



## **Air Quality in Derby – Outcome of Public Consultation on Nitrogen Dioxide and Benzene Levels; Detailed Assessment of PM<sub>10</sub> Particulates; Updating and Screening Assessment**

### **SUMMARY**

- 1.1 Under the Environment Act 1995 all Local Authorities are required to review and assess air quality on a continuous, cyclical basis and report the outcome to DEFRA.
- 1.2 Following public consultation on detailed assessments of nitrogen dioxide and benzene pollution levels in the city, it is proposed to declare a new Air Quality Management Area (AQMA) in Spondon and to revise the boundaries of the existing nitrogen dioxide AQMA. Overall this will result in a net increase in the geographical extent of the city's AQMAs. It is important to note, however, that this is not an indication of a worsening air quality, but an outcome of more comprehensive and sophisticated monitoring and modelling, which has enabled polluted areas to be more accurately defined.
- 1.3 This report also considers a detailed assessment of PM<sub>10</sub> particulate pollution in the city and summarises the outcome of an 'Updating and Screening Assessment' of the city's air quality in general

### **RECOMMENDATION**

- 2.1 That the outcome of public consultation on the detailed assessment of nitrogen dioxide and benzene levels be noted.
- 2.2 That a new Air Quality Management Area (AQMA) for nitrogen dioxide be declared in Spondon and the boundaries of the existing nitrogen dioxide AQMA be revised, via the making of Air Quality Management Orders under Part IV Environment Act 1995.
- 2.3 That the outcome of the Detailed Assessment of PM<sub>10</sub> particulate levels in the city be noted and that Cabinet agree to the report's proposals for public consultation on this matter.
- 2.4 That the outcome of the Updating and Screening Assessment of Air Quality be noted and that Cabinet agree to the report's proposals for public consultation on this matter.

## REASON FOR RECOMMENDATION

- 3.1 Consultation responses on the proposed changes to the existing nitrogen dioxide AQMA boundaries and the declaration of a new AQMA in Spondon have generally been positive (see summary of responses in Appendix 2). Monitoring data has shown that nitrogen dioxide levels in these areas exceeds National Air Quality targets and therefore the council is duty bound, under the provisions of the Environment Act 1995, to declare them as AQMAs. Consultation on the fact that no AQMA is required for benzene in Spondon has provoked little public reaction.
- 3.2 The Detailed Assessment of PM<sub>10</sub> levels has revealed that no parts of the city are forecast to exceed the National PM<sub>10</sub> Air Quality objective and therefore no PM<sub>10</sub> AQMA is required. Under the Environment Act 1995, the council is required to consult with statutory consultees, stakeholders and the general public on the outcome of Detailed Assessment reports
- 3.3 The Updating and Screening Assessment (USA 2006) report has identified further potential pollution hotspots in the city that require detailed assessment. As above, the council is required to consult with statutory consultees, stakeholders and the general public on the outcome of the USA report.

## SUPPORTING INFORMATION

- 4.1 In 2001, a nitrogen dioxide AQMA was declared by the Council incorporating approximately 1600 dwellings adjacent to the inner and outer ring roads. In September 2002, the AQMA was slightly reduced in size, following further monitoring, encompassing approximately 1500 dwellings. The AQMA boundaries have not been altered since.
- 4.2 Every 3 years an air quality 'Updating and Screening Assessment' (USA) report must be submitted to DEFRA, which compares local air pollution levels against national targets for 7 specified pollutants. The USA report is designed to identify 'hotspots' that require further investigation in the form of 'Detailed Assessments'. Following the previous USA report (in 2003), Council Cabinet (25 April 2006 and 6 June 2006) considered reports summarising detailed assessments of nitrogen dioxide and benzene levels in the city and recommended public consultation on the proposed declaration of a new Nitrogen Dioxide Air Quality Management Area (AQMA) in Spondon and revisions to the boundaries of the existing Nitrogen Dioxide AQMA.

