2013 Air Quality Progress Report

North East Lincolnshire Council

FINAL
April 2013

Prepared by:
North East Lincolnshire Council
Environment, Economy &
Housing Directorate

Local Authority Officer	Louisa Hewett/ Samantha Martin
Department	Environmental Control
Address	Acorn 5, Acorn Business Park, Grimsby, North East Lincolnshire, DN32 OLT
Telephone	01472 313131
e-mail	louisa.hewett@nelincs.gov.uk samantha.martin@nelincs.gov.uk
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Executive Summary

This report provides the details of the Progress Report 2013 for North East Lincolnshire Council (NELC). This report is the next stage in the guidance timetable, and follows DEFRA's Technical Guidance LAQM TG (09).[1]

The Progress Report 2013 for air quality has concluded that it is not required to provide a Detailed Assessment for any of the pollutants at this stage:

- **Nitrogen Dioxide**
- **Sulphur Dioxide**
- **Particulates (PM_{10})**

Air Quality Monitoring Station Data

- **Kings Road, Immingham:** The data recorded for NO_2, SO_2 and PM_{10} were within the requirements of the objectives.
- **Woodlands Avenue, Immingham:** The data recorded for PM_{10} are within the requirements of the objectives.
- **Fryston House, Grimsby:** The data recorded for NO_2, SO_2 and PM_{10} were within the requirements of the objectives.
- **Cleethorpe Road, Grimsby:** The annual mean concentration at Cleethorpe Road was 55.31µg/m^3 which is over the National Standard. North East Lincolnshire Council are in the process of implementing an Action Plan.

Diffusion Tube Data

- **Kings Road, Immingham:** the nitrogen dioxide tubes recorded concentrations of between 33.9-40.2µg/m^3 the latter being just over the National Standard. The average of the triplicate is 37.4µg/m^3.
- **Victoria Street/Victoria Mills:** the nitrogen dioxide tube at this location had a reading of 41.8 µg/m^3. This figure was annualised from 7 months of diffusion tube data, North East Lincolnshire Council will continue to monitor at this location and review the data when a full 12 months is available.

- **Cleethorpe Road, Grimsby:** the nitrogen dioxide tubes recorded concentrations of between 39.9-43.1µg/m^3 which are over the National Standard. North East Lincolnshire Council are in the process of implementing an Action Plan.

Air Quality Management Areas

- **Kings Road Immingham Air Quality Management Area**
  The real-time data collated in the AQMA for the last four years concludes that the Council should revoke the AQMA and exercise the powers conferred on it by Section 83 (2) (b) of the Environment Act 1995. A Revocation Order will be submitted to the Strategic Director Governance and Transformation for approval.
- **Cleethorpe Road, Grimsby Air Quality Management Area**
  The annual mean concentration at Cleethorpe Road continued to breach the exceedence level. The Draft Action Plan was submitted to DEFRA in October 2012 and North East Lincolnshire Council is continuing to work on the implementation of the Plan.

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1 Introduction

1.1 Description of Local Authority

North East Lincolnshire is a small unitary authority on the south bank of the River Humber, covering an area of 192 km^2. A high percentage of the areas 158,200 inhabitants (mid 2008) reside in three main urban areas, the industrial towns of Grimsby and Immingham and the seaside resort of Cleethorpes. The south west of the borough includes the foothills of the Lincolnshire Wolds, an area of outstanding natural beauty. The strategic road network linking North East Lincolnshire to the rest of the country is based on the A180 towards Doncaster, the A46 to Lincoln and the A16 that runs south through eastern Lincolnshire. The main rail link providing both passenger and freight transport runs westwards towards Gainsborough and Lincoln joining the east coast mainline at Doncaster. There is also a spur running to Barton upon Humber.

The sources of air pollution in North East Lincolnshire are mainly road traffic emissions, and other emissions generated by the operation of the Port of Immingham and Grimsby. Pollutant emissions from the Port of Immingham include road traffic emissions (including a high volume of HGV traffic) from the main access roads to the docks (the A1173 Kings Road and A160 Humber Road) and other port-related emissions (coal storage, shipping, the Humber and Lindsey oil refineries in North Lincolnshire, and other industrial processes linked to the port activities).

1.2 Purpose of Progress 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 exceedences 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.

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the Local Air Quality Management process.

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedence of an Air Quality Objective, the Local Authority (LA) should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

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 (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedences 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	Annual mean	31.12.2010
1,3-Butadiene	2.25 µg/m^3	Running annual mean	31.12.2003
Carbon monoxide	10 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.50 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
Particulate Matter (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

North East Lincolnshire Council have submitted reports to DEFRA through the previous rounds of Review and Assessment. Copies of all reports, submitted and approved from 2001 to date, are available on the council website (www.nelincs.go.uk/environment/pollution/air-quality/air-quality-reports).

Table 1.2 Summary of Review and Assessment Reports.

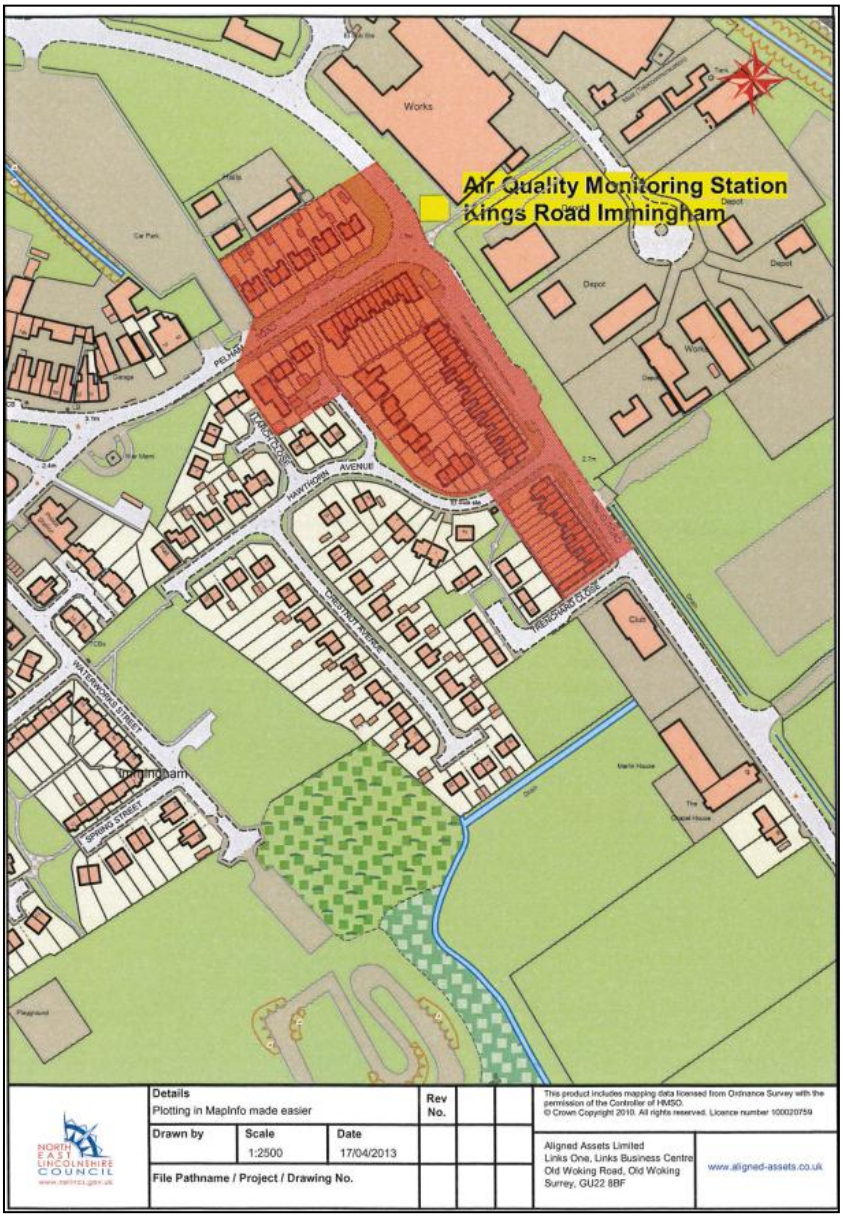
Date	Report	Location	Pollutant	Outcome
2012	Action Plan	Cleethorpe Road	NO_2	N/A
2012	USA	Borough wide	All	No declaration
2012	Further Assessment	Cleethorpe Road Grimsby	NO_2	N/A
2011	Progress Report	Borough wide	All	No declaration
2010	Progress Report	Borough wide	All	No declaration
2009	Detailed Assessment	Cleethorpe Road Grimsby	NO_2	AQMA Grimsby
2009	USA	Borough wide	All	No declaration
2008	Detailed Assessment	Fryston House, Grimsby	NO_2	No declaration
2008	Detailed Assessment	Humber & Lindsey Refineries	PM_{10} & SO_2	No declaration
2008	Progress Report	Borough wide	All	No declaration
2008	Action Plan & Further Assessment	Kings Road, Immingham	PM_{10}	N/A
2007	Progress Report	Borough wide	All	No declaration
2006	Detailed Assessment	Immingham Port	NO_2 & SO_2	N/A
2006	Air Quality Management Area	Kings Road, Immingham	PM_{10}	N/A
2006	USA	Borough wide	All	AQMA Immingham
2005	Detailed Assessment	3 areas in Grimsby	NO_2	No declaration
2004	Detailed Assessment	Riby Square, Grimsby	NO_2	No declaration

Date	Report	Location	Pollutant	Outcome
2003	USA	Borough wide	All	No declaration

1.4.1 Air Quality Management Area, Immingham.

North East Lincolnshire Council designated an AQMA in Immingham in October 2006; the particulate matter (PM_{10}) 24 hour mean objective had been exceeded in 2004 and 2005. The AQMA includes a residential area on Kings Road and Pelham Road, Immingham. Location of Immingham AQMA is shown in Figure 1.1.

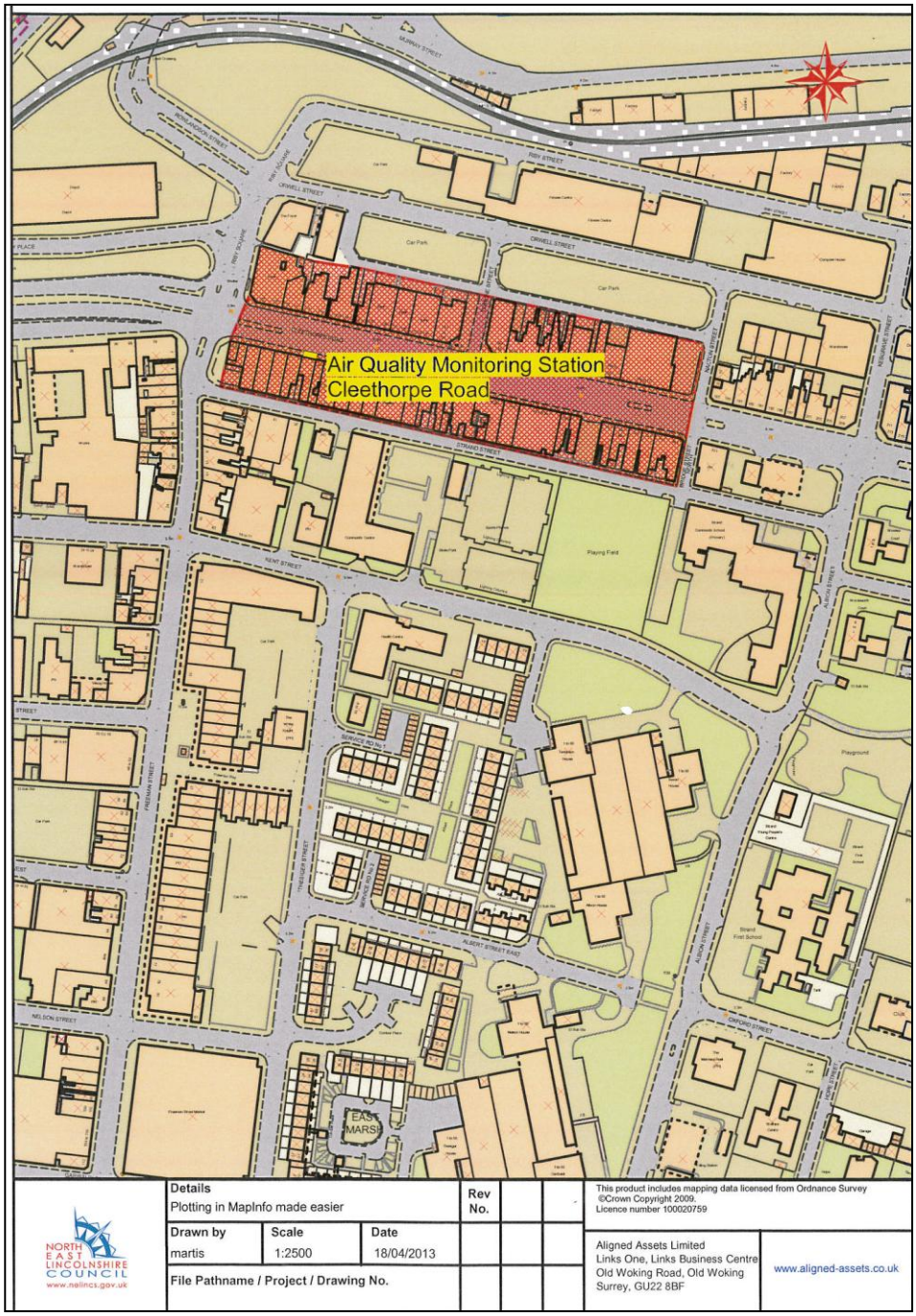
Figure 1.1 Map of AQMA Boundary, Immingham.



1.4.2 Air Quality Management Area Cleethorpe Road

North East Lincolnshire Council declared an AQMA in September 2010 for the breach of the annual mean NO_2 objective. The AQMA is formed along Cleethorpe Road between Freeman Street and Nacton Street. The area includes the properties 100-176 and 103-177 Cleethorpe Road, as highlighted in Figure 1.2. The properties are predominantly occupied for commercial use. Those few residential properties that do exist are found to be at first and second floor level.

Figure 1.2 Map of AQMA Boundary, Cleethorpe Road



2 New Monitoring Data

2.1 Automatic Monitoring Sites

North East Lincolnshire Council has four automatic air quality monitoring stations located at Fryston House Grimsby, Cleethorpe Road Grimsby, Kings Road Immingham and Woodlands Avenue Immingham. Table 2.1 gives the details of the Automatic Monitoring Sites and pollutants measured.

The location of each automatic monitoring sites are shown in Figure 2.1 Fryston House, Grimsby, Figure 2.2 Kings Road, Immingham, Figure 2.3 Woodlands Avenue, Immingham and Figure 2.4 Cleethorpe Road Grimsby.

Table 2.1 Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Inlet Height (m)	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
CM1	Fryston House, Grimsby	Roadside	526582	408050	2m	NO_2 PM_{10} O_3	No	Chemiluminescence	No	4m	Yes
CM2	Immingham Kings Road	Roadside	519193	415279	2m	NO_2 PM_{10} SO_2	Yes	Chemiluminescence	No	2m	Yes
CM3	Immingham Woodlands Ave	Urban background	518275	415106	2m	PM_{10}	No	BAM	Yes 7m	5m	No
CM4	Cleethorpe Road, Grimsby	Roadside	527759	410426	1.5m	NO_2	Yes	Chemiluminescence	Yes 2m	2m	Yes

Figure 2.1 CM1 Grimsby AQM Station Fryston House

Figure 2.2 CM2 Immingham AQM Station 1 Kings Road

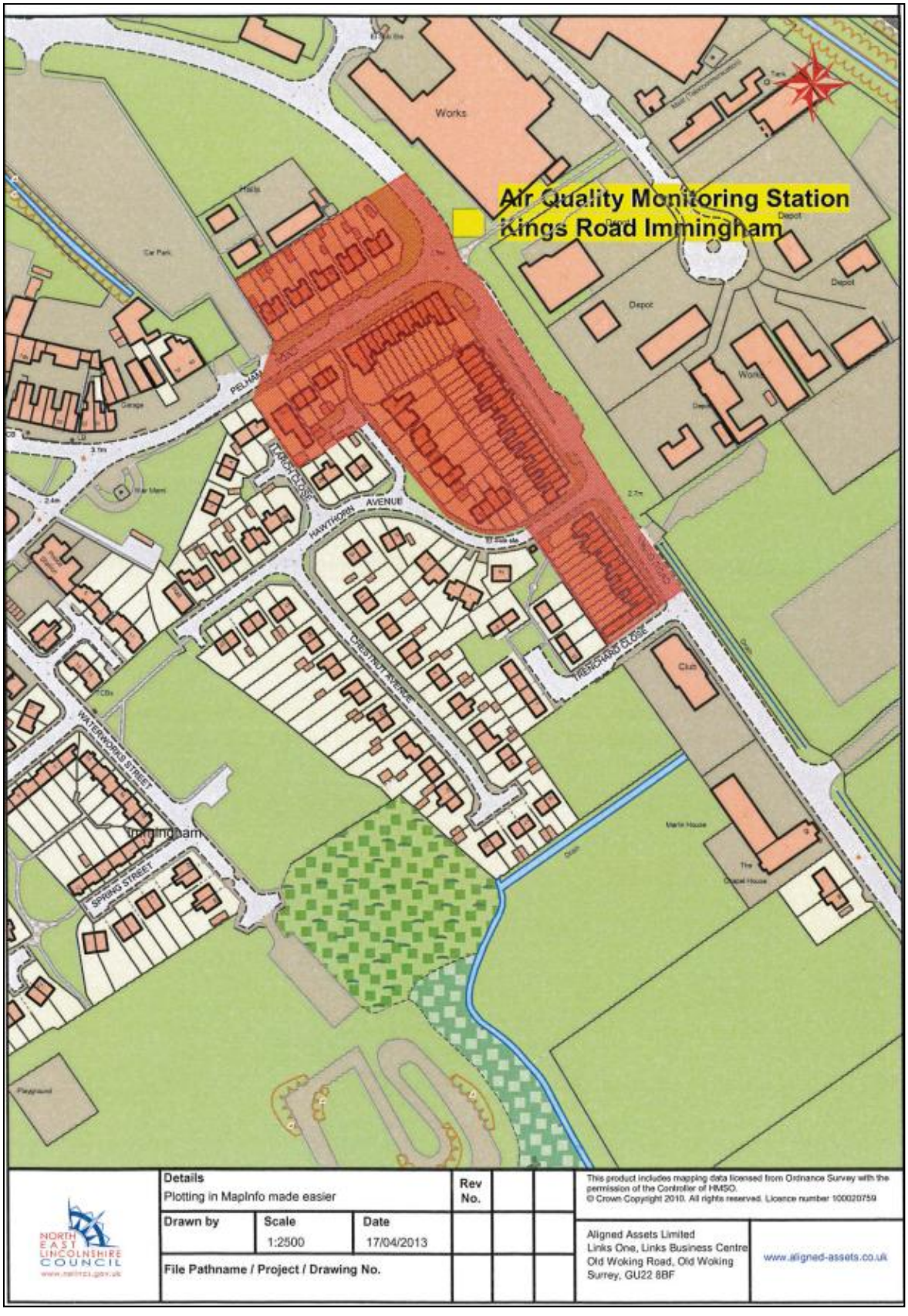
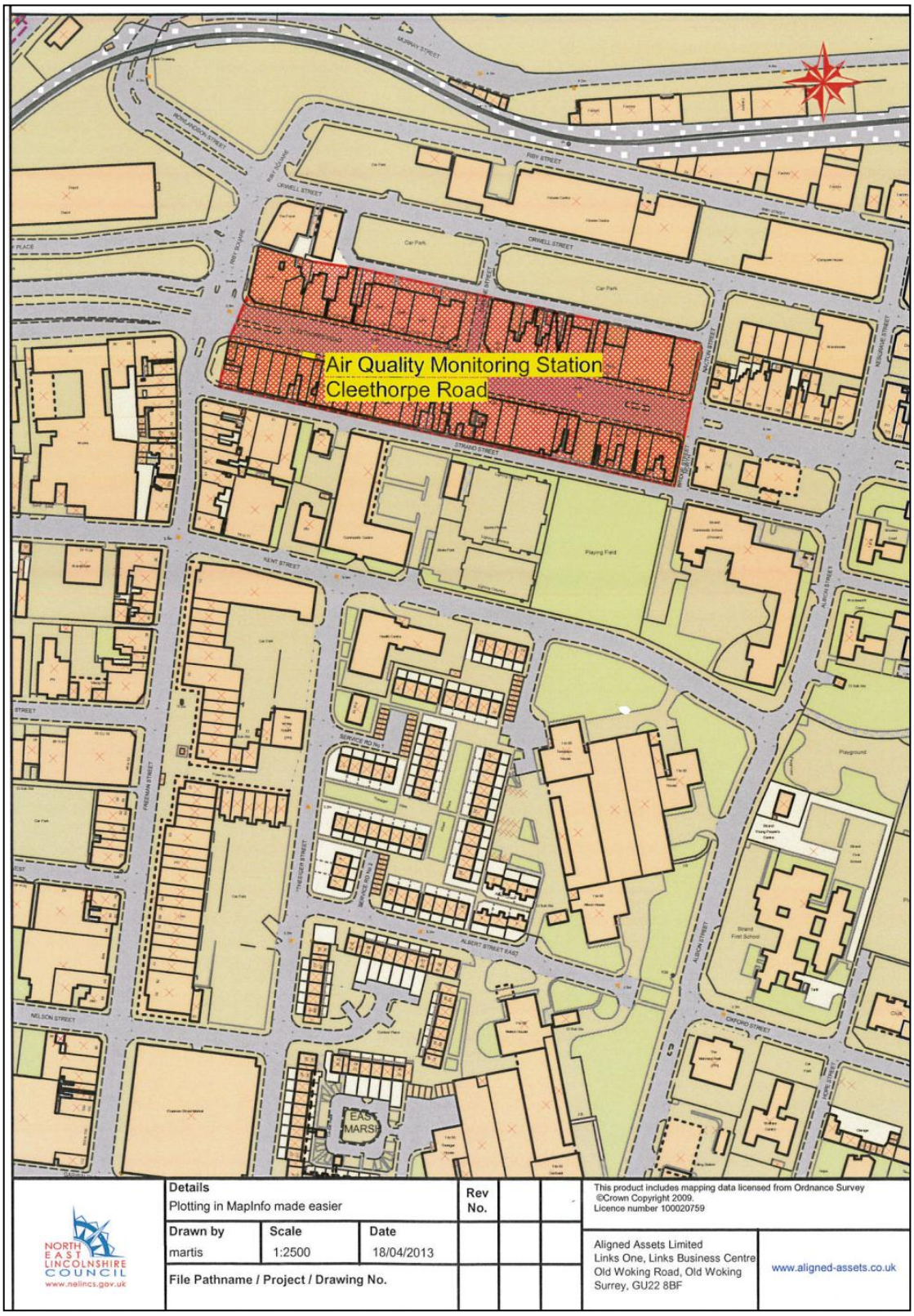


