pollution from staff travelling to and from work. Additional benefits involve cost savings and a healthier workforce, although it is acknowledged that this can be challenging due to factors such as reluctance to give up car, the lack of cycling facilities and safety concerns, which need to be overcome.

Proposed options include the following:

- Develop a workplace travel plan for LDC;
- Undertake staff travel surveys to establish current travel patterns to and from Council premises;
- Establish car-sharing practices by implementing a car-sharing database;
- Encourage use of public transport among staff;
- Encourage walking and cycling among staff;

- Video conferencing; and
- Flexible working practices such as remote working enabled by remote IT access.

This plan would be of greatest benefit if targeting employees who use routes going through the AQMAs to get to work or as part of their duties, so it may be prudent to undertake a survey prior to implementation to avoid unnecessary effort.

5.3 Education, Community and Partnership Measures

To ensure that members of the public have access to information about air pollution and can make informed choices, LDC gives a commitment to:

5.3.1 Implement initiatives to educate communities on air pollution issues and ways to minimise impacts on air quality

LDC will consider the development of additional web materials as a resource for air quality documents and local air quality news, as a means of making Air Quality a more accessible and relevant issue to local residents.

This will also involve uploading the Council's statutory reports to the website as soon as they are approved by Defra, so that the latest information is always available.

Other educational materials will also be considered for their efficacy.

5.3.2 Provide public with 'real time' travel and air quality information

Real time passenger information (RTPI) systems can assist by making greener alternative modes of transport as attractive as possible and increase rates of uptake. Bus stops, new developments in public spaces and new residential schemes are areas where such schemes can be targeted. Coupled with 'real-time' information on local air quality, this will enable commuters to make informed choices about their transport options. This will require infrastructure investment, so engagement from County Council may also be required.

Other authorities have implemented text alert systems, but it is considered that this is too costly proportionate to the air quality issues in Lichfield. It would not necessarily reduce exposure either, given the 1-hour mean objectives are not considered to be at risk of exceedance.

5.3.3 Staffordshire Air Quality Forum

The Council is part of the regional group formed of the 8 local authorities, co-ordinating programmes to develop area wide strategies to reduce emissions and improve air quality. This has the benefit of building complementary strategies and measures that have external as well as local benefits. Under the partnership, such projects as Ecostars have become viable. We commit to continuing this partnership and maintaining an active engagement with the Forum.

5.4 Statutory Measures

To ensure that air pollution is controlled by legislation and targeted enforcement, LDC will continue to:

5.4.1 Use the planning regime to minimise impact of new developments on AQMAs

The Council will ensure the effective use of planning conditions and obligations to help mitigate the transport and air quality impacts of development. Section 106 agreements and Community Infrastructure Levy (CIL) charges can be used to improve air quality and make other environmental improvements, or offset the air quality impacts of a proposed development, and have been effective elsewhere in aiding with the implementation of AQAP measures and providing investment for air quality monitoring activities.

As part of any new schemes that are likely to influence traffic flows through either AQMA, conditions of planning permission should include provision for workplace, residential and personalised travel plans. All new residents should be made aware of the travel plan through the property information pack received with new properties. Public transport (e.g. bus) travel vouchers can be offered as part of these packs, if viable.

The Council, ideally through the Staffordshire Partnership, will also explore the possibility of putting together Supplementary Guidance for consultants and planners preparing air quality assessments for applications in the area, so as to be consistent in the methodology and the appraisal of such reports. This should serve to benefit the quality of information coming in as part of the application, and therefore enable Officers to make better and more informed decisions relating to air quality impacts.

5.4.2 Inspect industrial premises under the Environmental Permit regulatory regime and enforce relevant legislation to reduce burning of commercial and domestic waste

The Council continues to use its powers to control industrial premises and ensure they comply with the relevant regulations. It also enforces relevant legislation to reduce burning of commercial and domestic waste. This should be particularly pertinent in areas within, or close to, the two AQMAs, with the most stringent measures possible employed in areas that Officers deem to have an impact on the AQMAs.

5.5 Air Quality Monitoring

To ensure that there is adequate air pollution monitoring data with which to manage air quality within the AQMA, LDC reinforces its obligation to provide:

5.5.1 Accurate, precise and extensive air quality monitoring

The Council will continue monitoring pollutants relevant to LAQM, with particular reference to NO₂. This will enable future decision making to be made against the best possible evidence base. This should be targeted and focussed around the AQMAs, but that should not be to the detriment of other areas (e.g. town centres) so as to ensure other hot-spot areas are not overlooked.

The Council will consider installing continuous monitoring, within both AQMAs if possible. All funding sources should be explored, but Air Quality Grant application should be considered.

Monitoring data are to be compliant with best practice guidance on Quality Assurance / Quality Control (QA/QC), available in LAQM.TG(16)¹⁶. Comprehensive information in relation to QA/QC is provided every year in statutory air quality reports.

We will make the monitoring information freely available to the public in an easily understood form, through the annual statutory report.

5.6 Measures not pursued

A range of other measures are available and have been employed in other areas to combat against pollution within AQMAs, but which are not considered viable for implementation to our two AQMAs. These are summarised in Appendix B and include, but are not limited to, the following:

5.6.1 Bus Park and Ride

This measure was deemed most effective for AQMAs within town centres/visitors to a location, which is not necessarily the case with either of Lichfield's AQMAs. User uptake would be minimal, and thus not worth the investment.

5.6.2 Introduction of Low Speed Restrictions

Imposing a 20mph speed limit on the roads within and surrounding the AQMAs would have a dual effect; it would likely lead to increases in pollutant concentrations in areas where traffic is currently free flowing at speeds averaging greater than 20mph, but would likely decrease concentrations in areas where there is currently congestion and average speeds are lower than 20mph. This is due to the lower speed limits 'smoothing' traffic flows and thereby reducing the degree of acceleration, which is when emissions are highest. However, this would not be feasible in either AQMA as they are A-Roads, and would only serve to increase congestion and thus emissions.