### 4.3 Setting AQMA boundaries

In consultation with DEFRA and using roadside monitoring data, it has been calculated that there should be no locations in Derby beyond 14m from the roadside that will be likely to exceed the air quality standard, even adjacent to the busies and most polluted roads/junctions. Using this 'rule', the existing AQMA has been re-mapped and now more accurately represents those areas of the city that are likely to exceed the air quality standard. It is proposed to join the inner and outer ring road AQMAs along Osmaston Road, as well as other minor boundary changes. It is also proposed to declare a separate new AQMA in Spondon, including dwellings adjacent to Brian Clough Way (A52), Nottingham Road and Derby Road.

Location plans showing the extent of the existing and proposed AQMAs are shown in Appendix 3 to this report.

- 4.4 Following declaration of a new AQMA, local authorities are obliged to produce an action plan to reduce pollution levels in that area. The Council has however, already adopted a Nitrogen Dioxide Action Plan (in 2003), which is now incorporated within the Local Transport Plan (LTP2). Since the Action Plan proposals are not location-specific, they are equally applicable to the proposed new Spondon AQMA. The Plan does not therefore require revision.

#### 4.5 Outcome of Consultation on Detailed Assessment of Nitrogen Dioxide and Benzene

As part of the consultation process, each household within the proposed boundaries of the revised and proposed Nitrogen Dioxide AQMAs and all Spondon households in close proximity to Acetate Products (the dominant source of benzene in the vicinity) received a leaflet summarising the air quality issues and the Council's proposals to declare new and revised AQMAs and inviting comment. Electronic copies of the reports were sent to all statutory consultees and links to the reports were set up on the Council's website. A press release was also issued and CD copies of the report were made available.

The consultation responses are summarised in Appendix 2. No objections have been received to the proposals.

#### 4.6 Detailed Assessment of PM<sub>10</sub> Particulates in the City

A link to the full copy of this report (which comprises 112 pages) is available on the Council's website or via CMIS. Alternatively, paper copies are available in the Member's rooms.

The report considers PM<sub>10</sub> levels in Derby against the two health-based standards specified in the National Air Quality Objectives and looks in detail at potential hotspots identified by the 2003 USA.

The dominant source of PM<sub>10</sub> particulates in the city is from road traffic and 5 busy junctions, identified by the 2003 USA, were scrutinised in detail. Using a combination of monitoring data and computer models it was determined that it is unlikely that target levels will be breached and therefore no new AQMAs need be declared for PM<sub>10</sub> particulates.

Cabinet should note that the council has an existing PM<sub>10</sub> AQMA at Victory Road, which has been maintained for the time being, despite the closure of the main local source of PM<sub>10</sub> particulates in the area, QDF Foundry. Once it is established that PM<sub>10</sub> levels have returned to normal background levels, the AQMA can be removed

#### 4.7 Updating and Screening Assessment 2006

A link to the full copy of this report (which comprises 150 pages) is available on the Council's website or via CMIS. Alternatively, paper copies are available in the Member's rooms.

#### 4.8 The report brings the Review and Assessment process up to date for all 7 pollutants in the UK Air Quality Strategy. In summary, the USA concludes that Detailed Assessments are not required for sulphur dioxide, carbon monoxide, 1,3-butadiene or lead.

- 4.9 The report recommends, however, that a further detailed assessment is made of nitrogen dioxide and PM<sub>10</sub> levels at various road junctions that were not identified by the 2003 USA. The report also highlights the work being done by Acetate Products, in conjunction with the council and the Environment Agency, to reduce benzene levels in Spondon. Although levels currently exceed the National Objective, they are predicted to reduce sufficiently by the government's 2010 deadline to avoid the need to declare an AQMA. As a result, a continuation of detailed monitoring/assessment adjacent to the site is recommended to ensure progress in reducing benzene emissions is maintained.
- 4.10 Once these further Detailed Assessments have been completed, the Council will again be in a position to determine whether more AQMAs need to be declared
- 4.11 Public Consultation

DEFRA requires Local Authorities to consult statutory consultees, stakeholders and the general public on the outcome of detailed assessments. It is proposed that the majority of statutory consultees and stakeholders will be invited to submit comments on electronic copies of the full report. The report will also be posted on the Council's web-site and hard copies made available at libraries and other council buildings with public access.

