2015 Updating and Screening Assessment for Kirklees Council

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

April 2015

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Report Reference number	Kirklees_2015_USA
Date	April 2015

Executive Summary

This report is the latest Updating and Screening Assessment (USA) for air quality across Kirklees in 2014. This is a continuation of Local Air Quality Management process to assess and review local air quality that is required by the Environment Act 1995. Previous reports and assessments are available on the Kirklees web site at:

http://www.kirklees.gov.uk/community/noisePollution/pollution.aspx

This assessment therefore reports any significant changes since the 2012 USA report and follows recently revised technical guidance (LAQM Technical Guidance (TG09) February 2009), published by the Department for Environment, Food and Rural Affairs (DEFRA).

The situation at present is that two Air Quality Management Areas (AQMAs) have been declared in Kirklees:

- AQMA 1Leeds Rd, Bradley Rd junction for the exceedance of the annual mean AQO for NO_2
- AQMA 2 Scout Hill, Dewsbury for the exceedance of the daily average AQO for small particulates (PM_{10})

Within reference to monitoring data collected in 2014, there are still exceedances of the AQO within one of Kirklees council's AQMAs, AQMA 1 in Bradley.
Kirklees Council AQMA 2 in Scouthill complied with the Daily PM_{10} objective in 2014.

Continuous monitoring at Roadside 4 has seen AQO exceeded and therefore detailed assessments are required in the following areas against the following objective:

- Birkenshaw (Roadside 4) – Annual NO_2 objective

Diffusion tube data has highlighted the following areas where the annual NO_2 AQO is exceeding at the façade of properties in 2014 and therefore requiring detailed assessment:

- Birchencliffe
- Birkenshaw
- Edgerton
- Huddersfield Town Centre
- Liversedge
- Outlane
- Thornton Lodge

In addition to above Kirklees Council has previously identified a further four sites which required assessment.

Monitoring sites within Eastborough continue to exceed the annual objective for NO_2 and a Detailed Assessment has been completed and is ready for submission.

The remaining three sites were compliant in 2014, but a detailed assessment will be conducted for;

- Birstall
- Chain Bar
- Mirfield

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1 Introduction

1.1 Description of Local Authority Area

Kirklees is the third largest Metropolitan District in area - it covers 157 square miles or 40,860 hectares and a population of ~404,000. Measured in population terms Kirklees is one of the larger local authorities in England and Wales ranking 11th out of 348 districts. Over one tenth of the district is in the Peak District National Park. The extremes of altitude in Kirklees range from 33m (108 ft) at Thornhill Lees to 582m (1903 ft) at Black Hill. Manufacturing industry, textiles and engineering still form a proportion of the local economy, the majority of it situated in the Huddersfield and Dewsbury areas and northwards to the M62. The urban areas comprise nine towns including the two larger towns of Huddersfield and Dewsbury. The air quality issues are focussed around the road network connecting the towns, and traffic which passes between the West Yorkshire conurbation and Greater Manchester.

1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 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 exceedances are considered likely, the local authority must then 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.

The objective of this Updating and Screening Assessment is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM **in England** are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre μg/m^3 (milligrams per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedances in each year that are permitted (where applicable).

Table 1.1 Air Quality Objectives included in Regulations for the purpose of LAQM in England

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 μg/m^3	Running annual mean	31.12.2003
	5.00 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
Lead	0.5 μg/m^3	Annual mean	31.12.2004
	0.25 μg/m^3	Annual mean	31.12.2008
Nitrogen dioxide	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
Particles (PM_{10}) (gravimetric)	50 μg/m^3, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 μg/m^3	Annual mean	31.12.2004
Sulphur dioxide	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

1.4 Summary of Previous Review and Assessments

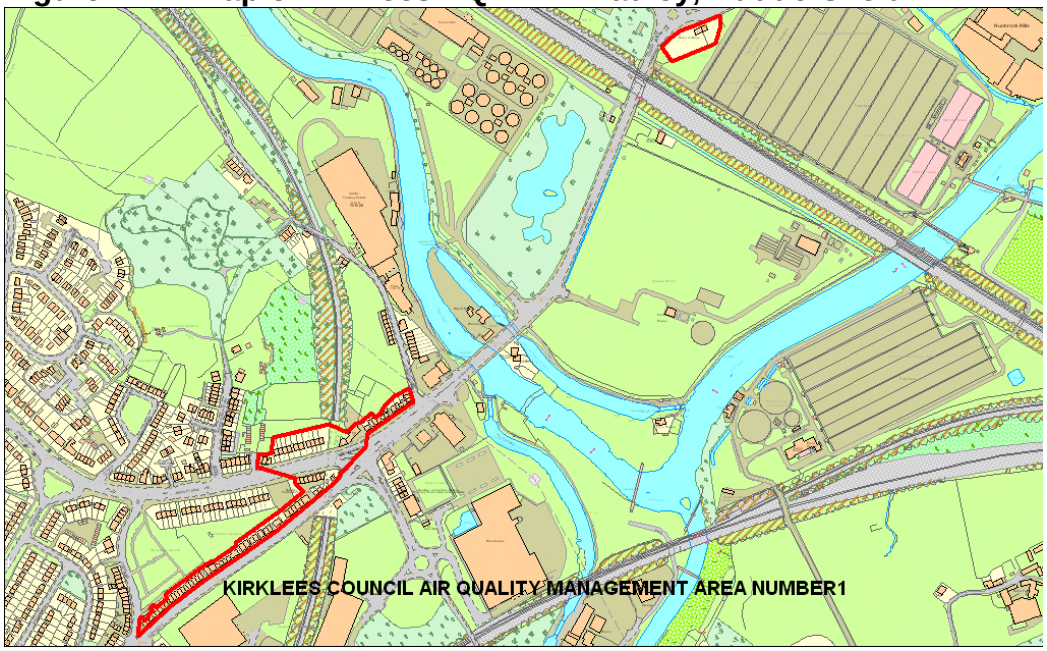
Previous assessments of Kirklees' air quality have shown that areas between Huddersfield and Dewsbury and the localities north of these have been borderline for complying with the annual average air quality objective (AQO) for nitrogen dioxide (NO_2), and in one area for compliance with the daily average AQO for PM10. Table 1.2 outlines the review and assessment undertaken by Kirklees and outcomes of published reports:

Table 1.2 Summaries of Previous Reports Submitted to DEFRA from 2008 to 2015

Report	Date	Outcome
Detailed Assessment	2008	Concluded that declaration of an AQMA for Annual NO_2 exceedances along A62 in Bradley is required
Detailed Assessment	2008	Concluded that declaration of an AQMA for Daily PM_{10} exceedances along A644 in Scout Hill is required
Progress Report	30/04/2008	No Problems Identified
Air Quality Management Order 1	17/10/2008	Air Quality Management Area 1 – Bradley, Huddersfield
Air Quality Management Order 2	27/02/2009	Air Quality Management Area 2 – Scout Hill, Dewsbury
Updating and Screening Assessment	30/04/2009	Detailed Assessment for NO_2 in 7 areas around Kirklees Further assessment for PM_{10} in Bradley AQMA
Progress Report 2010/11	30/05/2011	Detailed Assessment for NO_2 in 10 areas around Kirklees
Updating and Screening Assessment	30/04/2012	Detailed Assessments for NO_2 in 10 areas around Kirklees
Further Assessment 1	30/04/2012	Air Quality Management Area 1 – Bradley Huddersfield
Further Assessment 2	2014	Air Quality Management Area 2 – Scouthill
Progress Report 2013	2014	Information contained within Eastborough report. Detailed Assessments for NO_2 in 9 remaining areas around Kirklees
Detailed Assessment	2014	Concluded that declaration of an AQMA for Annual NO_2 exceedances in area of Eastborough
Progress Report 2014	2014	Detailed Assessments for NO_2 in 10 remaining areas around Kirklees. Action Plans for current AQMAs

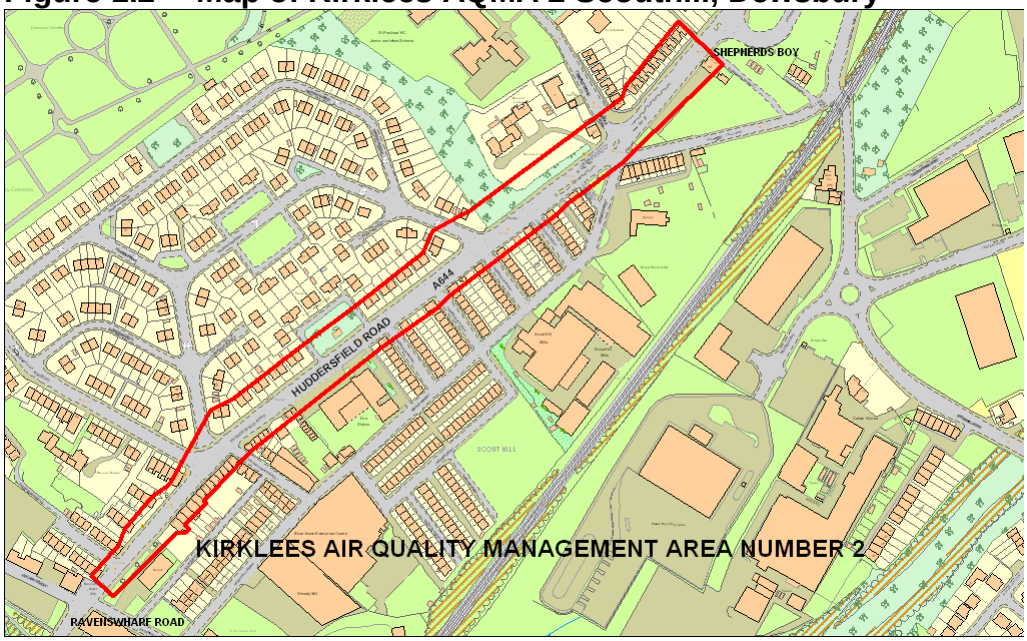
AQMA 1 is around the A62/A6107 Leeds Rd /Bradley Rd junction and due to an exceedance of the annual average AQO for NO_2. It currently contains 79 dwellings. It is shown in the map below:

Figure 1.1 Map of Kirklees AQMA 1 Bradley, Huddersfield



AQMA 2 is in the Scout Hill area of the A644 Huddersfield Rd to the west of Dewsbury and due to an exceedance of the daily average AQO for PM_{10}. It was declared on 2nd March 2009 and currently contains 46 dwellings. It is shown in the map below:

Figure 1.2 Map of Kirklees AQMA 2 Scouthill, Dewsbury



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Kirklees' continuous monitoring stations are shown in the maps below. In 2011 Kirklees Council reviewed the continuous monitoring station network at the end of March 2011, of which Trailer 1, Riverbank Court and Holmfirth monitoring stations were decommissioned as a result. In May 2011 Roadside 3 was relocated into AQMA 1 in Bradley. A new monitoring station in the Birchencliffe area was installed in January 2013 in order to monitor the alterations to the Ainley Top roundabout. Details of QA/QC for these stations are given in the Appendix A

Figure 2.1 Map of Automatic Monitoring Sites across district

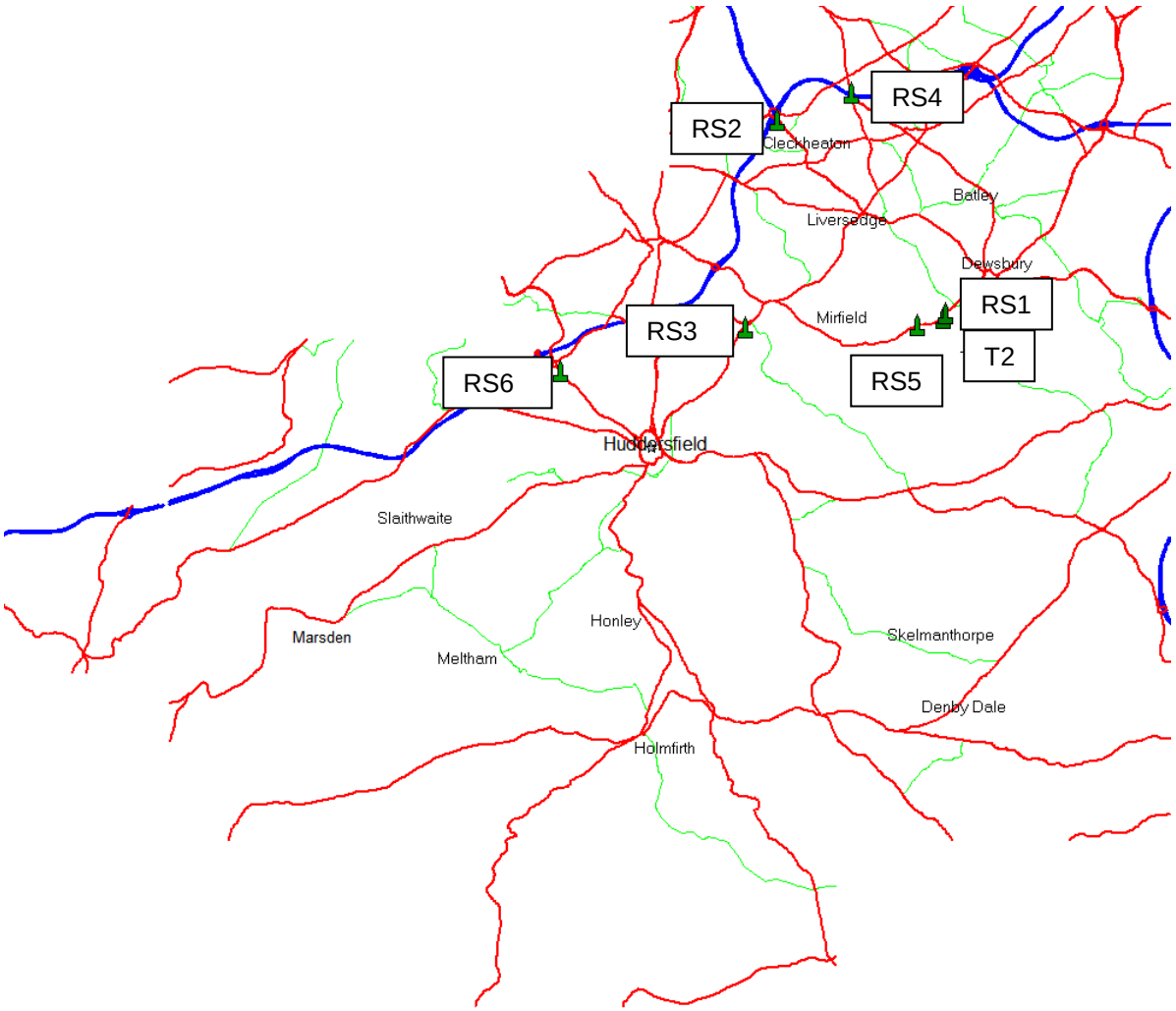


Figure 2.2 Map of Automatic Monitoring Site Trailer 2 Back Ravens Avenue & Roadside 1 Huddersfield Road

