

# Transport & Environment Committee

10am Tuesday 27 August 2013

## Redesign of Recycling Services – Outline Business Case

Item number	7.10
Report number	
Wards	ALL

### Links

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Coalition pledges	<a href="#">P44</a>
Council outcomes	<a href="#">CO17</a> <a href="#">CO18</a> <a href="#">CO19</a>
Single Outcome Agreement	<a href="#">SO4</a>

### Mark Turley

Director of Services for Communities

Contact: Pippa Milne, Waste Services Manager

E-mail: [pippa.milne@edinburgh.gov.uk](mailto:pippa.milne@edinburgh.gov.uk) | Tel: 0131 529 5844

# Executive summary

## Kerbside Recycling Review – Outline Business Case

### Summary

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This paper presents an Outline Business Case for the Waste Services proposal to move from the existing kerbside recycling provision of red and blue boxes towards a twin stream collection approach for low density housing areas (i.e. properties provided with individual wheeled bins for refuse collection), approximately 139,000 of the City's households. The purpose of the business case is to establish if the proposed redesigned service is affordable i.e. the net cost will not exceed the cost of existing recycling services and satisfies Best Value requirements.

The proposal to change the current method of collection is the culmination of a recycling review project commissioned by Zero Waste Scotland (ZWS), on behalf of the Council, in early 2012. The project has been fully funded through ZWS's Local Authority Support programme.

Approval of the proposed twin stream collection approach will result in positive impacts in the following areas:

- To increase the amount of waste collected for recycling and therefore reduce the amount of material disposed of to landfill;
- Increase the Council's household recycling performance in line with National targets;
- To provide a kerbside recycling service that encourages greater participation from residents by providing increased recycling capacity and simplifying residents' involvement;
- Allows the opportunity to improve and integrate recycling services provided to both high density areas and business waste customers;
- To provide a more holistic waste and resource service by adopting 'same day' collection principles; and
- To maximise the operational flexibility of the service by delivering all services using in-house resources and adopting common vehicles to service low and high density areas and business waste customers.

Approval of the Kerbside Recycling Review Outline Business Case will allow procurement to commence for processing capacity, containers, and the vehicles required to implement the proposed twin stream collection approach which will inform the development of a final full business case.

## Recommendations

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The committee is asked to:

- a) Approve the business case for the redesigned kerbside recycling service for low density housing areas and agree that the service should commence procurement of bins, vehicles and processing capacity.
- b) Agree to realign communal recycling provision to reflect the changes in the mix of materials being made in kerbside collections and to expand provision where costs can be contained within current budget.
- c) Agree to a further report on options and cost for expanding and enhancing communal recycling services for high density housing areas.

## Measures of success

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- Recycling increases above 50% from 2014/15 onwards.
- The net cost of the new service does not exceed the cost of the current service.

## Financial impact

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The key determinant for affordability of the proposed recycling service was that the net cost will not exceed the cost of the existing recycling collections. The net cost is the operational cost of the recycling collections (staff, vehicles etc...) and the cost of processing the recyclable material collected less any income derived from the onward sale of the processed recyclate. The business case modelled three different assumptions regarding income from recycled materials – high income of £30 per tonne, medium income of £15 per tonne and zero income. The business case is based on the medium income assumption of £15 per tonne ( the most recent industry benchmarking data gave a median price per tonne for dry recyclate of £26)

When comparing the cost of the redesigned low density kerbside recycling collection on its own the net cost is £736,000 less than the current budgeted net costs. However this does not take into account the one off capital cost of £3.3m for the new bins which will be funded through prudential borrowing repayable over 5 years. When the one off capital costs for new bins are taken into account then the net cost is £47,000 more than current budget in year 1 and then £76,000 less in years 2 – 5 and then £736,000 less from year 6 onwards..

It is also intended to expand and improve recycling provision in high density housing (tenements/flats) areas. The cost of expanding and enhancing recycling services in high density areas could be introduced together with service efficiencies to deliver a saving of £90,000 compared to the current budget. There will also be one off capital

costs for enhancing the high density housing recycling provision of £2.66m. As with the low density kerbside service it is intend to fund these capital costs from prudential borrowing repayable over five years. The impact on net costs would be an increase in year 1 of £667,000 and of £609,000 in years 2 – 4 and then a saving on the cost of high rise recycling collections of £90,000 from year 6 onwards. However it should be noted it is intended to phase in the expansion and enhancement of high density housing recycling provision over several years and this will enable the one off capital costs to be spread over out over a longer period rather than being incurred all in year 1.

When assessing the overall service cost of implementing the new recycling collections in both low density and high density housing areas and excluding the one off capital costs it is between 6% and 1.5% less than the existing budgeted service costs depending on which assumption on income from recyclable material is used (high, medium or low income). Taking the combined one off capital costs into account the impact on waste services budgets would be to increase expenditure in year 1 of the redesigned services by £714,000 and by £533,000 in the subsequent four years at the end of which the prudential borrowing costs will have been repaid. From year 6 onwards the redesigned services would cost £826,000 less than the current service (based on the medium income assumption).

The business case also assumes a 7.9% % increase in recycling from the redesigned kerbside service and a 1.8% increase from improvements in the high density communal service and a consequent reduction in landfill costs. If this increase in performance is not achieved the cost of landfill will increase. If the landfill tonnage assumed in the model increases by 10% then costs would increase by £362,975. If performance is exceeded, costs would reduce by the same amount.

## Equalities impact

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The Public Sector Equality Duty (PSED) general duties will be accommodated through the provision of a service which is easier to use, through the continued provision of assisted collections for those people who require them, and by the use of alternative containers where those are required.

Similar benefits would be expected in relation to the 10 key rights in terms of making the service simpler to use, and flexible in terms of its operation.

## Sustainability impact

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The provisions of the Climate Change (Scotland) Act 2009 would be met in the following ways:

- The provision of an enhanced recycling service will divert additional waste from landfill which will reduce the carbon impact of managing this waste;
- By moving additional waste materials from landfill to recycling, the enhanced service will deliver wider environmental and economic benefits and so contribute to sustainable development.

## Consultation and engagement

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Public consultation was held during the first quarter of 2013, using demographically representative focus groups, with residents from both low and high density housing areas.

The Council commissioned research to consult with residents to understand the impact of this change on them and to shape the communications and engagement activities.

The research found that the new service addresses most of the points raised by residents.

More detailed consideration of the research and the recycling communications strategy will be given at a future meeting of the Transport and Environment Policy Review Sub-Committee.

## Background reading / external references

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[Recycling Redesign](#)

## Redesign of Recycling Services – Outline Business Case

### 1. Background

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- 1.1 The Kerbside Recycling Review Outline Business Case (appendix 1) details the Waste Services proposal to move from the existing kerbside recycling provision of red and blue boxes towards a twin stream collection approach for properties provided with individual wheeled bins for landfill waste, approximately 139,000 of the City's households. The Kerbside Recycling Review will also seek to enhance recycling from communal collections.
- 1.2 In early 2012 the Council, via Zero Waste Scotland's (ZWS) Local Authority Support Programme, commissioned a project to review the existing kerbside dry recycling service provision to low density households. The Council was seeking to identify alternative dry recycling collection options that may better achieve the following objectives:
- Improve upon existing recycling performance and enable the Council to meet its internal 50% recycling target ;
  - In achieving the recycling target set out above enable the service to deliver against the savings already associated with achieving the target;
  - Provide residents with increased capacity to recycle, particularly to underpin managed weekly collections;
  - Appreciates and complements the relationship between ease of use by the public and National policy and legislative issues around quality of collected material and the collection of key materials;
  - Consider collection systems that are easier to use and understand by the public subsequently increasing the number using the service and diverting material from landfill;
  - Consider alternative collections systems that would offer greater potential for integration with commercial waste and high density housing recycling provision; and
  - Offer the potential to realise cashable savings across the waste collection service as a whole.
- 1.3 The decision to review the existing service is also driven by National policy considerations, namely the Scottish Government's Zero Waste Plan (ZWP) and

Waste Scotland Regulations 2012 (WSR). The latter is the regulatory mechanism designed to implement the policy objectives and aspirations of the ZWP. The WSR sets out a clear requirement for the Council to provide a kerbside recycling service no later than 1<sup>st</sup> January 2014 and collects five key dry recyclable materials:

- Paper;
- Cardboard;
- Glass;
- Metals; and
- Plastics.

- 1.4 The existing service is largely compliant with the exception that only plastic bottles are currently accepted for recycling in both low and high density housing areas.
- 1.5 Following a number of stages within the project to consider a wide range of collection options and a stakeholder workshop to identify the Council's preferred option, the Council then engaged with the recycling industry and Zero Waste Scotland. All these stages culminated in identifying a preferred collection option. Recyclable material is collected in a standard bin and a box (or alternative). Paper, cardboard, mixed plastics, and metals would be collected in the bin. Glass, textiles, small waste electrical and electronic equipment (WEEE), and household batteries would be collected with the box.
- 1.6 The preference has been presented to both the Transport & Environment Policy Sub-committee (December) and the Transport & Environment Committee (January) at which the preferred collection option was approved, subject to this business case.

## 2. Main report

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### Proposed Service

- 2.1 Waste Services propose to provide individual properties with a service commonly termed within the waste industry as a twin stream service. Properties will be provided with two containers, one a standard size bin and the other a box already provided. Crucially both containers will be collected on the same day on a fortnightly basis with less separation of materials than is currently required by the householder, thus simplifying the service for residents and therefore making participation in recycling easier. The benefit is that more residents participate, the amount of material presented for recycling is increased and as a result the amount of waste presented for landfill disposal is reduced
- 2.2 In making this change to the existing service it is projected that the tonnages collected (based on industry data collected from other similar schemes) for

recycling through the kerbside scheme and therefore diverted from landfill, should increase by around 11,000 tonnes (from 16,000 tonnes to 27,000 tonnes) representing a significant increase upon existing performance and a saving of approximately £1.1 million.

2.3 In addition to replacing the existing low density kerbside recycling service there is also a need to expand and improve communal recycling provision in high density housing areas. This will involve:

- Changing the mix of materials collected in communal recycling containers in line with the redesigned low density kerbside recycling service. (Cardboard, paper, plastics, metals would be placed in one container and where appropriate and practicable a separate container would be provided for glass.)
- Increasing number of sites for communal and on-street recycling
- Increasing capacity of recycling containers at existing and new locations by using the larger 3200 litre side loading bins where appropriate (phased in over 3 years).

Industry data indicates that performance on landfill diversion from communal recycling schemes is significantly lower than that from kerbside recycling and the business case has therefore assumed a reduction of 3,093 tonnes giving a saving of approximately £309,300 per annum.

## **Business Case**

2.4 The review carried out by AMEC (a waste consultancy firm), via Zero Waste Scotland's (ZWS) Local Authority Support Programme, found that there is a significant risk that without investment in a new dry recycling collection system the Council will fail to achieve its internal 50% recycling target. The Council has already 'banked' the avoided disposal costs related to achieving 50% and there is therefore high risk that a proportion of those savings will not be delivered. If the Council overachieves the 50% target there are associated benefits in respect of further avoided disposal cost savings.

2.5 For the current red and blue box service to perform at the same level it is anticipated that the fortnightly frequency would require to be increased to a weekly collection, therefore doubling the number of resources/cost required for the service to run. Based upon the current rate per tonne paid to the existing contractor the annual spend would need to increase to an estimated £3.2 million

2.6 The review of the kerbside recycling service considered a range of options and compared them in terms of cost, legislative compliance and performance. Fully co-mingled dry recycle collections, which are generally considered the simplest to use and most cost effective collection system, were ruled out on the basis that they do not comply with the Waste (Scotland) Regulations 2012 (WSR). The WSR require local authorities to collect recyclables in a way that ensures they



are of a quality high enough to prioritise closed loop recycling, meaning that materials are recycled back into the same product type (e.g. glass into new glass containers).

- 2.7 Twin streams options offered the most cost effective alternative. Options remained as to the mix of material to be collected in each container. A market sounding exercise was undertaken to understand the views of re-processors, enabling the most attractive option to be developed thereby maximising income from the materials. This led to the selection of the preferred solution with plastics, cans, paper and cardboard being collected in a bin and glass being collected in a box.
- 2.8 There are two methods that can be employed to collect recycling under the preferred solution. The first is to use dual compartment refuse collection vehicles (RCV with pod) that enable the co- collection of food waste with other materials. The Council also considered an alternative model in which each bin is collected on a dedicated vehicle that reduces the requirement to procure non standard RCV's.
- 2.9 The standard RCV approach offers maximum flexibility in respect of the fleet as it can be used elsewhere within the City on other collections should the need arise. Despite employing more staff, this methodology is more cost effective because it improves the productivity of each crew and reduces the number of spare vehicles required across the refuse collection fleet. Although the RCV with pod approach may be perceived, from a public point of view, to be more efficient given that two materials are collected on the same vehicle, the main drawback of the vehicle was considered to be the location of disposal facilities. A key requirement when using a dual compartment RCV is having disposal facilities for different materials co-located in strategic areas. This is not something the Council currently benefits from and is unlikely to do so until 2017, when the food and residual waste treatment facilities at Millerhill are both due to be operational. By this stage vehicles used on the new collection are likely to require replacement and the decision to use dual compartment vehicles can be revisited.
- 2.10 The financial model therefore assumes the following:

Week	Collection type	Vehicle
One	Food waste	Small food waste vehicle as used currently
	Residual waste	Refuse Collection Vehicle as used currently
	Garden waste	Refuse Collection Vehicle as used currently

Two	Food waste	Small food waste vehicle as used currently
	Blue bin	Refuse Collection Vehicle as used currently
	Blue box	Small recycling vehicle allowing for colour segregation of glass to comply with WSR.