## OTHER OPTIONS CONSIDERED

- 5.1 Air Quality Management Areas need only be declared where pollution levels are unlikely to meet government objectives. Air pollution levels are affected by a number of factors, notably changes in weather patterns and it is therefore important that air quality monitoring is sustained in the long term to identify trends as well as local pollution problems and to deal with them via action planning. For example, although benzene levels remain elevated in parts of Spondon, monitoring has shown that levels are reducing year on year and at a rate that currently prevents the need to declare an AQMA. This situation will need to be kept under regular review.

**For more information  
contact:**

**Background papers:**

**List of appendices:**

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a) Detailed Assessment reports for Nitrogen Dioxide, Benzene and PM<sub>10</sub> Particulates

b) Updating and Screening Assessment Report (2006).

(Full .pdf versions of all reports are available via CMIS or the website; hard copies on request from Julian de Mowbray)

Appendix 1 – Implications

Appendix 2 – Summary of consultation responses

Appendix 3 – AQMA location maps



<b>IMPLICATIONS</b>
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**Financial**

- 1.1 The work on monitoring is contained within budgets.

**Legal**

- 2.1 The report sets out the legal implications.

**Personnel**

- 3.1 None.

**Equalities impact**

- 4.1 The Public of Derby are all entitled to good air quality.

**Corporate Priorities**

Improve the quality of life in Derby's neighbourhoods by making Derby cleaner and greener  
Building healthy and independent communities by improving the health of our communities

### Consultation Responses – NO<sub>2</sub> Detailed Assessment

#### 1) Highways Agency

Accept the approach used in the Detailed Assessment, which relied entirely upon monitoring data. Note that the lack of dispersion modelling causes the following problems:

- Doesn't provide a baseline 2005 assessment for production of future year scenarios, in which to compare against the EU limit value in 2010
- Difficulty in undertaking a source apportionment study, as part of a Further Assessment
- No possibility of looking at scenarios outlined in the Action Plan
- Difficulty in appraising air quality assessments for developments which use dispersion modelling
- The use of an arbitrary Buffer Zone for all busy roads and junctions, regardless of traffic flow data

Concerned that the AQMAs have been set based upon monitoring data and therefore do not account for traffic flows. The monitoring data is however dependant upon traffic flows.

Note that the discrepancy between the monitored results and DMRB assessments in the revised USA, may be due to the factor of 5 used to convert peak traffic flows into AADT flows. Apparently, a factor of 10 is more typical.

Concerned that the 2005 monitoring data would have been more appropriate than 2004 data, when setting the AQMA cut off distance. This is on the basis that the 2005 data is more recent, it is for the objective achievement year and it has been validated against the 2 roadside monitors. The 2004 data was used on the basis of it providing a larger cut off distance and therefore a reasonable worst-case scenario.

Accept that there is little monitoring data available for the A52 and that the monitoring site at Drury Avenue met the objective in 2005, despite being just a few metres from the edge of the road. This situation will improve in 2006, following the annual review of diffusion tube monitoring locations.

Accept that in terms of Action Planning, the 2010 EU limit value is critical. However this value is the same as the National Air Quality standard of 40µg/m<sup>3</sup> for 2005, which means that action is required at present.

Confirmed that the Highways Agency will consult with the City Council and refer to its Supplementary Planning Guidance in the event of any improvements on their roads in Derby. The HA also supports the Council in encouraging a modal shift to public transport, as well as implementing Green Travel Plans for major employers where they are close to or use HA roads.

Restricting development with a 14 metre Buffer Zone will be difficult to enforce, as Government advice on land use and air quality does not preclude development within AQMAs. However, the HA will not support a development which causes worsening of air quality in an area where the EU limit value is predicted to be exceeded in 2010.

The HA is currently planning trials of noise barriers impregnated with titanium oxide, which are reported to be beneficial in reducing kerbside levels of nitrogen oxides. Due to their expensive nature, their use will be restricted to areas where the EU limit value is likely to be exceeded in 2010.

Confirmed that due to the Highways Agency having responsibility for the new Alvaston Bypass (the new A6), the revised outer ring-road AQMA no longer includes roads which are the responsibility of the HA. Consequently, the only HA road within the new AQMAs is the A52 in the Spondon AQMA.