5.6.3 Parking Strategies

Parking is not the principal issue in either AQMA as they are major through roads with limited parking and no multi-storey complexes. Managing a parking strategy for the areas would therefore have little effect.

5.6.4 Carry out regular emissions testing of vehicle fleet to ensure that all vehicles comply with the law

This is considered to be too costly relative to its actual impact on air quality, which would be minimal at best.

5.6.5 Compulsory Purchase

Compulsory purchase of properties located within the AQMAs is not considered to be feasible from both cost and practicality perspectives, and in any case would not address the underlying air pollution problem.

5.6.6 Road Closures

No practicable road closures that would benefit air quality are currently identified. All AQMA roads carry significant volumes of traffic and no practicable alternative roads are identified that would benefit air quality. Closure of these routes would only move the problem elsewhere.

5.6.7 Low Emission Zone/Clean Air Zone

The Council is aware of the Government's policy in dealing with non-compliant areas of poor air quality, which is the imposition of Clean Air Zones²⁵ (similar to Low Emission Zones). Such statutory measures are to be imposed with central government assistance and are considered impracticable and not proportional to the air quality issues within LDC. The enforcement of these zones would require the installation of costly Automatic Number Plate Recognition (ANPR) cameras which in themselves would do nothing to reduce air pollution. The Council considers therefore that its limited resources are better appropriated to other projects which will have direct impacts on vehicular emissions.

²⁵ <https://www.gov.uk/government/collections/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2015>

Appendix A: Response to Consultation

Table A.1 – Summary of Responses to Consultation and Stakeholder Engagement on the AQAP

Consultee	Category	Response
e.g. Chamber of Commerce	Business	E.g. Disagree with plan to remove parking on High Street in favour of buses and cycles; consider it will harm business of members.

<To be completed post-consultation>

Appendix B: Reasons for Not Pursuing Action Plan Measures

Table B.1 – Action Plan Measures Not Pursued and the Reasons for that Decision

Action category	Action description	Reason action is not being pursued (including Stakeholder views)
Bus Park and Ride	Installing parking areas outside of AQMAs and transporting people through AQMAs using public service vehicles	As per section 5.6.1.
Introduction of Low Speed Restrictions	Imposing a speed limit of 10, 20 or 30mph	As per section 5.6.2
Parking Strategies	Reviewing parking in AQMAs	As per section 5.6.3
Carry out regular emissions testing of vehicle fleet to ensure that all vehicles comply with the law	Bespoke emissions testing for Council vehicles	As per section 5.6.4
Compulsory Purchase	Purchase by the Council of properties in AQMAs	As per section 5.6.5
Road Closures	Closing afflicted roads	As per section 5.6.6
Low Emission Zone/Clean Air Zone	Implementing zones or corridors where certain vehicles cannot enter based on their emissions rating	As per section 5.6.7

Appendix C: Quantitative Appraisal of Measures

<This section will include details of the quantitative appraisal of the 3 key measures once agreed with the Council and applied>

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Appendix D: ADMS and Model Verification

The ADMS-Roads dispersion model has been widely validated for this type of assessment, and as such is regularly used for LAQM purposes by a large number of local authorities.

Dispersion modelling requires a number of inputs including traffic and meteorological data. For the Muckley Corner source apportionment, it was necessary to set up a new base model, the inputs to which are summarised below.

The ADMS-Roads assessment incorporates numbers of road traffic vehicles as AADT (Annual Average Daily Traffic flows), vehicle speeds on the local roads and the composition of the traffic fleet. The traffic data for this assessment has been collated from Department for Transport (DfT), Traffic Counts web resource¹⁴ and is outlined in Figure D.1. Traffic speed data has been derived from the speed limit on free flowing links. Where appropriate, the speeds have been reduced to simulate queues at junctions and traffic lights.

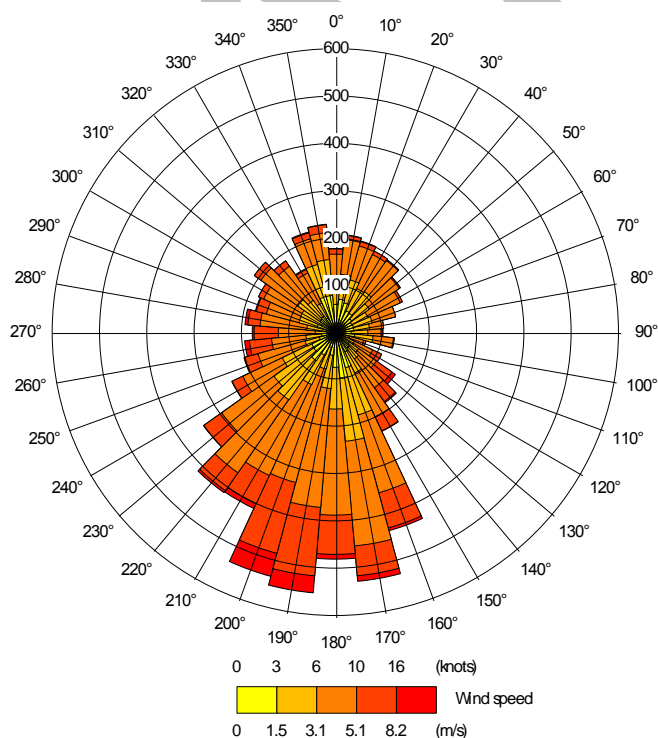
Figure D.1 - Traffic Data used in Source Apportionment of Muckley Corner

