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East Lothian Council

REPORT TO: Members' Library Service

MEETING DATE:

BY: Executive Director (Services for Communities)

SUBJECT: Local Air Quality Management – Annual Report 2011/12

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1 PURPOSE

1.1 The purpose of this report is to advise members of air quality monitoring and assessment work undertaken by the Environmental Protection team, particularly in relation to road traffic related pollution in Musselburgh.

2 RECOMMENDATIONS

2.1 The report is noted.

3 BACKGROUND

Legislation

3.1 Part IV of the Environment Act 1995 requires the UK Government and devolved administrations to publish a National Air Quality Strategy. The air quality objectives applicable to LAQM in Scotland are set out in the Air Quality (Scotland) Regulations 2000 (Scottish SI 2000 No 97), and the Air Quality (Scotland) (Amendment) Regulations 2002 (Scottish SI 2002 No 297). These objectives provide the statutory basis for the system of Local Air Quality Management (LAQM).

3.2 Section 82 of the 1995 Act places an obligation on all local authorities to regularly review and assess air quality in their areas, and to consider the current and likely future air quality in their areas, and assess whether the objectives are likely to be achieved by the due dates. Under LAQM local authorities also have a duty to continue to work towards meeting the objectives beyond the deadlines set out in the regulations.

3.3 Local authorities are expected to undertake reviews and assessments on a three year cycle. In year one, all authorities are required to undertake an Updating & Screening Assessment (USA). Where an authority identifies a risk that an objective will be exceeded at a relevant location the local authority is required to proceed to a Detailed Assessment (DA) in year two. To ensure continuity in the LAQM process, local authorities

are required to complete Progress Reports in the years when they are not carrying out a USA, including those authorities proceeding to a DA.

3.4 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.

Current monitoring

3.5 The results of the Updating and Screening Assessment carried out for all pollutants in November 2012 (see appendix 1) indicates that current Air Quality Objectives are being complied with for the majority of pollutants in East Lothian. However, passive monitoring of Nitrogen dioxide (NO2) in Musselburgh and the results of a Detailed Assessment of NO2 due to Road Traffic Sources in Musselburgh that was completed in June 2012 indicate concentrations at various locations that either exceed or are close to the Annual Mean Objective.

3.6 Additional monitoring of NO2 is being undertaken in Musselburgh (2012-13) to confirm the results of the June 2012 modelling assessment. If monitoring results confirm that the NO2 annual mean objective has been exceeded East Lothian Council will need to consider the declaration of an Air Quality Management Area (AQMA) for the NO2 annual mean objective. The results of the 2012-13 monitoring will be the subject of a further report to the Council later in 2013.

4 POLICY IMPLICATIONS

4.1 Air quality monitoring and assessment is a statutory obligation on the Council. This work supports the East Lothian Environment Strategy 2010-15 and the East Lothian Single Outcome Agreement 2011.

4.2 Should an AQMA be declared in due course this would have implications for Development and Transport plans in Musselburgh.

5 EQUALITIES IMPACT ASSESSMENT

5.1 This report is not applicable to the well being of equalities group and an Equality Impact Assessment is not required.

6 RESOURCE IMPLICATIONS

6.1.1 Financial – None directly as a result of this report. Ongoing air quality monitoring work is within existing departmental budget.

6.1.2 Application is being made to Scottish Government for grant funding in anticipation of further more detailed monitoring/ assessment work following the 2012/13 monitoring work.

6.2 Personnel - None

6.3 Other - None

7 BACKGROUND PAPERS

7.1 2012 Air Quality Updating and Screening Assessment for East Lothian Council *(attachment to this report)*

AUTHOR'S NAME	Finlay C Mackay
DESIGNATION	Environmental Protection Manager
CONTACT INFO	01620 827325
DATE	14 February 2013

East Lothian Council

2012 Air Quality Updating and Screening Assessment for *East Lothian Council*

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

November 2012

Local Authority Officer	Colin Clark Principal Environmental Protection Officer
Department	Services for Communities
Address	John Muir House HADDINGTON East Lothian EH41 3HA
Telephone	01620 827443
e-mail	cclark1@eastlothian.gov.uk
Report Reference number	U&SA2012
Date	November 2012

Executive Summary

This report presents the results of the Updating and Screening Assessment of local air quality within East Lothian Council. The Updating and Screening Assessment represents the first step in the current round of the management of local air quality, as required by Part IV of the Environment Act, 1995.

The objective of the Updating and Screening Assessment is to provide a checklist approach to identify those matters that have changed since the previous round of review and assessment was completed in 2011, and which may now require further assessment.

The Updating and Screening Assessment report should identify where there is a risk of an air quality objective being exceeded at a location with relevant public exposure by use of simple screening assessments and other similar tools. Where a risk has been identified the local authority is required to undertake a Detailed Assessment to identify with reasonable certainty whether or not an exceedence will occur.

The results of the Updating and Screening Assessment carried out for all pollutants indicates that current Air Quality Objectives are being complied with for the majority of pollutants. However, passive monitoring of Nitrogen dioxide in Musselburgh and the results of a Detailed Assessment of NO2 due to Road Traffic Sources in Musselburgh that was completed in June 2012 (Ref 19) continue to indicate concentrations at various locations that are close to the Annual Mean Objective.

It was considered appropriate by East Lothian Council to carry out passive monitoring of NO2 at a representative sample of these exceeding receptor locations to confirm the results of the modelling assessment. East Lothian Council started monitoring NO2 concentrations at 5 new locations on Musselburgh Bridge Street and High Street on 3rd May 2012; using passive diffusion tubes. East Lothian Council should consider the declaration of an AQMA for the NO2 annual mean objective after submission of the next LAQM Report, the 2013 Progress Report, due for submission by the end of April 2013 if monitoring results obtained from new locations, in addition to existing monitoring locations, confirms the modelling results that the NO2 annual mean objective has been exceeded.

Table of contents

Appendices

1 Introduction

1.1 Description of Local Authority Area

East Lothian is approximately 270 square miles in area and has 43 miles of coastline (photograph 1). Our boundaries extend from Musselburgh, immediately east of Edinburgh's suburban edge, eastwards to Dunbar and beyond to the Scottish Borders. From the coastline of the Firth of Forth, an agricultural plain extends southwards to the Lammermuir hills.

Photograph 1 – Yellowcraigs Beach

The population of East Lothian is circa 94,000. More than half the population live in its western sector, the main towns being Musselburgh (approximate population 22,000), Prestonpans (7,000), Tranent (9,000) and Cockenzie/Port Seton (5,500). The principal towns in the east are Haddington (9,000), North Berwick (6,000) and Dunbar (7,000). Although Musselburgh is the largest town, Haddington is the administrative centre for East Lothian Council.

The major sources of pollutants within the County are road traffic (photograph 2) although potential industrial sources are the coal-fired Cockenzie Power Station, Cockenzie (photograph 3) and also Lafarge Cement Works, Dunbar (photograph 4).

Photograph 2 – Buses on Musselburgh High Street

Photograph 3 – Cockenzie Power Station:

Photograph 4 – Lafarge Cement Works, Dunbar:

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) (Ref 1), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 (Ref 2) and the relevant Policy and Technical Guidance documents (Ref 3). 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.

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 **Scotland** are set out in the Air Quality (Scotland) Regulations 2000 (Scottish SI 2000 No 97) (Ref 4), the Air Quality (Scotland) (Amendment) Regulations 2002 (Scottish SI 2002 No 297) (Ref 5), and are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre $\mu g/m^3$ (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 Scotland

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu g/m^3$	Running annual mean	31.12.2003
	3.25 $\mu g/m^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu g/m^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu g/m^3$, not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18 $\mu g/m^3$	Annual mean	31.12.2010
Sulphur dioxide	350 $\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu g/m^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

During the second round of review and assessment (Refs 6, 7 and 8), which was due to be completed by April 2005, Carbon Monoxide, Benzene, Lead and 1,3-Butadiene were identified as not being likely to exceed the relevant Air Quality Objectives. The third round of review and assessment (Refs 9, 10 and 11), which was due to be completed by April 2008, indicated that the relevant Air Quality Objectives for these pollutants continued to be met.

However, the second round of review and assessment (Refs 6, 7 and 8) did conclude that Nitrogen Dioxide and PM10 levels in Musselburgh, due to road traffic sources, and also Sulphur Dioxide levels in vicinity of Cockenzie Power Station, Cockenzie and Lafarge Cement Works, Dunbar would require to be subject of a Detailed Assessment. PM10 levels in vicinity of Cockenzie Power Station would also require Detailed Assessment.

The Detailed Assessment (Ref 7) and subsequent third round of review and assessment (Refs 9, 10 and 11) indicated that the relevant Air Quality Objectives for Nitrogen Dioxide levels in Musselburgh and throughout East Lothian continued to be met.

However, PM10 levels due to road traffic were forecast to exceed the annual mean objective for 2010 in Musselburgh, although these results were based on the application of correction factors and were obtained using Osiris light-scattering measurement equipment that has since been deemed as unsuitable for comparison against Objectives. The Osiris units were replaced with Tapered Element Oscillating Microbalance (TEOM) units in May 2005. The 2007 Progress Report (Ref 10) concluded, from results obtained using the TEOM unit, that the 24-hour mean Objective will be complied with. Furthermore, the Annual Mean Objective was being complied with using the local correction factor of 1.14. However, the Annual Mean was exceeded when the National correction factor of 1.3 was applied. Correspondence from the Scottish Executive (Ref 12) advised that where the predicted levels are below the Objective using the local correction factor but above the Objective when the National correction factor is applied, the local authority should carryout monitoring using a gravimetric sampler. East Lothian Council, however, did not feel that this approach could be justified at that time, especially having regard to the results of the Department for Environment Food and Rural Affairs (DEFRA) equivalence study (Ref 13) which concluded that TEOM units not fitted with Filter Dynamics Measurement Systems (FDMS) failed to meet equivalence criteria and, as such, cannot be considered equivalent to the European Reference method. As a consequence, in March 2008 East Lothian Council replaced the TEOM unit with a Beta Attenuation Monitor (BAM) unit, the results of which can be compared directly to the Objective levels as the BAM units met the equivalence criteria outlined by DEFRA.