The A38 (also the responsibility of the HA) is excluded from the proposed AQMAs. This is on the basis of no public exposure within 14 metres of kerbside. The future need to include any part of the A38 in a NO<sub>2</sub> AQMA will be considered through the ongoing Review and Assessment process. This review will be based upon local monitoring data, including additional diffusion tube monitoring sites in 2007. At present, 150 Radbourne Street is the only NO<sub>2</sub> monitoring location adjacent to the A38.

The January to June 2006 result for 150 Radbourne Street was 41.3µg/m<sup>3</sup>. Although this monitoring result isn't ratified and is only for 6 months, it shows that a NO<sub>2</sub> AQMA may be necessary for some of the houses adjacent to the A38. Having said this, the 2004 annual average NO<sub>2</sub> concentration for 150 Radbourne Street was 32.3µg/m<sup>3</sup>. Further monitoring in the vicinity of the A38 will therefore be used to determine whether a NO<sub>2</sub> AQMA is required in this location.

Accept that the maps provided as part of the original consultation are not detailed enough to enable individual properties within the AQMAs to be identified. Advised the HA that this situation is being addressed through a list of properties on the Council's website + the interactive map on our homepage.

2) Central Derby NHS Primary Care Trust

Notes the evidence of an excess of lower respiratory illness among children aged 5 to 12 years exposed to annual average indoor NO<sub>2</sub> concentrations of 38-56µg/m<sup>3</sup>.

Also notes that a 'no effect' level for sub-chronic or chronic NO<sub>2</sub> exposure concentrations has yet to be determined.

In view of this evidence, the PCT supports the new AQMAs and the implementation of a 14 metre Buffer Zone. This is on the basis that the Buffer Zone is structured in such a way as to avoid unintended health related consequences for communities e.g. to avoid reduced or unequal access to nurseries and community facilities.

12 Development Control

Concerns regarding the viability of a 14 metre Buffer Zone in the city centre. Ongoing consultation is taking place regarding this matter.

4) Mr P  
Raynesway

The Alvaston Bypass needs to be completed, in order to solve the air quality problems along Raynesway

6) Mr P  
Friar Gate Court, Friar Gate

The exhaust emissions from buses are a particular problem, especially close to pedestrians in the city centre

7) Mr L  
Oxford Avenue, Leicester, LE2 1HP

The maps on the website of the AQMAs are of a poor scale. Concerned that the heavily congested area between Cockpit Island and Full Street is not in the proposed AQMA – advised that this is due to there being no relevant exposure on Full Street. Morledge is included.

8) Mr U  
Mount Street, Derby

Requested a copy of the reports and information on diffusion tube monitoring in relation to Connecting Derby.

- 9) Ms S  
Alvaston Road, Alvaston
- Requested a copy of the reports
- 10) Mr S  
Duffield Road, Allestree, DE22 2DJ
- Requested a copy of the reports
- 11) Mr D  
Friar Gate

Air quality is an important issue. He's concerned about the health implications of living in the AQMA, especially since he lives and works in his one-bedroom flat. The main window fronts onto Friar Gate, albeit at first-floor level.

He is now seriously considering moving to the second floor flat. He probably can't afford to move out of the AQMA. He also can't afford a car, even though he's exposed to the road-traffic pollution.

In the meantime, he'll try to keep his front window shut, so as to reduce his exposure to the traffic pollution. The side window and rear window will hopefully be able to provide sufficient ventilation.

Mr D was keen for the Council to measure the indoor air quality in his flat. Advised that this would not be possible, due to the number of variables involved making any study inaccurate + we only have a duty to measure outdoor air quality.

- 12) Ms S  
Warwick Avenue, near Carlton Road

There is regularly a problem of traffic fumes, which she can smell in her kitchen. Ms S finds the traffic pollution to be a real problem. She is also concerned that her grand-daughter's cough may be linked to the traffic pollution, as she sleeps in the front bedroom.

