LOCAL AIR QUALITY MANAGEMENT

1 PURPOSE OF REPORT

1.1 To present a summary of local authority responsibilities regarding local air quality management and the Council's progress with the Air Quality Management Area (AQMA) in Rayleigh.

2 INTRODUCTION

2.1 Poor air quality contributes to the premature deaths of between 40,000 and 50,000 people each year in the UK.

2.2 Local air quality management matters have been reported to Members frequently since the late 1990s and most recently to the Portfolio Holder for Environment in December 2014, prior to the declaration of the AQMA in Rayleigh.

2.3 This report serves as a further update on the creation of an Air Quality Action Plan (AQAP) for the AQMA in Rayleigh.

3 BACKGROUND

3.1 The Environment Act 1995 introduced the requirement for local authorities to monitor their districts for prescribed pollutants in line with a National Air Quality Strategy and to try to achieve legally-binding EU limit values.

3.2 Over time, officers have found that only two of those pollutants – nitrogen dioxide (NO_2) and PM_{10} (ultra-fine particulate matter) – are relevant to the Rochford District.

3.3 In May 2010 an AQMA was declared for PM_{10} at Rawreth Industrial Estate and neighbouring roads. This issue was resolved through resurfacing of the spine road serving the estate and without the need to produce an AQAP. The AQMA was duly revoked in March 2013.

3.4 The AQMA Order for Rayleigh town centre was made on 30 January 2015 and related to an exceedance of the permissible annual average level of NO_2 at 'relevant receptors'. For the purposes of local air quality management, 'relevant receptors' include the facades of homes, schools and hospitals, etc. Excluded are pavements, offices and shops.

3.5 A copy of the order is attached as Appendix A.

3.6 The primary source of NO_2 in the AQMA is vehicle emissions.

3.7 Following the creation of the Air Quality Management Area for Rayleigh in February 2015 officers have been working to arrange the process for creating the mandatory Air Quality Action Plan (AQAP). This has involved scoping the work and participating in traffic analysis with Essex County Council

colleagues. During this time the Department of Environment, Food and Rural Affairs (Defra) have also published revised technical and policy guidance which has amended the process for carrying out this work.

3.8 Rayleigh's air quality problem is caused, principally, by vehicle exhaust emissions; therefore, Rochford's Environmental Health Officers have worked closely with Essex County Council Highways Planners. Officers have worked together through the Essex Framework Agreement, to choose a company to project manage the development of the AQAP. Ringway Jacobs were selected in April and are to be supported with technical input provided by Air Quality Consultants, a leading specialist consultancy.

3.9 The creation and implementation of the AQAP will be a true collaborative effort with input from relevant stakeholders, such as Development Control and Public Health colleagues and public transport providers, at each stage.

3.10 The project will run in two parts. The initial phase will focus on analysing specific aspects of the air quality problem, such as the contribution of particular vehicle types and other contributory factors, current and planned policies and actions, and other pressures such as development.

3.11 The second will involve the proposal, evaluation and prioritisation of additional options, followed by a public consultation of the draft AQAP, planned for autumn 2016. Providing no further technical evaluation is required following this consultation, the final AQAP will be presented to Members early in 2017.

Monitoring

3.12 NO_2 monitoring takes place using two methods. An automatic analyser is placed in High Street, Rayleigh for six months each year to provide precise data for that location. This costs in the order of £6500 p.a. once electricity fees are also factored in.

3.13 To complement this, diffusion tubes – a passive form of monitoring – are used. They cost approximately £3.80 per tube per month and 10 are currently deployed at 8 locations around the AQMA and in Rochford.

3.14 Monitoring data and maps of current and past monitoring locations are available at www.essexair.org

3.15 Although officers have recently reduced the period of time the Council has an automatic analyser for each year, options are being explored to remove the analyser and increase diffusion tubes. This should reduce revenue costs and provide a better spread of data.

Reporting and Review

3.16 Every local authority is required to report its progress on air quality work to the Department for Environment, Food and Rural Affairs (Defra) each year. A copy of the Council's 2016 Annual Status Report is attached as Appendix B

for reference along with a letter of approval and accompanying appraisal from Defra dated 21 September 2016.

4 EMERGING AIR QUALITY ACTION PLAN

4.1 Via Essex County Council (ECC), officers have contracted Ringway Jacobs to develop the AQAP. Options for actions include planned and proposed highway improvements and policy enhancements as well as public and business engagement. At the time of writing, work on the production of a consultation document is still ongoing, so the latest working draft is attached as Appendix C for Members' reference.

4.2 Membership of the AQAP Steering Group reflects the traffic-led nature of the air quality issue in Rayleigh. Aside from Rochford District Council Environmental Health and Planning Policy officers, it consists of a number of ECC representatives from Highways and Public Health.

4.3 The priorities for the AQAP are: 1) To reduce congestion adjacent to receptors; 2) Reduce overall volume of traffic, and; 3) Strengthen planning policies.

4.4 As noted by Defra in its ASR appraisal, the exceedance in Rayleigh town centre is marginal and therefore the AQAP proposes proportional measures to address the issue. As such, officers wish to particularly draw Members' attention to Tables 5-10 (pages 29-35) which include the proposed measures in the themes of Monitoring, Traffic Management, Sustainable Travel, Planning Policy, Low Emission Vehicles and Raising Awareness.

4.5 At the time of writing, public consultation for the AQAP remains on course to commence in autumn 2016. Statutory consultees include: Defra; Environment Agency; Highways England; Neighbouring local authorities; Essex County Council; Other public bodies as appropriate, and; Bodies representing business interests. Comments from this Review Committee will be included in the consultation responses and the consultation will be open to comment from the general public.

4.6 Subject to consultation responses, officers expect to seek Member approval of the final AQAP in early 2017. This can then be submitted to Defra for approval.

5 RISK IMPLICATIONS

5.1 Each local authority must produce an AQAP with the aim of reducing pollutant emissions following the declaration of an AQMA. Defra can direct local authorities to carry out works where insufficient progress is made.

5.2 The Localism Act 2011 allows for any fine imposed by the EC for failure to meet EU limit values to be apportioned amongst local authorities. As it stands, Rochford District Council is outside identified infraction zones. Following the

result of the EU Referendum, it is unclear whether European Commission action may be forthcoming for the existing infractions.

6 ENVIRONMENTAL IMPLICATIONS

6.1 Achievement of the annual mean value for NO_2 (40µg/m^3)

7 RESOURCE IMPLICATIONS

7.1 Current work is being met from existing budgets and options are being explored to further reduce direct monitoring costs.

7.2 Resources to meet actions for the Council in the emerging AQAP will need to be factored in to future years' budgets.

8 LEGAL IMPLICATIONS

8.1 The Secretary of State for Environment (Department of Environment, Food and Rural Affairs) is responsible for achieving compliance with EU limit values.

8.2 The Government has previously been taken to court by Client Earth for lack of progress on air quality matters.

9 PARISH IMPLICATIONS

9.1 There are no direct implications for parishes, however the current AQMA is located entirely within Rayleigh Town Council's area and officers will ensure it is consulted directly regarding the emerging AQAP.

10 RECOMMENDATION

10.1 It is proposed that the Committee **RESOLVES** to note the contents of this report and contribute comments to the public consultation.

Louisa Moss

Assistant Director – Community & Housing Services

Background Papers:-

None

For further information please contact Martin Howlett (Principal Environmental Health Officer) on:-

Phone: 01702 318049
Email: martin.howlett@rochford.gov.uk

If you would like this report in large print, Braille or another language please contact 01702 318111.

Appendix A

Rochford District Council

ENVIRONMENT ACT 1995, SECTION 83

Air Quality Management Area Order

Rochford District Council ("The Council"), in exercise of the powers conferred upon it by Section 83(1) of the Environment Act 1995, hereby makes the following Order:

1. This Order may be cited as the **Air Quality Management Area (Rochford District Council) (No.1) Order 2015** and shall come in to effect on 1st February 2015.

2. The effect of the Order is to designate as an Air Quality Management Area ("the AQMA"), the area as shown outlined in red on the plan in Schedule 1 which incorporates some premises in each of the following streets:

   a) Brook Road;
   b) Crown Hill;
   c) Eastwood Road;
   d) High Road;
   e) High Street;
   f) Hockley Road;
   g) Southend Arterial Road;
   h) Webster's Way.

3. Where the AQMA includes any part of a property, it shall be taken to include the whole of that property (buildings and associated open space) within the same curtilage.

4. The AQMA is designated in relation to a likely breach of the nitrogen dioxide (NO_2) annual mean Objective as specified in the Air Quality (England) Regulations 2000, as amended.

5. This Order shall remain in force until it is varied or revoked by a subsequent Order.

MIN NO 149/14
SEAL NO 6499

The Common seal of ROCHFORD DISTRICT COUNCIL was hereunto affixed

DATED:

in the presence of

SIGNED: 30 January 2015

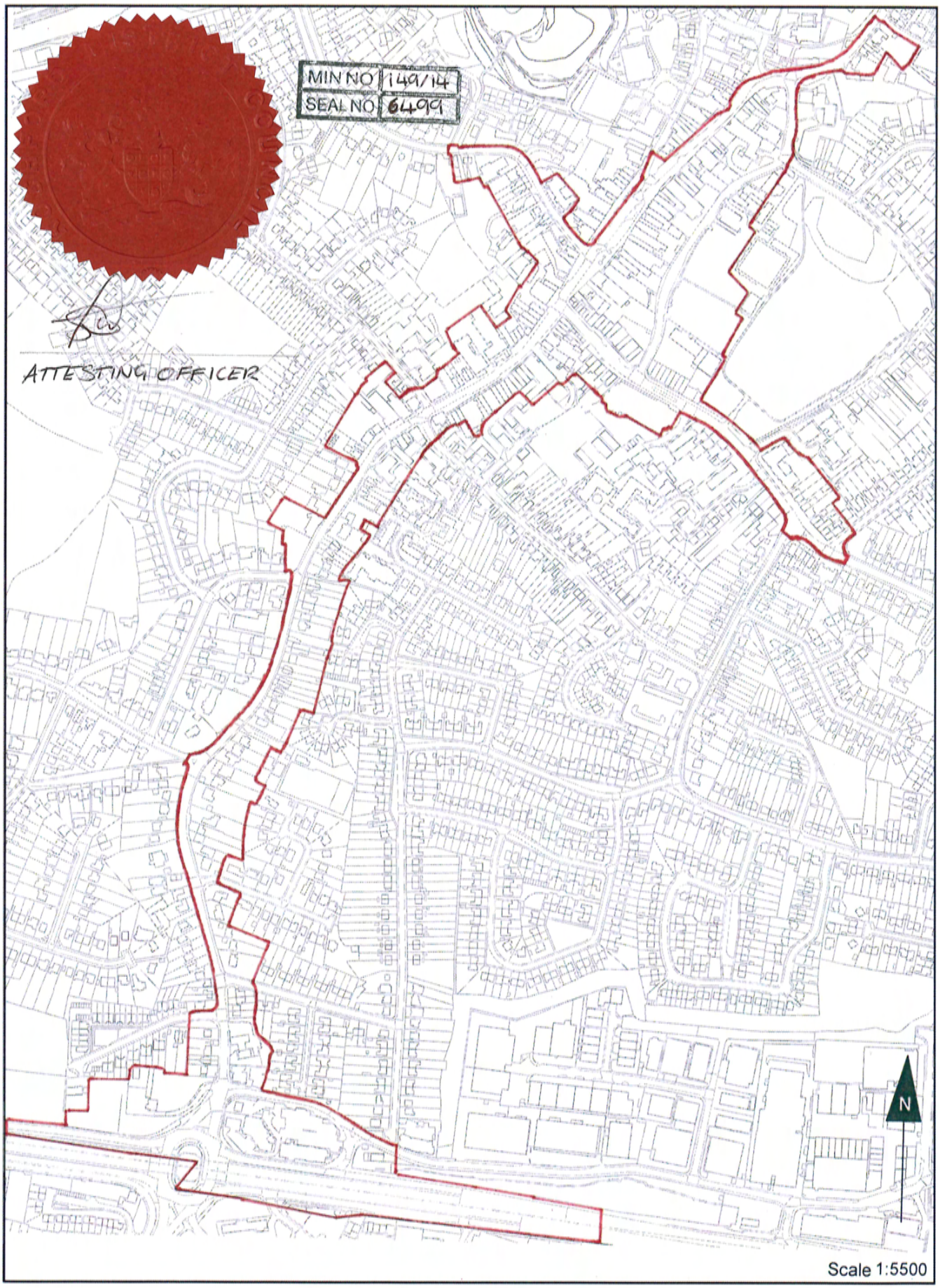
Attesting Officer

Address for all communications:
Rochford District Council, Council Offices
South Street, Rochford, Essex SS4 1BW

Notes: A copy of this Order and associated plan have been deposited and may be seen, free of charge, at the above address during normal working hours and on the Council's website www.rochford.gov.uk/airquality. Enquiries should be directed to Customer Services at the above address, via telephone on (01702) 318111 or else via the website.

Appendix A

Schedule 1 – Air Quality Management Area (Rochford District Council) (No.1) Order 2015



Appendix B

Rochford District Council

July 2016

2016 Air Quality Annual Status Report (ASR)

Rochford District Council

www.rochford.gov.uk

If you would like this information in large print, Braille or another language, please contact 01702 318111.

Local Authority Officer	Martin Howlett
Department	Environmental Services
Address	Rochford District Counci Council Offices South Street Rochford Essex SS4 1BW
Phone	01702 318049
Email	**martin.howlett@rochford.gov.uk**
Report Reference number	RDC/PR2016
Date	7 June 2016

Written by	Tim Savage
Approved by	Gary Lewis
Scientific Team **Public Health & Protection Services** **Chelmsford City Council** **Duke Street** **Chelmsford** **Essex** **CM1 1JE**	Chelmsford City Council

Executive Summary – Air Quality in Our Area

The 2016 Annual Status Report is designed to provide the public with information relating to local air quality in the District of Rochford, to fulfil Rochford District Council's statutory duty to review and assess air quality within its area, and to determine whether or not the air quality objectives are likely to be achieved.

Air Quality in Rochford

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].

In 2015, Rochford District Council declared an Air Quality Management Area (AQMA) in Rayleigh due to exceedances of Nitrogen Dioxide (NO_2) from road traffic. This area extends from the A127 trunk road to and encompassing the Rayleigh Town Centre one way system.

Rayleigh is Rochford District's principal centre and along with residential development, offers retail and leisure outlets. In addition to normal traffic from commuting, shopping and business, the road network in Rayleigh also acts to transfer traffic between the A127 trunk road and villages such as Hockley, Hawkwell, Ashingdon and Canewdon.

Congestion in the Town Centre and surrounding roads has long been an issue which has been acknowledged in the adopted Rayleigh Centre Area Action Plan which contains aims to make changes to the road network to improve traffic circulation.

The Council is currently working with Essex County Council to produce an Air Quality Action Plan (AQAP) which will contain direct measures to improve the air quality in the AQMA and to meet the Air Quality Objectives as shown in **Appendix F**. These measures are likely to complement improvements that will be delivered by the Rayleigh Centre Area Action Plan.

[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.

Actions to Improve Air Quality

The Rochford District adopted Core Strategy policy ENV5 restricts residential development within areas of poor air quality. With the declaration of the Rayleigh Town Centre AQMA, new exposure within this area will be prevented.

> New residential development will be restricted in Air Quality Management Areas in order to reduce public exposure to poor air quality.
>
> In areas where poor air quality threatens to undermine public health and quality of life, the Council will seek to reduce the impact of poor air quality on receptors in that area and to address the cause of the poor air quality. Proposed development will be required to include measures to ensure it does not have an adverse impact on air quality.

This policy was a reason given for the refusal of a planning permission **14/00888/FUL** at 8 Eastwood Road in Rayleigh.

Local Priorities and Challenges

In the coming year, Rochford District Council aims to draft the Air Quality Action Plan, carry out a consultation on the Plan, finalise and to formally adopt.

How to Get Involved

Rochford District Council is a member of the Essex Air Quality consortium. The purpose of the Essex Air is to promote improvements in air quality related issues. The Essex Air **website** provides a daily forecast of air pollution. Also the **@EssexAir** twitter feed provides localised weekly air pollution forecasts.

Links to Defra recommended actions and health advice are provided when air pollution is likely to be moderate or higher. This will enable those with heart or lung conditions, or other breathing problems to make informed judgements about their levels of activity or exposure.

Essex County Council has worked closely with **Liftshare** to develop the Essex Car Share scheme. This operates across the Rochford district to provide commuters with a car sharing service which could cut congestion and air pollution whilst saving money.

Contents

Page

1 Local Air Quality Management 11

2 Actions to Improve Air Quality 11

Air Quality Management Areas 11
Table 2.1 – Declared Air Quality Management Areas 11
Progress and Impact of Measures to address Air Quality in Rochford 12
Table 2.2 – Progress on Measures to Improve Air Quality 12
$PM_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations 13

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance 13

Summary of Monitoring Undertaken 13
Automatic Monitoring Sites 13
Non-Automatic Monitoring Sites 13
Individual Pollutants 14
Nitrogen Dioxide (NO_2) 14
Table 3.1 – Monitored Exceedances 14

Appendix A – Monitoring Results 15

Table A1 – Details of Automatic Monitoring Sites 15
Table A2 – Details of Non-Automatic Monitoring Sites 16
Table A3 – Annual Mean NO_2 Monitoring Results 17
Figure A1 – 2015 Automatic Monitoring Data Chart 18
Table A4 – 1-Hour Mean NO_2 Monitoring Results 19

Appendix B – Full Monthly Diffusion Tube Results for 2015 20

Table B1 – NO_2 Monthly Diffusion Tube Results – 2015 20

Appendix C – Nitrogen Dioxide Trend Data 21

Figure C1 – Nitrogen Dioxide Trend Data 2011-2015 21

Appendix D – Supporting Technical Information/Air Quality Monitoring Data QA/QC 22

Automatic Monitoring QA/QC 22
Table D1 – Automatic Data Annualisation 22
Diffusion Tubes QA/QC 22
Table D2 – AIR PT Results 2015 23
Diffusion Tube Bias Adjustment Factors 23
Figure D1 – RD012/013/014 Triplicate Adjustment 23
Diffusion Tube Data Annualisation 24
Table D3 – Diffusion Tube Annualisation 24
Nitrogen Dioxide Fall Off with Distance Calculations 27
Figure D3 – RO016 Eastwood Road Fall Off with Distance Calculation 27

Appendix E – Map(s) of Monitoring Locations 28

Figure E1 – Location of RD1 Automatic Analyser 28
Figure E2 – Location of Rayleigh Diffusion Tubes 28
Figure E3 – Location of Rochford Diffusion Tubes..... 29

Appendix F: Summary of Air Quality Objectives in England 30

Table F1 – Air Quality Objectives in England..... 30

Appendix G: Air Quality Management Area 31

Figure G1 – Air Quality Management Area (Rochford District Council) (No. 1) Order 2015..... 31

Glossary of Terms 33

References 34

1 Local Air Quality Management

1.1 This report provides an overview of air quality in Rochford during 2015. 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.

1.2 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 Rochford District Council to improve air quality and any progress that has been made.

1.3 The statutory air quality objectives applicable to LAQM in England can be found in **Appendix F, Table F1**.

2 Actions to Improve Air Quality

Air Quality Management Areas

2.1 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 the objectives.

2.2 A summary of the AQMA declared by Rochford District Council can be found in **Table 2.1** and the AQMA declaration order can be found in **Appendix G**.

2.3 Further information relating to current and revoked AQMAs declared by Rochford District Council, including maps of AQMA boundaries are available online at **https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=210**.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Pollutants and Air Quality Objectives	City/Town	One Line Description	Action Plan
AQMA No.1 (2015)	NO_2 annual mean	Rayleigh	Declared in 2015. Incorporates some premises in the following streets: • Brook Road • Crown Hill • Eastwood Road • High Road • High Street • Hockley Road • Southend Arterial Road • Webster's Way	The Air Quality Action Plan is currently being prepared

Progress and Impact of Measures to address Air Quality in Rochford

2.4 Due to Nitrogen Dioxide exceedances, Rochford District Council declared an Air Quality Management Area in Rayleigh Town Centre in 2015. The Council is currently developing an Air Quality Action Plan and associated measures to address air pollution.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	Essex Liftshare	Alternatives to private vehicle use	Car and lift sharing schemes	Essex County Council	N/A	2014	Number of Users	Unknown	Ongoing	N/A	
2	Restrict residential development in AQMA	Policy Guidance and Development	Other Policy	Rochford District Council	2014	2015	N/A	N/A	Policy has been adopted		Use of policy to prevent new exposure in areas of poor air quality
3	Developing Air Quality Action Plan	Policy Guidance and Development	Air Quality and Policy Guidance	Rochford District Council	2015	2017	Adoption of Air Quality Action Plan	In development	In Progress	2017	
4	Member of Essex Air	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	Essex Air	N/A	N/A	N/A	N/A	Ongoing	N/A	

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

2.5 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.