The Detailed Assessment (Ref 7), and subsequent Updating and Screening Assessment (Ref 9) of PM10 levels in Cockenzie due to activities undertaken within the coal storage plant for Cockenzie Power Station concluded that the relevant Air Quality Objectives would be met by the target year.

The Detailed Assessment (Ref 7) of Sulphur Dioxide levels in vicinity of Cockenzie Power Station, Cockenzie concluded that there would be no exceedences of any Objectives, although the 15-minute mean in the vicinity of Lafarge Cement Work's, Dunbar was forecast to exceed the Objective. However the installation of abatement equipment and the subsequent reduction in Sulphur Dioxide emissions has been taken into account in the third round of Review and Assessment (Refs 9, 10 and 11) that concluded the relevant Air Quality Objectives would be met.

The previous Round of Review and Assessment (Round 4) was completed in May 2012. As with previous rounds of review and assessment, this round was also based on a phased approach. The first step of this round was the Updating and Screening Assessment (USA) (Ref 14), which was due to be completed by April 2009 and was subsequently completed in November 2009.

If sufficient risk is identified, then the local authority must complete a Detailed Assessment to provide an accurate estimate of the likelihood of an air quality objective being exceeded at the particular location with relevant public exposure. The results of the USA in 2009 (Ref 14) concluded that a Detailed Assessment of PM10 and Nitrogen Dioxide levels in Musselburgh was required due to the Biomass Combustion Plant located at the Queen Margaret University. This Detailed Assessment (Ref 15) was completed in October 2010 and concluded that the biomass emissions will not result in any

exceedence of the relevant Air Quality Objectives and that the process contributions are typically a small percentage of the overall Air Quality Objectives.

The Progress Report completed in 2010 (Ref 16) concluded that all Air Quality Objectives continued to be met within East Lothian.

Following completion of the Progress Report in 2011 (Ref 17) the results of automatic and passive monitoring of Nitrogen dioxide confirmed that both the annual and 1-hour objectives continued to be met. However, passive monitoring of Nitrogen dioxide in Musselburgh High Street indicated exceedences at 2 locations (tube numbers 6 and 7 in vicinity of 147 and 183 High Street respectively). Accordingly, a Detailed Assessment of NO2 at these locations was required.

The Detailed Assessment of Nitrogen dioxide in Musselburgh due to Road Traffic Sources (Ref 18) was completed in June 2012. It was concluded from the Detailed Assessment that the highest modelled annual average NO2 concentrations were predicted at receptors located on High Street and Bridge Street close to bus stops and that the majority of the predicted annual mean exceedences were marginal. An element of uncertainty was introduced to the computer model used in the Detailed Assessment as a result of estimating emissions from both queuing traffic and stationary buses. It was considered appropriate by East Lothian Council to carry out passive monitoring of NO2 at a representative sample of these exceeding receptor locations to confirm the results of the modelling assessment. This would greatly enhance the reliability of any Further Assessment and allow better delineation of any required AQMA boundary. As a result of the abovementioned conclusion East Lothian Council started monitoring NO2 concentrations at 5 new locations on 3rd May 2012; using passive diffusion tubes. These new monitoring sites are located at receptors R1 (167 High Street), R5 (137 High Street), R13 (69 High Street), R24 (86 High Street) and R47 (15 Bridge Street) where dispersion modelling indicates that exceedences of the NO2 annual mean objective had occurred during 2011. It was also recommended following the detailed assessment of NO2 that East Lothian Council should consider the declaration of an AQMA for the NO2 annual mean objective after May 2013 if monitoring results obtained from new locations at R1 (167 High Street), R5 (137 High Street), R13 (69 High Street), R24 (86 High Street) and R47 (15 Bridge Street), in addition to existing monitoring locations, confirms the modelling results that the NO2 annual mean objective has been exceeded.

The Progress Report in 2011 (Ref 17) concluded that the results of automatic monitoring of PM_{10} confirm that both the annual and 24-hour mean objectives continue to be met. There was no need to proceed to a detailed assessment of PM10.

A summary of all previous Review and Assessment Reports is provided in Appendix 1

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2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

It was proposed following completion of the USA 2009 (Ref 14) that the NOx analyser that was previously located in Musselburgh High Street would be replaced with a new analyser to be located at Musselburgh North High Street, beside the existing BAM PM_{10} monitor. This work was completed in February 2010 providing a single air quality automatic monitoring station for Musselburgh that will provide the backbone of LAQM in future years in East Lothian. The current locations are shown in Figure 2.1. below:

Figure 2.1Map of Automatic Monitoring Sites in Musselburgh

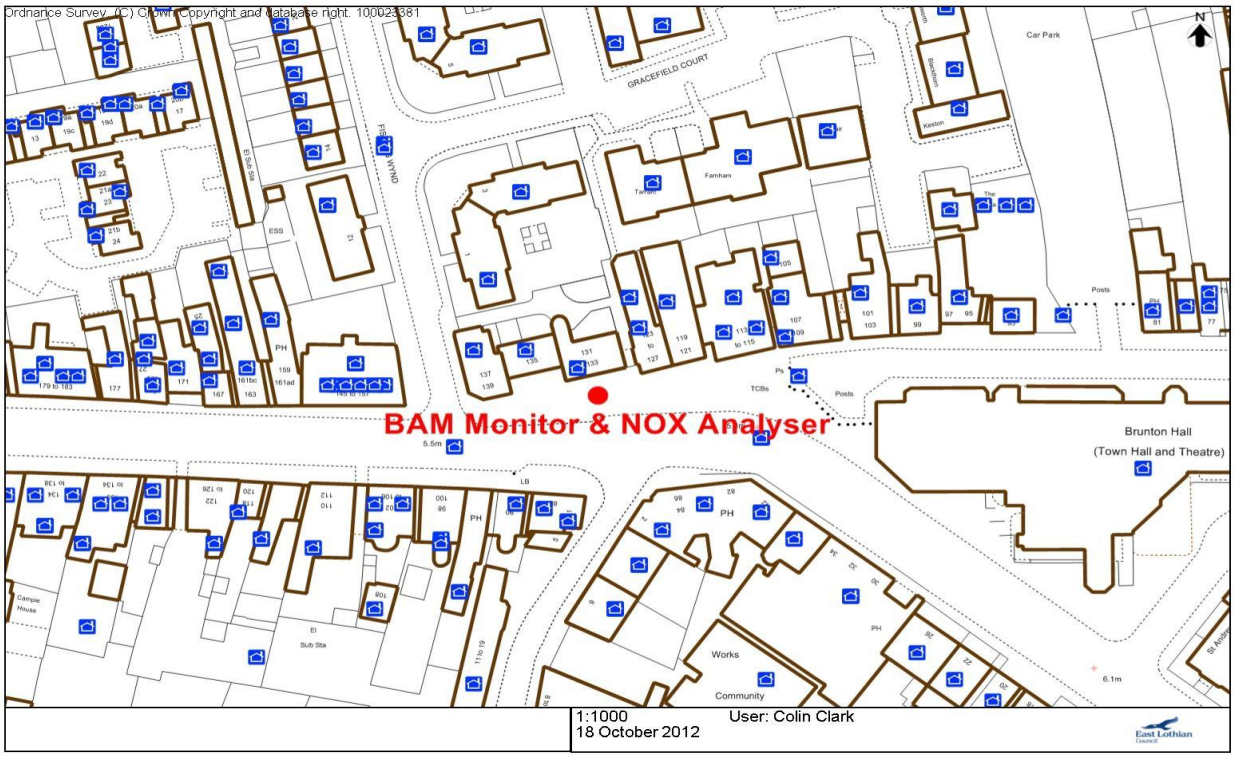

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	Monitoring Technique	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road	Does this location represent worst-case exposure?
		X	Y						
Musselburgh North High Street - BAM	Roadside	333 941	672837	PM_{10}	BAM	N	Y (5m)	3m	Y
Musselburgh North High Street - NOx	Roadside	333 941	672837	NOx	Gas-phase chemilluminescence detection	N	Y (5m)	3m	Y

2.1.2 Non-Automatic Monitoring Sites

Following on from the completion of the USA 2009 (Ref 14) NO_2 Diffusion Tube numbers 1, 4, 6, 7, 8, 9 and 10 would continue to be used to monitor NO_2 in Musselburgh. Three new tubes, numbered 23, 24 and 25 have been co-located with the new NOx Analyser beside the BAM unit at North High Street, Musselburgh. Two additional tubes, numbered 26 and 27 have also been introduced in the vicinity of Salters Road, Wallyford to monitor NO_2 in order to assess any potential impact that may arise as a consequence of the proposed Wallyford Expansion and the likely increase in Road Traffic along Salters Road.