Link ID	AADT	% Car	% LGV	% Rigid HGV	% Artic HGV	% Bus and Coach	% Motorcycle	Speed (kph)
A5_East_EB	16789	68.0	17.5	5.3	8.5	0.3	0.4	90
A5_East_EB_J1	16789	68.0	17.5	5.3	8.5	0.3	0.4	20
A5_East_EB_J2	16789	68.0	17.5	5.3	8.5	0.3	0.4	50
A5_East_WB	16789	68.0	17.5	5.3	8.5	0.3	0.4	90
A5_East_WB_J1	16789	68.0	17.5	5.3	8.5	0.3	0.4	20
A5_East_WB_J2	16789	68.0	17.5	5.3	8.5	0.3	0.4	50
A5_West_1	27312	68.4	19.2	4.3	7.0	0.4	0.7	90
A5_West_2	27312	68.4	19.2	4.3	7.0	0.4	0.7	90
A5_West_EB	13656	68.4	19.2	4.3	7.0	0.4	0.7	90
A5_West_EB_J1	13656	68.4	19.2	4.3	7.0	0.4	0.7	20
A5_West_J2	27312	68.4	19.2	4.3	7.0	0.4	0.7	50
A5_West_WB	13656	68.4	19.2	4.3	7.0	0.4	0.7	90
A5_West_WB_J1	13656	68.4	19.2	4.3	7.0	0.4	0.7	20
Lichfield_Rd_NB	7895	71.8	17.8	5.3	4.1	0.4	0.5	90
Lichfield_Rd_NB_J1	7895	71.8	17.8	5.3	4.1	0.4	0.5	20
Lichfield_Rd_NB_J2	7895	71.8	17.8	5.3	4.1	0.4	0.5	50
Lichfield_Rd_SB	7895	71.8	17.8	5.3	4.1	0.4	0.5	90
Lichfield_Rd_SB_J1	7895	71.8	17.8	5.3	4.1	0.4	0.5	20
Lichfield_Rd_SB_J2	7895	71.8	17.8	5.3	4.1	0.4	0.5	50
R1	24684	68.0	17.5	5.3	8.5	0.3	0.4	20
R2	21551	68.4	19.2	4.3	7.0	0.4	0.7	20

R3	21625	68.4	19.2	4.3	7.0	0.4	0.7	20
R4	24758	68.0	17.5	5.3	8.5	0.3	0.4	20
Wallsall_Rd	7969	81.4	13.9	2.2	1.2	0.6	0.7	80
Wallsall_Rd_J1	7969	81.4	13.9	2.2	1.2	0.6	0.7	20
Wallsall_Rd_J2	7969	81.4	13.9	2.2	1.2	0.6	0.7	50

Meteorological data from a representative station is required by the dispersion model. 2014 meteorological data from Coleshill weather station has been used in this assessment. A wind rose for this site is shown in Figure D.2. LAQM.TG(16)¹⁶ recommends that meteorological data should only be used if the percentage of usable hours is greater than 75%, and preferably 90%. 2014 meteorological data from Coleshill includes 8,665 lines of usable hourly data out of the total 8,760 for the year, i.e. 98.9% usable data. This is therefore suitable for the dispersion modelling exercise.

Figure D.2 - Coleshill Met Data 2014 Wind Rose



Defra maintains a nationwide model of existing and future background air pollutant concentrations at a 1km grid square resolution. The data sets utilised for this AQAP include annual average concentration estimates for NO_x and NO₂, using a base year of 2011. The model used is semi-empirical in nature; it uses the National Atmospheric Emissions Inventory (NAEI) emissions to model concentrations of

pollutants at the centroid of each 1km grid square, then calibrates these concentrations with actual monitoring data from the AURN (UK Automatic Urban and Rural Network). These have been used for consistency with the conclusions of the Detailed Assessment⁶ of Fradley.

Annual mean background concentrations have been obtained from the Defra published background maps²⁶, based on the 1km grid squares which cover the modelled area and the affected road network.

The background concentrations applied to the Muckley Corner AQMA Source Apportionment are as follows:

Figure D.3 - Background Concentrations applied to Muckley Corner AQMA Source Apportionment

Grid Square (E,N)	2014 Unadjusted Annual Mean Concentration ($\mu\text{g}/\text{m}^3$)	
	NO _x	NO ₂
408500, 306500	26.2	18.5
409500, 306500	26.5	18.7
408500, 307500	21.3	15.3
407500, 306500	26.0	18.3
AQS objective	-	40

For equivalent information pertaining to the Fradley modelled domain, please consult the Detailed Assessment, the data for which is employed in the Source Apportionment exercise in this AQAP.

Verification of Modelling

Model validation undertaken by the software developer (CERC) will not have included validation in the vicinity of the proposed development site. It is therefore necessary to perform a comparison of modelled results with local monitoring data at relevant locations. This process of verification attempts to minimise modelling uncertainty and systematic error by correcting modelled results by an adjustment factor to gain greater confidence in the final results.

²⁶ Defra Background Maps (2016). <http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html>

The predicted results from a dispersion model may differ from measured concentrations for a large number of reasons, including uncertainties associated with:

- Background concentration estimates;
- Source activity data such as traffic flows and emissions factors;
- Local weather conditions;
- Monitoring data, including locations; and
- Overall model limitations.

Model verification is the process by which these uncertainties are investigated and where possible minimised. In reality, the differences between modelled and monitored results are likely to be a combination of all of these aspects.

Model setup parameters and input data were checked prior to running the model in order to reduce these uncertainties. The following were checked to the extent possible to ensure accuracy:

- Traffic data;
- Distance between sources and monitoring as represented in the model;
- Speed estimates on roads;
- Background concentrations; and
- Local air quality monitoring data.

