2021 Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

September 2021

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Executive Summary: Air Quality in Our Area

Air Quality in Wyre

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, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas[1,2].

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

Air quality within the borough of Wyre is generally good. The district is largely rural in nature, and is bounded by the sea along parts of its western and northern boundaries. There are no areas in the borough which contain substantial activity with the potential to pollute. The most significant source of air pollution within the borough is therefore motor vehicles. These emit, amongst other pollutants, oxides of nitrogen; carbon monoxide; carbon dioxide; and, fine particulate matter (PM_{10} and $PM_{2.5}$). Those areas of the borough which have at times experienced periods of poorer air quality, have been those where narrow built up streets are combined with high volumes of slow moving traffic.

Pursuant with its legal obligation to periodically review and assess air quality within Wyre, the council currently monitors nitrogen dioxide (NO_2), at 19 diffusion tube sites throughout its administrative district. These sites are located close to busy roads, in areas where the public are likely to be exposed to traffic emissions. The locations of these sites can be found within Appendix D.

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[1] Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

[3] Defra. Air quality appraisal: damage cost guidance, July 2020

[4] Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

As a result of the council's monitoring programme, exceedances of the national objective for NO_2 have been established at a total of three sites within the council's monitoring network over recent years. These exceedances led to the declaration of an Air Quality Management Area (AQMA) in Chapel Street Poulton, in August 2009. Shortly after, the council compiled an Air Quality Action Plan (AQAP), outlining its intentions to improve air quality in the area. This plan was formally approved by DEFRA in 2012. Details of the Chapel Street AQMA, including a map illustrating the extent of its boundaries can be found in Table 2.1 and Figure 2.1 of the main report.

The Chapel Street AQMA incorporates two triplicate diffusion tube sites (Site R1-3 and Site R4-6), and is the council's only AQMA. Whilst exceedances of the national objective for NO_2 have also been indicated in the past at Site 14 (just to the north of Chapel Street), no extension of the AQMA boundaries has ever been made. This is due to uncertainties in the data indicating those exceedances, and to the existence of active measures designed to tackle poor air quality within the area already. The original boundaries of the Chapel Street AQMA therefore remain.

In terms of the current position with air quality within the borough, the 2020 monitoring results suggest a reduction in annual mean NO_2 concentration across the council's entire monitoring network. Most significantly however, they provide the eighth consecutive year in which there are no sites within the district where the national objective for NO_2 is being exceeded. This includes the two monitoring sites located within the Chapel Street AQMA, in which the highest recorded annual mean NO_2 concentration for 2020 was just 20.0ug/m^3 at Site R1-3. The 2020 results also suggest that the highest recorded annual mean anywhere within the council's entire monitoring network was 22.9ug/m^3 at Site 15 (Trunnah Road, Thornton), indicating that all locations within the council's network have annual mean concentrations of at least 17ug/m^3 below the national objective of 40ug/m^3.

In terms of the significance of the 2020 results, they are clearly very promising and under normal circumstances would provide further evidence to support the revocation of the Chapel Street AQMA. However, much of the 2020 reporting year fell within the period of the Covid-19 pandemic which resulted in both national and local lockdowns which significantly reduced the amount of traffic and congestion within the borough, in particular within the vicinity of the AQMA and centre of Poulton-le-Fylde; a town heavily reliant on both the hospitality industry and night time economy, and as such an area heavily impacted by the restrictions introduced to control the pandemic. The council is therefore reluctant to place too much weight on the 2020 results until such time that it can determine

whether the reduction in NO_2 concentrations seen within the AQMA are solely or largely the result of the imposed restrictions and subsequent behavioural changes brought about by the pandemic, and whether those behavioural changes are likely to be long term and to continue to impact positively on local air quality in future.

However, despite the need to be cautious the council does take comfort in the fact that 2020 is the second consecutive year in which NO_2 concentrations have fallen within the AQMA and therefore would like to consider that the opening of the Hardhorn link road (designed to divert traffic away from the AQMA) has been a success and is contributing effectively to the reduction in pollution levels as intended. However, as said it is considered too early to confidently measure the contribution of either the link road or the Covid-19 pandemic on the improvements seen, or to have sufficient confidence that any observed improvements will be long term. Add to this the fact that that there is still a significant amount of development both outlined and currently underway in and around Poulton-le-Fylde town centre, and the council's position in respects to the AQMA remains unchanged in that it wishes to take a precautionary approach and retain the current status of the AQMA until such time that the likely impact of any significant development within the area on local air quality can be determined.

In respects to the council's monitoring intentions for the year ahead, no new sources of pollution have been identified. The council does however continue to monitor air quality from a number of non-automatic 'test' sites within the borough in addition to its permanent monitoring sites, and therefore has the flexibility to alter the location of its monitoring stations at any time within the reporting year should any new sources of pollution be identified, or any concerns be raised by members of the public in respects to local air quality. The positioning of the council's permanent monitoring sites was reviewed as recently as March 2020 and the council is therefore confident that the monitoring stations it has in place are suitably placed to provide a good indication of the air quality across the borough, whilst also enabling the impact of any existing sources and proposed development to be determined. The council also considers that given the uncertainty of the 2020 results as a result of the impact of the Covid-19 restrictions, it would be premature to consider movement of any of its permanent monitoring stations at this time. The council does not therefore propose to undertake any further amendments to its monitoring network within the next 12 months, however it will continue to review matters periodically.

A further review of the council's position in respects to air quality will be undertaken within the 2022 Annual Status Report (ASR). Until that time, the council will continue to take a proactive approach to managing air quality; making best use of the air quality policy now incorporated into its newly adopted Local Plan (2011-2031), when giving consideration to any future planning proposals.

The council will also continue to work closely with other agencies and partners to maximise the number and range of options available to improve air quality within the borough. This will include working with colleagues within the Highways / Transport Planning Department, and Public Health Departments of Lancashire County Council; for example to bring about improvements to local road networks, and to raise awareness of potential health impacts. The council will also continue to work closely with the Environment Agency, for example, to address the potential impacts of industrial emissions; and with neighbouring local authorities; for example, to bring into effect countywide initiatives, and to ensure that a consistent approach to air quality management is achieved. The council has many partners in the management of local air quality, and will continue to work with them closely in order to best fulfil its statutory obligations, whilst bringing about the most effective solutions to combat air pollution. The council will also look to maximise the opportunities presented via its recent employment of its Climate Change & Environmental Projects Officer, and will look to prioritises those co-benefit actions and initiatives capable of impacting positively on both climate change and air quality simultaneously.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy[5] sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero[6] sets out the approach to reduce exhaust emissions from road transport through a number of

[5] Defra. Clean Air Strategy, 2019

[6] DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

The council's only AQMA is no different and therefore its 2012 AQAP contained 11 actions designed to reduce traffic emissions within the AQMA, primarily via the promotion of travel alternatives, and through interventions with traffic management.

During the lifetime of the Chapel Street AQAP, all but two actions were completed, resulting in a steady decline in NO_2 concentration within the AQMA to below the national objective. Most significant of all the actions completed was the construction of a link road (Wheatsheaf Way), designed to divert traffic away from the Chapel Street AQMA whilst also improving the flow of traffic in and around Poulton Town Centre. Less significant, but equally beneficial actions included the provision of improved signage to a number of priority pedestrian and cycle pathways within and around Poulton Town Centre; the provision of a cycle storage pod at Poulton Railway Station; and the promotion of a 'walk to school' initiative within a number of Poulton Schools; all of which were designed to encourage alternative modes of transport other than the domestic car.

Since 2016, all work undertaken by the council to improve air quality has been over and above that originally proposed within its Chapel Street AQAP. As such the council made the decision within the 2018 ASR to abandon the last two remaining actions of the Chapel Street AQAP, and to replace the Plan with a number of proactive measures to address air quality, relevant to the wider district.

Those measures identified as a priority for progress and / or completion within the 2020 ASR are listed below:

- **Ensuring the Adoption and Implementation of Improved Guidance to Planning Applicants.** With the council's 2011- 2031 Local Plan having been formally adopted in February 2019, the council had hoped to have adopted one of three Planning Guidance Templates designed by the Lancashire Authorities in association with the Low Emissions Partnership to increase both transparency and consistency in the consideration of air quality concerns within the planning process. The council's progress with this measure has however been hampered by the impact of the Covid-19 pandemic both through the impact on staffing resources within the council and an increase in workload within key departments, such as the Environmental Protection Department. This is the only measure identified within the 2020 ASR which the council has been unable to complete as intended over the

last 12 months. The council does however remain committed to the implementation of this measure and hopes to ensure the adoption of the intended planning guidance in the form of either a Supplementary Planning Document or at the very least, a Planning Advisory Note, within the next few months.

- **Continuing to Work With & Support the Council's Partners in their Role to Address Air Quality**. Such work includes that being undertaken in partnership with 5 other Lancashire Authorities to secure the installation of 24 electric vehicle charging units across the county specifically for use within the taxi trade. Further work includes that being undertaken with Lancashire County Council (LCC) to equip local schools with information about air quality as a means of raising awareness amongst their local community, and encouraging sustainable forms of travel, including the possibility of providing them with their own forms of monitoring equipment. Whilst the council's own contribution to this work has been hampered during the Covid-19 pandemic, Lancashire County Council (LCC) have continued to provide local schools with up to date information on air quality initiatives via their Safer Travel Moodle, and the council hopes to build on this work to support the county council now that schools have returned to face to face learning. The council has however been able to assist in progressing the shared initiative to promote the use of electric vehicles within the taxi trade by increasing the availability of electric vehicle charging points for the trade within the county, the progress of which is detailed below.

- **Encouraging the Use of Electric Vehicles**. Building on LCC's commitment to install 150 electric vehicle charging points within the county, the council made its own pledge within its 2017 ASR to encourage electric vehicle uptake across the borough through the introduction of electric vehicle infrastructure in key locations in the district, and through the provision of reliable information relating to electric vehicle use. That pledge has now led to the undertaking of three separate infrastructure projects, the first being the joint project referred to above, in which the council is working with 5 other local authorities, to secure the installation of 24 electric vehicle charging units across the county, specifically for use by the taxi trade. This project is now nearing completion following the successful installation of the charging points across Lancashire (4 in the Wyre district); all located on regular taxi routes. It is intended that the completed units will become operational very

shortly following connection to the national grid, after which a series of promotional activities aimed at promoting use of the units will be offered to taxi personnel.

The second project involves the gradual transition of the council's own transport fleet to cleaner and greener alternatives which has resulted in the purchase of 4 Nissan vans within the last 12 months; and the third project involves the installation of a further 23 dual headed electric vehicle charging points within the council's car parks, suitably located to both increase accessibility to electric vehicle infrastructure to the general public and to those residents within the district with little or no off street parking. Feasibility studies for the project have now been completed enabling confirmation of the proposed installation sites, and submission of an application for funding to OZEV. Subject to this application being successful it is hoped that the council may be in a position to commence works to install the charging units shortly, thereby enabling the council to contract a charge point operator and bring the units into operational use.

- **Increasing Awareness of Air Quality Issues**, through the better provision of information to local business and residents within Wyre. Following on from previous improvements made to the council's air quality webpage, the council has now launched its new website and in doing so has updated the content relating to air quality to include information relating to the availability of electric vehicle charging points located within Wyre, and an enquiry form enabling residents to ask the council questions about air quality in the area. The council will continue to make regular updates to the information available, and will also make best use of its social media platform in order to keep the public informed on air quality initiatives taking place within the local area, and to promote general awareness of air quality issues. The council's new air quality webpage can be accessed at https://www.wyre.gov.uk/pollution/air-quality.

All other measures identified for completion within the 2020 ASR are routine and will therefore continue to be progressed over the next 12 months.

Conclusions and Priorities

Despite the 2020 monitoring results providing yet further evidence to support the revocation of the Chapel Street AQMA, the council does not intend to make any changes to the status of the AQMA at this time. Instead the council will continue to monitor air

quality within and around the AQMA to determine if the continued decline in NO_2 concentrations observed over the last couple of years is likely to continue as a result of those measures previously introduced as part of the Chapel Street AQAP, or whether the most recent decline is largely the result of the restrictions imposed by the Covid-19 pandemic, and therefore likely to be short lived.

The council will also continue to make use of its flexible monitoring resource in the form of its temporary monitoring sites to help determine both the likely and actual impact of the significant development both proposed and currently underway within the locality of the AQMA. The council only completed a review of its monitoring provision across the borough and within close proximity to the AQMA recently, and in doing so ensured the addition of a further monitoring station within close proximity to the most significant development. The council therefore already has available over 12 months of monitoring data to aid in the assessment of any likely and actual impacts of that development, and will ensure that this data is used effectively in order to enable a decision to be made in respects to the future of the AQMA as soon as possible.

The council will also focus its attention on completing those actions hampered by the impact of the Covid19 pandemic / not completed within 2020, in particular the adoption and implementation of a suitable Planning Guidance Document in order to ensure both a transparent and consistent approach to the consideration of air quality impacts within the planning process in future. Thereafter, the council will look to further progress its work in relation to the installation of electric vehicle charging infrastructure within the borough, and to supporting the council's partners in respects to their priority projects including future engagement with schools and businesses.

A further review of the council's progress in relation to its key measures outlined above will be provided within the 2022 ASR, alongside a further review of its position in relation to the Chapel Street AQMA. Updates in relation to individual actions will also be made available on the council's website throughout the year, as and when they become available.

Local Engagement and How to get Involved

The council is keen to engage with the public on the issue of air quality and has recently introduced an air quality enquiry form on its website to encourage local residents and businesses to ask any questions they may have in relation to local air quality within the Wyre district. Whilst this facility is relatively new, any previous questions answered will be

added to the webpage over time, and it is therefore hoped that any previous FAQ's will provide a useful reference tool for the public in future.

The web enquiry form also enables local residents to express any concerns they may have in respects to the air quality in a particular area of the borough. This is intended to assist the council in identifying new areas of concern within the district, and to better inform the periodic review of its monitoring resource. Where concern for an area is expressed either by a member of the public or as a result of new development, the council will make use of its temporary monitoring sites to determine the air quality conditions in that location. The council currently has a total of five 'temporary' sites which it uses for this purpose. The location of these sites is changed on average every 12 months, with any sites of continued concern being made permanent. The location of all the council's 'test' sites both current and historical, together with the results obtained during their installation, are made available on the council's website.

Any concerns regarding air quality should be directed to the Environmental Protection Department on 01253 891000, or via email at pollution@wyre.gov.uk.

In addition to informing the public about what the council and its partners are doing to improve air quality, the council also encourages the uptake of measures by the public to enhance the work the council and its partners are undertaking. Everyone has a responsibility to protect air quality and everyone can make a positive contribution to improving air quality in their area. Examples of everyday choices which can lead to improved air quality include:

- Using public transport (buses / trains), instead of domestic cars to make a journey
- Walking or cycling whenever you can – which is also good for your health
- Car sharing whenever possible
- Turning your car engine off whenever you are at a standstill
- Avoiding driving during congested peak traffic periods
- Using a low emission vehicle such as an electric or hybrid car
- Refraining from burning garden waste
- Being as energy efficient as possible by insulating your home
- Using electric heating powered by non-combustion forms of renewable energy

- Using energy efficient appliances within your home
- Recycling your waste
- Turning off the lights when you leave a room

There are many other examples available of how everyone can help to improve the air which we breathe. Further information, including links to useful websites and advice on reducing exposure to air pollution, can be found on the council's website at https://www.wyre.gov.uk/pollution/air-quality.

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1 Local Air Quality Management

This report provides an overview of air quality in Wyre during 2020. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

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. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Wyre Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

Summary detail of the only AQMA currently designated by Wyre Council can be found in Table 2.1.

Appendix D: Map(s) of Monitoring Locations and AQMAs provides a map of the AQMA and also the air quality monitoring sites located within it. The air quality objectives pertinent to the current AQMA designation are as follows:

- NO_2 annual mean

Figure 2.1 Map of Chapel Street AQMA Boundaries

Site R – Chapel Street, Poulton-le-Fylde (includes R1-3 and R4-6)

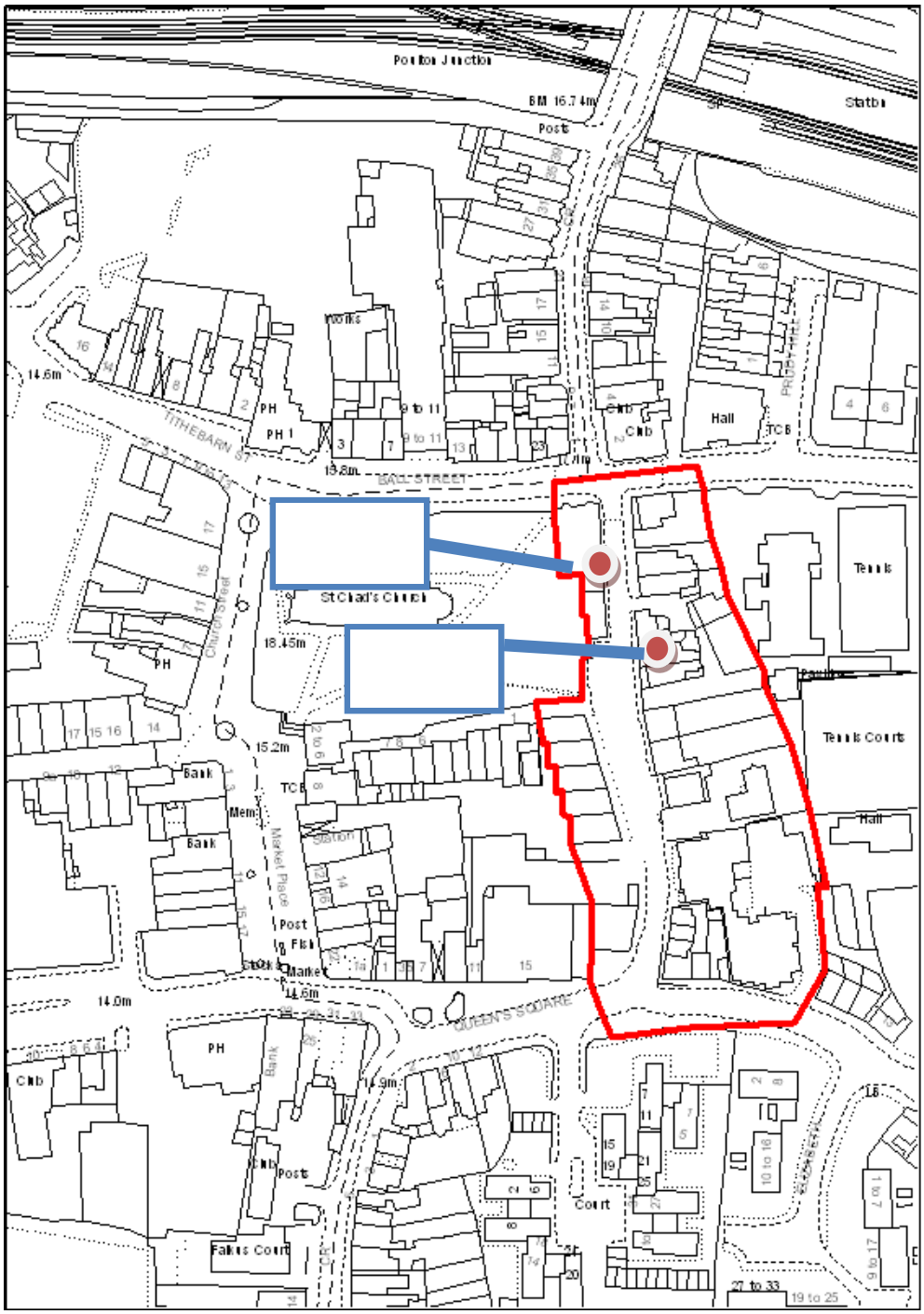


Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance : Declaration	Level of Exceedance : Current Year	Name and Date of AQAP Publication	Web Link to AQAP
Chapel Street, Poulton-le-Fylde	Aug-09	NO^2 Annual Mean	One way street with both commercial and residential properties situated close to the roadside	NO	40.7ug/m^3	None - 20.0ug/m^3	Chapel Street Action Plan - 2012	https://www.wyre.gov.uk/downloads/file/1036/poulton-air-quality-action-plan

☒ **Wyre Council confirm the information on UK-Air regarding their AQMA(s) is up to date**

☒ **Wyre confirm that all current AQAPs have been submitted to Defra**

2.2 Progress and Impact of Measures to address Air Quality in Wyre

Defra's appraisal of last year's ASR acknowledged the councils concerns in relation to the amount of new development, both proposed and underway, in and around Poulton-le-Fylde, and confirmed its understanding if the council wished to defer its intention to revoke its only AQMA until the impact of any committed developments on local air quality was able to be determined.

Defra also acknowledged that the council had revised its 2012 AQAP to account for having completed all but two of its intended actions, and acknowledged that in doing so the council would be better able to improve and protect air quality throughout its administrative district, rather than focussing primarily on the Chapel Street AQMA. A copy of the 2012 AQAP can be found at the end of this chapter together with detail of the two actions now abandoned.

With Defra's approval the council has replaced its 2012 AQAP with a list of priority measures capable of achieving a more proactive rather than a purely reactive approach to addressing air quality concerns moving forward. A summary of those measures is provided in Table 2.2 together with detail as to any progress made or barriers encountered in respects to their completion and implementation over the last 12 months. More detailed information in relation to each of the 4 measures is also provided below.

The only measure outlined with the 2020 ASR which the council failed to either complete or progress over the last 12 months was as follows:

- **The agreement and adoption of improved air quality guidance** designed to provide detailed and early advice to planning applicants in respects to the way in which the council determines the likely impact of proposed development on local air quality, together with detail in respects to the council's expectations in terms of the standard and extent of any necessary assessment and mitigation.

  Following the adoption of the council's new Local Plan (2011-2031) in February 2019, which incorporates a number of individual policies designed to protect and enhance local air quality, it was intended that the council would by now have selected one of three potential 'planning guidance templates' available for adoption, and implemented the chosen guidance in the form of either a Supplementary Planning Document, or a Planning Advisory Note. Indeed, the 2020 ASR identified

this measure as a priority for completion, however the sudden onset of the Covid-19 pandemic prevented the council from being able to devote the resources necessary to progressing this measure, with the Covid-19 response taking priority. The council is however committed to completing this measure as soon as possible and at the very latest, prior to the publication of the 2022 ASR. A copy of the guidance will be provided on the council's webpage once adopted.