2.6 Rochford District Council does not monitor $PM_{2.5}$ concentrations however notes the Public Health Outcomes Framework indicator 3.01 – Fraction of mortality attributable to particulate ($PM_{2.5}$) air pollution which for 2013 gave a value of 5.6 broadly similar to other authorities within the region.

2.7 Measures that are developed as part of the forthcoming Air Quality Action Plan are likely to reduce emissions and concentrations of $PM_{2.5.}$

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

Summary of Monitoring Undertaken

3.1 Due to a number of measured exceedances and after completing a Detailed Assessment, Rochford District Council declared an AQMA in Rayleigh. Monitoring focuses on sites within the Rayleigh AQMA and notable junctions in Rochford.

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

Automatic Monitoring Sites

3.3 Rochford District Council undertook automatic (continuous) monitoring at one site during 2015. **Appendix A, Table A1** shows the details of this site.

3.4 A map showing the location of the monitoring site is provided in **Appendix E**.

3.5 Detail of the Quality Assurance/Quality Control (QA/QC) process can be found in **Appendix D**.

Non-Automatic Monitoring Sites

3.6 Rochford District Council undertook non- automatic (passive) monitoring of NO_2 at six sites during 2015. **Appendix A**, **Table A2** shows the details of the sites.

3.7 Maps showing the location of the monitoring sites are provided in **Appendix E**.

3.8 The diffusion tube monitoring sites in Rayleigh are all within the AQMA.

3.9 The diffusion tube monitoring sites in Rochford are not within an AQMA

3.10 Detail on Quality Assurance/Quality Control (QA/QC) including annualisation, bias adjustment and nitrogen dioxide fall off calculations for the diffusion tubes are included in **Appendix D**.

Individual Pollutants

Nitrogen Dioxide (NO_2)

3.11 The air quality monitoring results presented in this section are, where relevant, adjusted for 'annualisation' and bias. Further details on adjustments are provided in **Appendix D**.

3.12 It should be noted that due to resourcing issues, automatic monitoring was carried out from January to July and passive diffusion tube monitoring carried out from January to June and not across the calendar year. Although the data has been 'annualised', results from data that has been corrected in this manner are only estimations and should be for reference only.

3.13 Exceedances of the Air Quality Objectives occurred at the sites of RD1 (Automatic Analyser in Rayleigh Town Centre) and RO016 in 2015. These sites are within the AQMA.

The following table identifies the exceedances.

Table 3.1 – Monitored Exceedances

Site	Annual Mean (Bias Adjusted and Annualised where appropriate)	Estimation of Concentration at the Receptor
RD1 Eastwood Road/High Street (Automatic Analyser)	47.59	**41.80**
RO016 Eastwood Road (Diffusion Tube)	47.31	**41.60**

3.14 Monitoring site RD1 is at a busy junction (roundabout) of Eastwood Road and Rayleigh High Street. Site RO016 is located in Eastwood Road which is a busy part of the one way system that approaches the junction with the High Street. Both of these locations could be considered to be street canyons.

3.15 **Appendix A, Figure A1** shows the RD1 automatic analyser 2015 data graphically.

3.16 **Appendix A, Table A4** compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year. This identifies that there have been no exceedances of the NO_2 hourly mean objective in 2015 and that there has been a general trend downwards.

3.17 **Appendix C, Figure C1** compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. All locations are showing a general trend downwards from 2012.

3.18 For diffusion tubes, the full 2015 dataset of monthly mean values is provided in **Appendix B**.

Appendix A – Monitoring Results

Table A1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
RD1	Eastwood Road/ High Street	Roadside	580536	190629	NO_2	Y	Chemiluminescent	3.0	2.0	1.5

(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 A2 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
RO011	Rayleigh Weir	Roadside	580233	189766	NO_2	Yes	2.0	6.0	No	2.0
RO012	Eastwood Road/ High Street	Roadside Urban Centre	580536	190629	NO_2	Yes	3.0	2.0	No	2.0
RO013	Eastwood Road/ High Street	Roadside Urban Centre	580536	190629	NO_2	Yes	3.0	2.0	No	2.0
RO014	Eastwood Road/ High Street	Roadside Urban Centre	580536	190629	NO_2	Yes	3.0	2.0	No	2.0
RO015	Crown Hill	Roadside Urban Centre	580542	190755	NO_2	Yes	5.0	1.0	No	2.0
RO016	Eastwood Road	Roadside Urban Centre	580603	190546	NO_2	Yes	3.0	2.0	No	2.0
RO020	South Street	Kerbside	587670	190352	NO_2	No	2.0	1.0	No	2.0
RO022	Anne Boleyn Sutton Road	Roadside	587733	189667	NO_2	No	13.0	1.0	No	2.0

(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 A3 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2015 (%) (2)	NO_2 Annual Mean Concentration (µg/m^3) (3)				
					2011	2012	2013	2014	2015
RD1	Roadside	Automatic	99.9	51.46	35.80	**52.10**	**52.50**	**50.10**	**47.59~41.80**
RO011	Roadside/Urban Centre	Diffusion Tube	100	45.45	39.60	**42.26**	**41.33**	37.10	34.57
RO012 RO013 RO014	Roadside/Urban Centre	Diffusion Tube	93.33	42.42	**45.10**	**50.48**	**53.00**	**45.00**	37.98
RO015	Roadside/Urban Centre	Diffusion Tube	100	45.45	**43.30**	**53.01**	**48.62**	**47.00**	39.61
RO016	Kerbside	Diffusion Tube	40	18.18	**50.30**	**54.57**	**53.87**	**49.55**	**47.31~41.6**
RO020	Roadside	Diffusion Tube	60	27.27	33.30	38.69	**40.80**	35.70	34.08
RO022	Roadside	Diffusion Tube	100	45.45	**44.40**	**48.50**	**49.82**	39.70	39.74

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.**

(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 six 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 Technical Guidance LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See **Appendix D** for details.

~ Estimated NO_2 concentration at the receptor. See **Appendix D** for details.

Figure A1 – 2015 Automatic Monitoring Data Chart

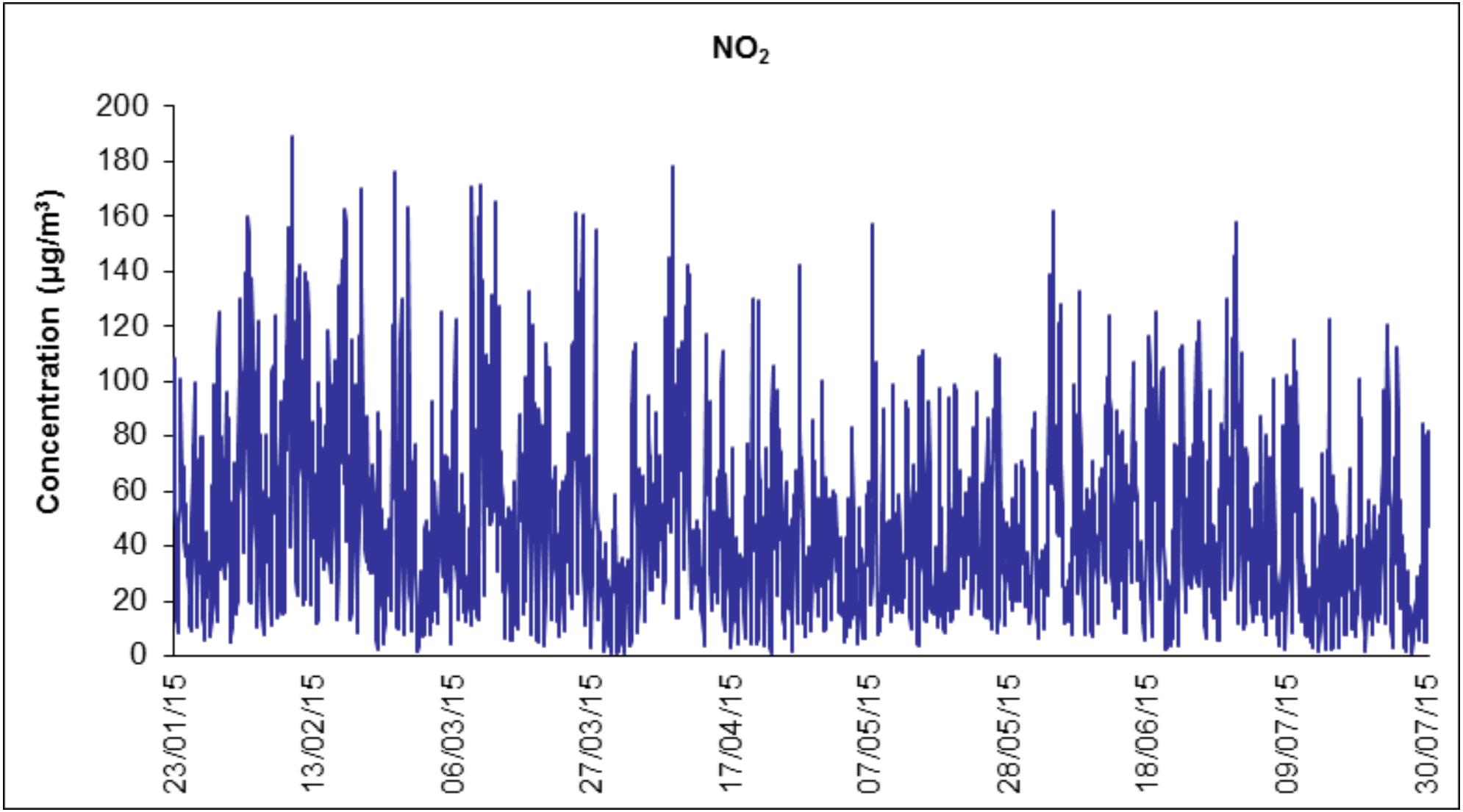


Table A4 – 1-Hour Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2015 (%) (2)	NO_2 Annual Mean Concentration (µg/m^3) (3)				
					2011	2012	2013	2014	2015
RD1	Roadside	Automatic	99.9	51.46	0	4	12	8	0

Notes: Exceedances of the NO_2 1-hour mean objective (200µg/m^3 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 90%, the 99.8th percentile of 1-hour means is provided in brackets.

Appendix B – Full Monthly Diffusion Tube Results for 2015

Table B1 – NO_2 Monthly Diffusion Tube Results – 2015

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Annualisation Factor (1)	Bias Adjusted (1)
RO011	60.20	64.30	34.90		32.60	28.00	No Measurement						44.00	0.97	34.57
RO012	66.60	56.30	50.50		32.80	37.50	No Measurement						48.74	0.97	38.30
RO013	49.10	58.60	32.90		40.50	Missing	No Measurement						45.28	0.97	35.57
RO014	68.70	61.10	48.40		37.60	43.70	No Measurement						51.90	*0.97*	**40.78**
RO015	62.90	62.80	49.20		39.80	37.40	No Measurement						50.42	*0.97*	39.61
RO016	68.20	Missing	Missing		Missing	51.00	No Measurement						59.60	*0.98*	**47.31**
RO020	49.50	Missing	44.70		Missing	34.60	No Measurement						42.93	0.98	34.08
RO022	70.00	56.10	41.30		37.60	47.90	No Measurement						50.58	*0.97*	39.74

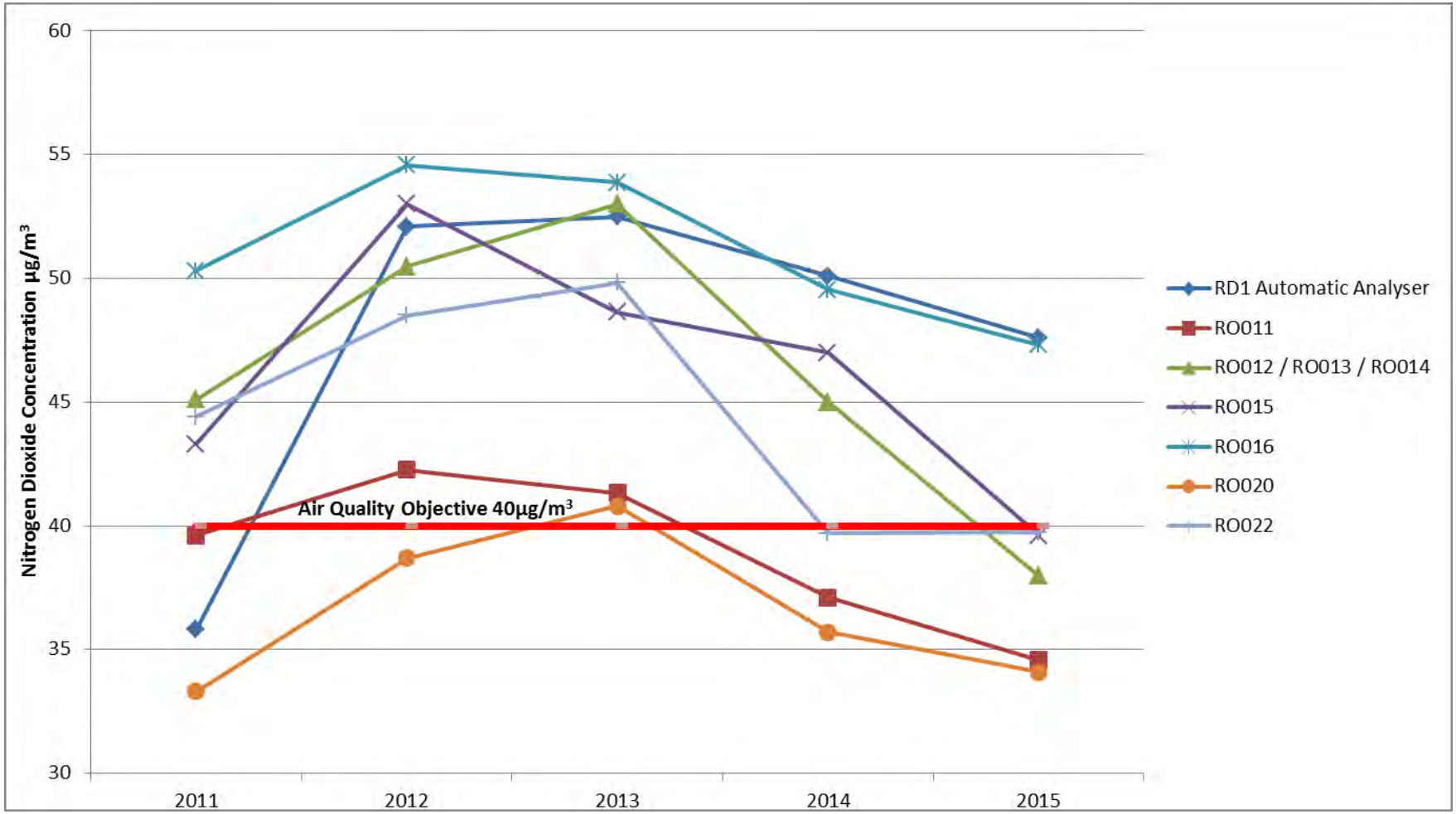
(1) See **Appendix C** for details on bias adjustment and annualisation factor.

March Diffusion Tubes exposed 4 March to 22 April.

A lack of resources prevented deployment of diffusion tubes during the second half of 2015.

Appendix C – Nitrogen Dioxide Trend Data

Figure C1 – Nitrogen Dioxide Trend Data 2011-2015



Appendix D – Supporting Technical Information/Air Quality Monitoring Data QA/QC

Automatic Monitoring QA/QC

Rochford District Council operates an API 200a TRL ID 6008 nitrogen oxide monitor in Rayleigh High Street at the roundabout junction with Eastwood Road. The analyser was serviced and tested in line with manufacturer guidelines prior to deployment. Upon installation the unit was checked against the certified calibration gas bottle. The 2015 monitoring campaign was of six months duration during which LSO duties were carried out monthly.

Data has been ratified according to AURN recommended procedures. The calibration and ratification process corrected the raw dataset for any drift in the zero baseline and upper range of the instrument. This was carried out using a spreadsheet based process that incorporates zero and span check information from the calibration visits.

The zero reading recorded during the calibration visits is used to adjust any offset of the baseline of the data.The difference between the span value obtained between one calibration visit and the next visit is used to calculate a factor. This change is assumed to occur at the same rate over the period between calibrations and as such, the factor is used as a linear data scalar. This effectively results in the start of the period having no factor applied and the end of the period being scaled with the full factor with a sliding scale of the factor in-between.

After applying the calibration factors the data was screened by visual examination for erroneous measurements or outliers. For the 2015 dataset no data was removed and the data capture rate was excellent.

Table D1 – Automatic Data Annualisation

Background Site	Annual Mean 2015 (Am)	Period Mean 2015 (Pm)	Ratio (Am/Pm)
Chignal	12.76	11.64	1.10
St Osyth	10.68	10.97	0.97
Average (Ra)			1.03
Rayleigh High Street Monitored Average			46.2
Rayleigh High Street Annualised Average Concentration			47.59

Diffusion Tubes QA/QC

Rochford District Council undertook monitoring at 6 nitrogen dioxide diffusion tubes sites in 2015.

The diffusion tubes were supplied by Environmental Scientifics Group (ESG Didcot) (UKAS Testing Laboratory number 1015) with a preparation method of 50% triethanolamine (TEA) in Acetone.

The AIR NO_2 proficiency testing scheme found that the laboratory achieved the following percentage of results determined as satisfactory for 2015:

Table D2 – AIR PT Results 2015

AIR PT Round	AIR PT AR006	AIR PT AR007	AIR PT AR009	AIR PT AR010
Round conducted in the period	January – February 2015	April – May 2015	July – August 2015	October – November 2015
ESG Didcot	87.5%	100%	100%	100%

Diffusion Tube Bias Adjustment Factors

Rochford District Council uses the national bias adjustment figure for calculating diffusion tubes results.

The Diffusion Tube Bias Adjustment Factors Spreadsheet for March 2016 identified that for ESG (Didcot) 50% TEA in acetone diffusion tubes in 2015, a bias adjustment factor of 0.81 should be used. This was derived from orthogonal regression analysis of 21 studies.

Figure D1 – RD012/013/014 Triplicate Adjustment

Adjustment of DUPLICATE or TRIPLICATE Tubes AEA Energy & Environment From the AEA group

Diffusion Tubes Measurements										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 Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	07/01/2015	04/02/2015	66.6	49.1	68.7	61.5	10.76	17.51	26.73	Good
2	04/02/2015	04/03/2015	56.3	58.6	61.1	58.7	2.40	4.09	5.96	Good
3	04/03/2015	22/04/2015	50.5	32.9	48.4	43.9	9.61	21.88	23.88	Poor Precision
4	22/04/2015	27/05/2015	32.8	40.5	37.6	37.0	3.89	10.52	9.66	Good
5	27/05/2015	02/07/2015	37.5	-	43.7	40.6	4.38	10.80	39.39	Good
6										
7										
8										
9										
10										
11										
12										
13										

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

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	Rayleigh High Street

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%
Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 49 μgm^{-3}
Average Precision (CV): 11
Adjusted Tube average: μgm^{-3}

Adjusted measurement (95% confidence level)
with all data
Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 48 μgm^{-3}
Average Precision (CV): 13
Adjusted Tube average: μgm^{-3}

Diffusion Tube Data Annualisation

All 8 sites had less than 8 months' worth of data so it was necessary to annualise. Rochford District Council does not operate a continuous monitor at a background site so data from the rural background site at Chignal in Chelmsford was used.