## Consultation Responses – Benzene Detailed Assessment

- 1) James Stewart–Evans, Environmental Scientist, Health Protection Agency

Supports the Council's decision on the understanding that:

- Work continues to be undertaken by Acetate Products, the Environment Agency and Derby City Council, to ensure that the 2010 objective is met.
- The downward trend in annual average off-site concentrations does not reverse.
- Progress towards meeting the 2010 objective will be kept under constant review, as will the need to declare a benzene AQMA. This review will be based upon local monitoring data at locations relevant for public exposure in the vicinity of Acetate Products. Should, at any time, it be considered likely that the 2010 annual average benzene objective will be breached, the City Council will consult again with all relevant stakeholders. This will be with a view to declaring an Air Quality Management Area for benzene in the vicinity of Acetate Products.

- 2) Highways Agency

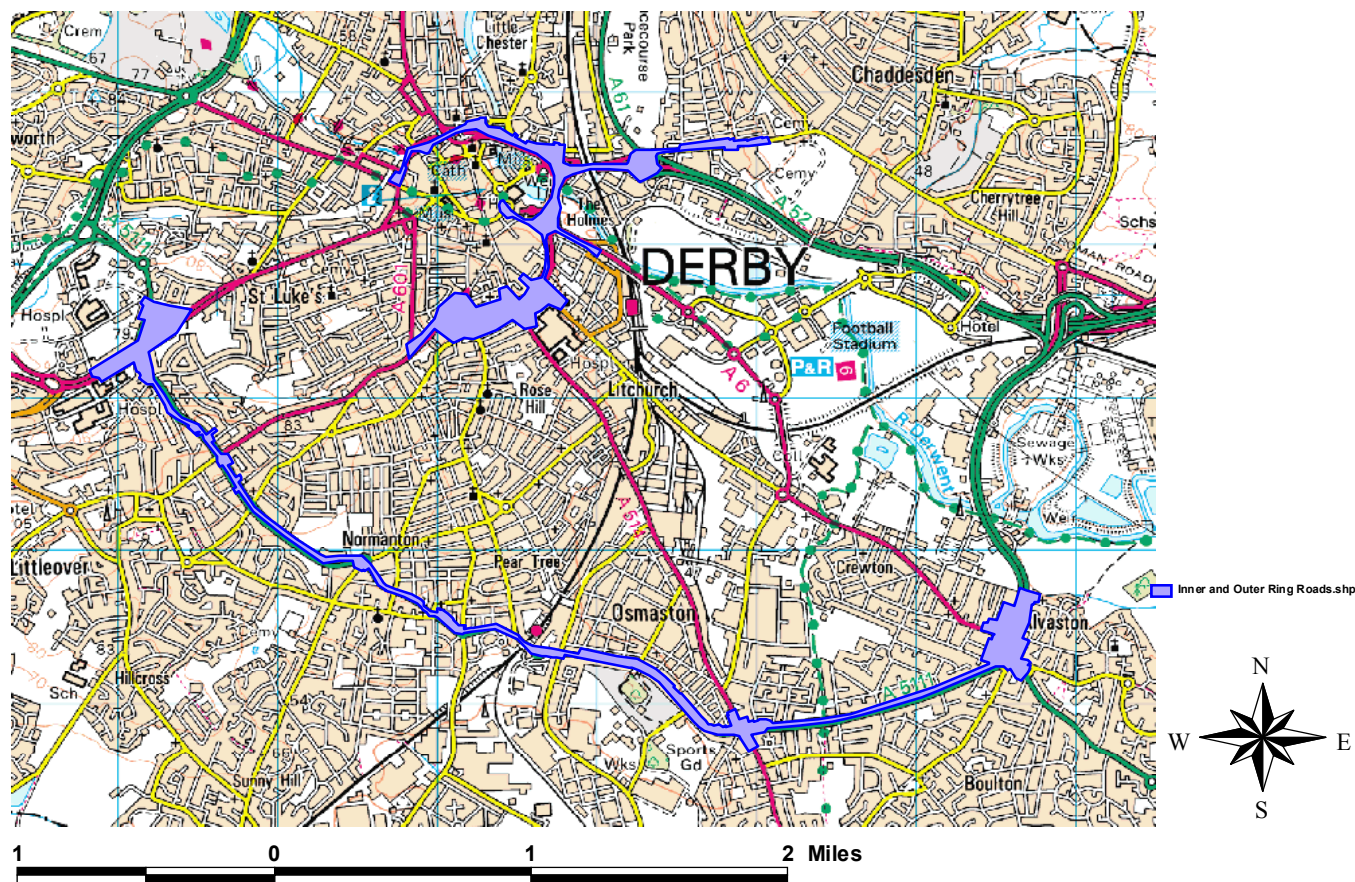
Happy with the Detailed Assessment. If a Benzene AQMA is ever declared, requested further consultation due to the impact of road traffic upon benzene emissions.

