Annual Progress Report (APR)

2016 Air Quality Annual Progress Report (APR) for
East Renfrewshire Council

In fulfilment of Part IV of the
Environment Act 1995

Local Air Quality Management

June 2016

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Executive Summary: Air Quality in Our Area

Air Quality in East Renfrewshire

Air quality in East Renfrewshire is generally good. There are no major industrial or commercial sources of air pollutants within the area and road traffic is therefore the main source of local air pollution. No air quality monitoring areas have been declared in East Renfrewshire and our monitoring of air quality across the district has found that pollutant levels have decreased over recent years.

Actions to Improve Air Quality

While our air quality is generally good, we have been working over the past year on a range of measures designed to improve local air quality and increase public awareness of the steps that we can all take to minimise our impact on our local environment. As well as carrying out roadside emissions testing in conjunction with Police Scotland, we have introduced vehicle idling enforcement schemes around local schools.

We have also worked in partnership with SEPA to deliver air quality education to children in four pilot primary schools. We supported these schools to develop their own bespoke air quality improvement projects, tailored to each specific school's existing Eco-schools and health and wellbeing activities.

Local Priorities and Challenges

In the coming year we will build on this work by extending our enforcement and educational programmes to reach all schools within East Renfrewshire. As well as carrying out idling enforcement outside the schools, we will be working with a local third sector partner and ERC's Education Department to deliver air quality education and promote active travel to and from school.

How to Get Involved

East Renfrewshire Council's Prevention Team has developed a unique partnership with local MOT stations to offer free vehicle emissions checks to local residents. Any resident who is concerned about their vehicle's emissions can visit one of the

participating local garages for a free check – details of all of the participating garages can be found on East Renfrewshire Council's website.

Further information on local air quality and our enforcement and education activities can also be found on East Renfrewshire Council's website at www.eastrenfrewshire.gov.uk/airquality

Residents who are concerned about local air quality can contact Environmental Health at environmentalhealth@eastrenfrewshire.gov.uk, by phone on 0141 577 3127 or via the 'Contact Us' section of our website.

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1. Local Air Quality Management

This report provides an overview of air quality in East Renfrewshire during 2016. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Progress Report (APR) is summarises the work being undertaken by East Renfrewshire Council to improve air quality and any progress that has been made.

Table 1.1 – Summary of Air Quality Objectives in Scotland

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Nitrogen dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m^3	Annual mean	31.12.2005
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18 µg/m^3	Annual mean	31.12.2010
Particulate Matter ($PM_{2.5}$)	10 µg/m^3	Annual mean	31.12.2020
Sulphur dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	3.25 µg/m^3	Running annual mean	31.12.2010
1,3 Butadiene	2.25 µg/m^3	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mg/m^3	Running 8-Hour mean	31.12.2003

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Lead	0.25 µg/m^3	Annual Mean	31.12.2008

2. Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

East Renfrewshire Council has not declared any AQMAs.

2.2 Progress of Measures to improve Air Quality in East Renfrewshire

East Renfrewshire Council has taken forward a number of measures during the current reporting year of 2016 in pursuit of improving local air quality. As East Renfrewshire does not have any AQMAs, these measures are not specifically designed to target any particular location, but rather have been developed to improve air quality across the district more generally.

Key completed measures include the adoption of enhanced enforcement powers to target vehicle idling (particularly outside schools) and roadside emissions checks, in conjunction with Police Scotland. Air quality educational projects have been delivered to 4 local pilot primary schools in conjunction with SEPA and an innovative new partnership has been created with local MOT stations to provide free vehicle emissions checks to local residents. Across East Renfrewshire Council, an active travel strategy has been developed, together with energy efficiency and sustainable transport projects. Further detail on these projects and others across ERC are detailed in Table 2.1 below.

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Focus	Lead Authority	Implementation Phase	Progress to Date	Estimated Completion Date	Comments
1	Air quality education project in schools	Public information	ERC undertook air quality education programmes in 4 pilot primary schools.	ERC Environment Department in partnership with SEPA	7/1/16	Education programme delivered to300 children	Ongoing	This pilot programme proved very successful in 2015-16 and will be rolled out to more schools in 2016.
2	Vehicle idling enforcement	Traffic management	ERC conducts vehicle idling enforcement around local schools at school pick-up time	ERC Environment	1/4/15	6 days of enforcement carried out in 2015/6.	Ongoing	This enforcement work will also be extended to cover all ERC schools in 2016.
3	Roadside emissions checks	Traffic management	ERC and Police Scotland carry out roadside vehicle emissions testing, with Fixed Penalty Notices issued to any drivers whose vehicles fail the test.	ERC Environment in partnership with Police Scotland.	1/4/15	4 days of enforcement carried out	Ongoing	This will continue throughout the coming year.
4	Local garage emissions test partnership	Vehicle fleet efficiency	ERC created a partnership with local MOT stations to offer free vehicle emissions checks to residents	ERC Environment and local garages	1/4/15	16 garages signed up to scheme to offer free tests	Ongoing	All garages who signed up to the scheme were publicised on ERC's website and awarded certificates to display to promote the scheme
5	Pilot scheme for staff pool cars	Promoting low emission transport	ERC purchased three electric vehicles for use as staff pool cars	ERC Environment Department	1/4/16	Scheme fully operational	Ongoing	The scheme has been publicised to all staff to encourage uptake.
6	ERC Active Travel Action Plan	Promoting travel alternatives	ERC has published a strategy for the provision and promotion of active travel	ERC Roads	Autumn 2015	Published Autumn 2015	2017	The strategy defines our strategy for increasing active travel throughout East Renfrewshire for the next five years.