Verification was required only for the Muckley Corner area, as this was a new model domain. For verification of the Fradley area, see the associated Detailed Assessment⁶.

LDC undertakes passive diffusion tube monitoring at 10 locations located along roads within the Muckley Corner modelled area, which have therefore been considered for the purpose of model verification.

The full details of these monitoring sites are presented in the Council's 2015.

Verification Calculations

The verification of the modelling output was performed in accordance with the methodology provided in Chapter 7 of LAQM.TG(16)¹⁶.

For the verification and adjustment of NO_x/NO₂, the LAQM diffusion tube monitoring data was used as in the 2015 USA. Data capture for 2014 was good, and was above 90% for all sites. Table D.1 below shows an initial comparison of the monitored and unverified modelled NO₂ results for the year 2014, in order to determine if an adjustment was required.

Table D.1 - Comparison of Unverified Modelled and Monitored NO₂ Concentrations

Site ID	Background NO ₂ (µg/m ³)	Monitored total NO ₂ (µg/m ³)	Unverified Modelled total NO ₂ (µg/m ³)	% Difference (modelled vs. monitored)
DT1 A5 - 1	18.3	34.3	29.3	-14.7
DT2 A5 - 1A	18.3	37.2	36.0	-3.2
DT3 A5 - 2A	18.5	32.1	29.4	-8.3
DT4 A5 - 2B	18.5	38.5	31.8	-17.5
DT5 MUC - 1	18.5	41.5	41.6	0.1
DT6 MUC - 2	18.5	37.6	36.8	-2.1
DT7 MUC - 3	18.5	54.6	46.4	-15.1
DT8 MUC - 4	18.5	42.1	41.5	-1.4
DT9 MUC - 5	18.5	47.2	39.2	-17.1
DT10 MUC - 6	18.5	38.0	31.7	-16.7
DT11 MUC - 1ABC	18.5	46.8	31.0	-33.7

In **bold**, exceedence of the NO₂ annual mean AQS objective of 40µg/m³

The model was under predicting in most cases, and no further improvement of the modelled results could be obtained on this occasion. At one of the sites, the difference between modelled and monitored concentrations was greater than or close to 25%, and for five of the sites it was outside the desirable range of ±10%, meaning adjustment of the results was necessary, as per LAQM.TG(16)¹⁶ guidance. The relevant data was then gathered to allow the adjustment factor to be calculated.

Model adjustment needs to be undertaken based on NO_x and not NO₂. For the diffusion tube monitoring results used in the calculation of the model adjustment, NO_x was derived from NO₂; using NO_x/NO₂ calculator tool¹⁷.

Table D.2 provides the relevant data required to calculate a model adjustment factor, based on regression of the modelled and monitored road source contribution to NO_x.

Table D.2 - Data Required for Adjustment Factor Calculation

Site ID	Monitored total NO ₂ (µg/m ³)	Monitored total NO _x (µg/m ³)	Background NO ₂ (µg/m ³)	Background NO _x (µg/m ³)	Monitored road contribution NO ₂ (total - background) (µg/m ³)	Monitored road contribution NO _x (total - background) (µg/m ³)	Modelled road contribution NO _x (excludes background) (µg/m ³)
DT1 A5 - 1	34.3	59.6	18.3	26.0	16.0	33.6	22.3

Site ID	Monitored total NO ₂ (µg/m ³)	Monitored total NO _x (µg/m ³)	Background NO ₂ (µg/m ³)	Background NO _x (µg/m ³)	Monitored road contribution NO ₂ (total - background) (µg/m ³)	Monitored road contribution NO _x (total - background) (µg/m ³)	Modelled road contribution NO _x (excludes background) (µg/m ³)
DT2 A5 - 1A	37.2	66.4	18.3	26.0	18.9	40.4	37.6
DT3 A5 - 2A	32.1	54.4	18.5	26.2	13.6	28.3	22.4
DT4 A5 - 2B	38.5	69.3	18.5	26.2	20.0	43.2	27.6
DT5 MUC - 1	41.5	76.8	18.5	26.2	23.0	50.6	50.7
DT6 MUC - 2	37.6	67.2	18.5	26.2	19.1	41.0	39.1
DT7 MUC - 3	54.6	112.6	18.5	26.2	36.1	86.5	63.2
DT8 MUC - 4	42.1	78.3	18.5	26.2	23.6	52.1	50.6
DT9 MUC - 5	47.2	91.6	18.5	26.2	28.7	65.5	44.7
DT10 MUC - 6	38.0	68.1	18.5	26.2	19.5	42.0	27.2
DT11 MUC - 1ABC	46.8	90.6	18.5	26.2	28.3	64.4	25.9

Figure D.4 provides a comparison of the Modelled Road Contribution NO_x versus Monitored Road Contribution NO_x, and the equation of the trend line based on linear regression through zero. The equation of the trend lines presented in Figure D.4 gives an adjustment factor for the modelled results of 1.28.

