West Lothian Council

Revocation of The West Lothian Council (Newton) Air Quality Management Area Order 2016

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

January 2024

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Report Reference	5504
Date	January 2024

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1. Introduction

Part IV of the Environment Act 1995 required the UK Government and the devolved administrations, to publish a national Air Quality Strategy (see Ref.1) and establish the system of Local Air Quality Management (LAQM) and Air Quality Objectives for specified pollutants.

The air quality objectives for Scotland are set out in;

- The Air Quality (Scotland) Regulations 2000 (Ref. 2);
- The Air Quality (Scotland) Amendment Regulations 2002 (Ref. 3); and
- The Air Quality (Scotland) Amendment Regulations 2016 (Ref. 4).

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely, the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

West Lothian Council fulfils its LAQM duties by maintaining 3 automatic air quality stations across its area. There is also a network of passive NO_2 diffusion tubes. Results from this monitoring are assessed and an annual progress report is produced each year in line with statutory guidance.

Due to the potential for the air quality objective to be breached, three AQMAs were declared within West Lothian. One of these AQMA's covers the whole of the village of Newton – see Map 1 for an outline of the AQMA. Following monitoring, modelling and extensive consultation, an AQMA was declared in July 2016 by issuing **The West Lothian Council (Newton) Air Quality Management Area Order 2016** (Ref. 5)**.** The AQMA was declared for exceedances of the Scottish annual mean Particulate Matter (PM_{10}) objectives.

Following completion of the most recent annual progress report (Ref. 1), and a review of historic monitoring data over previous years, it was noted that the annual mean objectives (see Table 1) for PM_{10} have been met within the Newton AQMA for several consecutive years as highlighted in Figures 1 and 2.

As such, West Lothian Council consider it appropriate to revoke the Newton AQMA Order 2016 for PM_{10}. This report brings together all the relevant monitoring information in support of the revocation.

Table 1 – Summary of Air Quality Objectives for NO_2 and PM_{10} in Scotland

Pollutant	Air Quality Objective Concentration	Air Quality Objective Measured as	Date to be Achieved by
Nitrogen dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
Nitrogen dioxide (NO_2)	40 µg/m^3	Annual mean	31.12.2005
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
Particulate Matter (PM_{10})	18 µg/m^3	Annual mean	31.12.2010
Particulate Matter ($PM_{2.5}$)	10 µg/m^3	Annual mean	31.12.2021

Map 1 – Newton Air Quality Management Area

2. Monitoring Equipment in Newton

Table 2 below displays details of the monitoring equipment which is currently installed at our Newton automatic air quality monitoring site. It also shows details of previous monitoring equipment.

