2019 Air Quality Annual Status Report (ASR)

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

Date: September 2019
<table>
<thead>
<tr>
<th>Local Authority Officer</th>
<th>Blackburn with Darwen Borough Council</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department</td>
<td>Environment and Operations</td>
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<td>Report Reference number</td>
<td>ASR2019</td>
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<td>Date</td>
<td>September 2019</td>
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</table>
Executive Summary: Air Quality in Our Area

Air Quality in the Borough of Blackburn with Darwen

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

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion\(^3\).

There are four Air Quality Management Areas (AQMAs) in the Borough. They were declared because nitrogen dioxide levels were too high. These AQMAs are located at busy urban junctions where nearby buildings hinder the dispersion of traffic exhaust fumes:

- Intack
- Bastwell
- Blackamoor
- Four Lane Ends

In general terms, there has been a gradual reduction in nitrogen dioxide exposure, and this reduction became more significant from 2017 onwards. There hasn't been an exceedance at a relevant receptor\(^4\) during 2017 and 2018. Information relating to these AQMAs is included in this report and can also be found on the [Defra AQMA website](#).

The results of nitrogen dioxide monitoring elsewhere in the Borough are also encouraging. No exceedances have been identified in 2017 and 2018, including at four former AQMAs.

There are no exceedances of other national objectives.

---

1. Environmental equity, air quality, socioeconomic status and respiratory health, 2010
2. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
3. Defra. Abatement cost guidance for valuing changes in air quality, May 2013
4. Relevant receptors for annual mean exposure are locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes etc. Excluding places or work, gardens and kerbside locations
Actions to Improve Air Quality

Some measures reported in this Annual Status Reports and preceding reports have required major investment, such as:

- the £40million Pennine Reach project to improve bus services on specific routes;
- the £20 million improvements to the Manchester/Clitheroe train line;
- a new junction on the A678 at Furthergate, which reroutes traffic from an AQMA which has since been revoked; and
- new intelligent traffic lights systems and junction modifications at several AQMAs

Changes are also being implemented at a national level, and as time marches on older more polluting road vehicles are being replaced.

Action has been taken, and it is good to be able to report that there haven’t been any exceedances of a national objective in our Borough since 2016. However, we can’t be complacent, as circumstances may change, and compliance with the national objectives isn’t enough. The Council must seek to reduce pollution where it is feasible to do so, in pursuit of better health outcomes.

Measures to be implemented include:

- Physical changes to the road infrastructure:
  - A new link road that will remove traffic from one busy arm of a junction in the middle of the Blackamoor AQMA, which is part of a £13million Growth Deal 3 funded project.
  - A new intelligent traffic light system at the Four Lane Ends AQMA, with £70k of funding from Blackburn with Darwen Council, Lancashire County Council and the Department of Transport. The system will sense traffic and adjust the sequencing of the lights to minimise congestion, thereby reducing emissions.

- More electric vehicle charging points in public places, and virtually all new housing and commercial developments in the Borough now incorporate electric vehicle charging facilities, in accordance with the Council’s Air Quality Planning Advisory Note.
Blackburn with Darwen Borough Council

- Projects to make public transport and shared car use more attractive – These include new quality bus shelters, car sharing clubs, personal travel planning and extra spurs for the 26km Weavers Wheel cycle route.

- Cycling and walking initiatives to encourage active travel:
  - Health Walks
  - Adult cycle training
  - Bike hire
  - Bike maintenance
  - Led rides
  - Weekly Ride the Park events

Conclusions and Priorities

It is encouraging to report that three more of the Borough’s Air Quality Management Areas (AQMAs) have been revoked since the last ASR was published, and that there hasn’t been an exceedance of a relevant air quality objective in the Borough during 2017 and 2018. However, the Council won’t be revoking the four remaining AQMAs until it is evident that the recent improvement has become a lasting trend (5 years or more).

The Council will press on with schemes to bring about further improvements at the Blackamoor and Four Lane Ends AQMAs.

The situation is not as straightforward at the Intack and Bastwell AQMAs, as the current action plans have run their course. The Council therefore intends to await the outcome of monitoring over the next year or two to see if the significant recent improvement in air quality are short lived or a more long term trend. Resources are limited and we must prioritise so that effort is directed to where it is needed most.

The Council’s priorities are therefore similar to those identified in the 2018 ASR.

1. **Blackamoor AQMA (No.6)** – Work is due to start in early 2020 with a programmed completion by the end of March 2021.

2. **Four Lane Ends AQMA (No.7)** – To commence work on the installation of a new intelligent traffic management system during 2019.
3. **Intack and Bastwell AQMAs (No. 1 and No.2)** – The Action Plans for these two AQMAs have run their course. These plans will be revised if monitoring identifies a deterioration in air quality in subsequent years.