Measure No.	Measure	Category	Focus	Lead Authority	Implementation Phase	Progress to Date	Estimated Completion Date	Comments
7	Newton Mearns Active Travel Network	Promoting travel alternatives	Improvements to paths for walking and cycling and promotion of sustainable travel to residents. Personalised travel planning to target over 5, 300 households.	ERC Roads	August 2015	New path launch event took place on 19th June 2016.	Ongoing	The project area includes 4 primary schools, a high school and 2 railway stations. Residents will be able to discuss travel planning with an advisor on their doorstep.
8	'Think Green' campaign	Policy guidance	Improving energy efficiency in council buildings and housing. Addressing fuel poverty and helping local people reduce their energy consumption. Encouraging sustainable transport. Promoting and encouraging healthy activities and lifestyles across East Renfrewshire.	ERC Environment	Autumn 2015		Ongoing	ERC has committed to an 'Energy Management Plan', an 'Environmental Sustainability Policy Statement' and 'Scotland Climate Change Declaration'.
9	Partnership with Neilston Development Trust	Promoting travel alternatives	ERC is part of the steering group for a new Climate Challenge Fund project to promote active travel to local school children.	ERC Environment and Neilston Development Trust	May 2016	Monitoring already underway. Education projects will commence in new school term.	March 2017	ERC is a key project partner in this new programme of active travel promotion and air quality education within local schools. We are supporting the project through air quality monitoring capabilility.

3. Air Quality Monitoring Data and Comparison with Air Quality Objectives

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

East Renfrewshire Council does not currently have any automatic monitoring sites. The TEOM/FDMS automatic monitor which was previously operational at Sheddens Roundabout, Clarkston failed in mid-2014 and has not been replaced due to the cost of new monitoring equipment.

3.1.2 Non-Automatic Monitoring Sites

East Renfrewshire Council undertook non- automatic (passive) monitoring of NO_2 at 22 sites during 2015. Table A.1 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix B. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

3.2 Individual pollutants

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 C.

3.2.1 Nitrogen Dioxide (NO_2)

East Renfrewshire Council currently monitors nitrogen dioxide at 22 locations, using diffusion tubes. During 2015, nitrogen dioxide levels at all 22 sites were within the annual mean objective. There has been a significant downward trend in nitrogen dioxide levels across the district over the past 5 years.

There is therefore no need to proceed to any more detailed monitoring or assessment of nitrogen dioxide levels for any location within East Renfrewshire.

Table A.2 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

For diffusion tubes, the full 2016 dataset of monthly mean values is provided in Appendix B.

3.2.2 Particulate Matter (PM_{10})

East Renfrewshire Council does not currently monitor PM_{10}. Monitoring was undertaken at Sheddens Roundabout until mid-2014, when the monitor failed. Monitoring up until that time had indicated that there was no likelihood of failing to meet the hourly or annual mean objective for PM_{10}.

3.2.3 Particulate Matter ($PM_{2.5}$)

East Renfrewshire Council does not monitor $PM_{2.5}$ and currently has no plans to do so.

3.2.4 Sulphur Dioxide (SO_2)

East Renfrewshire Council does not monitor SO_2 as there are no significant sources of SO_2 in the area.

3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene

East Renfrewshire Council does not monitor any of these pollutants as there are no significant sources of these pollutants within our area.

4. New Local Developments

There are significant new local developments currently either being considered under the development management system or under construction around the south of Barrhead and Newton Mearns. As part of the development management process, air quality assessments are required for any significant development. These may be stand-alone assessments or may form a chapter of the wider Environmental Impact Assessment for the development. The conclusions of each of these air quality assessments has been reviewed by the Environmental Health service; as background pollutant levels across the district are generally low, none of these developments has been considered to create a risk of any exceedence of air quality objectives. Any of these air quality assessments can be viewed via ERC's Online Planning Portal at www.eastrenfrewshire.gov.uk/planning.

4.1 Road Traffic Sources

This year there have been no new:

- Narrow congested streets with residential properties close to the kerb.
- Busy streets where people may spend one hour or more close to traffic.
- Roads with a high flow of buses and/or HGVs.
- Significant junctions
- Roads constructed or proposed with the potential to exceed AQ objectives
- Roads with significantly changed traffic flows or
- Bus or coach stations.