Figure 2.3 CM3 Immingham AQM Station 2 Woodlands Avenue

Figure 2.4 CM4 Grimsby AQM Station Cleethorpe Road



2.1.1 Data Validation and Ratification Procedures

The data validation and ratification procedures for the automatic monitoring data are carried out by Council Officers. Training was provided by Barnsley Metropolitan Borough Council. This was undertaken to NETCEN standards to operate the Council's sites to AURN standards. This training has been brought to NELC to ensure that the National Procedures are adhered to, and maintain a high standard of data collation.

Further details of all procedures can be found on the website: http://www.nelincs.gov.uk/resident/environment/air-quality/monitoring-and-data/quality-assurance-quality-control/

2.1.2 Monitoring Period

Monitoring for the automatic sites was carried out over a twelve month period: January to December.

2.2. Non-Automatic Monitoring Sites

During 2012 North East Lincolnshire Council's non-automatic monitoring network comprised of:

- 34 NO_2 diffusion tubes this increased to 38 in June and to 39 in October 2012.
- 6 Osiris monitors.

2.2.1 Monitoring Period

Monitoring for the non-automatic sites was carried out over a twelve month period: January to December.

2.2.2 Diffusion Tubes Nitrogen Dioxide

These tubes are supplied and analysed by Environmental Scientifics Group (ESG) and are analysed in accordance with ESG's Standard Operating Procedure HS/WI/1015 issue 15.

2.2.3 Bias Adjustment for Diffusion Tube Data.

During 2012 North East Lincolnshire Council had three co-location sites with "good" precision and high data capture. The local bias adjustment factor for each individual location was calculated using the "LAQM Tool" described in section A1.191 of LAQM TG (09)[(2)]. The results are shown in table 2.2 below. See **Appendix A** for calculations.

Table 2.2: Co-location Bias Adjustment Factors for 2012.

Source	Bias adjustment Factor 2012
Fryston House, Grimsby	0.79
Kings Road, Immingham	0.75
Cleethorpe Road, Grimsby	1.06

The average bias adjustment factor from Fryston House, Grimsby and Kings Road, Immingham is **0.77.** This local bias adjustment factor was used for all the diffusion tubes, with the exception of tubes located in the Cleethorpe Road AQMA in which the national bias adjustment factor of **0.79** was used. Further information on QA/QC procedures and discussion on the bias adjustment factor can be found in **Appendix A.**

Details of all nitrogen dioxide diffusion tubes are listed in **Table 2.3.**

Table 2.3 Details of Non- Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
NEL 1,2,3	Fryston House AQM Station	Roadside	526582	408050	2.5	NO_2	N	Y	N (10m)	4m	Y
NEL 4,5,6	Kings Rd, Immingham AQM Station	Roadside	519193	415279	2.5	NO_2	Y	Y	N (10m)	2m	Y
NEL 7	Pennels Cleethorpes	Roadside	529421	407008	2.5	NO_2	N	N	Y (10m)	2m	Y
NEL 8	Hewitts Circus Cleethorpes	Roadside	529531	406835	2.5	NO_2	N	N	Y (3m)	2m	Y
NEL 9	Toll Bar	Kerbside	527685	404531	2.5	NO_2	N	N	Y (10m)	1m	Y
NEL 10,11,12	112Cleethorpe Road	Roadside	527761	410426	2.5	NO_2	Y	Y	Y (1m)	2m	Y
NEL 13	113Cleethorpe Road	Kerbside	527756	410446	2.5	NO_2	Y	N	Y (1m)	1m	Y
NEL 14	123Cleethorpe Road	Kerbside	527787	410439	2.5	NO_2	Y	N	Y (1m)	1m	Y
NEL 15	197Cleethorpe Road	Roadside	527993	410398	2.5	NO_2	N	N	Y (0m)	3m	Y
NEL 16	Ramsdens, Grimsby	Roadside	528708	410140	2.5	NO_2	N	N	Y (0m)	5m	Y
NEL 17	42 Freeman Street	Roadside	527679	410277	2.5	NO_2	N	N	Y (0m)	2.5m	Y

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
NEL 18	76 Freeman Street	Kerbside	527664	410164	2.5	NO_2	N	N	Y (1m)	1m	Y
NEL 19	Pasture/Thomas	Roadside	527818	409320	2.5	NO_2	N	N	Y (0m)	2m	Y
NEL 20	Pasture/Edward	Roadside	527734	409343	2.5	NO_2	N	N	Y (0m)	2m	Y
NEL 21	9 Pyewipe Rd, Grimsby	Roadside	526074	410112	2.5	NO_2	N	N	Y (1m)	2m	Y
NEL 22	4 Boulevard Walk	Roadside	525823	409586	2.5	NO_2	N	N	Y (7m)	4m	Y
NEL 23	94 Cromwell Road	Roadside	525932	409274	2.5	NO_2	N	N	Y (0.5m)	6m	Y
NEL 24	Lovelane Corner	Roadside	528891	408078	2.5	NO_2	N	N	Y (12m)	3m	Y
NEL 25	Peaks Parkway/Welholme	Kerbside	527403	408666	2.5	NO_2	N	N	Y (6m)	1.5m	Y
NEL 26	Peaks Parkway/Weelsby	Kerbside	527572	408109	2.5	NO_2	N	N	Y (7m)	1.5m	Y
NEL 27	Louth Road/Waltham Road	Roadside	526468	406341	2.5	NO_2	N	N	Y (3.5m)	4.5m	Y
NEL 28	40-42 High Street	Roadside	530475	408919	2.5	NO_2	N	N	Y (5.5m)	2.5m	Y
NEL 29	2-5 Alexandra Road	Roadside	530896	408614	2.5	NO_2	N	N	Y (3m)	12m	Y
NEL 30	14 Weelsby Road	Roadside	526727	408028	2.5	NO_2	N	N	Y (1m)	7.5m	Y

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
NEL 31	21 Laceby Road	Roadside	526292	407840	2.5	NO_2	N	N	Y (0m)	15m	Y
NEL 32	110 Bargate	Roadside	526540	408168	2.5	NO_2	N	N	Y (0m)	19.5m	Y
NEL 33	82 Bargate	Roadside	526487	408395	2.5	NO_2	N	N	Y (0m)	18m	Y
NEL 34	11 Scartho Road	Roadside	526489	407739	2.5	NO_2	N	N	Y (1m)	17.5m	Y
NEL 35	Victoria Street/Victoria Mill	Kerbside	527169	410005	2.5	NO_2	N	N	Y (2m)	<1m	Y
NEL 36	Scartho Road/Cragston	Roadside	526520	407026	2.5	NO_2	N	N	Y (5m)	1.5m	Y
NEL 37	Great Coates/Yarborough	Roadside	524593	408863	2.5	NO_2	N	N	Y (5m)	1.5m	Y
NEL 38	Victoria Street West	Kerbside	526852	409271	2.5	NO_2	N	N	Y (5m)	1m	Y
NEL 39	Riby Square	Kerbside	527693	410430	2.5	NO_2	N	N	Y (0.5m)	1.5m	Y