- 2.11 When assessing the new recycling service against the existing service the costs of the residual collection have also been taken into account. This is because the new service is projected to recycle more material, therefore diverting more material from the residual collection and reducing the Council's landfill tax burden. Further productivity gains (i.e. by increasing the number of bins serviced per route), that will move Edinburgh more in line with industry norms, have also been taken into account.
- 2.12 The scenarios also assume enhanced recycling is provided in high density areas. This includes greater use of side loading bins for recycling and residual waste in communal areas. These bins provide more capacity via fewer bins and can be collected more efficiently.
- 2.13 As part of the development of an affordable business case and to test Best Value requirements, the financial model tested and compared a number of scenarios which are outlined in Table 1 below. This includes three scenarios based on the proposed future service but with differing assumptions on the level of income generated from the sale of the materials collected.

**Table 1 – Summary of key scenarios**

Scenario	Description
As is	The current service with costs based upon 13/14 budget. The services delivered under contract are shown as a cost per tonne only and none of the resources deployed by external contractors are shown.
Services In-house	Assumes the current services are delivered using in-house resources and 13/14 budget costs. The kerbside dry service is delivered using in-house resources collecting the tonnage estimated for 13/14.
Future in house (bin & a box) - High Income	Projects the costs of the whole service based around a box/bin kerbside dry recycling collection and assumes collections are delivered in-house. Processing/sorting of materials would be provided externally. Assumes a high income (£30 per tonne) from the sale of recycling materials. On high density collections this model assumes that side loading bin collections are extended to cover more properties on residual waste and to replace the 1280 litre bin collections for recycling.

Future in house (bin & a box) - Medium Income	As above with a medium income level for dry recyclables of £15 per tonne.
Future in house (bin & a box) - Zero Income	As above with zero income from the sale of dry recyclables (£0 p/t).

2.14 From the scenarios in Table 1 detailed cost modelling was conducted and is presented in Appendix 2. The key determinant for affordability of the proposed new kerbside recycling service was that the net cost will not exceed the cost of the existing recycling collections. The resulting cost comparison is illustrated in Table 2.

**Table 2 – Cost comparison of key future scenarios against cost of existing service**

£000s	As Is	Future High Income (£30) (OMB Driver only)	Future Medium Income (£15) (OMB Driver Only)	Future Zero Income (OMB Driver Only)
Low density (kerbside) Net Operational costs	14,984	13,929	14,248	14,566
Variance		-1,022 -6.8%	-736 -4.9%	-418 -2.8%
High density (communal) Net Operational Costs	8,410	8,069	8,320	8,468
Variance		341 -4.1%	90 -1.1%	+58 +0.7%
Total Net Operational Costs	23,394	21,998	22,568	23,034
Variance		-1396 -6%	-826 -3.5%	-360 -1.5%

2.15 The value of materials is linked to recycling commodity markets and can be tracked on a monthly basis. The value of materials can decrease as well as increase and there is consequently a degree of risk that the Council will bear. The level of risk the Council is willing to take will dictate the level of material value to be offered back to the Council. It is recommended that the Council does bear some of the material value risk but seeks to cap any liability in the event of severe market down turn. The implications of this are that the Council would therefore not realise the full potential value of the materials supplied but is

protected in the event of a significant reduction in material values. Should the recycling market improve considerably then this should be reflected in any proposed payment mechanism via some form of 'super profit' arrangement.

- 2.16 Recycling material prices are published and these figures and the prices achieved by other local authorities, using similar collection systems, have been used for benchmarking purposes. The most recent benchmarking data prepared by WRAP (the government funded Waste Resources Action Programme) in early 2012 gave a median price per tonne for dry recyclate of £26 per tonne. Given the volatility of recyclate prices the most prudent scenario to use in determining affordability of the future in-house service is the one based on the medium income figure (£15 per tonne). This gives an annual net operational cost that is £826,000 less than current service provision.
- 2.17 In addition to the costs presented in the cost model for the proposed recycling service, there are a number of 'one' off costs that would be incurred during the initial implementation of the proposed recycling service. These implementation costs are presented in Table 3.

**Table 3 – Implementation cost for proposed recycling service**

RESOURCE	Description	COST
<b>CAPITAL (Containers)</b>		
Low Density (kerbside)		£3,327,200
High Density (communal)		£2,659,099
<b>Total Capital</b>		<b>£5,986,299</b>
<b>REVENUE</b>		
Customer Service	additional contact centre costs in relation to anticipated increase in call volumes and customer service staff	£87,000
Operational Contingency	Additional spare vehicles and crew to provide back up and minimise any problems during implementation	£94,000
<b>Total Revenue</b>		<b>£181,000</b>
<b>Grand Total</b>		<b>£6,167,299</b>

- 2.18 Given the constraints and demands on the Council's General Services Capital budget it is assumed that the capital costs will need to be met through prudential borrowing funded over 5 years at an additional annual cost of £1.36 million. The impact on waste services budgets would be to increase expenditure in year 1 of the redesigned service by £714,000 and by £533,000 in the subsequent four years after which the prudential borrowing costs will have been repaid. However when comparing the cost of the redesigned low density kerbside recycling collection on its own the total cost is £47,000 more than current budgeted costs in Year 1 and then £76,000 less for the next 4 years. This gives a net saving of £257,000 on kerbside collection costs over the 5 year period. It is the cost of

improving and enhancing communal recycling provision in high density property areas that increases the overall costs for waste services.

- 2.19 The lower rates of landfill diversion and recycling tonnages for communal recycling results in a lower level both of savings on landfill costs and of income from the sale of recyclable materials leading to a higher net cost in the first five years. The cost of the redesigned recycling service in high density areas is £667,000 more than is currently budgeted in year 1 and £609,000 more for Years 2 – 4.
- 2.20 Given the significant increase in costs in the business case for the expansion and enhancements to high density communal recycling services it is proposed that further work is carried out on both the timeframe for making the improvements and alternative, lower cost solutions. In the short-term it may be more affordable to re-align the mix of materials that are collected in communal facilities to reflect the proposed changes in the kerbside service (i.e. cardboard, paper, plastics and metals all in the same container), to look at starting to expand the number of communal recycling sites and using communications and engagement with residents to increase participation rates.

## **Key Dependencies**

### Transition arrangements

- 2.21 A key consideration as part of the Review of Recycling is the expiry of existing kerbside recycling contract on 31st January 2015. The incumbent contractor currently provides a kerbside collection and processing service for dry waste recyclates but the remaining contract period has been agreed on the basis of a phased replacement of the current service. The intention is to phase in the new service during 2014. The detailed timetable will be largely dependent on the procurement of bins and the practicalities of storing and distributing such a large number of bins.

### ICT

- 2.22 Following the introduction of managed weekly collections the Transport and Environment Committee acknowledged the impact that antiquated data management systems had on the service during the implementation of those changes. The Confirm OnDemand system approved by Finance and Budget Committee on 21<sup>st</sup> February will be implemented between September and December 2013. This brings a wide range of improvements including more accurate asset management information, real time service performance information via in-cab devices, better systems integration, enabling more efficient working practices, and comprehensive management information

## **Conclusions**

- 2.23 The key criterion for affordability of the proposed recycling service was that the net cost will not exceed the cost of the existing recycling collections. This has been met for the kerbside service for low density housing areas. The expansion

and enhancement of the communal recycling service in high density areas will result in significant additional costs in the first 5 years. However there are options for reducing costs or spreading costs over a longer period and these will be the subject of a further report.

- 2.24 The new kerbside recycling service enables the Council to reduce waste disposed of to landfill and provides a better platform for Waste Services to achieve the 50% recycling target set within the Council.
- 2.25 The next steps towards implementation will include the procurement of contracts for the processing of materials and supply of vehicles and bins.

### 3. Recommendations

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- 3.1 The committee is asked to:
- a) Approve the business case for the redesigned kerbside recycling service for low density housing areas and agree that the service should commence procurement of bins, vehicles and processing capacity.
  - b) Agree to realign communal recycling provision to reflect the changes in the mix of materials being made in kerbside collections and to expand provision where costs can be contained within current budget.
  - c) Agree to a further report on options and cost for expanding and enhancing communal recycling services for high density housing areas.

## Mark Turley

Director of Services for Communities

### Links

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<b>Coalition pledges</b>	P44 – Prioritise keeping our streets clean and attractive
<b>Council outcomes</b>	CO17: Clean – Edinburgh’s streets and open spaces are clean and free of litter and graffiti. CO18: Green – We reduce the local environmental impact of our consumption and production. CO19: Attractive Places and Well Maintained – Edinburgh remains an attractive city through the development of high quality buildings and places and the delivery of high standards and maintenance of infrastructure and public realm.
<b>Single Outcome</b>	SO4 – Edinburgh’s communities are safer and have improved

**Agreement** physical and social fabric

**Appendices** Appendix 1 – Redesign of Recycling Business Case  
Appendix 2 – Redesign of Recycling Financial Model

**Kerbside Recycling Review**  
**Project Business Case**



## Executive Summary

In early 2012 the Council, via Zero Waste Scotland's (ZWS) Local Authority Support Programme, commissioned a project to review the existing kerbside dry recycling service provision to low density households. The Council was seeking to identify alternative dry recycling collection options that may better achieve the following objectives than the existing collection service:

- Improve upon existing recycling performance and enable the Council to meet its internal 50% recycling target;
- In achieving the recycling target set out above enable the service to deliver against the savings already associated with achieving the target;
- Provide residents with increased capacity to recycle, particularly to underpin managed weekly collections;
- Appreciates and complements the relationship between ease of use by the public and National policy and legislative issues around quality of collected material and the collection of key materials;
- Consider collection systems that are easier to use and understand by the public subsequently increasing the number using the service and diverting material from landfill;
- Consider alternative collections systems that would offer greater potential for integration with commercial waste and high density housing recycling provision; and
- Offer the potential to realise cashable savings across the waste collection service as a whole.

The current service was introduced in 2005, courtesy of the then Scottish Executive's Strategic Waste Fund (SWF) and helped enable the Council to achieve the current level of recycling performance. More recently the tonnage of material collected for recycling has declined to around 14,500 tonnes from a peak of 16,000 tonnes. This in part can be attributed to national trends of reduced newspaper consumption and the strides made by supermarkets and retailers in reducing the amount of packaging of products.

The decision to review the existing service is also driven by National policy considerations, namely the Scottish Government's Zero Waste Plan (ZWP) and Waste Scotland Regulations 2012 (WSR). The latter is the regulatory mechanism designed to implement the policy objectives and aspirations of the ZWP. The WSR sets out a clear requirement for the Council to provide a kerbside recycling service no later than 1<sup>st</sup> January 2014 and collects five key dry recyclable materials:

- Paper;
- Cardboard;
- Glass;
- Metals; and
- Plastics.

The existing service is largely compliant with the exception that only plastic bottles are currently accepted for recycling in low density housing areas.

National policy also promotes high quality recycling, specifically maximise the quantity and quality of materials available for recycling and minimise the need for residual waste treatment capacity. Although the current service meets the test of achieving high quality recycling it is not considered to be designed in a way to enable maximising the quantity of recycling collected. It is Waste Services firm belief that an alternative collection method can be introduced that maintains a high quality of materials, maximises the quantity by being easier to use for the resident but also takes account of the budgetary pressures faced by the Council and delivers a service in a more cost effective way.

It is therefore the intention of Waste Services to introduce a re-designed kerbside recycling collection to low density properties. The primary objectives are to increase the amount of material collected for recycling by providing a service that's easier to use and enables the householder to recycle more by providing increased capacity for recycling. The secondary objectives are to more closely align the low density service with that provided for high density or flatted properties and to also enable a convenient recycling service provided to commercial customers.

Following a number of stages within the project to consider a wide range of collection options and a stakeholder workshop to identify the Council's preferred option, the Council then engaged with the recycling industry and Zero Waste Scotland. All these stages culminated in identifying a preferred collection option. Recyclable material is collected in a standard bin and a box (or alternative). Paper, cardboard, mixed plastics, and metals would be collected in the bin. Glass, textiles, small waste electrical and electronic equipment (WEEE), and household batteries would be collected with the box.

The preference has been presented to both the Transport & Environment Policy Sub-committee (December) and the Transport & Environment Committee (January) at which the preferred collection option was approved, subject to this business case.

Following approval for Option 1 detailed cost and resource profiling was undertaken to consider the full cost of waste collection services, accounting for a number of service improvements alongside the introduction of the new scheme. The summary results are presented in Appendix 3.

The cost and resource profiling undertaken to support the preferred option suggests that the new recycling service, coupled with an optimised residual waste service to low density households can be delivered more cost effectively than the current services. The new service also enables the Council to reduce waste disposed of to landfill and provides a better platform for Waste services to achieve the 50% recycling target set within the Council.

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## Introduction

This document forms the Business Case for Waste Services proposal to move from the existing kerbside recycling provision of red and blue boxes towards a twin stream collection approach for properties provided with individual wheeled bins for landfill waste, approximately 139,000 of the City's housing stock.