As a result of the abovementioned Detailed Assessment of Nitrogen Dioxide due to road traffic sources in Musselburgh that was completed in June 2012 (Ref 18) East Lothian Council also started monitoring NO2 concentrations at 5 new locations on 3rd May 2012 using passive diffusion tubes. These new monitoring sites are located at Tube 29 (167 High Street), Tube 30 (137 High Street), Tube 31 (69 High Street), Tube 32 (86 High Street) and Tube 28 (15 Bridge Street) where dispersion modelling indicates that exceedences of the NO2 annual mean objective had occurred during 2011

The current locations of all diffusion tubes are shown in Figures 2.2.a - 2.2.d below:

Figure 2.2.a Map of Non-Automatic Monitoring Sites in Musselburgh

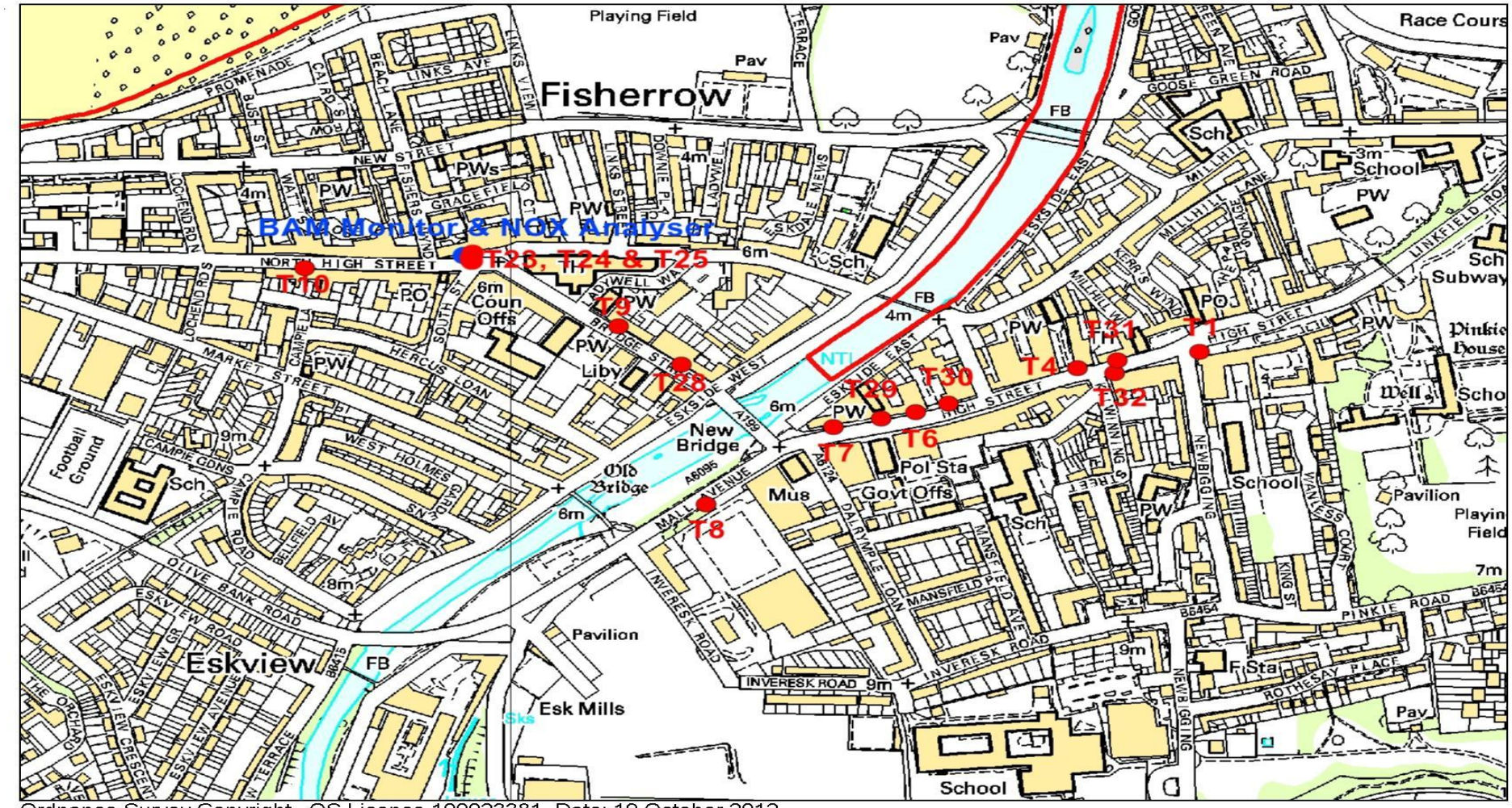

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Figure 2.2.b Map of Non-Automatic Monitoring Sites in Wallyford

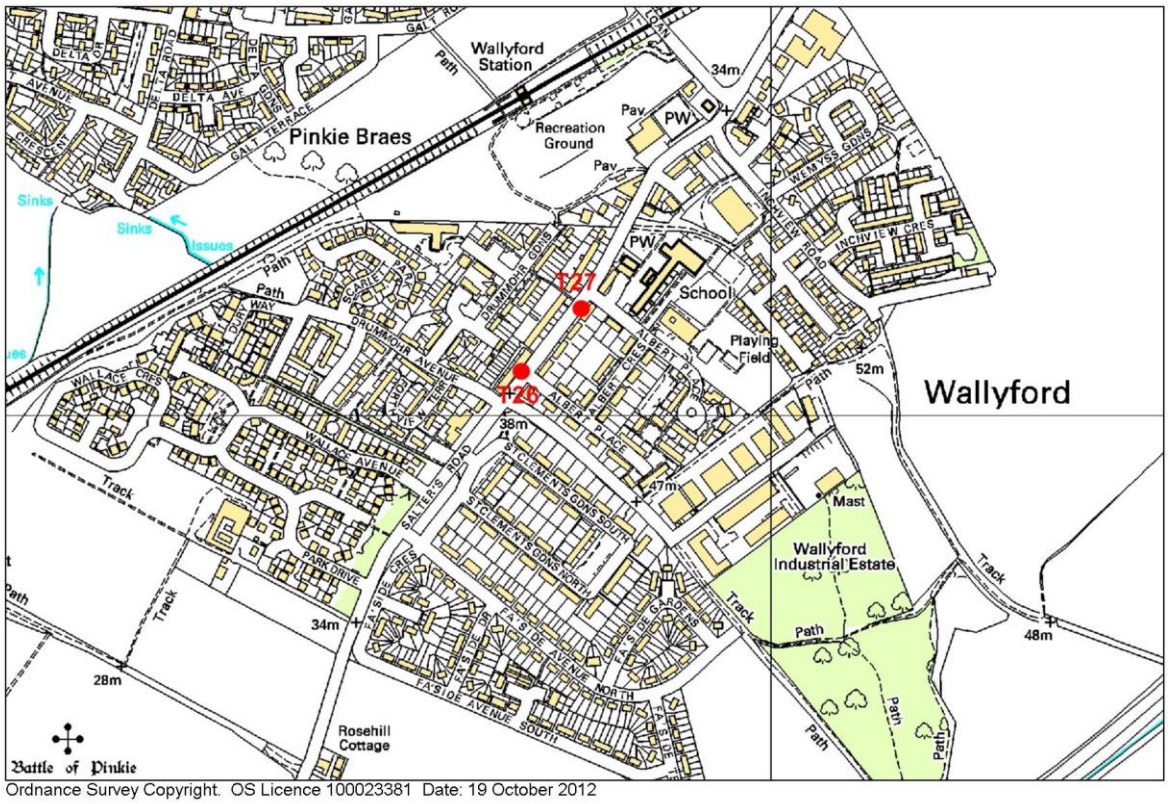

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Figure 2.2.c Map of Non-Automatic Monitoring Sites in Tranent

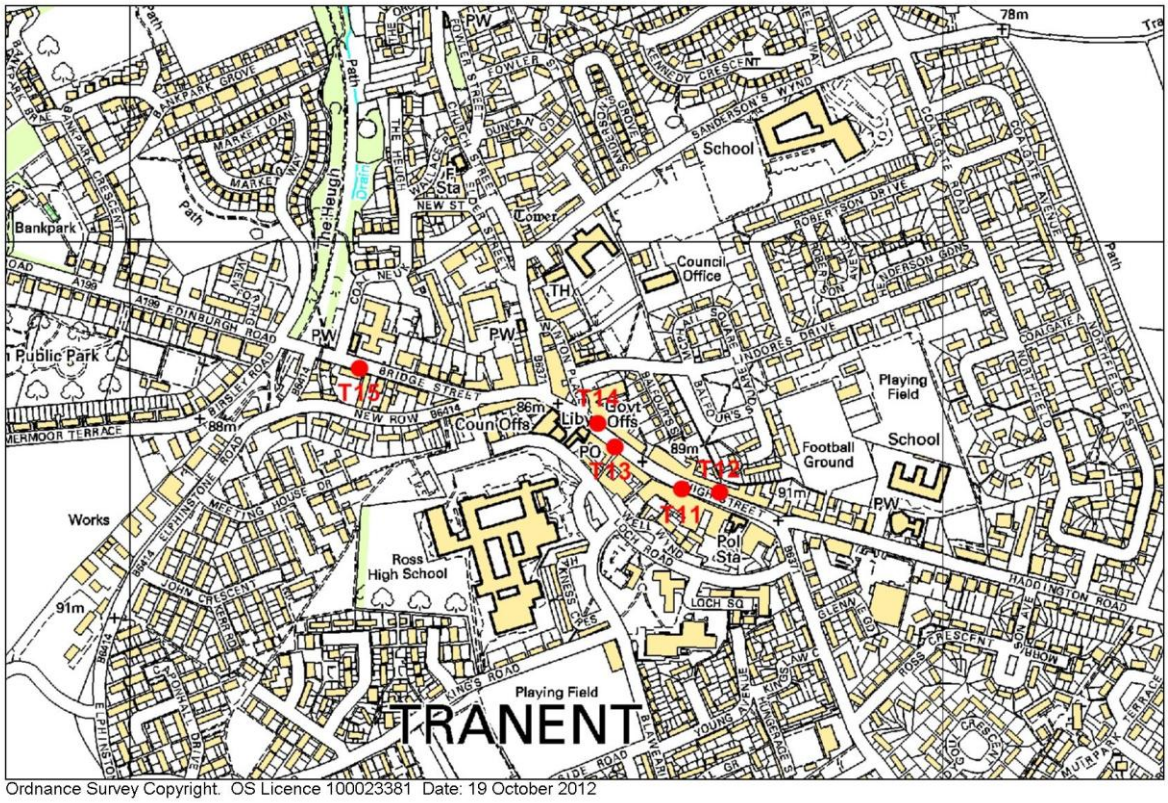

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Figure 2.2.d Map of Non-Automatic Monitoring Sites in Haddington