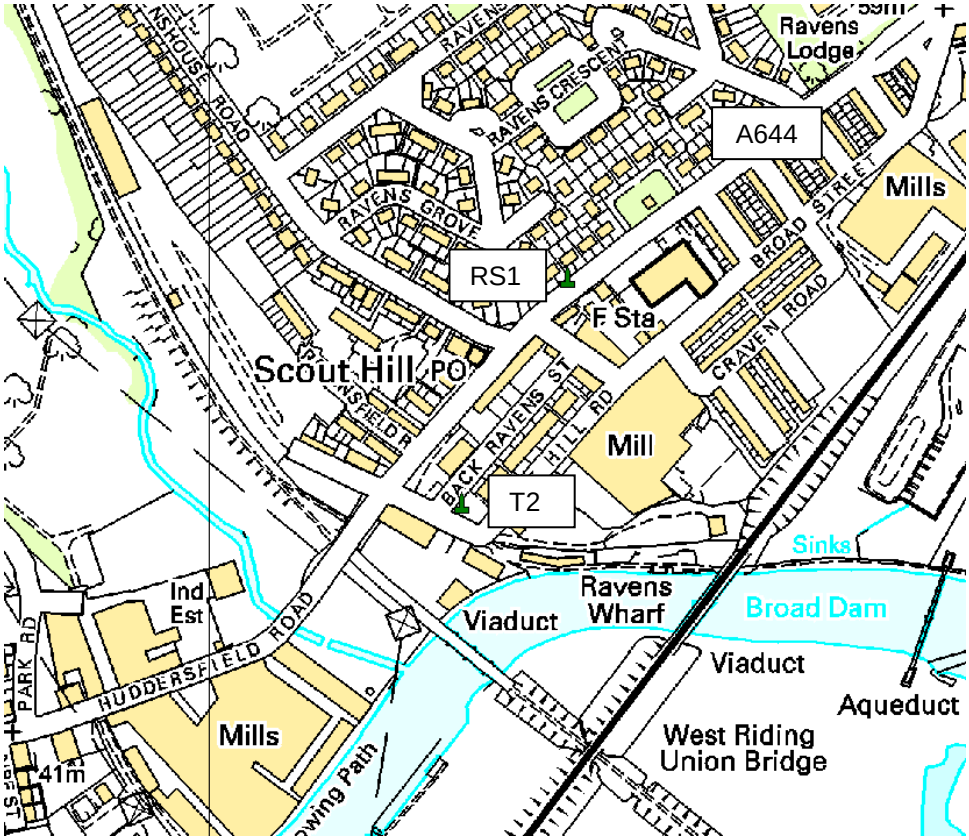


Figure 2.3 Map of Automatic Monitoring Site Roadside 2

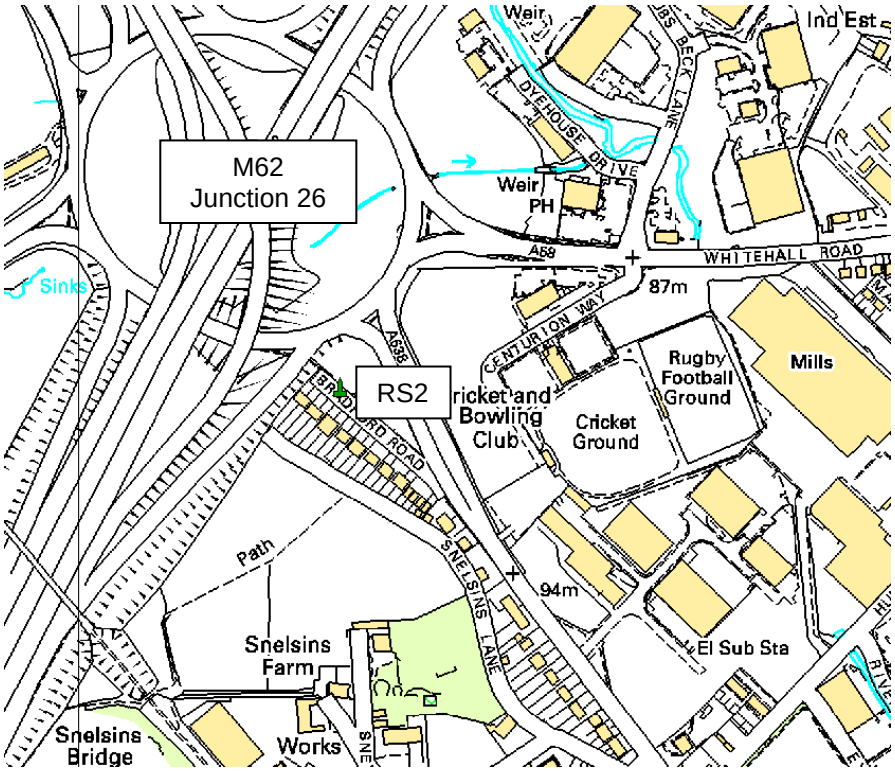


Figure 2.4 Map of Automatic Monitoring Site New Roadside 3

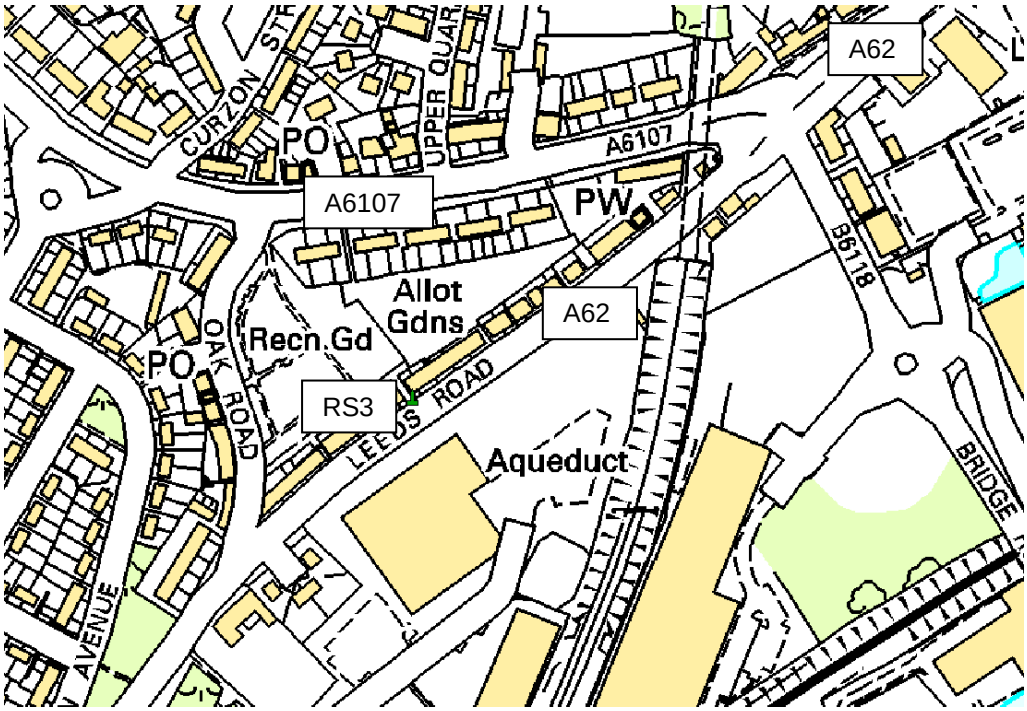


Figure 2.5 Map of Automatic Monitoring Site Roadside 4

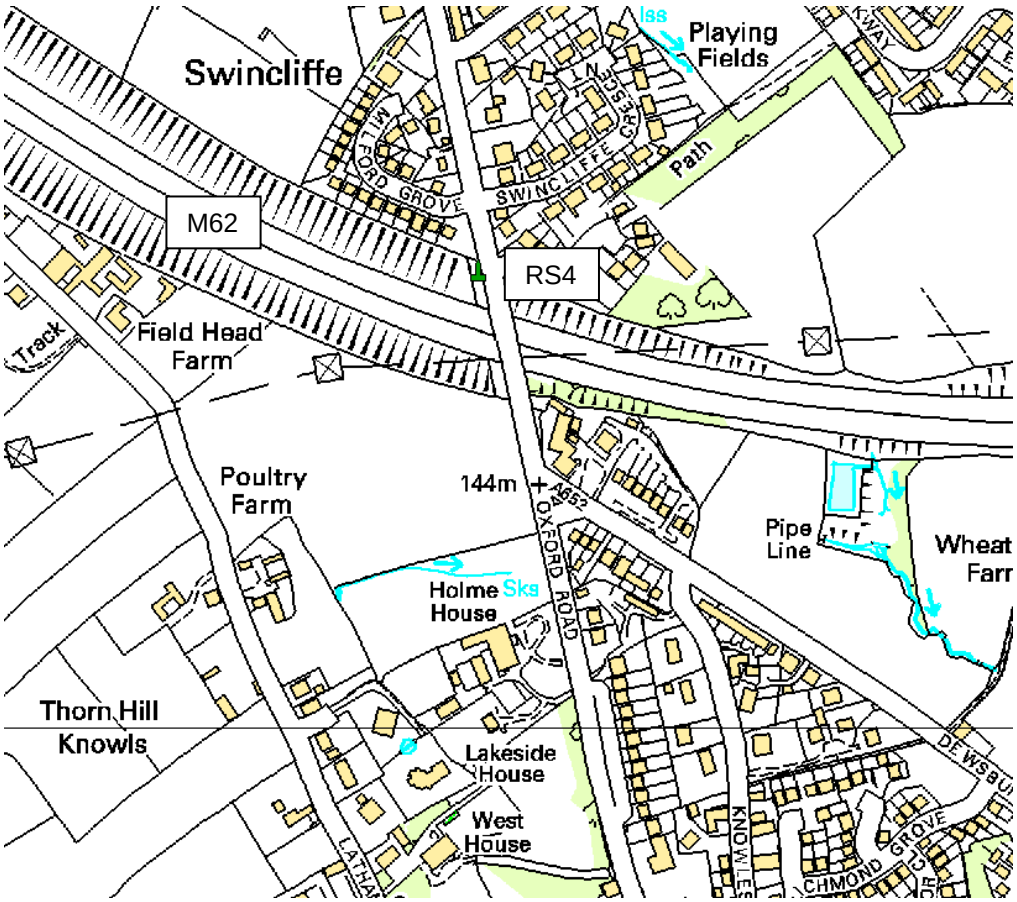


Figure 2.6 Map of Automatic Monitoring Site Roadside 5

Figure 2.7 Map of Automatic Monitoring Site Roadside 6

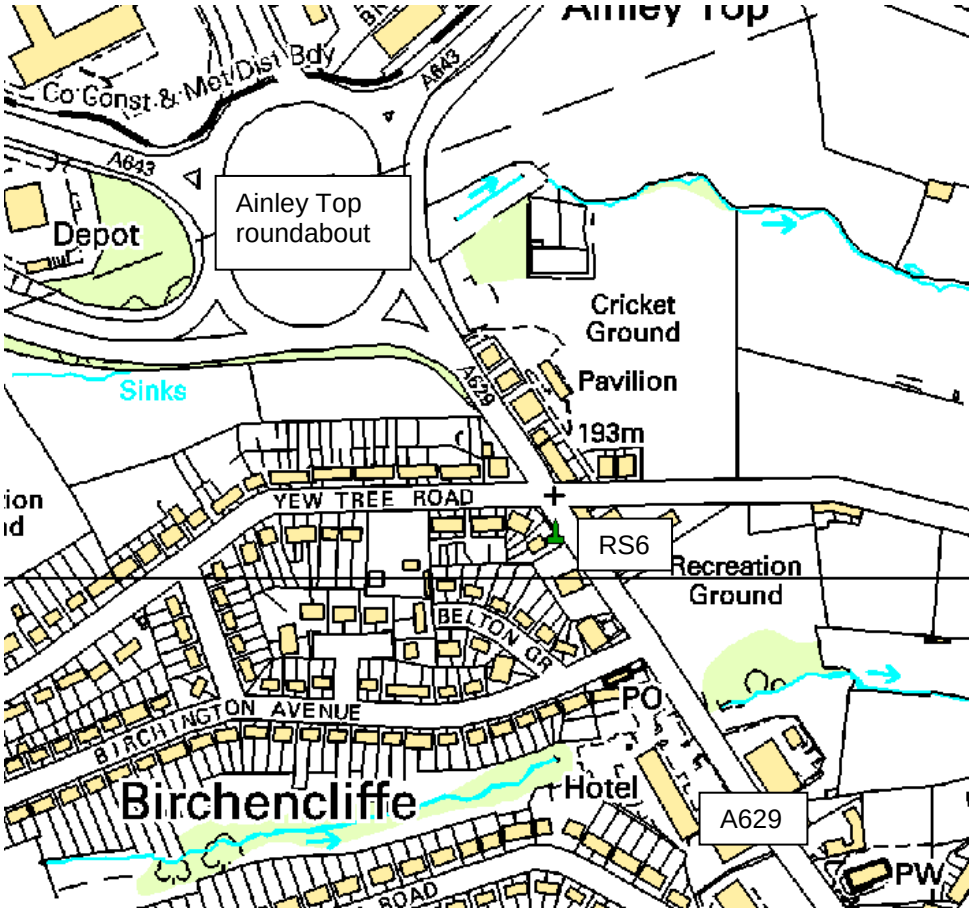


Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
Trailer 2	Industrial	423185	420612	NO_2, O_3, PM_{10}, SO_2	Adjacent	Chemiluminescence method. Ultraviolet Absorptiometry. TEOM. Ultraviolet luminescence	N (42m)	6m	N
Roadside 1	Roadside	423247	420761	NO_2, PM_{10},	Y	Chemiluminescence method. FH 62 I-R	Y (3m)	3m	Y
Roadside 2	Roadside	418240	426553	NO_2, PM_{10},	N	Chemiluminescence method. FH 62 I-R	Y (50m)	2m	N
Roadside 3	Roadside	417255	420358	NO_2, PM_{10},	Y	Chemiluminescence method. FH 62 I-R	Y (3m)	3m	Y
Roadside 4	Roadside	420441	427353	NO_2, PM_{10},	N	Chemiluminescence method. FH 62 I-R	N (29m)	3m	N
Roadside 5	Roadside	422430	420399	NO_2, PM_{10},	N	Chemiluminescence method. FH 62 I-R	Y (3m)	3m	Y
Roadside 6	Roadside	411739	419007	NO_2, PM_{10},	N	Chemiluminescence method. Met-One BAM	Y (8m)	5m	N

2.1.2 Non-Automatic Monitoring Sites

In addition to a continuous monitoring network, Kirklees Council has a network of non-automatic monitors across the district. This network comprises of 55 diffusion tubes monitoring for NO_2 and 5 co-location studies conducted by Kirklees and neighbouring authorities. Figure 2.9 highlights the areas in which non-automatic studies are being conducted across the district, where more than one tube is being used in the study area, a further map has been included.