4. **Monitoring** - To continue to monitor nitrogen dioxide levels in the Borough, including:
   - In existing AQMAs
   - At revoked AQMAs, to check that the air quality doesn’t deteriorate
   - At potential pollution hotspots, including the two locations that were subject to recent detailed assessments (the Toll Bar junction on Accrington Road and the Moorgate/Livesey Branch Road junction)

**Local Engagement and How to Get Involved**

There are lots of ways in which we can do something.
For more information click on the links below:

- Car sharing
- Finding electric vehicle charging points
- Electric vehicles – government grants
- Vehicles eligible for the Electric Vehicle Homecharge Scheme

Household Waste Disposal Centres

- Bulky Item Collection
- Garden fires - Advice
- Stove and fireplace information
- Smoke Control Areas
- Energy advice
- Grants to save energy
Interested in alternatives to car travel? Go to bwdconnect.org.uk for information on travelling by bus, train, car sharing, cycling and walking. Save money, keep fit, help lower carbon and pollution emissions, and you might even have some fun. There are loads of ideas for those journeys that you have to make, and for leisure activities too.

The number of public charging points are increasing

Find local charging points at Zap-map.com
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1 Local Air Quality Management

This report provides an overview of air quality in the Borough of Blackburn with Darwen during 2018. 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 Blackburn with Darwen Borough Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England can be found in Table E.1 in Appendix E.
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 must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMAs declared by Blackburn with Darwen Borough Council can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at:

https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=20

See full list at https://uk-air.defra.gov.uk/aqma/list.

Alternatively, see Appendix D: Map(s) of Monitoring Locations and AQMAs.
### Table 2.1 – Declared Air Quality Management Areas

<table>
<thead>
<tr>
<th>AQMA Name</th>
<th>Date of Declaration</th>
<th>Pollutants and Air Quality Objectives</th>
<th>City / Town</th>
<th>One Line Description</th>
<th>Is air quality in the AQMA influenced by roads controlled by Highways England?</th>
<th>Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)</th>
<th>Action Plan</th>
<th>Date of Publication</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQMA 1 - Intack</td>
<td>Declared 13/11/2005</td>
<td>NO₂ Annual Mean</td>
<td>Blackburn</td>
<td>An area encompassing a number of properties at the junction of Accrington Rd / Shadsworth Rd / Whitebirk Rd</td>
<td>NO</td>
<td>NO 46 µg/m³ 32 µg/m³</td>
<td>Air Quality Action Plans Progress Report</td>
<td>2010</td>
<td><a href="http://laqm.defra.gov.uk/documents/2010_Action_Plan_Update.pdf">http://laqm.defra.gov.uk/documents/2010_Action_Plan_Update.pdf</a></td>
</tr>
<tr>
<td>AQMA 2 - Bastwell</td>
<td>Declared 13/11/2005</td>
<td>NO₂ Annual Mean</td>
<td>Blackburn</td>
<td>An area encompassing a number of properties at the junction of Whalley New Road / Whalley Range / Plane St</td>
<td>NO</td>
<td>NO 43 µg/m³ 30 µg/m³</td>
<td>Air Quality Action Plans Progress Report</td>
<td>2010</td>
<td><a href="http://laqm.defra.gov.uk/documents/2010_Action_Plan_Update.pdf">http://laqm.defra.gov.uk/documents/2010_Action_Plan_Update.pdf</a></td>
</tr>
<tr>
<td>AQMA 6 - Blackamoor</td>
<td>Declared 1/2/2012</td>
<td>NO₂ Annual Mean</td>
<td>Blackburn</td>
<td>An area encompassing a number of properties at the junction of Roman Road &amp; B6231</td>
<td>NO</td>
<td>NO 40 µg/m³ 34 µg/m³</td>
<td>Action Plan not finalised, but details of new link road included in LTP2</td>
<td>n/a</td>
<td>-</td>
</tr>
<tr>
<td>AQMA 7 - Four Lane Ends</td>
<td>Declared 1/2/2012</td>
<td>NO₂ Annual Mean</td>
<td>Blackburn</td>
<td>An area encompassing a number of properties at the junction of B6233, Revidge Rd &amp; Lammack Rd</td>
<td>NO</td>
<td>NO 44 µg/m³ 17 µg/m³</td>
<td>Draft action Plan not finalised</td>
<td>n/a</td>
<td>-</td>
</tr>
</tbody>
</table>

Copies of 2019 revocation orders have been submitted to the RSW website. UK-Air website has yet to be updated to reflect the recent revocations.
2.2 Progress and Impact of Measures to address Air Quality in the Borough of Blackburn with Darwen

Defra’s appraisal of last year’s Annual Status Report concluded that, “…the conclusions reached [in the report] are acceptable for all sources and pollutants…” and, “The Council should continue to implement their air quality strategy, and continue monitoring.”