Figure D.4 - Comparison of the Modelled Road Contribution NO_x versus Monitored Road Contribution NO_x

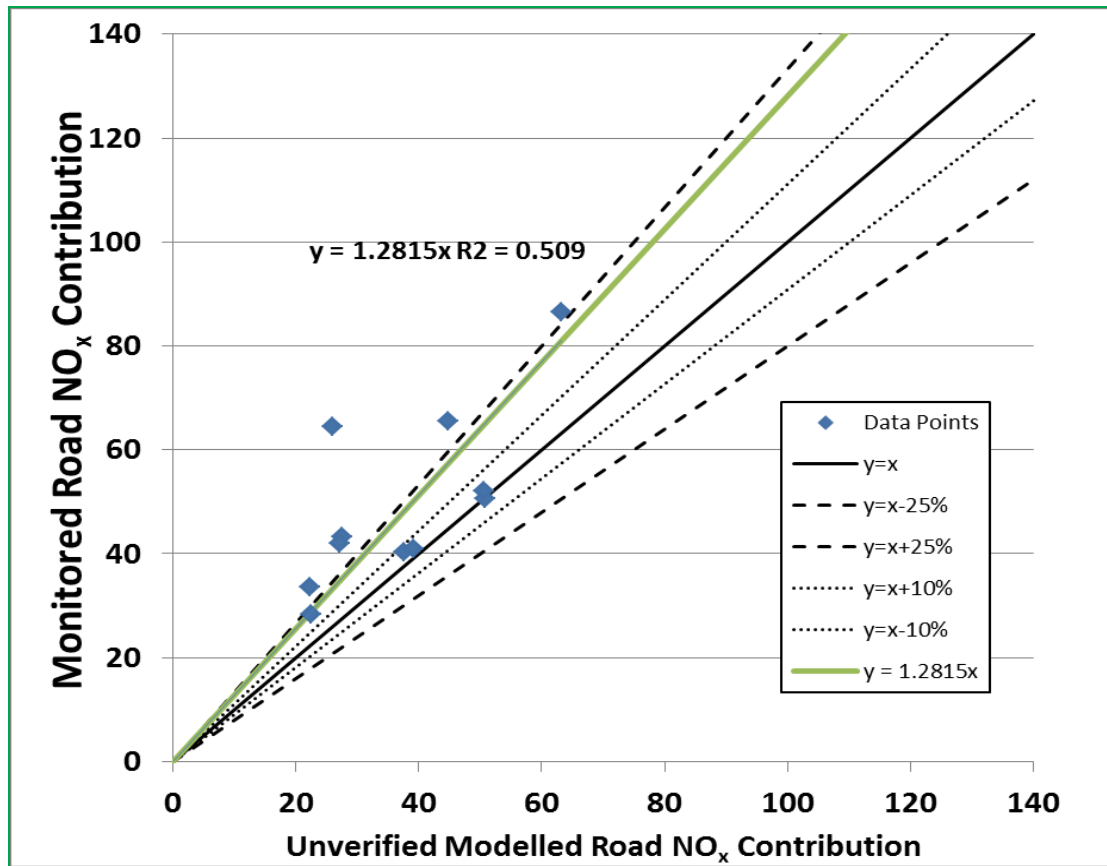


Table D.3 shows the ratios between monitored and modelled NO₂ for each monitoring location based on the above adjustment factor. There is some variation demonstrated, and using a factor of 1.28 to adjust all modelled results would lead to an under prediction of concentrations at one of these monitoring locations by up to 26.8%. In order to provide more confidence in the model predictions, the majority of results should be within 25%, ideally within 10%, of the monitored, and consequently 1.28 is not a suitable verification factor.

Table D.3 - Adjustment Factor and Comparison of Verified Results against Monitoring Results

Site ID	Ratio of monitored road contribution NO _x / modelled road contribution NO _x	Adjustment factor for modelled road contribution NO _x	Adjusted modelled road contribution NO _x (µg/m ³)	Adjusted modelled total NO _x (including background NO _x) (µg/m ³)	Modelled total NO ₂ (based upon empirical NO _x / NO ₂ relationship) (µg/m ³)	Monitored total NO ₂ (µg/m ³)	% Difference (adjusted modelled NO ₂ vs. monitored NO ₂)
DT1 A5 - 1	1.51	1.281	28.6	54.6	32.1	34.3	-6.4
DT2 A5 - 1A	1.07		48.1	74.1	40.4	37.2	8.6
DT3 A5 - 2A	1.26		28.7	54.9	32.3	32.1	0.6
DT4 A5 - 2B	1.57		35.3	61.5	35.2	38.5	-8.6
DT5 MUC - 1	1.00		65.0	91.2	47.0	41.5	13.3
DT6 MUC - 2	1.05		50.2	76.3	41.3	37.6	9.9
DT7 MUC - 3	1.37		81.0	107.1	52.7	54.6	-3.4
DT8 MUC - 4	1.03		64.8	91.0	47.0	42.1	11.6
DT9 MUC - 5	1.46		57.3	83.5	44.1	47.2	-6.5
DT10 MUC - 6	1.54		34.9	61.1	35.0	38.0	-7.8
DT11 MUC - 1ABC	2.49		33.2	59.4	34.3	46.8	-26.8

DT11 MUC - 1ABC was taken out of the verification process due to the fact it is located at the same X,Y location as DT5 MUC – 1, at an increased height, but at higher concentration. This is inverse to the relationship expected, and therefore raises concern about the monitored concentration. Comparison with the other verification locations identified this site as the outlier. Removing this results in a decrease of the model verification factor and increased alignment between monitored and modelled values as shown in Table D.4 and Figure D. 6. The equation of this new trend line presented gives an increased adjustment factor for the modelled results of 1.23, as shown in Figure D. 5.