The non-automatic monitoring network is reviewed on an annual basis. The network in 2015 will consist of 55 monitoring tubes and 5 co-location studies. There are no diffusion tubes to be removed this year.

Diffusion Tubes are prepared and analysed by Kirklees Council, details on QA/QC and bias adjustments for diffusion tube monitoring is recorded in appendix A

Figure 2.8 Map(s) of Non-Automatic Monitoring Sites (if applicable)

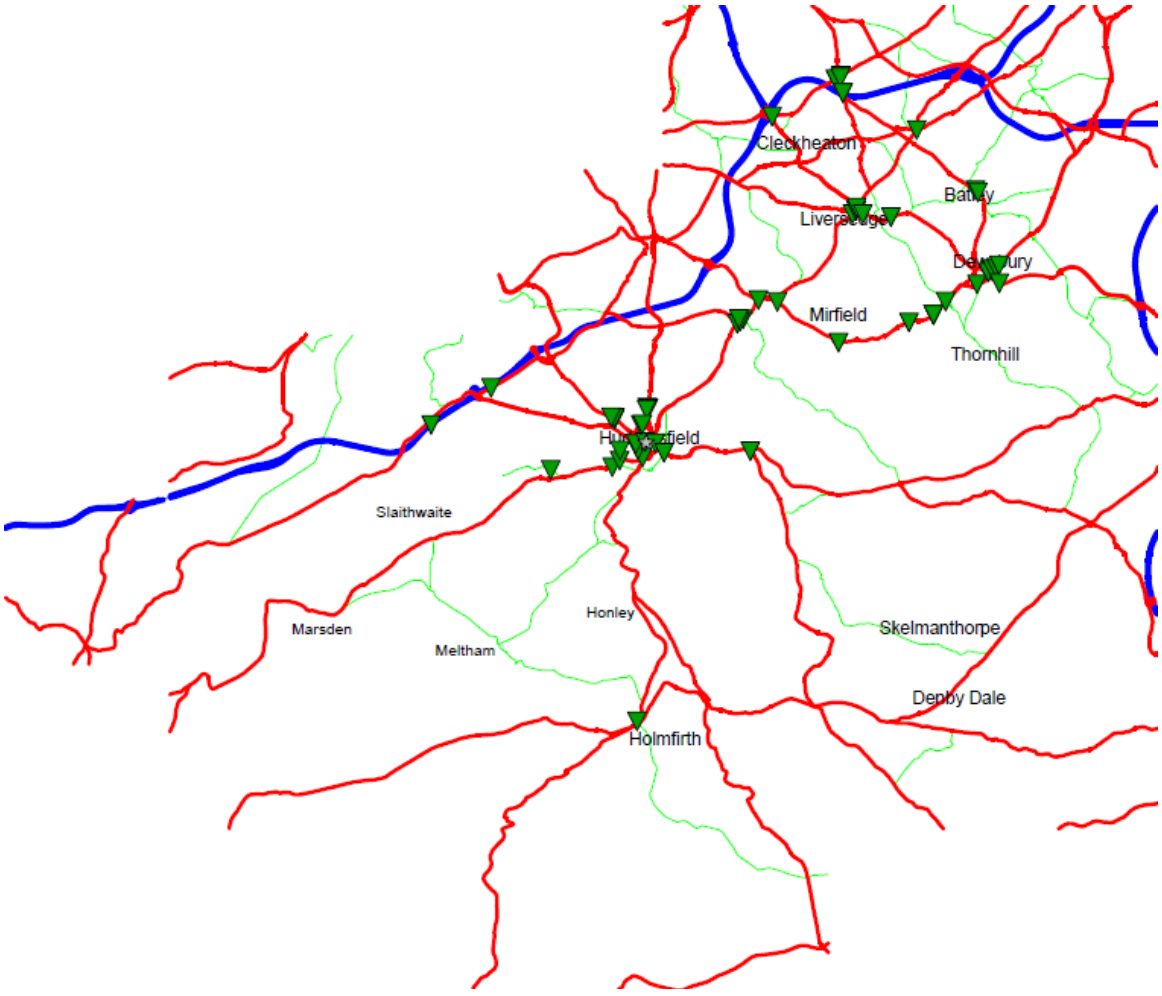


Figure 2.9 Map of AQMA 1 Bradley diffusion tubes

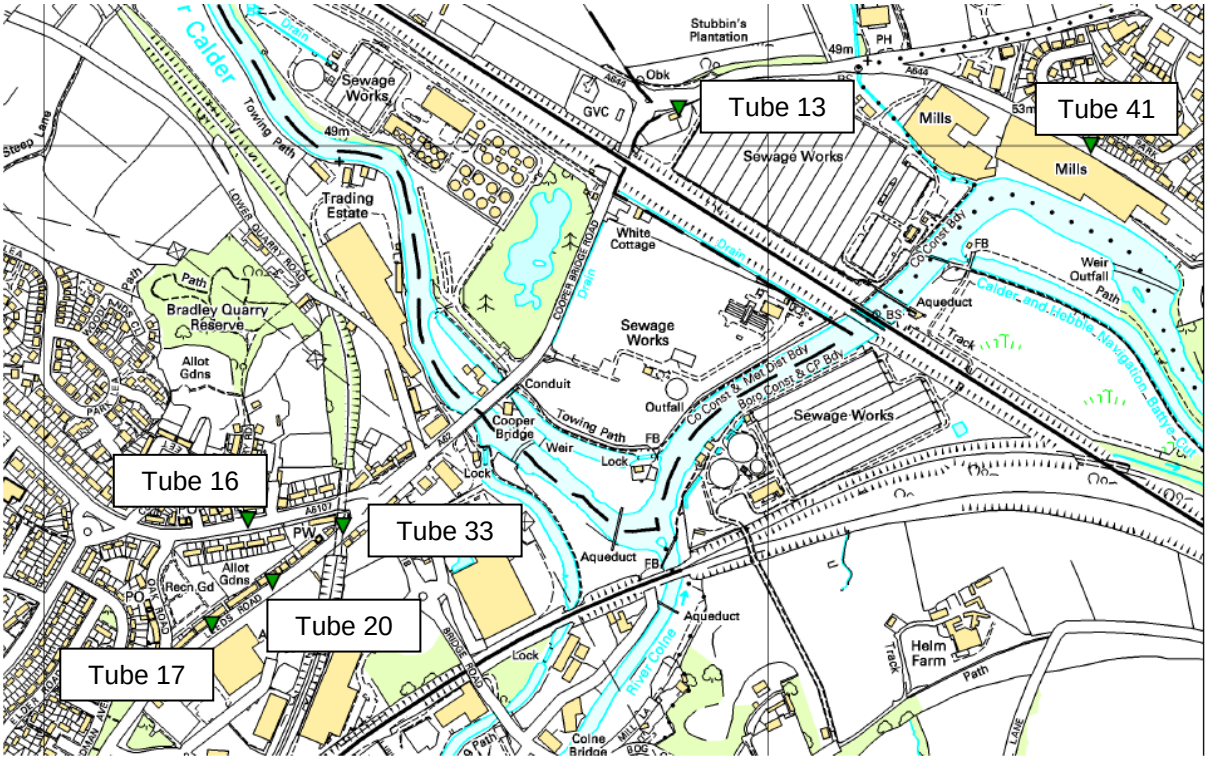


Figure 2.10 Map of Huddersfield town centre diffusion tubes

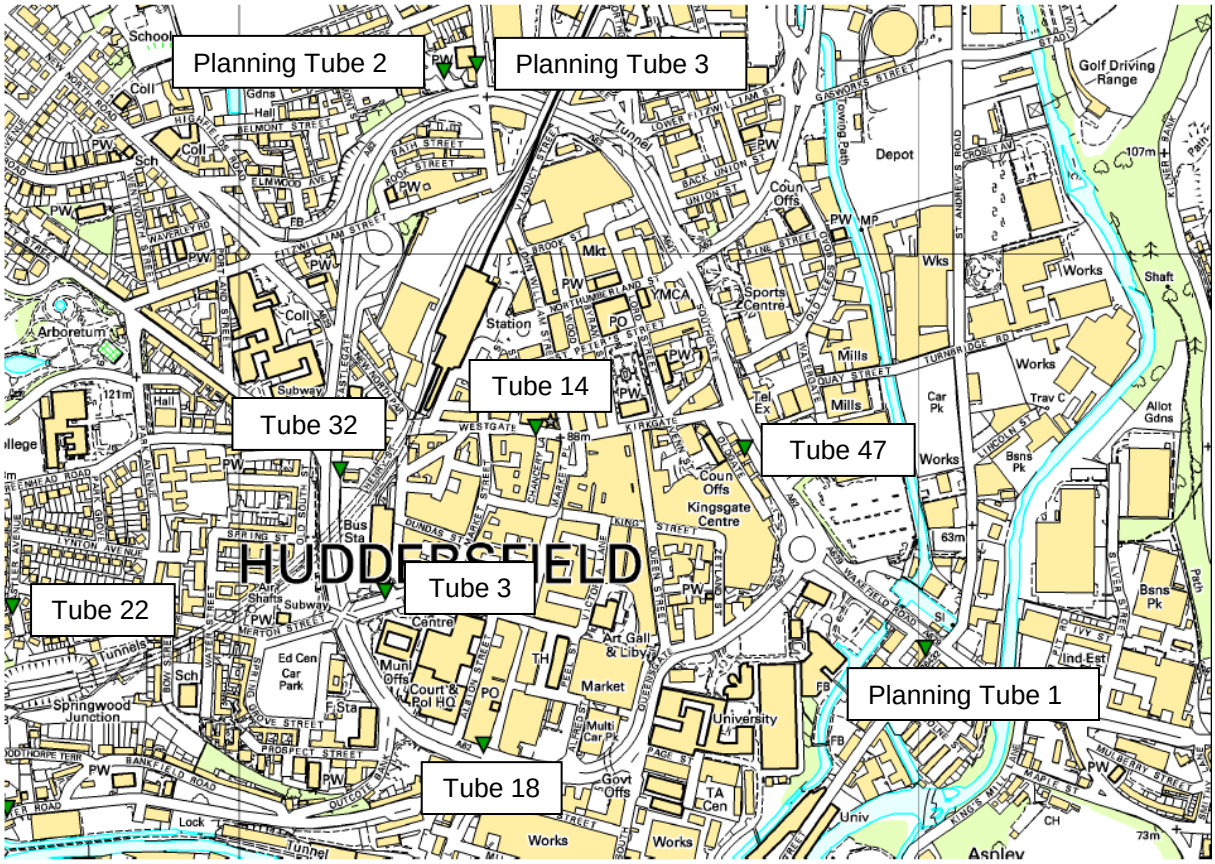


Figure 2.11 Map of Dewsbury town centre & Eastborough diffusion tubes

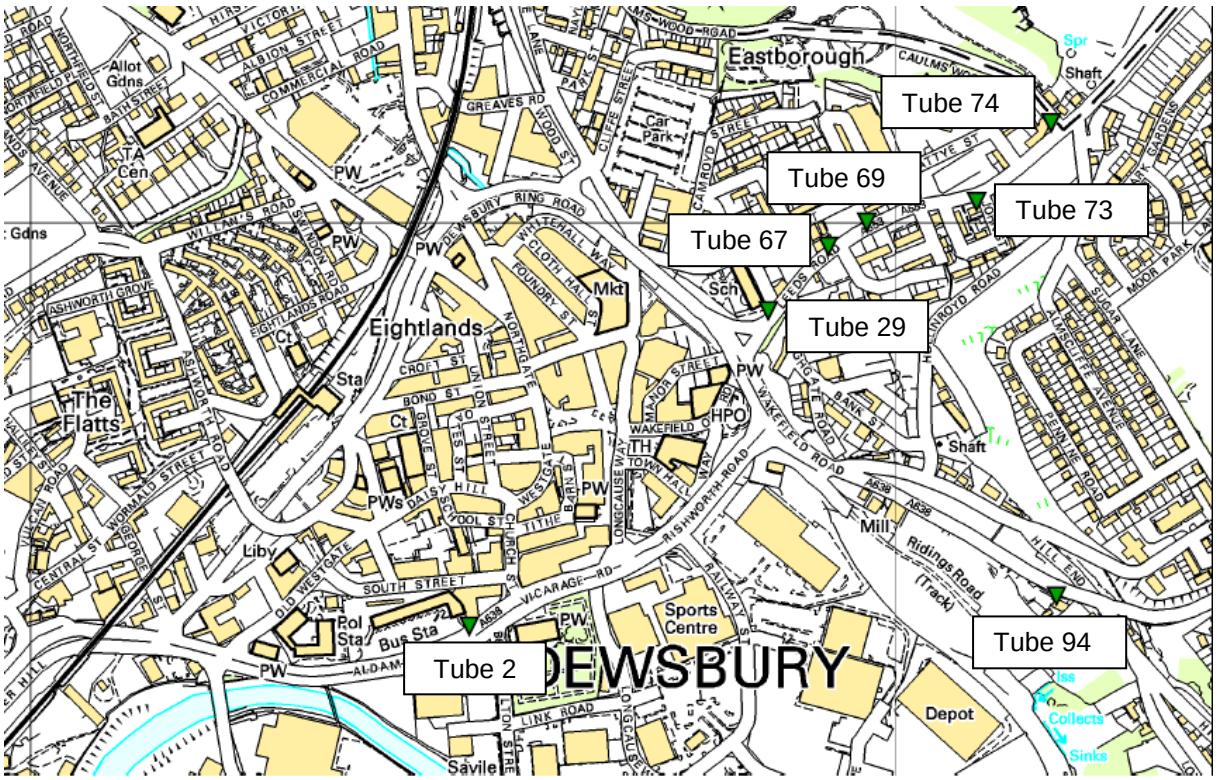


Figure 2.12 Map of Batley diffusion tubes

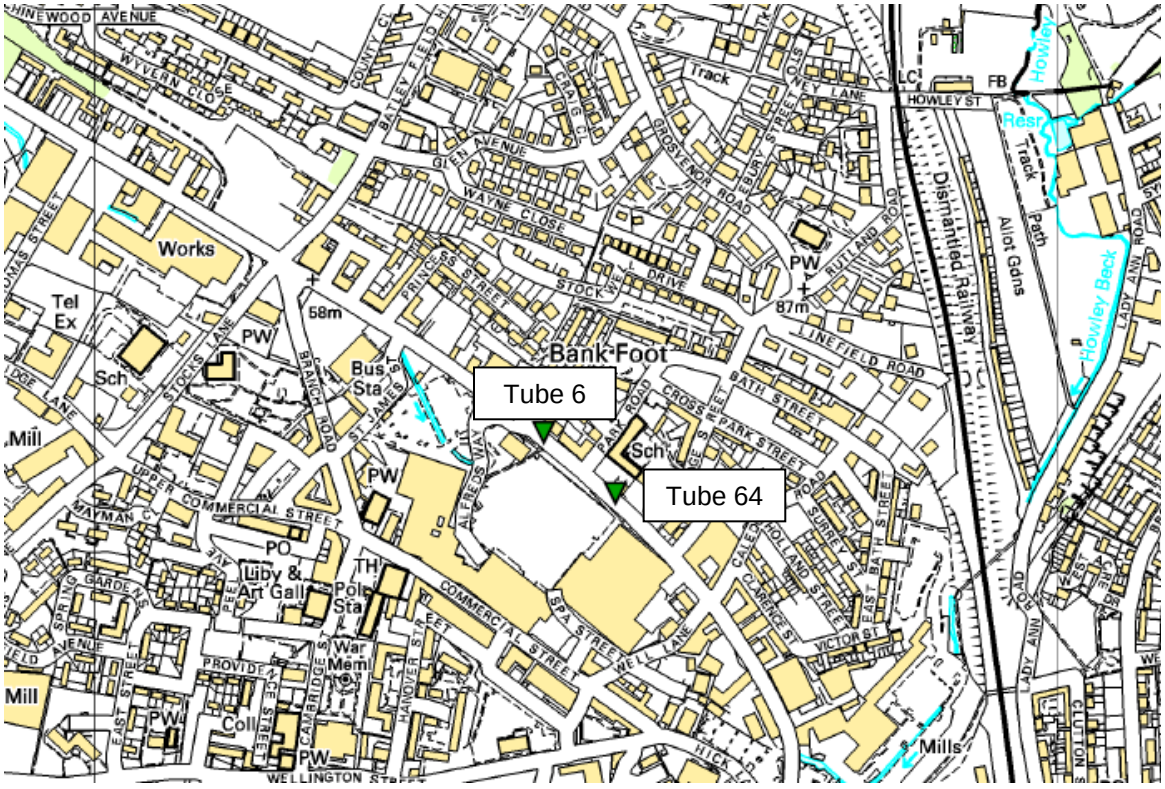


Figure 2.13 Map of Birkenshaw diffusion tubes

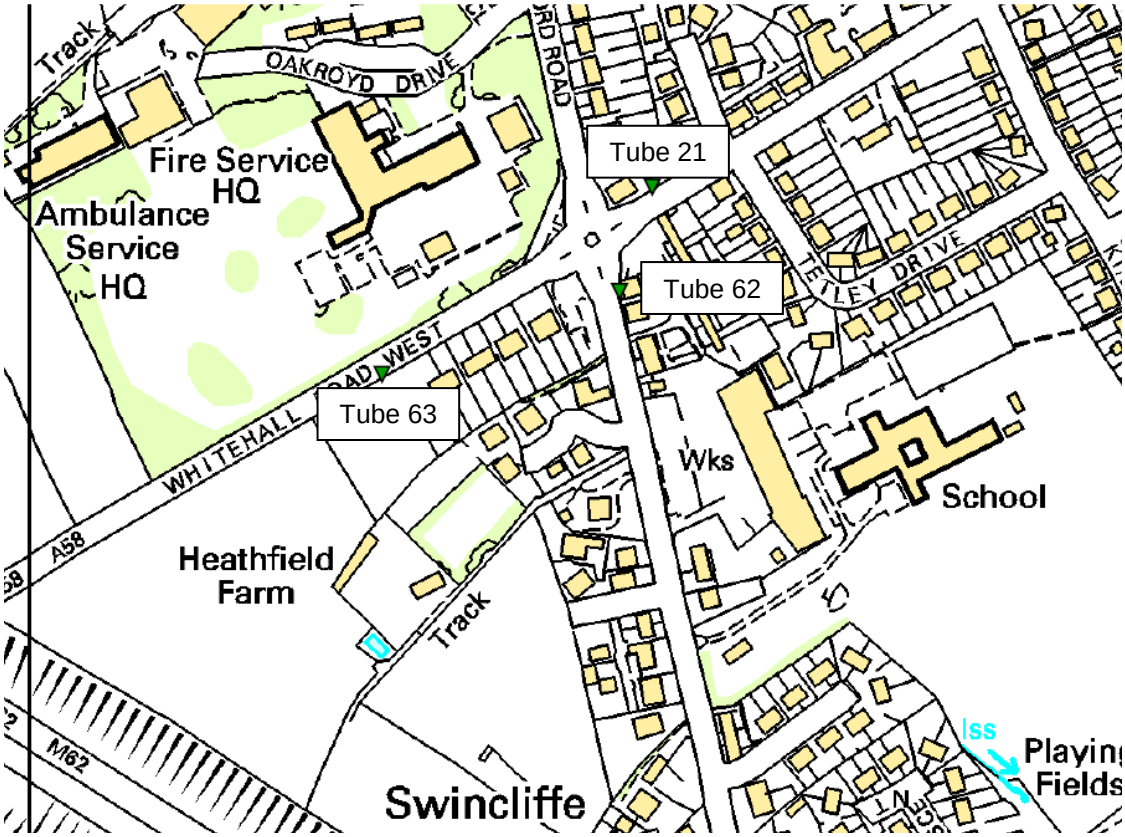


Figure 2.14 Map of Heckmondwike and Liversedge diffusion tubes

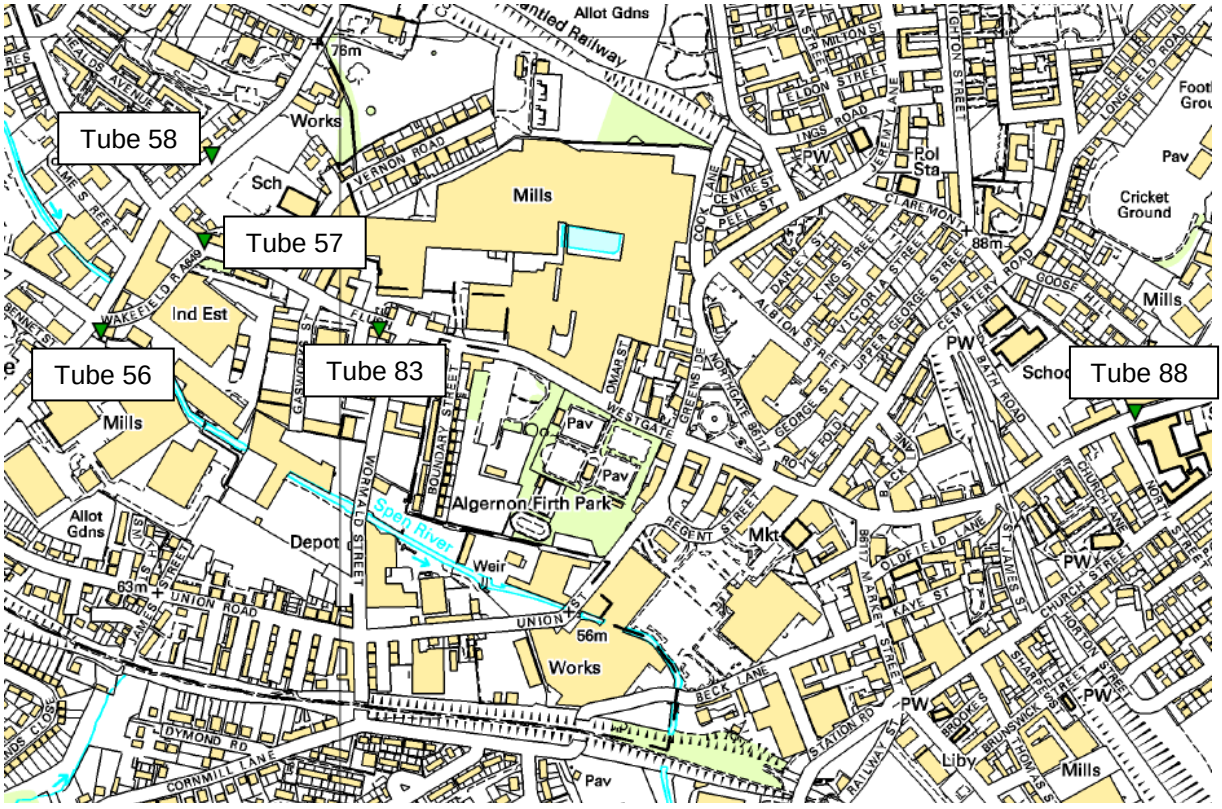


Figure 2.15 Map of Edgerton diffusion tubes