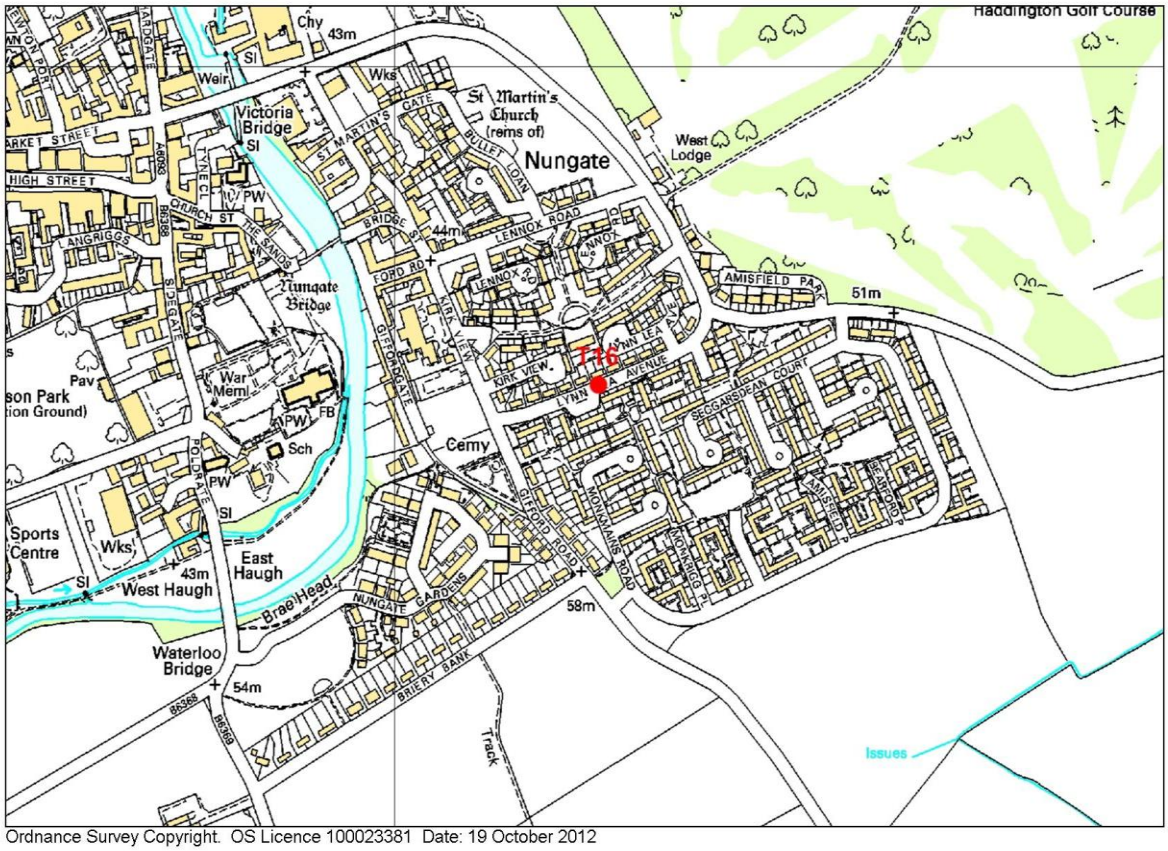

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Table 2.2 Details of Non-Automatic Monitoring Sites for NO2

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	In AQMA?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Worst-case Location?
		X	Y					
1. Musselburgh – Newbigging Junction	Roadside	334659	672720	NO_2	N	Y (15m)	2m	Y
4. Musselburgh - 87 High St	Roadside	334526	672700	NO_2	N	Y (15m)	4m	Y
6. Musselburgh – 147 High Street	Roadside	334392	672652	NO_2	N	Y 20m)	3m	Y
7. Musselburgh – 183 High St	Roadside	334301	672632	NO_2	N	Y 20m)	3m	Y
8. Musselburgh - Mall Av	Roadside	334172	672524	NO_2	N	Y (25m)	4m	Y
9. Musselburgh – 45 Bridge Street	Roadside	334105	672750	NO_2	N	Y (3m)	4m	Y
10 Musselburgh – 150 North High St	Roadside	333800	672822	NO_2	N	Y (3m)	4m	Y
11. Tranent – 89 High St	Roadside	340686	672692	NO_2	N	Y (3m)	3m	Y
12. Tranent – 82 High St	Roadside	370738	672687	NO_2	N	Y (4m)	3m	Y
13. Tranent – 55 High Street	Roadside	340608	672738	NO_2	N	Y (4m)	3m	Y
14. Tranent – 26 High St	Roadside	340570	672780	NO_2	N	Y (2m)	2m	Y
15. Tranent – 58 Bridge St	Roadside	340112	672905	NO_2	N	Y (5m)	2m	Y
16. Haddington - Lyn Lea	Urban	352249	673631	NO_2	N	Y 8m)	3m	Y
23. Musselburgh - Co-located 133 N High St	Roadside	333941	672837	NO_2	N	Y (5m)	3m	Y
24. Musselburgh - Co-located 133 N High St	Roadside	333941	672837	NO_2	N	Y (5m)	3m	Y
25. Musselburgh - Co-located 133 N High St	Roadside	333941	672837	NO_2	N	Y (5m)	3m	Y
26. 116 Salters Rd	Roadside	336691	672055	NO_2	N	Y (5m)	2m	Y
27. 71 Salters Rd	Roadside	336769	672127	NO_2	N	Y (5m)	2m	Y
28. Musselburgh - 15 Bridge Street	Roadside	334164	672708	NO_2	N	Y (5m)	3m	Y
29. Musselburgh - 167 High Street	Roadside	334354	672643	NO_2	N	Y (5m)	3m	Y
30. Musselburgh - 137 High Street	Roadside	334427	672664	NO_2	N	Y (5m)	3m	Y
31. Musselburgh - 69 High Street	Roadside	334580	672713	NO_2	N	Y (5m)	3m	Y
32. Musselburgh - 86 High Street	Roadside	334578	672695	NO_2	N	Y (5m)	3m	Y

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

East Lothian Council concluded from previous rounds of review and assessment that the annual mean and 1-hour mean air quality objectives would be complied with by the target date of 31 December 2005 and would continue to be met. An air quality management area (AQMA) was not required although monitoring of NO_2 would continue using both the continuous analyser located at Musselburgh High Street and passive diffusion tubes located in Musselburgh and the other towns of Tranent and Haddington.

Automatic Monitoring Data

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 %	Valid Data Capture for 2011	Annual mean concentrations (μg/m^3)				
					2007	2008	2009	2010	2011
Musselburgh North High Street - NOX	Roadside	N	86.6	86.6	28.8	25.9	NO DATA*	29	24

Note: *Following on from East Lothian Council's Progress Report in 2010 (Ref 16) and previous Review of Passive and Automatic Monitoring of Nitrogen Dioxide in East Lothian that was undertaken in 2009 (Ref 19) as described in Section 2.1.2 above, the monitoring data for nitrogen dioxide for 2009 is incomplete and, as such, there was insufficient data to report for 2009.

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 %	Valid Data Capture for 2011	Number of Exceedences of hourly mean (200 μg/m^3) *If the period of valid data is less than 90% of a full year, include the 99.8th % ile of hourly means in brackets.*				
					2007	2008	2009	2010	2011
Musselburgh North High Street - NOX	Roadside	N	86.6	86.6	0 (118.1)	0 (106.3)	NO DATA*	0	0 (94)

Note: *Following on from East Lothian Council's Progress Report in 2010 (Ref 16) and previous Review of Passive and Automatic Monitoring of Nitrogen Dioxide in East Lothian that was undertaken in 2009 (Ref 19) as described in Section 2.1.2 above, the monitoring data for nitrogen dioxide for 2009 is incomplete and, as such, there was insufficient data to report for 2009.

Diffusion Tube Monitoring Data

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2011

Site ID	LOCATION	Site Type	Within AQMA	Triplicate or Co-located	Data Capture 2011 (%)	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 = 0.81) 2011 ($\mu g/m^3$)
1	Musselburgh – Newbigging Junction	Roadside	N	N	91.7	N	N	30
4	Musselburgh - 87 High St	Roadside	N	N	100	N	N	26
6	Musselburgh – 147 High Street	Roadside	N	N	100	N	N	**40**
7	Musselburgh – 183 High St	Roadside	N	N	100	N	N	36
8	Musselburgh - Mall Av	Roadside	N	N	100	N	N	24
9	Musselburgh – 45 Bridge Street	Roadside	N	N	100	N	N	27
10	Musselburgh – 150 North High St	Roadside	N	N	100	N	N	35
11	Tranent – 89 High St	Roadside	N	N	100	N	N	22
12	Tranent – 82 High St	Roadside	N	N	100	N	N	25
13	Tranent – 55 High Street	Roadside	N	N	100	N	N	29
14	Tranent – 26 High St	Roadside	N	N	100	N	N	33
15	Tranent – 58 Bridge St	Roadside	N	N	100	N	N	20
16	Haddington - Lyn Lea	Urban	N	N	83.3	N	N	12
23	Musselburgh - 133 N High St	Roadside	N	Triplicate & Co-located	91.7	N	N	23
24	Musselburgh - 133 N High St	Roadside	N	Triplicate & Co-located	100	N	N	23
25	Musselburgh - 133 N High St	Roadside	N	Triplicate & Co-located	91.7	N	N	24
26	Wallyford - 116 Salters Rd	Roadside	N	N	91.7	N	N	24
27	Wallyford - 71 Salters Rd	Roadside	N	N	75	N	N	20
*28	Musselburgh - 15 Bridge Street	Roadside	N	N	NO DATA	NO DATA	NO DATA	NO DATA
*29	Musselburgh - 167 High Street	Roadside	N	N	NO DATA	NO DATA	NO DATA	NO DATA
*30	Musselburgh - 137 High Street	Roadside	N	N	NO DATA	NO DATA	NO DATA	NO DATA
*31	Musselburgh - 69 High Street	Roadside	N	N	NO DATA	NO DATA	NO DATA	NO DATA
*32	Musselburgh - 86 High Street	Roadside	N	N	NO DATA	NO DATA	NO DATA	NO DATA

*Note: Diffusion tube numbers 28-32 inclusive were installed in May 2012 following on from Detailed Assessment of NO2 due to Road Traffic that was completed in June 2012 (Ref 18) and, as such, there is no data for 2011 available for these tubes.

Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes (2007 to 2011)

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) μg/m^3			
			2008* (Bias Adjustment Factor = 0.95)	2009*	2010* (Bias Adjustment Factor = 0.97)	2011 (Bias Adjustment Factor = 0.81)
1	Roadside	N	25	*INSUFFICIENT DATA	32	30
4	Roadside	N	35	*INSUFFICIENT DATA	28	26
6	Roadside	N	**42**	*INSUFFICIENT DATA	**49**	**40**
7	Roadside	N	38	*INSUFFICIENT DATA	**40**	36
8	Roadside	N	30	*INSUFFICIENT DATA	26	24
9	Roadside	N	35	*INSUFFICIENT DATA	33	27
10	Roadside	N	32	*INSUFFICIENT DATA	34	35
11	Roadside	N	34	*INSUFFICIENT DATA	33	22
12	Roadside	N	33	*INSUFFICIENT DATA	32	25
13	Roadside	N	31	*INSUFFICIENT DATA	34	29
14	Roadside	N	33	*INSUFFICIENT DATA	33	33
15	Roadside	N	24	*INSUFFICIENT DATA	27	20
16	Urban	N	8	*INSUFFICIENT DATA	11	12
23	Roadside	N	**DATA FROM >2010	**DATA FROM >2010	28	23
24	Roadside	N	**DATA FROM >2010	**DATA FROM >2010	30	23
25	Roadside	N	**DATA FROM >2010	**DATA FROM >2010	30	24
26	Roadside	N	**DATA FROM >2010	**DATA FROM >2010	31	24
27	Roadside	N	**DATA FROM >2010	**DATA FROM >2010	28	20
*28	Roadside	N	#DATA FROM > 2012	#DATA FROM > 2012	#DATA FROM > 2012	#DATA FROM > 2012
*29	Roadside	N	#DATA FROM > 2012	#DATA FROM > 2012	#DATA FROM > 2012	#DATA FROM > 2012
*30	Roadside	N	#DATA FROM > 2012	#DATA FROM > 2012	#DATA FROM > 2012	#DATA FROM > 2012
*31	Roadside	N	#DATA FROM > 2012	#DATA FROM > 2012	#DATA FROM > 2012	#DATA FROM > 2012
*32	Roadside	N	#DATA FROM > 2012	#DATA FROM > 2012	#DATA FROM > 2012	#DATA FROM > 2012

Note: *Following on from East Lothian Council's Progress Report in 2010 (Ref 16) and previous Review of Passive and Automatic Monitoring of Nitrogen Dioxide in East Lothian that was undertaken in 2009 (Ref 19) as described in Section 2.1.2 above, the monitoring data for nitrogen dioxide for 2009 is incomplete and, as such, there was insufficient data to report for 2009.
Note: ** Following on from East Lothian Council's Review of Passive and Automatic Monitoring of Nitrogen Dioxide in East Lothian that was undertaken in 2009 (Ref 19) as described in Section 2.1.2 above data for Tube's 23-27 is only available from 2010 onwards.
Note: #** Following on from East Lothian Council's Detailed Assessment of Nitrogen dioxide in Musselburgh due to Road Traffic Sources (Ref 18) data for Tube's 28-32 is only available from 2012 onward

2.2.2 PM_{10}

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 2011 %[b]	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration μg/m^3				
						2007*[c]	2008*[c]	2009*[c]	2010*[c]	2011[c]
Musselburgh – North High Street BAM	Roadside	N	81.8	81.8	Y		14	14	12	13

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 2011 %[b]	Confirm Gravimetric Equivalent	Number of Exceedences of 24-Hour Mean (50 μg/m^3) (if data capture is less than 90%, include the 90.4th percentile of 24-hour means in brackets)				
						2007*	2008*	2009*	2010*	2011
Musselburgh – North High Street BAM	Roadside	N	81.8	81.8	Y		0	2	0	1(30)

2.2.3 Sulphur Dioxide

East Lothian Council do not carry out any monitoring of sulphur dioxide.

2.2.4 Benzene

East Lothian Council do not carry out any monitoring of benzene.

2.2.5 Other pollutants monitored

East Lothian Council do not carry out monitoring of any other pollutants.

2.2.6 Summary of Compliance with AQS Objectives

East Lothian Council has examined the results from monitoring in the district. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment at this time.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
Nitrogen dioxide	**Approach per Section A.1 of Box 5.3 LAQM TG (09)**	
	Use local knowledge to identify narrow congested streets Daily traffic flow (AADT) should be >5000 veh/day. A congested street will be one with slow moving traffic that is frequently stopping and starting due to pedestrian crossings, parked vehicles, etc throughout much of the day (not just during rush hours). The average speed is likely to be < 25 kph (15 mph). A narrow street will be one with residential properties within 2m of the kerb, and buildings on both sides of the road (the buildings on the other side of the road can be further from the kerb than 2m).	The High Streets in Musselburgh and Tranent and Court Street in Haddington were assessed in the first round of review and assessment. There are no new narrow congested streets that meet these criteria within East Lothian. There is no need to proceed further with this part.
	Question	
	Are there any roads meeting these criteria that are outside of traffic related AQMA's and have not previously been assessed?	N/A
	Action	
	No further action required.	

East Lothian 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

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
Nitrogen dioxide	**Approach per Section A.2 of Box 5.3 LAQM TG (09)**	
	Identify all busy streets (>10, 000 vehicles per day) where individuals may be exposed within 5m of the kerb for 1-hour or more that are new, or were not previously assessed. This should include streets with new exposure, where exposure was previously not present.	The busiest streets where people may spend 1-hour or longer close to traffic are those in or near the town centres of Musselburgh, Tranent and Haddington. These locations have been specifically identified and assessed in previous rounds of review and assessment through monitoring, screening methods and detailed dispersion modelling. There is no need to proceed further with this part.
	Obtain detailed information on traffic flows, speeds and proportion of different vehicle types.	
	Use the DMRB screening model to predict the current annual mean concentration at relevant locations.	
	Question	
	Are any of the predicted annual mean concentrations equal to or greater than 60$\mu g/m^3$?	N/A
	Action	
	No further action required.	

East Lothian 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.

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
Nitrogen dioxide PM_{10}	**Approach per Section A.3 of Box 5.3 LAQM TG (09)**	
	Identify all roads with an unusually high proportion of HDV (>20%) that were not previously assessed or are new. This should include roads with new exposure, where exposure was previously not present.	There are no roads in East Lothian with an unusually high (>20%) proportion of heavy-duty vehicles. There is no need to proceed further with this part.
	Determine whether there is relevant exposure within 10m of these roads (20m in major conurbations, i.e. population >2 million).	
	Determine whether the flow of HDV is greater than 25, 000 vehicles per day.	
	Use the DMRB screening model to predict the current annual mean at relevant locations.	
	Question	
	Are any of the predicted NO_2 annual mean concentrations greater than 40$\mu g/m^3$ (for the annual mean objective)? Are there more than 35, 24-hour PM_{10} exceedences of 50$\mu g/m^3$ predicted? Are any of the predicted annual mean PM_{10} concentrations in 2010 greater than 18$\mu g/m^3$?	N/A
	Action	
	No further action required.	

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

3.4 Junctions

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
Nitrogen dioxide PM_{10}	**Approach per Section A.4 of Box 5.3 LAQM TG (09)**	
	Identify "busy" junctions (> 10, 000 vehicles per day) that are new, or were not previously assessed. This should include streets where new exposure, where exposure was not previously present.	These types of junctions were specifically identified and assessed during previous rounds of review and assessment. There is no need to proceed further with this part.
	Determine whether there is relevant exposure within 10m of the kerb (20m in major conurbations, i.e. population >2 million).	
	Obtain detailed information on traffic flows, speeds and percentage of heavy-duty vehicles (all vehicles >3.5 tonnes).	
	Use the DMRB screening model to predict the current annual mean NO_2 concentration and the number of 24-hour exceedences of 50$\mu g/m^3$ at relevant locations.	
	Question	
	Are any of the predicted annual mean NO_2 concentrations greater than 40$\mu g/m^3$?	N/A
	Are more than 35, 24-hour PM10 concentrations above 50$\mu g/m^3$ predicted?	N/A
	Action	
	No further action required.	

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
PM_{10} (2010 objective - Scottish Authorities only)	**Approach per Section A.4 of Box 5.3 LAQM TG (09)**	
	Identify "busy" roads and junctions (> 10, 000 vehicles per day).It is only necessary to include busy roads or junctions not considered in previous Review and Assessment Reports, and/or where there has been a significant increase (>10% AADT) in traffic flows since the last assessment, and/or where there is new relevant exposure.	These types of junctions were specifically identified and assessed during previous rounds of review and assessment. There is no need to proceed further with this part.
	Determine whether there is relevant exposure within 10m of the kerb (20m in major conurbations, i.e. population >2 million).	
	Obtain detailed information on traffic flows, speeds and proportion of different vehicle types.	
	Use the DMRB screening model to predict the annual mean in 2010 at relevant locations.	
	Question	
	Are any of the predicted annual mean PM_{10} concentrations in 2010 greater than 18$\mu g/m^3$?	N/A
	Action (Scotland only)	
	No further action required.	

East Lothian 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

Approach 1

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
Nitrogen dioxide PM_{10}	**Approach 1 per Section A.5 of Box 5.3 LAQM TG (09) – This approach should be followed if an air quality assessment has been undertaken for the new or proposed road in question**	
	Obtain details of the air quality assessment that has been carried out for the new road (planning approval must be already granted).	There have been no roads constructed or granted planning consent since the first round of review and assessment.
	Question	
	Have any exceedences of the NO_2 or PM_{10} objectives been predicted at relevant locations?	N/A
	Action	
	No further action required.	