4.2 Other Transport Sources

There are no airports or shipping ports within East Renfrewshire, nor are there any:

- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.
- Locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

4.3 Industrial Sources

There are no new:

- **Industrial installations:** new or proposed installations for which an air quality assessment has been carried out.
- **Industrial installations:** existing installations where emissions have increased substantially or new relevant exposure has been introduced.
- **Industrial installations:** new or significantly changed installations with no previous air quality assessment.
- Major fuel storage depots storing petrol.
- Petrol stations, or
- Poultry farms

4.4 Commercial and Domestic Sources

There are no new:

- Biomass combustion plants – individual installations.
- Areas where the combined impact of several biomass combustion sources may be relevant.
- Areas where domestic solid fuel burning may be relevant, or
- Combined Heat and Power (CHP) plants.

4.5 New Developments with Fugitive or Uncontrolled Sources

There are no new:

- Landfill sites.
- Quarries.
- Unmade haulage roads on industrial sites.
- Waste transfer stations, etc.
- Other potential sources of fugitive particulate matter emissions.

5. Planning Applications

There are significant areas of development around the south of Barrhead and Newton Mearns. These developments predominantly comprise residential development, together with associated community facilities e.g. schools.

Wherever such significant development is being considered, the Environmental Health service recommends to the Development Management team that an air quality assessment is required. Often the developer's appointed consultant will contact the EH service to discuss the requirement for an assessment, obtain any available local monitoring data and agree a suitable methodology for the assessment.

For the smaller housing developments, the assessment usually comprises a stand-alone report. For larger-scale developments, air quality is normally included as a chapter of the full Environmental Impact Assessment for the site. The assessment will cover both the construction and operational phases of the development. ERC encourages developers to consider the cumulative effect of their own development and other nearby developments which are already the subject of a planning application or under construction.

6. Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

There were no exceedences of Scottish objectives identified within East Renfrewshire in 2015. The monitoring data shows a downward trend in NOx levels over the past few years. As there have been no significant changes to the local roads network, it is likely that improvements in vehicle engine technology are largely responsible for this decrease.

6.2 Conclusions relating to New Local Developments

There are areas of significant development around the south of the existing suburbs of Newton Mearns and Barrhead. Some of this development is already under construction, although the majority is still being processed through the development management system. For all planning applications for significant development, air quality assessments are required. None of these assessments have considered that any of the development present a risk of national air quality objectives being exceeded as a result of the comparatively low background levels of pollutants.

This notwithstanding, Environmental Health has liaised with the Development Management section and with other services across East Renfrewshire Council to work towards securing some mitigation of any impacts on local air quality. East Renfrewshire Council seeks to encourage active travel within the context of place-making for significant new developments.

As new developments are completed and occupied, Environmental Health will review ERC's air quality monitoring network to ensure that it continues to be appropriate in both scale and location.

6.3 Proposed Actions

As there are no exceedences of national or Scottish air quality objectives within East Renfrewshire, there is no need to progress to any further formal assessments before the next annual Progress Report (due June 2017).

Although there is no requirement to proceed through any additional formal stages of the Local Air Quality Management process, East Renfrewshire Council is committed to improving local air quality, as part of the council's strategic outcome agreement to ensure that "*East Renfrewshire is a thriving, attractive and sustainable place for businesses and residents*" and as a part of ERC Environment Department's wider 'Prevention' agenda. East Renfrewshire Council is also cognisant of the key role of local authorities in delivery of the new Scottish Government "*Cleaner Air for Scotland*" strategy.

We will therefore be continuing to work throughout 2016 on air quality education projects within local schools, on vehicle idling enforcement and on roadside emissions testing. East Renfrewshire Council is also committed to providing and promoting opportunities for active travel and will continue to deliver on this throughout 2016.

Environmental Health will continue to liaise with colleagues in Development Management and Development Plans to ensure that air quality impacts from new developments are appropriately assessed and that mitigation measures are included wherever necessary.

East Renfrewshire Council will demonstrate our on-going commitment to improving local air quality throughout 2016, through developing partnerships between ERC services and with third sector partners. This integrated partnership approach will help us to deliver beyond air quality, to contribute to wider environmental and health benefits for our residents.

Appendix A: Monitoring Results.

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

Tube	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road (m*)*	Does this location represent worst-case exposure?
1	Huntly Drive, Giffnock	Roadside	256639	658900	Y 2.0m	0	Y
2	Eastwoodmains Road	Kerbside	255872	658311	Y 5.0m	2.5	Y
3	Clarkston Toll	Roadside	257278	657569	Y 5.0m	0	Y
4	Sheddens Roundabout	Kerbside	257459	657117	Y 2.0m	3	Y
5	Riverside Terrace, Busby	Kerbside	257889	656601	Y 2.5m	2.5	Y
6	Main Street, Neilston	Kerbside	248019	657343	Y 1.0m	2.5	Y
7	Kelburn St, Neilston Rd, Barrhead	Kerbside	249401	658377	Y 2.0m	2.5	Y
8	Cross Arthurlie St, Barrhead	Kerbside	249787	659237	Y 1.0m	2	Y
9	Darnley Rd, Barrhead	Kerbside	251009	659376	Y 5.0m	2.5	Y
10	Main St, Thornliebank	Kerbside	254880	659513	Y 5.0m	2.5	Y
11	Main St, Barrhead, North	Roadside	250633	659213	Y 5.0m	0.5	Y
12	Main St, Barrhead, South	Roadside	250636	659225	Y 15.0m	0.5	Y
13	Lochlibo Rd at W. Arthurlie	Kerbside	249344	658392	Y 7.0m	4	Y
14	Eastwoodmains Rd, Mains Ave	Kerbside	255920	658263	Y 5.0m	2	Y
15	Rouken Glen Rd	Kerbside	254761	658788	Y 5.0m	2	Y
16	195 Fenwick Road	Kerbside	256279	659209	Y 2.0m	0.5	Y
17	Mearnskirk Nursing Home	Roadside	253782	655404	Y 2.5m	1	Y
18	Brodick Place, Newton Mearns	Roadside	252407	655475	Y 1.0m	0	Y
19	Burnfield Road	Roadside	256218	659414	Y 1.0m	1.5	Y