- 3) Ms C  
Borrowfield Road, Spondon

Concerned that the National Air Quality Objectives do not always protect people most at risk from air pollution i.e. young children, the elderly, pregnant women and people with existing heart or lung problems. To this end, the Council therefore needs to be committed to reducing air pollution as much as possible, not just complying with the Objectives.

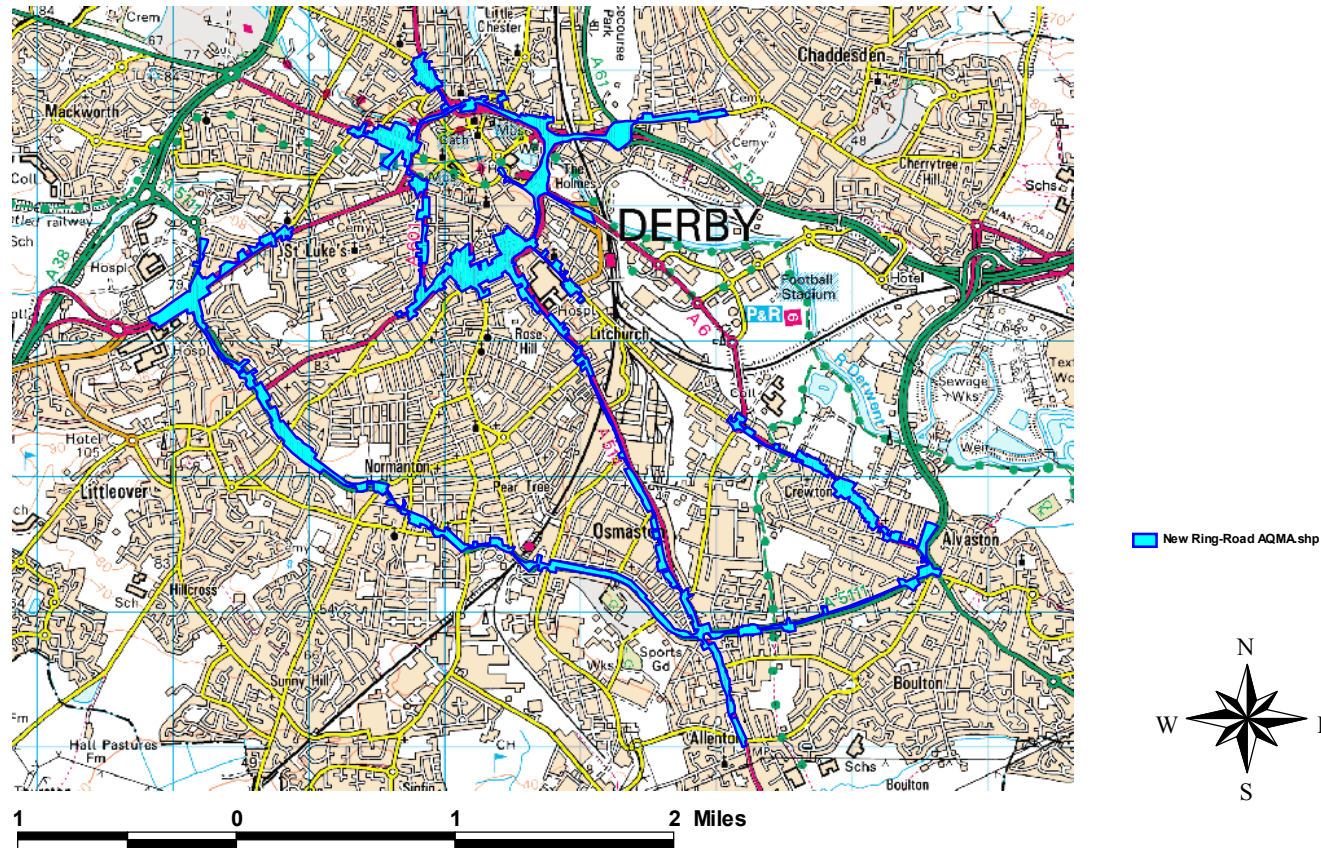
Concerned at new residential and industrial developments in the Spondon area and in particular, the impact of these developments on road-traffic pollution.