Table D3 – Diffusion Tube Annualisation

Start Date	End Date	B1 (Chignal, Chelmsford Rural Background AQMS)	D1 – RO011	B1 when D1
7 January 2015	4 February 2015	17.42	60.20	17.42
4 February 2015	4 March 2015	16.54	64.30	16.54
4 March 2015	22 April 2015	13.09	34.90	13.09
22 April 2015	27 May 2015	9.93	32.60	9.93
27 May 2015	2 July 2015	8.74	28.00	8.74
2 July 2015	8 August 2015	9.06		
8 August 2015	26 August 2015	9.42		
26 August 2015	30 September 2015	11.03		
30 September 2015	28 October 2015	13.55		
28 October 2015	2 December 2015	14.97		
2 December 2015	6 January 2016	17.08		
Average		12.80	44.00	13.14
Annualisation Factor		0.97		
RO011 Annualised Concentration		42.86		
Start Date	**End Date**	**B1 (Chignal, Chelmsford Rural Background AQMS)**	**D1 – R 012 RO013 RO014**	**B1 when D1**
7 January 2015	4 February 2015	17.36	61.50	17.42
4 February 2015	4 March 2015	16.68	58.70	16.54
4 March 2015	22 April 2015	12.95	43.90	13.09
22 April 2015	27 May 2015	10.07	37.00	9.93
27 May 2015	2 July 2015	8.76	40.60	8.74
2 July 2015	8 August 2015	8.98		
8 August 2015	26 August 2015	9.46		
26 August 2015	30 September 2015	10.95		
30 September 2015	28 October 2015	14.03		
28 October 2015	2 December 2015	14.92		
2 December 2015	6 January 2016	16.78		
Average		12.81	48.34	13.14
Annualisation Factor		0.97		
RO012/013/014 Annualised Concentration		47.12		

Start Date	End Date	B1 (Chignal, Chelmsford Rural Background AQMS)	D1 – RO015	B1 when D1
7 January 2015	4 February 2015	17.42	62.90	17.42
4 February 2015	4 March 2015	16.54	62.80	16.54
4 March 2015	22 April 2015	13.09	49.20	13.09
22 April 2015	27 May 2015	9.93	39.80	9.93
27 May 2015	2 July 2015	8.74	37.40	8.74
2 July 2015	8 August 2015	9.06		
8 August 2015	26 August 2015	9.42		
26 August 2015	30 September 2015	11.03		
30 September 2015	28 October 2015	13.55		
28 October 2015	2 December 2015	14.97		
2 December 2015	6 January 2016	17.08		
Average		12.80	50.42	13.14
Annualisation Factor		0.97		
RO015 Annualised Concentration		49.11		
Start Date	**End Date**	**B1 (Chignal, Chelmsford Rural Background AQMS)**	**D1 – RO016**	**B1 when D1**
7 January 2015	4 February 2015	17.42	68.20	17.42
4 February 2015	4 March 2015	16.54		
4 March 2015	22 April 2015	13.09		
22 April 2015	27 May 2015	9.93		
27 May 2015	2 July 2015	8.74	51.00	8.74
2 July 2015	8 August 2015	9.06		
8 August 2015	26 August 2015	9.42		
26 August 2015	30 September 2015	11.03		
30 September 2015	28 October 2015	13.55		
28 October 2015	2 December 2015	14.97		
2 December 2015	6 January 2016	17.08		
Average		12.80	59.60	13.08
Annualisation Factor		0.98		
RO016 Annualised Concentration		58.34		

Start Date	End Date	B1 (Chignal, Chelmsford Rural Background AQMS)	D1 – (RO020)	B1 when D1
7 January 2015	4 February 2015	17.42	49.50	17.42
4 February 2015	4 March 2015	16.54		
4 March 2015	22 April 2015	13.09	44.70	13.09
22 April 2015	27 May 2015	9.93		
27 May 2015	2 July 2015	8.74	34.60	8.74
2 July 2015	8 August 2015	9.06		
8 August 2015	26 August 2015	9.42		
26 August 2015	30 September 2015	11.03		
30 September 2015	28 October 2015	13.55		
28 October 2015	2 December 2015	14.97		
2 December 2015	6 January 2016	17.08		
Average		12.80	42.93	13.08
Annualisation Factor		0.98		
RO020 Annualised Concentration		42.01		
Start Date	**End Date**	**B1 (Chignal, Chelmsford Rural Background AQMS)**	**D1 – RO022**	**B1 when D1**
7 January 2015	4 February 2015	17.42	70.00	17.42
4 February 2015	4 March 2015	16.54	56.10	16.54
4 March 2015	22 April 2015	13.09	41.30	13.09
22 April 2015	27 May 2015	9.93	37.60	9.93
27 May 2015	2 July 2015	8.74	47.90	8.74
2 July 2015	8 August 2015	9.06		
8 August 2015	26 August 2015	9.42		
26 August 2015	30 September 2015	11.03		
30 September 2015	28 October 2015	13.55		
28 October 2015	2 December 2015	14.97		
2 December 2015	6 January 2016	17.08		
Average		12.80	50.58	13.14
Annualisation Factor		0.97		
RO022 Annualised Concentration		49.27		

Nitrogen Dioxide Fall Off with Distance Calculations

Figure D2 – RD1 Automatic Analyser Fall Off with Distance Calculation

This calculator allows you to predict the annual mean NO_2 concentration for a location ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph.

Air Quality CONSULTANTS

Enter data into the yellow cells

Step 1	How far from the KERB was your measurement made (in metres)?	(Note 1)	2	metres
Step 2	How far from the KERB is your receptor (in metres)?	(Note 1)	5	metres
Step 3	What is the local annual mean background NO_2 concentration (in $\mu g/m^3$)?	(Note 2)	20.55	$\mu g/m^3$
Step 4	What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)	47.59	$\mu g/m^3$
Result	The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)	41.8	$\mu g/m^3$

Note 1: In some cases the term "kerb" may be taken to be the edge of the trafficked road - see the FAQ at http://laqm2.defra.gov.uk/FAQs/Monitoring/Location/index.htm for further details. Distances should be measured horizontally from the kerb and assumes that the monitor and receptor have similar elevations. Each distance should be greater than 0.1m and less than 50m (In practice, using a value of 0.1m when the monitor is closer to the kerb than this is likely to be reasonable). The receptor is the location for which you wish to make your prediction. The monitor can either be closer to the kerb than the receptor, or further from the kerb than the receptor. The closer the monitor and the receptor are to each other, the more reliable the prediction will be. When your receptor is further from the kerb than your monitor, it is recommended that the receptor and monitor should be within 20m of each other. When your receptor is closer to the kerb than your monitor, it is recommended that the receptor and monitor should be within 10m of each other.

Note 2: The measurement and the background must be for the same year. The background concentration could come from the national maps published at www.airquality.co.uk, or alternatively from a nearby monitor in a background location.

Note 3: The calculator follows the procedure set out in Box 2.3 of LAQM TG(09). The results will have a greater uncertainty than the measured data. More confidence can be placed in results where the distance between the monitor and the receptor is small than where it is large.

Issue 4: 25/01/11. Created by Dr Ben Marner; Approved by Prof Duncan Laxen. Contact: benmarner@aqconsultants.co.uk

Figure D3 – RO016 Eastwood Road Fall Off with Distance Calculation

This calculator allows you to predict the annual mean NO_2 concentration for a location ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph.

Air Quality CONSULTANTS

Enter data into the yellow cells

Step 1	How far from the KERB was your measurement made (in metres)?	(Note 1)	2	metres
Step 2	How far from the KERB is your receptor (in metres)?	(Note 1)	5	metres
Step 3	What is the local annual mean background NO_2 concentration (in $\mu g/m^3$)?	(Note 2)	20.55	$\mu g/m^3$
Step 4	What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	(Note 2)	47.31	$\mu g/m^3$
Result	The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	(Note 3)	41.6	$\mu g/m^3$

Note 1: In some cases the term "kerb" may be taken to be the edge of the trafficked road - see the FAQ at http://laqm2.defra.gov.uk/FAQs/Monitoring/Location/index.htm for further details. Distances should be measured horizontally from the kerb and assumes that the monitor and receptor have similar elevations. Each distance should be greater than 0.1m and less than 50m (In practice, using a value of 0.1m when the monitor is closer to the kerb than this is likely to be reasonable). The receptor is the location for which you wish to make your prediction. The monitor can either be closer to the kerb than the receptor, or further from the kerb than the receptor. The closer the monitor and the receptor are to each other, the more reliable the prediction will be. When your receptor is further from the kerb than your monitor, it is recommended that the receptor and monitor should be within 20m of each other. When your receptor is closer to the kerb than your monitor, it is recommended that the receptor and monitor should be within 10m of each other.

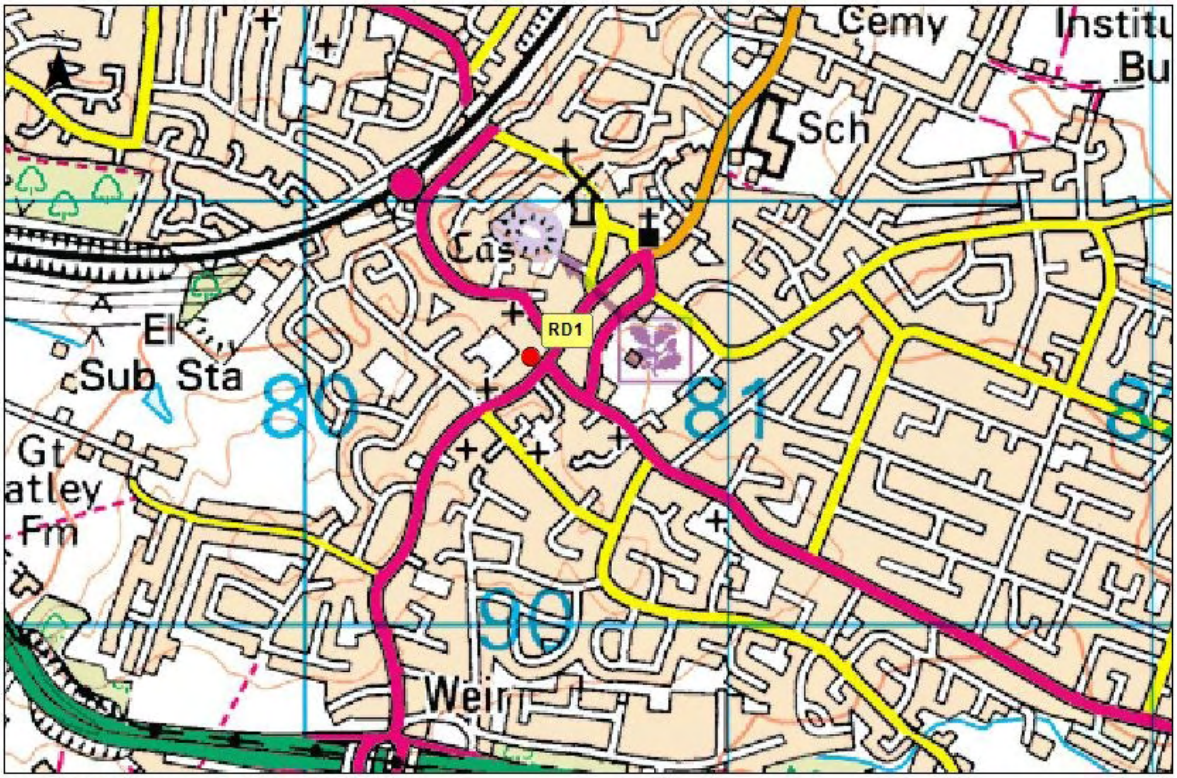
Note 2: The measurement and the background must be for the same year. The background concentration could come from the national maps published at www.airquality.co.uk, or alternatively from a nearby monitor in a background location.

Note 3: The calculator follows the procedure set out in Box 2.3 of LAQM TG(09). The results will have a greater uncertainty than the measured data. More confidence can be placed in results where the distance between the monitor and the receptor is small than where it is large.

Issue 4: 25/01/11. Created by Dr Ben Marner; Approved by Prof Duncan Laxen. Contact: benmarner@aqconsultants.co.uk

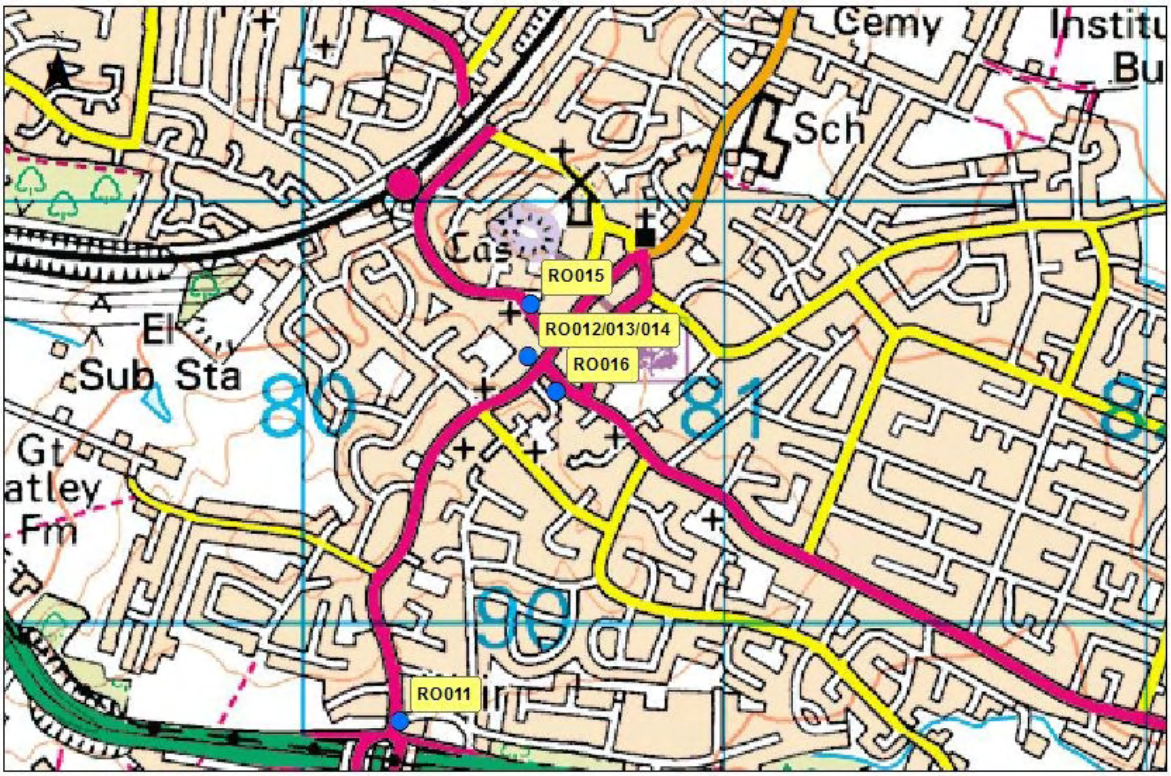
Appendix E – Map(s) of Monitoring Locations

Figure E1 – Location of RD1 Automatic Analyser



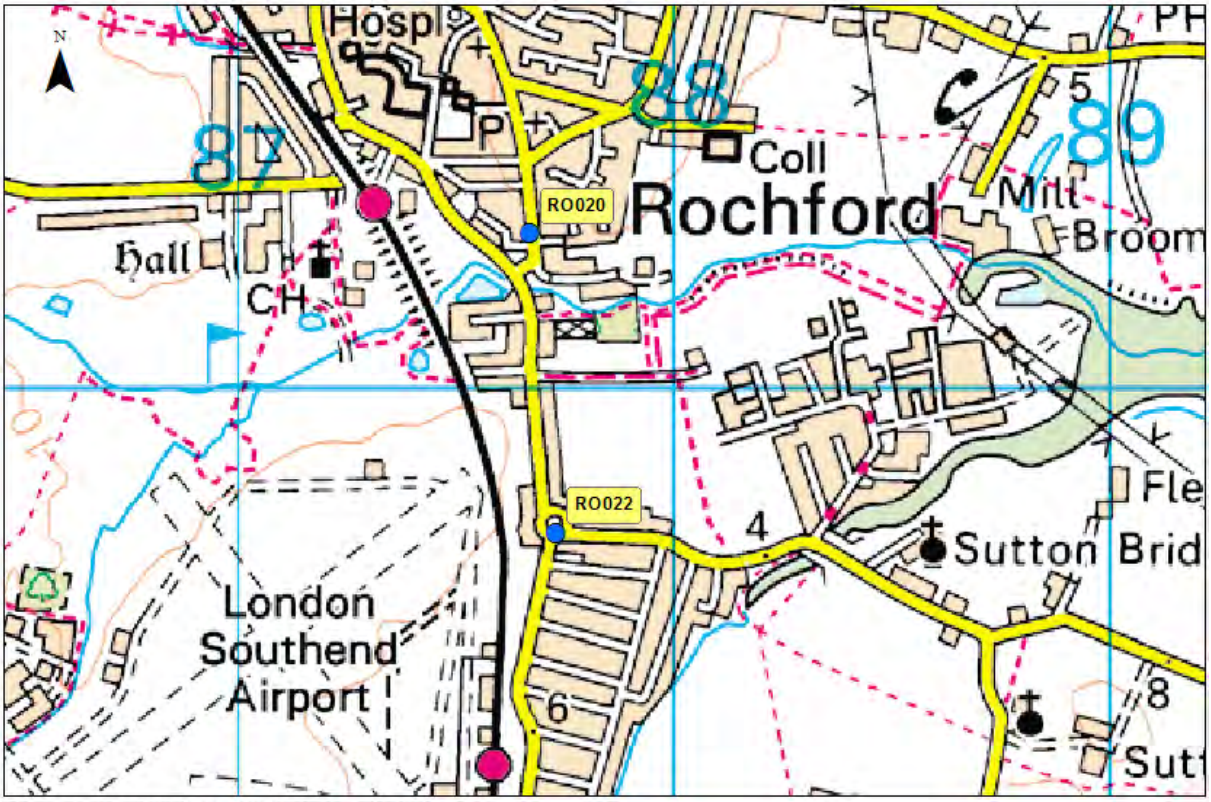
© Crown copyright and database rights 2016 Ordnance Survey 100023562

Figure E2 – Location of Rayleigh Diffusion Tubes



© Crown copyright and database rights 2016 Ordnance Survey 100023562

Figure E3 – Location of Rochford Diffusion Tubes



© Crown copyright and database rights 2016 Ordnance Survey 100023562

Appendix F: Summary of Air Quality Objectives in England

Table F1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[4]	
	Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

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

Appendix G: Air Quality Management Area

Figure G1 – Air Quality Management Area (Rochford District Council) (No. 1) Order 2015

Rochford District Council

ENVIRONMENT ACT 1995, SECTION 83

Air Quality Management Area Order

Rochford District Council ("The Council"), in exercise of the powers conferred upon it by Section 83(1) of the Environment Act 1995, hereby makes the following Order:

1. This Order may be cited as the **Air Quality Management Area (Rochford District Council) (No.1) Order 2015** and shall come in to effect on 1st February 2015.

2. The effect of the Order is to designate as an Air Quality Management Area ("the AQMA"), the area as shown outlined in red on the plan in Schedule 1 which incorporates some premises in each of the following streets:

   a) Brook Road;
   b) Crown Hill;
   c) Eastwood Road;
   d) High Road;
   e) High Street;
   f) Hockley Road;
   g) Southend Arterial Road;
   h) Webster's Way.

3. Where the AQMA includes any part of a property, it shall be taken to include the whole of that property (buildings and associated open space) within the same curtilage.

4. The AQMA is designated in relation to a likely breach of the nitrogen dioxide (NO_2) annual mean Objective as specified in the Air Quality (England) Regulations 2000, as amended.