Tube	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road (m*)*	Does this location represent worst-case exposure?
20	Braidholm Rd, Giffnock	Roadside	252407	655475	Y 4.5m	2	Y
21	Mearns Castle High School Sports	Kerbside	255418	655216	Y 10m	2	Y
22	Mearns Castle High School Entrance	Kerbside	255459	655337	Y 5m	0.5	Y

Table A.2 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2015 (%) [2]	Annual mean concentration (adjusted for bias) µg/m^3					
					2010* (Bias Adjustment Factor = 1.10)	2011* (Bias Adjustment Factor =0.94)	2012* (Bias Adjustment Factor = 0.95)	2013* (Bias Adjustment Factor = 0.99)	2014 (Bias Adjustment Factor =0.99)	2015 (Bias Adjustment Factor =0.98)
1	Roadside	Diffusion tube	83	83	18.5	13.2	18.3	14.7	13.3	9.9
2	Kerbside	Diffusion tube	92	92	36.5	28.5	31.4	23.7	30.2	25.1
3	Roadside	Diffusion tube	75	75	36.6	26.6	31.1	34.3	36.7	32.1
4	Kerbside	Diffusion tube	100	100	34.7	24.7	30.6	28.3	25.0	20.6
5	Kerbside	Diffusion tube	83	83	34.8	17.9	19.1	35.7	25.9	14.8
6	Kerbside	Diffusion tube	25	25	21.1	15.2	18.2	17.0	21.6	12.9[4]
7	Kerbside	Diffusion tube	75	75	45.1	41.4	37.5	30.6	29.3	16.8
8	Kerbside	Diffusion tube	83	83	31.6	25.9	32.4	23.3	33.5	21.5
9	Kerbside	Diffusion tube	100	100	25.4	16.8	18.2	18.4	21.0	13.5
10	Kerbside	Diffusion tube	92	92	32.0	26.6	27.4	29.3	29.2	19.4
11	Roadside	Diffusion tube	67	67	24.1	17.4	23.8	21.3	16.3	15.1[4]
12	Kerbside	Diffusion tube	17	17	NA	NA	NA	NA	NA	17.9[4]
13	Kerbside	Diffusion tube	33	33	38.9	31.2	36.4	36.7	33.5	27.9

Site ID	Site Type	Monitoring type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2015 (%) (2)	Annual mean concentration (adjusted for bias) µg/m^3					
					2010* (Bias Adjustment Factor = 1.10)	2011* (Bias Adjustment Factor =0.94)	2012* (Bias Adjustment Factor = 0.95)	2013* (Bias Adjustment Factor = 0.99)	2014 (Bias Adjustment Factor =0.99)	2015 (Bias Adjustment Factor =0.98)
14	Kerbside	Diffusion tube	100	100	27.4	21.6	28.5	22.9	26.6	18.9
15	Roadside	Diffusion tube	100	100	40.1	30.5	38.9	30.5	36.4	26.4
16	Roadside	Diffusion tube	92	100	38.4	30.4	31.5	23.1	NA	27.0
17	Roadside	Diffusion tube	83	83	19.3	13.2	18.0	16.3	13.0	10.9
18	Roadside	Diffusion tube	100	100	25.6	20.0	23.7	21.8	20.2	17.3
19	Roadside	Diffusion tube	100	100	NA	18.2	24.5	21.9	20.4	15.2
20	Roadside	Diffusion tube	42	42	NA	20.2	26.3	25.3	25.4	20.3[3]
21	Roadside	Diffusion tube	83	83	NA	NA	NA	NA	NA	8.9
22	Roadside	Diffusion tube	83	83	NA	NA	NA	NA	NA	8.2

Notes: Exceedences of the NO_2 annual mean objective of 40µg/m3 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) Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG(16) if valid data capture for the full calendar year is less than 75%. See Appendix C for detail

(4) Means that the data capture rate is less than 75% but the mean result has not been annualised due to the sporadic nature of the missing tubes