The proposal to change the current method of collection is the culmination of a recycling review project commissioned by Zero Waste Scotland (ZWS), on behalf of the Council, in early 2012. The project has been fully funded through ZWS's Local Authority Support programme.

## Background

The kerbside recycling service is currently provided to approximately 165,000 properties across the City and is operated by a recycling partner on the Council's behalf in return for a per tonne collected payment. The current rate of payment is £124 per tonne. The 2012/13 spend on this contract is projected to be £1.71M. The Council does not realise any income from the value of the materials collected. The contract with the recycling partner was extended to 31<sup>st</sup> January 2015.

A significant percentage (85%) of the properties currently offered the service is considered to be low density<sup>1</sup>. The current service comprises a two box collection provided to households and collected on alternate weeks. The blue box is provided for glass and cans and is presented alongside a reusable bag for paper, a bag for textiles and a small bag for household batteries. The red box is collected on the alternate week and is provided for cardboard and cardboard drinks cartons. Plastic bottles are presented in a bag alongside the red box.

The current service was introduced in 2005, courtesy of the then Scottish Executive's Strategic Waste Fund (SWF), and has helped enable the Council to achieve its current recycling performance level. More recently the tonnage of material collected for recycling has declined to around 14,500 tonnes from a peak of 16,000 tonnes. This in part can be attributed to national trends of reduced newspaper consumption and the progress made by supermarkets and retailers in reducing the amount of packaging of products. The service is anticipated to recover around 14,350 tonnes in 2012/13 and 16,000 tonnes in 2013/14. The projected increase is assumed to be as a result of the recent move towards Managed Weekly Collections, specifically the reduction in the collection frequency of landfill waste. The tonnage anticipated to be recovered in 2013/14 is part of a package of recycling services designed to enable the Council to achieve 50% recycling of all waste by 2014/15.

There is significant risk that without investment in a new dry recycling collection system the Council will fail to achieve its internal 50% recycling target. The Council has already 'banked' the avoided disposal costs related to achieving 50% and there is therefore high risk that a proportion of those savings will not be delivered. If the Council overachieves the 50% target there are associated benefits in respect of further avoided disposal cost savings.

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<sup>1</sup> Low density properties are those which are served by an individual bin for non-recyclable (landfill) waste and a kerbside food collection.

It is therefore the intention of Waste Services to introduce a re-designed kerbside recycling collection to low density properties. The primary objectives of the new service are to increase the amount of material collected for recycling by providing a service that's easier to use and enables the householder to recycle more by providing more capacity for recycling. The secondary objectives are to more closely align the low density service with that provided for high density or flatted properties and to also enable a convenient recycling service provided to commercial customers.

## **Proposed Service**

Waste Services propose to provide individual properties with a service commonly termed within the waste industry as a twin stream service. Properties will be provided with two containers, one a standard size bin and the other a box (similar to that currently provided). Crucially both containers will be collected on the same day on a fortnightly basis with less separation of materials than is currently required by the householder, thus simplifying the service for residents and therefore making participation in recycling easier. The benefit is that more residents participate, the amount of material presented for recycling is increased and as a result the amount of waste presented for landfill disposal is reduced and the costs of disposal therefore avoided.

In order to remove some of the barriers to recycling faced by the public the proposed service has been developed with as much operational flexibility in mind as can reasonably be done. Where some properties may not be able to accommodate another full size bins there is a commitment within the service that alternative container options can be provided to encourage participation.

In making the proposed change to the existing service it is projected that the tonnages collected for recycling, and therefore diverted from landfill, should increase to around 27,000 tonnes representing a significant increase upon existing performance.

For the current service to perform at the same level it is anticipated that the current fortnightly frequency would require to be increased to a weekly collection, therefore significantly increasing the number of resources, and therefore cost required for the service to run. Based upon the current rate per tonne paid to the existing contractor the annual spend would need to increase to an estimated £3.35M.

In developing the proposed new kerbside collection system a number of Local and National drivers have been taken into account and are outlined and discussed in the following section.

## **Strategic Fit: National and Local Policy Drivers**

### ***Local Drivers***

There are a number of policy drivers that have influenced the review and re-design of a kerbside recycling service. In respect of local drivers there is a desire within Waste Services to provide a kerbside collection that collects as wide a range of materials as possible, is easy to use from a resident's point of view, and finally encourages higher participation and therefore diversion of waste from landfill and improved recycling performance in line with national and internal targets.

From a 'local' perspective the Council's Single Outcome Agreement (SOA) commitment has also influenced the development of the proposed collection service. The provision of a redesigned recycling service which diverts waste from landfill will assist in achieving the following SOA commitments:

**12 – We value and enjoy our built and natural environment and protect it and enhance it for future generations.**

12(a) – Our environment is protected and enhanced.

**14 – We reduce the local and global environmental impact of our consumption and production.**

14(a) – Recycling of waste has increased and the amount of waste going to landfill has decreased; and

14(b) – The Council's carbon footprint has reduced.

**15 – Our public services are high quality, continually improving, efficient and responsive to local people's needs.**

15(a) - Public perceptions of public services have improved; and

15(b) - Public services are more efficient and effective.

The proposed service will increase the amount of waste recycled and therefore reduce the amount of waste being disposed of to landfill. This is achieved by providing a simplified service that is easier to participate in from a resident's perspective. The new service is estimated to divert around 26,000 tonnes. The existing service is projected to divert just in excess of 16,000 tonnes in 2013/14 and, given the frequency of collection, is unlikely to improve. This has a positive outcome in respect of SOA commitment 14(a).

It is anticipated that the new service will also have a positive impact against SOA commitment 14(b), to reduce the Council's carbon footprint. This will be achieved through reducing the Council's reliance upon landfill disposal and through a reduction in the number of vehicles required to deliver the service. The current service requires a minimum of 17 vehicles deployed on a daily basis. The new service requires 11.5 vehicles deployed on a daily basis. The half vehicle is a smaller vehicle and is shared across services.

The survey comprised 13 focus group sessions and was undertaken on behalf of the Council by a research agency. A total of 112 residents, both users and non users of recycling services, took part in

August 2013

the sessions. The sessions covered a wider range of recycling issues than just the kerbside dry recycling service however part of the sessions focused exclusively on the box service.

At the time the collection of plastics was considered to be a necessary improvement to the service. This feedback has since been addressed and the service now collects plastic, albeit only bottles, alongside the red box.

In summary, the proposed kerbside recycling service will have a positive impact against those key SOA outcomes identified above and enhance existing performance against them.

### **National Drivers**

The current national policy drive, shaped by EU and national legislation and policy, is to find more sustainable ways of managing waste and is the result of a fundamental shift in society's perception from discarding materials as a waste towards regarding materials as a valuable resource. As a result, there is a genuine desire to change from traditional waste management to resource efficiency and reduce the amount of waste being disposed of to landfill via waste minimisation, recycling and composting. It is these legislative and financial drivers that have shaped the vision of the Council, which is to provide an infrastructure and service solution that supports waste minimisation and re-use, high recycling and composting, and the production of energy from the treatment of the remaining waste destined for landfill.

The Scottish Government's Zero Waste Plan (ZWP) underpins this desire and cultural shift from traditional waste management towards resource management. The new approach to achieving Zero Waste for Scotland has been to introduce a number of measures including:

- Mandatory requirements to pre-sort recyclable materials;
- Landfill bans on mixed unsorted waste;
- A limit on the biodegradable content of waste that can be landfilled; and
- A restriction on what can be sent for thermal treatment.

The ZWP also revised recycling and composting targets with the focus for Councils initially changing from all collected waste to household waste. The revised targets are illustrated in the following table:

Date	Activity
1st April 2013	Scottish Government 50% Recycling and Composting target based on tonnage metric.
31 <sup>st</sup> December 2013	Offer dry recyclables collection service and begin roll out of food waste.
	Ban on mixing source segregated materials
	Ban on the landfill and incineration of source segregated materials
31 <sup>st</sup> December	Complete roll out of food waste collections



2015	Requirement to remove dense plastics and metals from residual waste prior to incineration (existing facilities) <sup>2</sup> .
1st April 2020	Scottish Government 60% Recycling and Composting target based on tonnage metric.
	EU revised WFD 50% Recycling and Composting target by weight.
	BMW LAS targets still apply.
31 <sup>st</sup> December 2020	Biodegradable waste with a Total Organic Content that is greater than three percent is banned from landfill disposal.
1st April 2025	Scottish Government 5% cap on all MSW to landfill
	Scottish Government 70% Recycling and Composting target based on tonnage metric.

The regulatory mechanism by which these policy aspirations and objectives intend to be delivered are via the Waste Scotland Regulations 2012 (WSR). The WSR contain a range of measures designed to deliver these objectives and are more wide ranging than being just related to the collection of kerbside dry recyclables. This business case only outlines those regulatory requirements that relate to the proposed new recycling collection.

The Waste (Scotland) Regulations 2012 introduce a series of regulatory measures to:

- maximise the quantity and quality of materials available for recycling and minimise the need for residual waste treatment capacity;
- move residual waste management up the waste hierarchy so as to extract resource value from those materials we can't recycle;
- create the market certainty needed to support investment by businesses in the recycling, materials reprocessing and waste management sector; and
- improve public confidence in recycling to help reaffirm Scotland's position as a recycling nation.

The Waste (Scotland) Regulations 2012 were passed by the Scottish Parliament in May 2012. The regulations make the following provisions in relation to the Council and the collection of dry recyclables.

- Businesses to present metal, plastic, glass, paper and card for separate collection from 1 January 2014;

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<sup>2</sup> For new facilities, this requirement will come into effect on commencement of the regulations.

- Local authorities to provide a minimum recycling service to householders comprising the collection of paper, cardboard, glass, metals, and plastics no later than 1<sup>st</sup> January 2014; and
- A ban on any metal, plastic, glass, paper, card and food collected separately for recycling from going to incineration or landfill from 1 January 2014;

At the current time the existing low density service is not considered compliant in respect of the range of materials currently collected at the kerbside. The service only accepts plastic bottles for recycling and would therefore need to expand to collect all plastics no later than 31<sup>st</sup> December 2013 to ensure compliance with the WSR.

The proposed kerbside service ensures the Council will be compliant with the regulatory requirements outlined above, enables the Council to meet and potentially exceed its own 50% recycling target, and reduces the Council's landfill tax burden.

## Key Objectives & Outputs

The key objectives in introducing the new recycling collection service can be considered as being:

- To provide an easy to use and understand kerbside recycling service to residents of Edinburgh;
- To increase the amount of material collected for recycling and therefore positively impact upon overall recycling performance in line with National and Council targets;
- To introduce a collection system that is delivered using in-house resources and allows for closer integration of vehicles across the service to increase flexibility in service delivery;
- To introduce a collection system that provides the opportunity for closer integration with services provided to flats and businesses; and
- To provide a service that is compliant with the requirements of National legislation.

It is generally recognised that kerbside recycling services encourage high participation where the range of materials collected exceeds five and the service is relatively simple for the householder to use. The current service, arguably, does not fulfil the latter point as the blue box and bags are collected on the first week and the second box, with different materials, is collected on the alternate week. Furthermore the boxes are collected on different days to the other containers provided for non-recyclable, garden, and food wastes.

The proposed service seeks to simplify recycling at the kerbside. Two containers will be provided to each individual household and both containers will be collected on a fortnightly frequency and on the same day. As far as possible the collection day will be the same as that for the other kerbside waste services provided by the Council. An example is outlined in the table below:

Proposed Service	
Week 1 (Same day collection)	Week 2 (Same day collection)

Landfill waste & Food waste	Dry Recycling waste, Food waste, Garden waste
<b>Current Service</b>	
<b>Week 1 (Same day collection)</b>	<b>Week 2 (Same day collection)</b>
Landfill waste & Food waste	Food waste & Garden waste
<b>Week 1 (Different day collection)</b>	<b>Week 2 (Different day collection)</b>
Blue box, Re-usable bag, textile bag	Red box, sack for plastics, bag for batteries

The range of materials collected under the new service will also increase when compared to the current 'baseline' of materials. In addition to those currently collected all types of plastic will be accepted and small electrical items will also be recycled.

The existing service is projected to recover 14,350 tonnes in 2012/13 and 16,072 tonnes in 2013/14. Despite the recent downward trend in tonnages collected it has been assumed that the recent move to a Managed Weekly Collection system will account for the projected increase for 2013/14 given that it will be the first full year of the change being implemented. The tonnage diverted from the kerbside service in 2013/14, in conjunction with other recycling initiatives, projects the Council achieving 46%. Without investment in the proposed recycling service the Council is at significant risk of not achieving 50% recycling in 2014/15.

The shortfall in tonnage approximately comprises 8,400 tonnes and, assumed at £115 per tonne for landfill disposal, would cost the Council in the region of £1M for disposal and the Council's internal recycling target would not be met. The service would also be unable to deliver the savings associated with achieving 50% recycling.

The proposed service is estimated to allow the Council to divert the additional 8,400 tonnes, therefore avoiding the landfill disposal costs, and potentially provide an income per tonne for the materials collected. The proposed service can therefore help deliver 50% recycling and the associated savings that have already been identified within the Council.