5. This Order shall remain in force until it is varied or revoked by a subsequent Order.

MIN NO 149/14
SEAL NO 6499

The Common seal of ROCHFORD DISTRICT COUNCIL was hereunto affixed

DATED:

in the presence of

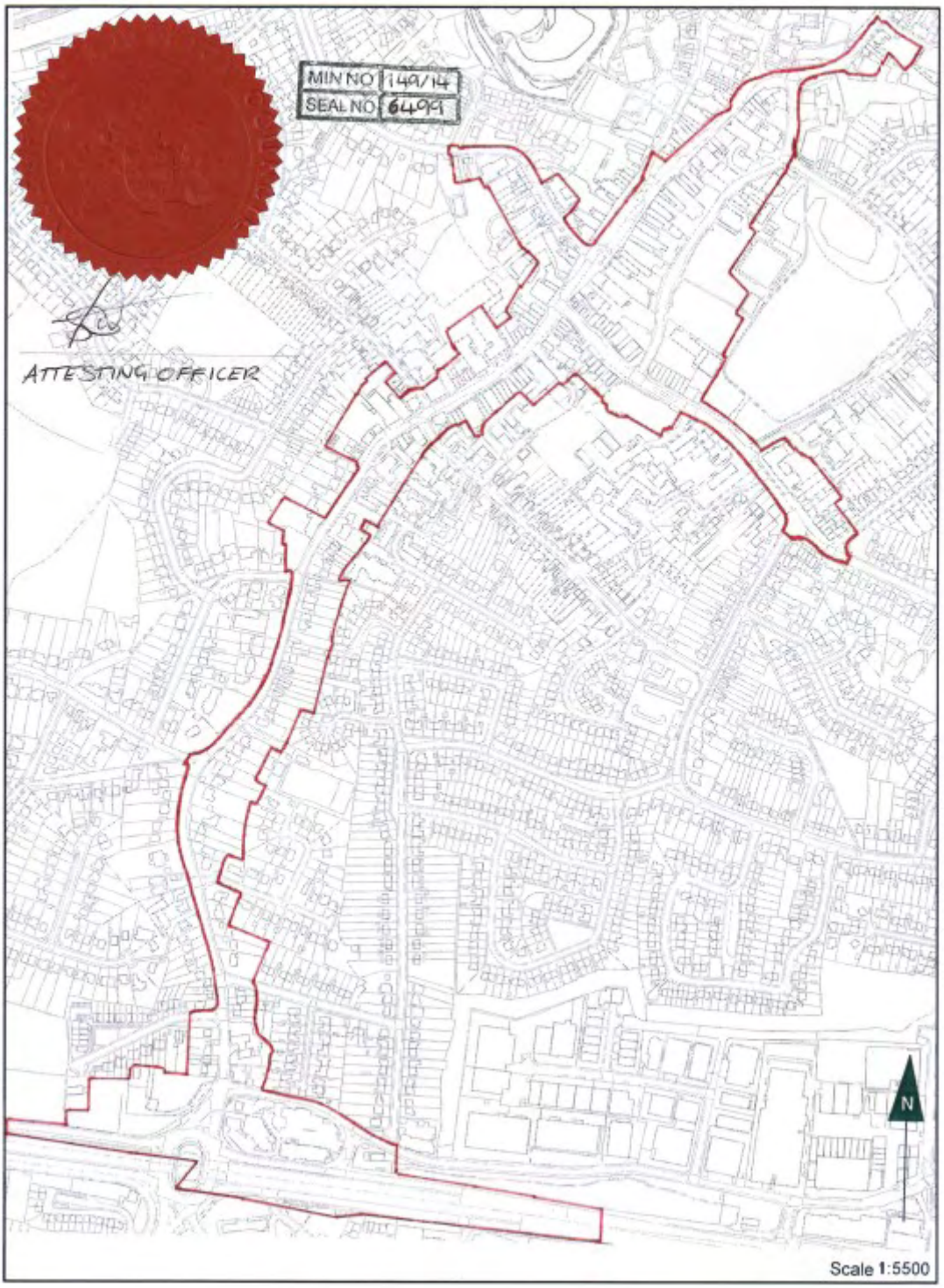
SIGNED: 30 January 2015

Attesting Officer

Address for all communications:
Rochford District Council, Council Offices
South Street, Rochford, Essex SS4 1BW

Notes: A copy of this Order and associated plan have been deposited and may be seen, free of charge, at the above address during normal working hours and on the Council's website www.rochford.gov.uk/airquality. Enquiries should be directed to Customer Services at the above address, via telephone on (01702) 318111 or else via the website.

Schedule 1 – Air Quality Management Area (Rochford District Council) (No.1) Order 2015



Glossary of Terms

Abbreviation	Description
AURN	Automatic Urban and Rural Network – The AURN is the UK's largest automatic monitoring network and is the main network used for compliance reporting against the Ambient Air Quality Directives.
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	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
EU	European Union
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
TEA	Triethanolamine – substance used in diffusion tubes for absorbing nitrogen dioxide
UKAS	United Kingdom Accreditation Service

References

Defra Diffusion Tube Bias Adjustment Factors Spreadsheet available at:	**http://laqm.defra.gov.uk/documents/Database_Diffusion_Tube_Bias_Factors_v03_16_Final_v2.xls**
Defra LAQM Summary of Laboratory Performance in AIR NO_2 PT Scheme available at:	**http://laqm.defra.gov.uk/documents/LAQM-AIR-PT-Rounds-1-12-(April-2014-February-2016)-NO2-report.pdf**
Defra LAQM Policy Guidance LAQM.PG16 available at:	**http://laqm.defra.gov.uk/documents/LAQM-PG16-April-16-v1.pdf**
Defra LAQM Technical Guidance LAQM.TG16 available at:	**http://laqm.defra.gov.uk/documents/LAQM-TG16-April-16-v1.pdf**
Defra Nitrogen Dioxide Fall-Off with Distance Calculator available at	**http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html**
Essex Air Quality Consortium available at:	**http://www.essexair.org.uk/AQInEssex/LA/Chelmsford.aspx**
EssexCarShare.com available at:	**https://essex.liftshare.com/**
Essex Air Twitter Feed available at	**https://twitter.com/essexair**
Public Health Outcomes Framework Indicator 3.01 available at:	**http://www.phoutcomes.info/public-health-outcomes-framework#page/1/gid/1000043/pat/6/par/E12000006/ati/101/are/E07000075/iid/30101/age/230/sex/4**
Rochford District Council Core Strategy available at:	**http://www.rochford.gov.uk/planning/policy/local_development_framework/core_strategy_dpd1**
Rochford District Council Rayleigh Town Centre Action Plan available at:	**http://www.rochford.gov.uk/planning/policy/local_development_framework/rayleigh_area_action_plan**

Rochford District Council
Council Offices South Street
Rochford Essex SS4 1BW
Phone: 01702 546366
customerservices@rochford.gov.uk
Website: www.rochford.gov.uk

INVESTORS IN PEOPLE | Gold

Appendix B

Area 2C
Nobel House
17 Smith Square
London SW1P 3JR

Telephone 0208 026 4243
Website www.defra.gov.uk

Email tutu.aluko@defra.gsi.gov.uk

Martin Howlett
Senior Environmental Health Officer
Rochford District Council
Council Offices
South Street
Rochford Essex SS4 1BW

21 September 2016

Dear Mr Howlett

LOCAL AIR QUALITY MANAGEMENT: 2016 ANNUAL STATUS REPORT

Thank you for consulting the Department for Environment, Food and Rural Affairs on Rochford District Council's 2016 Air Quality Annual Status Report (ASR).

Defra has reviewed the ASR and comments on the report are available in the appraisal report.

Defra notes that the Council is currently developing an Air Quality Action Plan and associated measures to address air pollution. Measures that will be introduced need to have the potential to achieve the required level of emissions reductions to achieve air quality objectives. The Council should refer to the recommendations of the new Technical Guidance LAQM TG16 for developing the Air Quality Action Plan.

For local authorities in England (outside of London), Defra is an important statutory consultee under local air quality management and looks forward to receiving a copy of the Action Plan. It is expected that the Council will also consult other statutory consultees.

The next Annual Status Report is due in 2017. Defra expects local authorities to upload a copy of the ASR to the Report Submission Website http://laqm.defra.gov.uk/1rsw/ no later than 30 June 2017.

Yours sincerely

Tutu Aluko
ATMOSPHERE AND INDUSTRIAL EMISSIONS
WEB: http://uk-air.defra.gov.uk |TWITTER: @defraukair

Local Authority:	**Rochford District Council**
Reference:	**ASR16-048**
Date of issue	**August 2016**

Annual Status Report

The Report sets out the Annual Status Report (ASR), which forms part of the Review & Assessment process required under the Environment Act 1995 and subsequent Regulations.

The Local Authority has a single AQMA in Rayleigh Town Centre, declared in 2015 for exceedence of the annual mean objective for nitrogen dioxide.

Rochford District Council are in the process of developing an Air Quality Action Plan, and have progressed several measures contributing to improving local air quality but they are not focussed on the AQMA hotspot area.

The current monitoring programme shows that there has been a continuing improvement in air quality in the AQMA during 2015, such that there remains a marginal exceedence of the annual mean objective at two relevant receptors.

On the basis of the evidence provided by the local authority the conclusions reached are acceptable for all sources and pollutants, with the provisos listed in the commentary below.

Following the completion of this report, Rochford District Council should submit an Annual Status Report in 2017.

Local Authority:	**Rochford District Council**
Reference:	**ASR16-048**
Date of issue	**August 2016**

Commentary

The report is well structured, detailed, and provides the information specified in the Guidance.

1. The report highlights that there is continuing marginal exceedence of the annual mean objective for nitrogen dioxide, within the AQMA in Eastwood Road and Junction with the High Street.
2. The monitoring results for 2015 highlight a continuing exceedance of the annual mean objective for nitrogen dioxide at two locations within the AQMA.
3. Distance corrections have been applied to these two results, but it is not clear whether they have been applied to all the previous results in the same table. For the main table of monitoring results in Table A3, all results should be recorded for relevant exposure and have distance corrections applied, where results are being used for comparisons with objective levels.
4. Rochford District Council have made clear that an Action Plan is being developed in conjunction with Essex County Council
5. It is recommended that the new Technical Guidance LAQM TG16 should be consulted through the process of developing the Air Quality Action Plan. The measures considered within the action plan, need to have the potential to achieve the required level of emissions reductions to achieve the air quality objectives within agreed timescales.
6. It is expected that the draft Action Plan will be subject to statutory consultation before adoption by the Council.

This commentary is not designed to deal with every aspect of the report. It highlights a number of issues that should help the local authority either in completing the Updating and Screening Assessment adequately (if required) or in carrying out future Review & Assessment work.

Issues specifically related to this appraisal can be followed up by returning the attached comment form to Defra, Welsh Assembly Government, Scottish Government or DOE, as appropriate – or by emailing the form to reportappraisal@ttr-ltd.com.

For any other queries please contact the Local Air Quality Management Helpdesk:
Telephone: 0800 0327 953
Email: LAQMHelpdesk@uk.bureauveritas.com

Local Authority:	**Rochford District Council**
Reference:	**ASR16-048**
Date of issue	**August 2016**

Appraisal Response Comment Form

Contact Name:	
Contact Telephone number:	
Contact email address:	

Comments on appraisal/Further information:

Rayleigh Town Centre

Air Quality Action Plan Report

June 2016

RINGWAY JACOBS
integrated expertise

Essex County Council

Document Control Sheet

Document prepared by:

James Browne
Graduate Air Quality Consultant

Air Quality Planning
1180 Eskdale Road
Winnersh
RG41 5TU

T 0118 946 8424
E james.browne@jacobs.com
W www.jacobs.com

Report Title	Rayleigh town centre Air Quality Action Plan Report
Project Number	B3553P09
Status	Draft
Revision	3
Control Date	

Record of Issue

Issue	Status	Author	Date	Check	Date	Review	Date
1	Draft	J Browne	02/06/16	MC	02/06/16	MC	02/06/16
2	Draft	J Browne	10/06/16	MC	10/06/16	MC	10/06/16
3	Draft	J Browne	26/09/16	MC	26/09/16	MC	26/09/16

Approved for Issue By	Date
Chris Beverley	26/09/16

Distribution

Organisation	Contact	Number of Copies
Essex County Council	M Howlett	1
Essex County Council	B Gould	1
Essex County Council	A Buston	1

© Copyright 2015 Jacobs U.K. Limited. The concepts and information contained in this document are the property of Jacobs. Use or copying of this document in whole or in part without the written permission of Jacobs constitutes an infringement of copyright.

Limitation: This report has been prepared on behalf of, and for the exclusive use of Jacobs' Client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

Contents

1 Rayleigh town centre Air Quality Action Plan 1
2 Air Quality Action Plan 2
Appendix A: Rayleigh Air Quality Action Plan 4

Executive Summary

The Air Quality team at Jacobs working on behalf of Essex County Council received a request from Martin Howlett of Rochford District Council (RDC) to provide air quality consultancy services to support the delivery of a Further Assessment as required under the Local Air Quality Management (LAQM) regime. This work is required following the declaration of an Air Quality Management Area (AQMA) for exceedences of the annual mean nitrogen dioxide (NO2) objective alongside roads in Rayleigh town centre.

Contained within the appendix of this report, the Air Quality Action Plan (AQAP) outlines how the council plan to effectively tackle air quality issues within our control and the responses from the consultation and stakeholder engagements. Two main stakeholder meetings took place with the first engaging predominately with representatives from the district and county transport teams and the second predominately engaging with district and county planning teams. The outcomes from these meetings enabled the council to develop and prioritise an action plan. Located within tables 4 - 9 of the AQAP are the actions that RDC will implement, their Key Performance Indicator, the quantification of their benefit in terms of concentration reduction and the date to be achieved by. These measures fall into the following categories - monitoring, traffic management, sustainable travel, planning development and policy control, low emission vehicles and the raising of awareness. The council expects the area to meet the AQO by 2018 and this compliance needs to be achieved for 3 years to support revocation of the AQMA. However, it is recognised that there are a large number of air quality policy areas that are outside of the respective organisations influence (such as vehicle emissions standards agreed in Europe), but for which there may be useful evidence, and so work will continue with regional and central government on policies and issues beyond RDC's direct influence.

1 Rayleigh town centre Air Quality Action Plan

1.1 Introduction

Rochford District Council recently declared an Air Quality Management Area (AQMA) for exceedences of the annual mean nitrogen dioxide (NO2) alongside roads in Rayleigh town centre. Whereas at the time of the declaration, a 4th stage “Further Assessment” report was required to be submitted to Defra within 12 months of an AQMA declaration, this requirement has since been revoked in Law.

Given the anticipated timescales for completion of the work and the date of commission however, it is anticipated that an AQAP will be available for RDC to submit to Defra by the dates indicated in the agreed delivery programme, and but may be subject to change upon further agreement.

1.1.1 Air Quality in Rayleigh

Rochford District Council (RDC) stated within its 2014 Air Quality Progress Report that an AQMA declaration would be required. In February 2015 the AQMA was declared for exceedances of the annual mean nitrogen dioxide (NO_2) for a number of roads in Rayleigh town centre. The AQAP located within appendix A details the measures to tackle air quality issues.

2 Air Quality Action Plan

Appendix A contains the Air Quality Action Plan.

Appendices

Appendix A: Rayleigh Air Quality Action Plan

DRAFT

Air Quality
CONSULTANTS

Air Quality Action Plan:
Rochford District Council

September 2016

Experts in air quality
management & assessment

Document Control

Client	Rochford District Council	**Principal Contact**	Martin Howlett

Job Number	J2545

Report Prepared By:	Lauren Bailey

Document Status and Review Schedule

Report No.	Date	Status	Reviewed by
J2545/1/D4	21 September 2016	Draft	Prof. Duncan Laxen (Managing Director)

DRAFT

This report has been prepared by Air Quality Consultants Ltd on behalf of the Client, taking into account the agreed scope of works. Unless otherwise agreed, this document and all other Intellectual Property Rights remain the property of Air Quality Consultants Ltd.

In preparing this report, Air Quality Consultants Ltd has exercised all reasonable skill and care, taking into account the objectives and the agreed scope of works. Air Quality Consultants Ltd does not accept any liability in negligence for any matters arising outside of the agreed scope of works. The Company operates a formal Quality Management System, which is certified to ISO 9001:2008, and a formal Environmental Management System, certified to ISO 14001:2004. QMF 08.

When issued in electronic format, Air Quality Consultants Ltd does not accept any responsibility for any unauthorised changes made by others.

When printed by Air Quality Consultants Ltd, this report will be on Evolve Office, 100% Recycled paper.

Air Quality Consultants Ltd
23 Coldharbour Road, Bristol BS6 7JT Tel: 0117 974 1086
12 Airedale Road, London SW12 8SF Tel: 0208 673 4313
aqc@aqconsultants.co.uk

Registered Office: 12 St Oswalds Road, Bristol, BS6 7HT
Companies House Registration No: 2814570

Local Authority Officer	Martin Howlett
Department	Environmental Services
Address	Rochford District Council Council Offices South Street Rochford Essex SS4 1BW
Telephone	01702 318049
E-mail	martin.howlett@rochford.gov.uk

DRAFT

Executive Summary

This Air Quality Action Plan (AQAP) has been produced as part of our statutory duties required by the Local Air Quality Management framework. It outlines the action we will take to improve air quality in the district of Rochford between 2016 and 2020, in particular within our Air Quality Management Area (AQMA), which we declared in Rayleigh in 2015.

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]. Rochford District Council is committed to reducing the exposure of people in Rochford to poor air quality in order to improve their health.

We have developed actions that can be considered under six broad topic headings:

- Monitoring
- Traffic Management
- Sustainable Travel
- Planning Policy and Development Control
- Low Emission Vehicles
- Raising Awareness

Our priorities are to; reduce congestion in areas where people live close to busy roads, reduce the volume of traffic within the AQMA and strengthen planning policies to avoid new residential development in the AQMA, manage growth and support electric vehicle (EV) infrastructure.

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

DRAFT

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

Responsibilities and Commitment

This AQAP was prepared by the Environmental Health Department of Rochford District Council in conjunction with Ringway Jacobs, with assistance from Air Quality Consultants Ltd. It has the support and agreement of officers in the following departments and other organisations:

- Rochford District Council Environmental Health Department;
- Essex County Council Transportation Planning and Development Team;
- Rochford District Council Planning Policy Team;
- Essex County Council Spatial Planning Department;
- Essex County Council Public Health Department; and
- Sustrans.

This AQAP has been approved by:

<Details of high level Council members who have approved the AQAP (This could also include support from County Councils or from Highways England where appropriate) e.g. Head of Transport Planning, Head of Public Health, with e-signature>.

This AQAP will be subject to an annual appraisal of progress and reporting to the relevant Council Committee (specify if relevant). We will report progress each year in our Annual Status Reports (ASRs), as part of our statutory Local Air Quality Management duties.

If you have any comments on this AQAP please send them to Martin Howlett at Rochford District Council:

Telephone: (01702) 318049

Email: Martin.Howlett@Rochford.gov.uk

DRAFT

1 Introduction

1.1 This report outlines the actions that Rochford District Council will deliver between 2016 and 2020 in order to reduce concentrations of air pollutants and exposure to air pollution; thereby positively impacting on the health and quality of life of residents and visitors to the district.

1.2 It has been developed in recognition of the legal requirement on the local authority to work towards the Objectives set out in the Air Quality Strategy (AQS) under Part IV of the Environment Act 1995, and in the relevant Regulations made under that Act, and to meet the requirements of the Local Air Quality Management (LAQM) statutory process.

1.3 This Plan will be reviewed every five years at the latest and progress on measures set out within this Plan will be reported on annually within Rochford District Council's air quality Annual Status Report (ASR).

DRAFT

2 Summary of Current Air Quality in Rochford

Rayleigh AQMA

2.1 A Detailed Assessment completed in 2011[4], and subsequent updates in 2013[5] and 2014[6], concluded that the annual mean nitrogen dioxide (NO_2) objective was being exceeded at relevant locations in Rayleigh. As a result, an AQMA was declared in 2015 covering a number of roads in Rayleigh town centre as shown in Figure 1. No current exceedences of the objectives have been identified anywhere else in the district of Rochford.

Figure 1 - Rayleigh AQMA Boundary

Contains Ordnance Survey data © Crown copyright and database right 2016

4 Air Quality Consultants (2011) Detailed Assessment of Air Quality in Rayleigh. May 2011

5 Air Quality Consultants (2013) Update to Detailed Assessment of Air Quality in Rayleigh. February 2013

6 Air Quality Consultants (2014) Rayleigh Detailed Assessment 2014 Update. March 2014

Monitoring Data

2.2 Monitoring has been carried out at a number of roadside sites for several years (Figure 2). These monitoring data, presented in Table 1, indicate that the annual mean NO_2 objective is being exceeded at a number of locations; however, apart from Rayleigh Weir (BR), none of the monitoring sites are representative of relevant exposure. The results for 2015 are generally lower than previous years, however, data capture was very low in this year, so the results are only indicative.