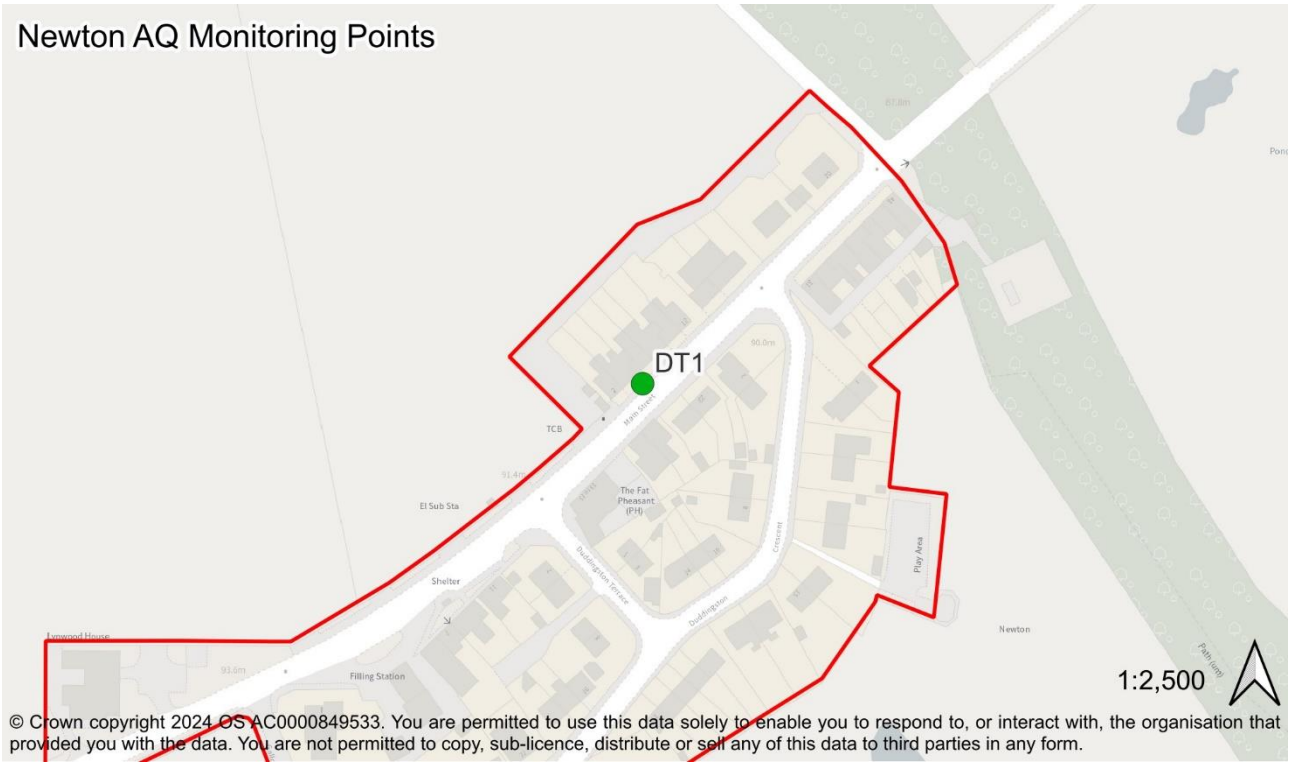
Table 2 – Newton Air Quality Station - Automatic Monitoring Equipment (Current and Historical)

Site ID	Site Type	Grid Ref	Pollutants Measured	Equipment	Distance to relative exposure (m)	Distance to kerb of nearest road (m)	Inlet height (m)	Date of Installation
Newton CNC	Roadside	309258, 677728	NO_2, PM_{10}, $PM_{2.5}$	Serinus NOx analyser	1.8	1.92	2.41	July 2022
Newton CNC	Roadside	309258, 677728	NO_2 PM_{10}, $PM_{2.5}$	FIDAS 200; Serinus 40 NOx analyser	1.8	1.92	2.41	October 2019
Newton CNC	Roadside	309258, 677728	PM_{10}, $PM_{2.5}$	TEOM/FDMS NOx analyser	1.8	1.92	2.41	2011

There are also 3 diffusion tubes co-located at the automatic monitoring site. The location of the Newton automatic monitoring station and diffusion tube is shown in Maps 2 and 3 below respectively.

Map 2 – Location of Newton Automatic Monitoring Station

Map 3 – Location of Newton Diffusion Tube



3. Air Quality Management Area – PM_{10} (Annual Mean)

Following exceedances of the air quality objective noted in the 2014 Annual Progress Report (Table 5), a detailed assessment was carried out in 2016. This considered whether an air quality management area should be declared for PM_{10}. The detailed assessment utilised modelling to determine PM_{10} levels at different receptors throughout the Newton study area. The modelling exercise found that PM_{10} concentrations exceeded the annual mean objective of 18 μgm^{-3} in most of Newton. As a result, West Lothian Council declared an AQMA for PM_{10} in the Newton study area in 2016.

Table 3 – PM_{10} monitoring results 2014

Site	Site Type	Data Capture (%)	Annual Mean (μgm^{-3})
Newton (Automatic Monitor)	R	97.4	22.45
R = Roadside site (1-5m from the kerb)			

3.1 More recent PM_{10} monitoring results

Over a number of years, within the Councils Annual Progress reports, it has been noted that PM_{10} levels are consistently below the Scottish annual mean objective level of 18 μgm^{-3} at the Newton automatic monitoring site. The results of a number of years

of monitoring are shown in Table 4 below;

Table 4 – PM_{10} monitoring results since 2013 (annual mean μgm^{-3})

Site	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Newton Automatic Monitor (CM3)	19	**22**	16	15	15	14	14	12.1	12.4	11.3*

*** Annualised mean due to 40% data capture for 2022.**

It is clear that measured levels over a number of recent years have been significantly below the annual mean Objective. Measured results for 2020 are lower due to the Coronavirus pandemic.