Figure 2.16 Map of Thornton Lodge diffusion tubes

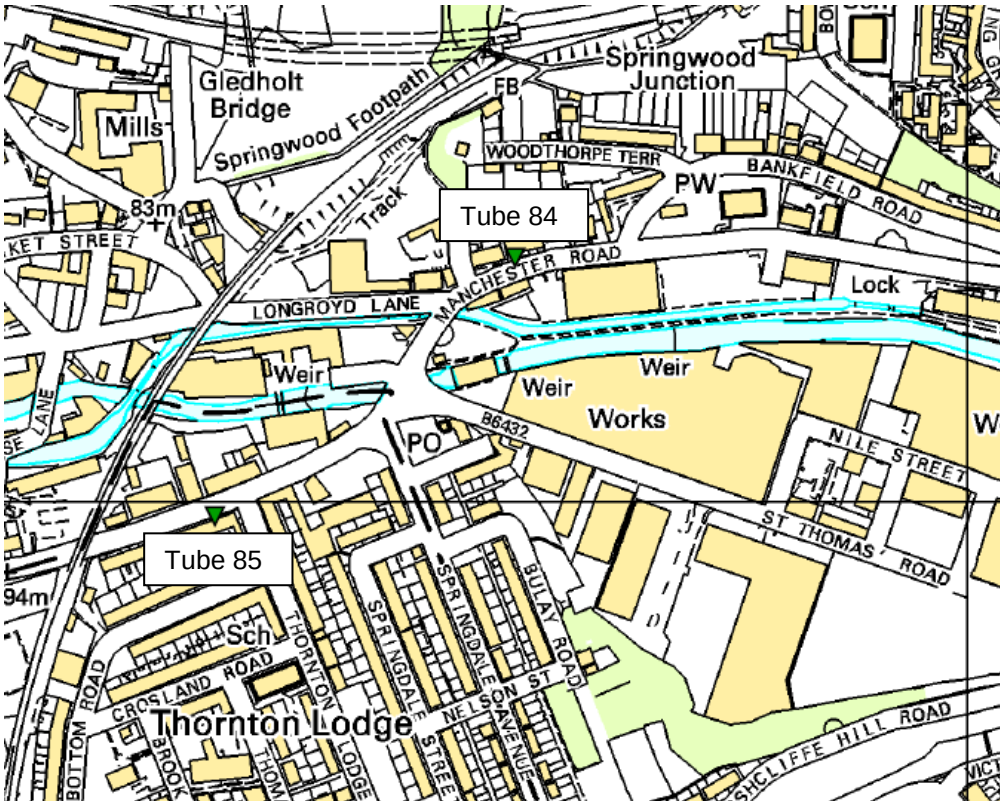


Table 2.2 Details of Non-Automatic Monitoring Sites

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
2	Other	424506	421535	NO_2	N	N	N	0.8	N/A
3	Other	414214	416504	NO_2	N	N	N	4.1	N/A
4	Roadside	413504	417439	NO_2	N	N	Y (2.0)	2.4	Y
6	Roadside	424464	424395	NO_2	N	N	Y (4.3)	1.8	Y
12	Roadside	422443	420380	NO_2	N	N	Y (1.6)	1.9	Y
13	Roadside	417872	421050	NO_2	Y	N	Y (5.2)	6.0	Y
14	Urban Centre	414434	416744	NO_2	N	N	Y (0.5)	0.5	Y
15	Roadside	414496	417795	NO_2	N	N	Y (2.5)	2.5	Y
16	Kerbside	417280	420482	NO_2	Y	N	Y (13.4)	0.7	Y
17	Roadside	417227	420337	NO_2	Y	N	Y (3.2)	2.0	Y
18	Roadside	414389	416262	NO_2	N	N	Y (0.1)	5.5	Y
20	Roadside	417335	420412	NO_2	Y	N	Y (3.7)	1.8	Y
21	Roadside	420377	427871	NO_2	N	N	Y (2.1)	2.6	Y
22	Urban Background	413669	416463	NO_2	N	N	N	1.7	N/A
24	Co-location Study	420441	427353	NO_2	N	Y	N	3.0	N/A
25	Co-location Study	420441	427353	NO_2	N	Y	N	3.0	N/A
26	Co-location Study	420441	427353	NO_2	N	Y	N	3.0	N/A
27	Roadside	422686	426229	NO_2	N	N	Y (4.2)	1.9	Y