2.2.4 Locations of Diffusion Tubes

Figure 2.5 Nuns Corner Grimsby

Map Key: Air Quality Monitoring Station Co-located with Diffusion Tubes

Single Diffusion Tube

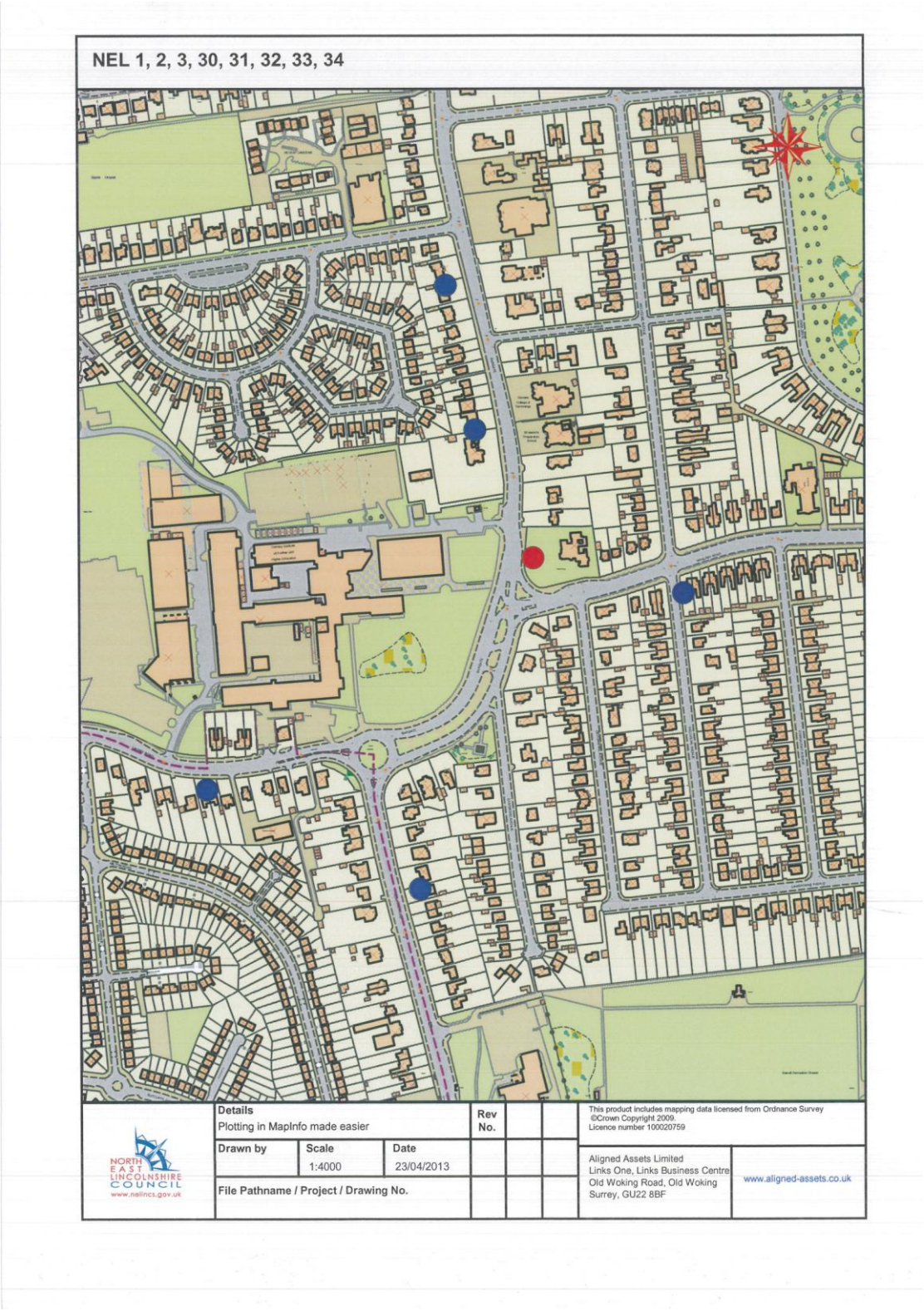


Figure 2.6 Kings Road, Immingham

Map Key: ● Air Quality Monitoring Station Co-located with Diffusion Tubes

Figure 2.7 Hewett's Circus, Grimsby

Map Key: ● Single Diffusion Tube

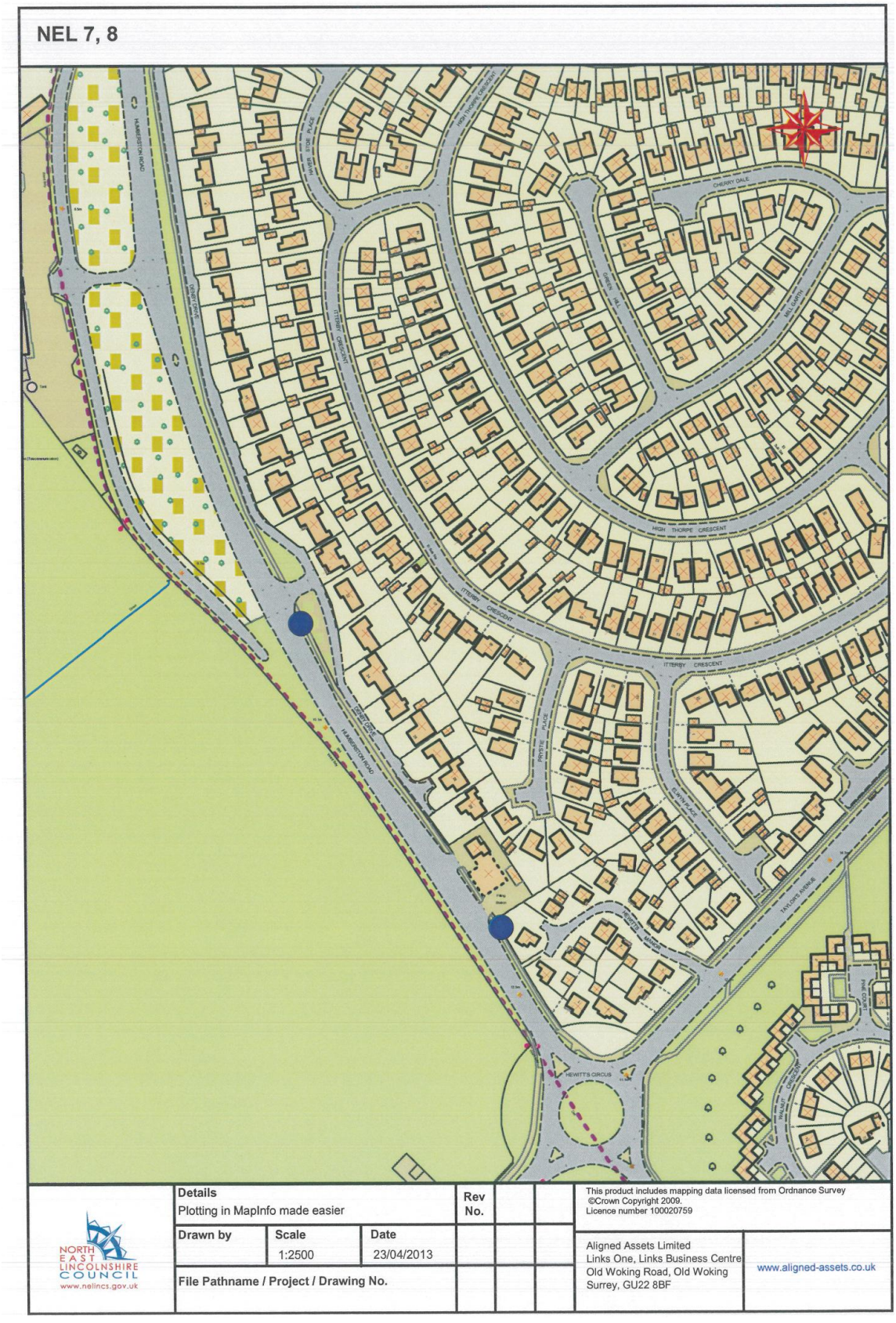


Figure 2.8 Kings Road, Immingham

Map Key: ● Single Diffusion Tube

Figure 2.9 Cleethorpe Road/Freeman Street Grimsby

Map Key: ● Single Diffusion Tube ● Co-located Diffusion Tubes

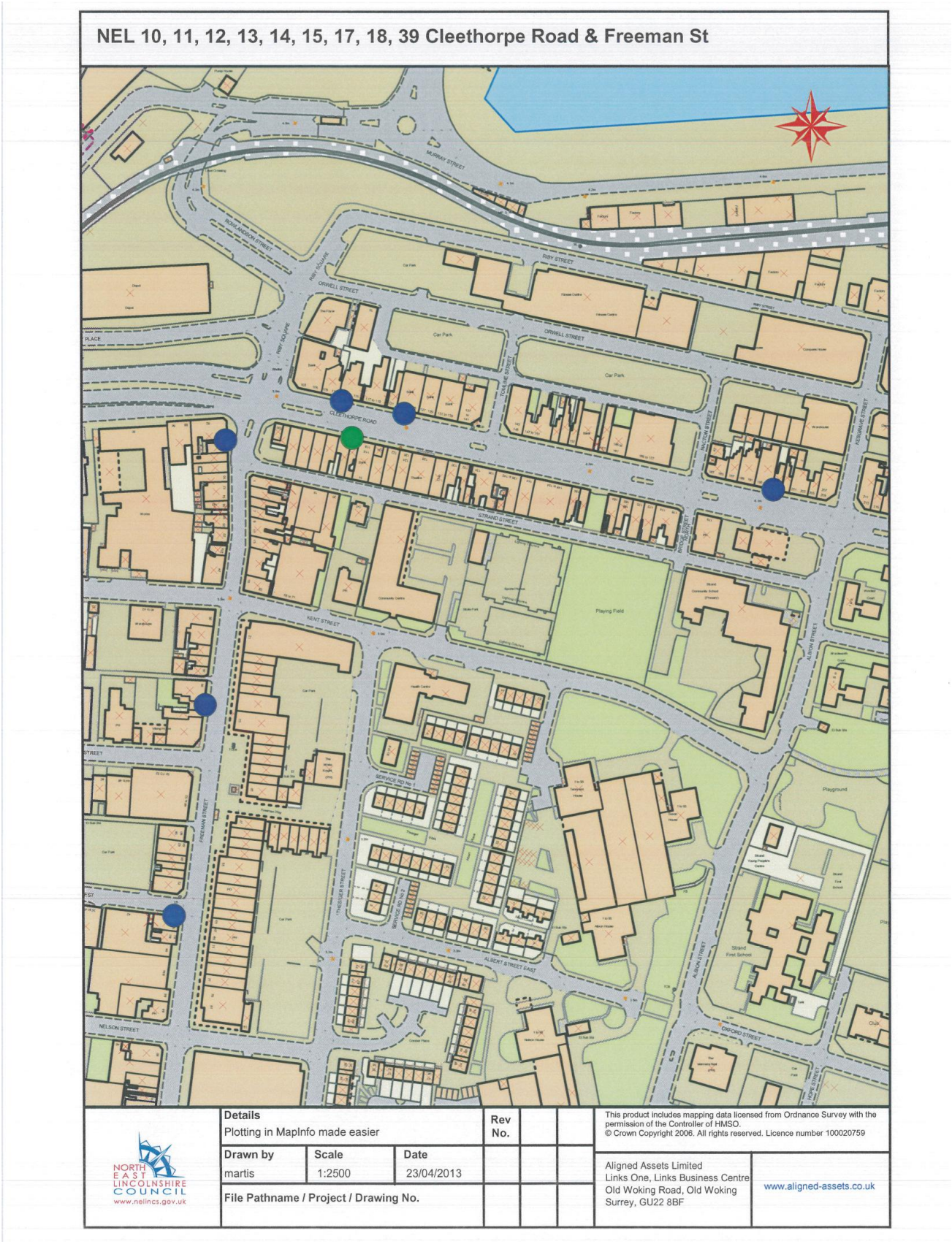


Figure 2.10 Cleethorpe Road, Grimsby

Map Key: ● Single Diffusion Tube

Figure 2.11 Pasture Street, Grimsby

Map Key: ● Single Diffusion Tube

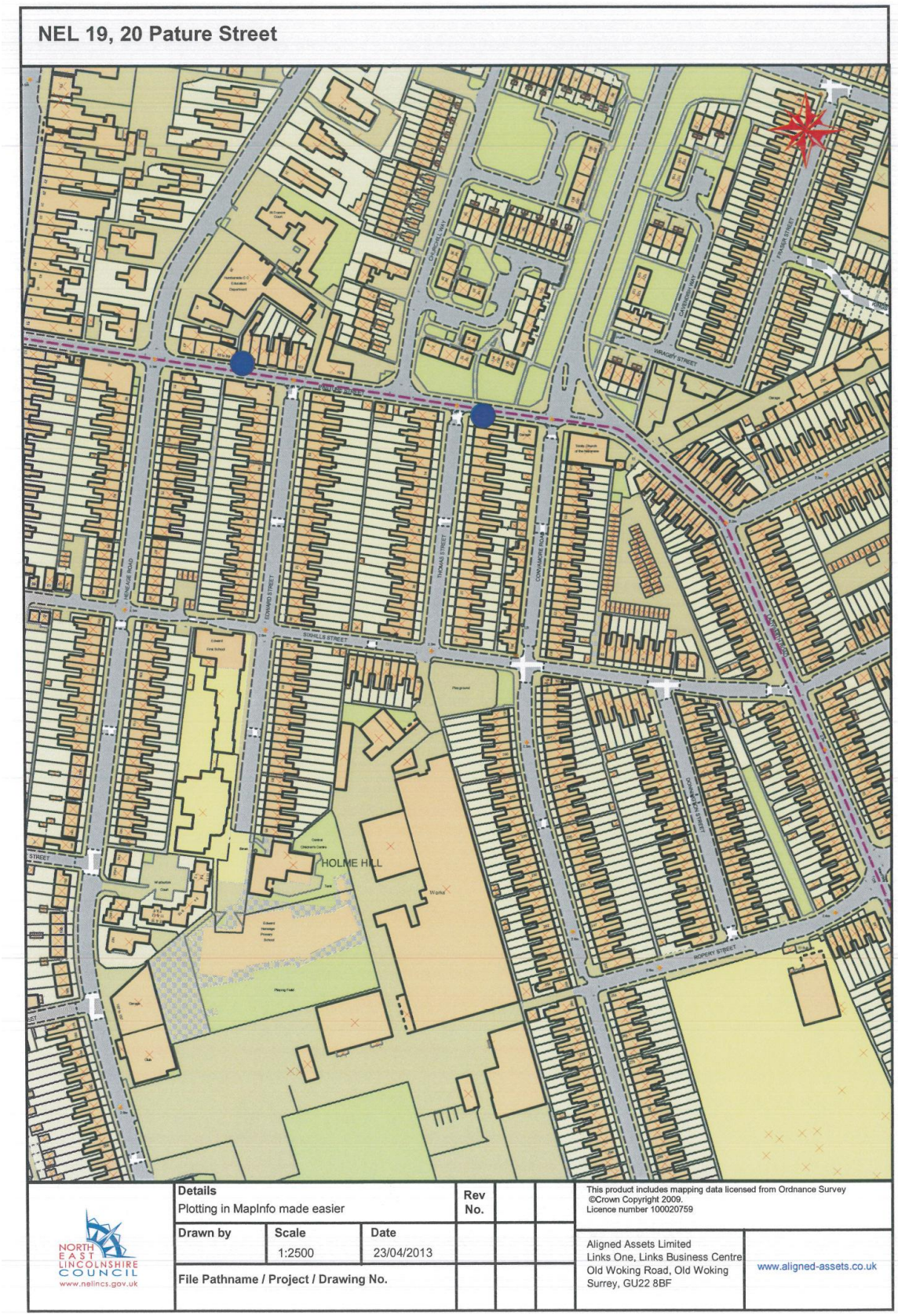


Figure 2.12 Pyewipe, Grimsby

Map Key: ● Single Diffusion Tube

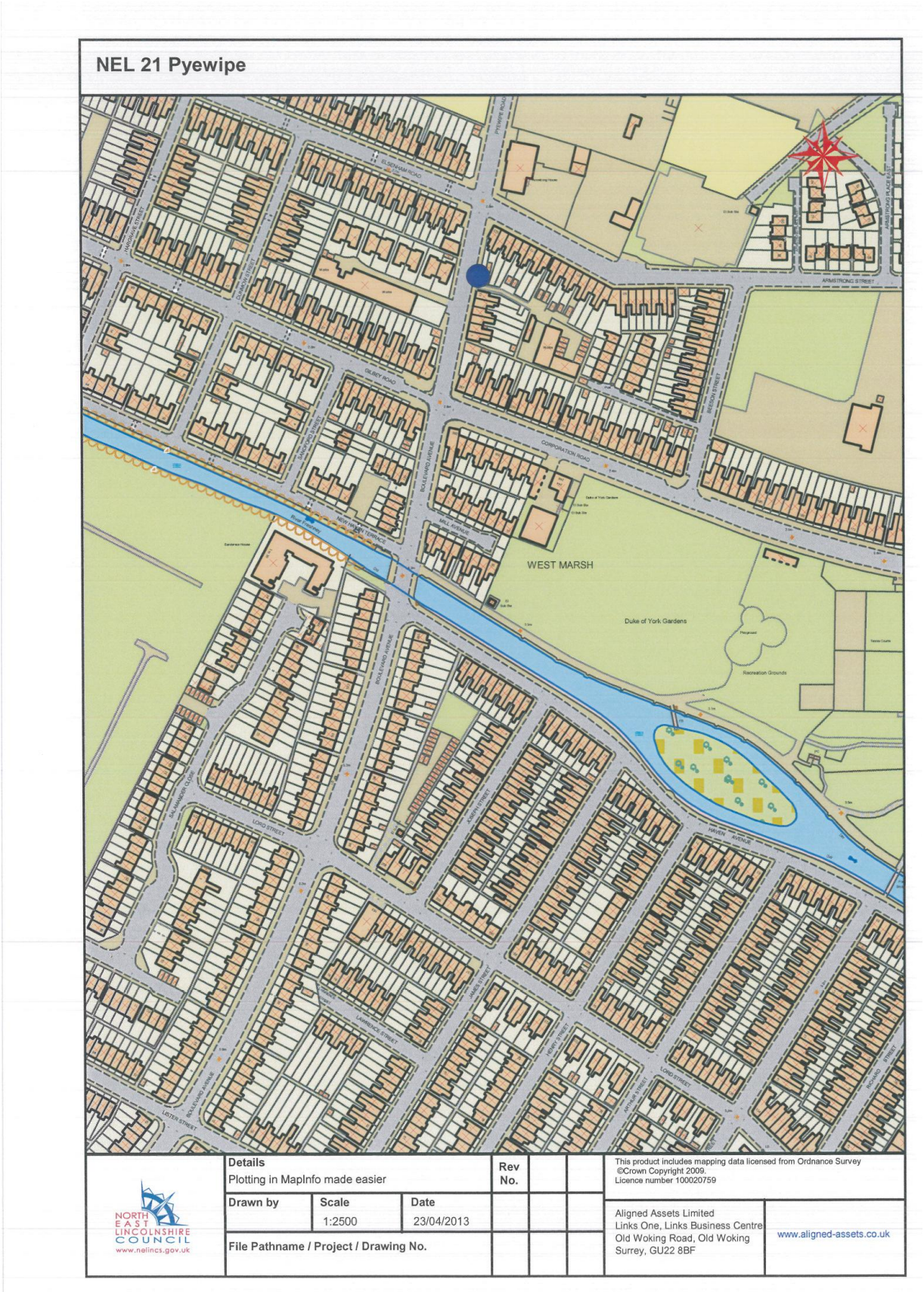


Figure 2.13 Boulevard/Cromwell, Grimsby

Map Key: ● Single Diffusion Tube

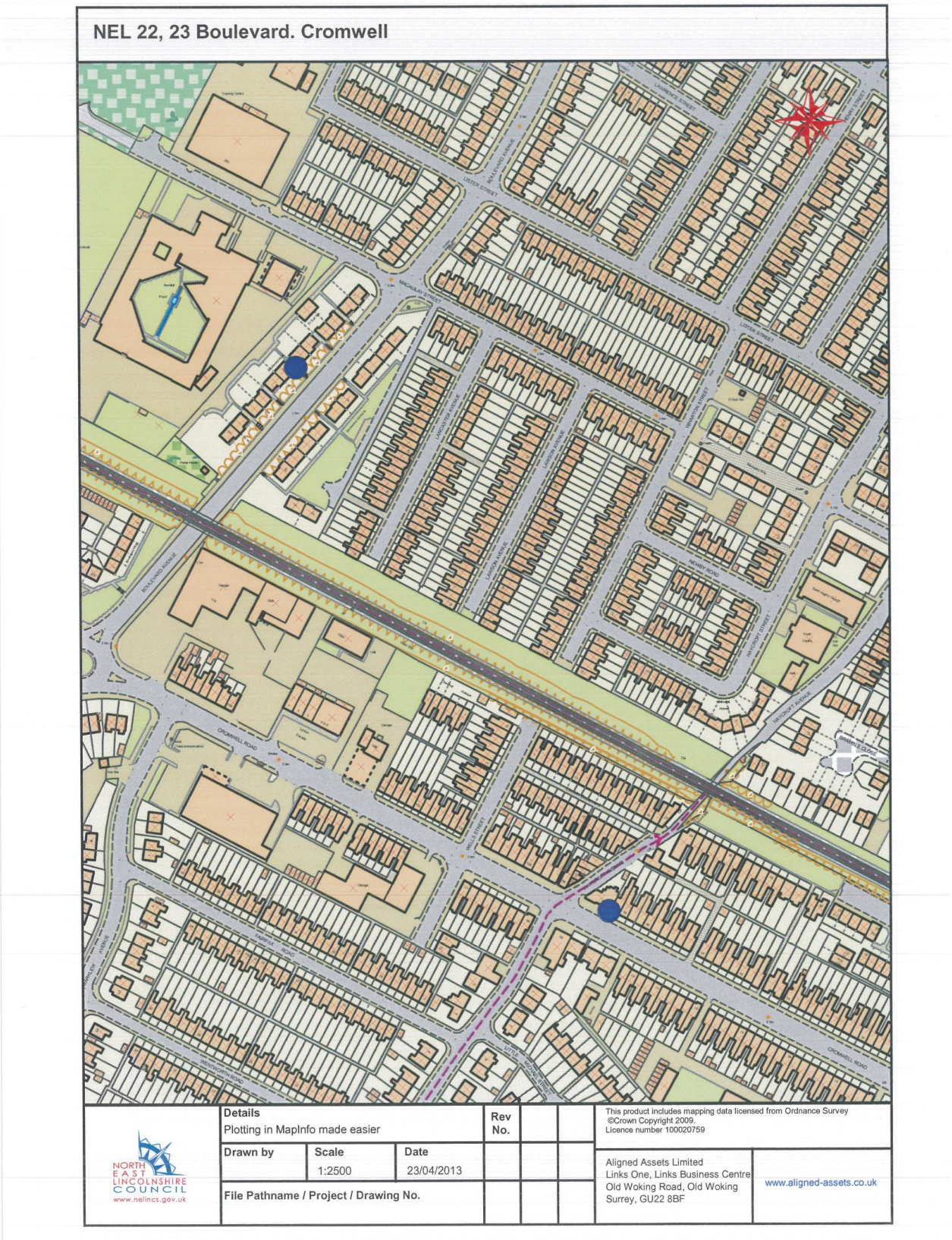


Figure 2.14 Lovelane Corner, Grimsby

Map Key: ● Single Diffusion Tube

Figure 2.15 Peaks Parkway/Welhome Road, Grimsby

Map Key: ● Single Diffusion Tube

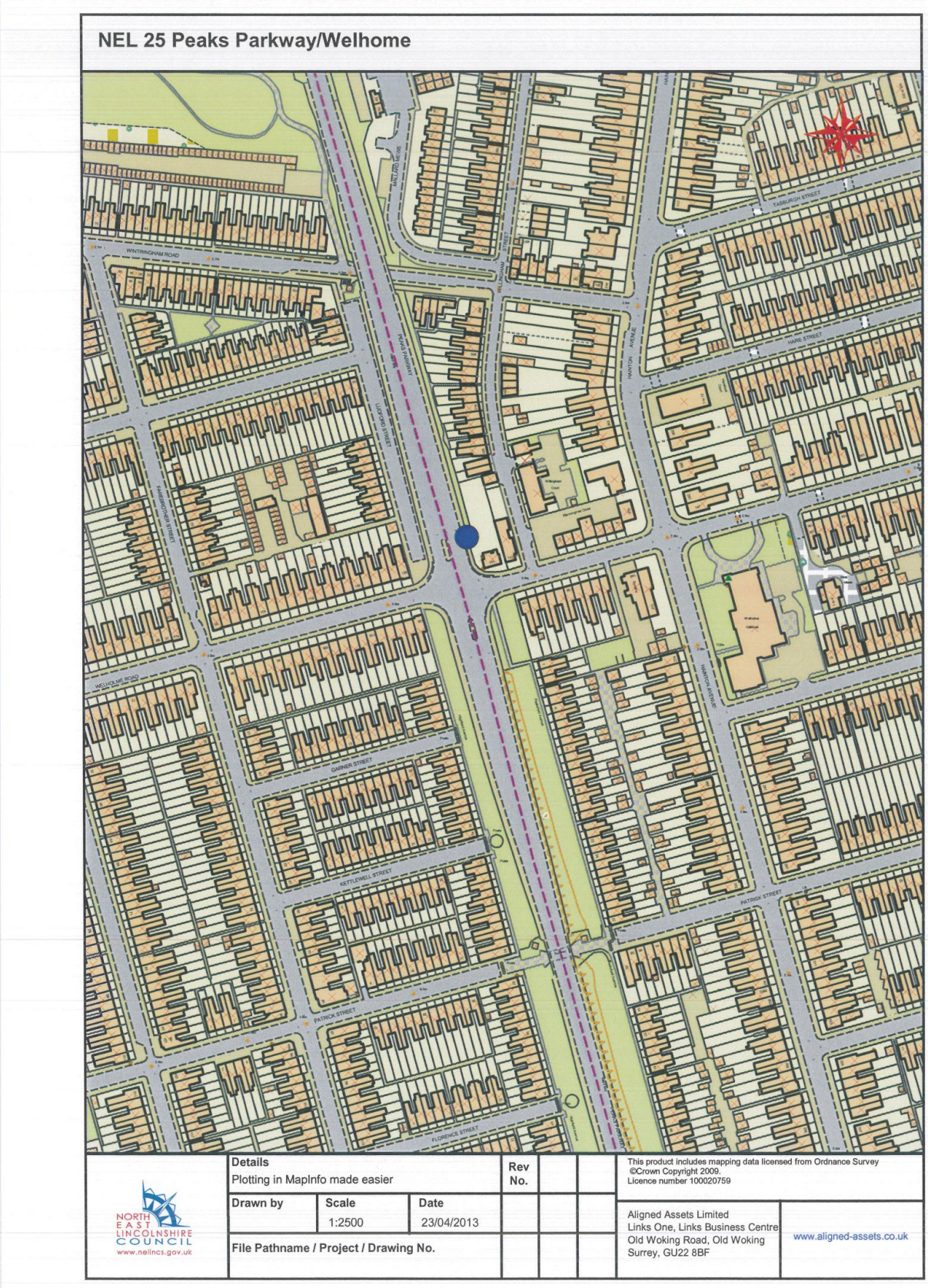


Figure 2.16 Peaks Parkway/Weelsby Road, Grimsby

Map Key: ● Single Diffusion Tube ● Co-located Diffusion Tubes