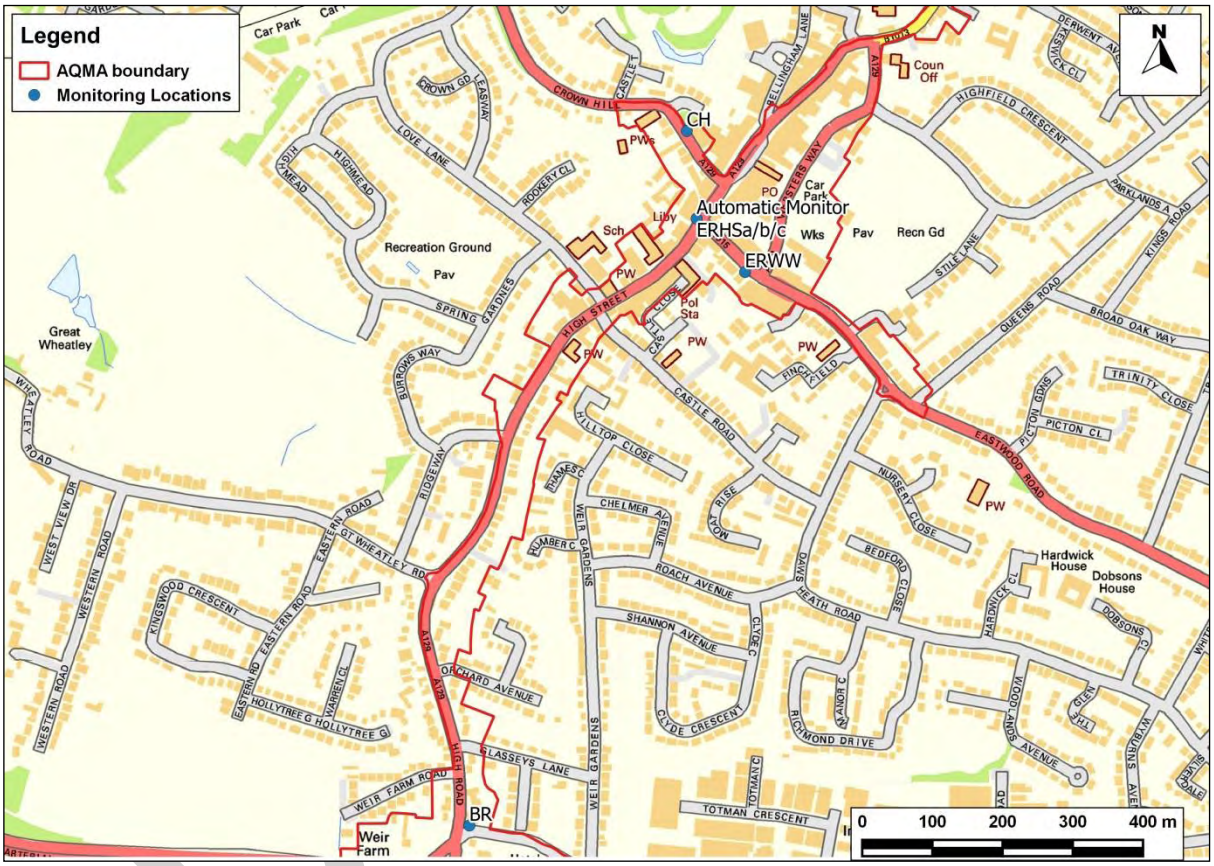


Figure 2 - Monitoring Locations

Contains Ordnance Survey data © Crown copyright and database right 2016

Table 1 – Annual Mean NO_2 Concentrations Measured within Rayleigh (µg/m^3)

Site	Site Type	Relevant Exposure	Site Description	2012 [a]	2013 [b]	2014 [c]	2015 [d]
Automatic							
Automatic	Roadside	No – exposure 4m further from the kerb and at 1st-floor	Eastwood Road/ High Street	**52.2**	**52.5**	**54.5**	**45.9**
Diffusion Tubes							
BR	Roadside	Yes	Rayleigh Weir (Brook Road)	35.6	37.1	38.8	34.6
ERHS (a,b,c) [e]	Roadside	No – exposure 4m further from the kerb and at height	Eastwood Road/ High Street	**42.2**	**47.4**	**46.3**	38.0
CH	Roadside	No– exposure 3m further from the kerb	Crown Hill	**45.1**	**43.6**	**48.9**	39.6
ERWW	Roadside	No - exposure 2.6m further from the kerb and at 1st floor	Eastwood Road/Websters Way	**45.3**	**48.3**	**52.4**	**47.3**
Objective				**40**			

[a] Data taken from the 2013 Update to Detailed Assessment[5].

[b] Data presented in 2014 Update to Detailed Assessment[6]. Diffusion tube data presented had been bias adjusted using a 2012 national factor for Gradko International of 0.96. Final 2013 factor was 0.95.

[c] Data provided by Rochford District Council. Diffusion tube data have been bias adjusted using a 2014 national factor for Gradko International of 0.92. Automatic data for January to June adjusted to 2014 annual mean based on St Osyth and Southend data.

[d] Automatic data for January to July adjusted to a 2015 annual mean based on St Osyth and Southend data. Only 2-4 months valid diffusion tube data available for 2015, so results indicative only (taken from 2016 Annual Status Report)[7].

[e] Average of triplicate tubes.

Modelling Data

2.3 The Detailed Assessment, and subsequent updates, used dispersion modelling to determine concentrations at relevant locations (Figure 3 and Table 2). This demonstrated that concentrations at relevant receptors were exceeding the annual mean objective in 2012. As expected the concentrations at the relevant receptors were lower than those measured at the roadside monitoring sites. The maximum predicted annual mean concentration, verified and adjusted against 2012 monitoring data, was 43.1 µg/m^3, at a property located alongside High Road. Exceedences less than 5% above the objective (<42 µg/m^3) were also predicted at some

[7] Rochford District Council (2016) 2016 Air Quality Annual Status Report, July 2016.

DRAFT

properties very close to High Street, Hockley Road, Eastwood Road and Websters Way. It should be noted that there are no relevant receptors (residential properties) at ground-floor level in High Street and Eastwood Road; there is only relevant exposure at first-floor level at flats above shops. This was taken into account in the dispersion modelling.

2.4 Figure 4 shows that there is no obvious trend in measured concentrations between 2009 and 2014, which is consistent with monitoring carried out at sites across the UK. This reflects a disparity between the expected reductions in concentrations anticipated by Defra and those measured, which relate to the on-road performance of modern diesel vehicles. New vehicles registered in the UK have had to meet progressively tighter European type approval emissions categories, referred to as "Euro" standards. While the nitrogen oxides (NO_x) emissions from newer vehicles should be lower than those from equivalent older vehicles, the on-road performance of some modern diesel vehicles has often been no better than that of earlier models. This has been compounded by an increasing proportion of NO_2 in the NO_x emissions, i.e. primary NO_2, which has a significant effect on roadside concentrations[8, 9].

2.5 A detailed analysis of emissions from modern diesel vehicles has been carried out by Air Quality Consultants Ltd.[10]. This shows that, where previous standards had limited on-road success, the 'Euro VI' and 'Euro 6' standards[11] that new vehicles have had to comply with from 2013/16 are delivering real on-road improvements. A detailed comparison of the predictions in Defra's Emission Factor Toolkit (EFT v6.0.2)[12] against the results from on-road emissions tests has shown that Defra's latest predictions still have the potential to under-predict emissions from diesel vehicles, albeit by less than has historically been the case[10]. In order to account for this potential under-prediction, the results for 2016 and 2018 presented in Table 2 are based on a sensitivity test in which the emissions from Euro IV, Euro V, Euro VI, and Euro 6 vehicles have been uplifted using AQC's Calculator Using Realistic Emissions for Diesels (CURED)[15].

2.6 Also shown in Figure 4 are the modelled results for Receptor 4 (1 High Road), where modelled concentrations are highest. The results between 2012 and 2014 reflect the monitoring data, with concentrations remaining fairly constant. They also indicate that concentrations are now reducing. However, there is a degree of uncertainty in these estimates of future concentrations and thus

---

8 Carslaw, D., Beevers, S., Westmoreland, E. and Williams, M. (2011) *Trends in NOx and NO2 emissions and ambient measurements in the UK*, [Online], Available: uk-air.defra.gov.uk/reports/cat05/1108251149_110718_AQ0724_Final_report.pdf

9 Carslaw, D. and Rhys-Tyler, G. (2013) *Remote sensing of NO2 exhaust emissions from road vehicles*, July, [Online], Available: http://uk-air.defra.gov.uk/assets/documents/reports/cat05/1307161149_130715_DefraRemoteSensingReport_Final.pdf.

10 AQC (2016) *Emissions of Nitrogen Oxides from Modern Diesel Vehicles* , [Online], Available: http://www.aqconsultants.co.uk/Resources/Download-Reports.aspx

11 Roman numerals are used to refer to heavy duty vehicles, e.g Euro VI and numbers refer to cars/light duty vehicles, e.g. Euro 6

12 http://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html

there remains a risk that the objective may continue to be exceeded for slightly longer than indicated in Table 2.

2.7 Estimated concentrations in 2016 and 2018 at all the modelled receptors, using AQC's Calculator Using Realistic Emissions for Diesels (CURED)[15], are shown in Table 2. The results indicate that in 2016 the objective will be exceeded at only one of the receptors modelled, and by less than 2.5% of the objective (40.9 µg/m^3). Elsewhere, the objectives are expected to be achieved. By 2018, the results suggest that the objective will be achieved at all locations in Rayleigh[13].

2.8 Examination of recent traffic data indicates that there has not been a significant increase in traffic flows since the Detailed Assessment was produced, and neither has traffic composition changed. In some locations, traffic flows appear to have reduced. Therefore the traffic data used as a basis for the Detailed Assessment are considered robust.

[13] Based on no growth in traffic flows on local roads and no new relevant receptors being introduced at worst-case locations. Analysis of traffic counts in the area, has demonstrated that this is a reasonable assumption for the AQMA.

Figure 3 - Specific Receptor Locations[14]

Contains Ordnance Survey data © Crown copyright and database right 2016

DRAFT

[14] Receptors are those included in the Detailed Assessment, selected to represent a number of worst-case locations across the study area.

Table 2 – Modelled Annual Mean NO_2 Concentrations at Specific Receptors (based on results presented in the 2013 Update to the Detailed Assessment)

			Concentration (µg/m^3) [a]		
Receptor [c]	**Location**	**Height**	**2012**	**2016 [b]**	**2018 [b]**
2	86 High Road	1.5	39.9	38.1	36.3
3	61 High Road	1.5	**41.4**	39.3	37.2
4	1 High Road	1.5	**43.1**	**40.9**	38.6
5	161 High Street	4.5	31.8	30.5	29.2
6	144 High Street	5.0	37.7	35.9	34.1
7	136 High Street	4.5	39.8	37.9	35.9
8	128 High Street	4.5	**40.3**	38.2	36.2
9	107 High Street	4.5	38.1	36.2	34.4
10	5 Eastwood Rd	4.5	37.9	36.0	34.2
11	37 Eastwood Rd	4.5	**41.9**	39.7	37.5
12	King George's Court	1.5	38.3	36.4	34.6
13	101 High Street	4.5	39.0	37.1	35.2
14	84 High Street	4.5	35.5	33.9	32.3
15	1 Crown Hill	1.5	39.9	37.9	35.9
16	38 High St	4.5	27.4	26.5	25.6
17	4 High St	1.5	30.2	29.1	27.9
18	5 Church St	1.5	30.5	29.3	28.1
19	22 Hockley Road	1.5	**41.5**	39.4	37.3
20	Webster's Court	1.5	**40.1**	38.0	36.0
21	22-24 High Street	5.0	26.8	26.0	25.2
Objective			**40**		

[a] Values in bold are exceedences of the objective.

[b] 2016 and 2018 values are based on the 2012 concentrations using the following assumptions; background concentrations remain the same as 2012 and traffic emissions reduce in-line with those projected using AQC's Calculator Using Realistic Emissions for Diesels (CURED)[15], based on traffic flow and composition for Eastwood Road at 24kph. A sensitivity test based on traffic flows, compositions and speeds on all roads in the area, indicated that this produced the highest future concentrations.

[c] Receptor 1 is located within Castle Point Borough Council boundary and thus the results are not reported here.

[15] http://www.aqconsultants.co.uk/Resources/AQC-Tools.aspx

DRAFT

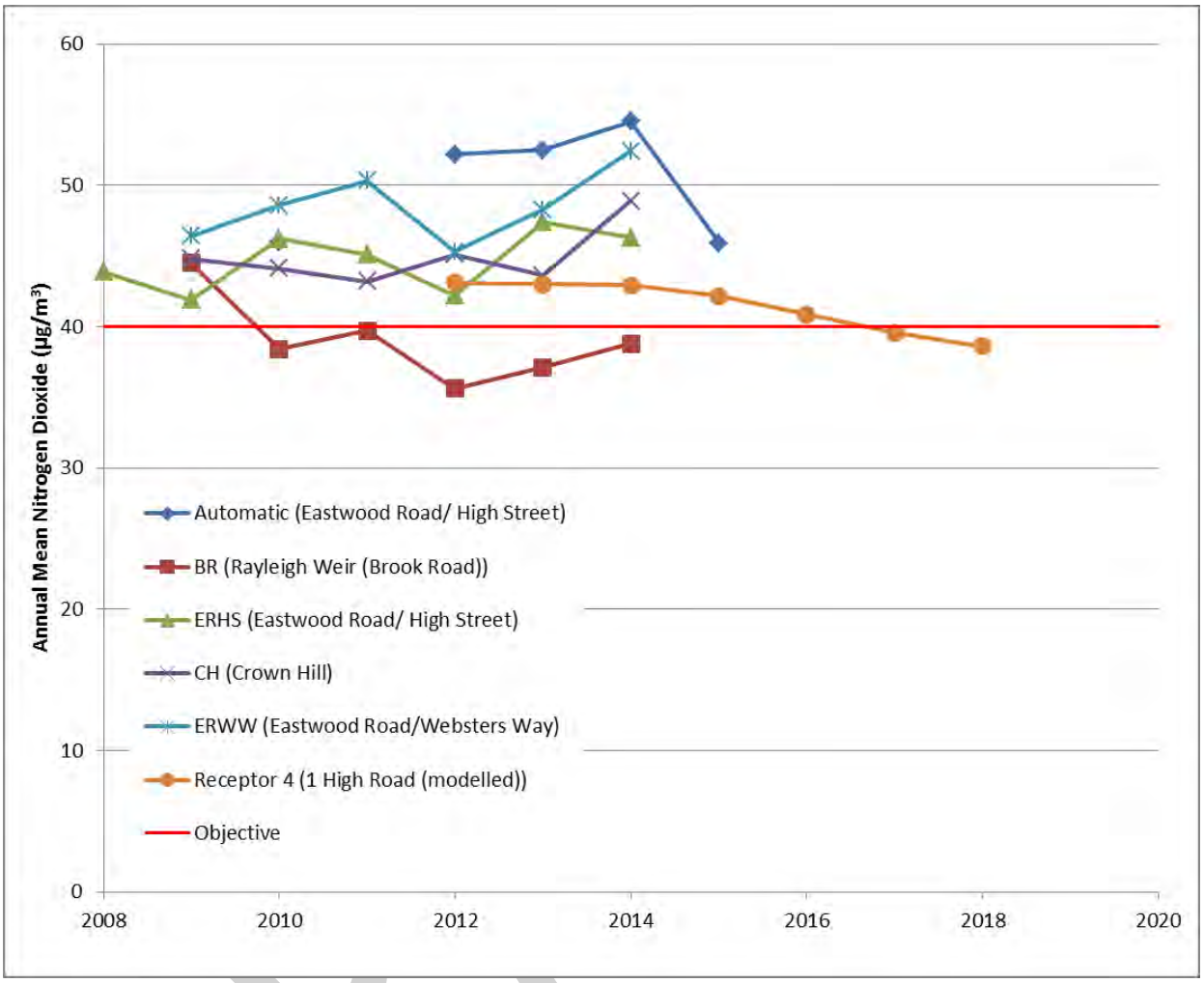


Figure 4 - Trends in Annual Mean NO_2 Concentrations

Factors Influencing Air Quality in Rayleigh

2.9 The AQMA includes roads in Rayleigh town centre and the A129 (High Road) between the town centre and the A127, up to the boundary with Castle Point Borough Council.

2.10 Roads in Rayleigh town centre are congested for much of the day. Traffic travelling into and through the town must negotiate a number of mini roundabouts and heavily used pedestrian crossings, leading to vehicles decelerating, accelerating and idling. This “stop/start” traffic leads to far higher vehicle emissions than steady free-flow conditions, and this is contributing to the elevated NO_2 concentrations in the AQMA.

2.11 In addition, there are a number of hills in this congested area including Crown Hill and parts of High Road. When vehicles, particularly heavy goods vehicles (HGVs) and buses, need to start and accelerate on these hills, emissions are greatly increased. This is likely to be particularly influential on Crown Hill, which is used by buses travelling to and from the railway station.

2.12 There are very few relevant locations at ground-floor level within the town centre, with the majority of residential properties being flats or maisonettes above shops. However, there are houses very close to Crown Hill, High Road and Hockley Road where exceedences of the objective have occurred.

2.13 Exceedences of the objective have also occurred alongside the A129 (High Road) between the town centre and the A127. Traffic queues form along the A129 on the approach to both the A127 and the town centre, particularly in peak periods. It is this queueing traffic that is likely to be influencing air quality at relevant receptors. Traffic on the A127 dual carriageway is over 40m from relevant locations in Rayleigh, and whilst emissions from this road will have some impact on the AQMA, it is not the dominant source.

Summary

2.14 In summary, the following points are relevant to the Action Plan:

- the annual mean NO_2 objective is predicted to be exceeded at only a small number of properties;
- these properties are situated at a number of locations around the AQMA, either where houses are very close to the road, or at flats above shops in the congested town centre;
- concentrations only exceed the objective in 2016 at relevant locations by less than 2.5% of the objective (concentrations of 40.9 µg/m^3 or less);
- congestion is likely to be the dominant cause of elevated concentrations;
- the objective is expected to be achieved at these locations in the next 2 years, due to reductions in emissions per vehicle; and
- any actions within the Action Plan need to be proportional to the marginal nature of the exceedences, which represent less than 2.5% of the objective.

DRAFT

3 Rochford's Air Quality Priorities

Planning and Policy Context

Core Strategy

3.1 The Rochford District Council Core Strategy was adopted in 2011[16]. It highlights the air quality issues in Rayleigh and acknowledges the potential impacts that new developments and changes to transport networks can have upon air quality in this area.

3.2 The document makes specific reference to consideration of the issues of congestion and poor air quality around the Rayleigh Weir junction of the A127 within a Route Management Strategy[17]. It also acknowledges that locating development to the east of Rayleigh and/or the west of Hockley could lead to increases in traffic travelling through the AQMA in Rayleigh on its way to and from the larger centres of Chelmsford and Basildon.

3.3 The Core Strategy includes Policy ENV5 Air Quality, which states that:

"*New residential development will be restricted in Air Quality Management Areas in order to reduce public exposure to poor air quality. In areas where poor air quality threatens to undermine public health and quality of life, the Council will seek to reduce the impact of poor air quality on receptors in that area and to address the cause of the poor air quality. Proposed development will be required to include measures to ensure it does not have an adverse impact on air quality.*"

3.4 The Core Strategy therefore already contains a strong policy basis with respect to air quality. Rochford District Council is in the early stages of reviewing the Local Plan and it will be important to retain appropriate policies within the new plan. This is discussed further in paragraph 5.28.

Rayleigh Centre Area Action Plan

3.5 Rayleigh Centre Area Action Plan (AAP) was adopted in October 2015[18]. This forms part of the statutory development plan and focuses on guiding the development of the town centre. A number of potential changes are identified including rationalisation of the taxi rank, changes to traffic management on Crown Hill and changes to the timings of crossing signals. A number of policies are also identified to encourage walking, cycling and public transport use.

3.6 There are several policies which could lead to improvements in air quality in Rayleigh, including Policy 1 which states that:

---

16 http://www.rochford.gov.uk/planning/policy/local_development_framework/core_strategy_dpd1

17 Currently being reviewed

18 http://www.rochford.gov.uk/planning/policy/local_development_framework/rayleigh_area_action_plan

"New and improved pedestrian and cycle routes within the AAP area and linking the centre with the railway station and the surrounding area"

3.7 Policy 4 includes:

"Enhanced cycle parking facilities should be provided at suitable locations throughout the centre;

Bus facilities should be upgraded, with improvements including better shelters and increased seating provision; and

New and improved pedestrian signage should be introduced for key destinations and attractions, including the rail station, the town centre, the Mount, the Windmill, Holy Trinity Church and the Dutch Cottage."

3.8 Policies 5, 6, 7 and 8 include commitments to strengthening pedestrian links within and from outside the AAP area.

3.9 The AAP acknowledges that "*route and junction improvements as identified in Rayleigh's Strategic and Movement Frameworks (Figures 5 and 6 respectively) are a priority and the Council will seek to secure contributions to these improvements as relevant development proposals come forward*". It also confirms that, "*The local bus network is a town-wide resource which plays an important role in ensuring local people have access to sustainable, accessible modes of public transport. The Council will continue to work with partners at Essex County Council and the bus operators to keep the bus network– its routes, timetables and supporting infrastructure – under review.*"

Source Apportionment

3.10 The AQAP measures presented in this report are intended to be targeted towards the predominant sources of emissions within the Rayleigh AQMA.

3.11 A source apportionment exercise was carried out by Rochford District Council in 2011, which was updated in 2013. This identified that at 1 High Street[5], where the maximum concentration was predicted within the AQMA, the percentage source contributions to NO_x concentrations were as shown in Figure 5.