Approach 2

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
Nitrogen dioxide PM_{10}	**Approach 2 per Section A.5 of Box 5.3 LAQM TG (09) – This approach should be followed if there has been no previous air quality assessment.**	
	Establish whether the traffic flow on the new road is greater than 10, 000 vehicles per day or whether the new road has increased traffic flow on existing roads previously identified as having a) NO_2 annual mean concentrations greater than 36μg/m^3, or b) more than 30, 24-hour exceedences of the PM_{10} objective of 50μg/m^3 (or more than six exceedences in 2010 in Scotland). Use the DMRB screening model to predict the current NO_2 annual mean at relevant locations and/or the number of PM_{10} 24-hour exceedences of 50μg/m^3, (and for Scotland the annual mean for 2010) at relevant locations.	There have been no new roads constructed or granted planning consent since the first round of review and assessment.
	Question	
	Do any of the predicted concentrations exceed the air quality objectives?	N/A
	Action	
	No further action required.	

East Lothian Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
Nitrogen dioxide PM_{10}	**Approach per Section A.6 of Box 5.3 LAQM TG (09)**	
	Identify any roads with more than 10, 000 vehicles per day that have experienced "large" (>25%) increases in traffic.	There are no roads in East Lothian with more than 10,000 vehicles per day that have experienced 'large' (>25%) increases in traffic.
	Determine whether these roads had previously been identified as being "at risk" (annual mean > 36μg/m^3 at a relevant location) of exceeding the objectives.	
	Obtain detailed information on traffic flows, speeds and percentage of HDV's	
	Use the DMRB screening model to predict the current annual mean NO_2 concentration and the number of 24-hour exceedences of 50μg/m^3 in the current year at relevant locations. Predict the annual mean PM_{10} concentration in 2010 (Scotland only).	
	Question	
	Do any of the predicted concentrations exceed the air quality objectives?	N/A
	Action	
	No further action required.	

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

3.7 Bus and Coach Stations

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
Nitrogen dioxide	**Approach per Section A.7 of Box 5.3 LAQM TG (09)**	
	Collect information on the daily movements of buses at the bus station.	All bus stations within East Lothian have vehicle flows of less than 1000 buses per day and have no relevant exposure within 10m of the bus station.
	Determine whether there is relevant exposure within 10m of any part of the bus station where buses are present (20m in major conurbations)	
	Determine whether the number of movements of buses and coaches is >2, 500 per day.	
	Use the DMRB screening model to predict the annual mean in the current year at relevant locations.	
	Question	
	Are any of the predicted annual mean NO_2 concentrations greater than 40μg/m^3?	N/A
	Action	
	No further action required.	
	Question	
	Are any of the predicted NO_2 annual mean concentrations greater than 60μg/m^3 (for the hourly mean objective)?	N/A
	Action	
	No further action required	

East Lothian Council confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
Nitrogen dioxide	**Approach per Section B.1 of Box 5.4 LAQM TG (09)**	
	Establish whether there is relevant exposure within 1,000 m of the airport boundary.	There are no airports in East Lothian.
	Obtain information on annual throughput of passengers and tonnes of freight in the most recent year possible. Calculate the total equivalent passenger numbers in million passengers per annum (mppa).	
	Question	
	Is the total equivalent passenger throughput more than 10 mppa? Is the existing background NO_x concentration above 25$\mu g/m^3$?	N/A
	Action	
	No further action required.	

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

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
Sulphur dioxide	**Approach 1 per Section B.2 of Box 5.4 LAQM TG (09) – Stationary locomotives (coal or diesel)**	
	Identify locations where diesel or steam locomotives are regularly stationary for periods of 15 minutes or more.	Freight trains deliver goods to Cockenzie Power Station and to the Viridor Landfill site adjacent to the Lafarge cement works at Dunbar.
	Establish whether there is the potential for regular outdoor exposure of individuals within 15m of the stationary locomotives.	There is no exposure to members of the public within 15m of each location identified above, where trains may occasionally stop.
	Obtain information on the number of trains per day that might affect these locations, and the typical duration that they are stationary with their engines running.	N/A
	Question	
	Are there three or more occasions a day when there might be a locomotive stationary with its engine running for 15 minutes or more?	N/A
	Action	
	No further action required.	

East Lothian 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

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
Nitrogen dioxide	**Approach 2 per Section B.2 of Box 5.4 LAQM TG (09) – Moving locomotives (diesel)**	
	Identify sections of track that may have a large number of movements of diesel locomotives (per Table 5.1 of LAQM TG (09))	There are no rail lines with a heavy traffic of diesel passenger trains within East Lothian.
	Identify whether the background annual mean NO_2 concentration is above 25μg/m^3.	
	Establish whether there is the potential for long-term exposure within 30m of the edge of the tracks.	
	Question	
	Are there any sections of rail line meeting the above criteria?	N/A
	Action	
	No further action required.	

East Lothian 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)

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
Sulphur dioxide	**Approach per Section B.3 of Box 5.4 LAQM TG (09)**	
	Establish whether there is relevant exposure within: 250m and 1km of the berths and main areas of manoeuvring.	There are no shipping ports within East Lothian.
	Collect information on the number of ship movements per year.	
	Question	
	Are there between 5, 000 and 15, 000 movements per year (and exposure within 250m)? Are there more than 15, 000 movements per year (and exposure within 1km)?	N/A
	Action	
	No further action required.	

East Lothian 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

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
All pollutants	**Approach 1 per Section C.1 of Box 5.5 of LAQM TG (09)**	
	Obtain details of the air quality assessment that has already been carried out for the new industrial source (for which planning approval has been granted).	In October 2011 Scottish Power Generation Ltd were granted consent by the Scottish Ministers under Section 36 of the Electricity Act 1989 to construct and operate the 1000MW gas-fired combined cycle gas turbine ("CCGT") generating station and associated works at Cockenzie Power Station (Ref 20). The Air Quality Assessment that was carried out as part of the Environmental Assessment concluded that the development would not have any significant impact on air quality objectives. However, there is a potential for nuisance dust (particles >30um in diameter) during the construction phase for which appropriate mitigation measures will be introduced via the implementation of an Environmental Management Plan (EMP). In 2009 Viridor Waste Management submitted planning application ref 08/00467/FUL to East Lothian Council to erect an Energy from Waste with combined heat and power facility at Dunbar Landfill, Oxwell Mains, Dunbar (Ref 21). This application was originally refused consent but subsequently granted permission in October 2012 following appeal. The Air Quality Assessment submitted in support of this application concluded there would be no adverse impact on ambient Air Quality and this conclusion was accepted by the Scottish Environmental Protection Agency (SEPA) (Ref 22).
	Question	
	Have any exceedences of the objectives been predicted at relevant locations?	No
	Action	
	No further action required.	

East Lothian Council has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

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

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
All pollutants	**Approach 2 per Section C.1 of Box 5.5 of LAQM TG (09)**	
	Determine whether any of the sources identified during previous rounds of Review and Assessment have: Experienced substantially increased emissions (>30%). Received new relevant exposure in their vicinity	Sources identified during previous rounds as potentially significant are Cockenzie Power Station and the Lafarge Cement Works. Information on emissions of NO_x, Sulphur dioxide and Particulates was obtained from SEPA for 2008 and 2011. **Cockenzie Power Station** In summary, between 2008 and 2011: NO_x emissions have decreased from 13,016 to 2466 Tonnes per annum, i.e. a decrease of 81%. SO_2 emissions have decreased from 15,719 to 3179 Tonnes per annum, i.e. a decrease of 80%. Total Particulate emissions have decreased from 414 to 193 Tonnes per annum, i.e. a decrease of 53%. As there has not been a significant increase in emissions (>30%) no further assessment is required in respect of Cockenzie Power Station. **Lafarge Cement Works** In summary, between 2008 and 2011: NO_x emissions have decreased from 1,434 to 669 Tonnes per annum, i.e. a decrease of 46%. SO_2 emissions have decreased from 1,309 to 590 Tonnes per annum, i.e. a decrease of 45%. Total Particulate emissions have decreased from 66 to 26 Tonnes per annum, i.e. a decrease of 39%. As there has not been a significant increase in emissions (>30%) no further assessment is required in respect of Lafarge Cement Works.
	Obtain information on the total annual emission of the pollutant, and the height of the emission.	
	Use the nomograms to determine if the source requires further assessment.	
	Question	
	Do the emissions exceed the threshold in the relevant nomogram?	N/A
	Action	
	No further action required.	

East Lothian 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

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
All pollutants	**Approach 3 per Section C.1 of Box 5.5 of LAQM TG (09)**	
	Determine whether the installation is likely to give rise to significant pollutant emissions.	There are no new or significantly changed installations with no previous Air Quality Assessment within East Lothian.
	Obtain information on the total annual emission of the pollutant, and the height of the emission.	
	Use the nomograms to determine if the source requires further assessment.	
	Question	
	Does the source exceed the threshold in the relevant nomogram?	N/A
	Action	
	No further action required.	

East Lothian 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

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
Benzene	**Approach per Section C.2 of Chapter 5 of LAQM TG (09)**	
	Identify any major fuel storage depots handling petrol that have not been covered by previous Review and Assessment reports. Include nearby sources in neighbouring authorities.	There are no major fuel storage depots handling petrol in East Lothian.
	Determine the distance of the nearest relevant exposure.	
	Establish the annual emissions from the storage depot.	
	Use the nomograms in Figure 5.16 (2010 objective) to determine if the source requires further assessment.	
	Question	
	Does the source exceed the threshold in the nomograms?	N/A
	Action	
	No further action required.	

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

5.3 Petrol Stations

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
Benzene	**Approach per Section C.3 of Chapter 5 of LAQM TG (09)**	
	Identify all petrol stations with an annual throughput of more than 2000m^3 of petrol (2 million litres per annum), and with a busy road nearby (> 30, 000 vehicles per day), that have not been covered by previous Review and Assessment reports.	There are no petrol stations within East Lothian that meet the criteria described.
	Determine whether there is relevant exposure within 10m of the pumps.	
	Question	
	Does the petrol station meet the above criteria?	N/A
	Action	
	No further action required.	