# Existing Inner & Outer Ring-Road NO<sub>2</sub> AQMAs



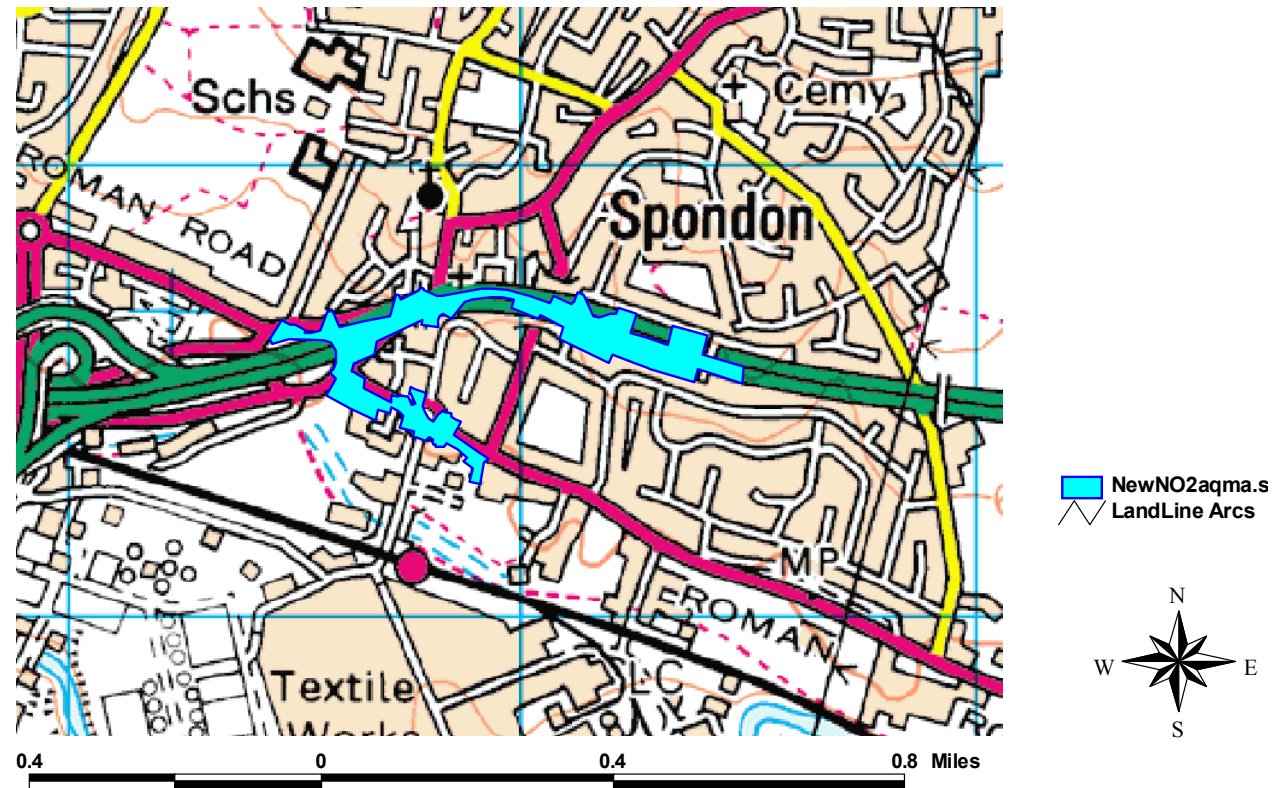
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## Proposed Boundary of the Revised Inner & Outer Ring-Road AQMA



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## Proposed Boundary of New NO<sub>2</sub> AQMA in Spondon



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