As far as possible it is the intention to mirror the new low density collection in areas of high density housing. Currently residents in flats use a communal recycling and waste collection system. Residents can recycle paper in blue lidded communal bins and packaging materials (plastic bottles, cans, cardboard and drinks cartons) in green lidded bins. It would be intended that one of the bins would be changed to accept the same materials as the 'traditional blue bin' provided to low density households. The potential to provide a communal container for glass needs to be more closely considered with internal stakeholders due to long standing concerns over noise and safety issues. It should however be noted that the WSR requires the Council to provide the opportunity to recycle glass in a manner that achieves the same yield of material as would be collected at the kerbside. In high density areas the only way in which this regulatory requirement can be achieved is through the provision of on-street glass banks similar to those provided to similar housing in Glasgow.

The WSR also places a regulatory requirement on businesses to separate waste for recycling. As such it is wholly conceivable that the Council will be approached by existing and new customers requesting a recycling collection. The current kerbside box service does not lend itself well to business waste recycling but the proposed service improves this by providing more capacity in a more traditional container that is arguably easier to store.

## Options Appraisal

At the commencement of the recycling review project a number of potential collection options were given detailed consideration. In all twelve collection options were considered and the cost and resource implications of each option was modelled. An internal workshop filtered the 12 options down to the Council's 2 preferred options:

**Option 1:** Paper, cardboard, metals, and plastics are collected in a bin. Glass is collected in a box (or similar container). Small electrical items, household batteries and textiles can be collected alongside either the bin or the secondary container; or

**Option 2:** Paper and cardboard is collected in a box (or similar container) whilst glass, plastics, and metals are collected in a bin. Textiles, small electrical items, and household batteries can again be collected alongside either the bin or secondary container.

Following identification of the 2 options the recycling industry was engaged with to establish a preference for either Option. Overwhelmingly the industry's preference is for Option 1 as the mix of materials is easier to process. There are limited reprocessing options for the mix of materials in Option 2, particularly the glass, metals and plastics, which could severely restrict competition at tendering. It is currently understood that even sourcing processing capacity that can recover the glass from the other materials it is highly likely that potentially 90% of the recovered glass would go to aggregate production rather than new bottles or jars but this should be tested at procurement. When considering this alongside the Scottish Government's recently published Waste Hierarchy Guidance there is significant risk that glass sent for aggregate processing may not be counted towards recycling performance.

From a Council perspective **Option 1** holds significantly less risk than Option 2.

Shortly following engagement with the recycling industry a presentation was delivered to the Transport & Environment Policy Sub-committee, at which support was indicated for the Council's preferred option, **Option 1**. A committee report was submitted to Transport & Environment Committee on the 15<sup>th</sup> January, at which approval was sought and granted to develop this full business case as the next stage in developing Option 1.

The considered strengths and weaknesses of Options 1 and 2 are contained within **Appendix 1**.

## Collection Options

In respect of the collection of Option 1, there are two methods that can be employed. The first is to use dual compartment Refuse Collection Vehicles (RCV with pod) that enable the co- collection of food waste with other materials.

**Week 1:** Food waste and non-recyclable waste are collected on the same vehicle (requires new RCV vehicles);

**Week 2:** Food waste and the dry recycling bin contents are collected on the same vehicle (as above – new RCV vehicles). The glass stream is collected on the same day but on another vehicle (requires new vehicles). Garden waste is collected on a separate vehicle.

The Council can also consider an alternative collection model that reduces the requirement to procure non standard RCV's.

**Week1:** Food waste is collected on a dedicated vehicle (existing fleet). Residual waste continues to be collected on a standard RCV (existing fleet).

**Week 2:** Food waste is collected on a dedicated vehicle (existing fleet). Glass is collected on a dedicated vehicle (requires new vehicles). The 'blue bin' contents are collected on a standard RCV (utilising existing fleet if available otherwise additional vehicles are required). Garden waste is collected on a separate vehicle.

An internal workshop was held to consider the strengths and weaknesses of the two collection options identified. These can broadly be considered as those shown in the table below:

Vehicle type	Standard RCV	Dual Compartment RCV
Strengths	<p>Maximises flexibility across collection types throughout the City;</p> <p>Larger vehicle capacity than alternative allows for more efficient route sizes;</p> <p>Increased vehicle availability on hire market if needed.</p>	<p>Removes need for standalone food collection;</p> <p>Perceived to be more efficient in collecting 2 materials on 1 vehicle;</p> <p>Only requires two vehicles in street on collection day.</p>
Weaknesses	<p>Approach requires 3 vehicles in street on collection day;</p> <p>Perceived to be less efficient than the RCV/Pod option (in respect of vehicle numbers accessing streets on any one day);</p> <p>Approach still requires standalone food waste collection;</p> <p>Possible perception that recycling just disposed of in landfill because of the vehicle type collecting it.</p>	<p>Increased annual maintenance costs;</p> <p>Higher purchase cost;</p> <p>Reduced availability on hire market where breakdowns occur;</p> <p>Also requires replacement of vehicles on residual waste collection with pod;</p> <p>If Pod is not specified to correct size it reduces efficiency of collection;</p> <p>Subject to disposal locations of materials, will likely incur additional transport costs for bulk haulage;</p> <p>Restricted capacity of back end reduces</p>

		<p>opportunity to maximise route sizes;</p> <p>Vehicle has been trialled and Union concerns raised about operative safety.</p>
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The standard RCV approach offers maximum flexibility in respect of the fleet as, with the exception of OMBs, it can be used elsewhere within the City on other collections should the need arise. It was felt that the RCV/pod approach would be perceived, from a public point of view, to be more efficient given that two materials are collected on the same vehicle. The main drawback of the dual compartment vehicle was considered to be the location of disposal facilities.

A key requirement of the approach using a dual compartment RCV is having disposal locations in strategic areas. This is not something the Council currently benefits from and is unlikely to do so until 2017 when vehicles used on the new collection are likely to require replacement anyway. The logistical impact upon the service of not having strategic tipping locations could be quite significant. As an example, on week 1 the vehicle collects residual waste and food waste. Residual waste would be taken to Powderhall and food waste would also be tipped at Powderhall. Once the Council's food waste treatment facility is operational at Millerhill the food waste would then require to be backhauled to Millerhill, incurring the transport costs. On week 2, and subject to the location for tipping the recycling materials, the Council will need to tip the food waste at the same location as the dry recycling. The food waste would then need to be backhauled to Millerhill, again incurring additional transport costs. The use of a standard RCV avoids the issues around logistics.

The table below summarises the logistical issues associated with the use of a dual compartment vehicle. The dual compartment vehicle collects both residual and food waste on the same vehicle and as the table below highlights it is unlikely that using this type of vehicle wouldn't be suitable until 2017, when disposal locations are more strategically located.

	2013/14	2015	2017
Food Waste	Cumbernauld via Powderhall	Millerhill, Midlothian	Millerhill, Midlothian
Residual Waste	Dunbar via Powderhall	Dunbar via Powderhall	Millerhill, Midlothian

Dry Recycling	MRF, direct delivered or via Powderhall	MRF, direct delivered or via Powderhall	MRF, direct delivered or via Millerhill/alternative
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### ***Flexibility of collections***

The workshop also considered how the service can be considered as ‘user friendly’ and encourages high participation at the kerbside. This session focused upon the range of alternative containers available on the market that could be offered as an alternative to the standard box/bin.

It was considered that the best approach, should the service be contacted by someone who cannot accommodate a box/bin, would be to arrange a visit to consider alternative options. This could conceivably lead to properties in any one street presenting different containers (from re-usable bag to bin) and the vehicle would therefore need to be specified to allow for emptying of a range of container types.

It was acknowledged that a number of properties, approximately 30,000, are currently served by the existing box collection but are unlikely to be suitable for the bin/box collection. It was generally agreed that these properties should be surveyed with a view to developing the most appropriate collection solution.

In both cases the current and future issues around the quality of glass and how it can be maintained it is likely that the Council would need to respond by introducing a standalone glass collection. Industry intelligence and advice from ZWS suggests that the collection of glass mixed is unlikely to be able to meet the quality requirements of closed loop<sup>3</sup> recycling, certainly amongst Scottish processors.

The likely requirement to provide a standalone glass collection that maintains colour segregation at the kerbside does increase the annual operational costs to the Council. It would be worthwhile investigating the potential for any third party funding support to offset the additional costs. ZWS were offering funding support to introduce colour segregated kerbside collections in the 2012/13 financial year. It has not been confirmed whether this support package will be available when the proposed new collection is introduced but the opportunity to explore third party funding support should not be discarded, particularly as the proposed new service complements ZWS policy in respect of the colour segregation of glass.

### **Preferred Option**

Having considered the relative strengths and weaknesses of the vehicle options available to deliver the new service, the preferred method of collection is Option 1 – to utilise standard RCV’s. The service would therefore be structured in a manner similar to the example below:

Week	Collection type	Vehicle
One	Food waste	Small food waste vehicle

<sup>3</sup> Closed loop recycling, in the example of glass, relates to glass being recycled back into bottles and jars.

	Residual waste	RCV
	Garden waste	RCV
Two	Food waste	Small food waste vehicle
	Blue bin	RCV
	Blue box	Small recycling vehicle

## Cost Appraisal

The summary results of the cost and resource profiling exercise to support this business case are attached at **Appendix 2**. An element of due diligence needs to be undertaken by the Council's finance officers although unit costs have been sourced from the Council where possible and industry information has been used to supplement costs the Council is unable to provide. Both the 'as is' and future cost models have been developed in conjunction with Council Officers to ensure accuracy of assumptions and are based upon 2013/14 budgets.

If the Council does not make any significant change to the existing kerbside recycling service there is significant risk that the internal 50% recycling target will not be achieved and the associated landfill savings will not be achieved. The new service provides a better platform to achieve 50% recycling and also provides an enhanced recycling service in high density areas, as required by the WSR. The service across both low and high density areas is mirrored in respect of materials recycled so provides an equality of service regardless of housing type.

The costs of the new recycling service have been modelled based upon the use of standard RCV's and incorporated within the wider service costs. The summary costs of both the 'baseline' service and the 'future' service are provided at **Appendix 2**.

A number of different scenarios have been profiled; 'As is' to capture the current service, the cost of all current services if delivered in-house (Services in house), the cost of the 'future' scenarios. The latter scenarios have been modelled assuming 3 cost profiles depending upon the potential value of recycling materials collected. The value of the materials will depend upon undertaking a procurement exercise.

The net operational cost of the 'As is' service is estimated to be £23.394M per annum. The future service, inclusive of an enhanced recycling service in high density areas, assuming an income of £30 per tonne for dry recycling materials is estimated to cost £22.602M p.a. A service with a medium income (£15 per tonne) is estimated to cost £23.172M, and likely to provide a better platform to achieve the Council's 50% recycling target compared to the 'As is' scenario.

When assessing the new recycling service against the existing service the costs of the residual collection must also be taken into account. This is because the new service is projected to recycle more material, therefore diverting more material from the residual collection and reducing the Council's landfill tax burden. Considering the net operational costs of the residual and dry recycling collections in the 'As is' scenario the estimated annual cost equates to £10.8M. The Future service,



assuming a medium income, equates to £10.1M, a saving of around £740K. The cost differential is largely down to more material being diverted from landfill towards recycling. This cost gap will only increase as the landfill tax escalator continues to take effect.

Each of the new services does see an increased cost in respect of a like for like comparison of high density services, largely as a result of increased service operational costs such as staff and vehicles. Each of the future scenarios contains a presumption that the Council moves towards increased use of side loading bins and vehicles (OMB's) for both recycling and residual wastes. The reasons for this is that for each set of paper and packaging recycling bins, 1 OMB could be substituted and provide increased capacity. This would allow for a mixed glass bin to be sited alongside, therefore increasing the range of recycling options in high density areas. Although there may be noise concerns around the siting of glass recycling bins in on-street areas the WSR clearly sets an expectation that glass, among other materials, recycling must be provided no later than 1<sup>st</sup> January 2014.

The cost and resource profile does not assume the potential for any external funding, such as from Zero Waste Scotland, associated with enhanced recycling services. It is recommended that the Council opens and maintains dialogue with ZWS over potential funding opportunities subject to the new service being approved.

There are additional capital costs required for each of the new services and these are associated with expenditure on new bins, for both low and high density services.

## **Procurement Strategy – Commercial Considerations**

There are two key procurement exercises that need to be undertaken following approval to proceed. Both are critical to the ongoing and long term success of the proposed new service.

The first procurement exercise is to identify and secure the appropriate number and specification of vehicles to deliver the service. This exercise will be undertaken in conjunction with internal procurement, fleet service, and the fleet workshop to determine the vehicle specification. It is intended to involve existing collection staff with co-design teams as a key part in the fleet procurement process, particularly in developing the technical specification for the new collection vehicles.

The second procurement exercise is to identify and appoint a materials recovery and recycling partner. Due to the way in which materials will be collected there is a requirement to appoint a suitably experienced Materials Recovery Facility (MRF) for the recyclables to be delivered, sorted, and the value extracted.

The procurement will be undertaken in line with the Public Contracts (Scotland) Regulations 2012.