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
28	Roadside	423563	421014	NO_2	N	N	Y (6.5)	2.7	Y
29	Roadside	424853	421828	NO_2	N	N	Y (9.5)	1.5	Y
32	Roadside	414149	416686	NO_2	N	N	Y (6.9)	2.1	Y
33	Roadside	417418	420479	NO_2	Y	N	Y (3.2)	1.5	Y
41	Roadside	418483	420978	NO_2	N	N	Y (14.1)	1.6	Y
42	Roadside	409941	418471	NO_2	N	N	Y (15.4)	2.0	Y
43	Co-location	423185	420612	NO_2	N	Y	N	6.0	N/A
44	Co-location	423185	420612	NO_2	N	Y	N	6.0	N/A
45	Co-location	423185	420612	NO_2	N	Y	N	6.0	N/A
47	Roadside	414745	416710	NO_2	N	N	Y (0.1)	3.3	Y
48	Co-location	429960	434240	NO_2	N	Y	N	30	N/A
49	Co-location	432680	406174	NO_2	N	Y	N	3.5	N/A
50	Roadside	413400	417495	NO_2	N	N	Y (8.3)	2.7	Y
51	Roadside	413513	417481	NO_2	N	N	Y (5.0)	2.6	Y
56	Roadside	420727	423668	NO_2	N	N	Y (4.3)	2.4	Y
57	Roadside	420845	423770	NO_2	N	N	Y (0.3)	1.9	Y
58	Roadside	420853	423866	NO_2	N	N	Y (9.4)	1.9	Y
59	Kerbside	420304	419766	NO_2	N	N	Y (2.9)	0.9	Y
62	Roadside	420356	427810	NO_2	N	N	Y (2.5)	2.2	Y
63	Roadside	420222	427764	NO_2	N	N	Y (18.3)	1.0	Y
64	Roadside	424526	424326	NO_2	N	N	Y (1.7)	2.1	Y
67	Roadside	424871	421921	NO_2	N	N	Y (1.2)	1.6	Y
68	Roadside	418285	426630	NO_2	N	N	Y (12.5)	3.4	Y
69	Roadside	424969	422002	NO_2	N	N	Y (5.6)	1.9	Y
73	Roadside	425083	422022	NO_2	N	N	Y (6.0)	1.9	Y

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
74	Roadside	425179	422114	NO_2	N	N	Y (-7.2)	1.7	N
78	Roadside	414480	417720	NO_2	N	N	Y (0.5)	7.2	Y
79	Roadside	414546	417759	NO_2	N	N	Y (0)	2.2	Y
80	Other	407942	417261	NO_2	N	N	Y (0)	14.4	Y
83	Roadside	421039	423673	NO_2	N	N	Y (0)	2.6	Y
84	Roadside	413659	416182	NO_2	N	N	Y (3.5)	3.7	Y
85	Roadside	413414	415981	NO_2	N	N	Y (1.6)	2.5	Y
88	Roadside	421904	423580	NO_2	N	N	Y (4.9)	1.0	Y
91	Roadside	417627	416472	NO_2	N	N	Y (7.8)	2.4	Y
93	Roadside	411564	415902	NO_2	N	N	Y (1.6)	1.7	Y
94	Roadside	425196	421566	NO_2	N	N	Y (2.7)	3.2	Y
95	Roadside	414187	408264	NO_2	N	N	Y (3.2)	1.7	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

At the beginning of 2013 NO_2 was monitored by a network of 6 continuous automatic NO_2 monitors, and 81 NO_2 diffusion tubes. Majority of sites are located at either roadside or kerbside locations, in close proximity to relevant receptors.

In October 2013 the non-automatic monitoring network within Kirklees was reviewed and as a result a number of tubes were removed.. These sites were removed from the network because they either were not exceeding the AQO or not near a relevant receptor.

Where an exceedence of an NO_2 AQO has been measured then the procedure outlined in TG (09) (Boxes 1.4 and 2.3) has been used to estimate the NO_2 concentration at the nearest relevant receptor.

Automatic Monitoring Data

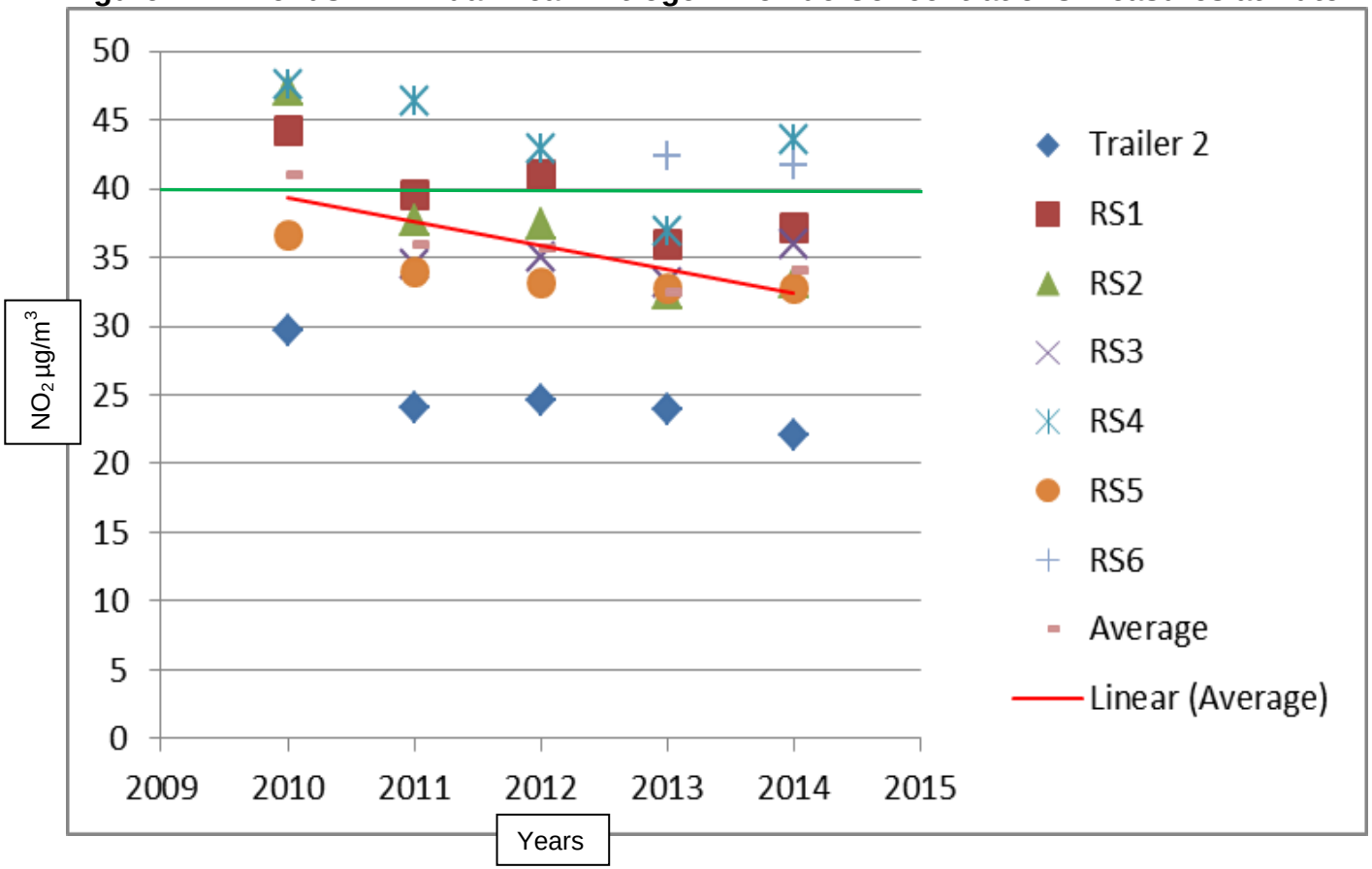
If a measurement exceeds an AQO then it is highlighted in bold.. Where monitoring data capture is less than a year the data has been annualised and information with regard to this is provided in Appendix A.

Table 2.3 Results of Automatic Monitoring of Nitrogen Dioxide: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2014 % [b]	Annual Mean Concentration μg/m^3				
					2010* [c]	2011* [c]	2012* [c]	2013* [c]	2014 [c]
Trailer 2	Industrial	Adjacent	81.8	81.8	29.7	24.0	24.6	23.9	22.0
Roadside 1	Roadside	Y	62.1	62.1	**44.2**	39.5	**41.0**	35.9	37.2
Roadside 2	Roadside	N	77.8	77.8	**47.2**	37.7	37.4	32.4	33.1
Roadside 3	Roadside	Y	59.1	59.1	N/A	34.5	35.0	33.2	36.0
Roadside 4	Roadside	N	88.7	88.7	**47.6**	**46.3**	**42.9**	36.9	**43.6**
Roadside 5	Roadside	N	86.8	86.8	36.6	33.9	33.1	32.8	32.7
Roadside 6	Roadside	N	77.6	77.6	N/A	N/A	N/A	**42.3**	**41.7**

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. 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 would be 50%).
[c] Means should be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.
*Annual mean concentrations for previous years are optional.

Figure 2.17 Trends in Annual Mean Nitrogen Dioxide Concentrations measures at Automatic Monitoring Sites



Current trends observed from real-time monitors in Kirklees indicate that the levels of NO_2 across the district have been steadily falling since 2010. Our stations have recorded a fall of 17% within the last 5 years. These falls have been observed at roadside locations and have been mirrored at our background location known as Trailer 2. In 2010 we had 3 out of 5 stations recording annual levels that exceed the air quality objective. In 2014, only 1 of the original 5 stations records levels above 40µg/m^3.

Table 2.4 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2014 % [b]	Number of Exceedences of Hourly Mean (200 μg/m^3)				
					2010* [c]	2011* [c]	2012* [c]	2013* [c]	2014 [c]
Trailer 2	Industrial	Adjacent	81.8	81.8	0	0	0	0 (64.23)	0 (79.85)
Roadside 1	Roadside	Y	62.1	62.1	0	0	5	1	0 (126.15)
Roadside 2	Roadside	N	77.8	77.8	21	0	0	0(88.91)	0 (135.03)
Roadside 3	Roadside	Y	59.1	59.1	N/A	0	0	0	2 (139.91)
Roadside 4	Roadside	N	88.7	88.7	13	7	5	0 (96.68)	1 (136.96)
Roadside 5	Roadside	N	86.8	86.8	2	0	0	0	0 (98.96)
Roadside 6	Roadside	N	77.6	77.6	N/A	N/A	N/A	0 (102.04)	0 (128.0)

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. 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 would be 50%).
[c] If the period of valid data is less than 90%, include the 99.8th percentile of hourly means in brackets
*Number of exceedances for previous years are optional.

Diffusion Tube Monitoring Data

Kirklees Council currently have a diffusion tube monitoring network of 55 diffusion tubes across the whole district. These are constructed and analysed in the Kirklees Council laboratory, being of the composition 50%TEA solution to 50% Acetone.

Majority of diffusion tubes across the district are attached to street furniture such as lamp posts and sited at either in a kerbside or roadside location.

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2014

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.74) 2014 (µg/m^3)
2	Dewsbury Bus Station	Other	N	N	12	N	N	46.64
3	Huddersfield Bus Station	Other	N	N	11	N	N	44.97
4	Edgerton A629 / Blacker Rd	Roadside	N	N	12	N	Y	43.71
6	Batley Carr A652	Roadside	N	N	12	N	N	39.95
12	Ravensthorpe A644	Kerbside	N	N	12	N	Y	37.20
13	Cooper Bridge A62	Roadside	Y	N	12	N	N	38.64
14	Huddersfield Westgate	Urban Centre	N	N	12	N	Y	37.29
15	Fartown A641	Roadside	N	N	11	N	N	39.99
16	Bradley A6107	Kerbside	Y	N	12	N	Y	24.90
17	Bradley A62	Roadside	Y	N	10	N	Y	34.88
18	Huddersfield A62 / A616	Roadside	N	N	10	N	N	41.61

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.74) 2014 (µg/m^3)
20	Bradley A62	Roadside	Y	N	12	N	Y	33.53
21	Birkenshaw A58	Roadside	N	N	12	N	N	36.86
22	Huddersfield Oastler Ave	Urban Background	N	N	12	N	N	18.62
24	Roadside 4	Co-location Study	N	Y	12	N	N	37.07
25	Roadside 4	Co-location Study	N	Y	12	N	N	39.04
26	Roadside 4	Co-location Study	N	Y	12	N	N	38.78
27	Birstall A62	Roadside	N	N	11	N	Y	37.54
28	West Town A644	Roadside	N	N	12	N	Y	35.46
29	Dewsbury A653	Roadside	N	N	12	N	N	39.73
32	Huddersfield A62	Roadside	N	N	8	Y	Y	36.31
33	Bradley A62 / A6107	Roadside	Y	N	12	N	Y	40.62
41	Mirfield A644	Roadside	N	N	11	N	Y	29.89