Fortunately the adoption of improved planning guidance was the only measure outlined within the council's 2020 ASR which the council failed to progress or complete. Intended measures successfully completed / progressed over the last 12 months include:

- **Launch of a revised Air Quality webpage** designed to increase awareness of air quality issues and improve the provision of information relating to air quality to local businesses and residents within Wyre. As intended the council launched its new website in July 2021 which includes a number of pages dedicated to providing the public with easier access to local air quality information, including amongst other things, all previous monitoring data collected within the borough; details in respects to the Chapel Street AQMA; information about what the council is doing to improve air quality; information about what the public and local businesses can do themselves to tackle air quality; and useful links to other relevant information on the subject, including to air quality information aimed at the younger generation.

  The council's updated web pages also include an online 'question' form which allows members of the public to submit any questions or concerns they may have in relation to local air quality direct to the council's Environmental Protection Team. Answers to any questions asked are posted publically for the benefit of all residents; and any concerns raised by the public in relation to particular locations within the borough used to influence the position of the council's future 'test' monitoring sites. The council has also used its social media platform to promote general awareness of air quality issues and to provide the public with useful information such as the location of any newly installed electric vehicle charging points within the borough.

- **Continuing to work with and support the council's partners** in their role to address air quality impacts. In particular the council has continued to work with Lancashire County Council (LCC) and other local authorities within Lancashire to maximise its success in tackling air pollution, and to ensure that the previously agreed 'Lancashire Ambitions' are realised, namely to reduce the number of areas

exceeding national objectives across Lancashire; to reduce the prevalence and severity of health conditions affected by poor air quality; and, to increase public awareness and responsibility for tackling emissions and reducing avoidable exposure.

Examples of some of the key areas of work currently being undertaken by the County Council to ensure these ambitions become a reality are listed below:

(I) Encouraging the use of sustainable forms of travel – Work in this area includes the 'Actively Moving Forward' programme intended to increase the number of people walking and cycling within Lancashire by 2028, through the supply of training and promotional activities, and by improving and increasing access to cycling and walking infrastructure within the county. A Local Cycling and Walking Infrastructure Plan (LCWIP) is currently being developed for each of the five Lancashire Highway and Transport Masterplan Areas, which when completed will provide a network plan for cycling and walking infrastructure within the Wyre District, together with a proposed timetable for infrastructure delivery. This work is in addition to that currently being undertaken by the County Council's Road Safety Team, who continue to actively encourage safe and sustainable modes of travel within the county by working closely with schools, workplaces and the local community. Current initiatives for schools are promoted though the Safer Travel Moodle and include: a series of cycling and walking safety training programmes; guidance and resources for teachers to encourage safe and active travel; in addition to support for creating school travel plans.

(II) Supporting the transition to low emission vehicles - The County Council is working with BP Chargemaster to deliver 150 electric vehicle charging points across the county. A total of 8 fast dual plug charging units (capable of charging an average electric car within approx. 2 hours), have already been installed within the Wyre District, within the council's town centre car parks. The locations of these charging points is provided below, with details of the charging network available on LCC's website.

Location and Number of Installed Charging Points Within the Wyre District	
Location	**No. of Charging Units**
Blackpool Old Road, Poulton-le-Fylde	2 x F7 Units
North Albert Street, Fleetwood	4 x F7 Units
Victoria Road West, Cleveleys	2 x F7 Units

(III) Creating cleaner, healthier road networks – Work to develop the next Local Transport Plan (LTP4) for Lancashire, Blackpool and Blackburn with Darwen is currently underway, with vital input being made by the County Council's Public Health Team to both evidence the link between transport and health, and to provide recommendation as to how improvements to air quality can be realised by design. Air quality has been identified as a priority consideration in the development of LTP4 and it is intended that the local Highways and Transport Masterplans will be refreshed to align with the priorities of LTP4 on completion, thereby enabling the identification of longer-term network solutions that address issues in AQMAs and have a positive impact on air quality generally.

(IV) Embedding air quality considerations into policy - The County Council continues to work closely with district planners to ensure that air quality remains a key consideration of Local Plans, alongside wider public health issues. It supports district councils in developing policies that seek to ensure that new development does not contribute to increasing levels of air pollutants, and that requirements for appropriate mitigation are in place. The County Council's Highways Department also routinely comments on individual planning applications, actively encouraging measures aimed to promote sustainable forms of travel. Working under the direction of the National Planning Policy Framework, the County Council seeks measures that facilitate cycling and walking; increase the use of public transport, and provide access to electric vehicle charging points. The County Council also

seeks funding from developers through section 106 contributions to support existing bus services, or to provide new bus services suitable to serve development sites once they are built. This work is in addition to ongoing research projects designed to guide future policy decisions. Examples include the work currently being undertaken in partnership with the Universities of Lancaster and Birmingham to develop evidence based guidance for the use of green infrastructure as an approach to mitigating the health impacts of road transport emissions; and the work currently being undertaken by the Lancaster City Centre Movement Strategy to identify how vehicular, public transport and pedestrian walking movements can be improved across the city of Lancaster. A key facet of the study is to examine what improvements can be implemented to prioritise public transport; reduce severance; improve air quality; and, effectively make the city centre a more welcoming environment for people. The intention is for a similar approach to be adopted as part of future Highways and Transport Masterplans for Lancashire as a whole.

(V) Raising awareness and increasing engagement – In addition to the work routinely undertaken by the County Council's Road Safety Team within local schools and communities, development of a clean air programme is currently underway, intended to provide schools with a toolkit containing both guidance and support on developing a clean air strategy; ready to go lesson plans, activities and resources for teachers; access to cycling and walking programmes; and guidance and resources for delivering a Clean Air Day event and creating a clean air banner. This information is in addition to that available to the wider community by way of the County Council's Lancashire Insight Website, which provides up to date information on the sources and health impacts of air pollution. Access to this information can be made via https://www.lancashire.gov.uk/lancashire-insight/area-profiles/ and includes a Summary of Emissions Data, Monitoring of Air Quality and Health Impacts and an Air Quality and Health Dashboard.

The council will continue to support Lancashire County Council in its work and will continue to engage with all its partners to identify local concerns and solutions in respects to air quality, and to work with those partners to identify and acquire the policy and funding necessary to support further joint initiatives. A further update as

to the progress made to fulfil the agreed Lancashire ambitions will be reported within the 2022 ASR.

- **Encouraging the Use of Electric Vehicles**. This initiative was originally introduced following a commitment by Lancashire County Council to install 150 electric vehicle charging points across Lancashire, and is intended to encourage electric vehicle infrastructure and ensure the provision of reliable information relating to electric vehicle use. Since its introduction the initiative has progressed in the form of three separate infrastructure projects, the first being a partnership project aimed at encouraging the switch to low emission vehicles via the installation of 4 rapid charging units within the borough for use specifically by the taxi industry. The project which is led by Lancaster City Council and funded by an OLev grant from the Department of Transport supports five other Lancashire Authorities (Lancaster City Council, South Ribble Borough Council, Fylde Borough Council, Rossendale Council, and Burnley Council), and has recently seen completion of the charging points within Wyre at the following locations:

    - Wheatsheaf Car Park, Park Hill Road, Garstang, PR3 1EL
    - Custom House Lane Car Park, Fleetwood, FY7 6BY
    - Thornton Little Theatre Car Park, Fleetwood Road North, Thornton, FY5 3SZ
    - Rough Lea Road Car Park, Thornton Cleveleys, FY5 1BW

  The council is now awaiting connection of the charging points to the national grid and hopes that the units will be operational within the next couple of months, at which point a series of promotional and education activities will be offered to taxi personnel, with the intention of encouraging their use.

  The second and third projects are being driven by the council alone to both further increase the number and availability of electric charging points within the district, and to improve the sustainability of the council's own transport fleet. Project 2 involves a review of the council's current transport provision and a gradual move towards more electric charged vehicles. Following on from the successful introduction of an electric pool car for visiting staff, the council has now introduced four Nissan NV200 electric vans to its regular fleet, supported by the installation of Three Garo Twin Smart charging pillars (totalling six 3.7kW charging points), at the

council's Copse Road Depot, Fleetwood, to enable overnight charging of these vehicles. These introductions mark the start of a long term initiative to make the council's fleet greener, with the intention being to replace more council vehicles with electric equivalents when they reach renewal. Similar measures are also being taken in respects to the council's grounds maintenance plant and equipment, with a number of electric powered alternatives having already been purchased including trimmers, strimmers and blowers.

Lastly, Project 3 involves the acquisition of a further 23, dual charging units (i.e.: 46 x 7kW units) within the council's car parks. This proposal is an extension of the original intention to install just five 22kW dual units, and will substantially increase public accessibility to electric vehicle charging points within the district, adding to the rapid charging unit already installed in the council's Rough Lea Road Car Park, Cleveleys by the Highways Agency, and the eight fast charging units already installed by LCC on the roadside referred to in (II) above. Following the recent completion of feasibility surveys it is proposed that the charging points (all of which will be capable of operating up to 22kW if required in future), will be installed within the car parks listed below. All of the locations listed have been selected due to their close proximity to residential areas without suitable access to off street parking, and will have dedicated electric vehicle parking bays for general public use (maximum 4hr charge limit) between the hours of 08:00-18:00, and for residents use only between the hours of 18:00-08:00 (unlimited charge limit). It is therefore hoped that the units will not only provide suitable charging facilities for those travelling to our local towns for both pleasure and work purposes, but will also provide local residents with the means and confidence to make the switch to electric powered vehicles regardless of their ability to install a charging unit at their home address. The council intends to part fund the project alongside monies provided by Electric Blue and an OZEV grant. An application for funding has already been submitted to OZEV and subject to it being successful the council intends to deliver the project prior to the 2022 ASR. Failure to obtain the grant, or any reduction in the sums awarded will however have a major impact on the deliverability of the intended scheme. Progress in relation to the project will be made available on the council's webpage.

Proposed Charge Point Locations by Wyre Council			
Location		**No. of Charge Points**	**No. of Sockets**
Civic Centre Car Park, Poulton-le-Fylde, FY6 7PU		3	6
Wheatsheaf Way, Car Park, Poulton-le-Fylde, FY6 7WL		2	4
Derby Road West Car Park, Thornton Cleveleys, FY5 1DA		3	6
Derby Road East Car Par, Thornton Cleveleys, FY5 1DE		3	6
Thornton Little Theatre Car Park, Fleetwood Rd North, Thornton, FY5 4AB		3	6
Quail Holme Road Car Park, Knott End, FY6 7WL		3	6
High Street Car Park, Garstang, PR3 1EB		3	6
Marine Hall Car Park, Fleetwood, FY7 6HF		3	6
Custom House Lane Car Park, Fleetwood, FY7 6BX		2	4
	Total	**23**	**46**

In summary, all measures included within Table 2.2 are over and above those included within the council's 2012 AQAP for its only AQMA (Chapel Street). As NO_2 concentrations within the AQMA are currently well below the national objective, completion of the measures included within Table 2.2 are not necessary to achieve compliance and enable the revocation of the AQMA. The only matter currently stopping the council from revoking the AQMA at this time is the amount of development (ongoing and proposed) within the locality of Poulton-le-Fylde, and the potential impact of that development on the air quality within the vicinity of the AQMA. Completion of the measures outlined within Table 2.2 is therefore not considered critical to the future status of the AQMA, however each measure

has the potential to improve air quality and prevent an exceedance of air quality objectives in future, and the council is therefore committed to their completion. The only principal challenges and barriers anticipated by the council which may hinder their implementation is a failure to be awarded the necessary funding required to support the implementation of additional electric vehicle charging points within the district; a continuation of the strain on council staffing resources as a result of its response to the Covid-19 pandemic; and, a decision that the proposed planning guidance cannot feasibility be adopted for use in the determination of future planning applications. The council will however do all that can reasonably be expected to ensure that suitable progress is made in respects to all of measures listed, in addition to those routine and regular measures detailed below:

- **Continuing to monitor all proposed developments within the borough**; particularly those within close proximity to the current Chapel Street AQMA (Poulton Town Centre); the Hillhouse International Business Park, Thornton; and those towns and villages located on the route of the A6; i.e.: where much development has been consented, or is currently underway. Where the council identifies that development may lead to the national objectives being exceeded, or where the development itself is likely to be adversely affected by poor air quality, the council may choose to either reject or require amendment to the proposal, or may seek to secure appropriate mitigation measures via the application / implementation of suitable planning conditions and / or section 106 agreements.

- **Continuing to monitor NO_2 concentrations throughout the borough**, including via the use of 'temporary' monitoring sites, to inform future monitoring decisions and ensure that future changes in air quality are detected as early as possible.

- **Continuing to raise awareness of air quality concerns** via the regular use of social media posts, and the promotion of initiatives and educational events such as 'Cycle / Walk to Work Day' and 'Clean Air Day'.

- **Completion and submission of the 2022 Annual Status Report.**

Details of the progress made by the council in implementing all of its key measures will be reported in the 2022 ASR.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Adoption & Implementation of Improved AQ Planning Guidance to planning applicants	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2017	2022	Wyre Council Environmental Health & Planning Depts. Low Emissions Partnership	Lancashire Authorities	NO	Partially Funded	< £10k	Planning	N/A	Adoption & Implementation of appropriate planning guidance	Planning guidance templates compiled with assistance of Low Emissions Partnership. Relevant policy incorporated into Local Plan.	Final stage of measure - adoption of guidance into planning policy hindered by staffing resources as a result of the Covid-19 pandemic
2	Provide Continued Support to Partners in respects to priority AQ initiatives in particular to the installation of EVC units for the taxi trade	Promoting Low Emission Transport		2017	2021	Wyre Council Environmental Health & Engineering Depts in partnership with 5 other Lancashire LA's (led by Lancaster City Council)	Olev Grant	NO	Funded	£100k - £500k	Implementation	N/A	Increased use of electric vehicles within the local taxi trade	4 EVC units within Wyre installed and awaiting connection to the local grid.	In the fnal stages. Waiting for a DNO connection
3	Encouraging Use of Electric Vehicles	Promoting Low Emission Transport		2017	2022	Wyre Council Environmental Health & Engineering Depts	Olev Grant	YES	Partially Funded	£100k - £500k	Planning	N/A	Increased accessibility to and use of electric vehicles and infrastructure	Grant for remaining funding applied for. Currently awaiting decision.	Project is subject to receipt of required funding.

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
4	Increasing Awareness of AQ Issues through the better provision of information	Public Information		2017	2021	Wyre Council Environmental Health Department	N/A	NO	Not Funded		Completed	N/A	Provision of information & positive feedback from public	Changes & Additions made to Council's AQ webpages. New website launched.	Delays caused by the replacement of the council's website

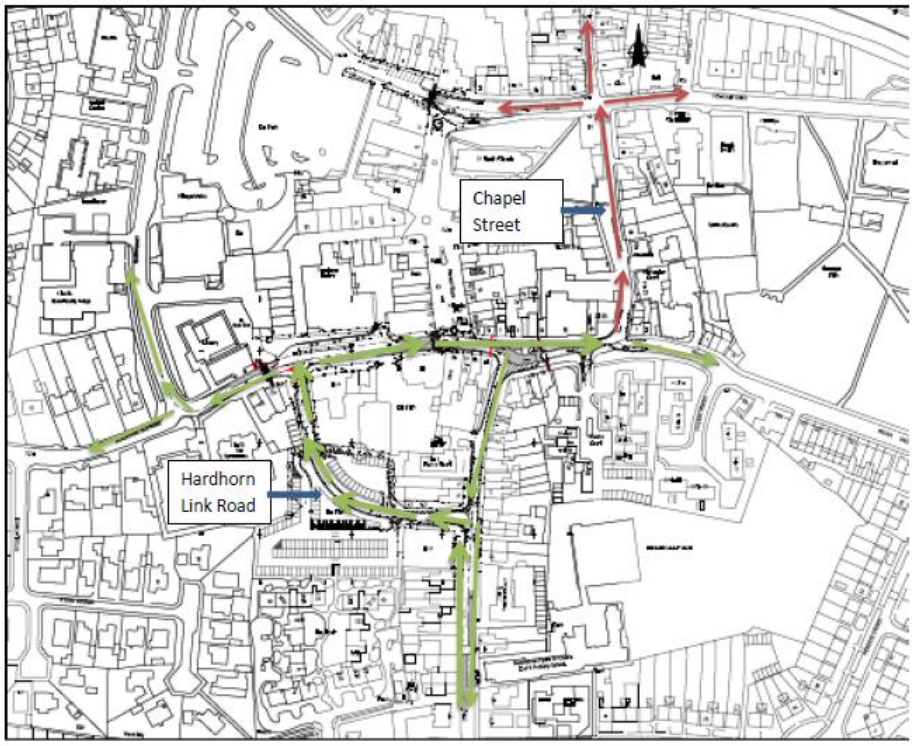


Figure 2.2a (above) Plan illustrating Hardhorn Link Road

Figure 2.2b (below) Priority footpaths / cycle ways within Poulton

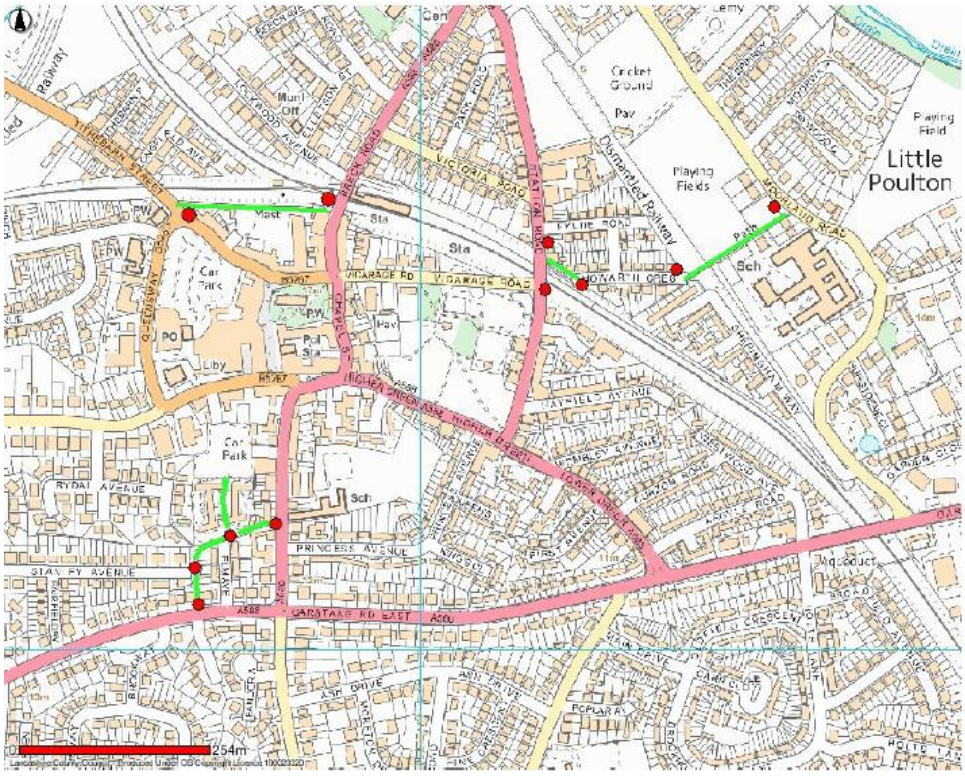


Figure 2.2c (above) – Cycle Store, Poulton Railway Station

Figure 2.5 (below) – Electric Vehicle Charing Point

Table 2.3 – Chapel Street Air Quality Action Plan 2012

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Undertake Network Appraisal to identify options to reduce traffic within Chapel Street AQMA by 8%	Traffic Management	UTC, Congestion Management, Traffic Reduction	Lancashire County Council	2011/12	2014/15	Production of a Network Appraisal Report	Target 8% reduction in NO2 emissions	Complete	Complete	Network Appraisal Completed in
2	Calculate the most effective option within the Network Appraisal to improve AQ within the Chapel Street AQMA. Utilise AQ Consultants for this purpose.	Traffic Management	UTC, Congestion Management, Traffic Reduction	Wyre Council	2013/14	2014/15	Production of Priority Actions Report	Target 8% reduction in NO2 emissions	Complete	Complete	Priority Actions Report completed in 2014/15. Link Road option approved by all parties.

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
3a	Lobby Lancashire County Council to implement options identified in Network Appraisal into draft Local Transport Plan	Traffic Management	UTC, Congestion Management, Traffic Reduction	Wyre Council	2013/14	2014/15	Securement of necessary finance to implement Link Road proposal	Target 8% reduction in NO2 emissions	Complete	Complete	Link Road proposal in-corporated into Local Transport Plan. Finances to implement link road secured.
3b	Construct Link Road	Traffic Management	UTC, Congestion Management, Traffic Reduction	Lancashire County Council	2013/14	2015/16	Completion of Link Road	Target 8% reduction in NO2 emissions	Complete	Complete	Link Road completed in December 2015. Open and in use.
4	Ensure regard is had to AQ in the consideration of any large scale development within Poulton	Policy Guidance & Development	AQ Planning & Policy Guidance	Wyre Council	Ongoing	Ongoing	AQ considered in all relevant cases	AQ considered in relation to numerous large scale developments within and around Poulton Town Centre	Ongoing	Ongoing	Measures remain in place to ensure adequate consideration is given to AQ Impacts resulting from proposed development. Mitigation measures encouraged in all cases regardless of likely impact.

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
5	Undertake Feasibility Study to reduce the number of circular bus journeys around Poulton Town Centre	Transport Planning & Infrastructure	Bus Route Improvements	Lancashire County Council	Not Known	Not Known	Production of Feasibility Study Findings	Not known	On-hold awaiting analysis of Link Road success	N/A	Measure abandoned as congestion within AQMA improved via completion of Link Road. Measure not considered necessary at this time.
6	Identification & Improvement of priority pathways within & around Poulton Town Centre to encourage travel to and from schools by foot & cycle	Alternatives to Private Vehicle Use	Other	Wyre Council	2012/13	2013/14	Improvement of Priority Pathways	Not Known	Complete	Complete	Improvements and additional signage provided to priority pathways. Positive feedback obtained to date.