It is currently envisaged that the Restricted Procedure will be used to appoint the recycling partner. The contractual requirement is not complex enough to warrant use of the Competitive Dialogue procedure but the Restricted procedure and the Pre Qualification Questionnaire (PQQ) stage will ensure the Council appoints a partner with the required track record to ensure a high quality of recycling is achieved and maintained throughout the contract duration. Ensuring high quality

materials are collected and processed is a pre-requisite of both National policy and legislation and the Council therefore needs to be comfortable that those companies bidding to become the Council's partner are suitably experienced. Recent engagement with the industry suggests that no less than a 3 year contract duration (with or without extensions) is favoured.

Given that the proposed collection comprises two material streams, traditional blue bin and glass, it is proposed that the contract is split into two lots. The first lot will be to accept and process the blue bin contents whilst the second lot will be for the glass, small electrical equipment, household batteries and textiles. Bidders will therefore be afforded the position to bid on either or both lots subject to their ability to process it. The associated timescales are included in the attached extract from the Project Plan.

With regard to the second lot, the potential bidders ability to colour sort glass and supply no less than 90% to remelt applications should be a critical factor. If a potential bidder can commit and guarantee the ability to accept mixed glass and access remelt markets the Council would not need to introduce a colour segregated collection and would therefore benefit in terms of reduced operational costs. It may therefore be an effective strategy to develop the second lot within the contract to provide an option for bidders to either commit to taking mixed or colour segregated glass.

Following the PQQ stage a minimum of 5 companies will be issued with Invitation to Tender (ITT) documents.

The Council's strategy with regard to this particular procurement needs to focus in two key areas. The first area is that the appointed partner has the capability to demonstrate that materials can be processed and recovered in a manner that ensures the materials processed meet a high quality. This needs to be tested by providing bidders the opportunity to demonstrate that robust auditing of incoming and outgoing materials is undertaken, along with a sampling regime. A commitment to achieving future MRF quality standards, currently being developed by the Scottish Government, would be valued highly.

The second area is with regard to enabling the Council to realise some of the material's economic value. The value of materials is linked to recycling commodity markets and can be tracked on a monthly basis. The value of materials can decrease as well as increase and there is subsequently a degree of risk that the Council will bear. The level of risk the Council is willing to take will dictate the level of material value to be offered back to the Council. It is recommended that the Council does bear some of the material value risk but seeks to cap any liability in the event of severe market downturn. The implications of this are that the Council would therefore not realise the full potential value of the materials supplied but is protected in the event of a significant reduction in material values. Should the recycling market improve considerably then this should be reflected in any proposed payment mechanism via some form of 'super profit' arrangement.

The ITT documents will clearly outline the Council's position and invite bidders to propose a transparent pricing mechanism, linked to published market values, that recognises the Council's risk position but does allow for a share of material value.

It is recommended that the Council evaluate on the basis of a 60:40 split between price and quality. The financial aspect, both in terms of potential income to the Council but limiting liability around market risk will be a key element for evaluation. In addition, ensuring the appointed partner has robust quality control mechanisms in place, at both input and output stages, to ensure the processing of high quality materials is a key consideration in respect of National policy and legislation.

## **Stakeholder Communications**

A robust strategy needs to be developed with colleagues from the Council's corporate communications department. The introduction of this service represents a significant change for the Council and the final, key, recycling roll out having recently introduced food waste collections and moved residual collections from weekly to fortnightly. As a result it represents a good opportunity to re-launch the service as a whole package and place increased emphasis upon recycling services rather than residual waste services.

There are a range of stakeholders, both internal and external, that require to be engaged with on an ongoing basis throughout the project lifecycle.

### ***Internal Stakeholders***

The key internal stakeholders can be considered as:

- Senior Management;
- Elected Members;
- Neighbourhoods;
- Corporate Communications;
- Finance
- Improve It programme; and
- Zero Waste Project team.

The way in which internal stakeholders are engaged with, and the frequency of engagement, will vary according to their influence over the project and the level of interest in the project. Those parties considered as having high influence and high interest would be Senior Management, Elected Members and Finance. These groups need to be fed project progress information on a regular basis face to face.

The remainder of the list can be considered to be those with a lower level of influence over the project but a high level of interest. To recognise that level of interest a monthly briefing note should be circulated that outlines project progress.

In respect of Corporate Communications they will need to be engaged with on a more frequent basis as they will play a key part within the project team in developing communications methods and materials at pre and post service launch.

## **External Stakeholders**

The key external stakeholders can be considered to be:

- The public;
- Community Groups/Community Councils; and
- Zero Waste Scotland.

Community groups, councils and local newspapers will have a high interest in the project and could potentially have a key role in the project by supporting it within their local communities. As such they should therefore be regularly updated on progress.

The public will have a high interest but need to be engaged with in a different way to the other listed external stakeholders. The method and timing of communications on a mass scale will be guided by communications colleagues. Subject to this business case, a full communications strategy will be developed.

Zero Waste Scotland will have a keen interest in the progress of the project, being low power but having a high interest. As such they should be updated on progress on a regular basis, particularly if the Council has sought and received funding to support the introduction of the service.

## **Conclusions and Recommendations**

It is recommended that the Council agrees to implement the proposed new recycling service and notes the positive impacts it is anticipated to have in the following areas:

- To increase the amount of waste collected for recycling and therefore reduce the amount of material disposed of to landfill;
- Increase the Council's household recycling performance in line with National targets;
- To provide a kerbside recycling service that encourages greater participation from residents by providing increased recycling capacity and simplifying residents involvement;
- Allows the opportunity to examine options for greater integration with recycling services provided to both high density areas and business waste customers;
- To provide a more holistic waste and resource service by adopting 'same day' collection principles and where possible collecting materials on the same vehicle; and
- To maximise the operational flexibility of the service by delivering all services using in-house resources and adopting common vehicles to service low and high density areas and business waste customers.

## **Next Steps**

Subject to gaining approval to advance the introduction of a new kerbside recycling service, the next initial stages are proposed to be as follows:

August 2013

- Appoint a project team to oversee delivery throughout the project lifecycle;
- Commence the procurement process for a materials recovery and recycling partner;
- Hold a number of internal workshops with key project stakeholders to develop a project implementation plan; and
- Undertake public consultation on the proposed new service to identify how the service can respond to barriers to participation.

## Appendix 1

### ***Strengths & Weaknesses of Options 1 & 2***

The strengths and weaknesses of Options 1 & 2 can be considered as being those illustrated in the table below.

Collection Option	Strengths	Weaknesses
Option 1	Glass is collected separately so ensures higher quality of glass and other materials.	A standalone glass collection may not be suitable for flatted properties
	Will provide an income stream to the Council. Value will vary subject to market conditions	Health and safety implications around the weight of glass containers and noise issues need to be managed
	A range of reprocessing options for both material streams so allow for increased competition when tendering	Income level cannot be guaranteed as subject to market conditions
	Could be offered to commercial customers as recycling package	
	Arguably better contains wind-blown litter than option 2 as lighter items are contained within a bin.	
	Provides increased capacity for recycling to residents and simplifies the system	
	Complies with regulatory requirements in terms of the range of materials	
Collection Option	Strengths	Weaknesses
Option 2	Will provide an income stream to the Council. Value will vary subject to market conditions	Mixed glass is collected with other materials which will affect the quality of the materials.
	Provides increased capacity for recycling to residents and simplifies the system	Risks around quality and end use of glass are significant and may lead to loss of recycling performance
	Complies with regulatory requirements in terms of the range of materials	Limited reprocessing options locally so reduced competition when tendering
	Could be offered to commercial customers as recycling package	Income level cannot be guaranteed as subject to market conditions
	Mix of materials better suited for flatted areas	Health and safety implications around the weight of paper and cardboard containers

Option 2 was designed with 'container' materials (metals, plastics, glass) being collected together as one material stream before being sent for sorting. It was understood at that time that a large

national waste company, with a local base, intended to make significant investment in equipment with the ability to optically sort glass into 3 colours and supply that glass to be recycled into new bottles and jars. It is more recently being suggested that sorting glass into the 3 colours and achieving a quality allowing it to be made into new bottles and jars is not possible and glass would therefore likely go to aggregate production. All Councils have recently received a letter from the Scottish Government that suggests glass collected and used for production of aggregate may not be counted as recycling tonnage as the environmental value of this recycling route is similar to simply sending glass to landfill. This is reinforced by the recent consultation on the proposed Waste Hierarchy Guidance. Pursuing Option 2 therefore holds significant risk for the Council.

Given the likely inability of processors to recover the glass and return it to the re-melt industry this Option was effectively discarded. **Option 1** therefore became the Council's preferred option for the collection of dry recyclables.

## **Appendix 2**

### ***Summary Cost and Resource Profiling***



Service element	As is			Services In-house			Future in house (Optimised) High			Future in house (Optimised) Medium			Future in house (Optimised) Zero			OMB Driver only (Medium)			RCV only (Medium)		
	Low Density	High Density	Total	Low Density	High Density	Total	Low Density	High Density	Total	Low Density	High Density	Total	Low Density	High Density	Total	Low Density	High Density	Total	Low Density	High Density	Total
Tonnage collected	102989	58466	161454	102989	58466	161455	107770	53643	161413	107770	53643	161413	107770	53643	161413	107770	53643	161413	107770	53643	161413
Number of vehicles (exc spares)	20	13	33	48	17	64.5	31	24	55	31	24	55	31	24	55	31	24	55	31	26	57.0
Number drivers (excludes cover staff)	39	23	62	67	28	95	62	47	109	62	47	109	62	47	109	62	47	109	62	52	114
Number loaders (excludes cover staff)	78	36	114	134	41	175	124	54	178	124	54	178	124	54	178	124	32	156	124	70	194
Number supervisors (excludes cover staff)	6	6	12	8	8	16	10	4	14	10	4	14	10	4	14	10	4	14	10	4	14
<b>Total staff</b>	<b>123</b>	<b>65</b>	<b>188</b>	<b>209</b>	<b>76.5</b>	<b>285.5</b>	<b>196</b>	<b>105</b>	<b>301</b>	<b>196</b>	<b>105</b>	<b>301</b>	<b>196</b>	<b>105</b>	<b>301</b>	<b>196</b>	<b>83</b>	<b>279</b>	<b>196</b>	<b>126</b>	<b>322</b>
<b>Operational Costs: (£)</b>																					
Container replacement cost	£ 219,957	£ 116,811	£ 336,768	£ 258,432	£ 174,730	£ 433,162	£ 347,291	£ 228,264	£ 575,555	£ 347,291	£ 228,264	£ 575,555	£ 347,291	£ 228,264	£ 575,555	£ 347,291	£ 228,264	£ 575,555	£ 347,291	£ 99,262	£ 446,553
Staffing cost	£ 3,064,293	£ 1,659,865	£ 4,724,158	£ 5,163,069	£ 1,977,682	£ 7,140,751	£ 4,891,686	£ 2,586,387	£ 7,478,073	£ 4,891,686	£ 2,586,387	£ 7,478,073	£ 4,891,686	£ 2,586,387	£ 7,478,073	£ 4,891,686	£ 2,094,247	£ 6,985,933	£ 4,891,686	£ 3,071,832	£ 7,963,518
Vehicle lease costs	£ 807,945	£ 525,714	£ 1,333,659	£ 1,605,895	£ 675,254	£ 2,281,149	£ 1,071,083	£ 999,092	£ 2,070,175	£ 1,071,083	£ 999,092	£ 2,070,175	£ 1,071,083	£ 999,092	£ 2,070,175	£ 1,071,083	£ 999,092	£ 2,070,175	£ 1,071,083	£ 1,093,260	£ 2,164,343
Vehicle running and standing costs	£ 535,217	£ 314,004	£ 849,221	£ 867,019	£ 396,266	£ 1,263,285	£ 741,162	£ 543,314	£ 1,284,476	£ 741,162	£ 543,314	£ 1,284,476	£ 741,162	£ 543,314	£ 1,284,476	£ 741,162	£ 543,314	£ 1,284,476	£ 741,162	£ 667,371	£ 1,408,533
Spare vehicles & overheads (includes cost of spare vehicles and cover staff)	£ 928,014	£ 718,185	£ 1,646,199	£ 1,445,529	£ 900,934	£ 2,346,463	£ 1,324,334	£ 930,159	£ 2,254,493	£ 1,324,334	£ 930,159	£ 2,254,493	£ 1,324,334	£ 930,159	£ 2,254,493	£ 1,324,334	£ 817,967	£ 2,142,301	£ 1,324,334	£ 970,971	£ 2,295,305
<b>Sub total operational</b>	<b>£ 5,555,425</b>	<b>£ 3,334,579</b>	<b>£ 8,890,004</b>	<b>£ 9,339,944</b>	<b>£ 4,124,866</b>	<b>£ 13,464,810</b>	<b>£ 8,375,556</b>	<b>£ 5,287,216</b>	<b>£ 13,662,772</b>	<b>£ 8,375,556</b>	<b>£ 5,287,216</b>	<b>£ 13,662,772</b>	<b>£ 8,375,556</b>	<b>£ 5,287,216</b>	<b>£ 13,662,772</b>	<b>£ 8,375,556</b>	<b>£ 4,682,884</b>	<b>£ 13,058,440</b>	<b>£ 8,375,556</b>	<b>£ 5,902,696</b>	<b>£ 14,278,252</b>
Revenues(£):	£ -	£ -223,268	£ -223,268	£ -641,846	£ -327,564	£ -969,411	£ -730,751	£ -377,103	£ -1,107,854	£ -411,996	£ -215,838	£ -627,834	£ -93,241	£ -54,573	£ -147,814	£ -411,996	£ -215,838	£ -627,834	£ -411,996	£ -215,838	£ -627,834
Gate Fees / Service Provider Payment (£):	£ 4,490,338	£ 1,818,077	£ 6,308,416	£ 2,395,817	£ 1,495,561	£ 3,891,378	£ 2,282,544	£ 1,054,982	£ 3,337,526	£ 2,282,544	£ 1,054,982	£ 3,337,526	£ 2,282,544	£ 1,054,982	£ 3,337,526	£ 2,282,544	£ 1,054,982	£ 3,337,526	£ 2,282,544	£ 1,054,982	£ 3,337,526
Landfill Tax	£ 4,439,148	£ 3,129,560	£ 7,568,709	£ 4,439,148	£ 3,129,560	£ 7,568,709	£ 3,604,008	£ 2,518,404	£ 6,122,412	£ 3,604,008	£ 2,518,404	£ 6,122,412	£ 3,604,008	£ 2,518,404	£ 6,122,412	£ 3,604,008	£ 2,518,404	£ 6,122,412	£ 3,604,008	£ 2,518,404	£ 6,122,412
Haulage	£ 499,404	£ 350,747	£ 850,151	£ 603,704	£ 350,747	£ 954,451	£ 398,118	£ 279,611	£ 677,729	£ 398,118	£ 279,611	£ 677,729	£ 398,118	£ 279,611	£ 677,729	£ 398,118	£ 279,611	£ 677,729	£ 398,118	£ 279,611	£ 677,729
Bulking	£ -	£ -	£ -	£ 240,692	£ -	£ 240,692	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -
<b>Gross Operational costs</b>	<b>£ 14,984,316</b>	<b>£ 8,632,963</b>	<b>£ 23,617,280</b>	<b>£ 17,019,306</b>	<b>£ 9,100,734</b>	<b>£ 26,120,040</b>	<b>£ 14,660,226</b>	<b>£ 9,050,519</b>	<b>£ 23,710,745</b>	<b>£ 14,660,226</b>	<b>£ 9,140,213</b>	<b>£ 23,800,439</b>	<b>£ 14,660,226</b>	<b>£ 9,126,449</b>	<b>£ 23,786,675</b>	<b>£ 14,660,226</b>	<b>£ 8,535,881</b>	<b>£ 23,196,107</b>	<b>£ 14,660,226</b>	<b>£ 9,755,693</b>	<b>£ 24,415,919</b>
<b>Net Operational costs</b>	<b>£ 14,984,316</b>	<b>£ 8,409,695</b>	<b>£ 23,394,012</b>	<b>£ 16,377,460</b>	<b>£ 8,773,170</b>	<b>£ 25,150,629</b>	<b>£ 13,929,475</b>	<b>£ 8,673,416</b>	<b>£ 22,602,891</b>	<b>£ 14,248,230</b>	<b>£ 8,924,375</b>	<b>£ 23,172,605</b>	<b>£ 14,566,985</b>	<b>£ 9,071,876</b>	<b>£ 23,638,861</b>	<b>£ 14,248,230</b>	<b>£ 8,320,043</b>	<b>£ 22,568,273</b>	<b>£ 14,248,230</b>	<b>£ 9,539,856</b>	<b>£ 23,788,085</b>
<b>Capital costs</b>																					
Container purchasing & delivery costs	£ -	£ -	£ -	£ -	£ -	£ -	£ 3,327,200	£ 2,659,099	£ 5,986,299	£ 3,327,200	£ 2,659,099	£ 5,986,299	£ 3,327,200	£ 2,659,099	£ 5,986,299	£ 3,327,200	£ 2,659,099	£ 5,986,299	£ 3,327,200	£ 871,000	£ 4,198,200
<b>Total one-off capital costs (£)</b>	<b>£ -</b>	<b>£ -</b>	<b>£ -</b>	<b>£ -</b>	<b>£ -</b>	<b>£ -</b>	<b>£ 3,327,200</b>	<b>£ 2,659,099</b>	<b>£ 5,986,299</b>	<b>£ 3,327,200</b>	<b>£ 2,659,099</b>	<b>£ 5,986,299</b>	<b>£ 3,327,200</b>	<b>£ 2,659,099</b>	<b>£ 5,986,299</b>	<b>£ 3,327,200</b>	<b>£ 2,659,099</b>	<b>£ 5,986,299</b>	<b>£ 3,327,200</b>	<b>£ 871,000</b>	<b>£ 4,198,200</b>