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

5.4 Poultry Farms

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
PM_{10}	**Approach per Section C.4 of Chapter 5 of LAQM TG (09)**	
	Identify any farms housing in excess of: 400,000 birds if mechanically ventilated, 200, 000 birds if naturally ventilated, 100, 000 birds for any turkey unit.	Information from SEPA and East Lothian Council's Trading Standards confirms that the only PPC site for Poultry Farms in East Lothian is located at Appin Farm, North Berwick that can accommodate up to 98,400 birds and is mechanically ventilated. There are no poultry farms, including turkey units, in East Lothian that meet the criteria described.
	Establish whether there is relevant exposure within 100m of the poultry units.	
	Question	
	Does the poultry unit meet these criteria?	N/A
	Action	
	No further action required.	

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

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
Nitrogen dioxide PM_{10}	**Approach per Section D.1a of Box 5.8 of LAQM TG (09)**	
	Identify plant that is burning biomass in 50Kw to 20MW units.	The only Biomass unit identified is located at Queen Margaret University, Musselburgh which has a 1500KW unit. However, a Detailed Assessment for this unit was completed in October 2010 (Ref 15) that concluded that the biomass emissions will not result in any exceedence of the relevant Air Quality Objectives and that the process contributions are typically a small percentage of the overall Air Quality Objectives.
	Obtain information on: • Height of the stack • Diameter of the stack • Dimensions of buildings within 5 times the stack height (above the ground) • Description of the combustion appliance • Maximum emission rates (g/sec) of NO_x and PM_{10} or maximum thermal capacity	
	Calculate the "background adjusted" emission rates using the procedure set out in Para 5.78 (PM_{10}) and 5.81 and 5.84 (NO_2)	
	If necessary, calculate the "effective stack height"	
	Use the nomograms in Figure 5.19 (PM10) AND Figure 5.20 (NO2) to determine whether the source requires further assessment.	
	Question	
	Does the source exceed the threshold in the relevant nomograms?	N/A
	Action	
	No further action required.	

East Lothian Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.2 Biomass Combustion – Combined Impacts

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
PM_{10}	**Approach per Section D.1b of Box 5.8 of LAQM TG (09)**	
	Identify the areas in 500x500m squares with the highest densities of houses and service sector biomass combustion appliances.	No information is currently available on densities of houses and service sector biomass combustion appliances other than the unit already assessed above.
	Identify the types of appliances used in each 500x500m area.	
	Count the numbers of each appliance type in each 500x500m square. Multiply the number of houses for each appliance type by the annual household emission shown in Table 5.3. Sum the emissions from each of the domestic appliance types to give the total annual domestic emission from the 500x500m square.	
	Estimate the floor space occupied in the service sector in each of the identified 500x500m squares for each of the identified types of solid-fuel burning plant. Multiply the service sector floor space (in hectares) for each appliance type by the annual service sector emission per hectare. Sum the emissions from each of the sector service appliance types to give the total annual service sector emission from the 500x500m square.	
	Add the service sector emissions to the domestic emissions to give the total emissions from the 500x500m square	
	Estimate the fraction of space in the 500x500m square occupied by solid-fuel burning premises or domestic properties. Divide the annual emission by the fraction occupied by solid-fuel burning to give the emission density for the square (kg emissions per 500x500m area).	
	Question	
	Does the source exceed the threshold in the relevant nomogram? (Use nomogram in Figure 5.22 in Scotland).	N/A
	Action	
	No further action required	

East Lothian Council confirms that there are no biomass combustion plant in the Local Authority area.

6.3 Domestic Solid-Fuel Burning

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
Sulphur dioxide	**Approach per Section D.2 of Chapter 5 of LAQM TG (09)**	
	Identify areas where significant coal burning takes place. Smokeless fuel has similar sulphur content to coal and so should be treated in the same way.	There are no additional areas of domestic coal burning that have not been assessed in previous rounds of review and assessment.
	Collect information on the actual use of coal/smokeless fuel in these areas.	
	Question	
	Does the density of coal burning premises exceed 100 per 500x500m area?	N/A
	Action	
	No further action required.	

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

7 Fugitive or Uncontrolled Sources

RELEVANT POLLUTANTS	STEPS TO BE TAKEN TO COMPLETE ASSESSMENT	NOTES RELEVANT TO EACH STEP
PM_{10}	**Approach per Section E of Box 5.10 of LAQM TG (09)**	
	Obtain details of any air quality assessment already carried out for the relevant source.	Other sources of dust in East Lothian were screened during the previous round of review and assessment and no further sources have been identified.
	Establish whether there is relevant exposure "near" to the source(s) of dust emissions.	
	Determine whether there are dust concerns associated with the facility.	
	Question	
	Is there relevant exposure "near" to a source of dust emissions? Are there recent complaints about dust? Does visual inspection indicate significant dust emissions or dust tracked out of the site onto public roads?	N/A
	Action	
	No further action required.	

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

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

East Lothian Council has examined the results from monitoring in the district. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment at this time.

8.2 Conclusions from Assessment of Sources

The Updating and Screening Assessment of Road Traffic and other Transport sources as well as Fugitive and Uncontrolled sources has not indicated any exceedences of any air quality objective.

8.3 Proposed Actions

The results of new monitoring data and the screening assessments indicate that the Objectives for the majority of pollutants are being, and will continue to be met, by the target dates.

However, passive monitoring of Nitrogen dioxide in Musselburgh continues to indicate concentrations at various locations that are close to the Annual Mean Objective. Accordingly, a Detailed Assessment of NO2 at these locations was completed in June 2012 (Ref 18).

It was concluded from the Detailed Assessment that the highest modelled annual average NO2 concentrations were predicted at receptors located on High Street and Bridge Street close to bus stops and that the majority of the predicted annual mean exceedences were marginal. An element of uncertainty was introduced to the computer model used in the Detailed Assessment as a result of estimating emissions from both queuing traffic and stationary buses. It was considered appropriate by East Lothian Council to carry out passive monitoring of NO2 at a representative sample of these exceeding receptor locations to confirm the results of the modelling assessment. This would greatly enhance the reliability of any Further Assessment and allow better delineation of any required AQMA boundary. As a result of the abovementioned conclusion East Lothian Council started monitoring NO2 concentrations at 5 new locations on 3rd May 2012; using passive diffusion tubes. These new monitoring sites are located at receptors R1 (167 High Street), R5 (137 High Street), R13 (69 High Street), R24 (86 High Street) and R47 (15 Bridge Street) where dispersion modelling indicates that exceedences of the NO2 annual mean objective had occurred during 2011. It was also recommended following the detailed assessment of NO2 that East Lothian Council should consider the declaration of an AQMA for the NO2 annual mean objective after submission of the next LAQM Report, the 2013 Progress Report, due for submission by the end of April 2013 if monitoring results obtained from new locations at R1 (167 High Street), R5 (137 High Street), R13 (69 High Street), R24 (86 High Street) and R47 (15 Bridge Street), in addition to existing monitoring locations, confirms the modelling results that the NO2 annual mean objective has been exceeded.

9 References

1. The Stationary office, The Environment Act 1995, 1995.
2. Department for Environment, Food and Rural Affairs, The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, July 2007.
3. Part IV of The Environment Act 1995: Local Air Quality Management, Technical Guidance LAQM.TG (09), Department of Environment, Food and Rural Affairs, 2009.
4. The Stationary Office, Air Quality (Scotland) Regulations 2000 (Scottish SI 2000 No 97)
5. The Stationary Office, Air Quality (Scotland) (Amendment) Regulations 2002 (Scottish SI 2002 No 297).
6. East Lothian Council, Local Air Quality Management: Updating and Screening Assessment, March 2004
7. East Lothian Council, Local Air Quality Management: Detailed Assessment, April 2005.
8. East Lothian Council, Local Air Quality Management: Progress Report, August 2005.
9. East Lothian Council, Local Air Quality Management: Updating and Screening Assessment, August 2006.
10. East Lothian Council, Local Air Quality Management: Progress Report, July 2007.
11. East Lothian Council, Local Air Quality Management: Progress Report, February 2009.
12. Local Air Quality Management: Update on Particles**,** Correspondence form Scottish Executive, 06 April 2005.
13. UK Equivalence Programme for Monitoring of Particulate Matter, Final Report for DEFRA and the Devolved Administrations, Bureau Veritas, June 2006.
14. East Lothian Council, Local Air Quality Management: Updating and Screening Assessment, November 2009.
15. East Lothian Council, Local Air Quality Management: Detailed Assessment, October 2010
16. East Lothian Council, Local Air Quality Management: Progress Report, October 2010.
17. East Lothian Council, Local Air Quality Management: Progress Report, June 2011.
18. East Lothian Council, Local Air Quality Management: Detailed Assessment, June 2012
19. East Lothian Council, Review of Passive and Automatic Monitoring of Nitrogen Dioxide in East Lothian, January 2010.
20. Scottish Power Generation Ltd: Application under Section 36 of the Electricity Act 1989 to construct and operate a 1000MW gas-fired combined cycle gas turbine (“CCGT”) generating station and associated works at Cockenzie Power Station, Cockenzie, October 2011.
21. East Lothian Council, Planning Application by Viridor Waste Management, Planning Reference 08/00467/FUL, for planning permission for the erection of an Energy from Waste with combined heat and power facility at Dunbar Landfill, Oxwell Mains, Dunbar, May 2008.
22. Scottish Environmental Protection Agency, Memorandum Ref ELC/2008/1040 to East Lothian Council, 25 June 2009.