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
7	Production of Wyre Council Travel Plan and introduction of Sustainable Travel Days as a means of encouraging alternative modes of transport to work than by car	Promoting Travel Alternatives	Workplace Travel Planning	Wyre Council	2012/13	Ongoing	Completion of Travel Plan. Undertaking of Sustainable Travel Days	Not Known	Wyre Council Travel Plan complete. Number of Sustainable Travel Days held to date	Ongoing	Intention to continue to hold a minimum of two Sustainable Travel Days each year. Success of measure to monitored via the undertaking of a staff survey.
8	Increase Sustainable Travel to and from Poulton Schools	Promoting Travel Alternatives	Promotion of Walking & Cycling School Travel Plans	Wyre Council	2012/13	2013/14	Increased sustainable travel to school	Not Known	Complete	Complete	Work completed with 3 local primary schools and 1 secondary school. All 3 participated in a walk to school campaign. Secondary school also participated in an education theatre workshop & delivered a Sustainable Message to the council. Success of measure to be monitored via consultation with schools.

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
9	Installation of an automatic monitoring station within Chapel Street AQMA to increase the council's understanding of the pollution issues			Wyre Council	2012/13	No longer to be implemented	N/A	N/A	N/A	N/A	Measure abandoned after difficulties in finding a suitable installation site. NO2 levels within the AQMA no longer justify implementation of the measure.
10	Improve deliveries associated with the Thatched Public House within Chapel Street AQMA			Wyre Council	2012/13	None Set	Improvement of Deliveries to reduce congestion at busy times	Target 8% reduction in NO2 concentration in AQMA	None	N/A	Measure abandoned as congestion within AQMA improved via completion of Link Road. Measure not considered capable of making a significant improvement to air quality.

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
11	Monitor Taxi's Idling within Chapel Street AQMA during the early hours	Traffic Management	Anti-Idling Enforcement	Wyre Council	2012/13	2013/14	Taxi's no longer Idling within Chapel Street AQMA	Taxi Ranks altered to allow for enforcement. Adherence to rank rules being monitored	Complete	Complete	Reduced tolerance for taxis within Chapel Street AQMA. Taxis prevented from idling close to residential properties. No further action proposed unless further problems arise. Situation to be monitored.

2.3 $PM_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Whilst the requirement to work towards reducing the impact of PM2.5 on public health is a relatively new one, many of the measures which were included and completed within the council's Chapel Street AQAP for the purpose of tackling NO_2 concentrations within the Chapel Street AQMA had the potential to also impact on PM2.5 emissions and concentrations. Co-benefit actions completed throughout the implementation of the plan included:

- Transport Planning – Actions 1-3 of the Chapel Street AQAP involved the design and delivery of a link road to reduce the number of vehicles travelling through the AQMA, whilst also improving the flow of traffic through the town centre as whole. Hardhorn Link Road (now named Wheatsheaf Way), was opened in January 2016. Its completion marked achievement of the most significant action within the council's AQAP; the action most capable of improving air quality within the AQMA. Whilst only five years have passed since its opening, initial results seem positive with current NO_2 concentrations within the AQMA remaining well below the national objective of 40ug/m^3, despite quite significant development having taken place in and around Poulton Town Centre in recent years. The success of the link road will however continue to be monitored closely in the future.
- Promotion of Cycling /Walking – Action 6 of the Chapel Street AQAP, involved the council identifying a number of priority pathways requiring improvement within and around Poulton Town Centre, with a view to encouraging travel to and from school by foot and by cycle. This action resulted in improvement works being undertaken to those pathways in terms of their condition, and / or their signage. The majority of those works were undertaken within 2015, with the final works being completed in 2016.

- Work Place Travel Planning – Action 7 of the Chapel Street AQAP involved the council promoting the sustainable travel message amongst its staff and members via the adoption of a Travel Plan, designed to promote the benefits of sustainable travel. Since the implementation of the Plan, the council has held a number of 'sustainable travel to work days', one of which was organised to coincide with promotional work being undertaken within local schools (so as to increase public awareness of the sustainability message). The council continues to encourage sustainable travel amongst its staff by way of its 'sustainable travel to work days,' and is currently in the process of introducing a 'hybrid working' model for its staff to enable a higher proportion of home working following the restrictions imposed during the Covid-19 pandemic. The council thereby intends to further reduce the number of car journeys made by its members and staff over the next 12 months and will undertake periodic staff surveys to monitor its progress in this area.
- School Travel Plans – Action 8 of the Chapel Street AQAP involved the council working with a total of 3 primary schools, and 2 secondary schools, located within and around Poulton Town Centre, as a means of encouraging sustainable travel. All three of the primary schools participated in a walk to school campaign (Living Street's Walk to School Programme - which rewarded the children with badges if they succeeded in walking or cycling to school at least once per week), whilst the secondary schools were invited to participate in an educational theatre workshop, which encouraged the children to become 'sustainable travel champions', and culminated in them promoting the 'sustainable message' to both their peers and the council's Members at a full cabinet meeting. The council continues to support LCC in the promotion of school travel plans and hopes to undertake further engagement with schools now that they have returned to face to face teaching.
- Anti-Idling Enforcement – Action 11 of the Chapel Street AQAP involved the council monitoring the idling of taxis within the Chapel Street AQMA. This action was considered necessary as a result of reports that the street was being frequently used by taxi drivers as an unofficial taxi rank, due to its close proximity to a number of popular late night entertainment venues within Poulton Town Centre. Action to resolve this matter was achieved by the council working in partnership with LCC, via the introduction of a reduced 'tolerance agreement', whereby taxi drivers are only permitted to park up in a designated area of the street, away from residential properties. Continued compliance with this agreement is monitored by CCTV and

will shortly be supported by the provision of electric vehicle charging points dedicated specifically for use by the taxi trade, thereby encouraging the local taxi trade to make the switch to cleaner greener alternatives.

Wyre Council does not currently monitor for $PM_{2.5,}$ however there is already a wealth of data available across the county which has been collected by DEFRA, Lancashire County Council (LCC), and other district authorities. The Public Health Outcomes Framework (PHOF) estimates the fraction of all-cause adult mortality (for persons aged over 30 years) attributable to man-made particulate air pollution for Lancashire to be 4.0%. Whereas within Wyre itself, the fraction of mortality attributed to $PM_{2.5}$ exposure is calculated at 3.45%, indicating that the impact of particulate air pollution on health is significant. This clearly demonstrates that further work needs to be done in respects to $PM_{2.5}$ emissions if the council is to ensure that the lives of Wyre citizens are not adversely affected by poor air quality.

The council's proposals for addressing $PM_{2.5}$ emissions / concentrations over the coming year include:

- Working closely with its partners (in particular Lancashire County Council), to establish the adequacy of $PM_{2.5}$ monitoring provision within Lancashire, and to assist in the identification of any 'hot spot' areas of elevated $PM_{2.5}$ concentrations within Wyre. The council will also work to identify and implement any suitable air quality initiatives capable of reducing $PM_{2.5}$ emissions / concentrations, particularly in sensitive locations such as within close proximity to schools. The council has already worked with a number of local schools in relation to 'walk to school' initiatives and is keen to support LCC in its ongoing work to promote and resource walking and cycling initiatives in schools, in addition to the work it undertakes in respects to the expansion of local cycle networks. The council is also currently involved in discussions with the County Council and its neighbouring Lancashire authorities around how we can better equipment local schools with information about air quality, including the possibility of providing them with their own monitoring equipment for the purposes of education and raising awareness within their local communities. This work was hindered by the enforced restrictions of the Covid-19 pandemic, in particular the disruption to face to face teaching, however it is hoped that good progress can be made over the following 12 months following the relaxation of restrictions.

- Adoption of a Low Emissions and Planning Guidance Document. As detailed previously, the council is currently in the process of adopting a Planning Guidance Template aimed at encouraging developers to support action through the planning system that will improve air quality and lower transport emissions. Adoption of the guidance will not only ensure that future developments are supported by adequate impact assessments and mitigating measures designed to protect local air quality, but will also ensure a consistent approach to the consideration of air quality concerns within the planning process across Lancashire. Recent adoption of the council's 2011-2031 Local Plan has ensured the availability of appropriate planning policy under which such guidance can be implemented, and whilst progress in adopting the intended guidance has been hindered over the last 12 months by the Covid-19 pandemic, it intended that the guidance will be in place and operational before the 2022 ASR.
- The promotion of electric vehicle infrastructure within Wyre. Following the recent adoption of the council's new Local Plan in February 2019, and the incorporation of suitable policy in the form of Policy CDMP6 (see Appendix C.2), the council is now in a position where it can move beyond actively encouraging the provision of electric vehicle infrastructure within future developments, to making it a necessity where relevant. The council is also currently in the process of seeking the necessary funding required to support its intention to install 23 dual charging points within the district for both public and residents use, which will add to the 4 rapid charging units recently installed for use by the taxi industry, which are due to come into operation shortly. On completion of the proposed units, the council will seek to advertise and promote use of the charging infrastructure available within the borough and beyond its boundaries via both its website and social media platforms, and will look to further educate and encourage the uptake and use of electric vehicles via the undertaking of promotional initiatives with its partners.

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

This section sets out the monitoring undertaken within 2020 by Wyre Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2016 and 2020 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Wyre Council has no automatic monitoring sites within the borough. The nearest monitoring sites are located in the town of Blackpool and City of Preston. National automatic monitoring results are available through the UK-Air website.

3.1.2 Non-Automatic Monitoring Sites

Wyre Council undertook non- automatic (i.e. passive) monitoring of NO_2 at a total of 19 sites during 2020. **Error! Reference source not found.** in Appendix A presents the details of those sites.

Maps showing the location of the council's monitoring sites are provided in Appendix D. This includes the current location of the council's 5 temporary non-automatic 'test' sites, designed to monitor new sources and areas of potential development, and therefore assist in the identification of new air quality hot spots.

Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. annualisation and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater

than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Error! Reference source not found. and Table A. in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2020 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Review of the 2020 monitoring data is extremely encouraging. Not only do the results suggest a reduction in annual mean NO_2 concentration at all sites within the council's monitoring network, comparison against air quality objectives also suggests that there are no sites within the borough where the annual mean objective of 40ug/m^3 is being exceeded. This includes the two monitoring sites within the Chapel Street AQMA (Site R1-3 and Site R4-6), together with Site 14 (located just outside of the AQMA boundary), all of which were found to be in exceedance of the national objective in 2012.

The 2020 results also indicate that there are no sites within the council's monitoring network where the annual mean NO_2 concentration comes close to reaching the national objective of 40ug/m^3. The highest recorded annual mean from any site within the council's monitoring network was 22.9ug/m^3, which was recorded at Site 15 located on Trunnah Road, Thornton, thereby suggesting that all sites within the council's monitoring network have annual mean concentrations of at least 17ug/m^3 below the national objective. Whilst Site 15 has previously caused the council some concern due to it being located on a narrow and busy street subject to regular congestion, 2020 provided the third consecutive year in which NO_2 concentrations have fallen at this location. The council therefore has no significant cause for concern in relation to this or any other monitoring location within the borough at this time.

In terms of the significance of the 2020 results, they provide the eighth consecutive year in which those sites located within and adjacent to the Chapel Street AQMA (Site R1-3, Site R-6, and Site 14), have been found to be below the national objective for NO_2.

They also provide the lowest recorded annual mean concentration at each of these sites since the declartation of the AQMA in 2009, with the highest recorded mean for 2020 being significantly below the national objective at 20.0ug/m3 at Site R1-3. Most encouraging however the 2020 results indicate that NO_2 concentrations at Site R1-3, Site R4-6 and Site 14 showed the largest reductions across the council's entire monitoring network when compared to the 2019 results. This is considered to be extremley reassuring particularly as this is the second consecutive year in which the largest reduction across the network was seen within the Chapel Street AQMA at Site R1-3.

Under normal circumstances the 2020 results would provide the council with reassurance that the Hardhorn link road (Wheatsheaf Way); designed to direct traffic away from the AQMA is having a positive impact on local air quality, however 2020 was by no means an ordinary year and the council must therefore treat the results obtained with caution. The national and local lock downs imposed as a result of the Covid 19 pandemic prevented normal activites from taking place across the country and the borough. Poulton-le-Fylde in particular, having a high reliance on the night time economy, saw many of its local businesses closed, or operating on a reduced capacity for much of the reporting year. Traffic and congeston within the town was therefore notably reduced in comparison to previous years and to other towns within the borough of Wyre. It is therefore considered no surprise that Poulton saw the biggest reduction in NO_2 concentrations within the council's monitoring district, and the council must consider the possibility that any recent improvements seen in the air quality within the AQMA are associated purely with the impact of the Covid-19 restrictions, and any subsequent behavioural changes.

The council is not therefore in the position it hoped to be in at this time, and having regard also to the fact that much of the planned development in and around Poulton-le-Fylde is still to take place, the council does not consider itself able to revoke the Chapel Street AQMA at this time. No changes to the AQMA are therefore proposed to take place over the next 12 months. The council will however continue to monitor the concentration of NO_2 within the AQMA closely as the Covid-19 restrictions continue to be relaxed and will look to determine more accurately the contribution which those restrictions have had on pollution levels within the AQMA in the 2022 ASR.

Appendix A: Monitoring Results

Table A.1 – Details of Non-Automatic Monitoring Sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co located with a Continuous Analyser?	Tube Height (m)
K	22 Poulton Road Fleetwood	Roadside	333402	447778	NO2	NO	0.0	7.0	No	2.0
L	153 Victoria Road East Thornton Cleveleys	Roadside	333717	442185	NO2	NO	0.0	4.0	No	2.0
N	43/44 High Street Garstang	Roadside	349237	445344	NO2	NO	0.0	2.0	No	2.0
R.1, R.2, R.3	11/13 Chapel Street Poulton	Roadside	334903	439425	NO2	YES – AQMA 1	0.0	2.0	No	2.0
R.4, R.5, R.6	Chapel Street Poulton	Roadside	334887	439458	NO2	YES - AQMA 1	N/A	2.0	No	2.0
S	36 Tithebarn Street Poulton	Roadside	334725	439550	NO2	NO	0.0	7.0	No	2.0
T.1, T.2, T.3	133 Breck Road Poulton	Roadside	335247	440095	NO2	NO	0.0	5.0	No	2.0
U.1, U.2, U.3	Wyre Council Breck Road Poulton	Urban Background	334987	439868	NO2	NO	N/A	N/A	No	2.0
3	5 Bridge Row St Michaels	Roadside	346143	441157	NO2	NO	0.0	1.0	No	2.0
7	168 Breck Road Poulton	Suburban	335499	440467	NO2	NO	0.0	12.0	No	2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co located with a Continuous Analyser?	Tube Height (m)
8.1, 8.2, 8.3	66 Hardhorn Road Poulton	Suburban	334791	438990	NO2	NO	0.0	12.0	No	2.0
9	1A Hardhorn Road Poulton	Roadside	334836	439317	NO2	NO	0.0	2.0	No	2.0
11	3 Briarwood Court Thornton Cleveleys	Suburban	333965	441347	NO2	NO	0.0	11.0	No	2.0
12.1, 12.2, 12.3	2 Park Hill Road Garstang	Roadside	349134	445224	NO2	NO	0.0	2.0	No	2.0
13.1, 13.2, 13.3	10 Croston Road Garstang	Roadside	349222	445455	NO2	NO	0.0	2.0	No	2.0
14.1, 14.2, 14.3	Lloyds Pharmacy Breck Road Poulton	Roadside	334868	439525	NO2	NO	N/A	2.0	No	2.0
15.1, 15.2, 15.3	63 Trunnah Road Thornton Cleveleys	Roadside	333874	443054	NO2	NO	0.0	1.0	No	2.0
16	24 Rose Fold Thornton Cleveleys	Suburban	333429	443983	NO2	NO	0.0	10.0	No	2.0

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable.

Table A.2 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
K	333402	447778	Roadside	100	100.0	14.1	14.5	15	13.2	9.7
L	333717	442185	Roadside	100	100.0	21.7	20.1	21.4	19.7	14.8
N	349237	445344	Roadside	100	100.0	25.2	23.8	23.9	20	15.4
R.1, R.2, R.3	334903	439425	Roadside	100	100.0	32.3	30	32.5	28.1	20.0
R.4, R.5, R.6	334887	439458	Roadside	100	100.0	31.5	31.3	31.6	27.8	19.9
S	334725	439550	Roadside	100	100.0	19	17.6	19.8	19.2	13.1
T.1, T.2, T.3	335247	440095	Roadside	100	100.0	27.7	27.5	27.5	24.4	18.1
U.1, U.2, U.3	334987	439868	Urban Background	100	100.0	10.1	9.5	10.2	9	6.4
3	346143	441157	Roadside	100	100.0	29.8	25.6	27.4	24.5	18.2
7	335499	440467	Suburban	100	100.0	15.7	14.8	14.8	13.3	10.5
8.1, 8.2, 8.3	334791	438990	Suburban	100	100.0	19.1	17.7	19.5	17.2	12.4
9	334836	439317	Roadside	100	92.3	22.9	20.3	21.5	19.6	13.6
11	333965	441347	Suburban	100	100.0	20.2	19.1	20	17.9	14.1

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
12.1, 12.2, 12.3	349134	445224	Roadside	100	100.0	25.8	24.4	24.7	21.3	16.3
13.1, 13.2, 13.3	349222	445455	Roadside	100	100.0	25.6	23	24	21	16.3
14.1, 14.2, 14.3	334868	439525	Roadside	100	100.0	29.5	29.6	30.6	26.8	19.7
15.1, 15.2, 15.3	333874	443054	Roadside	100	100.0	28.6	28.6	28.4	27.7	22.9
16	333429	443983	Suburban	100	90.4	15.2	14.3	15.7	13.4	11.0

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16).**

☒ **Diffusion tube data has been bias adjusted).**

☒ **Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance correction).**

Notes:

The annual mean concentrations are presented as µg/m^3.

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

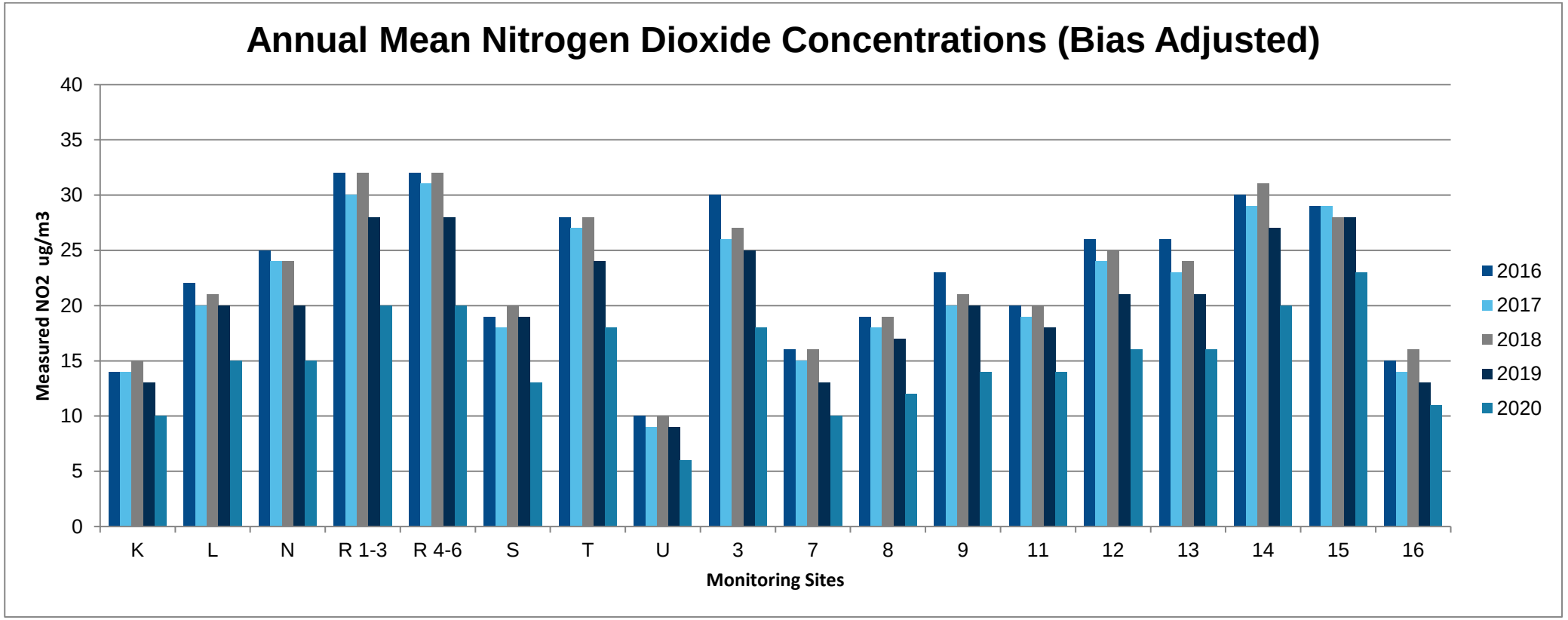
Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure A.1 – Trends in Annual Mean NO_2 Concentrations



Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO_2 2020 Diffusion Tube Results ($\mu g/m^3$)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.82)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
K	333402	447778	15.9	11.6	11.8	9.8	7.6	9.2	6.6	10.6	12.6	10.1	18.2	18.0	11.8	9.7	-	
L	333717	442185	27.0	9.4	19.9	11.8	13.5	13.8	14.9	18.7	19.9	18.1	24.4	24.9	18.0	14.8	-	
N	349237	445344	29.5	21.6	17.8	9.7	12.3	13.2	14.8	14.2	19.6	20.6	25.9	26.2	18.8	15.4	-	
R.1	334903	439425	28.6	26.1	19.7	17.1	18.2	22.9	15.0	23.8	27.3	24.0	29.5	32.8	-	-	-	Triplicate Site with R.1, R.2 and R.3 - Annual data provided for R.3 only
R.2	334903	439425	31.9	24.5	25.4	19.3	18.3	24.9	15.3	25.7	23.4	25.6	29.9	33.0	-	-	-	Triplicate Site with R.1, R.2 and R.3 - Annual data provided for R.3 only
R.3	334903	439425	33.1	missing	26.1	16.8	18.3	23.6	14.9	26.1	27.4	22.4	30.6	32.1	24.4	20.0	-	Triplicate Site with R.1, R.2 and R.3 - Annual data provided for R.3 only
R.4	334887	439458	26.6	28.9	23.5	15.3	17.4	20.9	19.0	22.1	23.8	24.2	29.4	32.5	-	-	-	Triplicate Site with R.4, R.5 and R.6 - Annual data provided for R.6 only
R.5	334887	439458	37.5	28.3	24.4	15.7	17.6	22.7	18.0	23.5	22.2	25.4	30.6	30.8	-	-	-	Triplicate Site with R.4, R.5 and R.6 - Annual data provided for R.6 only
R.6	334887	439458	35.2	27.6	25.6	16.0	17.7	21.6	19.5	23.0	23.3	23.5	30.2	30.2	24.3	19.9	-	Triplicate Site with R.4, R.5 and R.6 - Annual data provided for R.6 only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.82)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
S	334725	439550	22.5	18.4	18.0	11.1	11.2	12.2	9.2	13.7	14.5	14.1	22.3	23.9	15.9	13.1	-	
T.1	335247	440095	32.3	26.8	20.2	13.1	16.8	18.9	17.7	20.0	22.1	23.9	25.8	23.9	-	-	-	Triplicate Site with T.1, T.2 and T.3 - Annual data provided for T.3 only
T.2	335247	440095	33.3	24.7	20.4	13.7	16.8	19.5	16.1	20.7	23.0	21.3	26.8	25.2	-	-	-	Triplicate Site with T.1, T.2 and T.3 - Annual data provided for T.3 only
T.3	335247	440095	34.6	26.2	23.9	13.3	16.4	19.3	17.4	20.8	22.4	25.7	26.1	25.7	22.1	18.1	-	Triplicate Site with T.1, T.2 and T.3 - Annual data provided for T.3 only
U.1	334987	439868	11.5	8.9	8.6	5.1	4.3	4.5	3.2	6.4	7.5	7.2	13.4	13.2	-	-	-	Triplicate Site with U.1, U.2 and U.3 - Annual data provided for U.3 only
U.2	334987	439868	12.3	8.9	7.5	5.4	4.4	5.0	3.1	6.0	6.6	6.9	12.9	12.8	-	-	-	Triplicate Site with U.1, U.2 and U.3 - Annual data provided for U.3 only
U.3	334987	439868	12.5	9.6	7.9	5.0	4.4	4.8	3.2	6.3	7.7	6.8	14.6	12.8	7.8	6.4	-	Triplicate Site with U.1, U.2 and U.3 - Annual data provided for U.3 only
3	346143	441157	27.4	18.7	19.1	12.2	15.7	22.6	13.9	25.9	26.0	24.0	28.8	31.4	22.1	18.2	-	
7	335499	440467	19.3	13.8	13.5	7.6	8.5	9.6	8.1	11.3	12.2	12.4	16.8	20.5	12.8	10.5	-	
8.1	334791	438990	20.1	18.4	15.4	10.3	8.5	11.2	8.1	12.8	14.5	16.3	23.0	21.5	-	-	-	Triplicate Site with 8.1, 8.2 and 8.3 - Annual data provided for 8.3 only
8.2	334791	438990	20.6	18.3	14.3	9.2	9.6	10.8	8.5	13.9	15.1	16.7	22.0	22.9	-	-	-	Triplicate Site with 8.1, 8.2 and 8.3 -

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.82)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
																		Annual data provided for 8.3 only
8.3	334791	438990	20.9	17.0	15.3	10.7	9.6	11.3	8.5	13.8	15.8	16.3	19.7	23.7	15.1	12.4	-	Triplicate Site with 8.1, 8.2 and 8.3 - Annual data provided for 8.3 only
9	334836	439317	missing	18.6	18.6	11.8	10.9	15.6	10.2	15.7	15.6	16.2	25.3	24.4	16.6	13.6	-	
11	333965	441347	25.7	18.7	16.9	11.4	11.5	13.3	13.7	16.3	17.8	16.3	24.2	20.6	17.2	14.1	-	
12.1	349134	445224	30.8	23.9	20.0	10.4	12.6	15.3	15.3	15.9	20.0	21.9	26.8	23.5	-	-	-	Triplicate Site with 12.1, 12.2 and 12.3 - Annual data provided for 12.3 only
12.2	349134	445224	33.9	21.1	18.4	10.6	12.0	13.8	15.7	16.9	21.1	21.3	27.4	28.2	-	-	-	Triplicate Site with 12.1, 12.2 and 12.3 - Annual data provided for 12.3 only
12.3	349134	445224	29.9	21.0	18.9	11.5	12.9	14.5	14.6	17.0	22.2	22.5	28.0	27.8	19.9	16.3	-	Triplicate Site with 12.1, 12.2 and 12.3 - Annual data provided for 12.3 only
13.1	349222	445455	28.3	19.5	20.2	10.8	13.4	13.8	14.6	18.3	20.1	20.4	26.7	25.3	-	-	-	Triplicate Site with 13.1, 13.2 and 13.3 - Annual data provided for 13.3 only
13.2	349222	445455	30.6	20.4	20.0	10.1	13.6	14.8	14.4	18.5	19.1	21.1	30.7	27.5	-	-	-	Triplicate Site with 13.1, 13.2 and 13.3 - Annual data provided for 13.3 only
13.3	349222	445455	31.1	22.7	20.4	10.7	13.5	15.8	16.2	18.3	18.9	22.8	26.3	26.4	19.9	16.3	-	Triplicate Site with 13.1, 13.2 and 13.3 - Annual data provided for 13.3 only
14.1	334868	439525	42.8	28.0	26.4	15.7	16.2	20.6	17.1	19.0	24.4	21.1	29.3	28.4	-	-	-	Triplicate Site with 14.1, 14.2 and 14.3 -

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.82)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
																		Annual data provided for 14.3 only
14.2	334868	439525	39.3	26.7	24.6	14.9	15.2	19.2	17.7	21.7	24.2	22.1	32.7	29.3	-	-	-	Triplicate Site with 14.1, 14.2 and 14.3 - Annual data provided for 14.3 only
14.3	334868	439525	36.6	25.1	27.6	15.8	16.2	21.1	17.5	22.2	22.2	23.7	32.3	29.1	24.0	19.7	-	Triplicate Site with 14.1, 14.2 and 14.3 - Annual data provided for 14.3 only
15.1	333874	443054	35.5	30.1	26.5	20.4	20.3	25.7	21.3	27.1	24.5	34.3	33.1	31.5	-	-	-	Triplicate Site with 15.1, 15.2 and 15.3 - Annual data provided for 15.3 only
15.2	333874	443054	37.6	27.5	29.2	19.7	20.9	water in tube	18.3	25.3	25.9	37.1	43.5	35.4	-	-	-	Triplicate Site with 15.1, 15.2 and 15.3 - Annual data provided for 15.3 only
15.3	333874	443054	39.9	30.6	29.4	19.6	18.9	28.2	21.2	22.3	27.3	27.6	36.8	24.5	27.9	22.9	-	Triplicate Site with 15.1, 15.2 and 15.3 - Annual data provided for 15.3 only
16	333429	443983	19.1	14.8	13.5	7.2	missing	10.8	10.7	11.9	12.7	12.0	17.0	18.0	13.4	11.0	-	

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1**

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16**

☐ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used.**

☒ **Where applicable, data has been distance corrected for relevant exposure in the final column.**

☒ **Wyre Council confirm that all 2020 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC

New or Changed Sources Identified Within Wyre During 2020

Wyre Council has not identified any new sources relating to air quality within the reporting year of 2020, therefore no changes have been made to the council's monitoring programme since a review of its monitoring network was last undertaken just prior to the publication of the 2020 ASR. During that review the council increased the number of temporary 'test' sites it has available from three to five, and ensured that all of its test sites were suitably located in areas outlined for significant development in the near future. Given the current uncertainty in respects to the recent impact of the Covid-19 restrictions on local air quality, and the fact that much of the development proposed within the borough has yet to commence / be completed, no changes to any of the council's test sites are proposed at this time.

The current location of the council's 'test' monitoring stations are provided within map format in Appendix D. The permanence of these monitoring stations will be reviewed on a regular basis and the results obtained provided on the council's air quality webpage.

In terms of identifying areas of future air quality concern within the borough, the council continuously reviews all relevant planning applications where either the introduction of a potential new source of pollution is planned, or where significant changes to an existing source of pollution are proposed. The applications to which particular attention is paid within the borough include:

- Large scale retail/ leisure / commercial developments
- Large scale housing developments
- Developments likely to result in increased congestion, or changes in traffic volumes and/ or vehicle speeds
- Developments introducing new / alterations to existing roads & junctions
- Developments which significantly increase car parking provision in an area
- Large scale poultry breeding establishments

- Industrial Installations
- Biomass / CHP Installations
- Petrol Stations
- Developments involving transport, e.g.: train stations, taxi ranks, bus stations, etc.
- Developments associated with the increased use of HGV's
- Development likely to give rise to the generation of dust

The council also gives careful consideration to any applications which propose to introduce new receptors to an area of poorer air quality.

Additional Air Quality Works Undertaken by Wyre Council During 2020

Wyre Council has not completed any additional works within the reporting year of 2020. Only those priority measures identified within its 2020 ASR have been progressed in the last 12 months.

QA/QC of Diffusion Tube Monitoring

All diffusion tubes used by the council during 2020 were obtained from and analysed by Gradko Ltd, using a 50% TEA in Acetone preparation method.

The council's analytical laboratory for the supply and analysis of its diffusion tubes (Gradko) is assessed annually by UKAS to establish conformance of its Laboratory Quality Procedures to the requirements of the ISO/IEC 17025 Standard. A copy of the laboratory's current UKAS certificate is provided overleaf, together with the laboratory's Technical Data Sheet for Diffusion Tube Monitoring (TDS1).

Further to the above, Gradko International participates in the AIR PT Analytical Proficiency Testing Scheme, which is an independent analytical proficiency programme, operated by LGC Standards, and supported by the Health and Safety Laboratory. The summary of laboratory performance provided on the LAQM Portal[8] confirms that Gradko participated by providing two sets of test samples (2 x 4 tests) for the two proficiency test rounds undertaken for the period January – October 2020 (i.e.: Rounds AR036 Jan - Feb, and AR040 Sept - Oct), in which 75% of the results submitted were deemed to be satisfactory based on a score of $\underline{<+}2$. Unfortunately rounds AR037 (May – June) and AR039 (July-

Aug) were cancelled due to the pandemic. There is therefore less data available than there would be ordinarily to assess Gradko's laboratory performance during the 2020 monitoring period, however this is the same for any other laboratory during this period and as a high percentage of the results analysed were deemed to be satisfactory during the rounds which did go ahead, the council has no significant concerns regarding the reliability of the laboratory results obtained.

In terms of diffusion tube precision, the council has 9 triplicate tube sites (Site's 8, 12, 13, 14, 15, R1-3, R4-6, U, & T). Use of the precision spread sheet tool available through the LAQM Portal[8] indicates that all of the council's triplicate tubes demonstrated 'good' precision in 2020, i.e.: all tubes at each location demonstrated similar results to one another. Copies of the precision calculator spread sheets for each of the council's triplicate sites are provided overleaf for reference purposes.

Two calculation spread sheets are provided for Site 15 (one inclusive of data outliers and one without). The outlier identified at Site 15 (tube 15.2 in June) was the only outlier identified within the 2020 data. The tube precision calculator spread sheets for Site 15 (provided overleaf), illustrate the impact of the said outlier within the data set on tube precision.

C5. Short-Term to Long-Term Data Adjustment

Monitoring was undertaken at all 19 of the council's permanent monitoring sites for the full calandar year, resulting in 100% data capture at 17 sites. The minimum data capture from any site was 90.4%. Therefore no annualisation of the results was required. There was also no divergence from the 2020 Diffusion Tube Monitoring Calandar.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within the council's monitoring network recorded data capture of over 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2021 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube

monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Wyre Council have applied a bias adjustment factor of 0.82 ug/m^3 to the 2020 monitoring data.

The bias adjustment factor used (0.82 ug/m^3) has been taken from the National Bias Adjustment Factor Spreadsheet (version 03/21) available on the support pages of the LAQM Portal[8].

The bias adjustment factor for Gradko is based on 14 studies, of which only 1 was poor precision and two were single tubes and therefore not applicable. The remaining 11 studies were of good precision.

A summary of bias adjustment factors used by the council over the past 5 years is presented in Table C.1.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	National	03/21	0.82
2019	National	03/20	0.87
2018	National	03/19	0.92
2017	National	03/18	0.97
2016	National	03/17	1.03

NO_2 Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure should be estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

No diffusion tube NO_2 monitoring locations within Wyre required distance correction during 2020.

Technical Data Sheet: TDS 1

DIF 100 RTU - NITROGEN DIOXIDE (NO_2)

This tube is designed for passively monitoring gaseous airborne Nitrogen dioxide.

Description: Acrylic tube fitted with coloured and white thermoplastic rubber caps. The coloured cap contains the absorbent.

The concentrations of Nitrite ions and hence NO_2 chemically adsorbed are quantitatively determined by UV/ Visible Spectrophotometry with reference to a calibration curve derived from the analysis of standard nitrite solutions (UKAS Accredited Methods).

Suitable for carrying out spatial or localized assessments for NO_2 in ambient air or workplace monitoring. It can be used for co-location projects alongside an automatic analyzer to obtain bias correction factors.

Clips and straps are not included and must be ordered separately.

Tube Dimensions: 71.0mm length x 11.0mm internal diameter.

Absorbent: Two preparations of Triethanolamine (TEA) absorbent are available:

20% Triethanolamine / De-ionised Water - *GREY CAP
50% Triethanolamine / Acetone – *RED CAP

Recommended Exposure Periods: 2 -4 weeks.

Air Velocity: Influence of Wind Speed < 10% between 1.0 and 4.5 $msec^{-1}$ (* based on original data).

Storage: Store in a dark, cool environment preferably between 5-10°C.

Shelf Life: 12 weeks from preparation date.

Desorption Efficiency: d = 0.98 (determined using N.I.S.T. Standard Analytes).

TDS 1:V1 March 2012

Limit of detection:

- 20%TEA/Water – less than 1.5 ugm^{-3} over a 4-week exposure period. Specific values available upon request.
- 50%TEA/Acetone – less than 2 ugm^{-3} over a 4-week exposure period. Specific values available upon request.

Analytical Expanded Measurement Uncertainty: available upon request.

Relevant Standards: BS EN 13528 Parts 1-3: 2002/3

Reference document: ED48673043 Issue-1A Feb 2008 – AEA Energy and Environment

Special Factors: Potential interference from Nitrous Acid , Peroxy Acetyl Nitrate, which could increase levels of nitrate.

TDS 1:V1 March 2012

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

UKAS TESTING

2187

Accredited to ISO/IEC 17025:2017

Gradko International Ltd
(Trading as Gradko Environmental)

Issue No: 024 **Issue date:** 15 April 2020

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Winchester	**Fax: +44 (0)1962 841339**
Hampshire	**E-Mail: diffusion@gradko.co.uk**
SO23 0RH	**Website: www.gradko.co.uk**

Testing performed at the above address only

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ATMOSPHERIC POLLUTANTS Collected on diffusion (sorbent) tubes and monitors	Chemical Tests	Documented In-House Methods
	Ammonia as ammonium (NH_4^+)	GLM 8 by Ion Chromatography
	Benzene Toluene Ethyl benzene Xylene	GLM 4 by Thermal Desorption/ FID Gas Chromatography
	Hydrogen chloride as chloride (Cl^-) Nitrogen dioxide as nitrite (NO_2^-) Sulphur dioxide as sulphate (SO_4^{2-}) Hydrogen fluoride as fluoride (F^-)	GLM 3 by Ion Chromatography
	Hydrogen sulphide	GLM 5 by Colorimetric determination (UV Spectrophotometry)
	Ozone as nitrate (NO_3^-)	GLM 2 by Ion Chromatography
	Nitrogen Dioxide as nitrite (NO_2^-)	GLM 7 by Colorimetric determination (UV Spectrophotometry)
	Sulphur dioxide as sulphate (SO_4^{2-})	GLM 1 by Ion Chromatography
	Formaldehyde as formaldehyde-DNPH	GLM 18 by HPLC
	Volatile Organic Compounds including: Benzene Toluene Ethylbenzene p-Xylene o-Xylene	GLM 13 by Thermal Desorption GC-Mass Spectrometry

UKAS TESTING 2187 Accredited to ISO/IEC 17025:2017	**Schedule of Accreditation** issued by **United Kingdom Accreditation Service** 2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK **Gradko International Ltd** **(Trading as Gradko Environmental)** **Issue No:** 024 **Issue date:** 15 April 2020
Testing performed at main address only	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ATMOSPHERIC POLLUTANTS Collected on diffusion (sorbent) tubes and monitors (cont'd)	Chemical Tests (cont'd)	
	Qualitative Analysis and Estimation of Volatile Organic Compounds on diffusion (sorbent) tubes and monitors	GLM 13 by Thermal Desorption GC-Mass Spectrometry with estimations in accordance with ISO standard 16000-6
	Naphthalene	GLM 13-1 by Thermal Desorption GC-Mass Spectrometry
	Tetrachloroethylene Trichloroethylene	GLM 13-2 by Thermal Desorption GC-Mass Spectrometry
	trans-1,2-Dichloroethene cis-1,2-Dichloroethene	GLM 13-3 by Thermal Desorption GC-Mass Spectrometry
	Indane Styrene	GLM 13-4 by Thermal Desorption GC-Mass Spectrometry
	1,2,3-Trimethylbenzene 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene	GLM 13-5 by Thermal Desorption GC-Mass Spectrometry
	1,3-Butadiene	GLM 13-6 by Thermal Desorption GC-Mass Spectrometry
	Carbon Disulphide	GLM 13-7 by Thermal Desorption GC-Mass Spectrometry
	Vinyl Chloride	GLM 13-8 by Thermal Desorption GC-Mass Spectrometry
	Flexible scope for quantitative analysis of Volatile Organic Compounds on diffusion (sorbent) tubes and monitors in accordance with methods developed and validated by in-house procedure LWI 47	LWI 47 by Thermal Desorption GC-Mass Spectrometry
END		

National Diffusion Tube Bias Adjustment Factor Spreadsheet

Spreadsheet Version Number: 03/21

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies

Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods

Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet

This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2021

LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List

If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List

If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List

If a year is not shown, we have no data[2]

Step 4:

Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.

If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[5] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[6]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in acetone	2020	R	Royal Borough of Windsor and Maidenhead	12	29	25	17.3%	G	**0.85**
Gradko	50% TEA in acetone	2020	R	Royal Borough of Windsor and Maidenhead	12	24	22	11.7%	G	**0.90**
Gradko	50% TEA in acetone	2020	SU	Redcar & Cleveland Borough Council	11	16	13	23.4%	P	**0.81**
Gradko	50% TEA in acetone	2020	R	Newham	10	29	24	18.2%	G	**0.85**
Gradko	50% TEA in acetone	2020	R	Sandwell MBC	12	34	27	26.9%	G	**0.79**
Gradko	50% TEA in acetone	2020	B	Sandwell MBC	9	14	11	23.0%	S	**0.81**
Gradko	50% TEA in acetone	2020	R	Sandwell MBC	11	25	23	9.4%	S	**0.91**
Gradko	50% TEA in acetone	2020	UB	Sandwell Metropolitan Borough Council	11	21	19	9.4%	G	**0.91**
Gradko	50% TEA in acetone	2020	KS	Marylebone Road Intercomparison	12	57	43	33.0%	G	**0.75**
Gradko	50% TEA in acetone	2020	R	London Borough of Richmond upon Thames	12	22	20	9.4%	G	**0.91**
Gradko	50% TEA in acetone	2020	B	London Borough of Richmond upon Thames	9	19	16	20.3%	G	**0.83**
Gradko	50% TEA in acetone	2020		**Overall Factor[3] (14 studies)**				**Use**		**0.82**

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	01/01/2020	31/12/2020	20.1	20.6	20.9	21	0.4	2	1.0
2	01/01/2020	31/12/2020	18.4	18.3	17.0	18	0.8	4	1.9
3	01/01/2020	31/12/2020	15.4	14.3	15.3	15	0.6	4	1.5
4	01/01/2020	31/12/2020	10.3	9.2	10.7	10	0.8	8	1.9
5	01/01/2020	31/12/2020	8.5	9.6	9.6	9	0.7	7	1.6
6	01/01/2020	31/12/2020	11.2	10.8	11.3	11	0.3	3	0.7
7	01/01/2020	31/12/2020	8.1	8.5	8.5	8	0.2	3	0.6
8	01/01/2020	31/12/2020	12.8	13.9	13.8	13	0.6	4	1.5
9	01/01/2020	31/12/2020	14.5	15.1	15.8	15	0.7	4	1.6
10	01/01/2020	31/12/2020	16.3	16.7	16.3	16	0.2	1	0.5
11	01/01/2020	31/12/2020	23.0	22.0	19.7	22	1.7	8	4.2
12	01/01/2020	31/12/2020	21.5	22.9	23.7	23	1.1	5	2.8
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
Overall survey -->		Good precision	

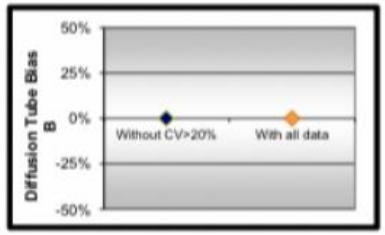
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	Site 8

Precision: 12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 0 periods of data
Bias factor A
Bias B
Diffusion Tubes Mean: μgm^{-3}
Mean CV (Precision):
Automatic Mean: μgm^{-3}
Data Capture for periods used:
Adjusted Tubes Mean: μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 0 periods of data
Bias factor A
Bias B
Diffusion Tubes Mean: μgm^{-3}
Mean CV (Precision):
Automatic Mean: μgm^{-3}
Data Capture for periods used:
Adjusted Tubes Mean: μgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	01/01/2020	31/12/2020	30.8	33.9	29.9	32	2.1	7	5.2
2	01/01/2020	31/12/2020	23.9	21.1	21.0	22	1.6	7	4.1
3	01/01/2020	31/12/2020	20.0	18.4	18.9	19	0.8	4	2.0
4	01/01/2020	31/12/2020	10.4	10.6	11.5	11	0.6	5	1.4
5	01/01/2020	31/12/2020	12.6	12.0	12.9	13	0.5	4	1.1
6	01/01/2020	31/12/2020	15.3	13.8	14.5	15	0.7	5	1.8
7	01/01/2020	31/12/2020	15.3	15.7	14.6	15	0.6	4	1.5
8	01/01/2020	31/12/2020	15.9	16.9	17.0	17	0.6	4	1.6
9	01/01/2020	31/12/2020	20.0	21.1	22.2	21	1.1	5	2.7
10	01/01/2020	31/12/2020	21.9	21.3	22.5	22	0.6	3	1.5
11	01/01/2020	31/12/2020	26.8	27.4	28.0	27	0.6	2	1.5
12	01/01/2020	31/12/2020	23.5	28.2	27.8	26	2.6	10	6.5
13									