Figure 2.17 Louth Road/Waltham Road, Grimsby

Map Key: ● Single Diffusion Tube

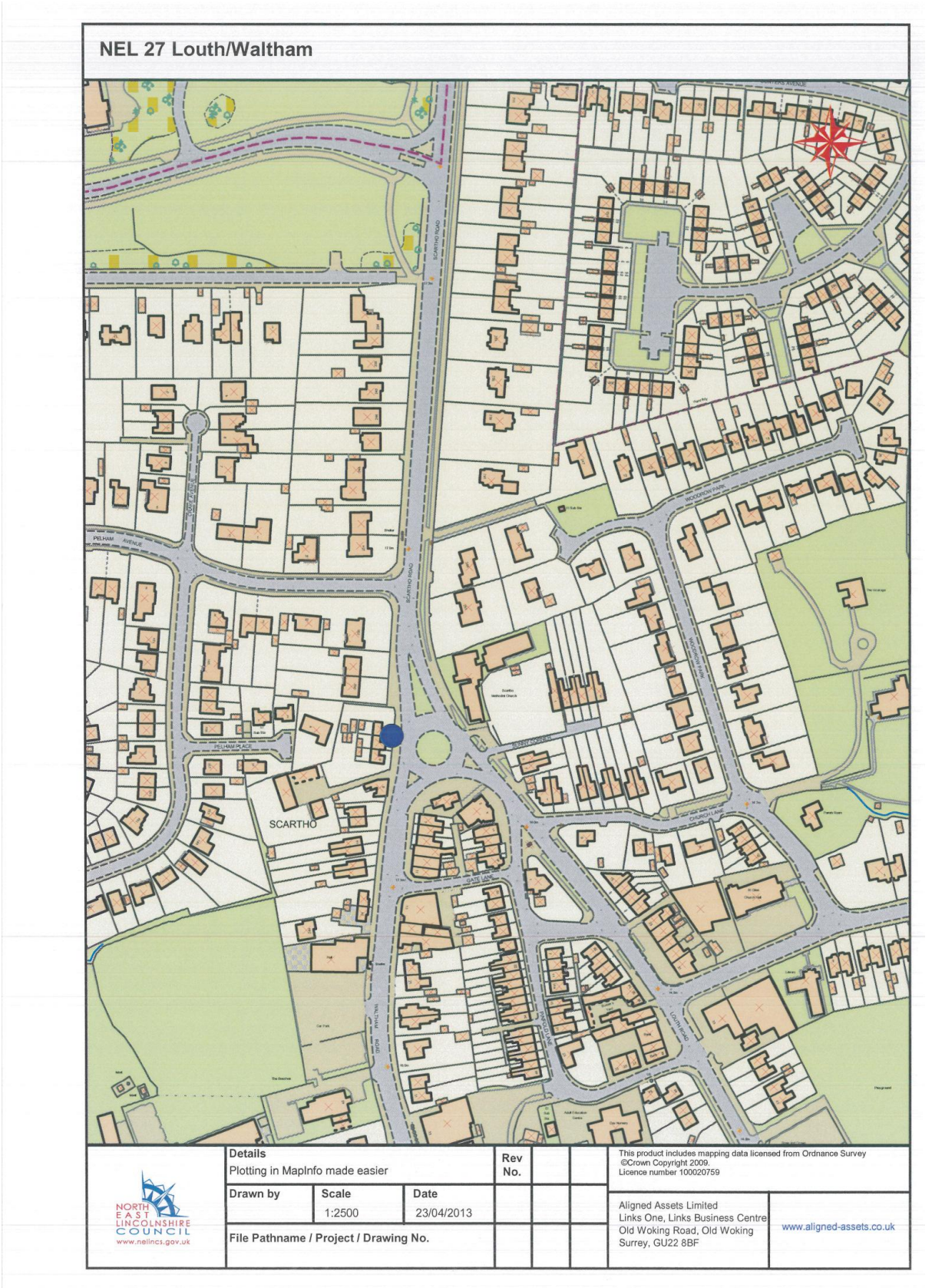


Figure 2.18 Cleethorpes

Map Key: ● Single Diffusion Tube

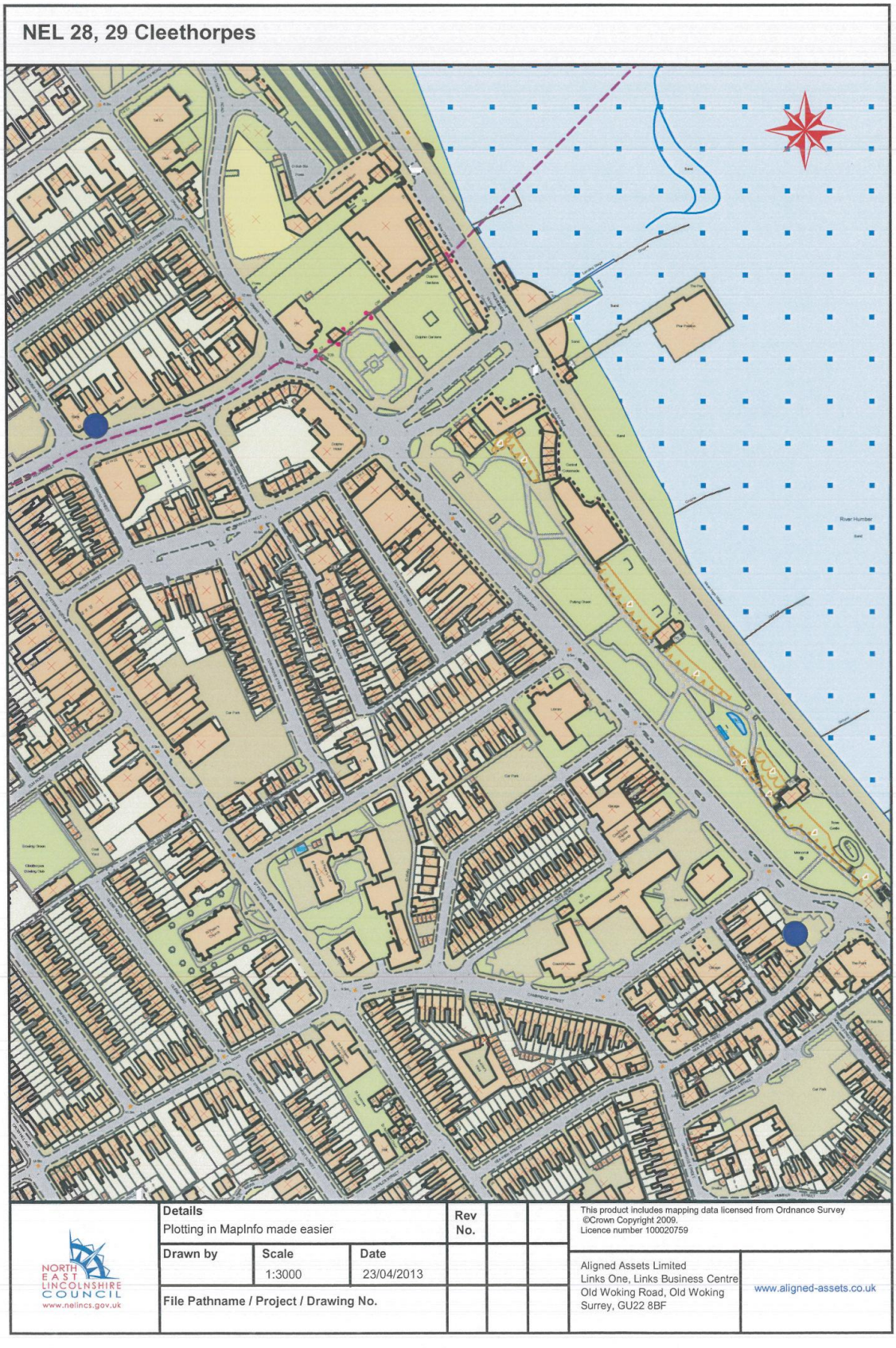


Figure 2.19 Victoria Mills. Grimsby

Map Key: ● Single Diffusion Tube

Figure 2.20 Scartho Road/Cragston. Grimsby

Map Key: ● Single Diffusion Tube

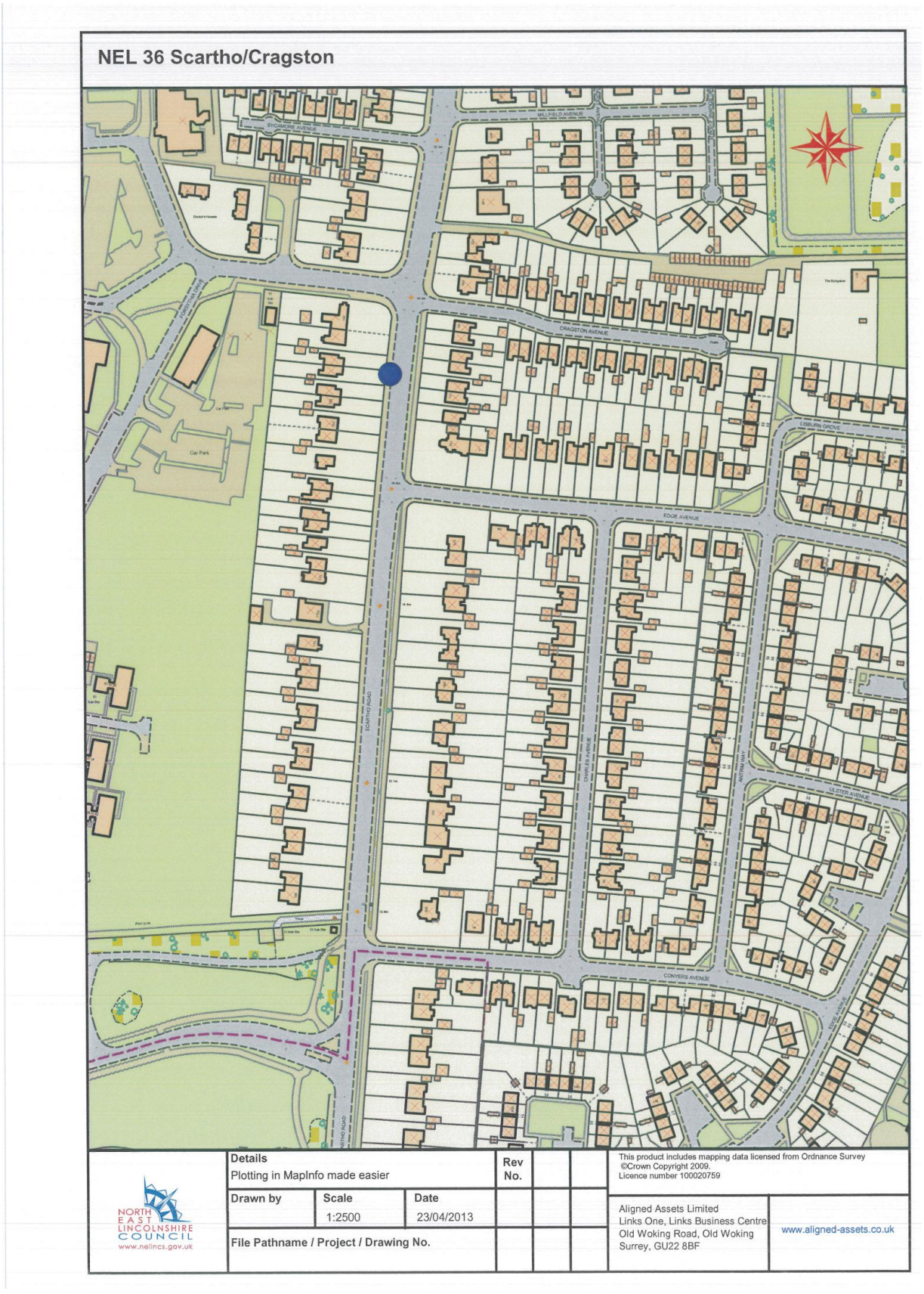


Figure 2.21 Great Coates/Yarborough. Grimsby

Map Key: ● Single Diffusion Tube

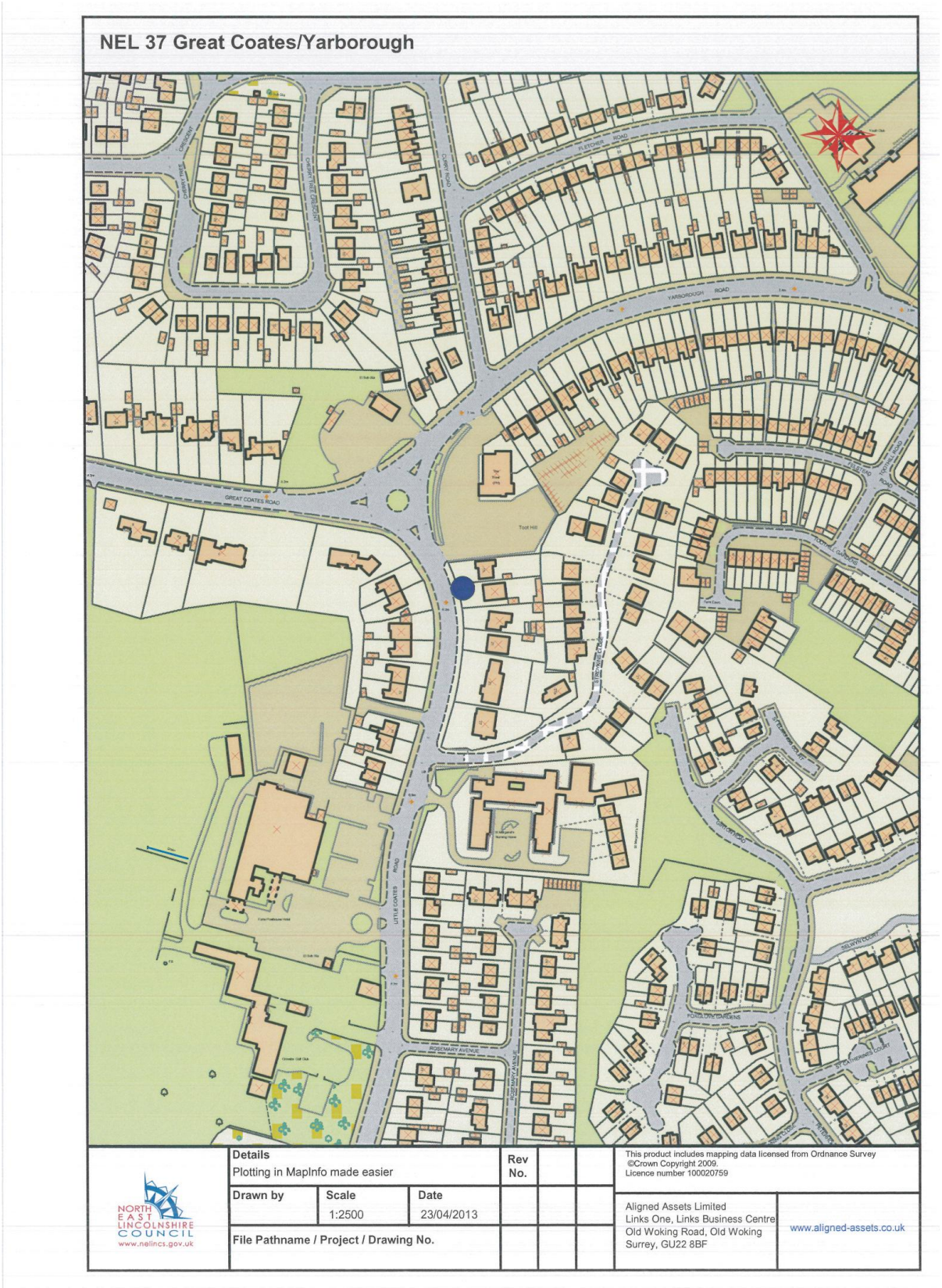
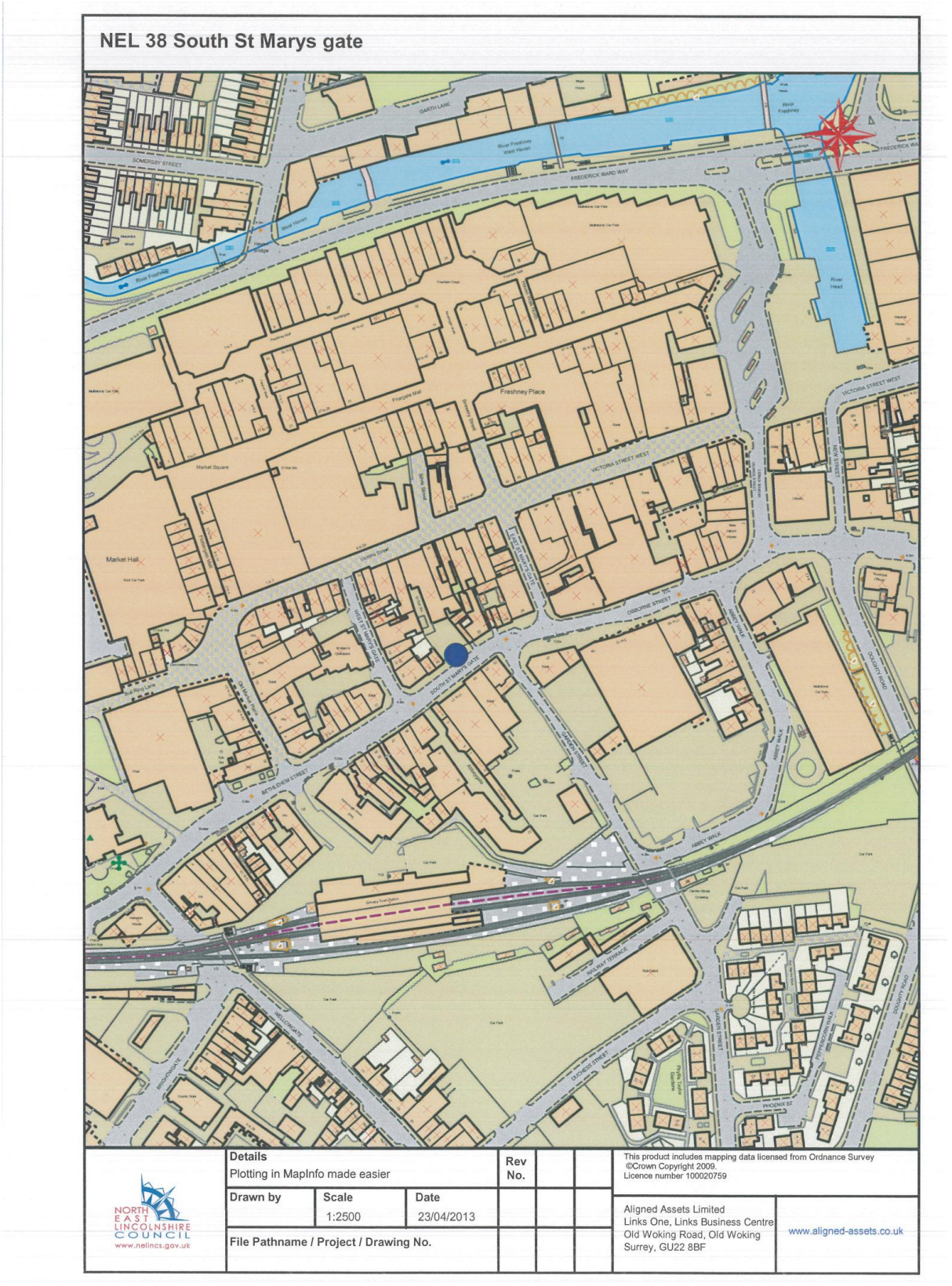


Figure 2.22 South Marys Gate. Grimsby

Map Key: ● Single Diffusion Tube



2.2.5 Locations of Osiris Monitors

There are 6 Osiris monitors situated in Immingham, 3 are situated on the docks and 3 in residential areas. The results of which are for indicative purposes only, and this data is used to react to pollution incidents as they occur in the Immingham area. The Osiris' have been provided through partnership working with ABP and the Council. The associated costs are shared between each partner and the results are used to help source dust pollution, from both the Port and the areas surrounding Immingham.

Figure 2.23 Osiris Dust Monitor Location

Map Key: ▲ Osiris Dust Monitor Location

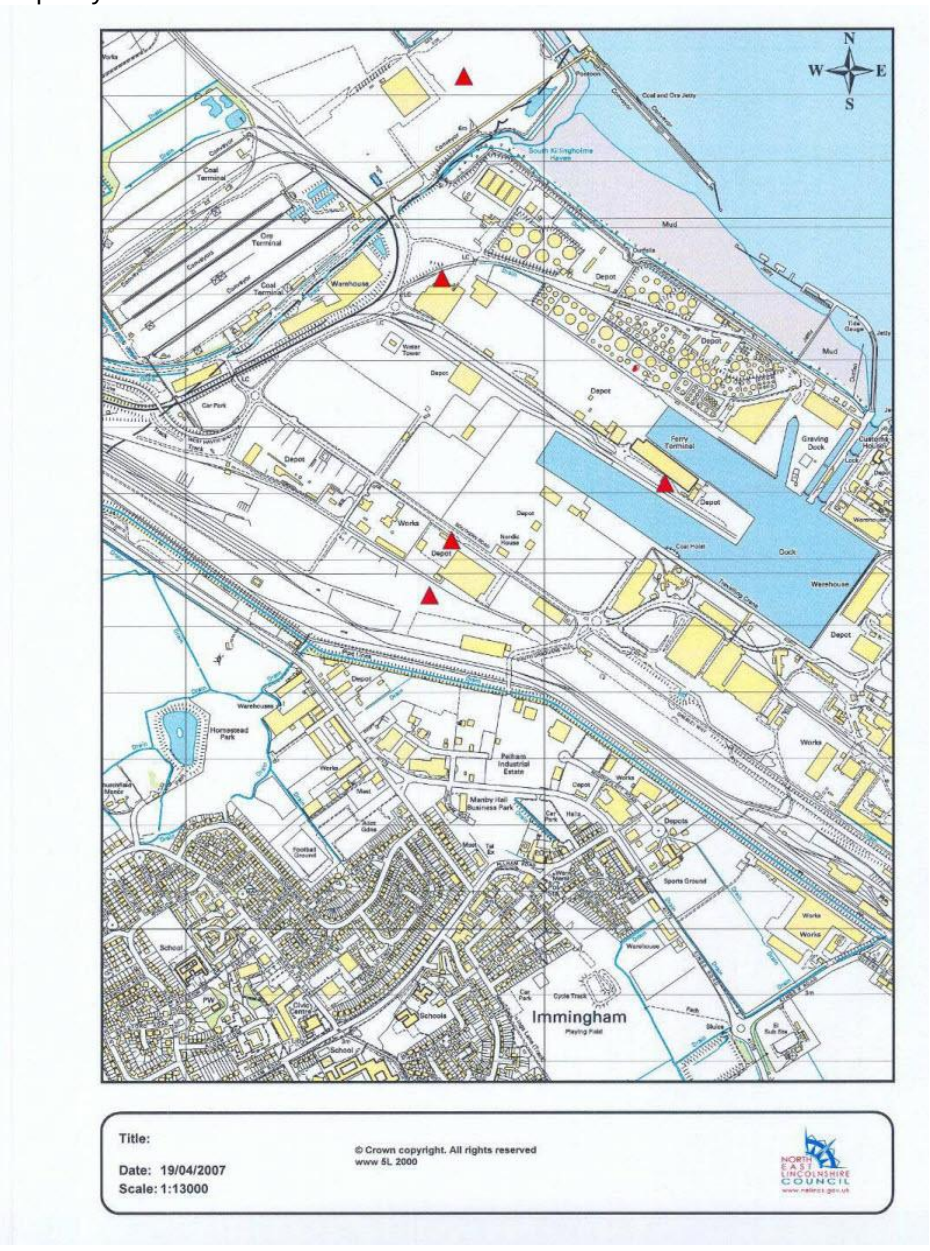
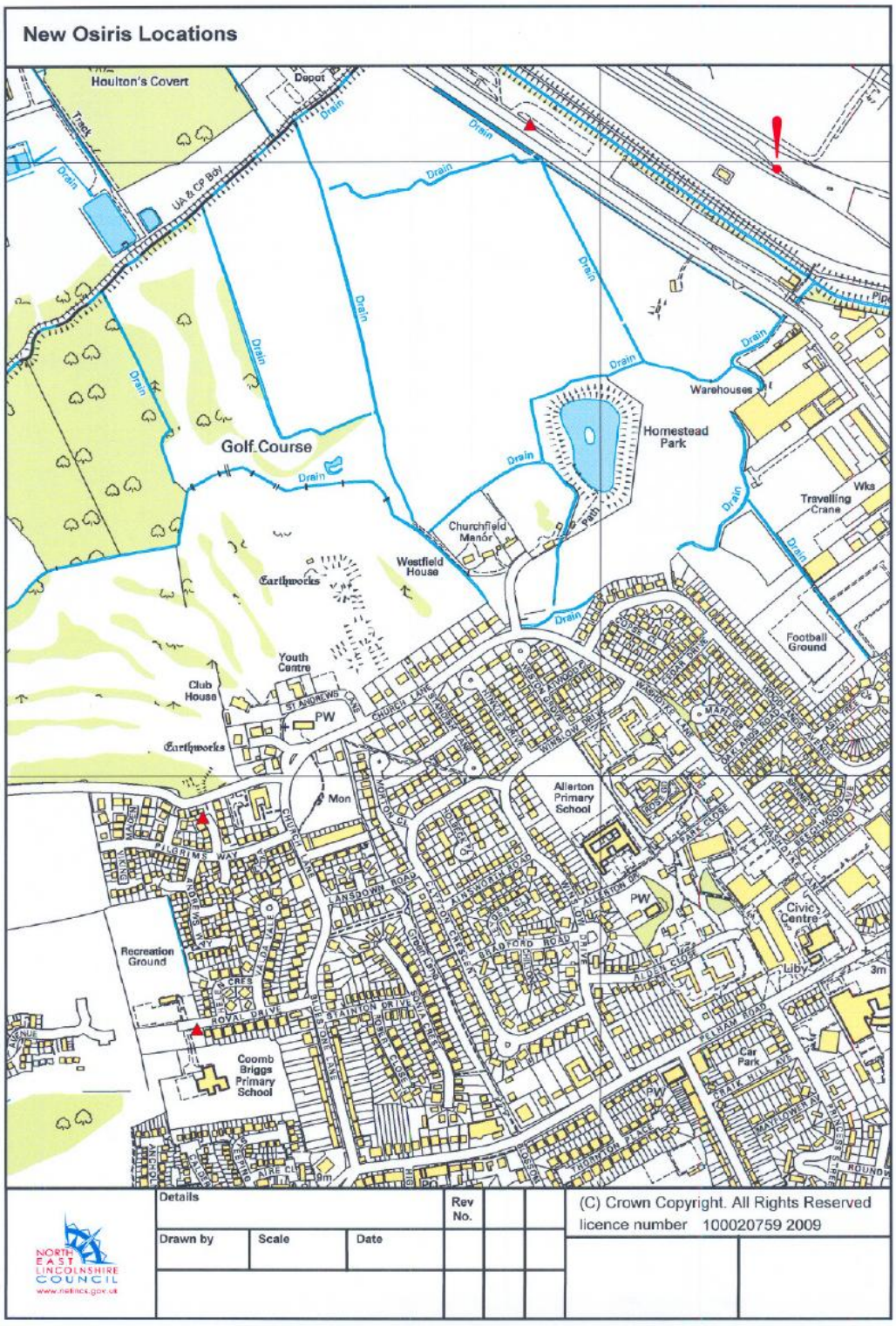