Appendices

Appendix 1: Summary of previous Review and Assessment Reports

Appendix 2: QA/QC Data

Appendix 1: Summary of previous Review and Assessment Reports

Summary of Previous Review and Assessment Reports				
ROUND	**REPORT TYPE**	**REPORT DUE DATE**	**REPORT COMPLETION DATE**	**CONCLUSIONS**
2	**Updating & Screening Assessment**	**April 2003**	March 2004	No further assessments required for **Carbon Monoxide, Benzene, Lead and 1,3-Butadiene**. Detailed Assessments required for: **Nitrogen Dioxide** due to road traffic sources in Musselburgh High St **Sulphur Dioxide** due to industrial sources (Cockenzie Power Station and Lafarge Cement Works) **PM10** due to road traffic sources in Musselburgh High St and North High St and also due to industrial source (Cockenzie Power Station)
2-1	**Detailed Assessment**	**April 2004**	**April 2005**	**Nitrogen Dioxide** due to road traffic in Musselburgh High St expected to meet Objectives by target year of 2005. No Further Assessment required at this time. **Sulphur Dioxide** in vicinity of Cockenzie Power Station was not forecast to exceed Objectives. 15-minute mean Objective forecast to be slightly exceeded in vicinity of Lafarge Cement Works, although abatement equipment to be installed should ensure that Objective will be met. No further assessments required at this time. PM10 **Annual Mean Objective forecast to be exceeded in Musselburgh High St due to roadwork's and Cockenzie due to emissions from Coal Plant at Cockenzie Power Station. However, results were based on Osiris monitoring system and use of correction factors. Further Assessments to be carried out by East Lothian Council using TEOM Analyser for road traffic sources in Musselburgh and by SEPA using Gravimetric Sampler for industrial source in Cockenzie.**
2-2	**Progress Report**	**April 2005**	**August 2005**	**Nitrogen Dioxide** levels due to road traffic sources continue to comply with Objectives within Musselburgh and throughout East Lothian. PM10 **Further Assessments due to road traffic sources in Musselburgh and industrial source in Cockenzie still to be completed and results to be incorporated in Updating and Screening Assessment Report due in April 2006.**
3	**Updating & Screening Assessment**	**April 2006**	**August 2006**	No exceedences of any Objectives forecast. No Further Assessments required
3-1	**Progress Report**	**April 2007**	**July 2007**	**Nitrogen Dioxide** levels due to road traffic sources in Musselburgh and proposed expansions of Musselburgh Racecourse and Wallyford Village continue, and are forecast, to comply with Objectives. **PM10** levels due to road traffic in Musselburgh complied with using local correction factor but exceeded using national correction factor. TEOM unit to be replaced with a BAM unit following results of Equivalence Study carried out by DEFRA.
3-2	**Progress Report**	**April 2008**	**February 2009**	**Nitrogen Dioxide** levels due to road traffic sources in Musselburgh and proposed expansions of Musselburgh Racecourse and Wallyford Village continue, and are forecast, to comply with Objectives. Passive monitoring to be introduced in Wallyford. **PM10** levels due to road traffic in Musselburgh complied with using local correction factor but exceeded using national correction factor. TEOM unit replaced with a BAM unit in March 2008 and results from new monitor to be incorporated into Updating and Screening Assessment Report due in April 2009. Sulphur Dioxide **in vicinity of Lafarge Cement works continues to comply with Objectives**

Summary of Previous Review and Assessment Reports				
Round	**Report Type**	**Report Due Date**	**Report Completion Date**	**Conclusions**
4	**Updating & Screening Assessment**	**April 2009**	**November 2009**	**PM10 and Nitrogen Dioxide** levels in Musselburgh will require to be subject of a Detailed Assessment due to the Biomass Unit located at Queen Margaret University. The results of the Updating and Screening Assessment carried out for all other pollutants indicates that current Air Quality Objectives are being complied with.
4-1.1	**Detailed Assessment of Nitrogen Dioxide and PM10 due to QMU Biomass Unit**	**2010**	**October 2010**	**PM10 and Nitrogen Dioxide** levels continue to be met
4-1	**Progress Report**	**April 2010**	**October 2010**	All AQO's being complied with
4-2	**Progress Report**	**April 2011**	**June 2011**	Detailed Assessment of **Nitrogen Dioxide** required for Musselburgh High Street. All other AQO's being complied with.
4-2.1	**Detailed Assessment of Nitrogen Dioxide in Musselburgh due to Road Traffic**	**2012**	**May 2012**	AQMA required for Bridge Street and High Street due to forecast exceedence of Annual Mean AQO if additional monitoring confirms predicted exceedences.
5-1	**Updating &Screening Assessment**	**April 2012**	**November 2012**	AQMA required for Bridge Street and High Street due to forecast exceedence of Annual Mean AQO if additional monitoring confirms predicted exceedences in 2012.

Appendix 2: QA:QC Data

Diffusion Tube results for 2011

Site ID	Location	2011												AVERAGE	Data Capture %	BIAS ADJUSTED (0.81)
		January	February	March	April	May	June	July	August	Sep	October	Nov	Dec			
1	Musselburgh – Newbigging Junction	**48**	**42**	**49**	MISSING	33	19	28	36	37	**40**	**40**	**40**	37	91.7	30
4	Musselburgh - 87 High St	**41**	38	**43**	28	30	28	23	29	28	29	33	37	32	100	26
6	Musselburgh – 147 High Street	**49**	**44**	**66**	**55**	**47**	**56**	**53**	**55**	**41**	**40**	**40**	**41**	**49**	100	**40**
7	Musselburgh – 183 High St	**54**	**46**	**56**	**46**	37	**53**	**59**	**50**	33	39	30	36	**45**	100	36
8	Musselburgh - Mall Av	**42**	31	38	29	27	30	24	21	23	30	29	32	30	100	24
9	Musselburgh – 45 Bridge Street	36	**43**	**41**	33	26	32	34	35	25	31	28	27	33	100	27
10	Musselburgh – 150 North High St	**54**	**52**	**60**	**44**	38	**40**	33	**41**	36	37	**44**	38	**43**	100	35
11	Tranent – 89 High St	28	31	35	32	22	30	34	31	18	24	22	19	27	100	22
12	Tranent – 82 High St	36	28	42	38	22	38	**40**	28	22	23	27	22	31	100	25
13	Tranent – 55 High Street	**42**	38	**48**	37	32	36	34	32	32	37	38	29	36	100	29
14	Tranent – 26 High St	**43**	**44**	**52**	**41**	37	**42**	38	**42**	36	**44**	**40**	37	**41**	100	33
15	Tranent – 58 Bridge St	37	27	34	26	21	25	20	27	19	20	23	20	25	100	20
16	Haddington - Lyn Lea	15	11	16	10	<1	MISSING	40	9	MISSING	11	12	13	15	83.3	12
23	Musselburgh - 133 N High St	33	34	38	29	21	28	32	29	22	MISSING	28	27	29	91.7	23
24	Musselburgh - 133 N High St	39	30	36	30	23	28	29	28	22	24	27	30	29	100	23
25	Musselburgh - 133 N High St	**41**	32	38	33	24	29	32	MISSING	21	26	25	29	30	91.7	24
26	Wallyford - 116 Salters Rd	36	28	**40**	35	MISSING	32	30	29	24	26	27	27	30	91.7	24
27	Wallyford - 71 Salters Rd	MISSING	10	MISSING	28	21	MISSING	29	30	22	31	29	29	25	75	20

Diffusion Tube Bias Adjustment Factors

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data Capture Check
1	12/01/2011	01/02/2011	33.0	39.0	41.0	38	4.2	11	10.3	23	86.7	Good	Good
2	01/02/2011	01/03/2011	34.0	30.0	32.0	32	2.0	6	5.0	33	85.7	Good	Good
3	01/03/2011	04/04/2011	38.0	36.0	38.0	37	1.2	3	2.9	30	94.4	Good	Good
4	04/04/2011	03/05/2011	29.0	30.0	33.0	31	2.1	7	5.2	28	93.5	Good	Good
5	03/05/2011	31/05/2011	21.0	23.0	24.0	23	1.5	7	3.8	25	91.8	Good	Good
6	31/05/2011	30/06/2011	28.0	28.0	29.0	28	0.6	2	1.4	14	52.4	Good	Poor Data Capture
7	30/06/2011	02/08/2011	32.0	29.0	32.0	31	1.7	6	4.3	19	93.2	Good	Good
8	02/08/2011	30/08/2011	29.0	28.0		29	0.7	2	6.4	21	93	Good	Good
9	30/08/2011	27/09/2011	22.0	22.0	21.0	22	0.6	3	1.4	18	94.1	Good	Good
10	27/09/2011	02/11/2011		24.0	26.0	25	1.4	6	12.7	22	94.1	Good	Good
11	02/11/2011	14/12/2011	28.0	27.0	25.0	27	1.5	6	3.8	24	92.3	Good	Good
12	14/12/2011	10/01/2012	27.0	30.0	29.0	29	1.5	5	3.8	19	93.5	Good	Good
13													
										Overall survey -->		Good precision	Poor Overall DC

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

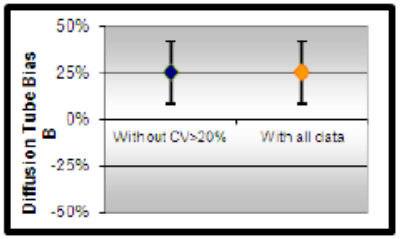
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	East Lothian Musselburgh N High St

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

Accuracy (with 95% confidence interval)	
without periods with CV larger than 20%	
Bias calculated using 11 periods of data	
Bias factor A	0.81 (0.72 - 0.94)
Bias B	23% (6% - 40%)
Diffusion Tubes Mean:	29 μgm^{-3}
Mean CV (Precision):	6
Automatic Mean:	24 μgm^{-3}
Data Capture for periods used: 92%	
Adjusted Tubes Mean:	24 (21 - 28) μgm^{-3}

Accuracy (with 95% confidence interval)	
WITH ALL DATA	
Bias calculated using 11 periods of data	
Bias factor A	0.81 (0.72 - 0.94)
Bias B	23% (6% - 40%)
Diffusion Tubes Mean:	29 μgm^{-3}
Mean CV (Precision):	6
Automatic Mean:	24 μgm^{-3}
Data Capture for periods used: 92%	
Adjusted Tubes Mean:	24 (21 - 28) μgm^{-3}



Jaume Targa, for AEA
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