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.74) 2014 (µg/m^3)
42	Lindley Moor A643	Roadside	N	N	12	N	Y	33.56
43	Trailer 2	Co-location	N	Y	9	N	N	22.20
44	Trailer 2	Co-location	N	Y	9	N	N	25,06
45	Trailer 2	Co-location	N	Y	9	N	N	23.50
47	Huddersfield A62	Roadside	N	N	10	N	Y	49.03
48	Leeds Council	Co-location	N	Y	11	N	N	39.09
49	Barnsley Council	Co-location	N	Y	12	N	N	31.87
50	Edgerton A629	Roadside	N	N	12	N	N	32.68
51	Edgerton Blacker Rd	Roadside	N	N	12	N	Y	34.76
56	Liversedge A62 / A649	Roadside	N	N	12	N	N	35.78
57	Liversedge A638	Roadside	N	N	12	N	N	35.35
58	Liversedge A62	Roadside	N	N	12	N	Y	34.91
59	Mirfield A644	Kerbside	N	N	10	N	Y	33.85
62	Birkenshaw A651	Roadside	N	N	11	N	N	36.18

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.74) 2014 (µg/m^3)
63	Birkenshaw A58	Roadside	N	N	11	N	Y	32.86
64	Batley A652	Roadside	N	N	12	N	Y	39.22
67	Eastborough A653	Roadside	N	N	10	N	Y	42.06
68	Cleckheaton A638	Roadside	N	N	10	N	Y	34.33
69	Eastborough A653	Roadside	N	N	10	N	Y	38.38
73	Eastborough John Street	Roadside	N	N	11	N	Y	34.99
74	Eastborough Calumswood Road	Roadside	N	N	11	N	N	35.78
78	Fartown A641	Roadside	N	N	11	N	N	36.84
79	Fartown Willow Ln East	Roadside	N	N	10	N	N	32.08
80	Outlane Round Ings Rd	Other	N	N	12	N	Y	42.17
83	Liversedge A638	Roadside	N	N	12	N	Y	44.62

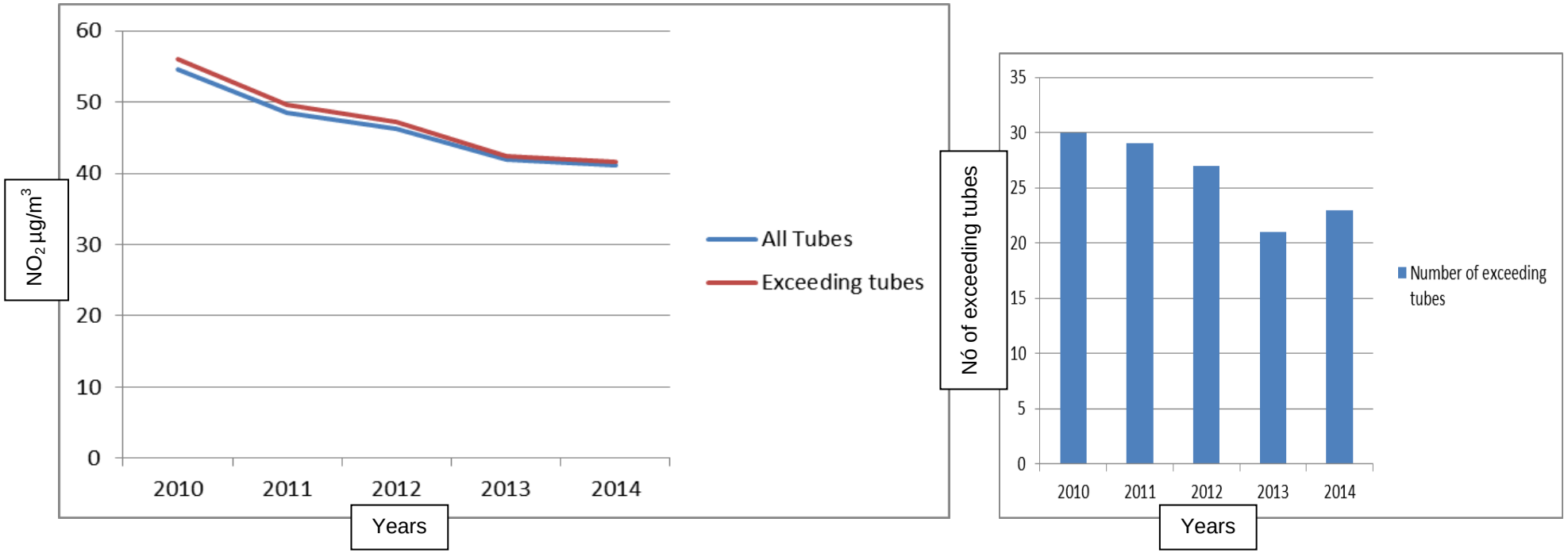
Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.74) 2014 (μg/m^3)
84	Thornton Lodge A62	Roadside	N	N	12	N	N	38.69
85	Thornton Lodge A62	Roadside	N	N	11	N	Y	40.88
88	Heckmondwike A638	Roadside	N	N	11	N	Y	36.08
91	Waterloo A629	Roadside	N	N	12	N	N	35.24
93	Milnsbridge B6111	Roadside	N	N	12	N	N	32.27
94	Dewsbury A638	Roadside	N	N	11	N	N	38.57
95	Holmfirth A6024	Roadside	N	N	12	N	N	31.76
P1	Firth Street	Roadside	N	N	11	N	N	39.50
P2	Cambridge Road Car Park	Roadside	N	N	9	N	N	28.81
P3	Cambridge Road	Roadside	N	N	11	N	N	39.17

Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes (2010 to 2014)

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) μg/m^3				
			2010* (Bias Adjustment Factor = 1.06)	2011* (Bias Adjustment Factor = 0.82)	2012* (Bias Adjustment Factor = 0.8)	2013* (Bias Adjustment Factor = 0.72)	2014 (Bias Adjustment Factor = 0.74)
2	Other	N	60.12	52.76	50.11	47.67	46.64
3	Other	N	49.40	40.28	50.44	43.39	44.97
4	Roadside	N	66.55	63.85	53.17	49.24	47.85
6	Roadside	N	53.08	42.66	35.11	38.79	39.95
12	Kerbside	N	49.28	47.93	47.11	40.22	40.08
13	Roadside	Y	49.56	42.09	44.61	36.88	38.64
14	Urban Centre	N	62.62	44.34	48.61	46.33	42.82
15	Roadside	N	48.85	44.90	42.97	37.84	39.99
16	Kerbside	Y	49.32	38.47	42.66	34.98	41.19
17	Roadside	Y	60.55	49.99	51.40	39.89	41.25
18	Kerbside	N	67.35	52.25	49.04[a]	41.23	41.61
20	Roadside	Y	56.74	48.38	48.17	39.31	40.17
21	Roadside	N	47.79	42.97	39.60	35.37	36.86
22	Urban Background	N	25.69	19.98	19.00	17.95	18.62
27	Roadside	N	53.17	45.46	48.60	47.89	44.77
28	Roadside	N	54.07	50.04	44.47	46.35	42.58
29	Roadside	N	50.57	53.19	26.47	40.82	39.73
32	Roadside	N	53.57	54.33	50.97	45.17	43.94
33	Roadside	Y	75.62	66.55	63.90	52.50	47.85
41	Roadside	N	52.26	42.49	43.31	46.83	42.90
42	Roadside	N	35.58	36.59	44.27	48.91	49.04
47	Roadside	N	64.63	62.82	63.06	51.83	49.03
50	Roadside	N	45.56	48.97	37.58	34.70	32.68
51	Roadside	N	51.06	52.08	50.65	42.14	41.83

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) μg/m^3				
			2010* (Bias Adjustment Factor = 1.06)	2011* (Bias Adjustment Factor = 0.82)	2012* (Bias Adjustment Factor = 0.8)	2013* (Bias Adjustment Factor = 0.72)	2014 (Bias Adjustment Factor = 0.74)
56	Roadside	N	45.75	40.41	41.40	35.88	35.78
57	Roadside	N	46.80	44.70	42.79	34.94	35.35
58	Roadside	N	62.99	54.97	58.44	45.92	44.02
59	Kerbside	N	61.33	48.30	47.49	43.91	40.71
62	Roadside	N	46.33	40.92	42.60	36.63	36.18
63	Roadside	N	65.05	49.40	50.62	42.63	40.68
64	Roadside	N	47.42	43.43	40.94	42.79	42.52
67	Roadside	N	81.30	81.74	63.49	51.08	45.24
68	Roadside	N	61.71	51.34	44.08	42.31	43.03
69	Roadside	N	N/A	N/A	36.28	48.03	47.37
73	Roadside	N	N/A	N/A	42.37	46.53	42.82
74	Roadside	N	N/A	N/A	34.76	38.43	35.78
78	Roadside	N	N/A	N/A	45.72	35.99	36.84
79	Roadside	N	N/A	N/A	53.40	36.87	32.08
80	Other	N	N/A	N/A	57.96	44.45	42.17
83	Roadside	N	N/A	N/A	61.89	44.15	44.62
84	Roadside	N	N/A	N/A	55.07	44.06	38.69
85	Roadside	N	N/A	N/A	64.16	48.34	43.72
88	Roadside	N	N/A	N/A	45.73	42.94	43.65
91	Roadside	N	N/A	N/A	46.42	37.88	35.24
93	Roadside	N	N/A	N/A	40.31	36.13	32.27
94	Roadside	N	N/A	N/A	45.96	40.55	38.57
95	Roadside	N	N/A	N/A	42.41	36.82	31.76
P1	Roadside	N	N/A	N/A	N/A	N/A	39.50
P2	Roadside	N	N/A	N/A	N/A	N/A	28.81
P3	Roadside	N	N/A	N/A	N/A	N/A	39.17

Figure 2.18 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites



Diffusion tube trends mirror those observed at the real time monitors. Current trends observed at diffusion tubes sites in Kirklees indicate that the levels of NO_2 across the district have been steadily falling since 2010. Our sites have recorded a fall of 26% within the last 5 years. These falls have been observed at roadside locations and have been mirrored at our background locations.. In 2010 we had 30 out of 36 current diffusion tube sites recording annual levels that exceed the air quality objective. In 2014, only 23 of the original 36 sites records levels above 40µg/m^3.

2.2.2 PM_{10}

Kirklees Council monitored for PM_{10} at 7 sites across the district in 2013.

Kirklees Council have 3 types of monitoring equipment installed in our monitoring station Trailer 2 monitors using a tapered element oscillating microbalance (TEOM) and data collected at this station has been corrected using the Volatile Correction Model (VCM).

Roadside 1 through to 5 contains a FH 62 I-R monitor which uses Beta particles passing through a tape to determine the PM_{10}. The FH 62 I-R monitor is not an equivalence tested piece of equipment. Therefore, a 1.3 correction factor has been applied to the data as recommended in the guidance TG(09)para1.56.

In 2013 Roadside 6 was installed at Ainley Top. Due to technical issues, very little data was collected for 2013, but the monitor is working in 2014. Roadside 6 monitors using a MET-One BAM. The MET-One BAM monitor is an equivalence tested piece of equipment, with a known correction factor for the equipment. Therefore, data collected at Roadside 6 has been divided by 1.2.

Discussion regarding PM_{10} correction factors can be found in Appendix A

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Table 2.7 Results of Automatic Monitoring of PM_{10}: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2014 %[b]	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration μg/m^3				
						2010*[c]	2011*[c]	2012*[c]	2013*[c]	2014[c]
Trailer 2	Industrial	Adjacent	61.9	61.9	Y	20.39	22.81	22.46	21.54	17.22
Roadside 1	Roadside	Y	53.8	53.8	NA	30.44	32.47	29.21	30.34	16.78
Roadside 2	Roadside	N	20.9	20.9	NA	19.05	18.61	19.13	19.11	15.92
Roadside 3	Roadside	Y	61.1	61.1	NA	N/A	23.30[c]	19.21	22.08	20.12
Roadside 4	Roadside	N	60.2	60.2	NA	22.17	23.29	19.87	22.29	20.84
Roadside 5	Roadside	N	72.8	72.8	NA	26.96	29.29	22.79	25.48	22.41
Roadside 6	Roadside	N	25.3	25.3	Y	N/A	N/A	N/A	N/A	17.13

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

[b] i.e. 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 would be 50%).

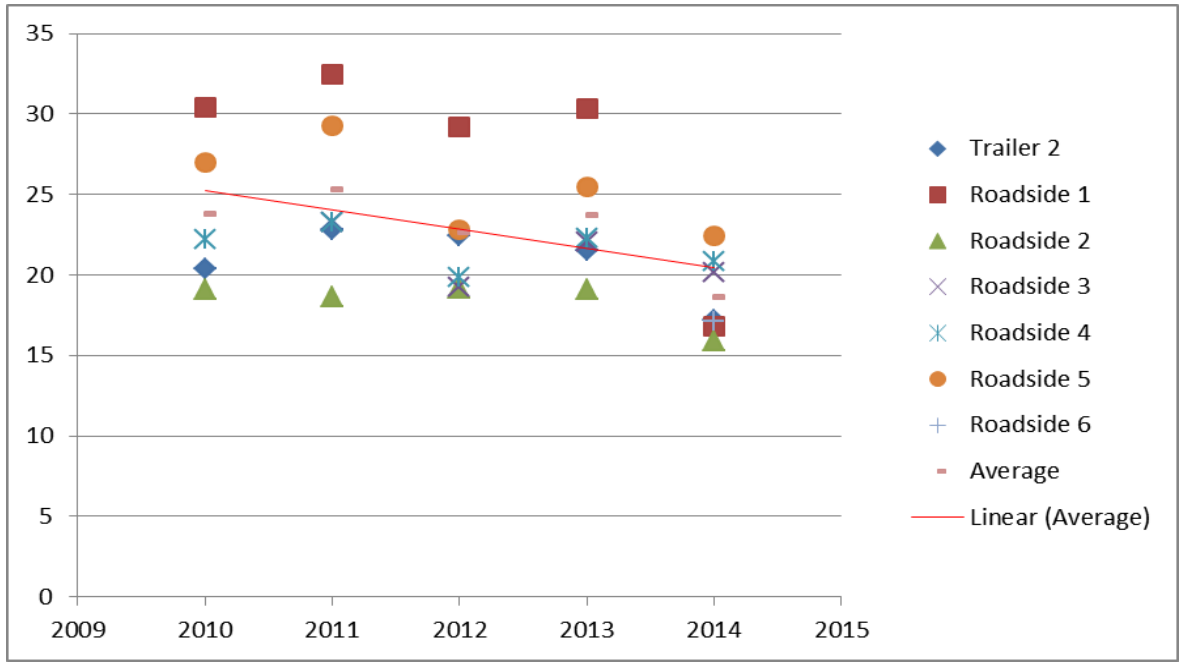
[c] Means should be “annualised” as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.