Blackburn with Darwen Borough Council has taken forward a number of direct measures during the current reporting year of 2018 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

The Council’s 2018 Annual Status Report identified five priorities for 2018:

1. Blackamoor AQMA (No.6) – To commence work on the construction of the new link road during 2019. It will take an estimated 9 months to complete.

   What has happened? – Plans were finalised following a consultation and a planning application will be submitted for the new link road later in 2019, with a March 2021 completion date. One arm of what is currently a busy four arm crossroads at heart of AQMA will become a dead-end, thereby reducing congestion

2. Four Lane Ends AQMA (No.7) – To commence work on the installation of a new intelligent traffic management system in 2019. The Council will also work with the St Mary’s school to reduce reliance on private car journeys to school.

   What has happened? - £70,000 has been secured for the work and the intelligent traffic light system has been purchased for installation in 2019. The system will sense traffic and adjust the sequencing of the lights to minimise congestion, thereby reducing emissions. Work with the school hasn’t taken place due to limited resources.

3. Intack and Bastwell AQMAs (No.1 and 2) – The Action Plans for these two AQMAs had run their course and was to be reviewed 2018/2019.

   What has happened? – The decision to review the Action Plans was based on a worst case assumption that the significant improvement observed in 2017 would be short-lived. However, 2018 has been another good year. There hasn’t been an
exceedance at these locations for a second year running. The decision to invest significant time and money in a new action plan has been postponed. This review will take place if the situation deteriorates. Resources are limited and they have to be prioritised.

4. To continue to monitoring NO$_2$ levels in the Borough, including:
   a. In existing AQMAs
      What has happened? – There have been no exceedances of the objective during 2018
   b. At revoked AQMAs, to see if the anticipated improvement is maintained
      What has happened? – There have been no exceedances of the objective during 2018
   c. At potential pollution hotspots, including the two locations that were subject to recent detailed assessments
      What has happened? - There have been no exceedances of the objective during 2018

5. To deliver the Department of Transport’s Access Fund project “CONNECTING East Lancashire” - we will work with businesses, educational establishments, residents and commuters in relation to raising the awareness of travel options and the choices available, in addition to delivering interventions that address specific barriers to active travel.

What has happened? There have been a variety of walking and cycling initiatives. See Table 2.2 for more information. Lovetoride.net has been encouraging people living and working in the Borough to cycle. Various events have been organised including:

- The Weavers Wheel Cycle Fest
- The Active Sustainability Roadshow
- Ride the Park
- Fresh Air at Witton Festival
- The Big Bike Revival at Darwen Aldridge Academy
Blackburn with Darwen Borough Council’s priorities for the coming year are to implement improvements to the Blackamoor and Four Lane Ends AQMAs. It is expected that the following measures will be implemented:

- **Blackamoor AQMA (No.6)** – Work is due to start in early 2020 with a programmed completion by the end of March 2021.
- **Four Lane Ends AQMA (No.7)** – To complete the installation of a new intelligent traffic management system in 2019.

The principal challenges and barriers to implementation facing the Council haven’t changed since 2017:

1. Our AQMAs are at busy urban junctions where emissions from slow moving vehicles are trapped by nearby buildings and the surrounding topography. This is particularly true for AQMA 7 at Four Lane Ends. The tightly formed Victorian streetscape can make it difficult to implement changes to physical infrastructure (e.g. changing road layouts).
2. Limited financial resources.
3. Relative to other more affluent areas, the profit made from developing land in our Borough is not particularly high. As a consequence, expensive mitigation options are less likely to be implemented.

For the last two years (2017 & 2018) there hasn’t been an exceedance at any of the AQMAs in the borough. Further monitoring in future years will reveal whether this is a short-lived improvement or part of a lasting trend.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, the Council anticipates that further additional measures not yet prescribed may be required in subsequent years to achieve compliance and enable the revocation of AQMA No.1 at Intack, AQMA No. 2 at Bastwell, and AQMA No.7 at Four Lane Ends.