# Transport and Environment Committee

10am, Tuesday, 27 August 2013

## Scotland's Climate Change Adaptation Programme: Consultation Response

Item number	7.11
Report number	
Wards	All

### Links

Coalition pledges	<a href="#">P8</a> , <a href="#">P15</a> , <a href="#">P28</a> , <a href="#">P33</a> , <a href="#">P40</a> , <a href="#">P48</a> , <a href="#">P50</a>
Council outcomes	<a href="#">CO8</a> , <a href="#">CO10</a> , <a href="#">CO14</a> , <a href="#">CO15</a> , <a href="#">CO16</a> , <a href="#">CO18</a> , <a href="#">CO19</a> , <a href="#">CO20</a> , <a href="#">CO21</a> , <a href="#">CO22</a> , <a href="#">CO23</a> , <a href="#">CO26</a>
Single Outcome Agreement	<a href="#">SO1</a> , <a href="#">SO4</a>

**Alastair D Maclean**

Director Corporate Governance

Contact: Nick Croft, Corporate Policy and Strategy Team Manager, Organisational Development

E-mail: [nick.croft@edinburgh.gov.uk](mailto:nick.croft@edinburgh.gov.uk) | Tel: 0131 469 3726

# Executive summary

## Scotland's Climate Change Adaptation Programme: Consultation Response

### Summary

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This report proposes a response to [Climate Ready Scotland: Draft Scottish Climate Change Adaptation Programme](#), the Scottish Government consultation on its new programme to adapt to the impacts of climate change. The deadline for responses to the consultation is 27 September 2013.

### Recommendations

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1. To approve the response from the Council to the Scottish Government's draft Adaptation Programme, as set out in Appendix 1; to meet Scottish Government submission deadlines.
2. To note a Climate Change Adaptation Framework is being prepared by the City of Edinburgh Council in consultation with relevant stakeholders, and will be presented to Committee in due course.

### Measures of success

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Delivery towards statutory requirements, specifically the Climate Change (Scotland) Act 2009, which requires the Council to contribute to national emissions reductions targets, deliver any statutory adaptation programmes and act in a sustainable manner.

Delivery towards the Capital Coalition Pledge commitments and Sustainable Edinburgh 2020 objectives.

Delivery of an Adaptation Framework for the Council and the city, to help Edinburgh adapt to the unavoidable impacts of climate change in partnership with key stakeholders and local communities.

### Financial impact

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There are no immediate financial implications arising from this report, however in the longer term, adaptation initiatives will require additional expenditure to provide an effective response to this Adaptation Programme. The proposed response to Scottish Government makes it clear that new resources must be forthcoming to enable appropriate adaptation responses to be developed by local authorities.

## Equalities impact

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The delivery of social, economic and environmental sustainability objectives is closely aligned to equality and rights work and enables progress against the Equality Act 2010 duties to eliminate illegal discrimination, victimisation and harassment, advance equality of opportunity and foster good relations. In addition, progress in this area also enables the enhancement of human rights for citizens and service users.

## Sustainability impact

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The impacts of this report in relation to the three elements of the Climate Change (Scotland) Act 2009 Public Bodies Duties have been considered. The proposals in this report will increase the city's resilience to climate change impacts. When ratified, the Scottish Government's Programme will be used to ensure that the Council's own Climate Change Adaptation Framework is fully fit for purpose in terms of building resilience to the unavoidable impacts of climate change.

## Consultation and engagement

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All Service Areas within the Council were consulted to prepare this response. Responses received were taken on board.

## Background reading / external references

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- [Climate Ready Scotland: Draft Scottish Climate Change Adaptation Programme](#)
- [Scottish Climate Change Adaptation Programme – Consultation Document](#)
- [Climate Change \(Scotland\) Act 2009](#)
- [Scotland's Climate Change Adaptation Framework, Policy & Strategy Committee, 9 June 2009](#)
- [Sustainable Edinburgh 2020](#)

## Scotland's Climate Change Adaptation Programme

### 1. Background

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- 1.1 The Scottish Government published [Climate Ready Scotland: Draft Scottish Climate Change Adaptation Programme](#) for consultation on Friday 28 June. This is the Scottish Government's first Climate Change Adaptation Programme, required by Section 53 of the Climate Change (Scotland) Act 2009. Publication of the Programme will bring into force the adaptation requirement of the Public Bodies Climate Change Duties introduced by Section 44 of the Act. This requires that a public body, including local authorities, must, in exercising its functions, act in the way best calculated to help deliver the Programme.
- 1.2 The consultation is seeking views on the draft Adaptation Programme, which sets out Scotland's objectives, proposals and policies for addressing the impacts of climate change. The overarching aim of the Programme is "to increase the resilience of Scotland's people, environment and economy to the impacts of a changing climate".
- 1.3 The Scottish Government deadline for responses to the consultation is 27 September 2013.
- 1.4 The proposed Programme will replace the existing [Adaptation Framework](#). The Council submitted a response to the previous Scottish Government consultation on adaptation, which was approved by the Policy & Strategy Committee on 9 June 2009.

### 2. Main report

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- 2.1 The consultation response has been prepared by the Carbon, Climate and Sustainability team (Corporate Policy and Strategy), Corporate Governance in consultation with the political groups and Council departments. The proposed Council response is detailed in Appendix 1.
- 2.2 The Council's proposed response broadly welcomes the Scottish Government's Draft Adaptation Programme, which indicates the way forward for how Scotland will adapt to the impacts of climate change, over the short, medium and long term.
- 2.3 The Council's response stresses the fact that local authorities will be on the front line in dealing with the impacts of climate change – not only in delivering

services but also (along with other partners) as leaders in their communities. It is felt that this statutory responsibility is not stated clearly enough in the Programme. The role of local government in adaptation needs to be emphasised better in the Programme overall and especially as a key delivery agent in relevant Programme actions.

- 2.4 Local authorities are regarded as “a major player” in climate change adaptation, according to the Climate Change (Scotland) Act 2009, and as such, significant funding will be required to fulfil the requirements of the Adaptation Programme. It is not specified how many of the actions in the Programme will be funded. Climate change impacts will place immense strains on public sector budgets.
- 2.5 The Scottish Government’s Adaptation Programme is structured around the three themes of natural environment, buildings and infrastructure networks, and society. The consultation questions are based around these themes, with additional questions on the overall framework of the Programme, the role of others in delivering the Programme, and the environmental report.
- 2.6 The Council welcomes the Scottish Government’s acknowledgement of local authority work under the Natural Environment theme, but feels that more weight should be given to the role councils play in safeguarding natural capital and raising awareness of the implications of climate change for nature. The Council’s response also expresses concern over how specific actions under this theme will be funded.
- 2.7 The Council’s response broadly agrees with the objectives set out under the Infrastructure and Built Environment theme, but would like to see more emphasis placed on statutory planning legislation, and more information on how measures will be funded. However the importance of the local authority’s role in planning, managing, developing, and maintaining local buildings and infrastructure, and historic sites and buildings, is not recognised. The Council’s response also raises concern over the issue of building resilience into housing especially climate-proofing new residential developments and retrofitting existing buildings. The Programme should more fully acknowledge this priority and indicate what additional funding will be made available to local authorities to facilitate appropriate actions.
- 2.8 The Council’s response welcomes the pivotal role of health and emergency services under the Society theme, especially in relation to vulnerable groups. However the Council is concerned that the role of local authorities as service providers and community leaders is underplayed.
- 2.9 As stated in the proposed response, the current text of the Programme does not adequately address in detail the economic risk and opportunities associated with climate change and the competitive advantages which will accrue from a climate-resilient economy.

- 2.10 Given the Council's statutory responsibility and existing commitment to climate change, a Climate Change Adaptation Framework for Edinburgh is being developed. The Council will work with key stakeholders across the city to develop this Framework. The Framework will incorporate the outcomes from the Scottish Government's Adaptation Programme, once it is finalised.

### 3. Recommendations

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- 3.1 To approve the response from the Council to the Scottish Government as set out in Appendix 1 to meet Scottish Government submission deadlines.
- 3.2 To note a Climate Change Adaptation Framework is being prepared for the City of Edinburgh Council in consultation with relevant stakeholders, and will be presented to Committee in due course.

#### **Alastair D Maclean**

Director Corporate Governance

### Links

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#### **Coalition pledges**

**P8** - Make sure the city's people are well-housed, including encouraging developers to build residential communities, starting with brownfield sites.

**P15** - Work with public organisations, the private sector and social enterprise to promote Edinburgh to investors.

**P28** - Further strengthen our links with the business community by developing and implementing strategies to promote and protect the economic well being of the city.

**P33** - Strengthen Neighbourhood Partnerships and further involve local people in decisions on how Council resources are used.