Table 2.8 Results of Automatic Monitoring for PM_{10}: Comparison with 24-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2014 %[b]	Confirm Gravimetric Equivalent	Number of Exceedences of 24-Hour Mean (50 μg/m^3)				
						2010*[c]	2011*[c]	2012*[c]	2013*[c]	2014[c]
Trailer 2	Industrial	Adjacent	61.9	61.9	Y	6 *(35.75)*[c]	19	28	5 (33.31)[c]	2 (29.44)
Roadside 1	Roadside	Y	53.8	53.8	NA	**37**	**57**	**39**	**36 (50.32)[c]**	6 (28.02)
Roadside 2	Roadside	N	20.9	20.9	NA	6	4	9	4 (35.69)[c]	0 (24.81)
Roadside 3	Roadside	Y	61.1	61.1	NA	N/A	7 *(29.68)*[c]	12	13	8 (32.36)
Roadside 4	Roadside	N	60.2	60.2	NA	12	22	13	13 (40.57)[c]	8 (33.77)
Roadside 5	Roadside	N	72.8	72.8	NA	29	**44**	17	15	6 (35.96)
Roadside 6	Roadside	N	25.3	25.3	Y	N/A	N/A	N/A	N/A	0 (24.79)

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. 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 would be 50%).
[c] if data capture is less than 90%, include the 90th percentile of 24-hour means in brackets

Figure 2.19 Trends in Annual Mean PM_{10} Concentrations



Current trends observed from real-time monitors in Kirklees indicate that the levels of PM_{10} across the district slowly fell between 2010 and 2013, before drastically falling in 2014.Looking at the 5 year average it is visible to see a fall of 21.7% if you include the large fall of 2014 or 4% if you exclude 2014. These falls have been observed at roadside locations and have been mirrored at our background location known as Trailer 2. In 2010 we had 1 out of 5 stations recording daily levels that exceed the air quality objective. In 2014, none of the original 5 stations exceed the daily average.

2.2.3 Sulphur Dioxide

3 SO_2 monitors were removed from the monitoring program in 2011. Kirklees Council has one remaining SO_2 monitor at an industrial location near to AQMA 2 where the primary concern is PM_{10}.

Table 2.9 Results of Automatic Monitoring of SO_2: Comparison with Annual Mean Objectives

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2014 %[b]	Number of Exceedences (percentile in bracket μg/m^3)[c]		
					15-minute Objective (266 μg/m^3)	1-hour Objective (350 μg/m^3)	24-hour Objective (125 μg/m^3)
Trailer 2	Industrial	N	67.4	67.4	0 (1.84)	0 (1.81)	0 (1.68)

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. 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 would be 50%).
[c] if data capture is less than 90%, include the relevant percentile in brackets

2.2.4 Other pollutants monitored

In addition to NO_2, PM_{10} and SO_2 Kirklees Council monitored for Ozone (O_3) at the Trailer 2 site.

Table 2.10 Results of Automatic Monitoring of O_3

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2014 %[b]	Annual Mean Concentration μg/m3	8-hour Objective (>100 μg/m^3)
Trailer 2	Industrial	Adjacent	77.8	77.8	22.43	0

2.2.5 Summary of Compliance with AQS Objectives

Kirklees Council has examined the results from SO_2, O_3 and PM_{10} monitoring in the district. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

Kirklees Council currently have an AQMA for the exceedance of the daily PM_{10} objective at Scouthill (Roadside1 & Trailer2). The number of daily exceedances fell from 36 in 2013 to 6 in 2014. This means that currently AQMA 2 is compliant for the daily PM_{10} objective.
In 2014 a deep clean of the area was conducted in order to reduce the possibility of re-suspension of PM. It would appear that this project was successful in reducing the days of exceedance. In order to determine if 2014 results are anomalous we propose that AQMA 2 remains and we will repeat the deep clean in 2015. If levels remain below the objective in 2015, Kirklees Council will seek to remove AQMA 2 and continue with regular deep cleans of the Scouthill area.

Kirklees Council has measured concentrations of NO_2 above the annual mean at relevant locations outside of our AQMAs, and **will need to proceed to a Detailed Assessment**, for;

- Birchencliffe
- Birkenshaw
- Edgerton
- Huddersfield Town Centre
- Liversedge
- Outlane
- Thornton Lodge

In addition to above Kirklees Council has previously identified a further four sites which required assessment.

Monitoring sites within Eastborough continue to exceed the annual objective for NO_2 and a Detailed Assessment has been completed and ready for submission.

The remaining three sites were compliant in 2014, but a detailed assessment will be conducted for;

- Birstall
- Chain Bar
- Mirfield

A plan of work for the completion of the above detailed assessments is included in Appendix B

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Kirklees Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic

Kirklees Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

3.3 Roads with a High Flow of Buses and/or HGVs.

Kirklees Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

3.4 Junctions

Kirklees Council confirms that there are no new/newly identified busy junctions/busy roads.

3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment

Kirklees Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

Kirklees Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

Kirklees Council has monitored air quality in the vicinity of Huddersfield bus station, and concluded that it will be necessary to proceed to a Detailed Assessment for NO_2 in the town centre, which will include the bus station

4 Other Transport Sources

4.1 Airports

Kirklees Council confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

Kirklees Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

4.2.2 Moving Trains

Kirklees Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

4.3 Ports (Shipping)

Kirklees Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

Kirklees Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been introduced

Kirklees Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

Kirklees Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.2 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within the Local Authority area.

There are major fuel (petrol) storage depots within the Local Authority area, but these have been considered in previous reports.

5.3 Petrol Stations

Kirklees Council confirms that there are no petrol stations meeting the specified criteria**.**

5.4 Poultry Farms

Kirklees Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

Kirklees Council confirms that there are no significant biomass combustion plant in the Local Authority area.

6.2 Biomass Combustion – Combined Impacts

Kirklees Council confirms that there are no significant biomass combustion plant in the Local Authority area.

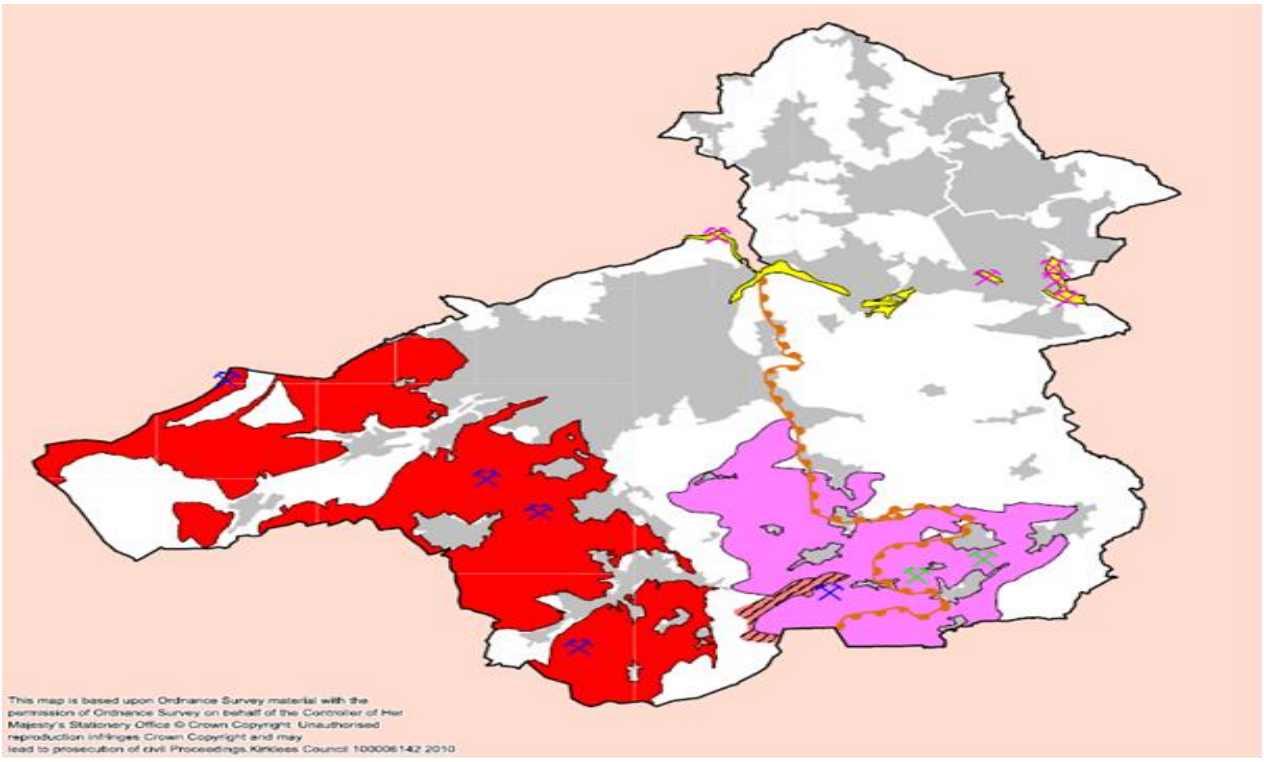
6.3 Domestic Solid-Fuel Burning

Kirklees Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

7 Fugitive or Uncontrolled Sources

Kirklees Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

Figure 7.1 Proposed Quarry sites in LDF



Sites that are proposed to be included in the Local Development Framework as potential quarry sites are on the map below

The LDF is still currently under review and changes are subject to internal consultation. Representations on air quality impacts will be made in this process.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

Within reference to monitoring data collected in 2014, there are still exceedances of the AQO within one of Kirklees council's AQMAs, AQMA 1 in Bradley.
Kirklees Council AQMA 2 in Scouthill complied with the Daily PM_{10} objective in 2014. In order to determine if 2014 results are anomalous we propose that AQMA 2 remains and we will repeat the deep clean in 2015. If levels remain below the objective in 2015, Kirklees Council will seek to remove AQMA 2 and continue to regularly deep clean the Scouthill area.

Continuous monitoring at Roadside 4 has seen AQO exceeded and therefore detailed assessments are required in the following areas against the following objective:

- Birkenshaw (Roadside 4) – Annual NO_2 objective

Diffusion tube data has highlighted the following areas where the annual NO_2 AQO is exceeding at the façade of properties in 2014 and therefore requiring detailed assessment:

- Birchencliffe
- Birkenshaw
- Edgerton
- Huddersfield Town Centre
- Liversedge
- Outlane
- Thornton Lodge

In addition to above Kirklees Council has previously identified a further four sites which required assessment.

Monitoring sites within Eastborough continue to exceed the annual objective for NO_2 and a Detailed Assessment has been completed and ready is for submission.

The remaining three sites were compliant in 2014, but a detailed assessment will be conducted for;

- Birstall
- Chain Bar
- Mirfield

8.2 Conclusions from Assessment of Sources

Assessment of new potential sources e.g. poultry farms, biomass installations and fugitive emissions indicates a detailed assessment is not required for these new sources. In respect of road sources there has not been any significant change to previously assessed sources.

8.3 Proposed Actions

Next actions will be:

- Complete Detailed Assessment identified in in accordance with plan set out in Appendix B
- Completion of Action Plans for AQMA 1 & 2 by December 2015
- Submit Progress Report 2016

9 References

Part IV EnvironmentAct1995. (c.25) London: HMSO

Local Air Quality Management Technical Guidance LAQM TG (09) DEFRA 2009

Air Quality (England) Regulations 2000. SI 2000/928, London: HMSO

Air Quality (England) (Amendment) Regulations 2002. SI 2002/3043, London: HMSO

Paul Bailey - Environmental Health Officer for Air Quality
(Kirklees Environmental Health)

Alex Garry – Environmental Health Officer for PPC
(Kirklees Environmental Health)

Health and Safety Laboratories
(WASP Tubes)

National Physical Laboratories Management Ltd
(Intercomparison Scheme)

Appendices

Appendix A: QA/QC Data

Appendix B: Plan of Work / Data

Appendix A: QA/QC Data

Kirklees operates its own laboratory for the analysis of Palmes NO_2 diffusion tubes. The laboratory operates following the protocols set out in the AEAT document "Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance".
The tubes are prepared using 50% tea: 50% acetone mix.

Factor from Local Co-location Studies (if available)

Kirklees Council currently conduct 2 co-location studies with neighbouring authorities and participates in the Intercomparison scheme locating tubes at Marylebone Road

The bias adjustment factor derived from Kirklees participation in the Intercomparison scheme for 2014 is 0.74, with the precision being rated as good

Diffusion Tube Bias Adjustment Factors

In addition to the Intercomparison scheme 2 Co-location studies are conducted at Kirklees Monitoring stations., but due to vandalism and station failures, neither Trailer 2 nor Roadside 4 have a data capture >75% and not valid.

Discussion of Choice of Factor to Use

2 Co-location studies are conducted at Kirklees Monitoring stations., but due to vandalism and station failures, neither Trailer 2 nor Roadside 4 have a data capture >75%. Therefore, Kirklees Council have used the Intercomparison scheme derived correction factor of 0.74

PM Monitoring Adjustment

Kirklees Council currently have 3 types of PM_{10} monitors across the 7 sites.

Trailers 2 collects data using a TEOM, therefore all data presented in this report have been corrected using the Volatile Correction Model using FDMS sites Leeds Centre AURN, Chesterfield AURN and an average of other nearby FDMS Sites

Roadsides 1 to 5 have FH 62 I-R PM_{10} monitors which are not equivalence tested. Kirklees Council has sought advice on this issue with the LAQM Helpline who provided Kirklees Council with studies from Europe in which the FH 62 I-R were included. The conclusions of these studies found that the heated element affected volatiles and as a result under-predicted. The recommendation of the studies was that a 1.3 correction factor is applied to data collected. In accordance with advice from the LAQM Helpdesk and the guidance in TG(09)para1.56.

Roadside 6 is a Met-One BAM which is an equivalence tested monitor. Therefore the applicable correction factor of /1.2 has been applied to the data.