Figure 2.24 Osiris Dust Monitor Location

Map Key: ▲ Osiris Dust Monitor Location



2.3 Comparison of Monitoring Results with Air Quality Objectives

2.3.1 Nitrogen Dioxide (NO_2) Automatic Monitoring Data

Table 2.3a Results of Automatic Monitoring for NO_2: Comparison with Annual Mean Objective

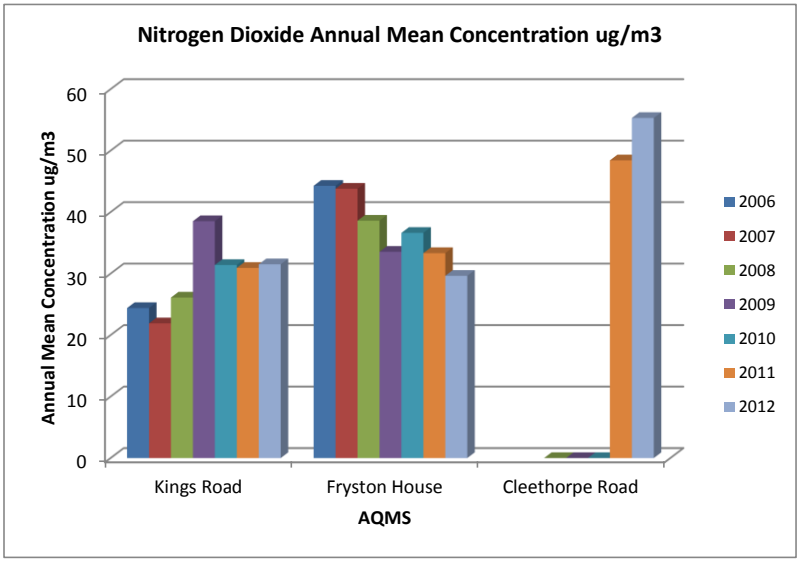
Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring %	Valid Data Capture 2012 %	Annual Mean Concentration μg/m^3				
					2008	2009	2010	2011	2012
Immingham Kings Road	Roadside	Y	n/a	95.63	26.10	38.52	31.40	30.92	31.51
Grimsby Fryston House	Roadside	N	n/a	94.52	38.60	33.54	36.62	33.33	29.64
Cleethorpe Road	Roadside	Y	n/a	94.79	n/a	n/a	n/a	**48.42**	**55.31**

Table 2.3b Results of Automatic Monitoring for NO_2: Comparison with 1-hour Mean Objective.

Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring %	Valid Data Capture 2012 %	Number of Exceedences of Hourly Mean (200 μg/m^3)				
					2008*	2009*	2010*	2011*	2012 *
Immingham Kings Road	Roadside	Y	n/a	95.63	0 (80.1)	0	7	0	0
Grimsby Fryston House	Roadside	N	n/a	94.52	12	1 (100.5)	23 (132.5)	3 (69.5)	0
Cleethorpe Road	Roadside	Y	n/a	94.64	n/a	n/a	n/a	0	3

*Where the valid data period is less than 90% the 99.8th percentile hourly means is displayed in brackets.

Figure 2.25 Trends in Annual Mean NO_2 Concentrations measures at Automatic Monitoring Sites.



Data Analysis

Kings Road Air Quality Monitoring Station is situated within the Immingham AQMA and the data capture of 95.63% for 2012 is above the 90% required. The data collated, for both the annual mean & hourly mean, were below the objectives target values. Over the last three years the annual mean has been relatively stable.

Fryston House Air Quality Monitoring Station had a data capture of 94.5% which is above the 90% required level. The data collated, for both the annual mean & hourly mean, were below the objectives target values. The level of nitrogen dioxide has decreased over the last three years.

Cleethorpe Road Air Quality Monitoring Station is situated within the Cleethorpe Road/Riby Square AQMA. The data capture was 94% which is above the 90% required level. The annual mean recorded 55.31µg/m^3, breaches the Air Quality Standard and has increased on last year's figure. This confirms that the findings in the Detailed Assessment and North East Lincolnshire Council where correct to

declare an AQMA in this area. At the present time the Action Plan is being implemented to address this breach.

See **Appendix B** for the Ambidesk Annual Summaries from all four AQMS.

2.3.2 Nitrogen Dioxide (NO_2) Diffusion Tube Monitoring Data

During 2012 North East Lincolnshire Council's diffusion tube monitoring network comprised of 34 NO_2 diffusion tubes this increased to 38 in June 2012 and to 39 in October. These are located in Grimsby (32 tubes), Cleethorpes (4) and Immingham (3). The diffusion tubes are exposed for a period of one month and replaced in compliance with the National Timetable.

Table 2.4 Lists the Annual Mean for 2012 and **Table 2.5 the Results of Nitrogen Dioxide Diffusion Tubes (2008 to 2012**) and the bias adjustment factors for each year.
The data shown in Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2012 have not been distance corrected. Five diffusion tubes annual mean have been annualised (NEL 35-39). Any breaches of the Air Quality Standard have been highlighted, including locations recording an annual mean above 39µg/m^3 .

The monitored monthly diffusion tube data for 2012 is shown in **Appendix A**

Table 2.4 Results of NO_2 Diffusion Tubes 2012

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2012 Number of Months	Data with less than 9 months has been annualised (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.77) 2012 ($\mu g/m^3$)
NEL 1	Fryston House, Grimsby	Roadside	No	Triplicate	12	N/A	30.0
NEL 2	Fryston House, Grimsby	Roadside	No	Triplicate	12	N/A	29.8
NEL 3	Fryston House, Grimsby	Roadside	No	Triplicate	12	N/A	28.9
NEL 4	Kings Road, Immingham	Roadside	Yes	Triplicate	12	N/A	33.9
NEL 5	Kings Road, Immingham	Roadside	Yes	Triplicate	12	N/A	**40.2**
NEL 6	Kings Road, Immingham	Roadside	Yes	Triplicate	12	N/A	38.1
NEL 7	Pennels Cleethorpes	Roadside	No	N	12	N/A	23.8
NEL 8	Hewitts Circus Cleethorpes	Roadside	No	N	10	N/A	24.3
NEL 9	Toll Bar, Grimsby	Roadside	No	N	12	N/A	31.7
NEL 10	Riby Square 1 (112 Cleethorpe Road) , Grimsby	Roadside	Yes	Triplicate	12	N/A	**40.4***
NEL 11	Riby Square 1 (112 Cleethorpe Road) , Grimsby	Roadside	Yes	Triplicate	11	N/A	**42.6***
NEL 12	Riby Square 1 (112 Cleethorpe Road) , Grimsby	Roadside	Yes	Triplicate	11	N/A	**43.1***
NEL 13	113 Cleethorpe Road, Grimsby	Kerbside	Yes	N	11	N/A	**40.6***
NEL 14	123 Cleethorpe Road, Grimsby	Kerbside	Yes	N	12	N/A	**39.9***
NEL 15	197 Cleethorpe Road, Grimsby	Roadside	No	N	12	N/A	26.8
NEL 16	Ramsdens, Cleethorpe Road, Grimsby	Roadside	No	N	12	N/A	27.8
NEL 17	42 Freeman Street, Grimsby	Roadside	No	N	11	N/A	27.9

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2012 Number of Months	Data with less than 9 months has been annualised (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.77) 2012 (μg/m^3)
NEL 18	76 Freeman Street, Grimsby	Kerbside	No	N	12	N/A	23.9
NEL 19	Pasture Street / Thomas Street, Grimsby	Roadside	No	N	11	N/A	27.7
NEL 20	Pasture Street / Edward Street Junction, Grimsby	Roadside	No	N	9	N/A	22.8
NEL 21	9 Pyewipe Road, Grimsby	Roadside	No	N	12	N/A	32.3
NEL 22	4 Blvd Avenue, Grimsby	Roadside	No	N	12	N/A	20.5
NEL 23	94 Cromwell Road, Grimsby	Roadside	No	N	9	N/A	22.5
NEL 24	Love Lane Corner, Grimsby	Roadside	No	N	12	N/A	24.9
NEL 25	Peaks Parkway & Welholme Road, Grimsby	Kerbside	No	N	12	N/A	35.7
NEL 26	Peaks Parkway & Weelsby Road, Grimsby	Kerbside	No	N	11	N/A	35.4
NEL 27	Louth Road & Waltham Road, Grimsby	Roadside	No	N	12	N/A	25.8
NEL 28	40-42 High Street, Cleethorpes	Roadside	No	N	12	N/A	27.1
NEL 29	2-5 Alexandra Road, Cleethorpes	Roadside	No	N	10	N/A	22.9
NEL 30	14 Weelsby Road, Grimsby	Roadside	No	N	12	N/A	22.6
NEL 31	21 Laceby Road, Grimsby	Roadside	No	N	12	N/A	20.9
NEL 32	110 Bargate, Grimsby	Roadside	No	N	12	N/A	16.9
NEL 33	82 Bargate	Roadside	No	N	12	N/A	18.5

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2012 Number of Months	Data with less than 9 months has been annualised (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.77) 2012 (μg/m^3)
NEL 34	11 Scartho Road	Roadside	No	N	12	N/A	21.9
NEL 35	Victoria Street/Victoria Mill	Kerbside	No	N	7	Y	**41.76**
NEL 36	Scartho Road/Cragston	Roadside	No	N	7	Y	29.70
NEL 37	Great Coates/Yarborough	Roadside	No	N	7	Y	30.38
NEL 38	Victoria Street West	Kerbside	No	N	7	Y	27.52
NEL 39	Riby Square	Kerbside	No	N	3	Y	33.81

In bold, exceedence of the NO_2 annual mean AQS objective of 40μg/m^3

*National bias adjustment factor 0.79 used at locations NEL 10,11,12,13 and 14 all other location using the local bias of 0.77.

See **Appendix A** for short term to long term data adjustment calculations at locations NEL 35,36,37,38 and 39

Table 2.5 Results of NO_2 Diffusion Tubes (2008 to 2012)

Site ID	Location	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) μg/m^3				
				2008 Bias Adj Factor = 1.01	2009 Bias Adj Factor = 0.83	2010 Bias Adj Factor = 0.84	2011 Bias Adj Factor =0.87	2012 Bias Adj Factor =0.77
NEL 1	Fryston House, Grimsby	Roadside	No	**40.32**	32.37	34.51	31.60	30.0
NEL 2	Fryston House, Grimsby	Roadside	No	34.00	32.51	33.92	29.30	29.8
NEL 3	Fryston House, Grimsby	Roadside	No	37.19	34.17	34.41	28.20	28.9

Site ID	Location	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) μg/m^3				
				2008 Bias Adj Factor = 1.01	2009 Bias Adj Factor = 0.83	2010 Bias Adj Factor = 0.84	2011 Bias Adj Factor =0.87	2012 Bias Adj Factor =0.77
NEL 4	Kings Road, Immingham	Roadside	Yes	**41.16**	38.53	**41.54**	35.50	33.9
NEL 5	Kings Road, Immingham	Roadside	Yes	**43.51**	**39.98**	37.27	36.30	**40.2**
NEL 6	Kings Road, Immingham	Roadside	Yes	**41.13**	**41.36**	**43.97**	34.90	38.1
NEL 7	Pennels Cleethorpes	Roadside	No	20.81	22.58	24.53	19.40	23.8
NEL 8	Hewitts Circus Cleethorpes	Roadside	No	22.50	22.16	24.04	19.10	24.3
NEL 9	Toll Bar, Grimsby	Roadside	No	23.23	22.58	22.71	19.10	31.7
NEL 10	Riby Square 1 (112 Cleethorpe Road) , Grimsby	Roadside	Yes	**57.99**	**50.91**	**47.24**	**46.70**	**40.4***
NEL 11	Riby Square 1 (112 Cleethorpe Road) , Grimsby	Roadside	Yes	**57.49**	**50.35**	**47.29**	**46.20**	**42.6***
NEL 12	Riby Square 1 (112 Cleethorpe Road) , Grimsby	Roadside	Yes	**54.37**	**53.05**	**48.64**	**46.40**	**43.1***
NEL 13	113 Cleethorpe Road, Grimsby	Kerbside	Yes	**52.86**	**46.07**	**49.33**	**41.10**	**40.6***
NEL 14	123 Cleethorpe Road, Grimsby	Kerbside	Yes	**51.51**	**46.03**	**46.08**	**40.50**	**39.9***
NEL 15	197 Cleethorpe Road, Grimsby	Roadside	No	31.98	32.85	32.36	27.10	26.8

Site ID	Location	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) μg/m^3				
				2008 Bias Adj Factor = 1.01	2009 Bias Adj Factor = 0.83	2010 Bias Adj Factor = 0.84	2011 Bias Adj Factor =0.87	2012 Bias Adj Factor =0.77
NEL 16	Ramsdens, Cleethorpe Road, Grimsby	Roadside	No	35.90	32.45	35.48	28.20	27.8
NEL 17	42 Freeman Street, Grimsby	Roadside	No	32.19	27.04	33.97	28.70	27.9
NEL 18	76 Freeman Street, Grimsby	Kerbside	No	32.02	32.79	28.36	26.50	23.9
NEL 19	Pasture Street / Thomas Street, Grimsby	Roadside	No	31.22	30.11	**39.84**	31.10	27.7
NEL 20	Pasture Street / Edward Street Junction, Grimsby	Roadside	No	21.55	26.28	29.32	23.30	22.8
NEL 21	9 Pyewipe Road, Grimsby	Roadside	No	38.29	36.90	38.60	34.30	32.3
NEL 22	4 Blvd Avenue, Grimsby	Roadside	No	23.57	22.76	24.97	21.10	20.5
NEL 23	94 Cromwell Road, Grimsby	Roadside	No	33.79	29.30	31.92	25.50	22.5
NEL 24	Love Lane Corner, Grimsby	Roadside	No	31.22	28.80	32.21	27.50	24.9
NEL 25	Peaks Parkway & Welholme Road, Grimsby	Kerbside	No	**43.26**	**40.60**	**39.58**	**39.70**	35.7
NEL 26	Peaks Parkway & Weelsby Road, Grimsby	Kerbside	No	**42.70**	**40.39**	34.48	38.10	35.4
NEL 27	Louth Road & Waltham Road, Grimsby	Roadside	No	33.23	32.87	28.94	27.80	25.8

Site ID	Location	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) μg/m^3				
				2008 Bias Adj Factor = 1.01	2009 Bias Adj Factor = 0.83	2010 Bias Adj Factor = 0.84	2011 Bias Adj Factor =0.87	2012 Bias Adj Factor =0.77
NEL 28	40-42 High Street, Cleethorpes	Roadside	No	30.47	27.87	29.58	28.70	27.1
NEL 29	2-5 Alexandra Road, Cleethorpes	Roadside	No	29.80	29.58	25.76	23.80	22.9
NEL 30	14 Weelsby Road, Grimsby	Roadside	No	26.15	24.21	23.51	24.40	22.6
NEL 31	21 Laceby Road, Grimsby	Roadside	No	21.21	21.30	23.24	22.80	20.9
NEL 32	110 Bargate, Grimsby	Roadside	No	18.40	17.50	19.06	16.60	16.9
NEL 33	82 Bargate	Roadside	No	22.56	21.65	21.11	20.40	18.5
NEL 34	11 Scartho Road	Roadside	No	25.36	23.16	23.30	23.50	21.9
NEL 35	Victoria Street/Victoria Mill	Kerbside	No	N/A	N/A	N/A	N/A	**41.8**
NEL 36	Scartho Road/Cragston	Roadside	No	N/A	N/A	N/A	N/A	29.7
NEL 37	Great Coates/Yarborough	Roadside	No	N/A	N/A	N/A	N/A	30.4
NEL 38	Victoria Street West	Kerbside	No	N/A	N/A	N/A	N/A	27.5
NEL 39	Riby Square	Kerbside	No	N/A	N/A	N/A	N/A	33.8

In bold, exceedence of the NO_2 annual mean AQS objective of 40μg/m^3

*National bias adjustment factor 0.79 used at locations NEL 10,11,12,13 and 14 all other location using the local bias of 0.77.