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
	Overall survey -->	Good precision	

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

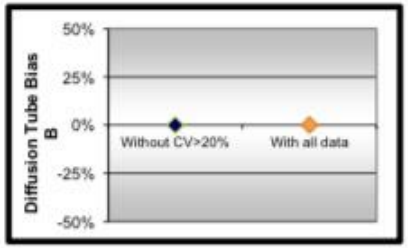
Site Name/ ID:	Site 12

Precision: 12 out of 12 periods have a CV smaller than 20%

(Check average CV & DC from Accuracy calculations)

Accuracy (with 95% confidence interval) without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Bias factor A	
Bias B	
Diffusion Tubes Mean:	μgm^{-3}
Mean CV (Precision):	
Automatic Mean:	μgm^{-3}
Data Capture for periods used:	
Adjusted Tubes Mean:	μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 0 periods of data	
Bias factor A	
Bias B	
Diffusion Tubes Mean:	μgm^{-3}
Mean CV (Precision):	
Automatic Mean:	μgm^{-3}
Data Capture for periods used:	
Adjusted Tubes Mean:	μgm^{-3}



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Version 04 - February 2011

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	01/01/2020	31/12/2020	28.3	30.6	31.1	30	1.5	5	3.7
2	01/01/2020	31/12/2020	19.3	20.4	22.7	21	1.8	9	4.4
3	01/01/2020	31/12/2020	20.2	20.0	20.4	20	0.2	1	0.4
4	01/01/2020	31/12/2020	10.8	10.1	10.7	11	0.4	4	0.9
5	01/01/2020	31/12/2020	13.4	13.6	13.5	14	0.1	1	0.3
6	01/01/2020	31/12/2020	13.8	14.8	15.8	15	1.0	7	2.5
7	01/01/2020	31/12/2020	14.6	14.4	16.2	15	1.0	7	2.5
8	01/01/2020	31/12/2020	18.3	18.5	18.3	18	0.1	1	0.2
9	01/01/2020	31/12/2020	20.1	19.1	18.9	19	0.7	3	1.6
10	01/01/2020	31/12/2020	20.4	21.1	22.8	21	1.2	6	3.1
11	01/01/2020	31/12/2020	26.7	30.7	26.3	28	2.4	9	6.0
12	01/01/2020	31/12/2020	25.3	27.5	26.4	26	1.1	4	2.6
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
Overall survey -->		Good precision	

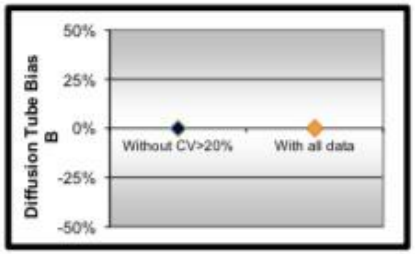
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	Site 13

Precision: 12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Bias factor A	
Bias B	
Diffusion Tubes Mean:	μgm^{-3}
Mean CV (Precision):	
Automatic Mean:	μgm^{-3}
Data Capture for periods used:	
Adjusted Tubes Mean:	μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 0 periods of data	
Bias factor A	
Bias B	
Diffusion Tubes Mean:	μgm^{-3}
Mean CV (Precision):	
Automatic Mean:	μgm^{-3}
Data Capture for periods used:	
Adjusted Tubes Mean:	μgm^{-3}



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Version 04 - February 2011

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	01/01/2020	31/12/2020	42.8	39.1	36.6	40	3.1	8	7.8
2	01/01/2020	31/12/2020	28.0	27.0	25.0	27	1.5	6	3.8
3	01/01/2020	31/12/2020	26.4	24.6	27.6	26	1.5	6	3.7
4	01/01/2020	31/12/2020	15.7	14.9	15.8	15	0.5	3	1.2
5	01/01/2020	31/12/2020	16.2	15.2	16.2	16	0.5	3	1.3
6	01/01/2020	31/12/2020	20.6	19.2	21.1	20	1.0	5	2.4
7	01/01/2020	31/12/2020	17.1	17.7	17.5	17	0.3	2	0.9
8	01/01/2020	31/12/2020	19.0	21.7	22.2	21	1.7	8	4.3
9	01/01/2020	31/12/2020	24.4	24.2	22.2	24	1.2	5	3.1
10	01/01/2020	31/12/2020	21.1	22.1	23.7	22	1.3	6	3.3
11	01/01/2020	31/12/2020	29.3	32.7	32.3	31	1.8	6	4.6
12	01/01/2020	31/12/2020	28.4	29.3	29.1	29	0.4	2	1.1
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
Overall survey -->		Good precision	

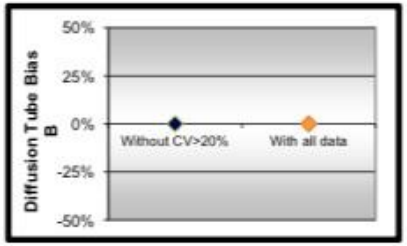
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	Site 14

Precision: 12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 0 periods of data
Bias factor A
Bias B
Diffusion Tubes Mean: μgm^{-3}
Mean CV (Precision):
Automatic Mean: μgm^{-3}
Data Capture for periods used:
Adjusted Tubes Mean: μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 0 periods of data
Bias factor A
Bias B
Diffusion Tubes Mean: μgm^{-3}
Mean CV (Precision):
Automatic Mean: μgm^{-3}
Data Capture for periods used:
Adjusted Tubes Mean: μgm^{-3}



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Version 04 - February 2011

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	01/01/2020	31/12/2020	35.5	37.6	39.9	38	2.2	6	5.5
2	01/01/2020	31/12/2020	30.1	27.5	30.6	29	1.6	6	4.0
3	01/01/2020	31/12/2020	26.5	29.2	29.4	28	1.6	6	4.0
4	01/01/2020	31/12/2020	20.4	19.7	19.6	20	0.4	2	1.0
5	01/01/2020	31/12/2020	20.3	20.9	18.9	20	1.0	5	2.6
6	01/01/2020	31/12/2020	25.7	15.3	28.2	23	6.8	30	17.0
7	01/01/2020	31/12/2020	21.3	18.3	21.2	20	1.7	8	4.2
8	01/01/2020	31/12/2020	27.1	25.3	22.3	25	2.5	10	6.1
9	01/01/2020	31/12/2020	24.5	25.9	27.3	26	1.4	5	3.4
10	01/01/2020	31/12/2020	34.3	37.1	27.6	33	4.8	15	12.0
11	01/01/2020	31/12/2020	33.1	43.5	36.8	38	5.3	14	13.1
12	01/01/2020	31/12/2020	31.5	35.4	24.5	30	5.5	18	13.7
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
		Good	
		Good	
		Good	
		Good	
		Good	
		Poor Precision	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
Overall survey -->		Good precision	

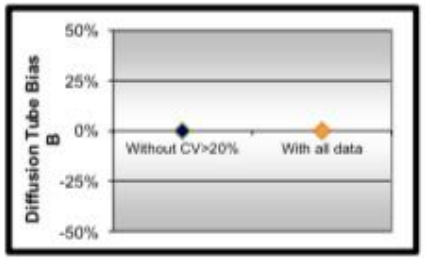
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	Site 15

Precision: 11 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Bias factor A	
Bias B	
Diffusion Tubes Mean:	μgm^{-3}
Mean CV (Precision):	
Automatic Mean:	μgm^{-3}
Data Capture for periods used:	
Adjusted Tubes Mean:	μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 0 periods of data	
Bias factor A	
Bias B	
Diffusion Tubes Mean:	μgm^{-3}
Mean CV (Precision):	
Automatic Mean:	μgm^{-3}
Data Capture for periods used:	
Adjusted Tubes Mean:	μgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	01/01/2020	31/12/2020	35.5	37.6	39.9	38	2.2	6	5.5
2	01/01/2020	31/12/2020	30.1	27.5	30.6	29	1.6	6	4.0
3	01/01/2020	31/12/2020	26.5	29.2	29.4	28	1.6	6	4.0
4	01/01/2020	31/12/2020	20.4	19.7	19.6	20	0.4	2	1.0
5	01/01/2020	31/12/2020	20.3	20.9	18.9	20	1.0	5	2.6
6	01/01/2020	31/12/2020	25.7		28.2	27	1.7	6	15.6
7	01/01/2020	31/12/2020	21.3	18.3	21.2	20	1.7	8	4.2
8	01/01/2020	31/12/2020	27.1	25.3	22.3	25	2.5	10	6.1
9	01/01/2020	31/12/2020	24.5	25.9	27.3	26	1.4	5	3.4
10	01/01/2020	31/12/2020	34.3	37.1	27.6	33	4.8	15	12.0
11	01/01/2020	31/12/2020	33.1	43.5	36.8	38	5.3	14	13.1
12	01/01/2020	31/12/2020	31.5	35.4	24.5	30	5.5	18	13.7
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
Overall survey -->		Good precision	

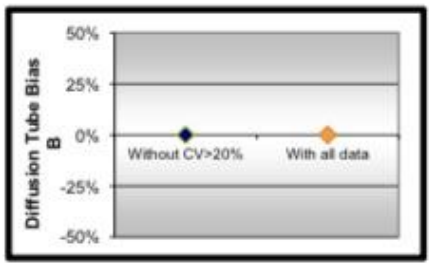
Site Name/ ID:	Site 15

Precision: 12 out of 12 periods have a CV smaller than 20%

(Check average CV & DC from Accuracy calculations)

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 0 periods of data
Bias factor A
Bias B
Diffusion Tubes Mean: μgm^{-3}
Mean CV (Precision):
Automatic Mean: μgm^{-3}
Data Capture for periods used:
Adjusted Tubes Mean: μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 0 periods of data
Bias factor A
Bias B
Diffusion Tubes Mean: μgm^{-3}
Mean CV (Precision):
Automatic Mean: μgm^{-3}
Data Capture for periods used:
Adjusted Tubes Mean: μgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	01/01/2020	31/12/2020	28.6	31.9	33.1	31	2.3	7	5.8			Good	
2	01/01/2020	31/12/2020	26.1	24.5		25	1.1	4	10.1			Good	
3	01/01/2020	31/12/2020	19.7	25.4	26.1	24	3.5	15	8.8			Good	
4	01/01/2020	31/12/2020	17.1	19.3	16.8	18	1.4	8	3.4			Good	
5	01/01/2020	31/12/2020	18.2	18.3	18.3	18	0.1	0	0.1			Good	
6	01/01/2020	31/12/2020	22.9	24.9	23.6	24	1.0	4	2.5			Good	
7	01/01/2020	31/12/2020	15.0	15.3	14.9	15	0.2	1	0.5			Good	
8	01/01/2020	31/12/2020	23.8	25.7	26.1	25	1.2	5	3.0			Good	
9	01/01/2020	31/12/2020	27.3	23.4	27.4	26	2.3	9	5.6			Good	
10	01/01/2020	31/12/2020	24.0	25.6	22.4	24	1.6	7	3.9			Good	
11	01/01/2020	31/12/2020	29.5	29.9	30.6	30	0.5	2	1.3			Good	
12	01/01/2020	31/12/2020	32.8	33.0	32.1	33	0.5	1	1.1			Good	
13													
											Overall survey -->	Good precision	

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

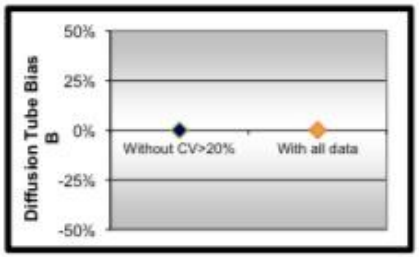
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	Site R1 - R3

Precision	12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Bias factor A	
Bias B	
Diffusion Tubes Mean:	μgm^{-3}
Mean CV (Precision):	
Automatic Mean:	μgm^{-3}
Data Capture for periods used:	
Adjusted Tubes Mean:	μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 0 periods of data	
Bias factor A	
Bias B	
Diffusion Tubes Mean:	μgm^{-3}
Mean CV (Precision):	
Automatic Mean:	μgm^{-3}
Data Capture for periods used:	
Adjusted Tubes Mean:	μgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	01/01/2020	31/12/2020	26.6	37.5	35.2	33	5.7	17	14.2
2	01/01/2020	31/12/2020	28.9	28.3	27.6	28	0.7	2	1.7
3	01/01/2020	31/12/2020	23.5	24.4	25.6	24	1.0	4	2.6
4	01/01/2020	31/12/2020	15.3	15.7	16.0	16	0.4	2	0.9
5	01/01/2020	31/12/2020	17.4	17.6	17.7	18	0.1	1	0.4
6	01/01/2020	31/12/2020	20.9	22.7	21.6	22	0.9	4	2.3
7	01/01/2020	31/12/2020	19.0	18.0	19.5	19	0.8	4	2.0
8	01/01/2020	31/12/2020	22.1	23.5	23.0	23	0.7	3	1.9
9	01/01/2020	31/12/2020	23.8	22.2	23.3	23	0.8	3	2.0
10	01/01/2020	31/12/2020	24.2	25.4	23.5	24	1.0	4	2.5
11	01/01/2020	31/12/2020	29.4	30.6	30.2	30	0.6	2	1.5
12	01/01/2020	31/12/2020	32.5	30.8	30.2	31	1.2	4	2.9
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
Overall survey -->		Good precision	

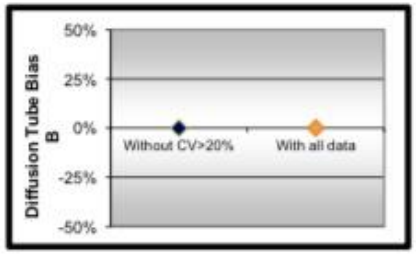
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	Site R4 - R6

Precision: 12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Bias factor A	
Bias B	
Diffusion Tubes Mean:	μgm^{-3}
Mean CV (Precision):	
Automatic Mean:	μgm^{-3}
Data Capture for periods used:	
Adjusted Tubes Mean:	μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 0 periods of data	
Bias factor A	
Bias B	
Diffusion Tubes Mean:	μgm^{-3}
Mean CV (Precision):	
Automatic Mean:	μgm^{-3}
Data Capture for periods used:	
Adjusted Tubes Mean:	μgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	01/01/2020	31/12/2020	32.3	33.3	34.6	33	1.2	3	2.9
2	01/01/2020	31/12/2020	26.8	24.7	26.2	26	1.1	4	2.7
3	01/01/2020	31/12/2020	20.2	20.4	23.9	22	2.1	10	5.2
4	01/01/2020	31/12/2020	13.1	13.7	13.3	13	0.3	3	0.8
5	01/01/2020	31/12/2020	16.8	16.8	16.4	17	0.2	1	0.6
6	01/01/2020	31/12/2020	18.9	19.5	19.3	19	0.3	1	0.7
7	01/01/2020	31/12/2020	17.7	16.1	17.4	17	0.8	5	2.1
8	01/01/2020	31/12/2020	22.1	23.5	23.0	23	0.7	3	1.9
9	01/01/2020	31/12/2020	22.1	23.0	22.4	22	0.4	2	1.1
10	01/01/2020	31/12/2020	23.9	21.3	25.7	24	2.2	9	5.5
11	01/01/2020	31/12/2020	25.8	26.8	26.1	26	0.5	2	1.2
12	01/01/2020	31/12/2020	23.9	25.2	25.7	25	0.9	4	2.3
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
Overall survey -->		Good precision	

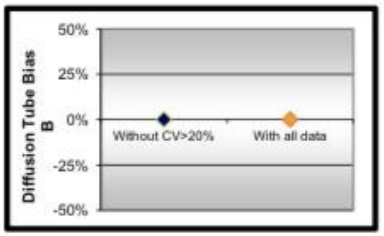
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	Site T

Precision: 12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 0 periods of data
Bias factor A
Bias B
Diffusion Tubes Mean: μgm^{-3}
Mean CV (Precision):
Automatic Mean: μgm^{-3}
Data Capture for periods used:
Adjusted Tubes Mean: μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 0 periods of data
Bias factor A
Bias B
Diffusion Tubes Mean: μgm^{-3}
Mean CV (Precision):
Automatic Mean: μgm^{-3}
Data Capture for periods used:
Adjusted Tubes Mean: μgm^{-3}



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Version 04 - February 2011

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	01/01/2020	31/12/2020	11.5	12.3	12.5	12	0.6	5	1.4
2	01/01/2020	31/12/2020	8.9	8.9	9.6	9	0.4	5	1.0
3	01/01/2020	31/12/2020	8.6	7.5	7.9	8	0.5	7	1.4
4	01/01/2020	31/12/2020	5.1	5.4	5.0	5	0.2	4	0.5
5	01/01/2020	31/12/2020	4.3	4.4	4.4	4	0.0	1	0.1
6	01/01/2020	31/12/2020	4.5	5.0	4.8	5	0.3	5	0.6
7	01/01/2020	31/12/2020	3.2	3.1	3.2	3	0.1	2	0.1
8	01/01/2020	31/12/2020	6.4	6.0	6.3	6	0.2	4	0.6
9	01/01/2020	31/12/2020	7.5	6.6	7.7	7	0.6	8	1.5
10	01/01/2020	31/12/2020	7.2	6.9	6.8	7	0.2	3	0.5
11	01/01/2020	31/12/2020	13.4	12.9	14.6	14	0.9	6	2.1
12	01/01/2020	31/12/2020	13.2	12.8	12.8	13	0.2	2	0.6
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
		Good	
Overall survey -->		Good precision	

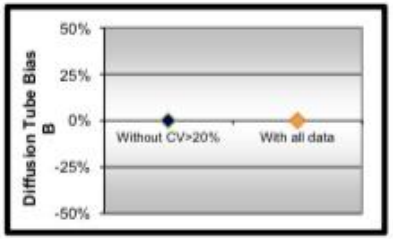
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	Site U

Precision: 12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 0 periods of data
Bias factor A
Bias B
Diffusion Tubes Mean: μgm^{-3}
Mean CV (Precision):
Automatic Mean: μgm^{-3}
Data Capture for periods used:
Adjusted Tubes Mean: μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 0 periods of data
Bias factor A
Bias B
Diffusion Tubes Mean: μgm^{-3}
Mean CV (Precision):
Automatic Mean: μgm^{-3}
Data Capture for periods used:
Adjusted Tubes Mean: μgm^{-3}



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Version 04 - February 2011

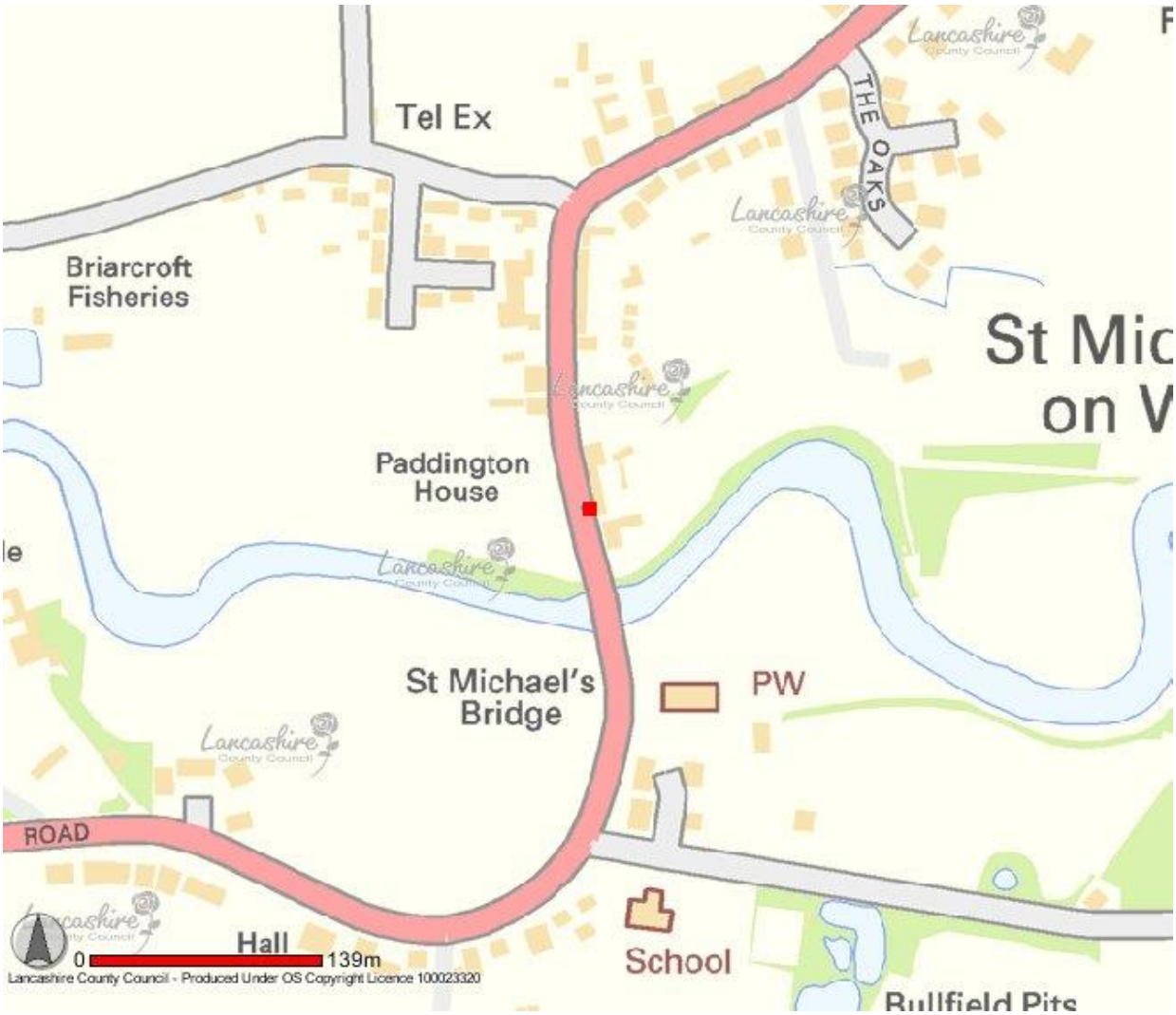
Appendix D: Map(s) of Monitoring Locations and AQMAs