Blackburn with Darwen Borough Council anticipates that the measures stated above and in Table 2.2 will secure long-term compliance in AQMA No. 6 at Blackamoor.
<table>
<thead>
<tr>
<th>Measure No.</th>
<th>Measure</th>
<th>EU Category</th>
<th>EU Classification</th>
<th>Organisations involved and Funding Source</th>
<th>Planning Phase</th>
<th>Implementation Phase</th>
<th>Key Performance Indicator</th>
<th>Reduction in Pollutant / Emission from Measure</th>
<th>Progress to Date</th>
<th>Estimated / Actual Completion Date</th>
<th>Comments / Barriers to implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Link Road, Blackamoor</td>
<td>Transport Planning and Infrastructure</td>
<td>Other</td>
<td>Funding secures as part of Growth Deal 3 “Penneine Gateways” project, investing £13m in transport infrastructure across the Borough until March 2021. Planning application to be submitted 2019</td>
<td>works to commence early 2020</td>
<td>Reduction in NO₂ below annual objective</td>
<td>No estimate available at present</td>
<td>Included in Adopted Local Plan 2. Public consultation ended, planning application to be submitted 2019</td>
<td>Completion by the end of March 2021.</td>
<td>One arm of a busy 4 arm crossroads at heart of AQMA will become a dead-end, thereby reducing congestion</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Pennine Reach</td>
<td>Transport Planning and Infrastructure</td>
<td>Bus route improvements</td>
<td>£40m - BwDBC &amp; Lancashire county Council, DfT Funding</td>
<td>2015</td>
<td>2015/16</td>
<td>Findings of provisional report include: • Bus punctuality in the borough up 12% from 2015/16 to 2016/17 • YTD passenger growth up 12% on Accrington-Blackburn (route 6 &amp; 7) buses • AQMA revoked due to relocation of A678/679 junction • Better bus journey times on some routes • Positive feedback for Blackburn and Accrington bus stations. 87% of customers preferring improved new stations, 38% of customers use them more</td>
<td>0.02</td>
<td>Completed</td>
<td>Completed August 2017</td>
<td>Monitoring and Evaluation Report completed and submitted to Defra. Awaiting agreement with DfT.</td>
</tr>
<tr>
<td>3</td>
<td>Maximise Signal Efficiency</td>
<td>Traffic Management</td>
<td>Other</td>
<td>£70k for Four Lane Ends - BwDBC</td>
<td>2015/16</td>
<td>Initially 2016/17, but put back to 2018/19</td>
<td>New signal system at Blackamoor and Four Lane Ends</td>
<td>No estimate available</td>
<td>Blackamoor completed. Four Lane Ends system purchased</td>
<td>Four Lane Ends signal upgrade 2019</td>
<td>New Blackamoor road layout anticipated, so spend on evaluation not appropriate. Pleckgate system upgrade had been delayed because of...</td>
</tr>
<tr>
<td>4</td>
<td>Development Control</td>
<td>Policy Guidance and Development Control</td>
<td>Air Quality Planning and Policy Guidance</td>
<td>BwDBC</td>
<td>2016/17</td>
<td>2017/18</td>
<td>Implementation of Supplementary Planning Document - since amended</td>
<td>No estimate available</td>
<td>Planning Advisory Note completed and in use</td>
<td>July 2018</td>
<td>limited resources, but funding now secured</td>
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</tr>
<tr>
<td>5</td>
<td>Control of Bonfire and Chimney Emissions</td>
<td>Other</td>
<td>Other</td>
<td>BwDBC</td>
<td>Not applicable</td>
<td>Ongoing</td>
<td>Compliance with legislation and good practice</td>
<td>No estimate available</td>
<td>Responded to 130 service requests</td>
<td>Ongoing</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Control of Industrial Emissions</td>
<td>Environmental Permits</td>
<td>Other measure through permit systems and economic instruments</td>
<td>BwDBC, Local Industry</td>
<td>Not applicable</td>
<td>Ongoing</td>
<td>Compliance with Defra inspection regime</td>
<td>BAT - not quantified</td>
<td>All installations inspected in accordance with Defra regime</td>
<td>Ongoing</td>
<td></td>
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<tr>
<td>7</td>
<td>Car Sharing - Shared wheels and relaunch of Royal Blackburn Hospital car share website</td>
<td>Alternatives to private vehicle use</td>
<td>Car Clubs</td>
<td>Lancashire Authorities, 2yrs of DfT Access Fund</td>
<td>Completed</td>
<td>Ongoing</td>
<td>Number of members</td>
<td>No estimate available</td>
<td>152 Blackburn with Darwen members</td>
<td>Ongoing</td>
<td>Funding</td>
</tr>
<tr>
<td>8</td>
<td>Weaver’s Wheel - 26km cycle track route encircling Blackburn</td>
<td>Alternatives to private vehicle use</td>
<td>Other</td>
<td>BwDBC, 2015/19 £600k earmarked. Additional £50 2018/19 &amp; 19/20 for network improvements, maintenance £30k per year</td>
<td>2014/15</td>
<td>2016-2019</td>
<td>26km of cycle track completed</td>
<td>No estimate available</td>
<td>Completed 2017. Extra spurs now being added over 3 years to 2021</td>
<td>2019, additional spurs completed 2021</td>
<td>Potential new spurs being identified, e.g. in Milking Lane area</td>
</tr>
<tr>
<td>No.</td>
<td>Category</td>
<td>Description</td>
<td>BwDBC/Other</td>
<td>Start Year</td>
<td>Duration</td>
<td>Participants</td>
<td>Number of participants</td>
<td>Notes</td>
<td></td>
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<tr>
<td>9</td>
<td>Cycling events / training / bike hire</td>
<td>Alteratives to private vehicle use</td>
<td>BwDBC</td>
<td>2014/15</td>
<td>2015 onwards</td>
<td>No estimate available</td>
<td>26 Adult learn to ride, 23 Children learn to ride, 33 Balanceability, 64 Pedal around the park, 610 Hired bikes</td>
<td>2020</td>
<td>Active travel promotion is an established part of Public Health improvement initiatives and is embedded within the Health and Well-being Strategy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Personal travel Planning</td>
<td>Promoting Travel Alternatives</td>
<td>BwDBC, Hospital</td>
<td>2014/15</td>
<td>Ongoing</td>
<td>No estimate available</td>
<td>3453 personal travel plans produced 2016/17, 142 plans in 2018/19</td>
<td>2020</td>
<td>New reporting criteria have been adopted. Figures for new 2018/19 PTPs are those requested by clients, whereas previous figures included proactive plans distributed on &quot;opt out&quot; basis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Walking Initiatives</td>
<td>Promoting Travel Alternatives</td>
<td>BWDBC</td>
<td>ongoing</td>
<td>ongoing</td>
<td>Number of participants</td>
<td>Health Walk participants (including volunteer led) - 1596</td>
<td>ongoing</td>
<td>Active travel promotion is an established part of Public Health improvement initiatives and is embedded within the Health and Well-being Strategy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>School travel plans at St Marys college and Pleckgate City Learning Centre</td>
<td>Promoting Travel Alternatives</td>
<td>BwDBC, School</td>
<td>Ongoing</td>
<td>2019/20</td>
<td>To be confirmed</td>
<td>None</td>
<td>2019/20</td>
<td>Lack of progress to date due to lack of funding for travel planning</td>
<td></td>
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<tr>
<td>13</td>
<td>Quality Bus Shelters</td>
<td>Transport Planning and Infrastructure</td>
<td>£290k - BwDBC</td>
<td>2018</td>
<td>3yrs to 2021</td>
<td>Completed quality bus shelters</td>
<td>No estimate available</td>
<td>Ongoing</td>
<td>2020/21</td>
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Note: BwDBC = Blackburn with Darwen Borough Council
<table>
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<tr>
<th></th>
<th>Description</th>
<th>Category</th>
<th>Organisation</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Impact</th>
<th>Evidence</th>
<th>Progress</th>
<th>Year</th>
<th>Notes</th>
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<tr>
<td>14</td>
<td>Parking Restrictions - Four Lane Ends Junction</td>
<td>Traffic Management</td>
<td>BwDBC</td>
<td>2016/17</td>
<td>2018/18</td>
<td>Less congestion</td>
<td>No estimate available</td>
<td>No progress</td>
<td>2019</td>
<td>Likely to be small scale amendments to restrictions in vicinity of lights</td>
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<td>Bus Stop Relocation</td>
<td>Traffic Management</td>
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<td>Withdrawn from action plan</td>
<td>Withdrawn from action plan</td>
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<td>16</td>
<td>Formal Right Turn on Shear Brow</td>
<td>Workplace Parking Levy, Parking Enforcement on highway</td>
<td>BwDBC</td>
<td>2016/17</td>
<td></td>
<td>Withdrawn from action plan</td>
<td>Withdrawn from action plan</td>
<td>Withdrawn from action plan</td>
<td>Withdrawn from action plan</td>
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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.