See **Appendix A** for short term to long term data adjustment calculations at locations NEL 35,36,37,38 and 39

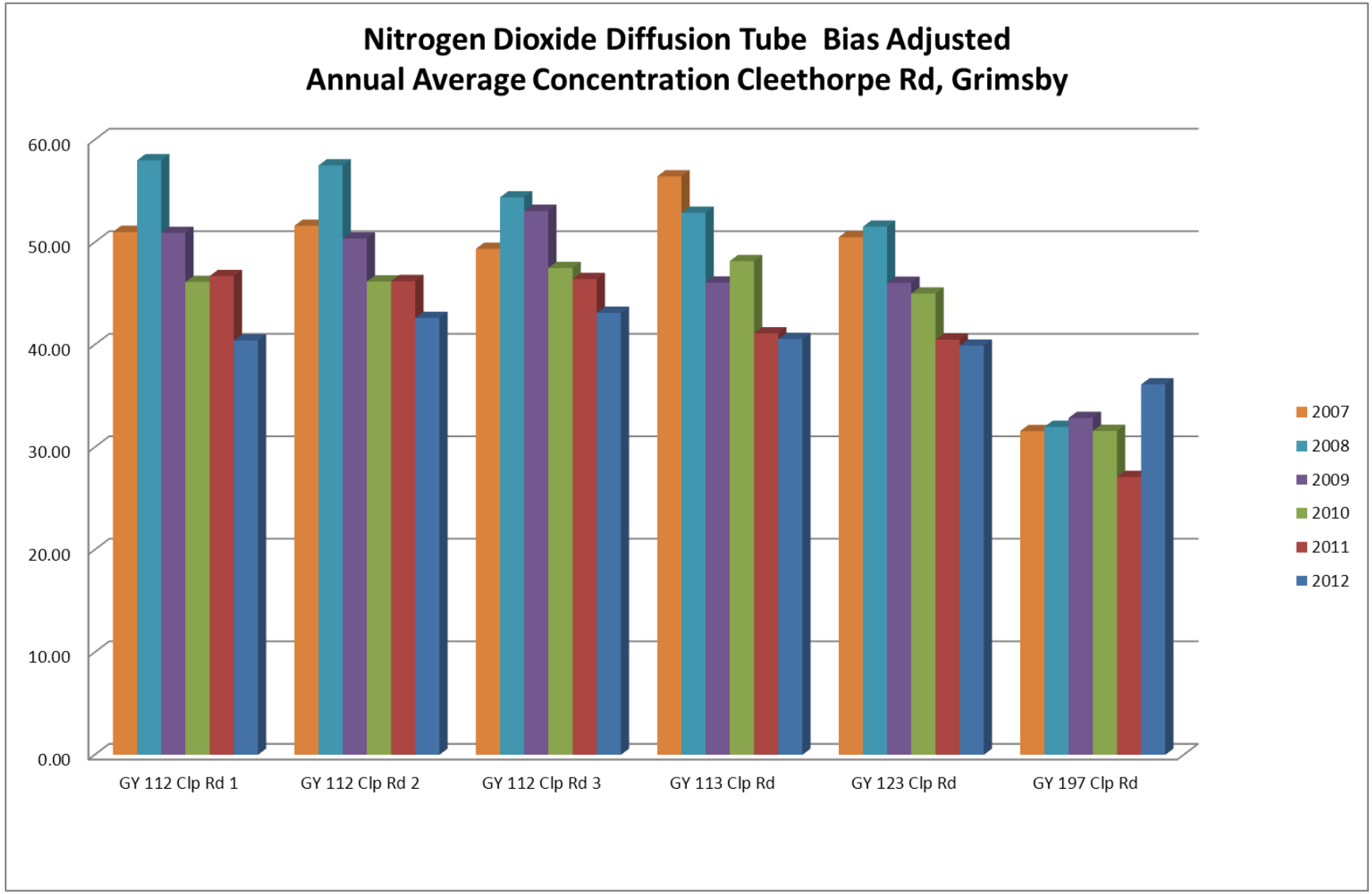
Data Analysis

The majority of diffusion tube concentrations remain below the national standard, and they will continue to be monitored over the next 12 month period, with the exception of NEL 20, 22, 29-34 inclusive. Data from the previous 5 years, as shown in Table 2.6 indicates that these locations have never exceeded and are well below the National Standard. Therefore North East Lincolnshire Council will no longer monitor at these locations.

As highlighted in Table 2.5 there are three areas in North East Lincolnshire that have monitored concentrations above the standard during 2012:

- Kings Road, Immingham: one of the co-located tubes had a reading of 40.2ug/m^3. The other 2 tubes had a reading of 33.9µg/m^3 and 38.1µg/m^3 both of which are under the target.
- Cleethorpe Road, Grimsby: the 5 tubes are recording concentrations of between 39.9- 43.1µg/m^3 which is above the National Standard. The Detailed Assessment 2009[(3)] for Cleethorpe Road (from the junction of Freeman Street and Nacton Junction) concluded that the annual mean NO_2 objective had been breached. North East Lincolnshire Council declared an Air Quality Management Area (AQMA) in September 2010. The trend graph in Figure 2.26 demonstrates that there has been an increase in concentration at Cleethorpe Road in 2012. At the present time an Action Plan is being produced.
- Victoria Street, Victoria Mills had a reading of 41.8µg/m^3. This figure was annualised from 7 months of diffusion tube data. North East Lincolnshire Council will continue to monitor at this location and review the data when a full 12 months is available.

Figure 2.26 Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites



2.3.3 Particulate Matter (PM_{10})

Table 2.6 Results of Automatic Monitoring for PM_{10}: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % [a]	Valid Data Capture 2012 % [b]	Confirm Gravimetric Equivalent (Y or N/A)	Annual Mean Concentration (µg/m^3)				
						2008* [c]	2009* [c]	2010* [c]	2011* [c]	2012 [c]
Immingham Kings Road	Roadside	Y	n/a	90	n/a	35.1	25.2	20.74	19.54	22.44
Immingham Woodlands Avenue	Background	N	n/a	94	n/a	27.4	26.3	26.00	28.21	26.21
Grimsby Fryston House	Roadside	N	n/a	96	n/a	29.7	28.6	28.04	29.52	24.45

Table 2.7 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 2012 % [b]	Confirm Gravimetric Equivalent (Y or N/A)	Number of Daily Means > 50µg/m^3				
						2008* [c]	2009* [c]	2010* [c]	2011* [c]	2012 [c]
Immingham Kings Road	Roadside	Y	n/a	90.0	n/a	**56**	24	3	6	10
Immingham Woodlands Avenue	Background	N	n/a	93.8	n/a	17	12	9	22	13
Grimsby Fryston House	Roadside	N	n/a	96.2	n/a	22	11	14	26	8

Figure 2.27 Trends in Annual Mean PM_{10} Concentrations

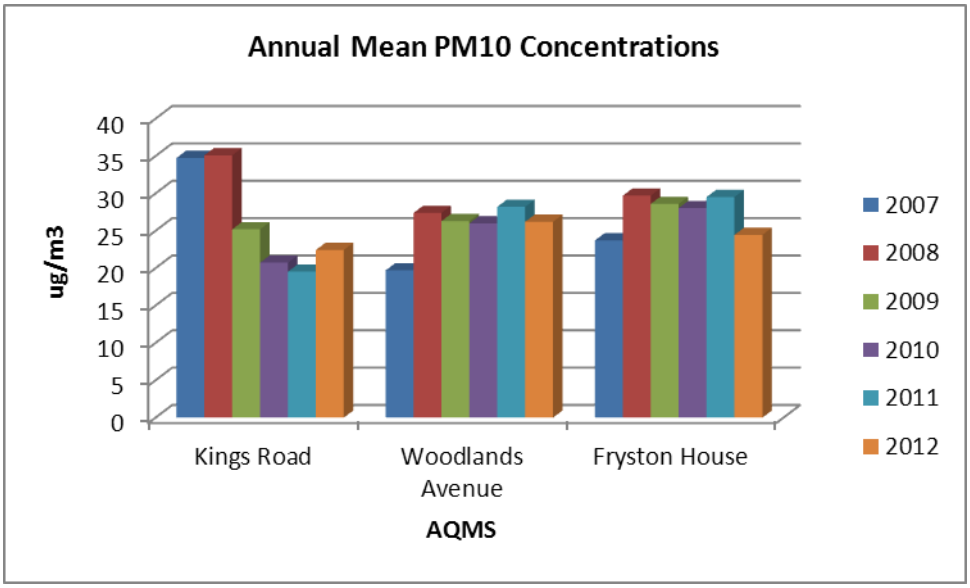
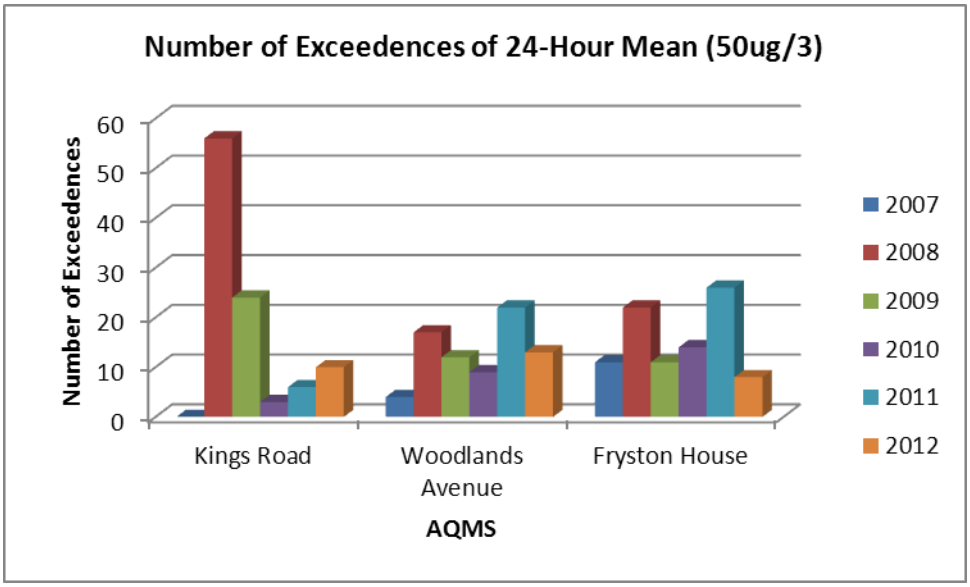


Figure 2.28 Trends in the 24-Hour Mean PM_{10} Concentrations



The 2012 results show that both PM_{10} annual mean objective (40µg/m^3) and the 24-Hour-Mean have been achieved at all three sites. Fryston House and Woodlands Avenue station data has remained stable over the past 4 years and in 2012 showed a reduction in both objective targets.

The Kings Road results have reduced significantly since 2008, with a slight increase in 2012. This reduction reflects the implementation of the Action Plan.

The Updating & Screening Assessment (USA) 2012[4] concluded that the data recorded for PM_{10} at Kings Road, Immingham was below the objective for the fourth consecutive year. Therefore, North East Lincolnshire Council requested approval from DEFRA to revoke the AQMA.

DEFRA confirmed in their assessment of the USA 2012 that there had been a downward trend in PM_{10} concentrations and the suggestion to explore the possibilities of revoking the AQMA was supported.

The real-time data collated in the AQMA for the last four years concludes that the Council will revoke the AQMA and exercises the powers conferred on it by Section 83 (2) (b) of the Environment Act 1995. A Revocation Order will been submitted to the Strategic Director Governance and Transformation for approval.

A Briefing Report will be submitted to Council, within the next 3 months for approval, and then the revocation notice will then be applied for.

2.3.4 Sulphur Dioxide (SO_2)

Table 2.8 Results of Automatic Monitoring for SO_2: Comparison with Objectives

Site ID	Site Type	Within AQMA ?	Valid Data Capture for Monitoring Period % [a]	Valid Data Capture 2012 % [b]	Number of: [c]		
					15-minute Means > 266µg/m^3	1-hour Means > 350µg/m^3	24-hour Means > 125µg/m^3
Immingham Kings Road	Roadside	Y	n/a	95.59	0	n/a	n/a

The result for the 1-hour and 24-hour objective is not available. The data management software used, only reports the 15-minute mean objective. However, this is the most stringent objective. The 15-minute mean AQS objective has not been breached at either site. It is therefore unlikely that the hourly and daily mean AQS objectives are at risk of being exceeded. Since 2009 there have been no breaches of the 15-minute mean objective recorded.

2.2.5 Benzene

Benzene monitoring is not undertaken within North East Lincolnshire.

2.2.6 Other Pollutants Monitored

The are no further pollutants monitored within North East Lincolnshire.

2.2.7 Summary of Compliance with AQS Objectives

North East Lincolnshire Council has examined the results from monitoring in the borough.
Concentrations outside of the two AQMA's are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

3 New Local Developments

Industrial Sources

North East Lincolnshire Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

North East Lincolnshire confirms that all the following have been considered:

- **Road traffic sources**
- **Other transport sources**
- **Industrial sources**
- **Commercial and domestic sources**
- **New developments with fugitive or uncontrolled sources.**

4 Local / Regional Air Quality Strategy

North East Lincolnshire Council are in the process of updating the Air Quality Strategy. The review of the current environmental related policies and strategies are incorporated into Development Services as a whole, which includes planning; transport; regeneration; and growth. The environmental infrastructure will support the Local Plan and incorporate all aspects of environmental management. The Environmental Strategy will be a key element in supporting and directing the Spatial Investment Framework.

Further development of a GIS system will ensure that environmental issues are considered in the early stages of development. The online mapping tool will include for example air quality management areas; planning policies; vehicle routing agreements; associated costs.

5 Planning Applications

5.1 Planning Applications with Approval

Location:	Alexandra Road South Immingham Dock Immingham N E Lincolnshire
Planning App:	DC/999/11/IMM
Proposal:	Construction of 49MW Biomass Combined Heat and Power Facility - the Reality Energy Centre (Immingham) - comprising plant and equipment (boiler, fuel store, turbine, air cooled condensers, utilities, 77m high flue and high level conveyor from dock) and supporting buildings (workshop, office space), to include the demolition of existing buildings on site.

As part of the planning process an Environmental Statement was produced as part of this statement and an Air Quality Assessment was undertaken. The results of this assessment indicates that releases to air from the proposed Biomass Combined Heat and Power will not have a significant impact on local air quality. The full Environmental Statement can be viewed at:

http://planning.nelincs.gov.uk/images/ocella_dv/dv_pl_files/DC_999_11_IMM/7%20rvi%20air%20quality%20final%20issue%202.pdf

Location:	Energy Park Way (Vireol) off Moody Lane Healing Grimsby
Planning App:	DC/978/11/WOL
Proposal:	Demolition of existing building, construction and operation of a 15MWe gas fired combined heat and power (CHP) plant and associated equipment, to include chimney to the height of 50m, with access from the approved bioethanol plant in accordance with applicant's agent letter dated 27th January 2012 and further information contained therein.

As part of the planning process an Environmental Statement was produced as part of this statement and an Air Quality Assessment was undertaken. The results of this assessment indicates that releases to air from the proposed Biomass Combined Heat and Power will not have a significant impact on local air quality. The full Environmental Statement can be viewed at:

http://planning.nelincs.gov.uk/images/ocella_dv/dv_pl_files/DC_978_11_WOL/DC_978_11_WOL-SD.pdf

5.2 New Developments in the Pre-Application Stage

- **Grimsby Bus Station Re-Development:** an air quality assessment has been carried out for the proposed bus station re-development. The proposal will alter traffic flows along Town Hall Road where residential properties exist

close to the kerbside. New bus stops will be added along the road which will have an impact on air quality.

6 Air Quality Planning Policies

Air quality is a material consideration in dealing with planning applications. All applications have to satisfy the requirements of the National Air Quality Standards and not lead to any significant increase in pollutants.

The Environment Team is consulted on planning applications where air quality issues need to be considered. When reviewing an application the following conditions are considered to help prevent a reduction in the quality of the local air:

- **Process Guidance**: The applicant must be informed that the proposed process requires a permit to operate as required by the Environmental Permitting (England and Wales) Regulations 2010.
- **Demolition Condition**: Prior to the commencement of demolition works a method statement outlining:
    - The method of demolition;
    - Measures to identify and remove asbestos if present;
    - Measures to prevent nuisance from dust and noise to the site operatives and the surrounding occupiers;

  shall be submitted in writing to the local authority for approval. Once approved the scheme shall be implemented and retained. Reason: In the interests of public safety and to protect the amenities of nearby residents
- **Dust Suppression (during construction):** A method statement including details of dust suppression techniques to be employed during the course of construction are to be submitted and agreed with the LPA prior to commencement of development. The techniques shall be applied as agreed. Reason: To ensure that dust emissions arising from the development are within acceptable levels, and in the interests of amenity.
- **No external manufacturing**

  No industrial activities shall take place other than within the buildings hereby approved. Reason: In the interests of residential amenity.

7 Local Transport Plans and Strategies

The Council's third Local Transport Plan (LTP3) has been created following consultation with local stakeholders and developed in accordance with the published guidance from the Department for Transport (DfT). The key local stakeholders included representatives from:

- Business, commerce and tourism.
- Ports, freight and logistics.
- Public sector organisations.
- Transport operators.
- Transport users including Parish Councils and Neighbourhood Groups.
- North East Lincolnshire Council Elected Members.

Further information on the Council's LTP3 can be found on North East Lincolnshire Council Website:
http://www.nelincs.gov.uk/council/planning-policy/evidence-base/local-documents/infrastructure/local-transport-plan/

8 Climate Change Strategies

LGA Climate Local will enable the Council to meet the national targets of reducing carbon emissions by 80% by 2050. Focus will be on ‘in-house’ emissions initially, then the approach will cover four main themes: carbon management; business resilience in a changing climate; supporting growth in renewables and energy security; and creating the foundations of low carbon economy.

The overall outcome of the Climate Local will support and provide guidance for:

- Raise awareness among council officers, elected members, partners and community of the environmental issues and challenges affecting North East Lincolnshire.
- Provide a strategy for an on-going programme of action by the Council on environment and climate change issues.

9 Implementation of Action Plans

9.1 Kings Road Immingham

9.1.1 Designation

The Updating & Screening Assessment (USA) 2012 concluded that the data recorded for PM_{10} at Kings Road, Immingham was below the objective for the fourth consecutive year. Therefore, North East Lincolnshire Council requested approval from DEFRA to revoke the AQMA.

9.1.2 The Next Step

DEFRA confirmed in their assessment of the USA 2012 that there had been a downward trend in PM_{10} concentrations and the suggestion to explore the possibilities of revoking the AQMA was supported.
The real-time data collated in the AQMA for the last four years concludes that the Council will revoke the AQMA and exercises the powers conferred on it by Section 83 (2) (b) of the Environment Act 1995. A Revocation Order will been submitted to the Strategic Director Governance and Transformation for approval.

A Briefing Report will be submitted to Council, within the next 3 months for approval, and then the revocation notice will then be applied for.

9.2 Cleethorpe Road, Grimsby

9.2.1 Designation

Following the conclusions of the Updating and Screening Assessment for air quality 2009[(5)], a Detailed Assessment of nitrogen dioxide (NO_2) was undertaken for Cleethorpe Road at Riby Square, Grimsby as part of the Local Air Quality Management regime. This assessment concluded that an Air Quality Management Area (AQMA) for an exceedence of the annual mean NO_2 objective was to be declared in September 2010.

The AQMA is formed along Cleethorpe Road between Freeman Street and Nacton Street.. The properties are predominantly occupied for commercial use. Those few

residential properties that do exist are found to be at first and second floor level. Based on available information, it is estimated that 27 properties lie within the exceedence area on Cleethorpe Road, this equates to an exposed population of 64 (based on North East Lincolnshire Council Sustainability Appraisal Report 2008 which suggested an average occupancy per household of 2.36)[6].

9.2.2 Further Assessment

The Further Assessment[7] indicated that road traffic was the primary source of NO_x emissions (55%). The emissions from Heavy Good Vehicles (HGVs) and buses are the most significant contributor (26% of NO_x and 23% of NO_2), followed by cars (18%of NO_x and 16% NO_2). Measures formulated in the Action Plan should aim to reduce the levels of NO_x/NO_2 within the AQMA by these amounts:

- Reduction on NO_2 required within the AQMA: 3.4µg/m^3 equivalent to a reduction of 8%
- Reduction on NO_X required within the AQMA: 9µg/m^3 equivalent to a reduction of 19%

As the primary source of the pollution in the AQMA is from road traffic, extensive consultation has taken place with Balfour Beatty who is responsible for the North East Lincolnshire Third Local Transport Plan (LTP3)[8]. Therefore the AQAP considers various traffic-related measures to deliver improvements to air quality.

9.2.3 Action Plan

The Council are to consider the adoption and implementation the seven measures in pursuit of the NO_2 annual mean air quality objective. Some of the identified measures require further study to facilitate which ones have the most potential for improvement against the cost occurred.

Table 9.1 lists the measures that the Council intend to investigate and pursue with the intent of reducing the annual mean NO2 objective within the AQMA at Cleethorpe Road.

Table 9.1: Summary of the Direct Measures Proposed for the AQMA.

Summary of the Direct Measures Proposed for the AQMA Measure	Description	Date to be Achieved by	Estimated Cost*
1	Traffic Management: Change traffic cycles at peak times	April 2013	£
2	New road infrastructure options: Relocate stacking option	October 2014	££
3	New road infrastructure options: Left turn only from Freeman Street (without pedestrian crossing)	October 2014	££
4	New road infrastructure options: Left turn only from Freeman Street (with pedestrian crossing)	October 2014	££
5	New road infrastructure options: Create a roundabout at Riby Square	October 2014	£££
6	Highway Signage: Improve signs at Lockhill for the dock traffic	April 2014	££
7	Pollution Control: Promotion of Air Quality within NELC	April 2014	£

9.2.4 The Next Step

Discussions with the Principal Traffic Engineer and LTP Programme Assistant from Balfour Beatty Workplace have taken place to consider the infrastructure options for the junction. This infrastructure design for the Riby Square junction with Freeman Street and the A180 are presently being assessed by Balfour Beatty.