DRAFT

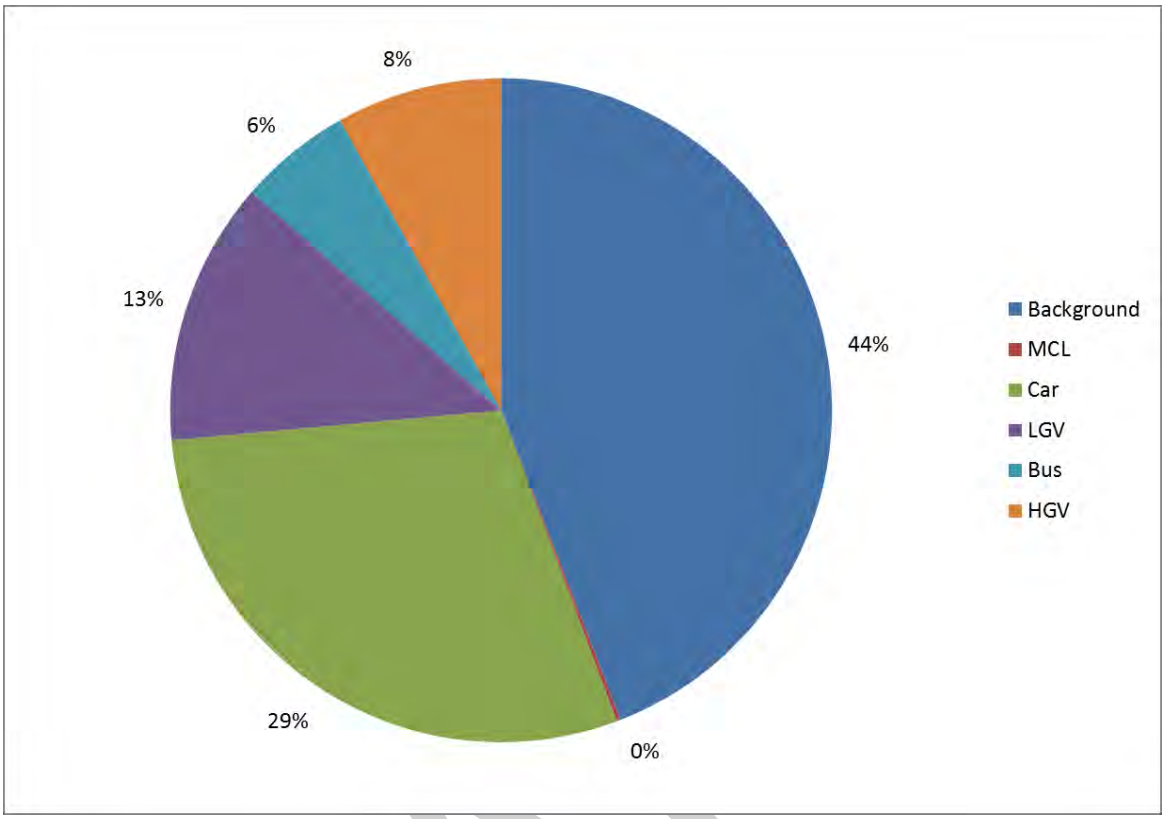


Figure 5 - Source Apportionment of NOx Concentrations – 1 High Street

3.12 This demonstrates that cars and light goods vehicles are the dominant sources of vehicle emissions, when free flow conditions and a flat gradient are assumed. As noted above, steep gradients and stop-start conditions can disproportionately increase HGV and bus emissions and where these conditions exist, the proportion of emissions attributable to these vehicle types may be greater than shown in Figure 5.

Required Reduction in Emissions

3.13 As discussed in Section 2, the highest estimated concentration at a relevant location is 40.9 µg/m^3 in 2016. This is only 2.5% above the objective. As lower emissions from new vehicles continue to penetrate the vehicle fleet, it is anticipated that concentrations are likely to reduce from 2016 onwards. It is therefore expected that concentrations at relevant locations will fall below the annual mean objective within 2 years. The required reduction in emissions has therefore not been calculated.

3.14 It is, however, acknowledged that there is a degree of uncertainty associated with these estimates, and thus Rochford District Council (RDC) has developed this Action Plan to minimise the risk of exceedences continuing in the future.

Key Priorities

3.15 Available information indicates that the air quality objectives will be achieved at all relevant locations within the AQMA by 2018, without any additional measures. Measures within the Action Plan are therefore proportional to the relatively small scale of the exceedences. Rochford District Council is already implementing a number of measures which will improve air quality in the AQMA and is committed to improving air quality in Rayleigh town centre. Measures are therefore focussed on minimising the risk of changes leading to exceedences of the objective in the future.

3.16 The key priorities for the Action Plan are:

- Priority 1 – reduce congestion adjacent to relevant receptors;
- Priority 2 – reduce volume of traffic through AQMA; and
- Priority 3 – strengthen planning policies to avoid new residential development in the AQMA, manage growth that may affect the AQMA and support EV infrastructure.

DRAFT

4 Development and Implementation of Rochford AQAP

Steering Group

4.1 This Action Plan has been developed by a Steering Group. Key members of the group are officers from the Rochford District Council Environmental Health Department, and the Essex County Council Transportation Planning and Development Team. They have been supported by Ringway Jacobs, with assistance from Air Quality Consultants Ltd. In addition, officers from Rochford District Council Planning Policy Team, Essex County Council Spatial Planning Department, Essex County Council Public Health Department and Sustrans have been copied into minutes and/or attended some of the meetings.

4.2 Prior to instigation of the Action Planning process, the Principal Environmental Health Officer at Rochford District Council already had a close working relationship with the planning policy team. In addition, the Transportation, Planning and Development Department at Essex County Council has been instrumental in the development of the Action Plan. This has provided a firm foundation for the development of the Action Plan and a strong basis for implementation of the plan.

4.3 During development of the Action Plan it became apparent that liaison with public health colleagues has not been as close as with other departments. At the time of developing the Action Plan, there was no public health officer in post at Rochford District Council. An officer has now been employed and air quality issues have been included within the work programme. Measures have also been included in the Action Plan to address this issue.

4.4 An initial inception meeting was held with the main parties to identify the approach to the Action Plan, to exchange information and to determine a programme for delivery. Subsequently, two Steering Group meetings were held to develop and prioritise a list of measures; the first focussed on transportation measures, and the second on planning policy and development control.

Consultation and Stakeholder Engagement

4.5 An initial draft of the Action Plan was prepared and circulated to the Steering Group. It was then circulated more widely to XXXXXXX.

4.6 The next stage requires Rochford District Council to consult with XXXXX. Schedule 11 of the Environment Act 1995 requires local authorities to consult the bodies listed in Table 3. In addition, we have undertaken the following stakeholder engagement:

E.g. website

Articles in local newspaper

Questionnaires distributed directly to households along major roads

DRAFT

etc

4.7 The response to our consultation stakeholder engagement is given in Appendix A1.

Table 3: Consultation Undertaken

Yes/No	Consultee
Yes/No	the Secretary of State
Yes/No	the Environment Agency
Yes/No	the Highway Authority
Yes/No	all neighbouring local authorities
Yes/No	other public authorities as appropriate, such as Public Health officials
Yes/No	bodies representing local business interests and other organisations as appropriate

[a] Table footnote

DRAFT

5 AQAP Measures

5.1 A list of all possible measures to improve air quality, including those already completed, proposed in existing plans and new measures, are listed in detail in Appendix A3. This includes those measures which have been considered, but are not appropriate, with the reasons for them being discounted identified. Each measure has been evaluated, taking account of the air quality impact, cost, feasibility and timescale using the approach set out in Appendix A2. The details of this evaluation are included in the table provided in Appendix A3.

5.2 The measures identified within this Action Plan are considered appropriate to address the relatively small scale of the exceedence of the air quality objective in Rayleigh, where concentrations are currently only marginally above the objective at a small number of properties. The measures also need to be implementable in a short timescale (1-2 years) in order to accelerate compliance with the air quality objective.

5.3 All of the factors described above, alongside the Council's key air quality priorities (as identified in paragraph 3.16), have been taken into account in prioritisation of the measures within the Action Plan. The measures to be included in the Action Plan fall into six main categories, which are set out in Table 4.

Table 4 – Prioritisation of Action Plan Measures

Priority	Category	Reason
1	**Monitoring**	Enable revocation of AQMA when appropriate
2	**Traffic management**	Key Priority 1 – reduce congestion adjacent to relevant receptors
3	**Sustainable travel**	Key Priority 2 – reduce volume of traffic through AQMA
4	**Planning policy and development control**	Key Priority 3 – strengthen planning policies to avoid new residential development in AQMA, manage growth and support EV infrastructure
5	**Low emission vehicles**	Public Health - reduce emissions in AQMA and across district
6	**Raising awareness.**	Public Health – raise awareness of issue, increase physical activity and management of symptoms

5.4 A number of measures have been identified in each of the categories, which are considered in turn below.

Monitoring

5.5 Whilst monitoring will not lead to improvements in air quality, it will be essential for determining when the AQMA can be revoked. Monitoring of concentrations below the objective for three years based on good quality monitoring data from relevant locations is required before the AQMA can be

DRAFT

removed. In Rayleigh, annual mean NO_2 concentrations at relevant locations are only marginally above the air quality objective and concentrations are anticipated to fall below the objectives within the next two years. Therefore, it is important that appropriate monitoring is carried out.

5.6 Monitoring is currently carried out using diffusion tubes at a number of roadside locations, most of which are not representative of relevant exposure. In addition, 6-month surveys are completed each year using an automatic analyser which is located in a permanent roadside housing that is also not directly representative of relevant exposure.

5.7 A number of additional diffusion tube monitoring sites will be set up which are directly representative of relevant exposure. These will focus on the locations where modelled concentrations are above or close to the objective. If possible, the diffusion tubes will be located at similar heights to the exposure, i.e. where flats are located above shops tubes should be higher. It will be helpful to retain some or all of the existing monitoring locations to allow long-term trends to be analysed. Consideration will be given to discontinuation of the automatic monitoring surveys, which do not provide appropriate information to support revocation of the AQMA.

5.8 It will be essential to ensure that the data obtained are of a suitable quality. This will include using a reputable laboratory to supply and analyse the diffusion tubes, changing the tubes at appropriate intervals and adjusting the results for laboratory bias and any other factors accordingly.

Traffic Management

Town Centre

5.9 A detailed evaluation of existing congestion in Rayleigh, and potential measures to alleviate it, has been carried out by Essex County Council. This concluded that options to reduce congestion, and thus also possibly NO_2 concentrations, are limited. The only option considered to be feasible is conversion of the zebra crossings to traffic signal controlled Puffin crossing points. This would reduce the frequency of vehicles being stopped and thus decrease the amount of acceleration and deceleration, which in turn would reduce vehicle emissions. Many of these crossing points are near to locations where the objectives are being exceeded, and the measure has the potential to have a perceptible impact on NO_2 concentrations, it is therefore an important measure within the Action Plan.

5.10 The Rayleigh study also found that implementing bus laybys that are fully off the carriageway would reduce congestion. However, there is insufficient space available to implement these laybys. Consideration has therefore been given to minimising emissions from buses within the AQMA. The main operators will be contacted to determine whether cleaner buses could be used or engine idling time minimised within the AQMA.

5.11 Many of the shops in the town centre are serviced via the rear, minimising the number of delivery vehicles that obstruct the traffic and lead to congestion and thus increased emissions. This Action

DRAFT

Plan has thus identified the need to retain off-carriageway delivery space to avoid increasing congestion in the future.

A127

5.12 The A127 forms the southern boundary to the AQMA and congestion, particularly on the roundabout with the A129 High Road (known as Rayleigh Weir roundabout), influences air quality at the southern end of the AQMA. In addition, there is anecdotal evidence that drivers travel through the town centre section of the AQMA to avoid congestion on the A127, particularly during peak periods and when there are incidents. Measures to relieve congestion on the A127 and Rayleigh Weir roundabout will therefore reduce pollutant concentrations within the AQMA.

5.13 Some improvements have already been carried out at Rayleigh Weir. A major scheme has also been funded to introduce a MOVA/SCOOT system, CCTV and driver signage boards. This will reduce queuing on the approach to the roundabout through the AQMA and reduce pollutant concentrations. This scheme is programmed to start at the end of 2016.

5.14 The A127 Corridor for Growth strategy is being reviewed and in the longer term there are planned improvements to the Fairglen Interchange. Both of these measures will aim to improve journey times on the A127, which will reduce 'rat-running' through the AQMA. A review of the A127 Signage Strategy is also anticipated in the longer term, and a measure to consider the impacts on the AQMA as part of this process is included in the Action Plan.

Sustainable Travel

5.15 Travel Information packs are required for all new developments, these contain specific information for new residents on sustainable travel choices in the area. At present, packs have been prepared by Essex County Council for small residential developments in Rayleigh and a larger development in Hawkwell, much of the travel from which would be to or via Rayleigh. The potential for inclusion of air quality information will be investigated as part of the Action Plan.

Cycling and Walking

5.16 Essex County Council is already implementing a number of measures to increase cycling and walking in Rayleigh. These include working with the train company to improve infrastructure, such as installing high quality, secure cycle stands at the station. The County Council is in the process of developing a County-wide Cycle Strategy, which will be supplemented by local Cycle Delivery Plans. Work on the Rayleigh Cycle Delivery Plan is expected to start shortly and likely to include identification of 'quiet routes', provision of cycle maps, parking and signage of alternative routes. This will implement a number of requirements already identified within the Rayleigh Area Action Plan.

DRAFT

5.17 Sustrans run a number of initiatives in Essex, including the Schools Ecorace and the 'Cake Escape'. The Cake Escape is a loyalty scheme for cyclists who visit participating cafes. Each time a cyclist collects four stamps, they can collect a free slice of cake. At present, there are no participating cafes in Rayleigh, so a measure within the Action Plan is to encourage local businesses to join the scheme.

5.18 The Schools Ecorace is a termly initiative, where pupils record how they travel to school for 3 weeks and are awarded points accordingly. Prizes are then awarded to the class with the most points. There are no schools in Rayleigh currently participating in the scheme. A list of potential schools has been identified as part of the Action Plan process and a measure within the Action Plan is to approach these schools about joining the scheme.

Travel Plans

5.19 Essex County Council runs a successful Business Travel Plan accreditation scheme. No businesses in Rayleigh have signed up to this scheme and Steering Group members have not identified any obvious organisations to target. However, the Essex County Council Travel Plan team have indicated a willingness to work with Rochford District Council to identify possible organisations and work with any that may be appropriate as part of this Action Plan.

5.20 As discussed above, the Essex Travel Plan team have not yet worked with any of the schools within Rayleigh. Therefore as part of this Action Plan, schools within and near to the AQMA will be targeted to develop Travel Plans with the aim of reducing car journeys through the AQMA and thus improving air quality.

5.21 Home to station travel plans have been completed for rail passengers at some stations in Essex. This could be an effective measure for Rayleigh, where a large proportion of people travelling to the station pass through the AQMA. A new rail franchisee is to be announced shortly, and once it is, the Essex Travel Plan team will work with the franchisee to develop a travel plan for Rayleigh station.

5.22 Travel Plans for new residential and commercial developments will be essential to minimise the impact of these developments on traffic movements and thus air quality within the AQMA. The best way to introduce these is via the planning system and thus they are discussed in the next section.

Public Transport

5.23 Essex County Council has carried out a number of works as part of a Local Sustainable Transport Fund project aimed at bridging the gap between sustainable modes. This has included provision of real-time passenger information and upgrading ramps, lighting, cycle storage and shelters. As a result of this project a partnership has been developed with Abellio Greater Anglia who have match funded some of the improvements.

DRAFT

5.24 The next stage is to carry out a campaign to market these improvements. Whilst a recent funding bid was unsuccessful, Essex County Council will continue to work to identify and apply for alternative funding, to increase the use of these facilities and encourage journeys by alternatives to the private car.

Planning

5.25 The current Rochford Local Plan contains a strong policy basis for restricting developments within, or that would have an impact upon, the AQMA (see paragraph 3.3). This has been used to refuse planning permission for a development where insufficient information has been provided. In addition, there is already strong partnership working between the Environmental Health and Planning departments at Rochford District Council.

5.26 Essex County Council reviews all planning applications where Transport Assessments are required. Their focus for mitigation of impacts of development upon transport networks is to prioritise maximisation of sustainable transport choices before requiring infrastructure improvements.

5.27 There is concern about the impacts of air quality upon residential developments within the AQMA, as premises are being converted to residential uses from other uses under permitted development rights. Mechanisms will therefore be investigated as part of the Action Plan to ensure that the air quality impacts upon such developments are considered appropriately, and adequate mitigation to protect future residents is provided.

5.28 The process of reviewing the Rochford Local Plan is in the early stages. An evidence base is currently being developed in conjunction with other South Essex councils to inform this process, which includes identification of future housing needs, potential areas for growth and district-wide traffic modelling. Rochford District Council Planning Policy officers hold monthly meetings with Essex County Council Transportation, Planning and Development Team, both parties are members of the Steering Group and well briefed about the air quality issues in the AQMA, consulting with the Environmental Health team when required. This provides a strong platform to ensure that air quality impacts upon, and within, the AQMA are considered in the emerging Local Plan. It is vital that this relationship continues and therefore it is identified as a measure within the Action Plan to continue active engagement with the Local Plan process on air quality issues.

5.29 It will be essential that the emerging Local Plan includes clear policies to control future developments within the AQMA and mitigate impacts upon it. Whilst the AQMA could be revoked in the early phases of the Local Plan, measures will be required to avoid traffic growth generated by developments leading to delays in compliance with the air quality objective or leading to exceedences re-occurring in the future. Measures to mitigate impacts upon the AQMA should relate to all developments that could lead to increases in traffic through the AQMA, not just those within it. Consideration will be given to the most appropriate policies as the Local Plan develops.

DRAFT

These are expected to relate to provision of electric vehicle charging points, Travel Plans and infrastructure to encourage sustainable travel choices.

5.30 Whilst current cross-departmental relationships are strong and an informal approach to collaboration has worked well, consideration will be given to formalising arrangements to ensure consistency in the future. This could range from amendments to the planning application validation checklist, through to development of a local planning framework or Sustainable Planning Document.

Raising Awareness

5.31 There are a number of existing Essex-wide initiatives that provide relevant information. The EssexAir[19] consortium has a website holding information about air quality in Essex, including reports and monitoring data relevant to Rayleigh. It also provides daily pollution forecasts on its website and twitter feed, based on the Defra forecasts. Members of the consortium include environmental health officers from the district councils, a transport officer from Essex County Council, University of Essex and other interested parties. There is also the Active Essex[20] brand and website, which has been established to promote active travel in the County. A measure has been included in the Action Plan to promote these initiatives in any future relevant communications.

5.32 There is an established carshare network in Essex[21]. There is scope to set up a specific group for the district of Rochford under the wider Essex umbrella and this will be investigated further as part of the Action Plan.

5.33 CAR CLUB – CHECKING WITH TB

5.34 It became apparent early in the process of developing the Action Plan that there has been limited engagement with District and County Public Health colleagues, to date. Relevant contacts have now been established and the next important action within the Action Plan is to brief these colleagues on air quality issues in Rayleigh and investigate ways in which the departments can work together.

5.35 Apart from consultation on the extent of the AQMA, there has been little engagement with local people in Rayleigh about the AQMA. An action has therefore been included within the Action Plan to make Rochford District Council communications department aware of this plan and any future updates, to allow them to disseminate information via the relevant existing channels.

5.36 SUSTAINABLE TRAVEL CONFERENCE

[19] http://www.essexair.org.uk/Default.aspx
[20] http://www.activeessex.org/
[21] https://essex.liftshare.com/

Low Emission Vehicles

Taxis

5.37 There is a taxi rank within the AQMA and thus measures relating to controlling emissions from taxis will be important in Rayleigh. All taxis licenced by Rochford District Council are required to be a minimum of 6 years old at first registration and will not be re-licenced if more than 10 years old. This means that all taxis will currently be a minimum of Euro 4, with the majority being Euro 5 or Euro 6. The majority of taxis are diesel vehicles. NO_x emissions from Euro 6 diesel vehicles are much lower than Euro 4 or Euro 5, therefore any tightening of the licencing conditions to remove Euro 4 and 5 diesel vehicles from the fleet would contribute to reducing emissions in the AQMA; thus potential for amending the licencing conditions is included as a measure within the Action Plan. Options for encouraging the use of lower emission vehicles, such as electric, hybrid or petrol vehicles will also be considered.

Electric Vehicles

5.38 The availability of financial incentives for low emission vehicles, such as grants for electric vehicles will be investigated. Information about available incentives will then be shared with the relevant Council departments, licenced taxi operators and other interested parties.

5.39 There is scope to introduce priority parking spaces and possibly lower parking fees for electric vehicles at carparks in Rayleigh. The feasibility of these options will therefore be considered further as part of the Action Plan.

5.40 There are currently no public electric vehicle charging points in Rayleigh. Therefore measures have been included in the Action Plan to install at least one charging point in a Council car park and to investigate other possible locations.