**P40** - Work with Edinburgh World Heritage Trust and other stakeholders to conserve the city's built heritage.

**P48** - Use Green Flag and other strategies to preserve our green spaces.

**P50** - Meet greenhouse gas targets, including the national target of 42% by 2020.

<b>Council outcomes</b>	<p><b>CO8</b> - Edinburgh's economy creates and sustains job opportunities</p> <p><b>CO10</b> - Improved health and reduced inequalities.</p> <p><b>CO14</b> - Communities have the capacity to help support people.</p> <p><b>CO15</b> - The public is protected.</p> <p><b>CO16</b> - Well-housed – People live in a good quality home that is affordable and meets their needs in a well managed Neighbourhood.</p> <p><b>CO18</b> - Green - We reduce the local environmental impact of our consumption and production.</p> <p><b>CO19</b> - Attractive Places and Well Maintained – Edinburgh remains an attractive city through the development of high quality buildings and places and the delivery of high standards and maintenance of infrastructure and public realm.</p> <p><b>CO20</b> - Culture, sport and major events – Edinburgh continues to be a leading cultural city where culture and sport play a central part in the lives and futures of citizens.</p> <p><b>CO21</b> - Safe – Residents, visitors and businesses feel that Edinburgh is a safe city.</p> <p><b>CO22</b> - Moving efficiently – Edinburgh has a transport system that improves connectivity and is green, healthy and accessible.</p> <p><b>CO23</b> - Well engaged and well informed – Communities and individuals are empowered and supported to improve local outcomes and foster a sense of community.</p> <p><b>CO26</b> - The Council engages with stakeholders and works in partnership to improve services and deliver on agreed objectives.</p>
<b>Single Outcome Agreement</b>	<p><b>SO1</b> - Edinburgh's Economy Delivers increased investment, jobs and opportunities for all.</p> <p><b>SO4</b> - Edinburgh's communities are safer and have improved physical and social fabric.</p>
<b>Appendices</b>	<p>Appendix 1 – Draft City of Edinburgh Council Response to the Scottish Government's Adaptation Programme Consultation</p>



Appendix 1 – Draft City of Edinburgh Response to the Scottish Government Adaptation Programme Consultation

## Consultation on the Draft Scottish Climate Change Adaptation Programme

### RESPONDENT INFORMATION FORM

Please Note this form **must** be returned with your response to ensure that we handle your response appropriately

#### 1. Name/Organisation

Organisation Name

City of Edinburgh Council

Title Mr  Ms  Mrs  Miss  Dr  *Please tick as appropriate*

Surname

Croft

Forename

Nick

#### 2. Postal Address

Waverley Court

4 East Market Street

Edinburgh

Postcode EH8 8BG

Phone 0131 469 3726

Email [Sustainability@edinburgh.gov.uk](mailto:Sustainability@edinburgh.gov.uk)

#### 3. Permissions - I am responding as...

Individual

/

Group/Organisation

*Please tick as appropriate*

- (a) Do you agree to your response being made available to the public (in Scottish Government library and/or on the Scottish Government web site)?

*Please tick as appropriate*  Yes  No

- (b) Where confidentiality is not requested, we will make your responses available to the public on the following basis

*Please tick ONE of the following boxes*

Yes, make my response, name and address all available

or

Yes, make my response available, but not my name and address

or

Yes, make my response and name available, but not my address

- (d) We will share your response internally with other Scottish Government policy teams who may be addressing the issues you discuss. They may wish to contact you again in the future, but we require your permission to do so. Are you content for Scottish Government to contact you again in relation to this consultation exercise?

*Please tick as appropriate*

Yes

No

- (c) The name and address of your organisation **will be** made available to the public (in the Scottish Government library and/or on the Scottish Government web site).

Are you content for your **response** to be made available?

*Please tick as appropriate*  Yes  No

## CONSULTATION QUESTIONS

### 1 Views on the Overarching Framework

**1a** To what extent does the overarching framework of the Programme outlined in Figure 1 set an appropriate long term direction for climate change adaptation in Scotland?

Fully  Mostly  Partially  Poorly  Tick one box only

Comments: The Council feels that the Framework should reflect the five key themes identified in the CCRA Evidence Report, that is, Natural Environment; Buildings & Infrastructure; Health & Well-Being; Business & Services; and Agriculture & Forestry. A climate-ready flexible economy is desirable in order to respond to the uncertainties of future climate risks.

The Council acknowledges that local authorities will be on the front line in dealing with the impacts of climate change – not only in delivering services but also (along with other partners) as leaders in their local communities. The Council feels this statutory responsibility is not stated clearly enough in the framework, and the local authority role is not given enough weight in the Programme as a whole. Likewise, how many of these actions will be funded is not made clear.

**1b** Does the overarching framework address the current and predicted impacts to Scotland identified in the UK Climate Change Risk Assessment?

Fully  Mostly  Partially  Poorly  Tick one box only

Comments: It is the Council's view that the Framework does, in part, address the areas of risk identified in the UK Climate Change Risk Assessment. We would point out however that the risk assessment deals with "business" as a separate substantive issue and, as outlined above, it is the Council's view that this approach should be included in the Programme.

### 2 Views on the Natural Environment Theme

**2a** Do objectives **N1**, **N2** and **N3** collectively set an appropriate long term direction to ensure that Scotland's natural environment is able to adapt to our changing climate?

Fully  Mostly  Partially  Poorly  Tick one box only

Comments: The Council welcomes the acknowledgement the Programme gives to local authorities' role in flood prevention, green networks, forestry and woodland management, regional land-use and coastal management. Local authorities own and directly manage significant areas of woodland, greenspace and natural habitats, with a statutory responsibility to look after biodiversity –

## Appendix 1

often in conjunction with expert and community partners. Additionally many of the natural assets owned and managed by local authorities will have a role in building community resilience to the negative impacts of a changing climate.

However, it is the Council's view that the natural environment theme fails to give sufficient weight to the valuable role local authorities' play in safeguarding local natural capital. This management role will represent a potentially increasing financial burden if local natural assets are to remain resilient to a changing climate. The financial implications of local authorities' role as an educator for residents, schools and students, businesses and visitors also need to be considered.

**2b** To what extent will the policies and proposals listed under objective **N1** provide an appropriate focus for the lifetime of the Programme in order to progress towards the long-term objective?

Fully  Mostly  Partially  Poorly  Tick one box only

Comments: The Programme represents the first in a series of five yearly action plans, with an initial focus on research and data gathering. The Council would like to see more detail on how this programme of adaptation actions will be rolled forward for the longer term (over the next 50 years).

The Council welcomes the Programme's acknowledgement of the role local authorities' play in flood risk management but feel the importance of current, projected and future floodplain identification should be emphasised to give Planners the jurisdiction to ensure the long term view is taken into account. Our role in raising awareness of the implications of climate change for nature and the financial implications of this is also not acknowledged.

The Council feels that it would be appropriate to include additional measures focusing on the resilience of soils and iconic Scottish landscapes.

**2c** To what extent will the policies and proposals listed under objective **N2** provide an appropriate focus for the lifetime of the Programme in order to progress towards the long-term objective?

Fully  Mostly  Partially  Poorly  Tick one box only

Comments: The Council feels that the Programme does not go into sufficient detail about specific actions that will be undertaken to support a healthy and diversely adapted natural environment, and how this will be funded at the local level. Again, the Council feels that the local authority role is not sufficiently acknowledged, as the major local guardian of the natural environment.

**2d** To what extent will the policies and proposals listed under objective **N3** provide an appropriate focus for the lifetime of the Programme in order to progress towards the long-term objective?

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Fully  Mostly  Partially  Poorly  Tick one box only

Comments: The Council is disappointed that the Programme does not acknowledge the important role that local authorities play in sustaining and enhancing the benefits, goods and services that the natural environment provides.

This objective focuses on agriculture and fishing but the Council feels it should also include additional measures focused on the important role of ecological services in adaptation, for instance through measures linked to local authority planning and land-use policies (e.g. preventing development on current and future/projected floodplains) and the use of greenspace for carbon storage, heat reduction and water management.

Both the Programme and CCRA make only limited reference to ecological services. Recent studies of urban woodland in Edinburgh (i-Tree Project) have provided confirmation that local natural resources and ecological systems are a significant source of economic wealth. Climate change will adversely impact natural systems and the wealth they generate but N3 fails to acknowledge this. It is the Council's view that to help build resilience and adapt ecological goods and services to changing climatic conditions the Scottish Government should:

- Increase investment in research into evidence-based ecology to better understand the economic value of ecological goods and services.
- Employ strategies to manage the resilience of ecosystems as insurance against costly reductions in the supply of ecosystem goods and services
- Acknowledge the economic value associated with ecological protection and the maintenance of habitat resilience

The Council feels that further research would be desirable into the negative impact on wildlife, habitats and local communities that changes in the timing of seasonal events and migration patterns may have.

**2e** Taken together, do the policies and proposals listed under objectives **N1**, **N2** and **N3** address the current and predicted impacts to the natural environment in Scotland identified in the UK Climate Change Risk Assessment?

Fully  Mostly  Partially  Poorly  Tick one box only

Comments: As stated in the previous sections, the Council believes that N1-N3 only partially address current and predicted impacts to Scotland's natural environment. The Council feels that following impacts should be addressed now or in the near future: biodiversity risks due to warmer rivers and lakes; changes in biodiversity reproductive habits; asynchrony between species breeding cycle and food supply; waterlogging; priority habitats lost due to coastal erosion; increase in prevalence of certain vector-borne diseases (ticks and lymes); decline in marine water quality due to sewer overflows.

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### 3 Views on the Infrastructure and Built Environment Theme

**3a** Do objectives **B1**, **B2** and **B3** collectively set an appropriate long term direction to ensure that Scotland's buildings and infrastructure networks are able to adapt to our changing climate?

Fully  Mostly  Partially  Poorly  Tick one box only

Comments: It is the Council's view that this theme places too much emphasis on soft measures, such as research into understanding the effects and impacts, and not enough on 'hard' measures such as planning legislation to make developers and planners take adaptation into consideration in the design of new buildings and the refurbishment of older ones. Improving and increasing active travel infrastructure for cycling and walking in our urban environment should also be included in all new urban planning legislation to contribute to a healthier, greener and more sustainable environment. Also we feel there is no information on how delivery agencies will fund these measures.

The document does not adequately address the issues surrounding the retrofit of existing buildings and the challenges that this can bring especially with older buildings that may be difficult and expensive to improve, or in cases of mixed ownership where it may be difficult to organise repairs and improvements. We feel that this area is especially significant considering the fact that new build only accounts for a small percentage of buildings that could benefit from improved energy efficiency and resilience to climate change.

The local authority planning measures need to be strengthened not just for developers but also for residents to ensure that where they are planning a change/upgrade to their property they include run off and carbon capture measures – i.e. these measures should not be limited to new builds. More proactive measures need to be put in place by residents.

There is no mention of the introduction of Energy Efficiency Standards for Social Housing (EESH). While this will serve to improve standards for social tenants, the majority of homes in Scotland will not benefit from this. In Edinburgh, only 15% of households live in the social rented sector. Limited funding opportunities for other tenures mean that it will be more difficult for home owners and people living in private rented housing to prepare for issues associated with climate change.

Also, we feel there is no information on how delivery agencies will fund these measures.

**3b** To what extent will the policies and proposals listed under objective **B1** provide an appropriate focus for the lifetime of the Programme in order to progress towards the long-term objective?

Fully  Mostly  Partially  Poorly  Tick one box only

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Comments: The Council welcomes the Scottish Government's approach to evidence-based decision-making. However we note with concern that there is no research detail which specifically addresses local authorities in planning, developing and maintaining local buildings and infrastructure.

As stated in the previous answer, the local authority planning measures need to be strengthened not just for developers but also for residents to ensure that where they are planning a change/upgrade to their property they include run off and carbon capture measures – i.e. these measures should not be limited to new builds. More proactive measures need to be put in place by residents.

**3c** To what extent will the policies and proposals listed under objective **B2** provide an appropriate focus for the lifetime of the Programme in order to progress towards the long-term objective?

Fully  Mostly  Partially  Poorly  Tick one box only

Comments: The Council welcomes the Scottish Government's recognition of the importance of increasing knowledge, skills and tools in climate change adaptation. However with the exception of transport, there is no direct support being given to develop the skills and knowledge-base of local authorities who will be on the frontline in terms of reacting to climate change impacts and adapting public facing services to ensure long-term resilience.

In relation to protecting historic sites and buildings, there is no mention of local authorities, who own and manage a number of such sites and buildings. There is also no mention of the additional costs arising from the measures that may be required to safeguard collections from damage by climate change impacts such as increasing heat, damp, flooding and pest infestation, and the role culture can play in promoting good practice, disseminating knowledge and provoking discussion and action about climate change adaptation.

**3d** To what extent will the policies and proposals listed under objective **B3** provide an appropriate focus for the lifetime of the Programme in order to progress towards the long-term objective?

Fully  Mostly  Partially  Poorly  Tick one box only

Comments: The Council would like to see more emphasis placed on building resilience into the transport infrastructure.

The Council expresses concern about the lack of direct or specific reference to the role of local authorities in the management and maintenance of buildings and essential infrastructure at a local level, and the increasing costs of building resilience in terms of investment and resources.

While the role of the Home Energy Efficiency Programme for Scotland (HEEPS) is referred to under B2, there is no direct reference to building resilience into existing housing and making provision for new residential developments that are

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climate-proof under B3. Local authorities are major providers of social housing, and work with a variety of partners to assist householders with improvements to promote energy efficiency. Similar work is needed in the short term to promote climate resilience in housing at a local level. The Scottish Government's Programme should acknowledge this priority and indicate what additional funding will be made available to local authorities to facilitate appropriate actions. There is no clear guidance as to how to prioritise resources necessary to make these policies work.