At the present time the Council is waiting for the submission of the infrastructure plans for the junction. These scenarios will be submitted to Bureau Veritas for air quality dispersion modelling to assess the impact of the prosed changes.

The original timetable has been revised and the updated Action Plan will be submitted to DEFRA in October 2013.

10 Conclusions and Proposed Actions

10.1 Conclusions from New Monitoring Data

This report provides the details of the Progress Report 2013 for North East Lincolnshire Council (NELC). This report is the next stage in the guidance timetable, and follows DEFRA's Technical Guidance LAQM TG (09).

The Progress Report 2013 for air quality has concluded that it is not required to provide a Detailed Assessment for any of the pollutants at this stage:

- **Nitrogen Dioxide**
- **Sulphur Dioxide**
- **Particulates (PM_{10})**

Air Quality Monitoring Station Data

- **Cleethorpe Road, Grimsby:** The annual mean concentration at Cleethorpe Road was 55.31µg/m^3 which is over the National Standard . North East Lincolnshire Council are in the process of implementing an Action Plan.

Diffusion Tube Data

- **Kings Road, Immingham:** the nitrogen dioxide tubes recorded concentrations of between 33.9-40.2µg/m^3 the latter being just over the National Standard. The average of the triplicate is 37.4µg/m^3 .
- **Victoria Street/Victoria Mills:** the nitrogen dioxide tube at this location had a reading of 41.8 µg/m^3. This figure was annualised from 7 months of diffusion tube data, North East Lincolnshire Council will continue to monitor at this location and review the data when a full 12 months is available.
- **Cleethorpe Road, Grimsby:** the nitrogen dioxide tubes recorded concentrations of between 39.9-43.1µg/m^3 which are over the National Standard. North East Lincolnshire Council are in the process of implementing an Action Plan.

10.2 Conclusions relating to New Local Developments

North East Lincolnshire Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

10.3 Other Conclusions

Implementation of Air Quality Action Plans

- **Kings Road Immingham Air Quality Management Area**

The real-time data collated in the AQMA for the last four years concludes that the Council should revoke the AQMA and exercise the powers conferred on it by Section 83 (2) (b) of the Environment Act 1995. A Revocation Order will been submitted to the Strategic Director Governance and Transformation for approval.

- **Cleethorpe Road, Grimsby Air Quality Management Area**

The annual mean concentration at Cleethorpe Road continued to breach the exceedence level. The Draft Action Plan was submitted to DEFRA in October 2012 and North East Lincolnshire Council is continuing to work on the implementation of the Plan.

10.4 Proposed Actions

Change Monitoring Programme

The majority of diffusion tube concentrations remain below the national standard, and they will continue to be monitored over the next 12 month period, with the exception of NEL 20, 22, 29-34 inclusive. Data from the previous 5 years, as shown in Table 2.6 indicates that these locations have never exceeded and are well below the National Standard. Therefore North East Lincolnshire Council will no longer monitor at these locations.

Timetable of Reports to be Submitted to DEFRA:

- Action Plan October 2013 Cleethorpe Road, Grimsby AQMA
- Progress Report April 2014

11 References

1. Technical Guidance LAQM TG(09): DEFRA 2009
2. Local Bias Adjustment Factor
   http://laqm.defra.gov.uk/bias-adjustment-factors/local-bias.html
3. Detailed Assessment Cleethorpe Road 2009
   http://www.nelincs.gov.uk/resident/environment/air-quality/air-quality-reports/
4. Updating and Screening Assessment 2012
   http://www.nelincs.gov.uk/resident/environment/air-quality/air-quality-reports/
5. Updating and Screening Assessment 2009
   http://www.nelincs.gov.uk/resident/environment/air-quality/air-quality-reports/
6. North East Lincolnshire Council Sustainability Appraisal Report 2008
7. Further Assessment Cleethorpe Road 2012
   http://www.nelincs.gov.uk/resident/environment/air-quality/air-quality-reports/
8. North East Lincolnshire Third Local Transport Plan (LTP3)
   http://www.nelincs.gov.uk/council/planning-policy/evidence-base/local-documents/infrastructure/local-transport-plan/

Appendices

Appendix A: Diffusion Tubes

Diffusion Tubes Nitrogen Dioxide QA/QC

The tubes are supplied and analysed by Environmental Scientifics Group (ESG) and are analysed in accordance with ESG's Standard Operating Procedure HS/WI/1015 issue 15. This method meets the guidelines set out in DEFRA's Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance. The tubes were analysed using the 50:50 actetone: triethanolamine method.

This laboratory participates in the Workplace Analysis Scheme for Proficiency (WASP) for nitrogen dioxide tube analysis and the Annual Field Inter-Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, therefore ensure NO_2 concentrations reported are of a high standard. During rounds 111 – 118 of WASP performance scoring, ESG have achieved 100% (appendix A). The tubes are replaced in compliance with the National Timetable (?).

Laboratory summary performance for WASP NO_2 PT rounds 111-118

Table 1: Laboratory summary performance for WASP NO_2 PT rounds 111 - 118

The following table lists those UK laboratories undertaking LAQM activities that have participated in recent HSL WASP NO_2 PT rounds and the percentage (%) of results submitted which were subsequently determined to be satisfactory based upon a z-score of ≤ ± 2 as defined above.

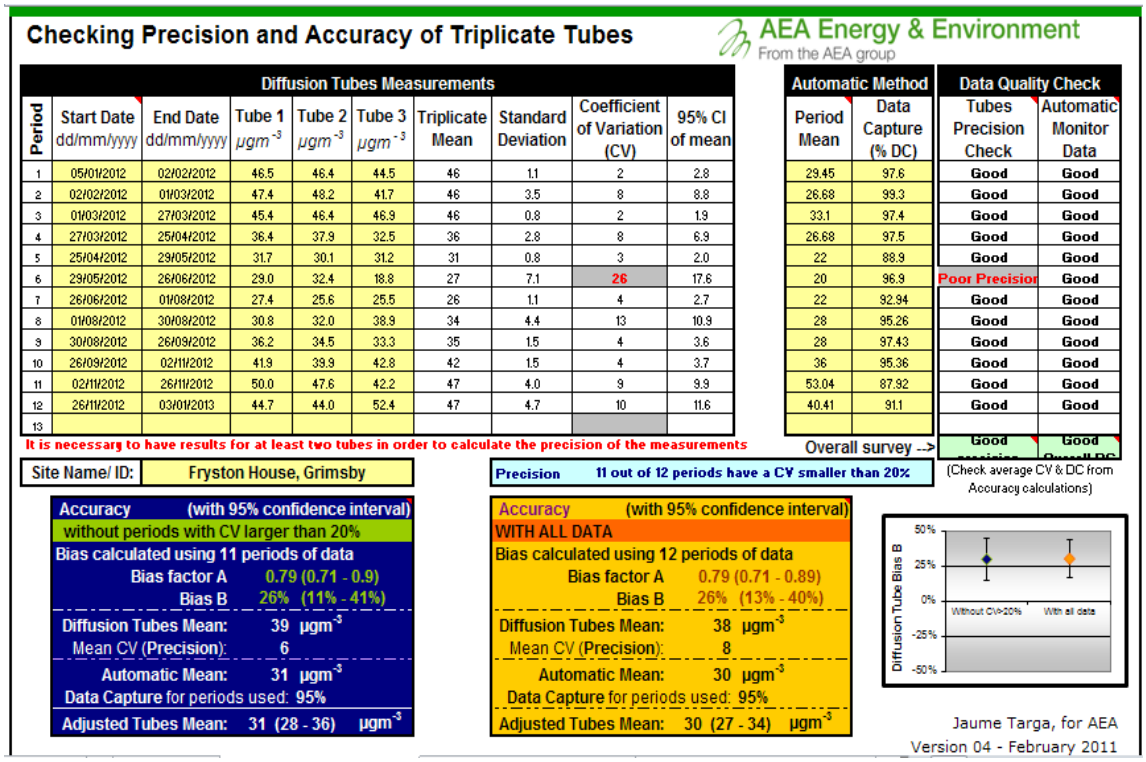
WASP Round	WASP R111	WASP R112	WASP R113	WASP R114	WASP R115	WASP R116	WASP R117	WASP R118
Round conducted in the period	October – December 2010	January - March 2011	April - June 2011	July - September 2011	October - December 2011	January – March 2012	April – June 2012	July – September 2012
Aberdeen Scientific Services	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Bristol City Council [6]	100 %	100 %	100 %	100 %	100 %	-	-	-
Cardiff Scientific Services	75 %	100 %	100 %	100 %	75 %	100 %	100 %	100 %
Edinburgh Scientific Services	100 %	100 %	100 %	100 %	0 %	100 %	100 %	100 %
Environmental Services Group, Didcot (formerly Bureau Veritas Laboratories, Glasgow and Harwell Scientific) [1] [2]	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Exova (formerly Clyde Analytical)	100 %	100 %	100 %	0 %	75 %	0 %	0 %	100 %
Glasgow Scientific Services	100 %	100 %	100 %	100 %	100 %	100 %	50 %	100 %
Gradko International [2]	100 %	100 %	100 %	100 %	37.5 %	100 %	100 %	100 %
Kent Scientific Services	100 %	50 %	100 %	100 %	75 %	75 %	100 %	75 %
Kirklees MBC	0 %	100 %	0 %	0 %	50 %	100 %	100 %	75 %
Lambeth Scientific Services	100 %	50 %	25 %	100 %	25 %	75 %	100 %	0 %
Lancashire County Analysts [3]	100 %	75 %	-	-	-	-	-	-
Milton Keynes Council	100 %	100 %	75 %	100 %	100 %	100 %	100 %	75 %
Northampton Borough Council	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Somerset Scientific Services [4]	-	-	-	-	100 %	100 %	100 %	100 %
South Yorkshire Air Quality Samplers	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Staffordshire County Council	100 %	100 %	100 %	100 %	100 %	100 %	100 %	75 %
Tayside Scientific Services (formerly Dundee CC)	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Walsall MBC [5]	100 %	-	-	-	-	-	-	-
West Yorkshire Analytical Services	100 %	75 %	75 %	100 %	100 %	75 %	75 %	50 %

[1] Bureau Veritas laboratory and Harwell Scientific now part of ESG Group.
[2] Participant subscribes to two sets of test samples (2 x 4 test samples) in each WASP PT round.
[3] No longer involved in NO_2 diffusion tube measurements from R113.
[4] New participant from R115.
[5] No longer involved in NO_2 diffusion tube measurements from R112.
[6] No longer involved in NO_2 diffusion tube measurements from R116.

Bias Adjustment for Diffusion Tube Data.

During 2012 North East Lincolnshire Council had three co-location sites with “good” precision and high data capture. The local bias adjustment factor for each individual location was calculated using the “LAQM Tool” described in section A1.191 of LAQM TG (09)

Local Bias Adjustment Factor Fryston House, Grimsby



Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Automatic Method: Period Mean	Automatic Method: Data Capture (% DC)	Data Quality Check: Tubes Precision Check	Data Quality Check: Automatic Monitor Data
1	05/01/2012	02/02/2012	46.5	46.4	44.5	46	1.1	2	2.8	29.45	97.6	Good	Good
2	02/02/2012	01/03/2012	47.4	48.2	41.7	46	3.5	8	8.8	26.68	99.3	Good	Good
3	01/03/2012	27/03/2012	45.4	46.4	46.9	46	0.8	2	1.9	33.1	97.4	Good	Good
4	27/03/2012	25/04/2012	36.4	37.9	32.5	36	2.8	8	6.9	26.68	97.5	Good	Good
5	25/04/2012	29/05/2012	31.7	30.1	31.2	31	0.8	3	2.0	22	88.9	Good	Good
6	29/05/2012	26/06/2012	29.0	32.4	18.8	27	7.1	26	17.6	20	96.9	Poor Precision	Good
7	26/06/2012	01/08/2012	27.4	25.6	25.5	26	1.1	4	2.7	22	92.94	Good	Good
8	01/08/2012	30/08/2012	30.8	32.0	38.9	34	4.4	13	10.9	28	95.26	Good	Good
9	30/08/2012	26/09/2012	36.2	34.5	33.3	35	1.5	4	3.6	28	97.43	Good	Good
10	26/09/2012	02/11/2012	41.9	39.9	42.8	42	1.5	4	3.7	36	95.36	Good	Good
11	02/11/2012	26/11/2012	50.0	47.6	42.2	47	4.0	9	9.9	53.04	87.92	Good	Good
12	26/11/2012	03/01/2013	44.7	44.0	52.4	47	4.7	10	11.6	40.41	91.1	Good	Good
13													

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

Overall survey --> Good Good

Site Name/ ID: Fryston House, Grimsby

Precision: 11 out of 12 periods have a CV smaller than 20%

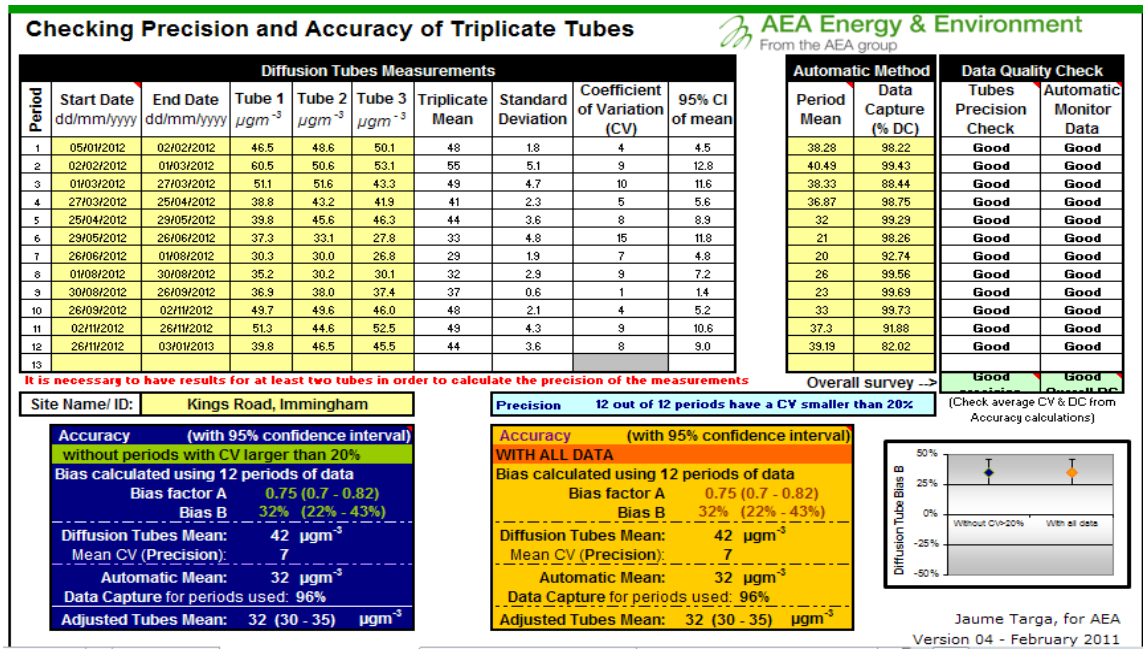
(Check average CV & DC from Accuracy calculations)

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 11 periods of data
Bias factor A 0.79 (0.71 - 0.9)
Bias B 26% (11% - 41%)
Diffusion Tubes Mean: 39 µgm^{-3}
Mean CV (Precision): 6
Automatic Mean: 31 µgm^{-3}
Data Capture for periods used: 95%
Adjusted Tubes Mean: 31 (28 - 36) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 12 periods of data
Bias factor A 0.79 (0.71 - 0.89)
Bias B 26% (13% - 40%)
Diffusion Tubes Mean: 38 µgm^{-3}
Mean CV (Precision): 8
Automatic Mean: 30 µgm^{-3}
Data Capture for periods used: 95%
Adjusted Tubes Mean: 30 (27 - 34) µgm^{-3}

Jaume Targa, for AEA
Version 04 - February 2011

Local Bias Adjustment Factor Kings Road, Immingham



Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Automatic Method: Period Mean	Automatic Method: Data Capture (% DC)	Data Quality Check: Tubes Precision Check	Data Quality Check: Automatic Monitor Data
1	05/01/2012	02/02/2012	46.5	48.6	50.1	48	1.8	4	4.5	38.28	98.22	Good	Good
2	02/02/2012	01/03/2012	60.5	50.6	53.1	55	5.1	9	12.8	40.49	99.43	Good	Good
3	01/03/2012	27/03/2012	51.1	51.6	43.3	49	4.7	10	11.6	38.33	88.44	Good	Good
4	27/03/2012	25/04/2012	38.8	43.2	41.9	41	2.3	5	5.6	36.87	98.75	Good	Good
5	25/04/2012	29/05/2012	39.8	45.6	46.3	44	3.6	8	8.9	32	99.29	Good	Good
6	29/05/2012	26/06/2012	37.3	33.1	27.8	33	4.8	15	11.8	21	98.26	Good	Good
7	26/06/2012	01/08/2012	30.3	30.0	26.8	29	1.9	7	4.8	20	92.74	Good	Good
8	01/08/2012	30/08/2012	35.2	30.2	30.1	32	2.9	9	7.2	26	99.56	Good	Good
9	30/08/2012	26/09/2012	36.9	38.0	37.4	37	0.6	1	1.4	23	99.69	Good	Good
10	26/09/2012	02/11/2012	49.7	49.6	46.0	48	2.1	4	5.2	33	99.73	Good	Good
11	02/11/2012	26/11/2012	51.3	44.6	52.5	49	4.3	9	10.6	37.3	91.88	Good	Good
12	26/11/2012	03/01/2013	39.8	46.5	45.5	44	3.6	8	9.0	39.19	82.02	Good	Good
13													

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

Overall survey --> Good Good

Site Name/ ID: Kings Road, Immingham

Precision: 12 out of 12 periods have a CV smaller than 20%

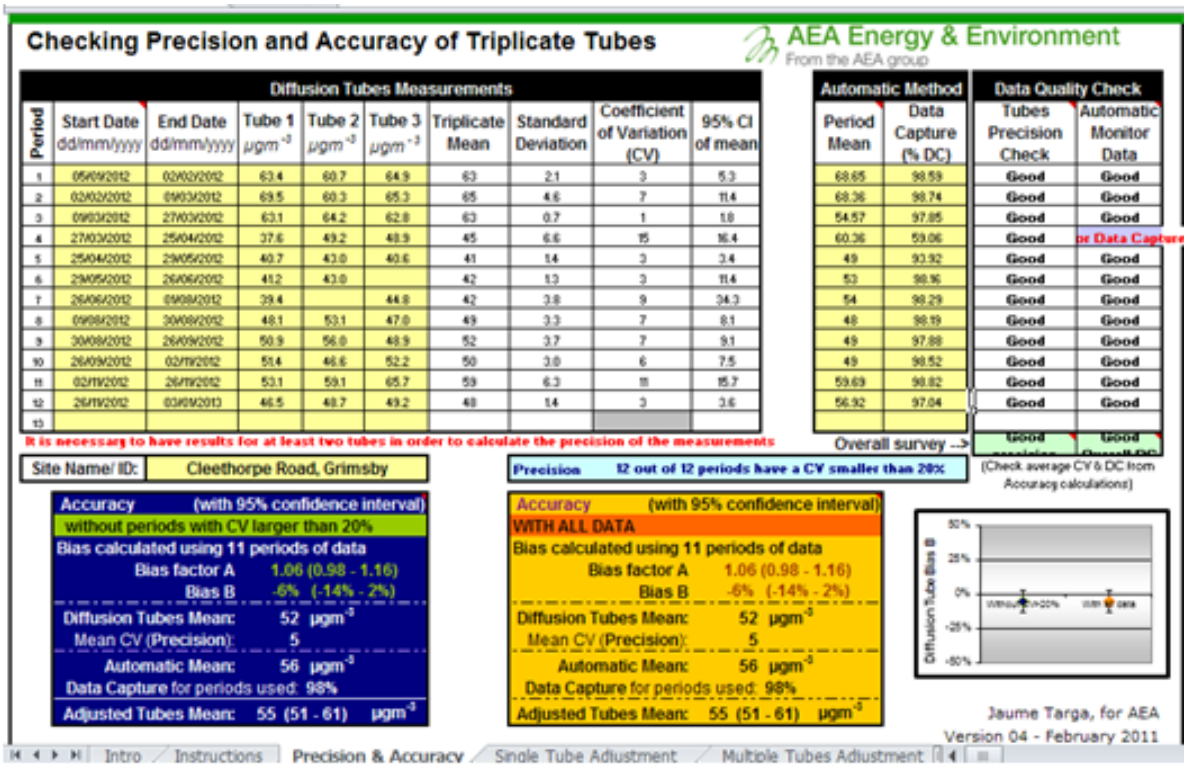
(Check average CV & DC from Accuracy calculations)