LPG

5.41 There is an LPG refuelling station within the AQMA, on High Road[22]. The presence of this station will be promoted in any relevant literature.

Summary of Action Plan Measures

5.42 The Rochford District Council AQAP measures are summarised under the six categories in Table 5 to Table 10. They contain:

- a list of the actions that form part of the plan;

[22] Vehicles running on LPG have lower NO_x emissions.

- the responsible individual and departments/organisations who will deliver this action;
- expected benefit in terms of pollutant emission and/or concentration reduction;
- the timescale for implementation; and
- how progress will be monitored.

5.43 Measures already completed, or discounted are set out in Appendix A3.

DRAFT

Table 5: Air Quality Action Plan Measures – Priority 1, Monitoring

Action	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comment
Amend Monitoring Programme	RDC	end 2016	2017-2020	AQMA revoked	No impact on concentrations	New measure	2020 at earliest	Currently monitoring using diffusion tubes at a number of roadside locations. 6-month automatic monitoring campaigns at a roadside site. Need to implement monitoring at building facades so that accurate information available to support revokation of AQMA. Will need to measure 3 years compliance (based on good quality data) at these locations before AQMA can be revoked.

Table 6: Air Quality Action Plan Measures – Priority 2, Traffic Management

Action	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
Rayleigh Weir (A127) Major scheme - SCOOT/MOVA	ECC	Early/mid 2016	End 2016	Reduction in measured NO_2 concentrations at sites affected by current queues	Up to 2 µg/m^3	On-going	End of 2017	Funded major scheme - introduction of MOVA/SCOOT system, CCTV and driver information boards. Due to start end 2016
Changes to pedestrian crossing points	ECC	2016	2017/2018	Puffin crossings installed	>0.2 µg/m^3	Proposed	2018	Conversion of zebra crossings to Puffin - High Road/Eastwood Road and High Road North (nr Castle Road) most beneficial. Identified as part LHP work. Aim to secure funding via contributions as developments come forward.
Use cleaner buses through AQMA	RDC	2016/2017	2017	RDC held discussions with all relevant operators	<0.2 µg/m^3	New measure	2017	Contact operators to determine whether cleanest buses in fleet could be used preferentially on routes through the AQMA
Minimise bus waiting times in AQMA	RDC	2016/2017	2017	RDC held discussions with all relevant operators	<0.2 µg/m^3	New measure	2017	Contact operators to determine whether buses can minimise idling times in the AQMA

DRAFT

Retain appropriate off road space for freight deliveries	ECC	on-going	on-going	Freight delivery space retained	avoid worsening pollution	New measure	on-going	Most deliveries at rear (Websters Way) and off road, so do not cause obstructions in AQMA. Probably no scope for improvement in terms of location or hours. AAP needs to protect deliveries at rear.
Ensure A127 signage strategy takes impact on AQMA into account	ECC	?	?	Reduction in through traffic in AQMA	<0.2 µg/m^3	Proposed	?	A review of strategic signage will be carried out in the future. Scope to avoid AQMA will be limited because A129 is a priority 1 route.
A127 Fairglen Interchange improvements	ECC	?	?	Reduction in through traffic in AQMA	>0.2 µg/m^3	Proposed	?	Major scheme to improve journey times. Improvements on the A127 corridor will reduce traffic through AQMA which re-route to avoid congestion on the A127
A127 Corridor for Growth strategy	ECC	mid/end 2016	2017/18	Reduction in measured NO_2 concentrations at sites affected by current queues	up to 2 µg/m^3	Proposed	2018	Route based strategy,considered improvements to the Rayleigh Weir interchange. Identified that further improvements to the traffic signals, queue length detector systems and further changes to lane markings had potential to improve traffic flow. Options being reviewed. If funding available, aim to complete within 2 years. Improvements on the A127 corridor will reduce traffic through AQMA which re-route to avoid congestion on the A127. Evaluation of impacts part of on-going review. Need to ensure air quality impacts on AQMA are given adequate consideration and weight in decision making process.
Route based strategies B1013 and A1015	ECC	?	?	Improvement in travel times	<0.2 µg/m^3	Proposed	?	No current funding but aspiration to consider measures to improve travel times. Likely to include walking/cycling measures

DRAFT

Table 7: Air Quality Action Plan Measures – Priority 3, Sustainable Travel

Action	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
Eco Race Essex. Target Rayleigh Schools	Sustrans/ ECC	2016/17	2017/2018	Increase number of schools participating	<0.2 µg/m^3	New measure	2017/2018	For 3 weeks per term pupils record how they travel to school and are awarded points accordingly. No schools in Rayleigh involved at present. Promote as part of wider School Travel Plans targeting
Quiet Routes	RDC/ Sustrans	2017	2017/2018	Quiet routes identified and publicised	<0.2 µg/m^3	New measure	2018	Identify appropriate 'quiet routes', such as Love Lane/Castle Road in Cycle Delivery Plan
The Cake Escape	Sustrans/ RDC	end 2016/beg 2017	2017	At least 1 café in Rayleigh joined scheme	<0.2 µg/m^3	New measure	2017	Loyalty scheme for cyclists to get free cake at participating cafes. No cafes in Rayleigh at present - identify participants, possibly via Rayleigh Town Team.
Secure cycling parking local schools	Sustrans/ ECC	2017	2017	Increase number of secure cycle stands at schools	<0.2 µg/m^3	New measure	2018	Experience in Essex demonstrates that provision of secure cycle parking can increase cycle numbers.
Enhanced cycle parking facilities	RDC	2016	2017/18	Increase in cycle parking facilities	<0.2 µg/m^3	Proposed	2018	Policy in Area Action Plan to provide enhanced cycle parking facilities at suitable locations throughout the centre
New and improved pedestrian and cycle routes	RDC	2016	2017/18	Inclusion of appropriate measures in Cycle Delivery Plan	<0.2 µg/m^3	Proposed	2018	New and improved pedestrian and cycle routes and links to the railway station included in AAP. Likely to be implemented as part of local Cycle Delivery Plan.
Cycle Delivery Plan	RDC	2016	2017/18	Appropriate routes identified and publicised	<0.2 µg/m^3	Proposed	2018	Local improvements considered in town centre as part of Rayleigh Town Centre Action Plan. Likely to include cycle maps, parking and signage of alternative routes
Marketing of Rail/bus/cycle improvements	ECC	2016/2017	dependant on funding	Will be idenntified as part of funding process	<0.2 µg/m^3	Proposed	dependant on funding	Marketing of Rail/bus/cycle improvements installed using previous LTSF funding. Sustainable Transition Fund bid for marketing was not successful. Will look to identify and apply for alternative funding
Bus facilities upgraded	RDC	2017	2018	Upgraded bus facilities	<0.2 µg/m^3	Proposed	2019	Bus facilities should be upgraded, with improvements including better shelters and increased seating provision. Policy in AAP

DRAFT

Action	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
Home to station travel plans	ECC/train operator	?	?	Plans implemented	<0.2 µg/m^3	New measure	?	Personalised home to station travel plans have been carried out at two stations in Essex. This could be effective for Rayleigh passengers to minimise car trips through the AQMA. Will be looked into once new rail franchise announced.
Rayleigh school travel plans	ECC	2017	2017/2018	Implement at least one new school travel plan in Rayleigh	<0.2 µg/m^3	New measure	2018	2 secondary schools and up to 4 primary schools near AQMA. Targeted travel planning in schools in conjunction with raising awareness air quality has potential to reduce number of trips through the AQMA
New Business Travel Plans in Rayleigh	ECC	2016/2017	2017/2018	At least one business travel plan implemented (if suitable business identified)	<0.2 µg/m^3	New measure	2018	No large employers in Rayleigh identified by Steering Group. ECC have indicated that they have a list of potential targets in Rochford, which could be pursued.
New and improved pedestrian signage	RDC	?	?	New signage introduced.	<0.2 µg/m^3	Proposed	?	New and improved pedestrian signage should be introduced for key destinations and attractions, including the rail station, the town centre, the Mount, the Windmill, Holy Trinity Church and the Dutch Cottage. Policy in AAP

DRAFT

Table 8: Air Quality Action Plan Measures – Priority 4, Planning

Action	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
Ensure air quality impacts on and in AQMA considered in Local Plan evidence base (South Essex)	RDC/ECC	2016	2016/2017	Impacts on AQMA considered in Local Plan	Avoid worsening pollution in AQMA	New measure	2017	ECC transport department attends fortnightly meetings. Climate change and green infrastructure workshop coming up - RDC AQ officer to attend?
Formalise Communications between Environmental Health and Planning	RDC/ECC	2017	2017/2018	Implement an appropriate communications framework	Avoid worsening pollution in AQMA or introducing new receptors into AQMA without mitigation	New measure	2018	Needed to ensure that impacts of new developments upon AQMA and appropriate mitigation measures are considered consistently in all applications. ECC review applications with Transport Assessments using a checklist. Now prioritising measures to maximise sustainable transport 1st, infrastructure 2nd. Alternative approach could be to add air quality considerations to this checklist, although this wouldn't include smaller applications.
Ensure ALL new receptors introduced in AQMA are considered	RDC	end 2016/early 2017	2017	AQ assessments for all relevant permitted development applications	No additional receptors introduced in AQMA without appropriate mitigation.	New measure	2017 and beyond	Investigate mechanism for ensuring that new sensitive receptors introduced in the AQMA via permitted development have appropriate air quality assessments and mitigation. Update planning officers on AQMA and Action Plan
Promote EV in new developments	RDC/ECC	2016/2017	2017	Policy requiring EV included in Local Plan	Avoid worsening pollution in AQMA	New measure	2018	Include appropriate policy in emerging Local Plan
Travel Plans - new developments	RDC	2017	2017/2018	All new developments required to implement residential travel plans	<0.2 µg/m^3	New measure	on-going	Large developments permitted to west and north of Rayleigh. Potential for targeted travel plans or packs for new residents. May need to include requirement in Local Plan.

DRAFT

Table 9: Air Quality Action Plan Measures – Priority 5, Low Emission Vehicles

Action	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
Lower parking fees for EV	RDC	2017	2017/2018	Scheme introduced	<0.2 µg/m^3	New measure	2018	Investigate for potential lower parking fees or season ticket fees for EV. Season tickets may be easier to enforce than day tickets which are pay and display.
EV grants	RDC/ECC	2016/2017	2017	Grants identified and applied for	<0.2 µg/m^3	New measure	2017	Investigate grants for Council and other vehicles, including taxis, from OLEV and communicate to relevant groups. Apply for any directly relevant to RDC or ECC that could impact upon AQMA
Prioritise parking provision for EV	RDC	2016/2017	2017	Priority spaces implemented	<0.2 µg/m^3	New measure	2018	Investigate potential for priority parking for EV - at station and high street (season ticket holders already given priority spaces nearest to station).
Install EV charging at council car parks	RDC	early 2017	2017	At least 1 charge point installed in a Rayleigh car park	<0.2 µg/m^3	New measure	2017	Install EV charging point at Council car park
Additional EV points	RDC/ECC	?	?	Additional EV points installed	<0.2 µg/m^3	New measure	?	Currently no public charging points in Rayleigh. ECC group aiming for provision of at least 1 point per district.
Promote LPG	RDC	2016/2017	2017/2018	LPG station promoted in all relevant communications	<0.2 µg/m^3	New measure	2017/18	1 petrol station in AQMA has LPG refuelling infrastructure/ promote in other awareness raising information
Taxi Emission Incentives	RDC	2016/2017	2017	Increase in low emission taxis	<0.2 µg/m^3	New measure	2018	Make taxi companies aware of possible grants
Taxi Licencing	RDC	2016/2017	2017	Licence conditions that encourage low emission vehicles	<0.2 µg/m^3	New measure	2018	Current conditions (January 2016) minimum age 6 years when first licenced and not re-licenced if more than 10 years old. In RDC control, taxi rank in AQMA, should be fairly straightforward to implement. Could consider requiring lower age limit, or conditions that encourage low emission vehicles.

DRAFT

Table 10: Air Quality Action Plan Measures – Priority 6, Raising Awareness

Action	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
Car club	RDC	end 2016/beg 2017	2017	At least 1 car club provided in Rayleigh	<0.2 µg/m^3	New measure	2018	Investigate provision of car club space(s) in Rayleigh
Promote Essex Liftshare	ECC	2016/2017	2017/2018	Increase in number of users travelling through Rayleigh	<0.2 µg/m^3	New measure	2017/18	Established liftshare website for Essex. Promote locally as part of other awareness raising. Investigate addition of Rochford group under the Essex umbrella
Set up Rochford Liftshare group	ECC	2016/2017	2017	Rochford group set up	<0.2 µg/m^3	New measure	2017	Private group for Rochford can be set up under Essex umbrella free of charge.
Promote Active Essex	ECC	2016/2017	2017/2018	Active Essex promoted in all relevant communications	<0.2 µg/m^3	New measure	2017/18	Established brand and website which aims to promote and encourage the uptake of healthy lifestyles across Essex. Various initiatives and events. Promote locally as part of other awareness raising. Investigate scope to link air quality with future initiatives.
Engage Public Health colleagues at district and county level	RDC	end 2016	2016/17	Briefings completed	<0.2 µg/m^3	New measure	2017	AQ not yet considered by public health colleagues. ECC Public Health on Steering Group and RDC officer now appointed (and AQ included in workplan). Need to raise AQ up their agenda by providing briefing to both ECC and RDC public health colleagues.
Hold Sustainable Travel Conference in Rayleigh	RDC/ECC	2016/2017	2017	Hold Sustainable Travel Conference in Rayleigh	Raise awareness of AQMA and Action Plan	New measure	2017	ECC holds occasional Sustainable Travel Conferences. Aim to hold the next one in Rayleigh.
Promote Air Quality Action Plan and awareness in Rayleigh	RDC	2016/2017	2017/2018	Increase in comms related to air quality	Raise awareness of AQMA and Action Plan	New measure	when AQMA revoked	Make RDC comms aware of AQAP and any updates, to allow them to distribute information via existing channels. Consider an event or awareness campaign using existing channels

DRAFT

6 Glossary

AQC	Air Quality Consultants
AQMA	Air Quality Management Area
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EFT	Emission Factor Toolkit
Exceedence	A period of time when the concentration of a pollutant is greater than the appropriate air quality objective. This applies to specified locations with relevant exposure
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
µg/m^3	Microgrammes per cubic metre
NO	Nitric oxide
NO_2	Nitrogen dioxide
NOx	Nitrogen oxides (taken to be NO_2 + NO)
Objectives	A nationally defined set of health-based concentrations for nine pollutants, seven of which are incorporated in Regulations, setting out the extent to which the standards should be achieved by a defined date. There are also vegetation-based objectives for sulphur dioxide and nitrogen oxides
SPD	Supplementary Planning Document
Standards	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal
TEA	Triethanolamine – used to absorb NO_2

DRAFT

7 Appendices

A1 Response to Consultation 38
A2 Approach to Evaluation of Measures 39
A3 All Action Plan Measures Considered 41
A4 Reasons for Not Pursuing Action Plan Measures 55
A5 Professional Experience 56

DRAFT

A1 Response to Consultation

A1.1 XXXXXX

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

Consultee	Category	Response

[a] Table footnote

DRAFT

A2 Approach to Evaluation of Measures

Evaluation Approach

A2.1 The Actions are evaluated in relation to their expected impact on:

- air quality (i.e. reduction in emissions or concentrations);
- cost;
- feasibility or practicability of option (including the wider non-air quality impacts); and
- timescale for implementation.

Air Quality Impact

A2.2 Air quality impacts have been classified to represent 'low 'to 'high' impact. The higher the impact, the greater the improvement in air quality, i.e. the greater the reduction in NO_2 concentrations. For each Action, the expected reduction in annual mean NO_2 concentrations has been determined based on professional judgement, drawing, wherever possible, on experience gained from other studies. It should be noted that the impacts on air quality are judged in relation to the impacts within the AQMA(s). So, for example, an Action may have wide reaching benefits, but only be slightly beneficial within the AQMA(s). The following classification scheme has been used:

Low: *imperceptible* (a step in the right direction). Improvements unlikely to be detected within the uncertainties of monitoring and modelling;

Medium: *perceptible* (a demonstrable improvement in air quality). An improvement of up to 2μg/m^3 NO_2, which could be shown by a modelling scenario. Improvement is not likely to be shown by monitoring due to confounding factors of the weather; and

High: *significant*. Improvement of more than 2µg/m^3 NO_2. Can be clearly demonstrated by modelling or monitoring (a significant improvement is likely to be delivered by a package of options rather than by a single intervention).

Cost

A2.3 The implementation of the measures set out in this Action Plan are dependent on securing a sufficient and consistent level of funding both to support any additional staff that may be required, and to deliver the programme. In line with current Government guidance, it is not necessary to carry out a detailed cost-benefit analysis. Rather the aim is to provide a broad indication of costs so that the proposed measures can be ranked according to the cost and the expected improvement to air quality. Costs are represented as follows:

DRAFT

'Very Low' cost is taken to be £10K and under;

'Low' cost is taken to be £10 - £50K;

'Medium' cost is £50 - 500K;

'High' cost is £500K - £2 million; and

'Very High' cost is over £2 million.

Feasibility

A2.4 The feasibility of individual measures is not straightforward to quantify. The following factors have been taken into consideration:

- alignment / synergies with other County or District Council initiatives;
- wider non-air quality impacts (social, environmental or economic);
- stakeholder acceptance / "political" feasibility; and
- source of funding available or possible.

The Feasibility has been judged as follows:

Low feasibility;

Medium feasibility;

High feasibility.

Timescale

A2.5 The timescale for the implementation of measures has also been considered. The following classifications have been used: **Short-term** relates to those measures that can be implemented within 1-2 years; **Medium-term** relates to those implemented within 2-5 years; **Long-term** options are those which are 6+ years.