Appendix B: Full Monthly Diffusion Tube Results for 2015

Table B.1 – NO_2 Monthly Diffusion Tube Results for 2015

Site ID	Location	NO_2 Mean Concentrations ($\mu g/m^3$)													
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	
														Raw Data	Bias Adjusted (1)
1	Huntly Drive, Giffnock	NR	9.6	6.3	6.3	3	NR	8.7	7.6	12.6	19.9	15.7	11.2	10.1	9.9
2	Eastwood Mains Road, Giffnock	24.6	36.4	9.9	28.3	12.9	27.2	22.2	21.8	26.6	35.1	37	NR	25.6	25.1
3	Clarkston Toll, Clarkston	43.3	NR	21.7	23.1	NR	33	NR	33.9	31	35.9	46.4	26.6	32.8	32.1
4	Sheddens R'about, Clarkston	30.7	11.9	13.9	13.2	11.4	23.8	22.5	22.4	22.6	26.8	33.4	19.8	21.0	20.6
5	Riverside Terrace, Busby	NR	NR	12	10.3	4.9	15.6	14	12.9	22.4	21.4	21	16.8	15.1	14.8
6	Main Street, Neilston	NR	NR	NR	14	NR	NR	NR	NR	NR	2.1	23.3	NR	13.1	12.9
7	Kelburn Street @ Neilston Road Barrhead	23.7	14.3	12.2	14.3	9.3	NR	16.5	25	22.8	15.8	NR	NR	17.1	16.8
8	Cross Arthurlie Street, Barrhead	28.4	NR	33.8	14.6	3	24.7	20.3	20	NR	19.2	29.7	25.6	21.9	21.5
9	Darnley Road, Barrhead	23.2	9.8	10.4	8.6	6.1	12.7	12	9.4	15.6	23.7	20.3	14.1	13.8	13.5
10	Main Street, Thornliebank	33.1	20.3	14.8	18.2	9.8	NR	7.1	22.6	23.8	17	27.9	23.5	19.8	19.4

Site ID	Location	NO_2 Mean Concentrations (µg/m^3)													
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	
														Raw Data	Bias Adjusted (1)
11	Main St Barrhead (North)	16.7	NR	7.1	10.1	7.2	13.1	NR	NR	NR	21.5	35.7	12.1	15.4	15.1
12	Main Street Barrhead (South)	NR	NR	NR	NR	NR	NR	NR	NR	NR	17.3	NR	19.3	18.3	17.9
13	Lochlibo Rd @ W. Arthurlie Cottage	23.2	NR	39.4	NR	NR	NR	NR	NR	24.2	NR	27	NR	28.5	27.9
14	Eastwoodmains Rd @ Mains Avenue	38.7	21.7	16.8	12.3	8.3	16.4	22	14.3	20.3	26	19.5	15	19.3	18.9
15	27 Rouken Glen Rd @ gushet	46.8	14	16.5	17.1	NR	27.5	23.4	26.4	25.8	35	29.5	33.8	26.9	26.4
16	195 Fenwick Road	NR	37.3	22.3	18.4	29.6	36.5	29.4	34.2	25.8	31.7	21.6	16.1	27.5	27.0
17	Mearnskirk Nursing home (GSO)	18.1	11.2	6.8	7.6	8	8.3	NR	7.9	NR	15.5	17.2	10.4	11.1	10.9
18	18 Brodick Place (M77)	28.1	13.7	12	10.8	14.1	19.1	19	20.2	12	21.6	25.4	15.6	17.6	17.3
19	8 Burnfield Road	25	11.4	9.8	6.7	9.2	11.1	12.7	10.7	21	20.8	26.9	21.4	15.6	15.2
20	5 Braidholm road	36.8	19.5	NR	NR	NR	NR	NR	NR	NR	14	48.7	25.7	28.9	28.4
21	Mearns Castle High School Sports	NR	4	5.2	4.9	3.3	7.2	7.4	NR	14.1	14.9	20.8	9.2	9.1	8.9
22	Mearns Castle High School Entrance	NR	6.8	NR	9.6	6.7	5.6	6.2	5.4	8.8	NR	16.7	9.7	8.4	8.2