Table D.4 - Adjustment Factor and Comparison of Verified Results against Monitoring Results after Removal of Verification Point

Site ID	Ratio of monitored road contribution NO _x / modelled road contribution NO _x	Adjustment factor for modelled road contribution NO _x	Adjusted modelled road contribution NO _x (µg/m ³)	Adjusted modelled total NO _x (including background NO _x) (µg/m ³)	Modelled total NO ₂ (based upon empirical NO _x / NO ₂ relationship) (µg/m ³)	Monitored total NO ₂ (µg/m ³)	% Difference (adjusted modelled NO ₂ vs. monitored NO ₂)
DT1 A5 - 1	1.5	1.233	27.5	53.5	31.6	34.3	-7.8
DT2 A5 - 1A	1.1		46.3	72.3	39.7	37.2	6.6
DT3 A5 - 2A	1.3		27.6	53.8	31.8	32.1	-0.9
DT4 A5 - 2B	1.6		34.0	60.1	34.6	38.5	-10.1
DT5 MUC - 1	1.0		62.5	88.7	46.1	41.5	11.1

Site ID	Ratio of monitored road contribution NO _x / modelled road contribution NO _x	Adjustment factor for modelled road contribution NO _x	Adjusted modelled road contribution NO _x (µg/m ³)	Adjusted modelled total NO _x (including background NO _x) (µg/m ³)	Modelled total NO ₂ (based upon empirical NO _x / NO ₂ relationship) (µg/m ³)	Monitored total NO ₂ (µg/m ³)	% Difference (adjusted modelled NO ₂ vs. monitored NO ₂)
DT6 MUC - 2	1.0		48.3	74.4	40.6	37.6	7.9
DT7 MUC - 3	1.4		77.9	104.1	51.7	54.6	-5.4
DT8 MUC - 4	1.0		62.4	88.6	46.1	42.1	9.4
DT9 MUC - 5	1.5		55.2	81.3	43.3	47.2	-8.3
DT10 MUC - 6	1.5		33.6	59.8	34.5	38.0	-9.3

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Figure D. 5 - Second Comparison of the Modelled Road Contribution NO_x versus Monitored Road Contribution NO_x

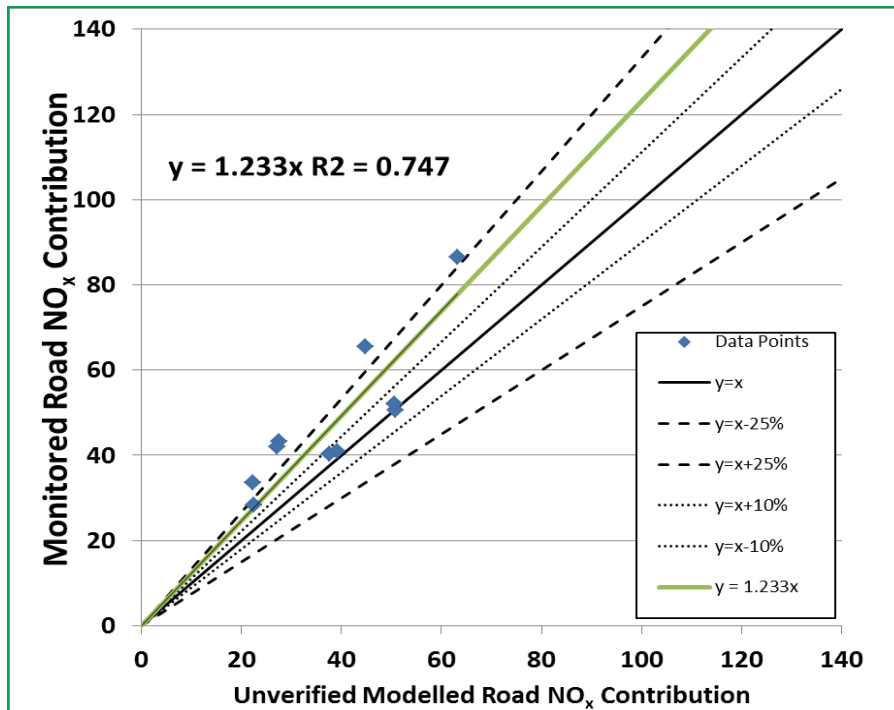
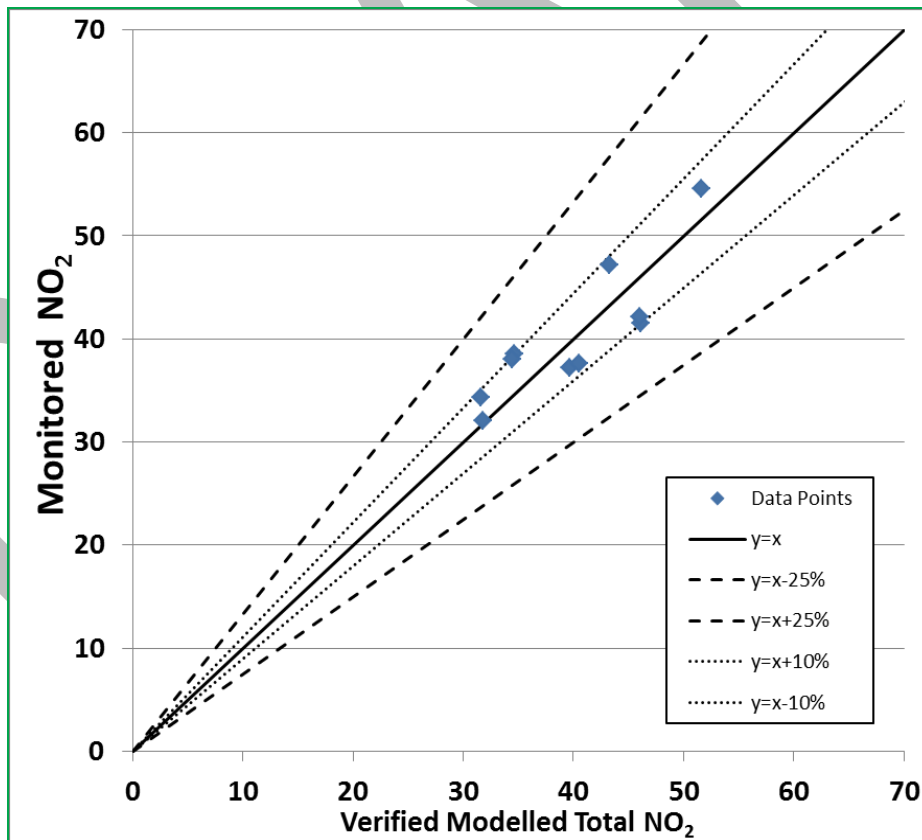