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 12 periods of data
Bias factor A 0.75 (0.7 - 0.82)
Bias B 32% (22% - 43%)
Diffusion Tubes Mean: 42 µgm^{-3}
Mean CV (Precision): 7
Automatic Mean: 32 µgm^{-3}
Data Capture for periods used: 96%
Adjusted Tubes Mean: 32 (30 - 35) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 12 periods of data
Bias factor A 0.75 (0.7 - 0.82)
Bias B 32% (22% - 43%)
Diffusion Tubes Mean: 42 µgm^{-3}
Mean CV (Precision): 7
Automatic Mean: 32 µgm^{-3}
Data Capture for periods used: 96%
Adjusted Tubes Mean: 32 (30 - 35) µgm^{-3}

Jaume Targa, for AEA
Version 04 - February 2011

Local Bias Adjustment Factor Cleethorpe Road, Grimsby



Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	05/01/2012	02/02/2012	63.4	60.7	64.9	63	2.1	3	5.3
2	02/02/2012	01/03/2012	69.5	60.3	65.3	65	4.6	7	11.4
3	01/03/2012	27/03/2012	63.1	64.2	62.8	63	0.7	1	1.8
4	27/03/2012	25/04/2012	37.6	49.2	48.9	45	6.6	15	16.4
5	25/04/2012	29/05/2012	40.7	43.0	40.6	41	1.4	3	3.4
6	29/05/2012	26/06/2012	41.2	43.0		42	1.3	3	11.4
7	26/06/2012	01/08/2012	39.4		44.8	42	3.8	9	34.3
8	01/08/2012	30/08/2012	48.1	53.1	47.0	49	3.3	7	8.1
9	30/08/2012	26/09/2012	50.9	56.0	48.9	52	3.7	7	9.1
10	26/09/2012	02/11/2012	51.4	46.6	52.2	50	3.0	6	7.5
11	02/11/2012	26/11/2012	53.1	59.1	65.7	59	6.3	11	15.7
12	26/11/2012	03/01/2013	46.5	48.7	49.2	48	1.4	3	3.6
13									

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
68.65	98.59	Good	Good
68.36	98.74	Good	Good
54.57	97.85	Good	Good
60.36	59.06	Good	or Data Capture
49	90.92	Good	Good
53	98.16	Good	Good
54	98.29	Good	Good
48	98.19	Good	Good
49	97.88	Good	Good
49	98.52	Good	Good
59.69	98.82	Good	Good
56.92	97.04	Good	Good
Overall survey -->		Good	Good

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

Site Name/ ID: Cleethorpe Road, Grimsby

Precision: 12 out of 12 periods have a CV smaller than 20%

(Check average CV & DC from Accuracy calculations)

Accuracy (with 95% confidence interval)
without periods with CV larger than 20%
Bias calculated using 11 periods of data
Bias factor A 1.06 (0.98 - 1.16)
Bias B -6% (-14% - 2%)
Diffusion Tubes Mean: 52 µgm^{-3}
Mean CV (Precision): 5
Automatic Mean: 56 µgm^{-3}
Data Capture for periods used: 98%
Adjusted Tubes Mean: 55 (51 - 61) µgm^{-3}

Accuracy (with 95% confidence interval)
WITH ALL DATA
Bias calculated using 11 periods of data
Bias factor A 1.06 (0.98 - 1.16)
Bias B -6% (-14% - 2%)
Diffusion Tubes Mean: 52 µgm^{-3}
Mean CV (Precision): 5
Automatic Mean: 56 µgm^{-3}
Data Capture for periods used: 98%
Adjusted Tubes Mean: 55 (51 - 61) µgm^{-3}

Jaume Targa, for AEA
Version 04 - February 2011

Intro | Instructions | Precision & Accuracy | Single Tube Adjustment | Multiple Tubes Adjustment

Co-location Bias Adjustment Factors for 2012

Source	Bias adjustment Factor 2012
Fryston House, Grimsby	0.79
Kings Road, Immingham	0.75
Cleethorpe Road, Grimsby	1.06

National Bias Adjustment Factor 2012

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/13

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2013
LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1:	Step 2:	Step 3:	Step 4:
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data[2]	If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[2] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[6]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in acetone	2012	KS	London Borough of Richmond upon Thames	9	46	41	11.8%	G	**0.89**
West Yorkshire Analytical Services	50% TEA in acetone	2012	KS	Wakefield MDC	11	59	58	2.3%	G	**0.98**
Aberdeen Scientific Services	20% TEA in water	2012		**Overall Factor[3] (1 study)**					Use	**0.83**
Edinburgh Scientific Services	50% TEA in acetone	2012		**Overall Factor[3] (1 study)**					Use	**0.86**
ESG Didcot	20% TEA in water	2012		**Overall Factor[3] (2 studies)**					Use	**0.69**
ESG Didcot	50% TEA in acetone	2012		**Overall Factor[3] (26 studies)**					Use	**0.79**
ESG Glasgow	20% TEA in water	2012		**Overall Factor[3] (1 study)**					Use	**0.71**
ESG Glasgow	50% TEA in acetone	2012		**Overall Factor[3] (5 studies)**					Use	**0.84**
Exova	20% TEA in water	2012		**Overall Factor[3] (1 study)**					Use	**0.89**
Glasgow Scientific Services	20% TEA in water	2012		**Overall Factor[3] (10 studies)**					Use	**0.95**
Gradko	20% TEA in water	2012		**Overall Factor[3] (27 studies)**					Use	**0.97**
Gradko	50% TEA in acetone	2012		**Overall Factor[3] (18 studies)**					Use	**1.01**
Kent Scientific Services	20% TEA in water	2012		**Overall Factor[3] (1 study)**					Use	**0.82**
Kirklees Council	50% TEA in acetone	2012		**Overall Factor[3] (5 studies)**					Use	**0.80**
Lambeth Scientific Services	50% TEA in acetone	2012		**Overall Factor[3] (2 studies)**					Use	**0.91**
Milton Keynes Council	20% TEA in water	2012		**Overall Factor[3] (1 study)**					Use	**0.81**
Northampton BC	20% TEA in water	2012		**Overall Factor[3] (3 studies)**					Use	**0.75**
Somerset County Council	20% TEA in water	2012		**Overall Factor[3] (2 studies)**					Use	**0.95**
South Yorkshire Air Quality Samplers	50% TEA in acetone	2012		**Overall Factor[3] (3 studies)**					Use	**0.80**
Staffordshire Scientific Services	20% TEA in water	2012		**Overall Factor[3] (13 studies)**					Use	**0.86**
Tayside Scientific Services	20% TEA in water	2012		**Overall Factor[3] (1 study)**					Use	**0.90**
West Yorkshire Analytical Services	50% TEA in acetone	2012		**Overall Factor[3] (10 studies)**					Use	**0.79**

Discussion of Choice of Factor to Use

The average bias adjustment factor from Fryston House, Grimsby and Kings Road, Immingham is **0.77**, this local bias adjustment factor was used for all the diffusion tubes in North East Lincolnshire with the exception of tubes located in the Cleethorpe Road AQMA in which the national bias adjustment factor of **0.79** was used.

Upon submission of the co-location questionnaire it was highlighted that the Cleethorpe Road data couldn't be used in the study due to the diffusion tubes being located too far away from the real time monitor. With this point raised North East Lincolnshire Council have chosen to use the national factor for the tubes in this area. For 2013 the tubes have been relocated 1.5m away from the monitor to be able to use this co-location data in the future.

North East Lincolnshire Council chose to use the bias adjustment factor from the local study for the majority of diffusion tube monitoring due to discussions in Box 3.3 of LAQM TG (09), the local factor may be more representative for studies with co-location studies with "good precision" and high data capture.

Short-term to Long-term Data adjustment

Adjustment Calculation for Diffusion tubes NEL 35,36,37 and 38

Site	Site Type	Annual Mean ($\mu g/m^3$)	Period Mean ($\mu g/m^3$)	Ratio
NEL 30		29.32	27.33	1.073
NEL 31		27.18	25.91	1.049
NEL 32		21.98	21.01	0.990
NEL 33		24.03	22.21	1.082
Average				1.049

Period mean=months June to December

Measured mean for 7months for **NEL35** = 51.71

M x R = 51.71 x 1.049 = 54.24 x (bias adjustment) 0.77 = **41.76 µg/m^3**

Measured mean for 7months for **NEL36** = 36.77

M x R = 36.77 x 1.049 = 38.57 x (bias adjustment) 0.77 = **29.70 µg/m^3**

Measured mean for 7months for **NEL37** = 37.62

M x R = 37.62 x 1.049 = 39.46 x (bias adjustment) 0.77 = **30.38 µg/m^3**

Measured mean for 7months for **NEL38** = 34.07

M x R = 34.07 x 1.049 = 35.74 x (bias adjustment) 0.77 = **27.52 µg/m^3**

Adjustment Calculation for Diffusion tube NEL 39

Site	Site Type	Annual Mean ($\mu g/m^3$)	Period Mean ($\mu g/m^3$)	Ratio
NEL 30		29.32	33.43	0.877
NEL 31		27.18	32.53	0.836
NEL 32		21.98	23.87	0.921
NEL 33		24.03	28.53	0.842
Average				0.869

Period mean=months October to December

Measured mean for 3 months for **NEL39** = 50.53

M x R = 50.53 x 0.869 = 43.91 x (bias adjustment) 0.77 = **33.81µg/m^3**

Monthly Diffusion Tube Results

Site Details	2012 All concentrations are in ugm^{-3}												Annual Mean	Bias Factor	Bias Adjusted
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec			
Grimsby 1	46.5	47.4	45.4	36.4	31.7	29.0	27.4	30.8	36.2	41.9	50	44.7	38.95	0.77	30.0
Grimsby 2	46.4	48.2	46.4	37.9	30.1	32.4	25.6	32	34.5	39.9	47.6	44.0	38.75	0.77	29.8
Grimsby 3	44.5	41.7	46.9	32.5	31.2	18.8	25.5	38.9	33.3	42.8	42.2	52.4	37.56	0.77	28.9
Immingham 4	46.5	60.5	51.1	38.8	39.8	37.3	30.3	35.2	36.9	49.7	51.3	51.4	44.07	0.77	33.9
Immingham 5	48.6	50.6	51.6	43.2	45.6	33.1	30.0	30.2	38.0	49.6	44.6	57.3	52.24	0.77	40.2
Immingham 6	50.1	53.1	43.3	41.9	46.3	27.8	26.8	30.1	37.4	46	52.5	39.4	49.47	0.77	38.1
Cleethorpes 7	29.8	31.1	31.6	22.5	15.2	15.3	15.7	18.6	28.9	30.8	34.5	35.0	30.90	0.77	23.8
Cleethorpes 8	39.5	missing	34.4	missing	19.8	22.1	25.5	25.9	26.3	33.5	48.5	40.4	31.59	0.77	24.3
Cleethorpes 9	44.8	43.3	47.2	36.1	28.4	35.9	29.7	36.5	37	53.8	55.1	45.6	41.12	0.77	31.7
Grimsby 10	63.4	69.5	63.1	37.6	40.7	41.2	39.4	48.1	50.9	51.4	53.1	55.3	51.14	0.79	40.4
Grimsby 11	60.7	60.3	64.2	49.2	43.0	43.0	missing	53.1	56	46.6	59.2	58.1	53.95	0.79	42.6
Grimsby 12	64.9	65.3	62.8	48.9	40.6	missing	44.8	47	48.9	52.2	65.7	59.1	54.56	0.79	43.1
Grimsby 13	61.1	59.6	62.6	55	55.4	40.6	39.9	40.2	48.6	missing	48.9	52.8	51.34	0.79	40.6
Grimsby 14	60.2	62.9	57.1	48.6	46.8	41.6	38.2	44.1	42.8	52.7	48.5	62.8	50.53	0.79	39.9
Grimsby 15	41.5	42.8	37.9	35.4	29.3	26.3	24.4	33.6	29.7	35.5	36.4	45.4	34.85	0.77	26.8
Grimsby 16	43.2	41.7	41.1	40.7	37.9	27.1	29.0	27.1	25	36.5	36.9	47.3	36.13	0.77	27.8
Grimsby 17	44.3	40.6	40.9	35.8	31.6	24.7	missing	31.5	30.1	36.6	42	40.7	36.25	0.77	27.9
Grimsby 18	46.2	39.2	38.7	28.3	23.9	19.5	22.3	23	25.1	26.2	39.6	39.9	30.99	0.77	23.9
Grimsby 19	39.9	41.7	42.9	30.9	missing	31.2	27.3	31.6	29.1	37.5	43.2	40.5	35.98	0.77	27.7
Grimsby 20	39.4	29.6	missing	29.7	23.6	1.8	missing	20.8	22.6	31.2	32.2	35.2	29.57	0.77	22.8
Grimsby 21	49.4	51.1	49.3	39.6	38.9	32.8	32.9	33.5	32.9	46.3	42.2	54.6	41.96	0.77	32.3
Grimsby 22	36.5	31.7	28.5	18.4	21.1	18.2	21.7	25.7	18.2	27.2	34.7	37.2	26.59	0.77	20.5
Grimsby 23	40.7	missing	31.5	30.7	28.0	22.2	23.6	23.6	25.6	missing	missing	36.7	29.18	0.77	22.5
Grimsby 24	41.3	38.5	29	33.8	29.5	27.3	28.5	26.9	27.7	31.7	36.6	37.5	32.36	0.77	24.9
Grimsby 25	57.1	52.4	49.8	45.1	35.9	41.7	36.8	38.8	41.3	48.5	52.9	55.5	46.32	0.77	35.7
Grimsby 26	59.9	56.2	59.1	43.3	30.9	missing	28.7	36.6	39.6	41.4	56.3	54.4	46.04	0.77	35.4
Grimsby 27	44.5	37.8	36.9	34.8	29.0	27.2	25.9	25.8	30	37.8	40.4	32.2	33.53	0.77	25.8
Cleethorpes 28	41.4	29.8	43.5	38.4	37.0	27.5	24.0	29.9	28	37.5	42.2	43.6	35.23	0.77	27.1
Cleethorpes 29	missing	39.7	missing	27.6	24.8	21.2	22.3	23.3	27.6	31.2	37.5	41.6	29.68	0.77	22.9
Grimsby 30	39.3	36.5	35.2	25.6	23.9	17.8	36.6	15.1	21.5	27.8	29	43.5	29.32	0.77	22.6
Grimsby 31	36.3	32.0	31.1	23.2	22.2	26.9	19.0	20.8	17.1	27.2	37.4	33.0	27.18	0.77	20.9
Grimsby 32	28.7	25.9	26.3	19	16.8	16.9	14.5	21.3	22.8	22.7	21.4	27.5	21.98	0.77	16.9
Grimsby 33	30.7	27.6	28.2	24.3	22.0	18.6	15.4	19.5	16.4	23.8	31.8	30.0	24.03	0.77	18.5
Grimsby 34	34.3	34.9	29.6	24.6	23.7	21.1	18.7	21.9	28.4	29	35.4	39.8	28.45	0.77	21.9
NEL 35						35.4	39.1	45.9	49.8	56.4	68.4	67	51.71	0.77	39.8
NEL 36						29.1	45.9	37.1	25.3	34.5	41	44.5	36.77	0.77	28.3
NEL 37						24.7	25.7	28.7	missing	38	46.9	61.7	37.62	0.77	29.0
NEL 38						28.0	27.0	missing	32.9	37.4	42.2	36.9	34.07	0.77	26.2
NEL 39										44.7	47.3	59.6	50.53	0.77	38.9

Appendix B:Annual Summaries from the Air Quality Monitoring Stations.

Scaled.

CLEETHORPE RD AQM STATION

01/01/2012 to 31/12/2012

Channel	Units	Average	Level	Exceedences	Notes
NO2	ppb	1h	105	3	

Channel	Units	% Valid	Mean	Max 1hr RAv	Max 8hr RAv	Max 24hr RAv	98%ile
NO2	ppb	94.79	28.96 x1.91 =55.31	157.69	90.35	60.44	67.50

Channel	Units	% Valid	Mean	Max 1hr RAv	Max 8hr RAv	Max 24hr RAv	90%ile	99.7%ile	99.8%ile	99.0%ile	98%ile	99.9%ile
NO2	ppb	94.79	28.96	157.69	90.35	60.44	51.87	82.86	86.09	72.57	67.50	92.42

SCANNED

GRIMSBY AQM STATION

01/01/2012 to 31/12/2012

Channel	Units	Average	Level	Exceedences	Notes
NO2	ppb	1h	105	0	
DUST	ug/m3	24h	50	8	

Channel	Units	% Valid	Mean	Max 1hr RAv	Max 8hr RAv	Max 24hr RAv	98%ile
NO2	ppb	94.52	15.52 x1.91 = 29.64	87.15	65.09	52.18	48.34
DUST	ug/m3	96.21	24.45	134.95	83.05	70.41	59.55
O3	ppb	95.59	20.04	62.92	53.32	46.22	41.87

Channel	Units	% Valid	Mean	Max 1hr RAv	Max 8hr RAv	Max 24hr RAv	90%ile	99.7%ile	99.8%ile	99.0%ile	98%ile	99.9%ile
NO2	ppb	94.52	15.52	87.15	65.09	52.18	30.20	70.80	75.29	56.36	48.34	79.65
DUST	ug/m3	96.21	24.45	134.95	83.05	70.41	40.90	83.38	89.48	67.85	59.55	102.16
O3	ppb	95.59	20.04	62.92	53.32	46.22	33.53	50.00	51.20	44.93	41.87	53.93

2012 SCALED.

KINGS ROAD IMMINGHAM AQM STATION

01/01/2012 to 31/12/2012

Channel	Units	Average	Level	Exceedences	Notes
NO2	ppb	1h	150	0	
DUST	ug/m3	24h	50	10	
SO2	ppb	15 min	100	0	

Channel	Units	% Valid	Mean	Max 1hr RAv	Max 8hr RAv	Max 24hr RAv	98%ile
NO2	ppb	95.63	16.50	73.10	53.11	37.02	38.46
DUST	ug/m3	89.59	22.44	174.11	99.63	69.73	63.07
SO2	ppb	95.59	2.72	21.44	13.81	11.30	7.54

Channel	Units	% Valid	Mean	Max 1hr RAv	Max 8hr RAv	Max 24hr RAv	90%ile	98%ile	99.9%ile	100.0%ile
NO2	ppb	95.63	16.50	73.10	53.11	37.02	28.91	38.46	57.49	87.63
DUST	ug/m3	89.59	22.44	174.11	99.63	69.73	38.44	63.07	110.58	178.96
SO2	ppb	95.59	2.72	21.44	13.81	11.30	5.03	7.54	16.91	28.25

2012 SCALED.

WOODLANDS AVENUE IMMINGHAM AQM STATION

01/01/2012 to 31/12/2012

Channel	Units	Average	Level	Exceedences	Notes
NO2	ppb	1h	150	0	
DUST	ug/m3	24h	50	13	
SO2	ppb	15 min	100	0	

Channel	Units	% Valid	Mean	Max 1hr RAv	Max 8hr RAv	Max 24hr RAv	98%ile
NO2	ppb	22.35	11.81	58.47	38.56	28.50	33.61
DUST	ug/m3	93.82	26.21	222.41	111.04	66.41	62.01
SO2	ppb	22.36	1.76	35.67	27.04	27.04	8.74

Channel	Units	% Valid	Mean	Max 1hr RAv	Max 8hr RAv	Max 24hr RAv	90%ile	98%ile	99.9%ile	100.0%ile
NO2	ppb	22.35	11.81	58.47	38.56	28.50	23.58	33.61	47.64	64.96
DUST	ug/m3	93.82	26.21	222.41	111.04	66.41	42.59	62.01	110.84	230.71
SO2	ppb	22.36	1.76	35.67	27.04	27.04	3.58	8.74	30.94	42.07