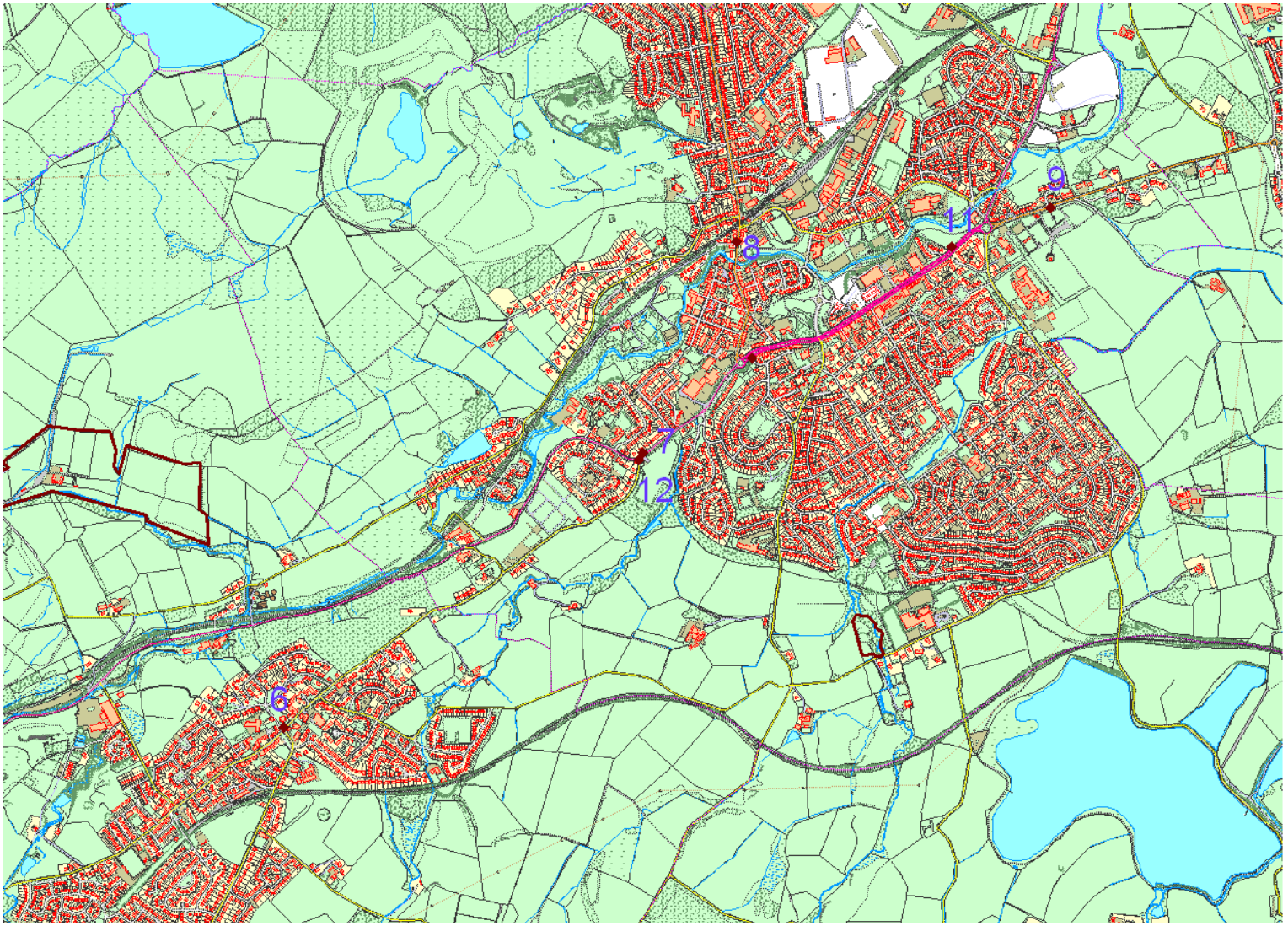
(1) See Appendix C for details on bias adjustment

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

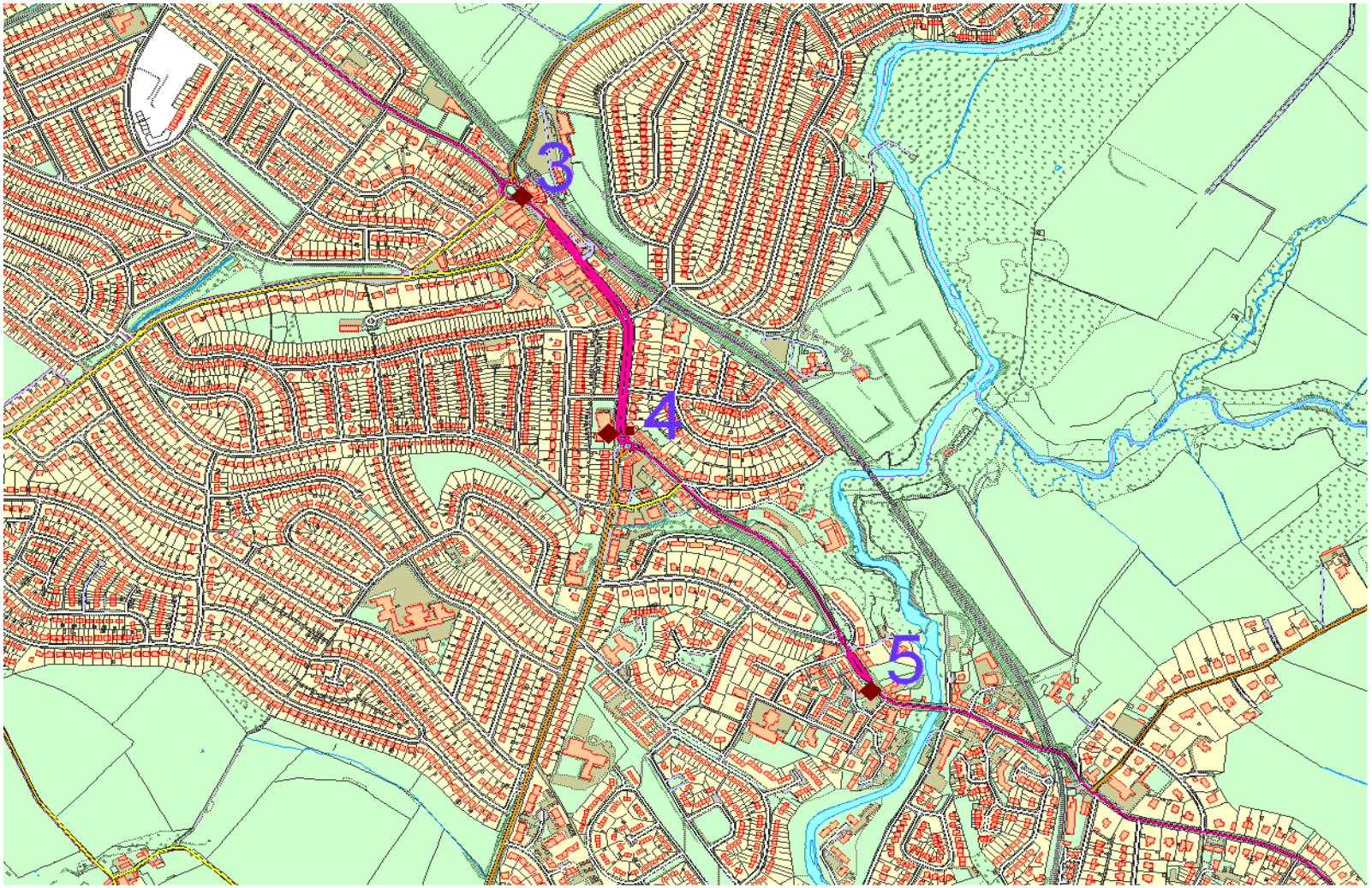
The diffusion tubes are supplied and analysed by Glasgow Scientific Services (GSS) and are prepared using the 20% TEA in water method and in accordance with the procedures set out in the practical guidance. East Renfrewshire has not carried out any co-location studies itself, although co-location studies are available for GSS. The Department for Environment and Rural Affairs (DEFRA) reports that in co-location testing in 2015, GSS demonstrated 'good' precision (see http://laqm.defra.gov.uk/documents/Tube_Precision_2015_version_03_15-Final.pdf).