According to the Public Health England website (Public Health Outcomes Framework$^5$), the fraction of mortality in 2017 attributable to particulate air pollution in Blackburn with Darwen Borough, the North West and England was 4.04%, 5.06% and 4.07% respectively.

Blackburn with Darwen Borough Council is taking action to address PM$_{2.5}$. Details can be found in Table 2.2, but include the following measures:

- **Bonfire Emissions** – Action is being taken to reduce the number of domestic fires and to prevent illegal commercial burning through awareness raising, the Clean Air Act and waste related legislation (Table 2.2 Measure No.5).

- **Emissions from the burning of domestic solid fuel** - Approximately 38% of UK primary particulate matter emissions come from burning wood and coal in domestic open fires and solid fuel stoves$^6$. Smoke emissions from stove and open fireplaces are being regulated through the Clean Air Act (Measure No.5). The large urban conurbations within the Borough are Smoke Control Areas, where restrictions are in place controlling burning in stoves and fireplaces.

- **Physical changes at junctions** - seeking to address congestion and reduce emissions at local hotspots. Examples include:
  - New intelligent traffic signals will be installed at the Four Lane Ends AQMA (Measure 3).
  - New Blackamoor link Road (Measure 1)

• Controlling industrial emissions – The Council and the Environment Agency are working with local permitted companies to ensure that industry complies with the relevant emission limits (Measure 6).