DRAFT

A3 All Action Plan Measures Considered

Action	EU Category	EU Classification	Lead Authority	AQ Impact	Cost	Feasibility	Timescale	Comments
Rayleigh Weir (A127) road layout/lane amendments	Traffic Management	UTC, Congestion management, traffic reduction	ECC	low	medium	high	complete	Road layout/lanes amended as part of a Rochford Local Highways Panel scheme
Rayleigh Weir (A127) Major scheme - SCOOT/MOVA	Transport Planning and Infrastructure	Strategic highway improvements, Re-prioritising road space away from cars, inc Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	ECC	low / medium	medium?	high	short	Funded major scheme - introduction of MOVA/SCOOT system, CCTV and driver information boards. Due to start end 2016
Ensure A127 signage strategy takes impact on AQMA into account	Traffic Management	Other	ECC	low	low	high	long term	A review of strategic signage will be carried out in the future. Scope to avoid AQMA will be limited because A129 is a priority 1 route.
A127 Fairglen Interchange improvements	Traffic Management	UTC, Congestion management, traffic reduction	ECC	low / medium	high	high	medium?	Major scheme to improve journey times. Improvements on the A127 corridor will reduce traffic through AQMA which re-route to avoid congestion on the A127

DRAFT

Action	EU Category	EU Classification	Lead Authority	AQ Impact	Cost	Feasibility	Timescale	Comments
A127 Corridor for Growth strategy	Traffic Management	UTC, Congestion management, traffic reduction	ECC	low/medium	medium	medium	short term	Route based strategy, considered improvements to the Rayleigh Weir interchange. Identified that further improvements to the traffic signals, queue length detector systems and further changes to lane markings had potential to improve traffic flow. Options being reviewed. If funding available, aim to complete within 2 years. Improvements on the A127 corridor will reduce traffic through AQMA which re-route to avoid congestion on the A127. Evaluation of impacts part of on-going review. Need to ensure air quality impacts on AQMA are given adequate consideration and weight in decision making process.
Car club	Alternatives to private vehicle use	Car Clubs	RDC	low	low	high	short	Investigate provision of car club space(s) in Rayleigh
Promote Essex Liftshare	Alternatives to private vehicle use	Car & lift sharing schemes	ECC	low	very low	high	short	Established liftshare website for Essex. Promote locally as part of other awareness raising. Investigate addition of Rochford group under the Essex umbrella
Set up Rochford Liftshare group	Alternatives to private vehicle use	Car & lift sharing schemes	ECC	low	very low	high	short	Private group for Rochford can be set up under Essex umbrella free of charge.
Promote Active Essex	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	ECC	low	very low	high	short	Established brand and website which aims to promote and encourage the uptake of healthy lifestyles across Essex. Various initiatives and events. Promote locally as part of other awareness raising. Investigate scope to link air quality with future initiatives.
Eco Race Essex. Target Rayleigh Schools	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	Sustrans / ECC	low	very low	high	short	For 3 weeks per term pupils record how they travel to school and are awarded points accordingly. No schools in Rayleigh involved at present. Promote as part of wider School Travel Plans targeting

DRAFT

Action	EU Category	EU Classification	Lead Authority	AQ Impact	Cost	Feasibility	Timescale	Comments
Quiet Routes	Transport Planning and Infrastructure	Cycle network	RDC / Sustrans	low	low	medium	short/ medium	Identify appropriate 'quiet routes', such as Love Lane/Castle Road in Cycle Delivery Plan
The Cake Escape	Transport Planning and Infrastructure	Cycle network	Sustrans / RDC	low	very low	high	short	Loyalty scheme for cyclists to get free cake at participating cafes. No cafes in Rayleigh at present - identify participants, possibly via Rayleigh Town Team.
Secure cycling parking local schools	Transport Planning and Infrastructure	Other	Sustrans / ECC	low	very low	high	short	Experience in Essex demonstrates that provision of secure cycle parking can increase cycle numbers.
County Cycle Strategy	Promoting Travel Alternatives	Promotion of cycling	ECC	low	?	high	short/ medium	County-wide strategy to encourage uptake of cycling. Overarching document - implemented via local delivery plans. Passed by cabinet
Secure cycling parking rail station	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	ECC / station operator	low	very low	high	short	Experience in Essex demonstrates that provision of secure cycle parking can increase cycle numbers. Planning application for 2 x 8 cycle stands submitted. If these are popular, more will be required.
Enhanced cycle parking facilities should be provided at suitable locations throughout the centre	Transport Planning and Infrastructure	Cycle network	RDC	low	very low	high	short/ medium	Policy in Area Action Plan
New and improved pedestrian and cycle routes and links to the railway station	Transport Planning and Infrastructure	Cycle network	RDC	low	very low/low	high	short/ medium	Included in AAP. Likely to be implemented as part of local cycle delivery plan

DRAFT

Action	EU Category	EU Classification	Lead Authority	AQ Impact	Cost	Feasibility	Timescale	Comments
Cycle Delivery Plan	Transport Planning and Infrastructure	Cycle network	RDC	low	medium	high	Stakeholder workshop July 2016. Plan expected early autumn 2016	Local improvements considered in town centre as part of Rayleigh Town Centre Action Plan. Likely to include cycle maps, parking and signage of alternative routes
Lower parking fees for EV	Promoting Low Emission Transport	Other	RDC	low	low/ medium	low/medium	medium?	Investigate for potential lower parking fees or season ticket fees for EV. Season tickets may be easier to enforce than day tickets which are pay and display.
EV grants	Promoting Low Emission Transport	Other	RDC/ECC	low	low	high	short	Investigate grants for Council and other vehicles, including taxis, from OLEV and communicate to relevant groups. Apply for any directly relevant to RDC or ECC that could impact upon AQMA
Prioritise parking provision for EV	Promoting Low Emission Transport	Priority parking for LEV's	RDC	low	low	high	short	Investigate potential for priority parking for EV - at station and high street (season ticket holders already given priority spaces nearest to station).
Install EV charging at council car parks	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	RDC	low	low	medium/high	short	Install EV charging point at Council car park

DRAFT

Action	EU Category	EU Classification	Lead Authority	AQ Impact	Cost	Feasibility	Timescale	Comments
Additional EV points	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	RDC/ECC	low	low	?	?	Currently no public charging points in Rayleigh. ECC group aiming for provision of at least 1 point per district.
Retain appropriate off road space for freight deliveries	Freight and Delivery Management	Delivery and Service plans	ECC	low	low	high	short	Most deliveries at rear (Websters Way) and off road, so do not cause obstructions in AQMA. Probably no scope for improvement in terms of location or hours. AAP needs to protect deliveries at rear. Check and review existing delivery restrictions
Delivery Hub	Freight and Delivery Management	Freight Consolidation Centre	RDC	medium	High	Low	long term	Possible locations Brook Road or Fairglen Interchange considered. Scope to operate for Southend (soon to be AQMA) from same location. Fairglen may also be appropriate for Basildon (no AQMA). Experience elsewhere indicates unlikely to be feasible if voluntary. Not sufficient scale or implementable in the timeframe, so discounted.
Engage Public Health colleagues at district and county level	Policy Guidance and Development Control	Other policy	RDC	low	very low	high	short	AQ not yet considered by public health colleagues. ECC Public Health on Steering Group and RDC officer now appointed (and AQ included in workplan). Need to raise AQ up their agenda by providing briefing to both ECC and RDC public health colleagues.

DRAFT

Action	EU Category	EU Classification	Lead Authority	AQ Impact	Cost	Feasibility	Timescale	Comments
Preferential employee mileage rate for vehicles with lower CO2 emissions	Promoting Low Emission Transport	Company Vehicle Procurement -Prioritising uptake of low emission vehicles	RDC	low	low	high	on-going	May actually encourage higher NOX emitting diesel vehicles because they generally have lower CO2 emissions than petrol vehicles
Refuse trucks	Promoting Low Emission Transport	Public Vehicle Procurement -Prioritising uptake of low emission vehicles	RDC	low	?	?	?	????
Home working for RDC employees	Promoting Travel Alternatives	Encourage / Facilitate home-working	RDC	low	low	high	on-going	RDC facilitate home working for employees
RDC staff charged for parking	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	RDC	low	low	high	on-going	RDC charge staff for parking at council offices
Promote LPG	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	RDC	low	low	high	short	1 petrol station in AQMA has LPG refuelling infrastructure/ promote in other awareness raising information

DRAFT

Action	EU Category	EU Classification	Lead Authority	AQ Impact	Cost	Feasibility	Timescale	Comments
Monitoring	Public Information	Other	RDC	low	low	high	short/medium	Currently monitoring using diffusion tubes at a number of roadside locations. 6-month automatic monitoring campaigns at a roadside site. Need to implement monitoring at building facades so that accurate information available to support revokation of AQMA. Will need to measure 3 years compliance (based on good quality data) at these locations before AQMA can be revoked.
Route based strategies B1013 and A1015	Traffic Management	Other	ECC	low	medium	low	?	No current funding but aspiration to consider measures to improve travel times. Likely to include walking/cycling measures
Planning policy ENV5 (LDP)	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	RDC	low	low	high	on-going	Planning policy ENV5 (LDP) - "new residential development will be restricted in AQMAs in order to reduce public exposure to poor air quality. In areas where poor air quality threatens to undermine public health and quality of life, the Council will seek to reduce the impact of poor air quality on receptors in that area and to address the cause of the poor air quality. Proposed development will be required to include measures to ensure it does not have an adverse impact on air quality". Policy has been used to refuse a development, where no information about exposure to poor air quality was provided (14/00888/FUL).
Air Quality Assessments required if significant emissions to air or near existing source	Policy Guidance and Development Control	Other policy	RDC	low	low	high	on-going	Assessments requested as required
Ensure air quality impacts on and in AQMA considered in Local Plan evidence base (South Essex)	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	RDC/ECC	low	low	high	short	ECC transport attends fortnightly meetings. Climate change and green infrastructure workshop coming up - RDC AQ officer to attend?

DRAFT

Action	EU Category	EU Classification	Lead Authority	AQ Impact	Cost	Feasibility	Timescale	Comments
Continue active engagement with Development Plan process	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	RDC/ECC	low	low	high	short/medium	AQ officer at RDC and ECC transport officers already actively involved in process via attendance at XXXX and copied into minutes of XXX. Engagement to continue to ensure that impacts of growth upon the AQMA are adequately considered and mitigated.
Develop a local planning framework (possibly SPD)	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	RDC/ECC	low	low	medium	short	Needed to ensure that impacts of new developments upon AQMA and appropriate mitigation measures are considered consistently in all applications. ECC review applications with Transport Assessments using a checklist. Now prioritising measures to maximise sustainable transport 1st, infrastructure 2nd. Alternative approach could be to add considerations to this checklist, although this wouldn't include smaller applications.
Ensure ALL new receptors introduced in AQMA are considered	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	RDC	low	low	high	short	Investigate mechanism for ensuring that new sensitive receptors introduced in the AQMA via permitted development have appropriate air quality assessments and mitigation. Update planning officers on AQMA and Action Plan
Promote EV in new developments	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	RDC/ECC	low	low	high	short	Need to include appropriate policy in emerging Local Plan
Hold Sustainable Travel Conference in Rayleigh	Public Information	Other	RDC/ECC	low	very low	high	short	ECC holds occasional Sustainable Travel Conferences. Aim to hold the next one in Rayleigh.

DRAFT

Action	EU Category	EU Classification	Lead Authority	AQ Impact	Cost	Feasibility	Timescale	Comments
Promote Air Quality Action Plan and awareness in Rayleigh	Public Information	Via the Internet	RDC	low	very low	high	short	Make RDC comms aware of AQAP and any updates, to allow them to distribute information via existing channels. Consider an event or awareness campaign using existing channels
EssexAir website	Policy Guidance and Development Control	Other policy	Essex Air	low	low	high	on-going	EssexAir consists of local councils, Essex County Council, Stanstead Airport and other interested parties. The website provides information about monitoring, reports and health advice. Quarterly meeting where information shared on AQ, including measures implemented. ECC transport officer attends and collects to data
Daily pollution forecasts	Public Information	Via the Internet	Essex Air	low	low	high	on-going	Provided on EssexAir website and twitter feed (based on Defra forecasts)
Rail/bus/cycle improvements aimed at bridging the gap between sustainable transport modes. LSTF funded.	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	ECC	low	medium	high	on-going	Realtime passenger information installed at bus stops and rail stations. Secure cycle storage installed. Partnership has been developed with Abellio Greater Anglia who have match funded some of the improvements. Specific Measures to be installed at Rayleigh Rail Station: • DDA Ramp and improved lighting • Environmental improvements to Station Forecourt area • New passenger shelter on platform • Additional cycle shelters on land to north east of station building, including moving existing cycle parking to this area • Additional cycle shelters on north side of station - (located off “The Approach” car park) • Motorcycle parking - increased motorcycle parking by moving cycle parking and installing racks to secure motorcycles to. • Additional bus shelters and Real Time Information

DRAFT

Action	EU Category	EU Classification	Lead Authority	AQ Impact	Cost	Feasibility	Timescale	Comments
Marketing of Rail/bus/cycle improvements installed using previous LTSF funding	Promoting Travel Alternatives	Promote use of rail and inland waterways	ECC	low	medium	medium	medium?	Sustainable Transition Fund bid was not successful. Will look to identify and apply for alternative funding
Bus facilities should be upgraded, with improvements including better shelters and increased seating provision	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	RDC	low	medium	medium	medium?	Policy in AAP
Taxi Emission Incentives	Promoting Low Emission Transport	Taxi emission incentives	RDC	low	very low	high	short	Make taxi companies aware of possible grants
Taxi Licencing	Promoting Low Emission Transport	Taxi Licensing conditions	RDC	low	very low	ongoing	ongoing	Current conditions (January 2016) minimum age 6 years when first licenced and not re-licenced if more than 10 years old.
Taxi Licencing	Promoting Low Emission Transport	Taxi Licensing conditions	RDC	low	very low	high	short	Current conditions (January 2016) minimum age 6 years when first licenced and not re-licenced if more than 10 years old. In RDC control, taxi rank in AQMA, should be fairly straightforward to implement. Could consider requiring lower age limit, or conditions that encourage low emission vehicles.

DRAFT

Action	EU Category	EU Classification	Lead Authority	AQ Impact	Cost	Feasibility	Timescale	Comments
Collection of detailed baseline traffic flow, speed and congestion data, construction of VISSIM model and testing of options	Traffic Management	UTC, Congestion management, traffic reduction	ECC	low	complete	complete	complete	Local Highways Panel has funded transport modelling work to consider options. Aim to secure funding via contributions as developments come forward." *A general conclusion is that the network in the town is very congested during peak periods, to an extent that it can only be addressed by a significant change of demand in traffic travelling into and through the town. Relative modest Rayleigh Town Centre VISSIM modelling measures as tested and recommended here have been shown to bring some benefits but it should not be expected to bring noticeable and significant long-term relief during peak weekday periods. The improved network and junction performance on a Saturday does indicated that the measures are effective during periods of slightly lower flow and can likely be expected to also benefit week day inter-peak periods.*"
Re-route traffic via Daws Heath Road and Castle Road to avoid Eastwood Road/High St	Traffic Management	UTC, Congestion management, traffic reduction	ECC	low/medium	discounted	discounted	discounted	Identified as part LHP work. VISSIM model indicated effectiveness would be limited and Castle Road likely to be sensitive to increased traffic. .
Extensive re-routing of traffic, creating one-way sections of Castle Road and Eastwood Road (Option 3)	Traffic Management	UTC, Congestion management, traffic reduction	ECC	low/medium	discounted	discounted	discounted	VISSIM model shows would increase congestion, so option rejected
Implementing bus laybys along High Road and Hockley Road	Traffic Management	UTC, Congestion management, traffic reduction	ECC	low/medium	discounted	discounted	discounted	VISSIM model indicated could be effective. Identified as part LHP work. No physical room to implement
Use cleaner buses through AQMA	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	RDC	low	very low	high/medium	short	Contact operators to determine whether cleanest buses in fleet could be used preferentially on routes through the AQMA

DRAFT

Action	EU Category	EU Classification	Lead Authority	AQ Impact	Cost	Feasibility	Timescale	Comments
Minimise bus waiting times in AQMA	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	RDC	low	very low	high/medium	short	Contact operators to determine whether buses can minimise idling times in the AQMA
Changes to pedestrian crossing points	Traffic Management	UTC, Congestion management, traffic reduction	ECC	low/medium	low	medium	going to LHP Sept, implementation within 2 years	Conversion of zebra crossings to Puffin - High Road/Eastwood Road and High Road North (nr Castle Road) most beneficial. Identified as part LHP work. Aim to secure funding via contributions as developments come forward.
Home to station travel plans	Promoting Travel Alternatives	Personalised Travel Planning	ECC/train operator	low	low	high	medium?	Personalised home to station travel plans have been carried out at two stations in Essex. This could be effective for Rayleigh passengers to minimise car trips through the AQMA. Will be looked into once new rail franchise announced.
Travel Information Packs - new developments	Public Information	Via leaflets	ECC	low	low	high	ongoing	Travel Information Packs required for all new developments. Packs have been supplied to small developments in Rayleigh and larger development in Hawkwell, much of the travel from which will be to or via Rayleigh. Could investigate inclusion of air quality information within the packs.
Travel Plans - new developments	Promoting Travel Alternatives	Personalised Travel Planning	RDC	low	low	medium	short/medium	Large developments permitted to west and north. Potential for targetted travel plans or packs for new residents. May need to include requirement in Local Plan.

DRAFT

Action	EU Category	EU Classification	Lead Authority	AQ Impact	Cost	Feasibility	Timescale	Comments
Rayleigh school travel plans	Promoting Travel Alternatives	School Travel Plans		low	low	high	Implementable in the short-term. Drawing on ECC/Sustrans resources	2 secondary schools and up to 4 primary schools near AQMA. Targeted travel planning in schools in conjunction with raising awareness air quality has potential to reduce number of trips through the AQMA
Current School Travel Plans	Promoting Travel Alternatives	School Travel Plans	ECC	low	on-going	on-going	on-going	Essex CC work with schools to develop travel plans. Has only worked with Wyburns Primary in Rayleigh to date. Has also worked successfully with Riverside Primary School in Hullbridge. Whilst the school is not Rayleigh, it is encouraging active travel habits in pupils that will go on to secondary school in the town. Pupils will not need to travel through the AQMA to get from Hullsbridge to the secondary schools (Fitzwimarc and Sweyne) and thus the impact on the AQMA will be extremely limited.
Business Travel Plan Accreditation	Promoting Travel Alternatives	Workplace Travel Planning	ECC	low	on-going	on-going	on-going	Essex County Councils' Sustainable Travel Planning team is working with businesses and schools to develop Travel Plans that deliver measurable progression in achieving modal shift. The County Council is willing to work with employers (with 50 staff members or more) on the development and progression of their Travel Plans. There is also the opportunity for businesses' to bid for funding (up to the value of £2,000) on successful completion of the programme. Travel Plans are awarded bronze, silver gold or platinum standards. No large employers in Rayleigh to target
New Business Travel Plans in Rayleigh	Promoting Travel Alternatives	Workplace Travel Planning	ECC	low	low	high/medium	short	No large employers in Rayleigh identified by Steering Group. ECC have indicated that they have a list of potential targets in Rochford, which could be pursued.

DRAFT

Action	EU Category	EU Classification	Lead Authority	AQ Impact	Cost	Feasibility	Timescale	Comments
New and improved pedestrian signage should be introduced for key destinations and attractions, including the rail station, the town centre, the Mount, the Windmill, Holy Trinity Church and the Dutch Cottage	Public Information	Via other mechanisms	RDC	low	low	medium	?	Policy in AAP

DRAFT

A4 Reasons for Not Pursuing Action Plan Measures

Action Category	Action Description	Reason action is not being pursued (including Stakeholder views)
Promoting Low Emission Transport	Clean Air Zone	Budget and timescale not feasible
Alternatives to private vehicle use	Park & Ride	Not appropriate for the size of the town or the scale of the problem
Transport Planning and Infrastructure	Bypass	Budget and timescale not feasible
Traffic Management	Reduce speed from 30 to 20 mph	Priority 1 route, so not appropriate. Traffic already slow for much of the day, so unlikely to have significant air quality impact
Fleet efficiency and recognition schemes	Ecostars	No obvious businesses to target
Traffic Management	Re-route traffic via Daws Heath Road and Castle Road to avoid Eastwood Road/High St	Identified as part LHP work. VISSIM model indicated effectiveness would be limited and Castle Road likely to be sensitive to increased traffic. .
Traffic Management	Extensive re-routing of traffic, creating one-way sections of Castle Road and Eastwood Road (Option 3)	VISSIM model shows would increase congestion, so option rejected
Environmental Permits	Control Industrial sources	No permitted sources of NOx in or near the AQMA
Freight and Delivery Management	Quiet & out of hours delivery	Freight deliveries not causing congestion by blocking road and responsible for small proportion of emissions
Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's	No alternative routes. Freight responsible for small proportion of emissions
Policy Guidance and Development Control	Low Emissions Strategy	No appropriate for the scale of the problem
Promoting Low Emission Plant		No notable sources in AQMA
Traffic Management	Anti-idling enforcement	Not perceived as an issue in Rayleigh
Traffic Management	Road User Charging (RUC)/ Congestion charging	Scale of the problem does not warrant the costs of implementation and enforcement
Vehicle Fleet Efficiency	Testing Vehicle Emissions	Not appropriate for the scale of the problem
Transport Planning and Infrastructure	Bus route improvements	No road space to implement improvements to laybys or bus lanes
Transport Planning and Infrastructure	Public cycle hire scheme	Town not big enough to support
Vehicle Fleet Efficiency	Driver training and ECO driving aids	No obvious companies to target

DRAFT

A5 Professional Experience

Prof. Duncan Laxen, BSc (Hons) MSc PhD MIEnvSc FIAQM

Prof Laxen is the Managing Director of Air Quality Consultants, a company which he founded in 1993. He has over forty years' experience in environmental sciences and has been a member of Defra's Air Quality Expert Group and the Department of Health's Committee on the Medical Effects of Air Pollution. He has been involved in major studies of air quality, including nitrogen dioxide, lead, dust, acid rain, PM_{10}, $PM_{2.5}$ and ozone and was responsible for setting up the UK's urban air quality monitoring network. Prof Laxen has been responsible for appraisals of all local authorities' air quality Review & Assessment reports and for providing guidance and support to local authorities carrying out their local air quality management duties. He has carried out air quality assessments for power stations; road schemes; ports; airports; railways; mineral and landfill sites; and residential/commercial developments. He has also been involved in numerous investigations into industrial emissions; ambient air quality; indoor air quality; nuisance dust and transport emissions. Prof Laxen has prepared specialist reviews on air quality topics and contributed to the development of air quality management in the UK. He has been an expert witness at numerous Public Inquiries, published over 70 scientific papers and given numerous presentations at conferences. He is a Fellow of the Institute of Air Quality Management.

Penny Wilson, BSc (Hons) CSci MIEnvSc MIAQM

Ms Wilson is a Principal Consultant with AQC, with more than fifteen years' relevant experience in the field of air quality. She has been responsible for air quality assessments of a wide range of development projects, covering retail, housing, roads, ports, railways and airports. She has also prepared air quality review and assessment reports and air quality action plans for local authorities and appraised local authority assessments and air quality grant applications on behalf of the UK governments. Ms Wilson has arranged air quality and dust monitoring programmes and carried out dust and odour assessments. She has provided expert witness services for planning appeals and is Member of the Institute of Air Quality Management and a Chartered Scientist.

Full CVs are available at www.aqconsultants.co.uk.

DRAFT