DEFRA further reports that the 2015 bias adjustment factor for GSS is 0.98 (see http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html). This bias adjustment factor has therefore been applied to the annual average diffusion tube results reported below. Laboratory performance in analysing diffusion tubes is subject to quality assurance/control under the AIR-PT scheme operated by LGC and supported by the Health and Safety Laboratory. Under this scheme, GSS was found to have achieved 100% satisfactory results throughout every round of testing in 2015 (AR006, AR007, AR009 AND AR010).

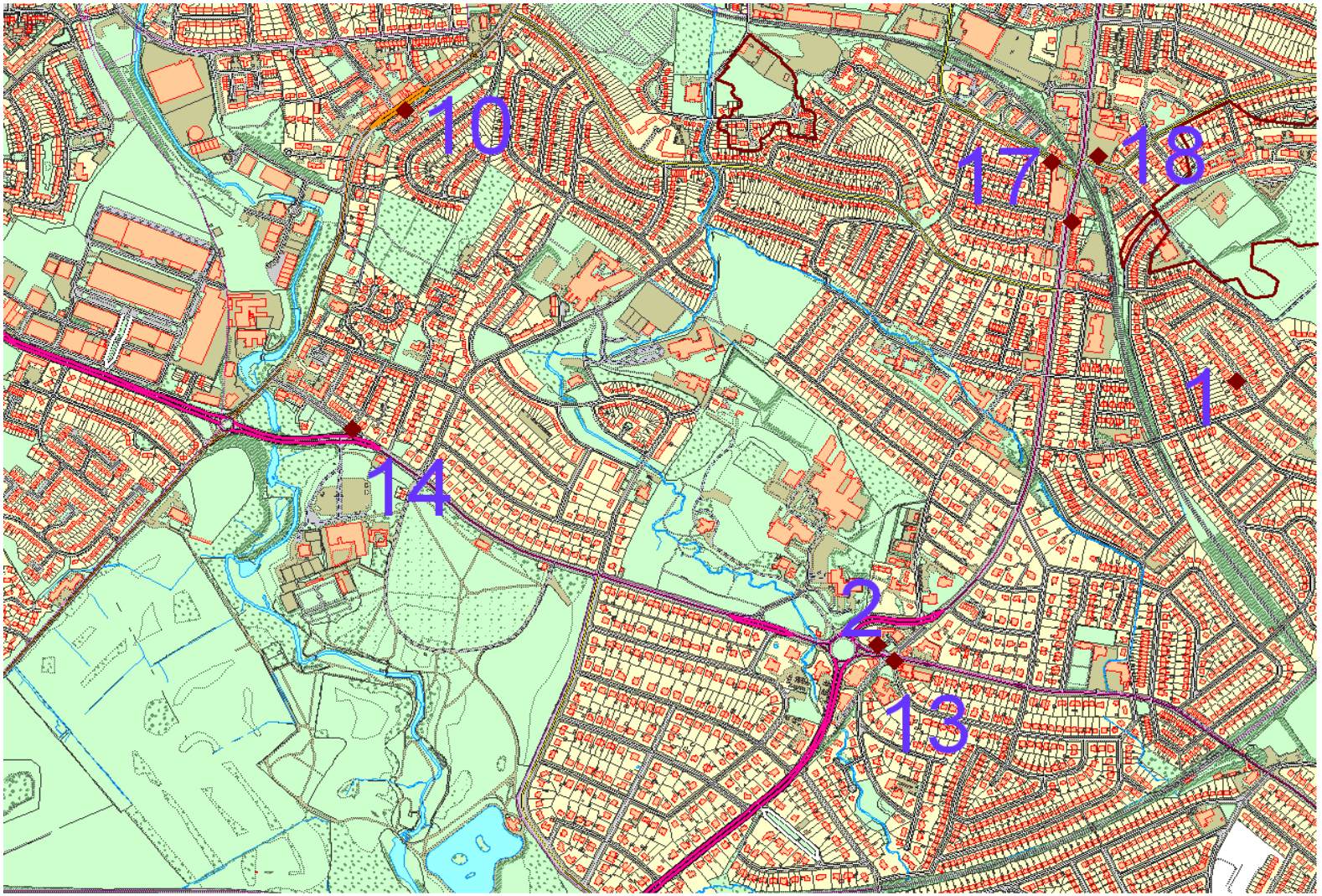
Appendix D: Map of Diffusion Tube Locations