• Public transport – Bus services are under pressure in the current financial climate, but efforts have been made to implement some significant changes on specific routes. Recent major projects include the £40 million Pennine Reach project (Measure 2 – completed 2017) and lengthening of the double track section at Darwen station to allow a more robust and frequent service to run between Clitheroe, Blackburn and Manchester (completed 2015). New high quality bus shelters will be installed (Measure 15). When delivering the Department of Transport’s Access Fund project “Connecting East Lancashire” we will work with businesses, educational establishments, residents and commuters in relation to raising the awareness of travel options and the choices available (Measure 10), in addition to delivering interventions that address specific barriers to active travel.

• Active travel is being encouraged. Work is being done to familiarise people with active travel options which can offer an alternative to the private car. Walking and cycling initiatives are proving popular (Measures 9 and 11). Traditional and electric bikes are available for hire (Measure 9). The 26km Weavers Wheel cycle route is complete, and new funding has been secured to add extra spurs (Measure 8).

• Blackburn with Darwen Borough Council are seeking opportunities to work with partner organisations and businesses and the public that will encourage active travel.

  - Together a Healthier Future is the Pennine Lancashire Sport England programme which aims to increase physical activity, targeting in particular, the most inactive. The programme is being developed, but it is likely that walking and cycling will be key themes.

  - The Council has identified significant interest in walking and other outdoor activities that link with active travel. Early engagement work has been undertaken with the Canals and Rivers Trust, Wildlife Trust and outdoor clubs, with a view to developing multi-use trails, increase the number of events and provide more promotion.
3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how it compares with objectives.

Blackburn with Darwen Borough Council undertook automatic (continuous) monitoring at one site during 2018. Table A.1 in Appendix A shows the details of the sites. NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. There are no such circumstances in the Borough. National monitoring results are available at https://uk-air.defra.gov.uk/data/data_selector_service?show=auto&submit=Reset&f_limit_was=1.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

Earlier in 2019 Blackburn with Darwen Borough Council revoked three AQMAs: at Darwen Town Centre; Witton; and Earcroft. Monitoring will continue at the worst case receptors and nearby urban background locations, but monitoring elsewhere in the vicinity of the former AQMAs will be reduced. Some tubes will be moved elsewhere to investigate other potential hotspots or inform other projects, such as working with local schools. New sites are being considered.

3.1.2 Non-Automatic Monitoring Sites

Blackburn with Darwen Borough Council undertook non-automatic (passive) monitoring of NO$_2$ at 47 sites during 2019. Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix D. 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” and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO₂)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

For diffusion tubes, the full 2018 dataset of monthly mean values is provided in Appendix B.

Table A.4 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

The results for monitoring locations DT24, DT39, DT47, DT48 and DT49 have been distance corrected to the nearest receptor (see Appendix C). Distance corrected exposures at the nearest relevant receptor can also be found in Table B.1

There have been no exceedances of the annual mean NO₂ objective in the borough at relevant receptors during 2017 and 2018. Annual mean NO₂ exposure at relevant worst case receptors has been well below 60µg/m³, which indicates that an exceedance of the 1-hour mean objective is also unlikely. Blackburn with Darwen Borough Council does not intend to declare any new AQMAs at the present time.

Trends over previous years are discussed in more detail in figures A.1.1 to A.1.9.
### Appendix A: Monitoring Results

#### Table A.1 – Details of Automatic Monitoring Sites

<table>
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<tr>
<th>Site ID</th>
<th>Site Name</th>
<th>Site Type</th>
<th>X OS Grid Ref</th>
<th>Y OS Grid Ref</th>
<th>Pollutants Monitored</th>
<th>In AQMA?</th>
<th>Monitoring Technique</th>
<th>Distance to Relevant Exposure (m) (1)</th>
<th>Distance to kerb of nearest road (m) (2)</th>
<th>Inlet Height (m)</th>
</tr>
</thead>
<tbody>
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**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 – Details of Non-Automatic Monitoring Sites

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<th>Site Name</th>
<th>Site Type</th>
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<th>Y OS Grid Ref</th>
<th>Pollutants Monitored</th>
<th>In AQMA?</th>
<th>Distance to Relevant Exposure (m) (1)</th>
<th>Distance to kerb of nearest road (m) (2)</th>
<th>Tube collocated with a Continuous Analyser?</th>
<th>Height (m)</th>
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**Notes:**
(1) 0m if the monitoring site is at a location of exposure (e.g. installed on/adjacent to the façade of a residential property).
(2) N/A if not applicable.
<table>
<thead>
<tr>
<th>Site ID</th>
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<th>Valid Data Capture 2018 (%) (2)</th>
<th>NO₂ Annual Mean Concentration (µg/m³) (3)</th>
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</table>
Diffusion tube data has been bias corrected

Annualisation has been conducted where data capture is <75% Annualisation not required as capture ≥75% at all monitoring locations

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in bold.
NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in bold and underlined.