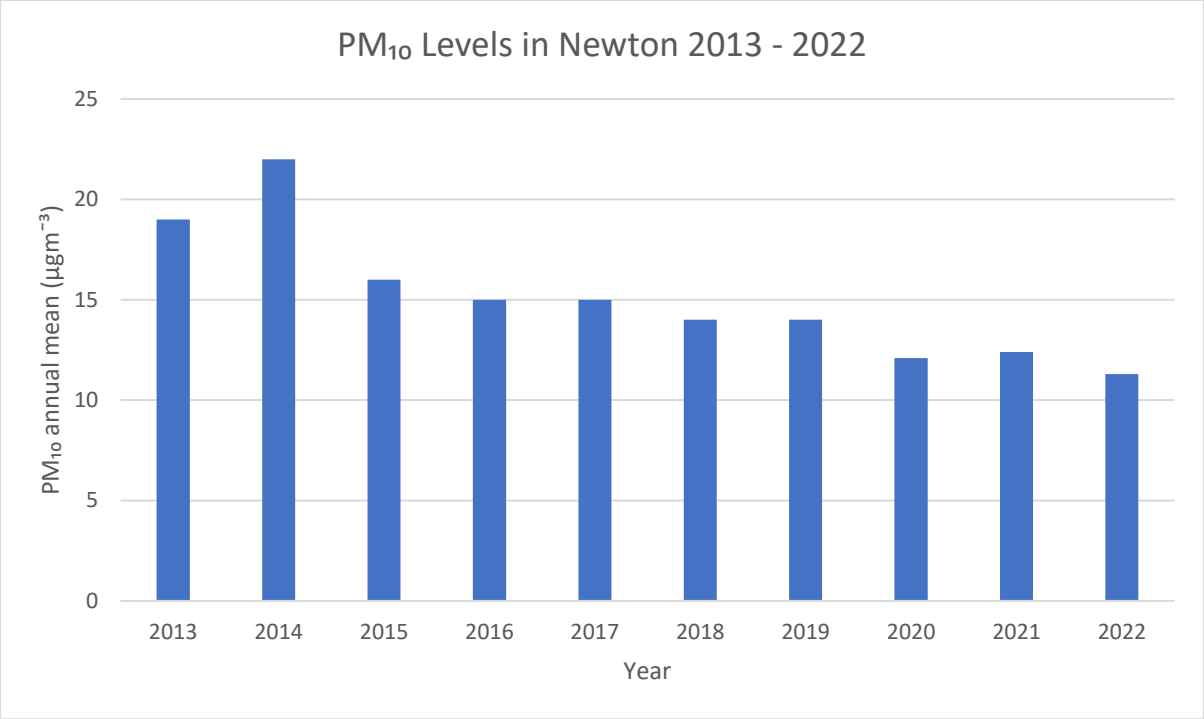
3.2 Particulate Matter Monitoring

The accurate measurement of particulate matter (PM) represents a significant challenge particularly where concentrations can generally be considered to be low. Ambient concentrations of PM_{10} and PM2.5 reported by different MCERT equivalent instruments in the same environments can vary by several micrograms (as an annual mean). Such differences represent a particular problem when considering compliance with air quality standards, especially in situations where a change in instrumentation results in a step-change reduction in reported concentrations. This prompted the Scottish Government to conduct a Pilot Research Study.

The aim of the study was to help identify whether measurement techniques used in Scotland were providing accurate measurements that government could rely on when making policy decisions. The study was carried out between July 2021 and June 2022 and the focus was on the main method for monitoring PM_{10} measurements - the FIDAS 200 which the council utilises.

The research report was published in May 2023 with the Scottish Government issuing guidance for local authorities. There were a number of points including the requirement to apply a correction factor to data obtained by the FIDAS particulate monitors. FIDAS 200 PM_{10} data collected within the SAQD should be corrected by dividing ratified data by 0.909. The data in Table 4 has had this correction factor applied to measurements taken in 2020 and 2021.