Figure D.1 – Map of Non-Automatic Monitoring Site

Site 3 – Single Tube Site

5, Bridge Row, St. Michaels, PR3 0TJ

Grid Reference (Easting): 346143 (Northing) 441157



Site 11 – Single Tube Site

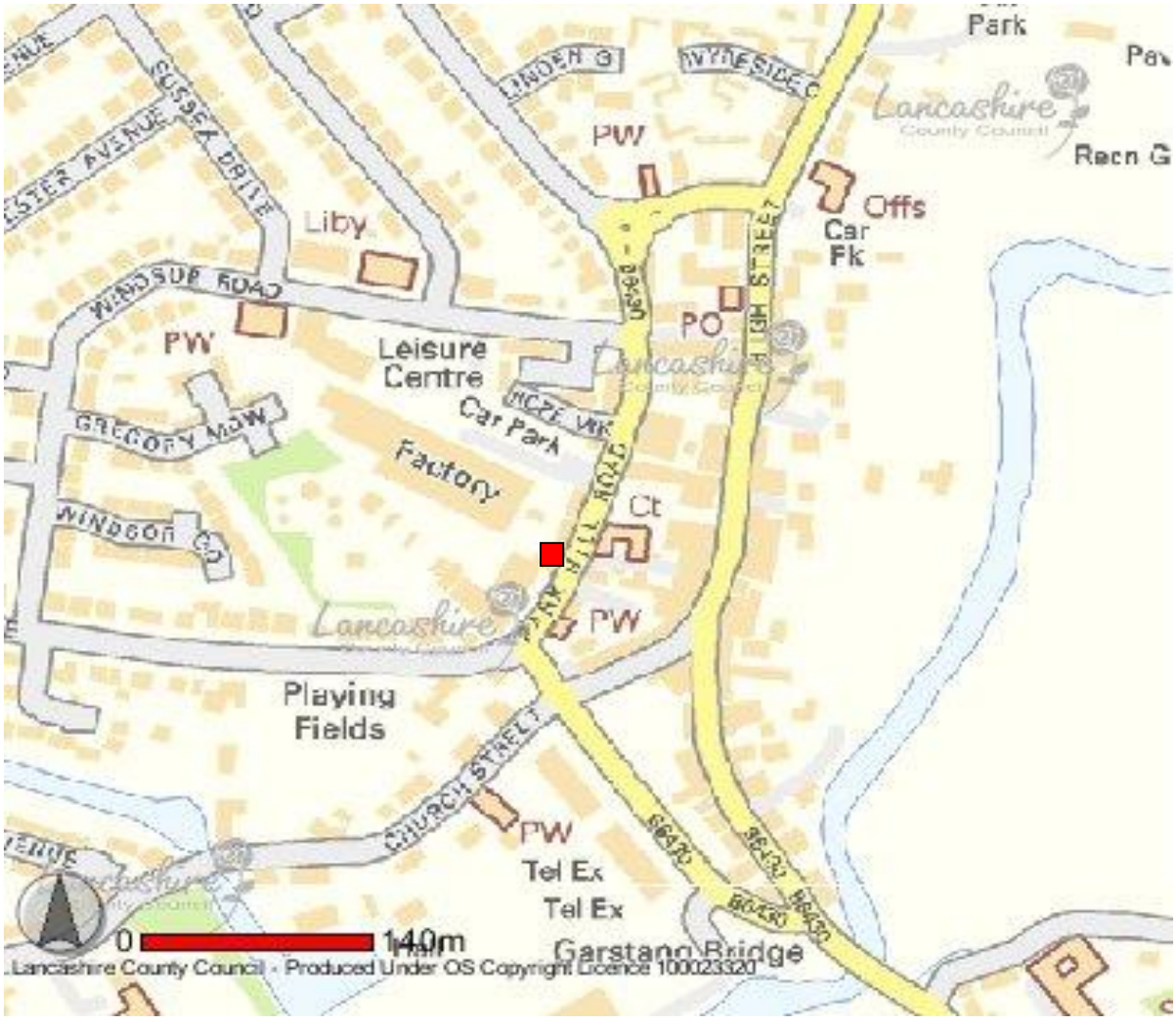
3, Briarwood Court, Briarwood Close, Thornton-Cleveleys, FY5 5DZ

Grid Reference (Easting) 333965 (Northing) 441347

Site 12 – Triplicate Site – Tubes 12.1, 12.2, 12.3

2 Park Hill Road, Garstang, PR3 1EL

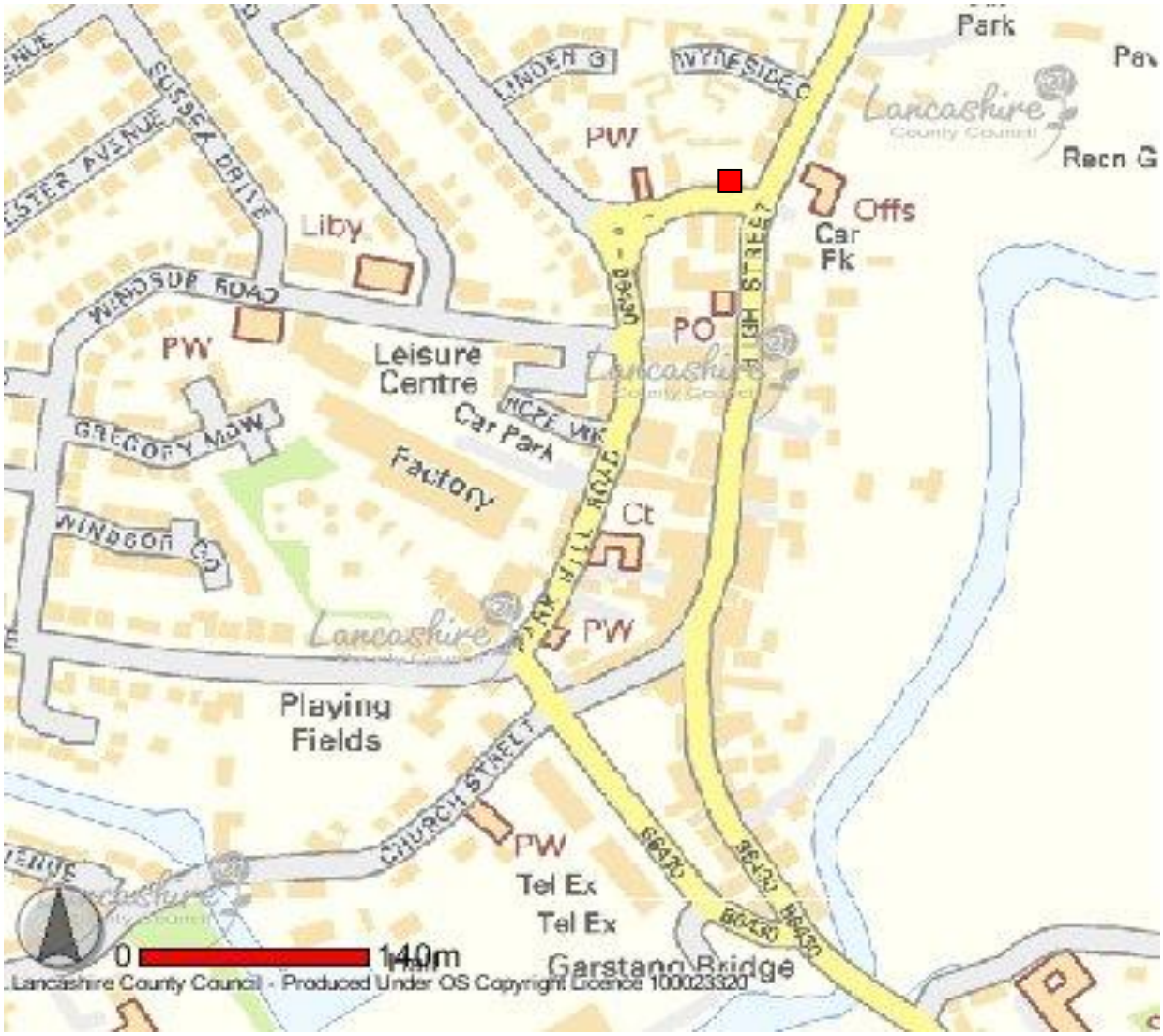
Grid Reference (Easting) 349134 (Northing) 445224



Site 13 – Triplicate Tube Site – Tube 13.1, 13.2, 13.3

10, Croston Road, Garstang, PR3 1FL

Grid Reference: (Easting) 349222, (Northing) 445455



Site 14 – Triplicate Tube Site – Site 14.1, 14.2, 14.3

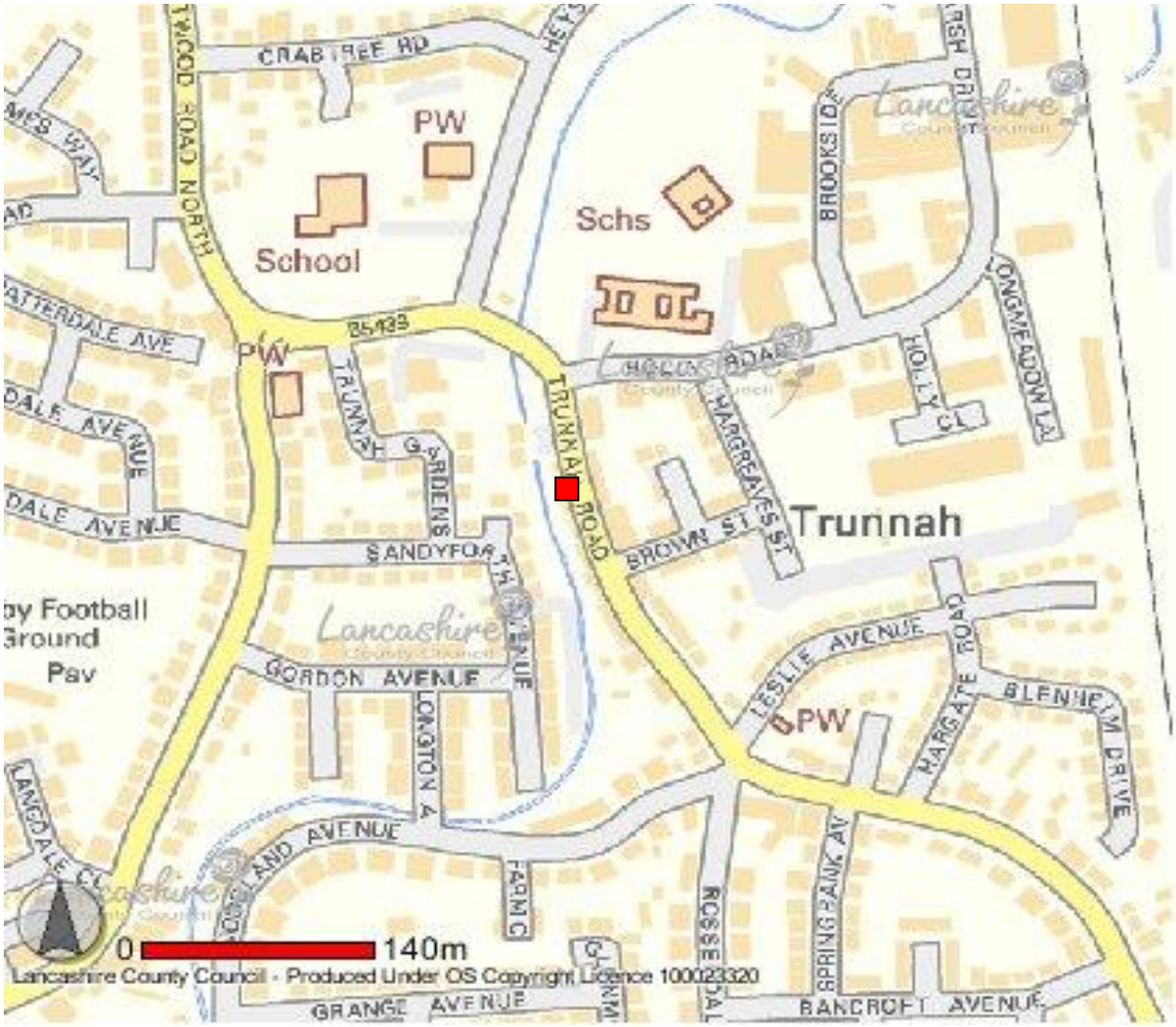
Halifax, Breck Road, Poulton

Grid Reference: (Easting) 334868, (Northing) 439525

Site 15 – Triplicate Tube Site – Tube 15.1, 15.2, 15.3

63 Trunnah Road, Thornton-Cleveleys, FY5 4HF

Grid Reference: (Easting) 333874, (Northing) 443054



Site 16 – Single Tube Site

24 Rose Fold, Thornton-Cleveleys, FY5 4NQ

Grid Reference: (Easting) 333429, (Northing) 443983

Site K – Single Tube Site

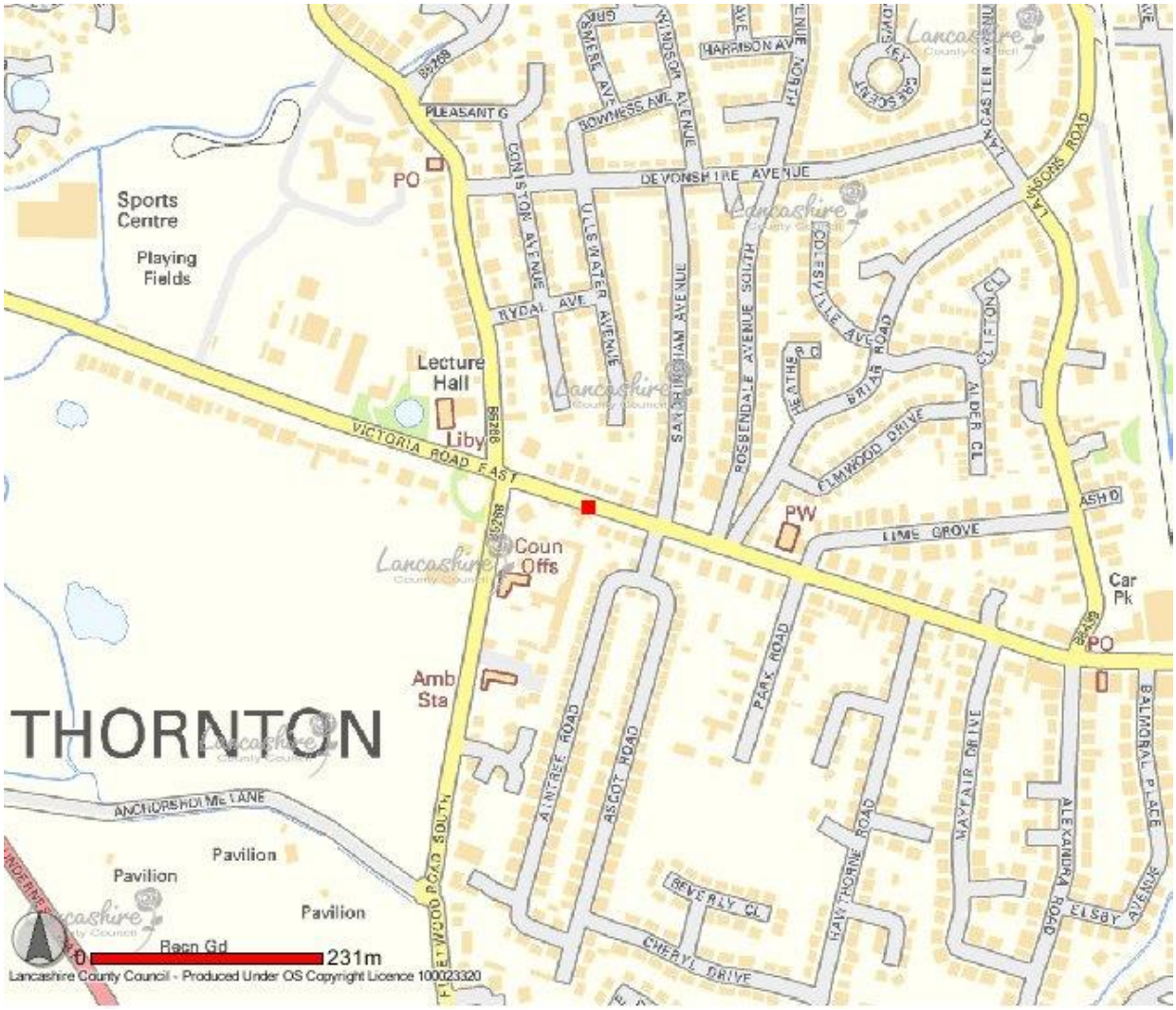
22 Poulton Street, Fleetwood, FY7 6LP

Grid Reference: (Easting) 333402, (Northing) 447778

Site L – Single Tube Site

153, Victoria Road East, Thornton-Cleveleys, FY5 5HH

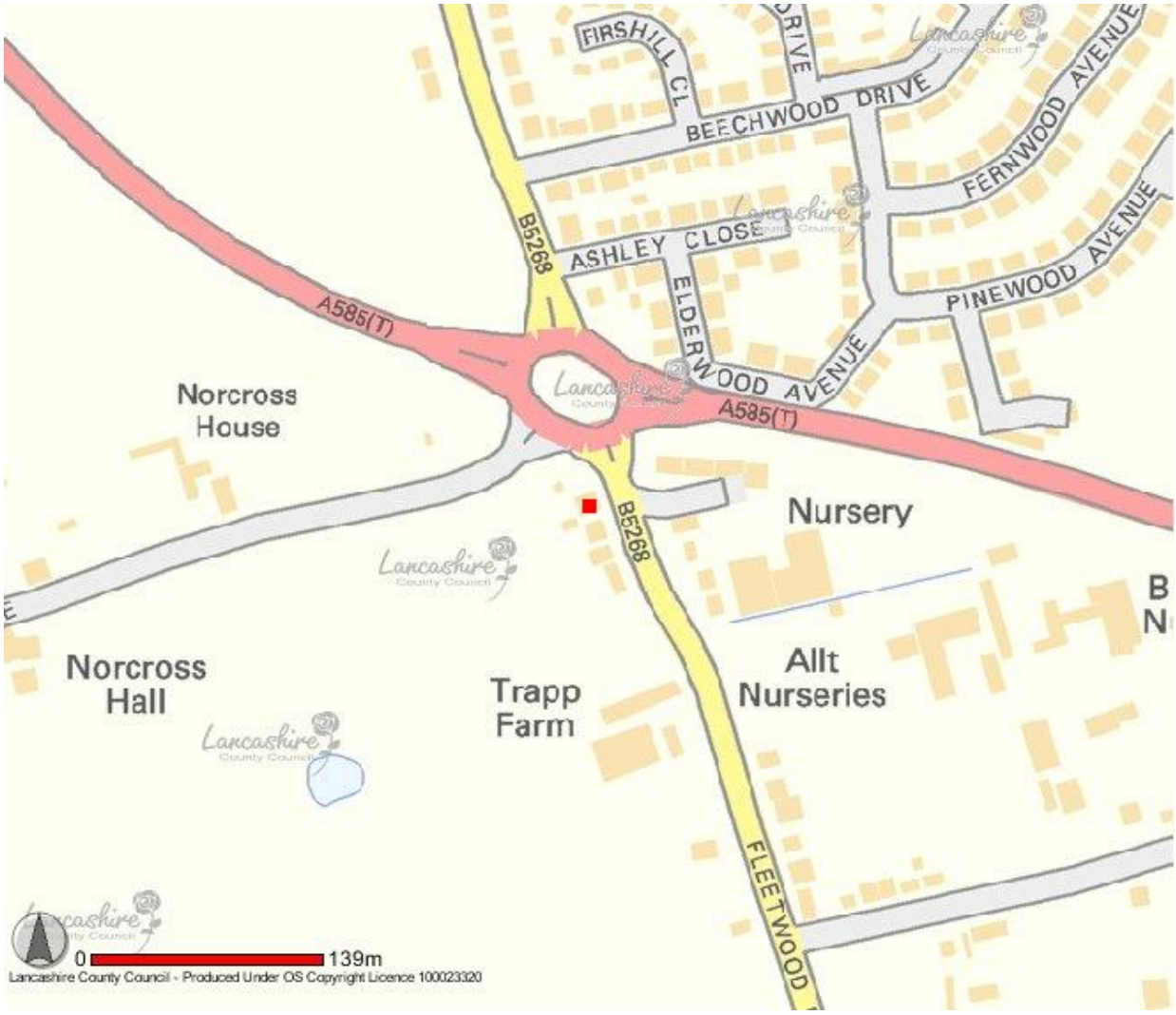
Grid Reference: (Easting) 333717, (Northing) 442185