QA/QC of Automatic Monitoring

Data ratification is carried out internally by one person (Senior Technical Officer) periodically, normally at monthly intervals. After ratification it is stored on an Excel files in the Kirklees air quality archive.

Data verification is carried out by two staff who have had their competency verified after internal training. Verification takes place twice per day on weekdays, and the of Friday p.m. to Monday a.m. on Monday morning.

Trailer 2 – Back Ravens Street, Scout Hill

Station	**Trailer 2 – Back Ravens Street, Scout Hill**
Analyser Model	Horiba: APNA-360CE, APSA-360ACE, APOA-360, TEOM 1400AB
Logging system	Datalogger used for collecting and storing data from 5 analysers and the data routinely retrieved via modem communication twice per day.
Calibration Gas	NO, SO_2, Scrubbed zero air.
Routine Calibration	Automatic calibration carried out every 72 hours
Daily zero and span Check	No
Air Conditioning	Yes
Service Contract	Horiba: 2 x 6 monthly service and breakdown/repair call out.

Roadside 1 – Dewsbury

Station	**Roadside 1 – Dewsbury**
Analyser Model	Horiba: APNA-360CE, FH 62 I-R
Logging system	Each analyser has a data distribution board and communicates directly via modem for data download twice per day
Calibration Gas	NO, zero air.
Routine Calibration	Automatic calibration carried out every 72 hours
Daily zero and span Check	No
Air Conditioning	Yes
Service Contract	Horiba: 2 x 6 monthly service and breakdown/repair call out.

Roadside 2 – Bradford Rd/Chain Bar

Station	**Roadside 2 – Bradford Rd/Chain Bar**
Analyser Model	Horiba: APNA-360CE, FH 62 I-R
Logging system	Each analyser has a data distribution board and communicates directly via modem for data download twice per day.
Calibration Gas	NO, zero air.
Routine Calibration	Automatic calibration carried out every 72 hours
Daily zero and span Check	No
Air Conditioning	Yes
Service Contract	Horiba: 2 x 6 monthly service and breakdown/repair call out.

Roadside 3 – Hunsworth Lane

Station	Roadside 3 – Hunsworth Lane
Analyser Model	Horiba: APNA-360CE, FH 62 I-R
Logging system	Each analyser has a data distribution board and communicates directly via modem for data download twice per day
Calibration Gas	NO, zero air.
Routine Calibration	Automatic calibration carried out every 72 hours
Daily zero and span Check	No
Air Conditioning	Yes
Service Contract	Horiba: 2 x 6 monthly service and breakdown/repair call out.

Roadside 4 – M62 road bridge, Birkenshaw

Station	Roadside 4 – M62 road bridge, Birkenshaw
Analyser Model	Horiba: APNA-360CE, FH 62 I-R
Logging system	Each analyser has a data distribution board and communicates directly via modem for data download twice per day.
Calibration Gas	NO, zero air.
Routine Calibration	Automatic calibration carried out every 72 hours
Daily zero and span Check	No
Air Conditioning	Yes
Service Contract	Horiba: 2 x 6 monthly service and breakdown/repair call out.

Roadside 5 – Ravensthorpe Gyratory

Station	Roadside 5 – Ravensthorpe Gyratory
Analyser Model	Horiba: APNA-360CE, FH 62 I-R
Logging system	Each analyser has a data distribution board and communicates directly via modem for data download twice per day
Calibration Gas	NO, zero air.
Routine Calibration	Automatic calibration carried out every 72 hours
Daily zero and span Check	No
Air Conditioning	Yes
Service Contract	Horiba: 2 x 6 monthly service and breakdown/repair call out.

Roadside 6– Ainley Top

Station	Roadside 6 – Ainley Top
Analyser Model	Horiba: APNA-360CE, MET-One BAM
Logging system	Each analyser has a data distribution board and communicates directly via modem for data download twice per day
Calibration Gas	NO,
Routine Calibration	Automatic calibration carried out every 72 hours
Daily zero and span Check	No
Air Conditioning	Yes
Service Contract	Horiba: 2 x 6 monthly service and breakdown/repair call out.

QA/QC of Diffusion Tube Monitoring

Kirklees operates its own laboratory for the analysis of Palmes NO_2 diffusion tubes. The laboratory operates following the protocols set out in the AEAT document "Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance".
The tubes are prepared using 50% tea:50% acetone mix.

Kirklees participates in the following QC/QA schemes
-Workplace Analysis Scheme for Proficiency (WASP)
-Intercomparison Scheme.

WASP results: for January 2014 to January 2015 Kirklees performance on the following web link-

http://laqm.defra.gov.uk/documents/LAQM-WASP-Rounds-121--124-and-AIR-PT-Rounds-1-3-4-6-(April-2013--February-2015)-NO2-report.pdf

Appendix B: Data / Ranking Matrix

Detailed Assessment Rank Matrix

To prioritise assessment Kirklees Council constructed the following matrix to determine a ranking with which to conduct the assessments. Scores for the 1st 3 parameters are provided in the key below and the rest of the figures are from monitoring. The parameters are; (1) to determine the score the AQO exceeded, (2) Problem 2014, (3) and (4) The number of Sites. This is added up then multiplied by the highest annual NO_2 concentration for the area.

	Birchencliffe	Birkenshaw	Edgerton	Hudds Town Centre	Liversedge	Outlane	Thornton Lodge
AQ objective exceeded 2014 (sum of, see key)	1	1	1	3	1	1	1
Problem in 2014	1	1	1	1	1	1	1
Number of Monitoring sites exceeding 2014	1	1	1	3	1	1	1
Highest Annual NO_2 Concentration for 2011 at Façade	41.7	43.6	43.71	49.03	44.62	42.17	40.88
Score	125.1	130.8	131.13	343.21	133.86	126.51	122.64
Ranking	6	4	3	1	2	5	7

	Birstall	Chain Bar	Mirfield
AQ objective exceeded 2014 (sum of, see key)	0	0	0
Problem in 2014	0	0	0
Number of Monitoring sites exceeding 2014	0	0	0
Highest Annual NO_2 Concentration for 2011 at Façade	37.54	34.33	33.85
Score	37.54	34.33	33.85
Ranking	8	9	10

Key				
AQO objective exceeded*	PM_{10} Daily = 10	PM_{10} Annual = 5	NO_2 Hourly = 2	NO_2 Annual = 1
Problem in 2011 / 2010	Yes = 1	No = 0		

**The scores assigned to each objective in the key above are given in order to take into account the anticipated health affects by an exceedance of the objective*

Plan of Works

Kirklees Council propose to complete the above detailed assessments in the following order by the following dates:

Non - compliant areas;

1. Further Assessment AQMA 2 – April 2015
2. Detailed Assessment Eastborough – July 2015
3. Detailed Assessment Birchencliffe – October 2015
4. Detailed Assessment Town Centre – February 2016
5. Detailed Assessment Liversedge – July 2016
6. Detailed Assessment Edgerton – October 2016
7. Detailed Assessment Birkenshaw – February 2017
8. Detailed Assessment Outlane – July 2017
9. Detailed Assessment Thornton Lodge – October 2017

Areas currently compliant with objectives with outstanding reports;

10. Detailed Assessment Birstall – February 2018
11. Detailed Assessment Chain Bar – July 2018
12. Detailed Assessment Mirfield – October 2018

The detailed assessment for Birchencliffe will be completed earlier than the ranking as set out in the Rank Matrix as there is potentially a large amount of proposed development in this area and there is increased concern from residents in this area regarding Local Air Quality.

Action Plans

We will complete Action Plans from AQMA 1 and 2 by December 2015.

Data

Site No.	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14
	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3
2	59.85	68.28	50.50	57.72	64.35	64.74	68.89	64.02	53.31	72.82	69.11	62.77
3	64.20	65.40	43.40	60.20	62.19	56.92	71.13		50.48	59.50	67.73	67.35
4	58.50	68.54	44.89	63.92	69.12	78.97	61.56	53.02	72.32	75.15	64.25	65.74
6	54.29	60.96	47.45	50.96	51.92	55.18	52.74	56.34	44.86	50.50	61.33	61.31
12	52.79	49.60	40.07	43.87	57.97	50.78	52.74	62.20	67.27	53.69	67.18	51.74
13	54.03	45.27	34.75	49.15	55.09	57.52	69.43	50.61	54.60	50.66	57.58	47.91
14	58.86	59.66	39.71	66.27	66.49	63.34	54.58	61.80	62.22	47.02	61.20	53.19
15	49.50	48.63	43.84	55.63	52.80	53.17	62.00	40.22	54.65		89.87	44.12
16	47.41	46.07	29.80	50.55	54.86	74.30	59.01	41.64	56.31	56.42	62.78	88.87
17	52.83			46.15	56.98	70.23	42.06	42.38	63.65	59.77	63.05	60.31
18	56.08	51.57	42.84	57.20	59.70	54.68	59.23		58.05	58.84		64.12
20	51.77	46.67	44.96	43.87	54.25	61.02	64.78	48.43	65.54	46.21	62.36	61.59
21	48.21	43.22	40.49	39.67	32.22		71.41	44.47	55.10	60.22	57.90	55.08
22	26.77	28.62	20.93	25.15	27.48	19.26	36.44	14.13	27.20	19.23	33.72	23.04
24	50.34	45.92	38.80	51.95	49.21	43.47	23.95	54.83	63.17	70.13	57.83	51.51
25	49.45	51.96	44.56	40.98	57.58	40.16	49.85	45.52	56.74	62.45	72.39	61.51
26	46.58	46.47	44.47	48.88	52.14	41.32	49.26	53.91	57.18	64.57	66.75	57.30
27	59.86	58.53	50.63	60.86	56.08	63.67	66.93	61.29		65.39	64.45	57.84
28	61.21	55.71	51.27	67.87	59.08	59.42	67.03	62.61	47.63	47.09	56.17	55.39
29	56.30	54.24	49.72	41.68	47.95	47.67	53.30	56.88	64.17	50.56	61.42	60.43
32	58.86	59.42	42.97	60.47	63.31					62.36	75.93	51.74
33	69.27	64.11	47.03	69.51	55.67	48.84	37.15	63.51	80.88	83.05	80.39	76.57
41	63.79	57.48	60.67	61.33	48.39	48.19	61.34	68.23	49.87		62.62	55.75

42	67.54	67.02	48.29	70.08	55.40	75.99	68.86	65.14	77.03	56.43	65.62	77.86
43	27.88	26.57	31.76	34.92	38.98	24.66	27.15			22.72	35.38	
44	31.25	30.03	43.39	43.05	40.26	25.56	28.96			24.96	37.34	
45	32.76	31.07	34.67	24.91	39.18	26.20	38.95			18.15	39.91	
47	63.30	69.95	55.83	63.59	61.30		67.67	42.98	72.53	88.87		76.51
48	43.53	50.49		93.19	28.41	70.06	65.65	34.32	36.56	51.09	58.80	48.90
49	51.38	47.62	39.59	33.97	39.54	26.73	30.98	32.75	47.02	55.21	59.14	52.96
50	45.51	48.83	32.20	41.10	45.93	35.51	50.44	38.49	45.51	47.32	58.04	41.06
51	59.93	54.54	46.21	57.10	51.11	49.44	43.87	57.28	63.11	66.65	64.22	64.83
56	45.64	39.40	32.15	47.09	40.08	44.64	90.06	36.24	52.33	49.73	55.30	47.52
57	42.74	36.65	33.75	40.79	39.28	33.90	49.11	48.94	65.19	62.79	54.52	65.56
58	66.61	61.96	33.99	51.32	57.99	38.77	53.24	62.71	75.79	82.13	63.63	65.76
59	53.34	52.09	50.41	49.53	48.39	61.06	60.10			56.66	57.70	60.85
62	48.68	43.33	32.72	48.22	54.00		73.12	38.96	52.67	49.37	50.79	45.93
63	54.69	51.57	40.54	56.31	83.10		43.69	49.94	65.49	47.37	61.31	50.71
64	58.17	53.62	61.04	61.92	48.91	57.27	58.03	60.60	48.17	63.09	65.53	53.18
67	62.94	57.18	53.32	56.31	49.95	68.95	64.34	70.86		70.46		57.09
68	65.46	56.29	47.21	50.31		51.52	43.26	65.05	67.04		70.48	64.87
69	70.99	61.03	61.39	61.85	60.27	62.71	72.33	61.85		66.66		61.04
73	61.75	55.58	58.26	52.62	58.33	63.99	59.47	64.47	47.79	57.20	57.07	
74	56.62	45.24	42.67	49.89	51.15	47.47	52.63	51.66	50.09	39.99		44.43
78	46.72	37.62	32.89	63.11	43.25	62.32	59.55	39.12	51.57		57.57	53.97
79	47.06	40.82		43.12	47.08	0.00	52.84	41.34	49.98		61.64	49.68
80	61.22	48.58	43.56	53.41	55.70	43.89	50.30	66.75	62.46	62.16	52.33	83.56
83	56.41	51.70	37.08	52.32	57.76	52.90	98.14	53.60	70.82	70.11	63.55	59.18
84	57.67	42.41	46.20	47.56	49.15	47.52	48.97	47.65	63.06	60.91	65.38	51.00
85	64.17	52.35	58.36	57.25	56.79	56.71	54.78	50.98	70.23	65.80	62.54	
88	55.55	50.99	62.99	49.75	65.05	64.95	61.28		51.13	64.51	70.51	52.20

91	50.01	43.19	30.22	46.66	46.00	57.38	63.14	43.09	53.49	36.52	52.06	49.76
93	45.06	41.98	33.84	41.38	37.13	54.79	48.89	35.15	49.22	42.83	50.22	42.84
94	54.55	47.19	60.86	48.98	48.06	43.35	61.59	57.46	41.35	62.50	47.49	
95	46.69	38.75	30.50	38.46	40.70	46.78	44.18	38.43	43.21	47.57	51.74	47.98
96	58.89	49.69		48.72	49.93	48.31	40.89	49.07	62.26	51.31	72.40	55.74
97	32.41			25.68	27.05	57.97	63.72	25.00	32.02		45.60	40.96
98	58.34	52.14		50.98	55.44	22.12	23.71	53.67	61.17	66.76	67.10	70.89