Figure D. 6 - Final Comparison of the Modelled NO₂ versus Monitored NO₂



The adjustment factor of 1.23 was applied to the road-NO_x concentrations predicted by the model in the Muckley Corner area before using the NO_x/NO₂ calculator tool to

estimate total NO₂ concentrations. All sites show an acceptable agreement between the monitored and modelled NO₂, with modelled concentrations mostly within ±10% of the measured concentrations, with only two locations marginally outside. A factor of 1.23 also reduces the Root Mean Square Error (RMSE) from a value of 5.0 to 3.3.

All NO_x and NO₂ results presented and discussed herein for the Muckley Corner area are those calculated following the process of model verification using an adjustment factor of 1.23.

All NO_x and NO₂ results presented and discussed herein for the Fradley area are those calculated following the same process of model verification using an adjustment factor of 1.40. For full details, consult the associated Detailed Assessment⁶.

Glossary of Terms

Abbreviation	Description
AADT	AADT Annual Average Daily Traffic flows
ADMS	Atmospheric Dispersion Modelling System
AONB	Areas of Outstanding Natural Beauty
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
AQS	Air Quality Strategy
ASR	Air quality Annual Status Report
AURN	Automatic Urban and Rural Network
CERC	Cambridge Environmental Research Consultants
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EU	European Union
FCC	Freight Consolidation Centre
FQP	Freight Quality Partnership
HGV	Heavy Goods Vehicle
ITS	Intelligent Transport Systems
LAQM	Local Air Quality Management
LDC	Lichfield District Council
LGV	Light Goods Vehicle
LTP	Local Transport Plan
NAEI	National Atmospheric Emissions Inventory
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm (micrometres or microns) or less
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or

	microns) or less
PTP	Personalised Travel Planning
QBP	Quality Bus Partnership
RMSE	Root Mean Square Error
RTPI	Real Time Passenger Information
SAC	Special Areas of Conservation
SAQF	Staffordshire Air Quality Forum
SCC	Staffordshire County Council
UTMC	Urban Traffic Management and Control
$\mu\text{g}/\text{m}^3$	Micrograms per cubic metre

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- <http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=18580>
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- Reference has been made to the Staffordshire LTP 2011 – Strategy Plan in writing Section 3.1
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- Reference has been made to the Staffordshire LTP 2011 - Implementation Plan in writing Section 3.1
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REPORT FOR DECISION

FOR: REGULATORY AND LICENSING COMMITTEE

Date: 4th July 2017

Agenda Item: 5

Contact Officers: Jack Twomey

Telephone: 01543 308734

SUBMISSION BY GARETH DAVIES – HEAD OF REGULATORY SERVICES HOUSING AND WELLBEING

ENVIRONMENTAL CRIME STRATEGY FOR LICHFIELD

1. Purpose of Report

- 1.1 To seek approval on the proposed direction for the development of the Council's Environmental Crime Strategy and a review of the current Dog Control Order.

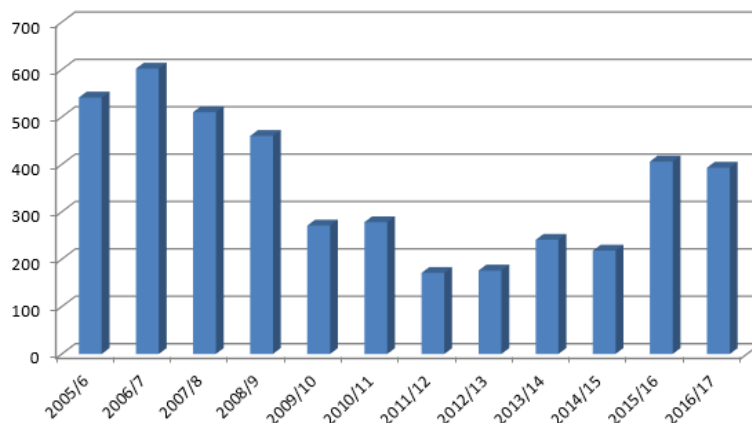
2. Recommendation

- 2.1 That a Member Task Group is set up to review our approach to environmental crime as outlined in the report, and consult stakeholders in order to make recommendations to the appropriate Committees and Cabinet Members.
- 2.2 Approve the scope of the Member Task Group.

3. Summary of Background Information

- 3.1 At a local level, the term "Environmental Crime" can encompass a range of offences, including fly tipping, littering, graffiti, fly posting, dog fouling and abandoning vehicles.
- 3.2 The number of instances of fly tipping within the Lichfield District shows a reduction from around 2005 to 2012 and then an upward trend since. This reflects a very similar trend nationally though some of the increase may be down to changed data collection methods.

Lichfield District fly tipping incidents



- 3.3 Whilst dog fouling has clearly reduced over recent decades, more recent statistics locally show that for Lichfield the reduction has levelled out and dog fouling complaints and cleansing requests have been broadly similar for the last 3 years.

- 3.4 Complaints regarding litter, fly posting and graffiti have remained fairly constant in recent years.
- 3.5 Abandoned vehicles have increased recently, with the 171 reports for 2016/17 being approximately double that of 2014/15 (at 89).