Site M – Single Tube Site

200 Fleetwood Road South, Thornton-Cleveleys, FY5 5NR

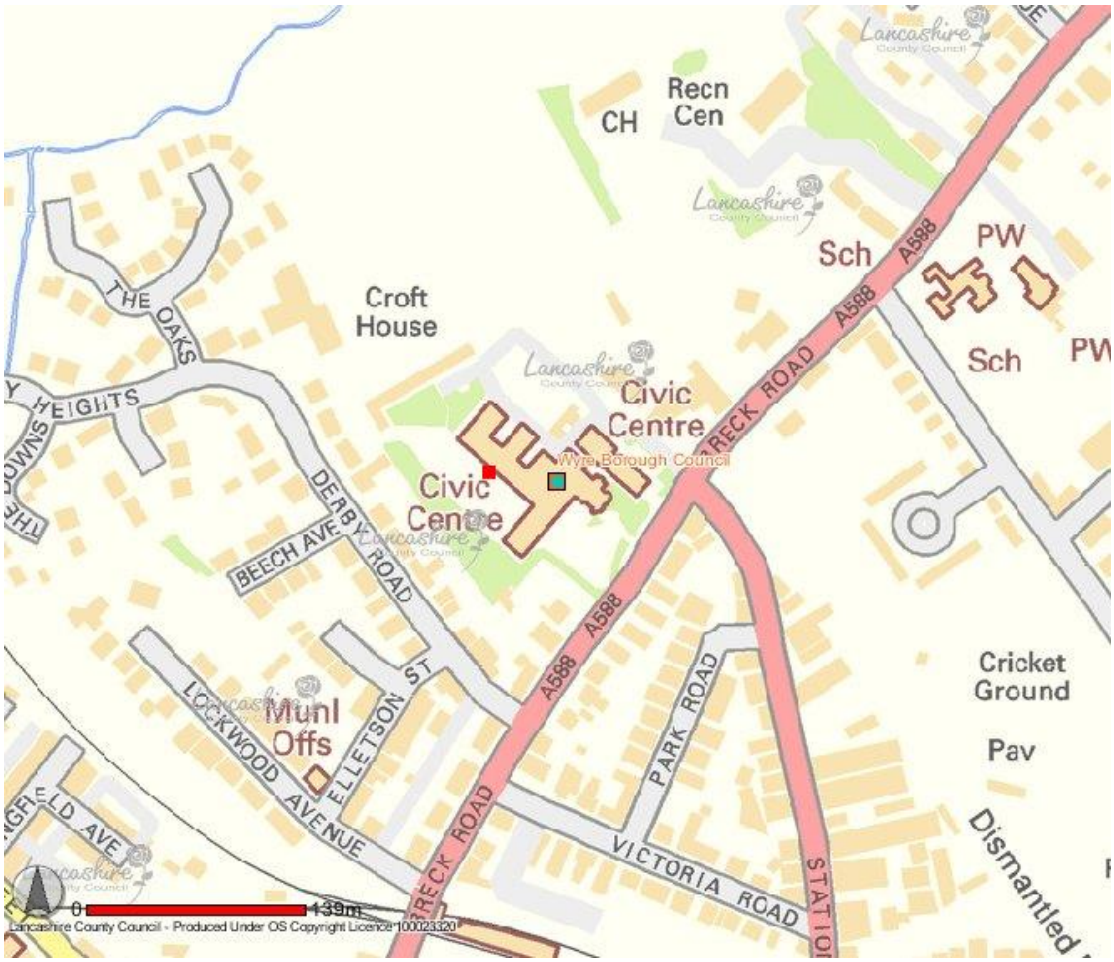
Grid Reference: (Easting) 333711, (Northing) 441308



Site U – Triplicate Site – Tubes U.1, U.2, U.3

Wyre Council, Breck Road, Poulton, FY6 7PU

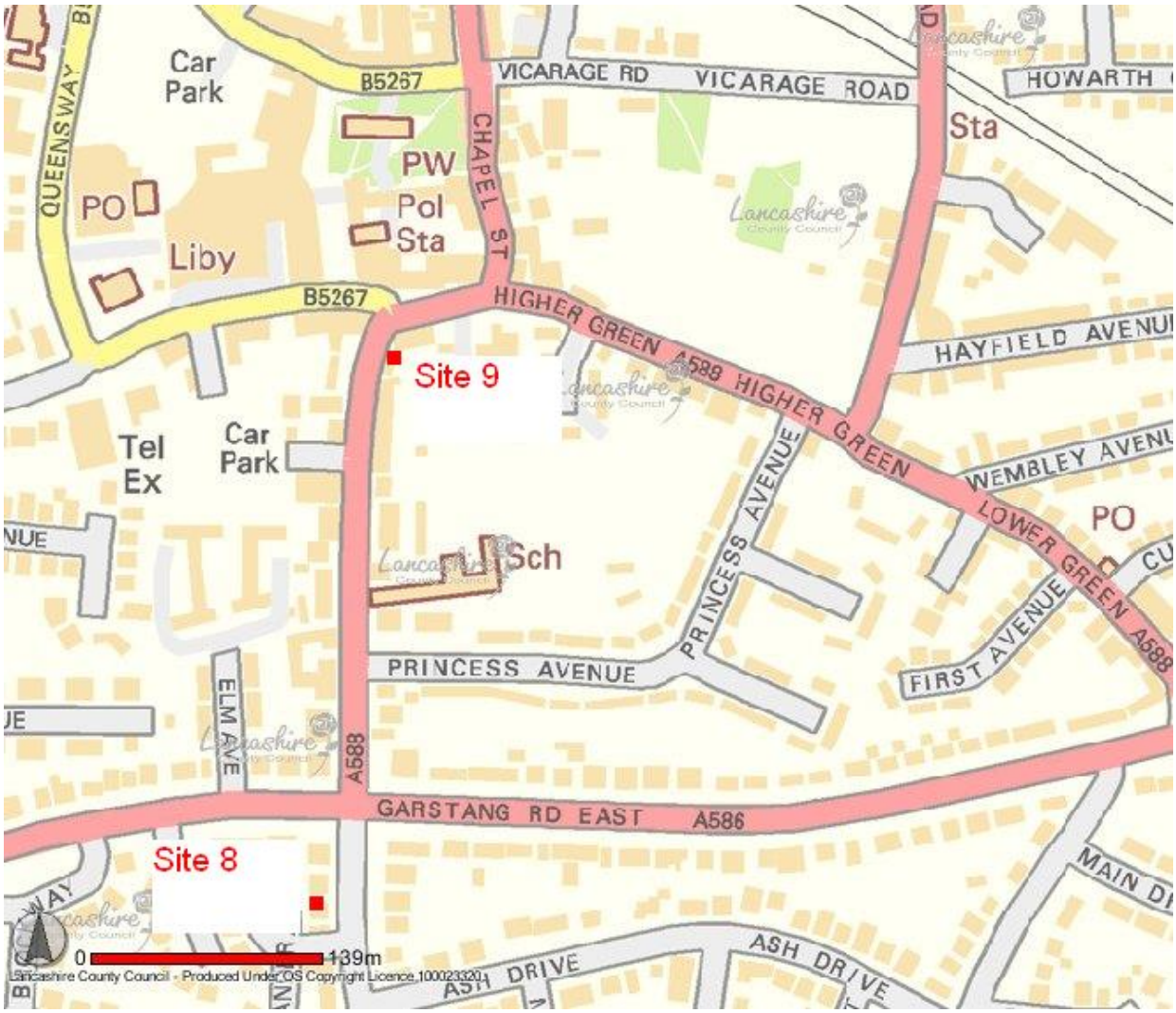
Grid Reference: (Easting) 334987, (Northing) 439868



Sites 8 & 9 – Single Tube Sites

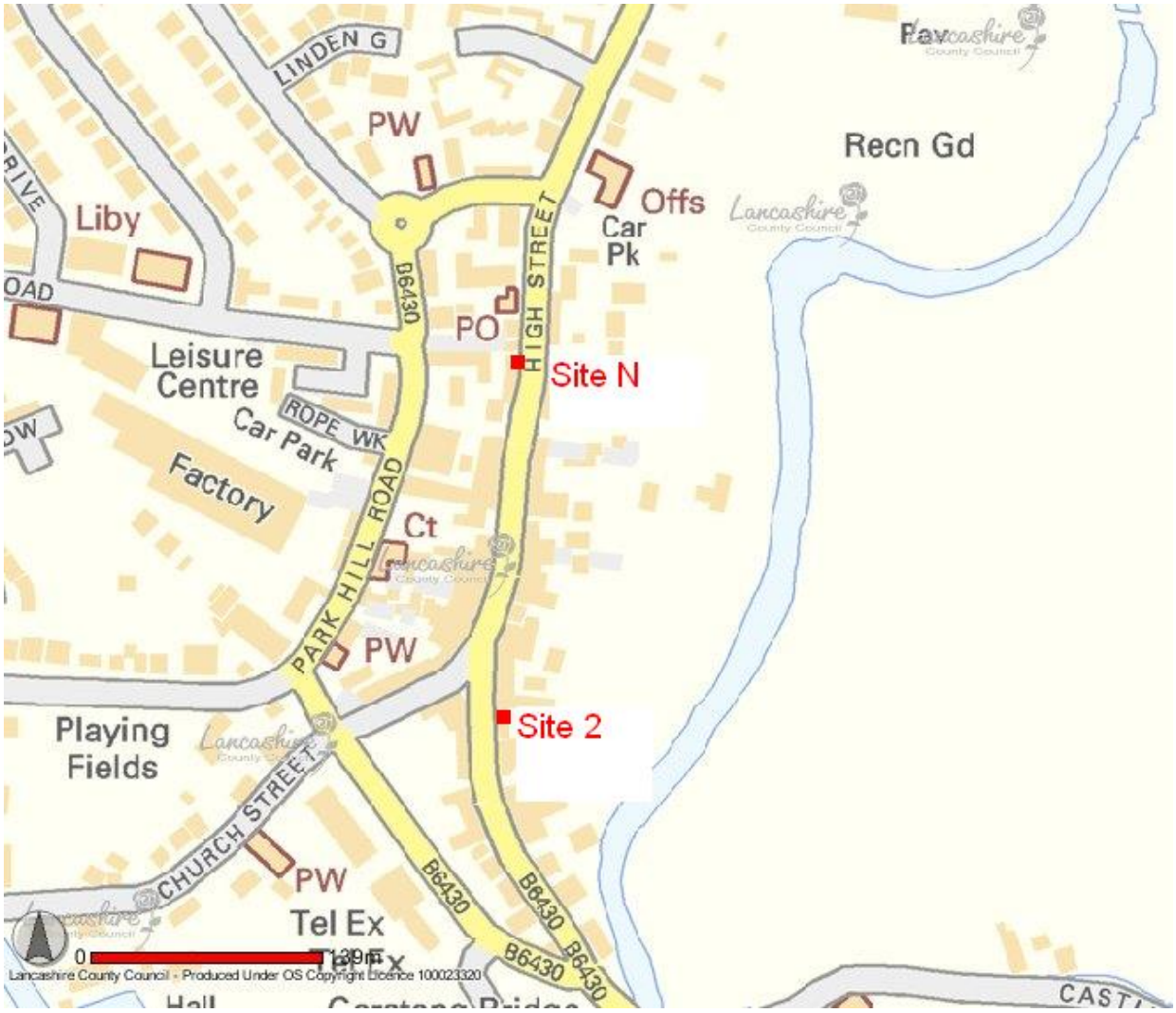
Site 8: 66, Hardhorn Road, Poulton, FY6 8AX – Grid Ref: (Easting) 334791 (Northing) 438990

Site 9: 1A, Hardhorn Road, Poulton, FY6 7WA – Grid Reference (Easting) 334836 (Northing) 439317



Site N - Single Tube Site

Site N: 43/44, High Street, Garstang, PR3 1EA: Grid Reference (Easting) 349237, (Northing) 445344



Sites R & S

Site R 1-3 - Triplicate Tube Site – Sites R.1, R.2, R.3

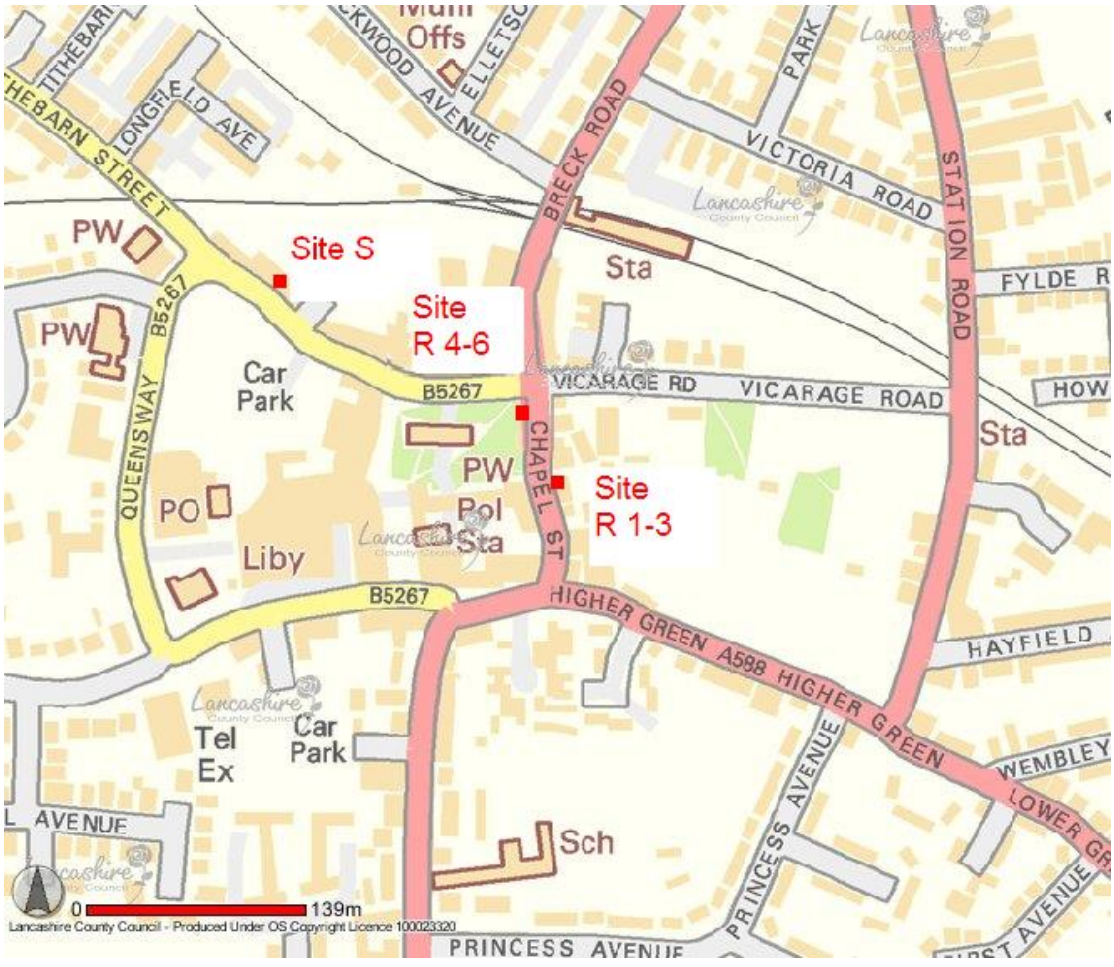
11/13, Chapel Street, Poulton, FY6 7BQ – Grid Reference (Easting) 334903, (Northing) 439425

Site R 4-6: - Triplicate Tube Site – Sites R.4, R.5, R.6

Chapel Street, Poulton – Grid Reference (Easting) 334887, (Northing) 439458

Site S: 36, Single Tube Site

Tithebarn Street, Poulton, FY6 7BX – Grid Reference (Easting) 334725, (Northing) 439550