(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%).

(3) Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.
Exposure during 2017 and 2018 at the Intack AQMA was under the annual mean NO$_2$ national objective, but there have been exceedances as recently as 2016 so the AQMA will not be revoked.

Annual mean exposures were well under 60µg/m$^3$, so there is no indication of a 1-hour mean air quality objective exceedance.
Exposure during 2017 and 2018 at the Bastwell AQMA was under the annual mean NO$_2$ national objective, but there have been exceedances in recent years so the AQMA will not be revoked.

Annual mean exposures were well under 60µg/m$^3$, so there is no indication of a 1-hour mean air quality objective exceedance.
Figure A.1.3 – NO₂ Trends at Former AQMA 3 – Darwen Town Centre

There hasn’t been an exceedance of the NO₂ annual mean objective at a relevant receptor in the Darwen Town Centre since 2010. There was evidence of a long term improvement so the AQMA was revoked in 2019 (this course of action was discussed in the previous ASR).

Annual mean exposures were well under 60µg/m³, so there is no indication of a 1-hour mean air quality objective exceedance.

There are no relevant receptors at DT8 and DT32. Monitoring was undertaken here to inform potential planning decisions, e.g. conversion of premises from commercial to residential.
There hasn’t been an exceedance of the NO₂ annual mean objective at a relevant receptor in Witton since 2010. There was evidence of a long term improvement so the AQMA was revoked in 2019 (this course of action was discussed in the previous ASR).

Annual mean exposures were well under 60µg/m³, so there is no indication of a 1-hour mean air quality objective exceedance.
There hasn’t been an exceedance of the NO$_2$ annual mean objective at a relevant receptor in Earcroft since 2008. There was evidence of a long term improvement so the AQMA was revoked in 2019 (this course of action was discussed in the previous ASR).

Annual mean exposures were well under 60µg/m$^3$, so there is no indication of a 1-hour mean air quality objective exceedance.
Exposure during 2017 and 2018 at the Blackamoor AQMA was under the annual mean NO$_2$ national objective, but there have been exceedances in recent years so the AQMA will not be revoked.

Annual mean exposures were well under 60µg/m$^3$, so there is no indication of a 1-hour mean air quality objective exceedance.
Exposure during 2017 and 2018 at the four Lane Ends AQMA was under the annual mean NO$_2$ national objective, but there have been exceedances as recently as 2016 so the AQMA will not be revoked.

Annual mean exposures were well under 60µg/m$^3$, so there is no indication of a 1-hour mean air quality objective exceedance.
Figure A.1.8 – NO2 Trends at Former AQMA 8 – Former junction of Burnley Road / Accrington Road

Exposure from 2012 onwards has been under the annual mean NO\textsubscript{2} national objective.

The junction of the A678 and A679 was moved westwards, and the section of road highlighted as a green dotted line on the above map was made into a cul-de-sac. The new junction was completed in April 2017.

Annual mean exposures were well under 60µg/m\textsuperscript{3}, so there is no indication of a 1-hour mean air quality objective exceedance.
Diffusion tube monitoring at locations outside the AQMAs has not identified exceedances of the NO$_2$ annual mean objective at relevant receptors. Annual mean exposures were well under 60µg/m$^3$, so there is no indication of a 1-hour mean air quality objective exceedance. There is no need to declare new AQMAs.

(The locations circled in red were the subject of detailed assessments reported in the 2018 ASR.)
There hasn’t been an exceedance of the NO$_2$ annual mean objective at the automatic monitor. Annual mean exposures were well under 60µg/m$^3$, so there is no indication of a 1-hour mean air quality objective exceedance.
Table A.4 – 1-Hour Mean NO₂ Monitoring Results

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<th>Site Type</th>
<th>Monitoring Type</th>
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<th>Valid Data Capture 2018 (%) (2)</th>
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Notes:
Exceedances of the NO₂ 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold**.
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%).
3. If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.
### Appendix B: Full Monthly Diffusion Tube Results for 2018

#### Table B.1 – NO₂ Monthly Diffusion Tube Results - 2018

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<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Annual Mean</th>
<th>Bias Adjusted and Annualised</th>
<th>Distance Corrected to Nearest Exposure</th>
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☒ Local bias adjustment factor used
☐ National bias adjustment factor
☐ Annualisation has been conducted where data capture is <75% Annualisation not required as all data capture ≥75%
☒ Where applicable, data has been distance corrected for relevant

Notes:
Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in bold.
NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in bold and underlined.
(1) See Appendix C for details on bias adjustment and annualisation.
(2) Distance corrected to nearest relevant public exposure.
Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC

Diffusion Tube Specification

Blackburn with Darwen Borough Council monitors NO₂ levels at 47 locations. This includes a triple tube co-location trial at the Blackburn Accrington Road AURN site. The 20% TEA in water diffusion tubes are provided and analysed by Gradko Ltd.