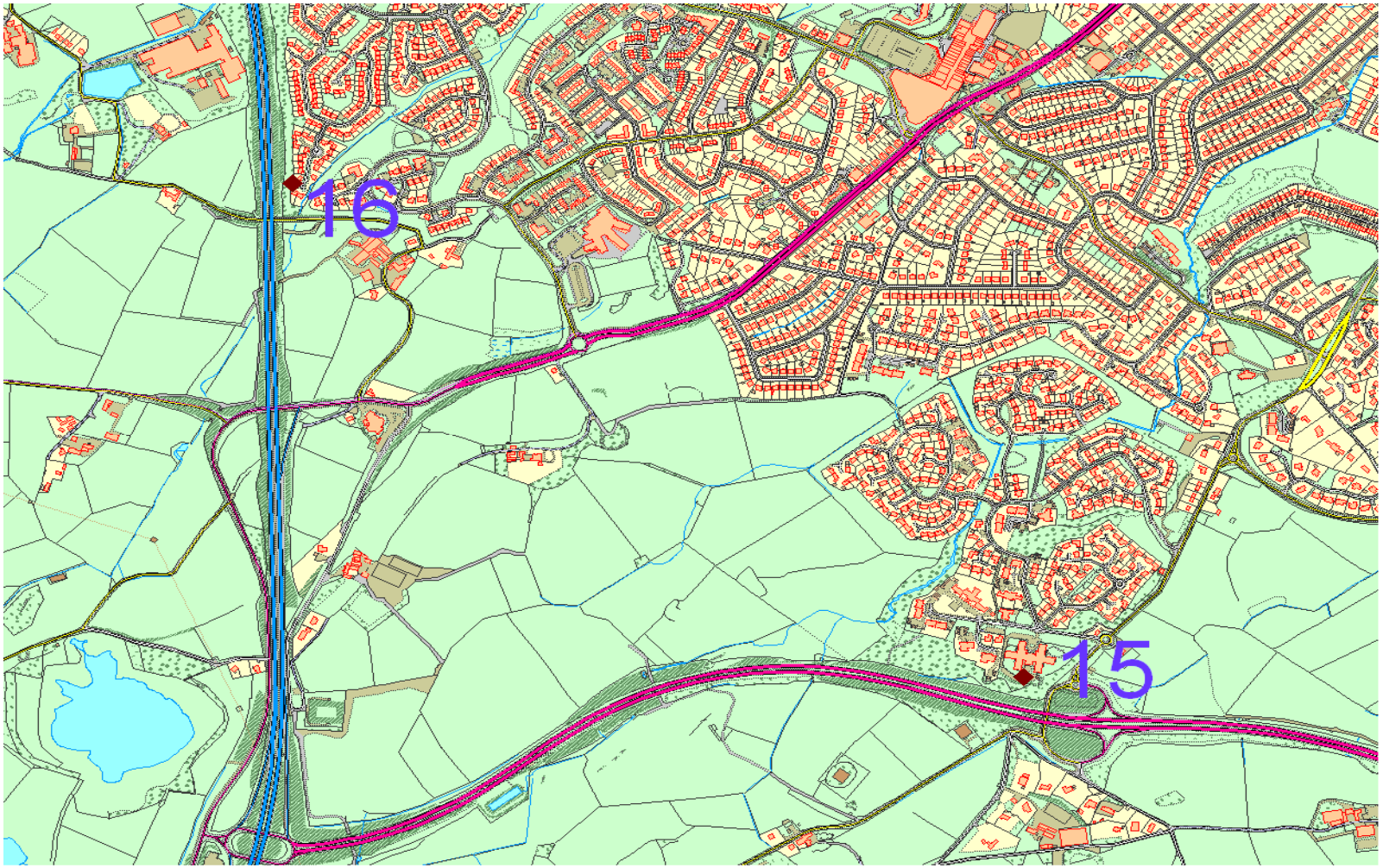
Barrhead and Neilston



Clarkston



Giffnock and Thornliebank



Newton Mearns

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA 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
APR	Air quality Annual Progress Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides

PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (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
SO_2	Sulphur Dioxide