Sites T & 7

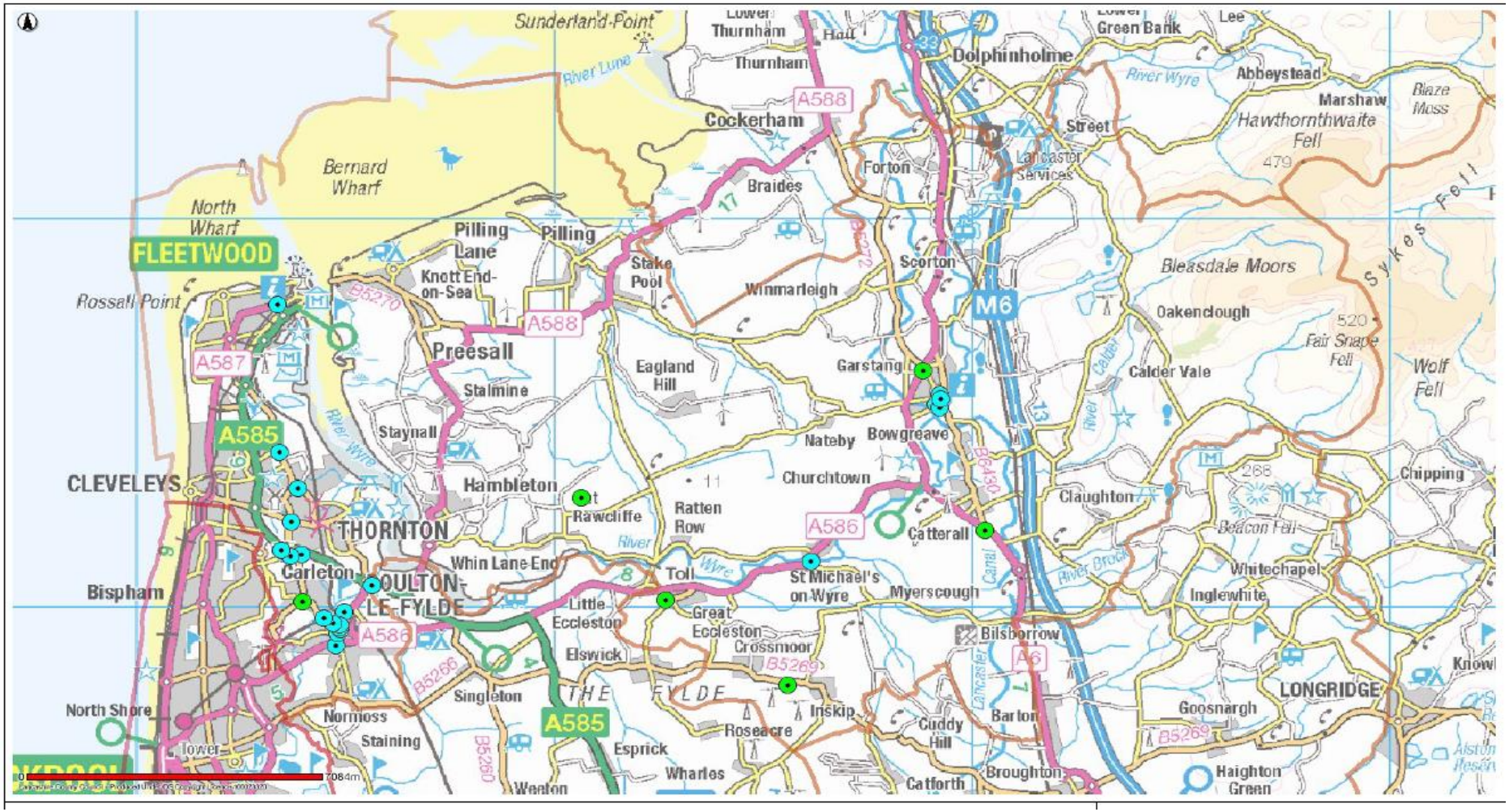
Site 7: Single Tube Site

168 Breck Road, Poulton, FY6 7JZ - Grid Reference (Easting) 335499, (Northing) 440467

Site T: Triplicate Tube Site – Tubes T.1, T.2, T.3

133 Breck Road, FY6 7HJ – Grid Reference (Easting) 335247, (Northing) 440095

Map of Monitoring Locations within the Wyre District

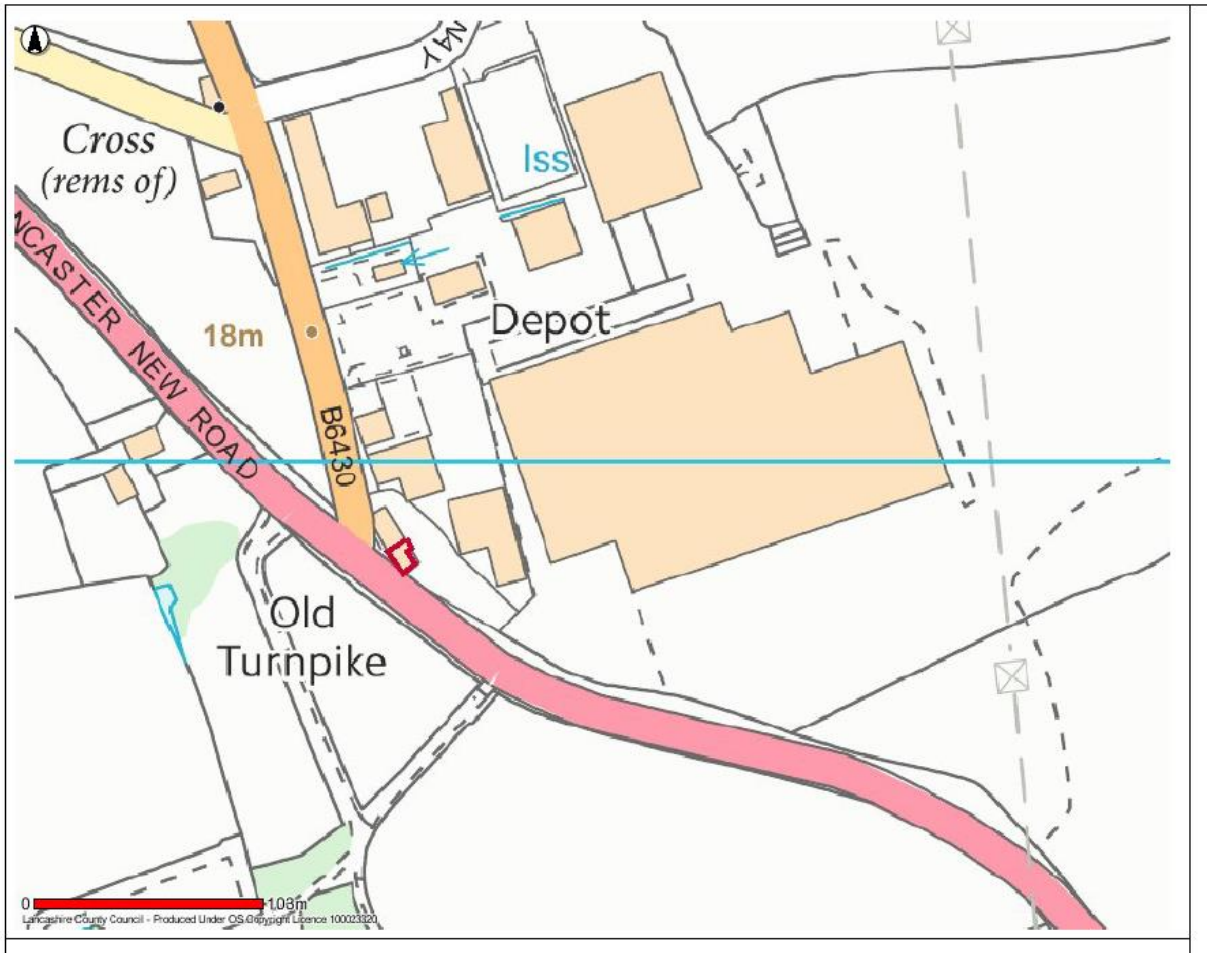


MAPS(S) OF TEMPORARY 'TEST' MONITORING LOCATIONS

Site 22 – Toll Bar Farm, Lancaster New Road, Cabus, PR3 0PH

Single Tube Site

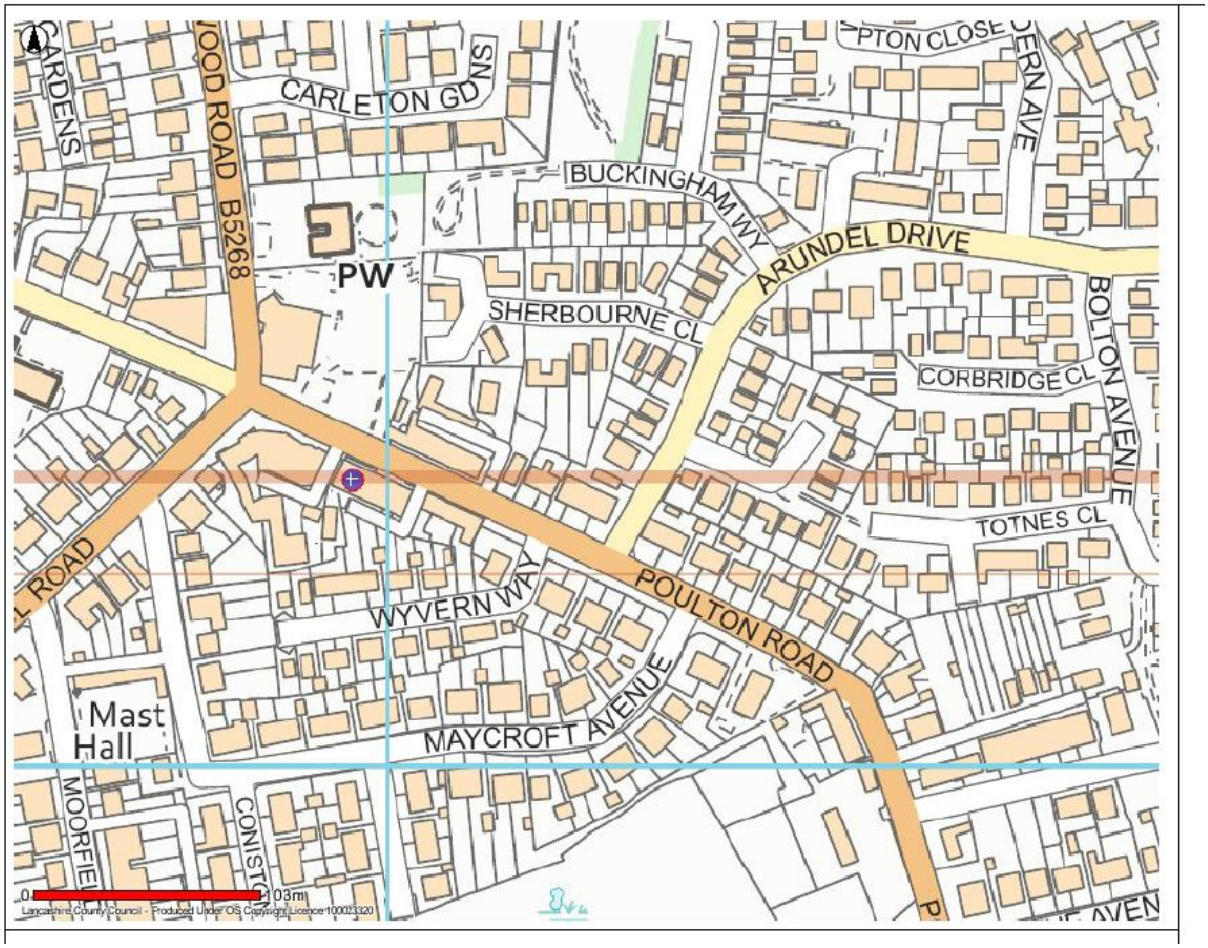
Grid Reference: (Easting) 350291, (Northing) 441973



Site 23 - 11 Poulton Road, Carleton, FY6 7NH

Single Tube Site

Grid Reference: (Easting) 333983, (Northing) 440130



Site 24 – 96 Croston Road Garstang, PR3 1HR

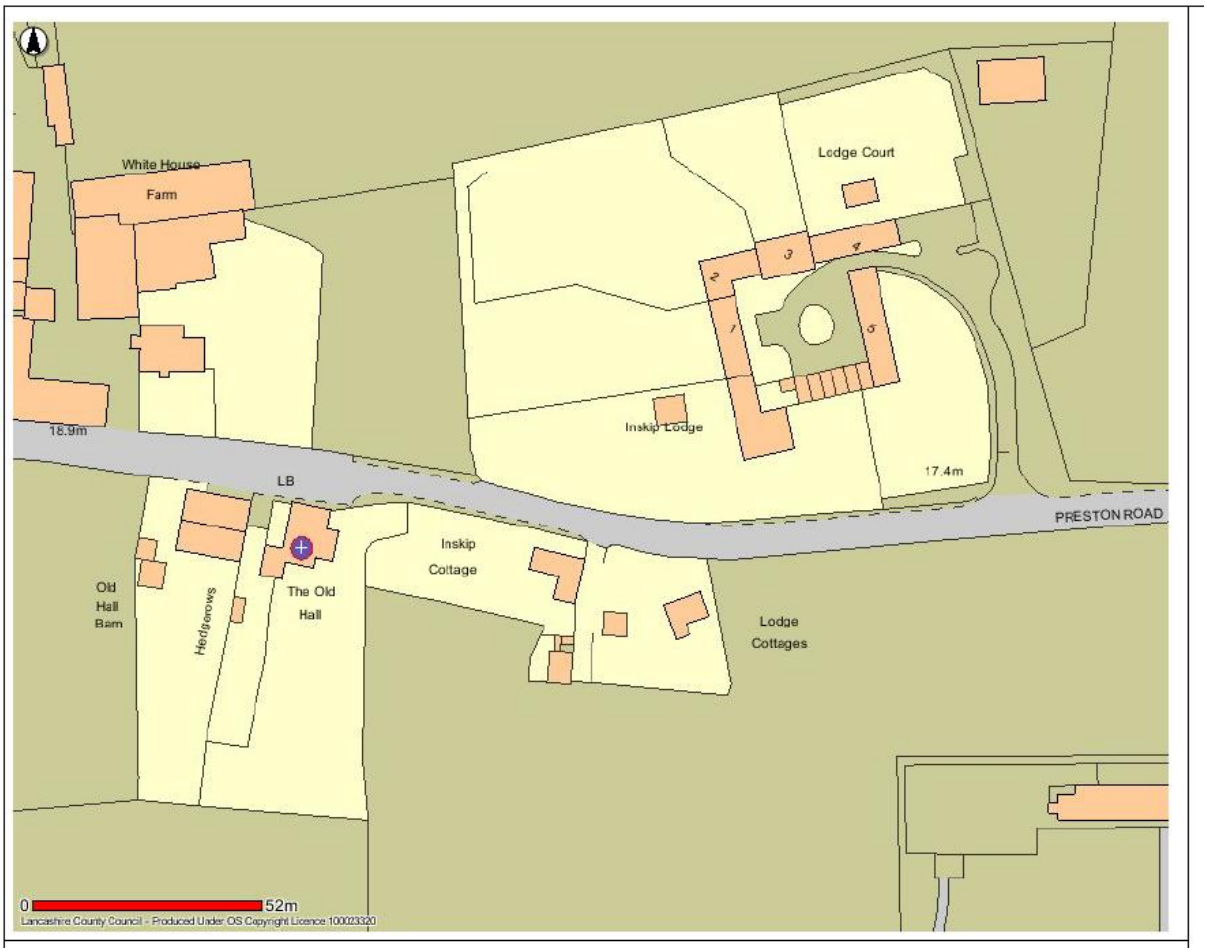
Single Tube Site

Grid Reference: (Easting) 348812, (Northing) 446070

Site 25 – Old Hall, Preston Road, Inskip, PR4 0TT

Single Tube Site

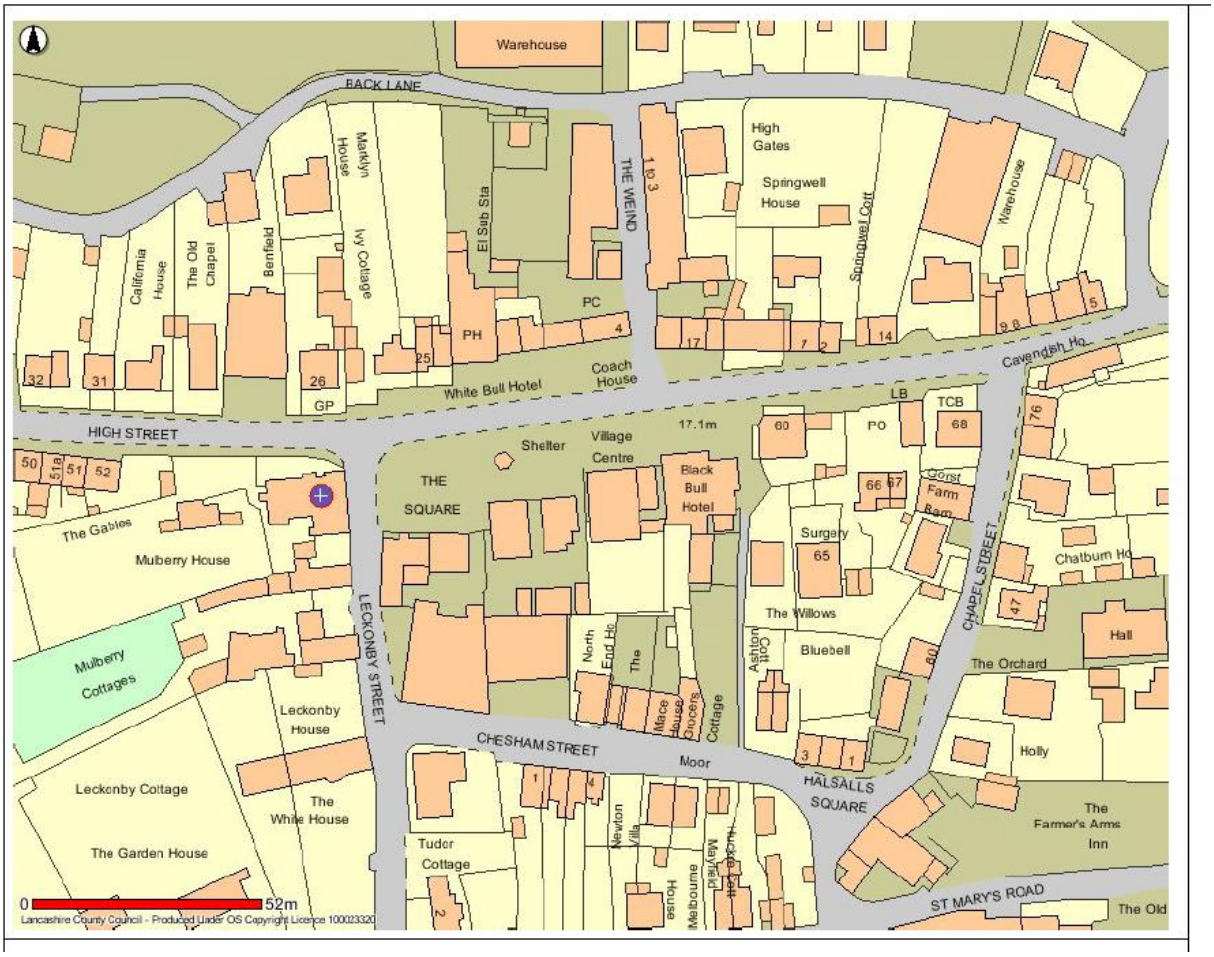
Grid Reference: (Easting) 345610, (Northing) 437979



Site 26 – Mulberry House, Leckonby Street, Great Eccleston, PR3 0ZD

Single Tube Site

Grid Reference: (Easting) 342668, (Northing) 440171



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[7]

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO_2)	200µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO_2)	40µg/m^3	Annual mean
Particulate Matter (PM_{10})	50µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM_{10})	40µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO_2)	125µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO_2)	266µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

[7] The units are in microgrammes of pollutant per cubic metre of air (µg/m^3).

Appendix F: Impact of COVID-19 upon LAQM

COVID-19 has had a significant impact on society. Inevitably, COVID-19 has also had an impact on the environment, with implications to air quality at local, regional and national scales.

COVID-19 has presented various challenges for Local Authorities with respect to undertaking their statutory LAQM duties in the 2021 reporting year. Recognising this, Defra provided various advice updates throughout 2020 to English authorities, particularly concerning the potential disruption to air quality monitoring programmes, implementation of Air Quality Action Plans (AQAPs) and LAQM statutory reporting requirements. Defra has also issued supplementary guidance for LAQM reporting in 2021 to assist local authorities in preparing their 2021 ASR. Where applicable, this advice has been followed.

Despite the challenges that the pandemic has given rise to, the events of 2020 have also provided Local Authorities with an opportunity to quantify the air quality impacts associated with wide-scale and extreme intervention, most notably in relation to emissions of air pollutants arising from road traffic. The vast majority (>95%) of AQMAs declared within the UK are related to road traffic emissions, where attainment of the annual mean objective for nitrogen dioxide (NO_2) is considered unlikely. On 23rd March 2020, the UK Government released official guidance advising all members of public to stay at home, with work-related travel only permitted when absolutely necessary. During this initial national lockdown (and to a lesser extent other national and regional lockdowns that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data[8] suggests reductions in vehicle traffic of up to 70% were experienced across the UK by mid-April, relative to pre COVID-19 levels.

This reduction in travel in turn gave rise to a change of air pollutant emissions associated with road traffic, i.e. nitrous oxides (NO_x), and exhaust and non-exhaust particulates (PM). The Air Quality Expert Group (AQEG)[9] has estimated that during the initial lockdown period in 2020, within urbanised areas of the UK reductions in NO_2 annual mean concentrations were between 20 and 30% relative to pre-pandemic levels, which

[8] Prime Minister's Office, COVID-19 briefing on the 31st of May 2020

[9] Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

represents an absolute reduction of between 10 to 20µg/m^3 if expressed relative to annual mean averages. During this period, changes in $PM_{2.5}$ concentrations were less marked than those of NO_2. $PM_{2.5}$ concentrations are affected by both local sources and the transport of pollution from wider regions, often from well beyond the UK. Through analysis of AURN monitoring data for 2018-2020, AQEG have detailed that $PM_{2.5}$ concentrations during the initial lockdown period are of the order 2 to 5µg/m^3 lower relative to those that would be expected under business-as-usual conditions.

As restrictions are gradually lifted, the challenge is to understand how these air quality improvements can benefit the long-term health of the population.

Impacts of COVID-19 on Air Quality within Wyre

Reductions of NO_2 concentrations of between 13.2% and 37.5% were seen at roadside diffusion tube monitoring sites within the council's only AQMA (Chapel Street) between March and April 2020, immediately following the commencement of the national lockdown and essential travel only rule. However this reduction was only very short lived, with an increase in concentration seen at both Site R1-3 and Site 4-6 (within the AQMA) within both May and June, albeit to levels still under those experienced just prior to the lock down commencement in March. July saw a further decline in concentrations, possibly as a result of the local restrictions imposed, however concentrations thereafter generally increased as the restrictions were relaxed.

Overall the 2020 monitoring results indicate a reduction in the annual mean NO_2 concentration within the AQMA of around 28% in comparison to the 2019 annual means, however given that the monthly results within the AQMA towards the end of the year were comparable and at times higher than in the period January – March, it is quite possible that any benefit gained as a result of the Covid-19 restrictions will be proven to be short-lived as more monitoring data becomes available.

Whilst the Covid-19 restrictions undoubtedly reduced the amount of traffic and congestion normally experienced within the locality of the AQMA, a reduction in NO_2 concentrations at Site R1-3 and Site R4-6 was also seen between 2018 and 2019. The contribution of the Covid-19 restrictions towards any improvement in local air quality is therefore currently unclear and only time will tell if the most recent reduction seen will be long lived. Add to this the fact that there has been no exceedance of the national objective for NO_2 within the

AQMA for eight consecutive years now, the impact of the Covid-19 restriction on the future of the council's only AQMA is not likely to be significant.

Opportunities Presented by COVID-19 upon LAQM within Wyre

Whilst the council has yet to implement any significant new measures as a result of the Covid-19 pandemic, it has seen a number of behavioural changes amongst its communities, not least it's business communities in terms of the way in which they continue to operate despite the COVID restrictions having been relaxed, particularly in terms of the continuation of the 'work from home' requirement. Indeed the council itself has taken the opportunity to utilise the information and experience gained from the 'stay at home' instruction enforced during the national lock down, to consider the introduction of a 'hybrid' working model for the majority of its staff, thereby enabling its employees to take advantage of the personal benefits gained from a combination of home and office working, whilst encouraging a continuation of the environmental benefits gained by a reduction in the number of vehicle journeys to and from work. The council has recently undertaken a consultation exercise with its staff to determine the feasibility of introducing a more long term hybrid working model, and will look to evidence any environmental improvements gained from an increase in home working on implementation.

The council is also currently looking to use the positive changes in perception and opinion towards air quality resulting from the national lockdown to consider possible changes in terms of the design and accessibility of its local high streets. Whilst the covid-19 pandemic was a challenging time for the majority of the population, it did give people the opportunity to see the benefits gained from a reduction in traffic and congestion, particularly in those areas where people reside or wish to spend time outdoors. The council is therefore looking to use the opportunity to consult with its communities as to how best to build on the positive impacts brought about by the pandemic, and ensure that any benefits gained are not lost. An example is in respects to the temporary traffic restrictions imposed on a number of its high streets during the pandemic in order to accommodate outdoor seating for its local cafes and eateries; something which many residents and businesses reported as a positive measure. The council will therefore look to embrace the current enthusiasm for change and build on the success of any short term measures implemented as a result of the pandemic, to enable the identification longer term measures which can be supported in future.

Challenges and Constraints Imposed by COVID-19 upon LAQM within Wyre

The council was fortunate in that any challenges or constraints on LAQM as a consequence of the Covid-19 pandemic have been minimal. The council was able to continue monitoring for air quality as normal throughout the 2020 reporting year, and experienced no disruption to the service provided by its analytical laboratory. The only challenges faced as a result of the restrictions imposed were therefore limited to the council's ability to progress its priority actions and report on its findings.

As detailed in Chapter 2.2 of the report (Progress and Impact of Measures to Address Air Quality), the council did experience a significant increase in workload as a result of the pandemic in a number of key departments responsible for progressing and implementing those measures identified as a priority within the 2020 ASR, and as such the intention to adopt and implement air quality planning guidance was not achieved in the original timescales set. The imposition of the Covid-19 'stay at home' requirement also created a barrier to the continuation of engagement with local business and schools, and thereby impacted on the council's ability to continue to educate on air quality issues, and to support its partners in doing so. Resource implications brought about by the pandemic also prevented the council from being able to compile both its 2020 and 2021 ASR on time.

Despite the challenges imposed by the Covid-19 pandemic, the council is fortunate to be in the position it is in as 2020 provides the eighth consecutive year in which NO_2 concentrations within the AQMA remain below the national objective. The impact of the pandemic has not therefore been critical to the future of the AQMA and the council will do all it can to ensure that it makes good progress in respects to all of its priority measures over the next 12 months and beyond.

A summary of the impact of the Covid-19 pandemic on the council LAQM duties is provided overleaf with reference to the Impact Matrix in Table F1.

Category	Impact Rating
Passive Monitoring – Data Capture (%)	More than 75% capture – No Impact
Passive Monitoring – Bias Adjustment Factor	Bias adjustment undertaken as normal – No Impact
Passive Monitoring – Adherence to Changeover Dates	Defra diffusion tube exposure calandar adhered to – No Impact
Passive Monitoring Storage of Tubes	Tubes stored for longer than normal but adhering to laboratory guidance – Small Impact
AQAP Measure Implementation	AQAP for Chapel Street AQMA complete and AQMA below objective levels – No Impact
Priority Measure Progress	Up to 12 months delay in respects to one priority action identified within the 2020 ASR. All other measures progressed albeit at a slower rate than intended. No measures critical to the AQMA. – Small to Medium Impact.

Table F 1 – Impact Matrix

Category	Impact Rating: None	Impact Rating: Small	Impact Rating: Medium	Impact Rating: Large
Automatic Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Automatic Monitoring – QA/QC Regime	Adherence to requirements as defined in LAQM.TG16	Routine calibrations taken place frequently but not to normal regime. Audits undertaken alongside service and maintenance programmes	Routine calibrations taken place infrequently and service and maintenance regimes adhered to. No audit achieved	Routine calibrations not undertaken within extended period (e.g. 3 to 4 months). Interruption to service and maintenance regime and no audit achieved
Passive Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Passive Monitoring – Bias Adjustment Factor	Bias adjustment undertaken as normal	<25% impact on normal number of available bias adjustment colocation studies (2020 vs 2019)	25-50% impact on normal number of available bias adjustment studies (2020 vs 2019)	>50% impact on normal number of available bias adjustment studies (2020 vs 2019) and/or applied bias adjustment factor studies not considered representative of local regime
Passive Monitoring – Adherence to Changeover Dates	Defra diffusion tube exposure calendar adhered to	Tubes left out for two exposure periods	Tubes left out for three exposure periods	Tubes left out for more than three exposure periods
Passive Monitoring – Storage of Tubes	Tubes stored in accordance with laboratory guidance and analysed promptly.	Tubes stored for longer than normal but adhering to laboratory guidance	Tubes unable to be stored according to be laboratory guidance but	Tubes stored for so long that they were unable to be analysed prior to expiry date.

Category	Impact Rating: None	Impact Rating: Small	Impact Rating: Medium	Impact Rating: Large
			analysed prior to expiry date	Data unable to be used
AQAP – Measure Implementation	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP
AQAP – New AQAP Development	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP

Glossary of Terms

Abbreviation	Description
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
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide
LCC	Lancashire County Council
OLEV / OZEV	Office for Zero Emission Vehicles

References

- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.