Bias Adjustment

National Bias adjustment Factor (0.93) – See National Factor spreadsheet below.

Local Bias Adjustment Factor (0.78) – See AEA Precision and accuracy spreadsheet below.
Bias adjustment discussion - In most circumstances TG16 recommends use of a local factor over a national factor. Several factors supported the conclusion that the local factor of 0.78 was likely to be more representative:

1. The tubes were exposed monthly for the full year in accordance with Defra’s diffusion tube monitoring calendar at sites.
2. The co-location trial gave “good” precision for the diffusion tubes.
3. The automatic monitor results were to national AURN standards with good overall data capture.
4. The urban roadside location of the co-located tubes was similar to the rest of the diffusion tube monitoring locations.
5. 0.78 is similar to the 0.74 local adjustment factor used to correct the 2017 monitoring data.

Distance Corrections

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Distance (m)</th>
<th>O₃ Annual Mean Concentration (µg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Monitoning Site to Kerb</td>
</tr>
<tr>
<td>DT21</td>
<td>5.0</td>
<td>7.0</td>
</tr>
<tr>
<td>DT30</td>
<td>9.5</td>
<td>2.5</td>
</tr>
<tr>
<td>DT17</td>
<td>3.2</td>
<td>6.1</td>
</tr>
<tr>
<td>DT16</td>
<td>3.2</td>
<td>6.1</td>
</tr>
<tr>
<td>DT10</td>
<td>3.2</td>
<td>6.1</td>
</tr>
</tbody>
</table>

Annualisation

Annualisation wasn’t necessary.
Appendix D: Map(s) of Monitoring Locations and AQMAs

AQMAs in the Borough
Former AQMA No.3 in Darwen Town Centre

Former AQMA No.4 at Witton
Blackburn with Darwen Borough Council

Former AQMA No.5 at Earcroft

AQMA No.6 – Blackamoor
The junction of the A678 and A679 was moved westwards, and the section of road highlighted as a green dotted line was made into a cul-de-sac.
The locations circled in red were the subject of detailed assessments reported in the 2018 ASR.
Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Air Quality Objective(^7)</th>
<th>Concentration</th>
<th>Measured as</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen Dioxide (NO(_2))</td>
<td>200 µg/m(^3), not to be exceeded more than 18 times a year</td>
<td>40 µg/m(^3)</td>
<td>1-hour mean</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Annual mean</td>
</tr>
<tr>
<td>Particulate Matter (PM(_{10}))</td>
<td>50 µg/m(^3), not to be exceeded more than 35 times a year</td>
<td>40 µg/m(^3)</td>
<td>24-hour mean</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Annual mean</td>
</tr>
<tr>
<td>Sulphur Dioxide (SO(_2))</td>
<td>350 µg/m(^3), not to be exceeded more than 24 times a year</td>
<td>125 µg/m(^3), not to be exceeded more than 3 times a year</td>
<td>24-hour mean</td>
</tr>
<tr>
<td></td>
<td></td>
<td>266 µg/m(^3), not to be exceeded more than 35 times a year</td>
<td>15-minute mean</td>
</tr>
</tbody>
</table>

\(^7\) The units are in microgrammes of pollutant per cubic metre of air (µg/m\(^3\)).
## Glossary of Terms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQAP</td>
<td>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'</td>
</tr>
<tr>
<td>AQMA</td>
<td>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</td>
</tr>
<tr>
<td>ASR</td>
<td>Air quality Annual Status Report</td>
</tr>
<tr>
<td>Defra</td>
<td>Department for Environment, Food and Rural Affairs</td>
</tr>
<tr>
<td>DMRB</td>
<td>Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>LAQM</td>
<td>Local Air Quality Management</td>
</tr>
<tr>
<td>NO₂</td>
<td>Nitrogen Dioxide</td>
</tr>
<tr>
<td>NOₓ</td>
<td>Nitrogen Oxides</td>
</tr>
<tr>
<td>PM₁₀</td>
<td>Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less</td>
</tr>
<tr>
<td>PM₂.₅</td>
<td>Airborne particulate matter with an aerodynamic diameter of 2.5µm or less</td>
</tr>
<tr>
<td>QA/QC</td>
<td>Quality Assurance and Quality Control</td>
</tr>
<tr>
<td>SO₂</td>
<td>Sulphur Dioxide</td>
</tr>
</tbody>
</table>