4. Current Situation

Fly Tipping

- 4.1 In order to tackle the upward trend in fly tipping the cause of the increase needs to be fully assessed and this data fed into the proposed Member Task Group for consideration on actions.
- 4.2 Household waste makes up the vast majority of all fly tips. This includes materials from house or shed clearances, old furniture, carpets and waste from small scale DIY works.
- 4.3 Some of the increase may be down to more metal fly tipping being picked up as steel prices have fallen in recent years (though have started to recover in 2016) and the number of scrap metal collectors has correspondingly reduced whilst residents still leave scrap metal out on the highways. Increased disposal costs may also be driving the upward trend in tipping.
- 4.4 More serious large scale waste crime appears to be an emerging trend nationally with organised criminals making large sums of money whilst causing serious concerns to local residents, businesses and the enforcement agencies. One such situation is the well-known GKN site waste bales which were illegally deposited there in 2016 and which have cost the public purse a great deal since. There are a number of other similar sites across Staffordshire.
- 4.5 The proposed Member Task Group will have to consider information from a range of sources including our own Streetscene operatives, enforcement teams such as Environmental Protection and Planning, other agencies such as the Environment Agency, Police and Staffordshire Fire and Rescue Service, Parish Councils and others.

Dog Fouling

- 4.6 Dog fouling is an emotive subject and residents demand not only quick and regular clean ups but successful enforcement actions to reduce incidents.
- 4.7 Legislative changes have previously led to a move from the Dogs (Fouling of Land) Act to Dog Control Order provisions for dog fouling. Dog Control Orders have since been replaced with Public Space Protection Orders (PSPOs). In line with transitional arrangements, any Dog Control Orders still in place on 20th October 2017 will automatically become PSPOs. It is recommended, however, that the Authority takes the opportunity to review our current Dog Control Order ahead of this time to ensure the provisions meet the legal tests for PSPOs. This work should progress as soon as possible and any new PSPOs which are suggested in other areas, which come about following the Members Task Group findings can be created separately at a later date.
- 4.8 Because there are so many responsible dog owners who pick up after their dogs, patrolling and being present near a dog owner who doesn't pick up to observe the offence is resource intensive. One recently introduced change is the move to intelligence cards which prompt those who live or work in the vicinity of fouling problems to report anyone they see not picking up. This is in effect designed to persuade residents to act as our

eyes on streets and in parks or wherever dogs are seen and to feed back information to us on offenders. This information can then be used to target patrols at appropriate times.

Other Environmental Crime

- 4.9 It may be that certain issues which fall outside of current legislation but which are causing an evident problem to residents can be covered by the creation of a Public Space Protection Order (PSPO). PSPOs can be very wide ranging in their scope from banning youths congregating in large groups to making it an offence not to leave a park when asked to do so by an authorised officer (such as when a park is closing). It should be noted, however, that there needs to be evidence of an ongoing problem which cannot be addressed with current legislation in order for and PSPO to be robustly defensible in court should that ultimately prove necessary.
- 4.10 Officers already patrol to try to catch any offenders, whether they be littering, fly posting, not picking up after their dog or any other offence. Further consideration may be required in relation to how such patrolling is managed.
- 4.11 Abandoned vehicles is an increasing problem, again probably due to the price of scrap metal making it less profitable to scrap vehicles, though scrap values have recovered in 2016 and so abandoned vehicle reports may drop as a result.
- 4.12 Aside from the need to go to public consultation on the change from the current fouling Dog Control Order to a PSPO, all of the above environmental crimes will be considered by the Members Task Group.

Suggested Scope of the Member task Group

- 4.13 To consult stakeholders on our current approach and any proposed changes.
- 4.14 To review the powers available under Public Space Protection Orders and identify the necessary and appropriate controls for the District.
- 4.15 To review the Council's current arrangements and approach to enforcing environmental crime.
- 4.16 To identify areas of improvement to council policies and practices in this area that impact upon our aim of a Clean Green and Welcoming Place to Live and make recommendations to the appropriate Committee / Cabinet Member.
- 4.17 Review the levels of resources to deal with environmental crime and make recommendations to the appropriate Cabinet Member.

5. Financial Implications

- 5.1 No immediate implications identified. Longer term, the hope would be that environmental crime would be reduced and this would cause a corresponding reduction in clean-up costs.

6. Human Rights Issues

- 6.1 None identified.

7. Crime and Community Safety Issues

7.1 Aside from the direct effect on lower level environmental crime, the well known “broken window” theory links petty crimes such as those outlined in this report with a rise in more serious crime in the same location. Any improvements we can make in this area then, are likely to reduce crime overall and increase community safety, albeit perhaps only to a small degree.

8. Risk Management Issues

Risk	Likelihood/ Impact	Risk Category	Countermeasure	Responsibility
Environmental Crime Policy is delayed (Political / reputational / potential financial risk)	Likelihood: Low Impact: Medium	Tolerable (Green)	Regular Task Group Meetings to progress the strategy quickly	Head of Regulatory Services, Housing and Wellbeing & Senior Environmental Protection Officer
Increase in Environmental Crime (financial risk)	Likelihood: Medium Impact: Medium	Material (Yellow)	Implementation of the Environmental Crime Strategy	Head of Regulatory Services, Housing and Wellbeing & Senior Environmental Protection Officer

Background Documents:

**REGULATORY AND LICENSING COMMITTEE
WORK PROGRAMME FOR 2017-18**

Item	4 JULY 2017	2 OCT 2017	6 FEB 2018	Purpose of the Report	Lead
Air Quality Action Plan	✓			To agree Action Plan	GD
Environmental Health 2017/18 Fees & Charges			✓	To agree the schedule of fees and charges for EH functions during 18/19	GD
Street collections 2017		✓			GD
Street Trading Policy - review					GD/JR
Environmental Crime Strategy	✓				GD