Figure 1 – PM_{10} Levels Since 2013 in Newton



4. Air Quality Action Plan 2017

During 2017, a draft air quality action plan was developed for Newton (Ref. 3). The development of an action plan is a statutory requirement following the declaration of an AQMA. A steering group across West Lothian Council was established and a number of strategic measures were outlined. These measures were also the subject of a public consultation exercise. Many of the measures set out in the action plan have been actioned since 2017. For example;

- Supplementary guidance on air quality and planning has been produced (see Ref. 7);
- The ECO stars scheme has expanded in its membership across West Lothian;
- Electric vehicle charging points have continued to be installed, both by the Council and via planning conditions for residential and commercial developments;
- Developers have been encouraged to include active travel measures into their plans – included in air quality and planning guidance and general planning condition requirements;
- Environmental Health have continued to deal with environmental nuisance (including dust and smoke) complaints across the Councils area; and
- West Lothian Council own 12 properties within Newton and have gradually been upgrading the heating systems to Air Source Heat Pumps. Five of the properties are still heated via solid fuel because some tenants have refused to accept an alternative heating system. Of those non-solid fuel heated houses, six were upgraded between 2018-2020 and 1 in 2008. This project has been on

hold as ASHP's have been in short supply due to Covid and there haven't been any new installs since 2020.

5. Detailed Assessment 2022

In considering whether the revocation of the Newton AQMA is appropriate, a detailed assessment of air quality in Newton was undertaken and subsequently published in July 2022 (see Ref. 6). The detailed assessment considered;

- A review of measured NO_2 and PM_{10} concentrations within the AQMA over recent years;
- Detailed dispersion modelling of PM_{10} and $PM_{2.5}$ concentrations for a baseline year of 2017;
- A sensitivity analysis of potential fluctuations in annual mean pollutant concentrations attributable to meteorological conditions;
- Detailed dispersion modelling of PM_{10} and $PM_{2.5}$ concentrations in a future year of 2024 reflecting anticipated changes in traffic levels associated with projected growth or planned local developments.

The detailed assessment concluded that West Lothian Council may wish to:

1. Delay revoking the AQMA for exceedances of the PM_{10} annual mean objective until Scottish Government guidance regarding AQMA revocation and the use of FIDAS analysers for particulate measurements is updated. This study has now been completed and a report has been published which will be discussed in the conclusion.

6. Conclusion

The Newton AQMA was declared in July 2016 after monitoring and modelling found exceedances of PM_{10} air quality objective levels at various receptors in the Newton study area. Since the AQMA was declared, measured concentrations of PM_{10} have consistently been below the air quality objectives for several consecutive years.

As stated within the Air Quality in Scotland (LAQM) website in relation to AQMA Revocation: 'Where a local authority feels that it has sufficient evidence to justify the need to amend/revoke an AQMA at any time, it should submit that evidence to the Scottish Government for appraisal.

The Scottish Governments Policy Guidance PG(S) 23 states that there are no set criteria on which an amendment or revocation decision will be based, but each request will be considered on a case-by-case basis. A minimum requirement however will normally be at least three consecutive years where the objectives of concern are being achieved and where monitoring data demonstrates that further exceedances of the objectives are unlikely to occur.

For those authorities that have continuous monitoring, the Scottish Government would expect them to keep the AQMA under regular review, and to act where necessary, rather than await the next round of reviews and assessments.'

In considering all the information available from several years of monitoring and from modelling carried out in the 2022 detailed assessment, West Lothian Council intend to revoke the AQMA for PM_{10}. The Council will, however, continue to monitor PM_{10} within Newton. If measured levels remain below the objective levels, West Lothian Council may utilise the monitoring equipment at other potential areas of poorer air quality within the Council area.

As previously mentioned pilot research by RICARDO (Scottish Government air quality consultants), which investigated particulate matter monitoring techniques in Scotland has now been completed.

The research report was published in May 2023. This required a correction factor to be applied to data obtained by the FIDAS particulate monitors which the council utilises.

10. References

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2. Local Authority Guidance Note for LAQM Reporting of Scottish PM Data - Scottish Government – 17.05.23

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3. Newton Draft Air Quality Action Plan – RICARDO – 01.11.17

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5. Newton Air Quality Management Order and Map - 30 June 2016

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6. Newton Detailed Assessment 2022

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9. The Air Quality (Scotland) Regulations 2000 (31st March 2000, The Scottish Government)

10. The Air Quality (Scotland) Amendment Regulations 2002 (11th June 2002, The Scottish Government)

11. The Air Quality (Scotland) Amendment Regulations 2016 (1st April 2016, The Scottish Government)