**3e** Taken together, do the policies and proposals listed under objectives **B1**, **B2** and **B3** address the current and predicted impacts to Scotland's buildings and infrastructure networks identified in the UK Climate Change Risk Assessment?

Fully  Mostly  Partially  Poorly  Tick one box only

Comments: The CCRA identifies a number of issues that will need to be addressed in the longer term. These are not addressed in the current 5 year Programme, but the Council believes that work needs to start now to develop and understand these issues, and build opportunities for future programmes to address. These issues include: higher energy demand for cooling; heat damage/disruption to energy infrastructure; increased water demand for energy generation; overheating in buildings; the Urban Heat effect, measures to make landowners and property developers who manage vacant land (such as brownfield sites) take proactive action for carbon absorption (e.g. planting of appropriate small trees and shrubs) and buildings affected by subsidence. Limited reference is made to the specific issue of sea level rise and to related risks in the shorter term such as tidal and storm surges. It is the Council's view that additional measures are required to address the specific issue of sea level rise.

## 4 Views on the Society Theme

**4a** Do objectives **S1**, **S2** and **S3** collectively set an appropriate long term direction to ensure that our communities are able to adapt to our changing climate?

Fully  Mostly  Partially  Poorly  Tick one box only

Comments: The Council feels that objectives S1-S3 collectively set the appropriate long term direction for ensuring adaptation at the community level, and cover the most important aspects of community resilience to climate change at this time.

The Council acknowledges that in this first five year programme there is a general emphasis on awareness raising activities and in developing a more in-depth understanding of risks and opportunities. We would expect that subsequent



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plans will be more action orientated at community level and appropriate levels of funding will be made available to local authorities and their community planning partners to ensure that this is achieved.

**4b** To what extent will the policies and proposals listed under objective **S1** provide an appropriate focus for the lifetime of the Programme in order to progress towards the long-term objective?

Fully  Mostly  Partially  Poorly  Tick one box only

Comments: The Council welcomes the fact that S1 addresses the health, emergency services and community aspects of this objective, especially in relation to vulnerable groups. However we are concerned about the limited reference to the role of local authorities in understanding the impacts of climate change on communities, and the increasing and competing demands that will be placed on local authority public safety teams and where the additional resources will come from to fund these.

**4c** To what extent will the policies and proposals listed under objective **S2** provide an appropriate focus for the lifetime of the Programme in order to progress towards the long-term objective?

Fully  Mostly  Partially  Poorly  Tick one box only

Comments: The Council feels that S2 is fairly comprehensive in addressing progress towards this objective but again feels that the role of local authorities as local service providers and community leaders is underplayed.

**4d** To what extent will the policies and proposals listed under objective **S3** provide an appropriate focus for the lifetime of the Programme in order to progress towards the long-term objective?

Fully  Mostly  Partially  Poorly  Tick one box only

Comments: The Council welcomes the Scottish Government's recognition of the crucial role that our health service and emergency responders will have in responding to the increased pressures associated with climate change, but again expresses concern that the role of local authorities, Community Planning and Neighbourhood Partnerships as emergency responders are not given sufficient recognition.

**4e** Taken together, do the policies and proposals listed under objectives **S1**, **S2** and **S3** address the current and predicted impacts to Scottish society identified in the UK Climate Change Risk Assessment?

Fully  Mostly  Partially  Poorly  Tick one box only

Comments: The CCRA identifies a number of issues of particular relevance to local authorities that will need to be addressed in the longer term. The Council

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believes that work will need to start now to develop and understand these issues, and build opportunities for future programmes to address. Issues we feel of particular relevance to local authorities include: community resilience to coastal erosion; further financial threats to vulnerable groups due to increased flood risk and severe weather events adding to existing fuel poverty issues; water quality issues; business disruption and tourism losses due to flooding; supply chain disruption affecting business output; ICT disruption; impact on outdoor leisure, sport and tourism; and impact on major outdoor events due to severe weather events.

### 5 Views on the Role of Others in Delivering the Programme

**5a** What support will public bodies require in meeting their duties to help deliver the programme?

Comments: Funding will be required to ensure that the correct infrastructure is put in place at the earliest possible stage to ensure that Scotland is able to deal with the impacts of climate change. At the local level, local authorities as “major players” will need to invest in buildings, transport infrastructure, flood prevention measures, coastal defences, greenspace and biodiversity, and in building organisational capacity in order to take action to reduce the risks and seize the opportunities resulting from changes in climate. This will need to be backed up by legislation and guidance to ensure that, for instance, developers follow planning regulations ensuring their developments are as climate resilient as possible. Finally, to ensure buy-in, resources will need to be provided for awareness-raising activities and behaviour change at the community, business and voluntary sector levels. This includes strengthening local authority planning measures for residents to ensure that where they are planning a change/upgrade to their property they include run off and carbon capture measures – i.e. these measures should not be limited to new builds. More proactive measures need to be put in place by residents.

**5b** Are the arrangements for ensuring public engagement and for involving employers, trade unions and other stakeholders in meeting the programme objectives sufficient?

Yes  No

Comments: It is the Council’s view that the arrangements for ensuring stakeholder engagement in the Programme are not clearly defined in terms of how this engagement will be proactively taken forward, by whom, over what timeframe and by what measures.

### 6 Views on the Environmental Report

**6a** To what extent does the environmental report set out an accurate description of the current environmental baseline?

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Fully  Mostly  Partially  Poorly  Tick one box only

Please give details of relevant sources: The Council agrees that the SEA describes the principal environmental impacts arising from the changing Scottish climate. However, this is a complex issue which we would have expected to be covered much more comprehensively than is the case in the current SEA. The Council would refer to the detailed information hosted on, for example, Adaptation Scotland's website.

**6b** Do you agree with the predicted environmental effects of the draft adaptation programme, set out in the Environmental Report?

Yes  No

Comments: The Council agrees that the SEA describes the principal environmental effects arising from the changing Scottish climate. However, this is a complex issue which we would have expected to be covered much more comprehensively than is the case in the current SEA. The Council would refer to the detailed information hosted on, for example, Adaptation Scotland's website. It is the Council's view that additional work needs to be done to describe environmental impacts relating to issues such as sea level rise.

**6c** Do you agree with the recommendations set out in the Environmental Report?

Yes  No

Comments: The Council agrees that the Scottish Government's Adaptation Programme will have a largely positive impact on the natural and built environment and on society. The Council also agrees that there are opportunities to introduce new measures to cover issues such as soil conservation, water quality, the resilience of the energy and food supply sector.

But, it is the Council's view that additional new measures are required to address the important issue of sea level rise which will present a number of significant risks to the natural and built environment and to society in both the medium and long term.

Generally, there is an over-emphasis in the first 5-year action plan on research and an under-emphasis on short-term new actions to build a resilient Scotland

**6d** Do you agree with the proposals for monitoring of the environmental effects of the draft programme set out in the Environmental Report?

Yes  No

Comments:

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**6e** Are you aware of any further environmental information that will help to inform the environmental assessment findings?

Yes  No

Please give details of relevant sources: Adaptation Scotland's website is a very useful source of collated environmental information. Work has been also been ongoing to develop an adaptation tool to be hosted on SEWEB (the Scottish Environmental portal). This has not yet been made publically available but will be a very useful adaptation tool when it does.

**6f** Are you aware of other 'reasonable' alternatives to adaptation programme and its content that should be considered as part of the SEA process?

Yes  No

Please give details of relevant sources:

## 7 Additional Comments

**7a** Please provide any additional comments you would like to make on the draft Scottish Climate Change Adaptation Programme.

Comments: The role of local government in adaptation needs to be better emphasised and as a delivery agent in relevant programme's actions. The guidance clearly states that "Adaptation to the impacts of climate change is often most effectively implemented at a local level". The City of Edinburgh Council is a major player and as such, significant funding will be required to fulfil the conditions of the Adaptation Programme. There is no mention of how actions in the Programme will be funded. Climate change impacts will place immense strains on public sector budgets.

The Council expresses concern that there is no mention of how the previously published Adaptation Framework's more detailed 12 Sector Action Plans and their outcomes will be integrated into this Programme. There is also no indication of what progress has been made in terms of the individual actions outlined in the Sector Action Plans nor is there indication of how and where the draft Programme adds value to these previously published Action Plans.

The Council feels that more mention should be made throughout the Programme of the educational and enforcement roles which are essential to the success of many of the actions.

Preparation for adaptation to climate change is linked to the issue of uncertainty and the costs and opportunity cost of devoting resources to other needs. In many cases this will involve prioritisation of climate change adaptation over other issues and vice versa. Due emphasis needs to be given to this issue. There also needs to be due reference to doing things in order to adapt that may prove

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harmful (to people, the environment and/or the economy).

The current text of the Programme also fails to address in any detail the economic risk and opportunities associated with climate change and the competitive advantages which will accrue from a climate-resilient economy. There must be a realistic assessment of the disadvantages and the opportunity costs of climate change impacts and adaptation.

The Council feels the following should be looked at in the Programme:

- an improved understanding of the economic impacts of climate change that could occur throughout Scotland and how these will be distributed across regions and sections of society
- actions to address the predicted negative climate impacts of climate change to ensure that they must not outweigh benefits for most sectors that provide essential goods and services to society
- the secondary effects of climate impacts such as higher prices, reduced income, reduced home value and job losses.

The Council feels that better linkage should be made between 'green', 'blue' and built infrastructure<sup>1</sup>.

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<sup>1</sup> Green Infrastructure includes parks, open spaces, playing fields, woodlands, wetlands, grasslands. Blue infrastructure refers to water bodies, rivers, streams, floodplains and sustainable drainage systems.

# Transport and Environment Committee

10 AM, Tuesday, 27 August 2013

## Energy Policy

Item number	7.12
Report number	
Wards	All

### Links

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Coalition pledges [P50](#)  
Council outcomes [CO18](#)  
Single Outcome Agreement [SO4](#)

#### Alastair Maclean

Director of Corporate Governance

#### Mark Turley

Director of Services for Communities

Contact: Mark Steed, Head of Corporate Property  
E-mail: [mark.steed@edinburgh.gov.uk](mailto:mark.steed@edinburgh.gov.uk) | Tel: 0131 529 7299

Contact: Jenny Fausset, Senior Policy Officer  
E-mail: [jenny.fausset@edinburgh.gov.uk](mailto:jenny.fausset@edinburgh.gov.uk) | Tel: 0131 469 3538

# Executive summary

## Energy Policy

### Summary

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This report presents a revised energy policy for the Council to Committee for approval. This policy replaces the current Council energy policy approved in 2000 and takes the format of an overarching policy document supported by ten procedures. The ten procedures outline Council good practice for the key elements of effective energy management as it relates to the City of Edinburgh Council. The policy is also supported by an action plan to meet the policy aims and objectives.

### Recommendations

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It is recommended that Committee:

1. approves the policy, supporting procedures and action plan.
2. agrees that a senior officer be the lead responsibility for energy management Council wide.
3. agree that a forum be established to drive the energy policy forward and address energy issues (e.g. reducing energy consumption) across the organisation; and
4. agree to receive annual reports on the implementation of the policy outlining progress made against policy objectives.

### Measures of success

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The following will be used to measure the effectiveness of the policy:

- robust energy monitoring and reduced energy consumption in Council buildings;
- regular reporting on building energy performance;
- increased efficiency and reduced energy consumption for stair and street lighting;

- the establishment of a corporate forum within the Council to address energy issues for all Service Areas led by a senior officer.

## **Financial impact**

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Implementation of this policy should lead to:

- Reduced energy consumption;
- Reduced carbon emissions;
- Reduced CRC annual cost.

## **Equalities impact**

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The content of this report is not relevant to the public sector equality duty of the Equalities Act 2010.

## **Sustainability impact**

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The impacts of this report in relation to the three elements of the Climate Change (Scotland) Act 2009 Public Bodies Duties have been considered, and the outcomes are summarised below.

- reduced energy consumption;
- reduced carbon emissions;
- increased energy efficiency; and
- improved governance of energy across the organisation.

## **Consultation and engagement**

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The policy and supporting procedures were subject to consultation within the Council. Responses received were taken on board.

## **Background reading / external references**

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Carbon Trust Management Guide CTC733: An energy management best practice model for Scottish local authorities.



## Energy Policy

### 1. Background

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- 1.1 This energy policy replaces the Council's current energy policy approved in 2000. It consists of an overarching policy statement supported by ten procedural documents. This policy revision was supported and assisted by The Carbon Trust, Scotland and was drafted in partnership with Technical Support Services, Transportation and Housing & Regeneration (SfC).

### 2. Main report

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- 2.1 The Council is a large organisation and the use of energy is vital to the delivery of Council services and day to day Council activities. With increasing energy costs, carbon reduction commitment legislation and concerns over climate change, the effective management of energy within the Council is more essential than ever before.
- 2.2 This policy (Appendix1) and its supporting procedures sets out an overarching statement on the Council's commitment to energy management and efficiency. The statement includes six commitments for the Council's Corporate Management Team. Support for the policy at the most senior management level is fundamental to delivery of the objectives and meeting targets.
- 2.3 There are many elements to be considered in the effective management of energy for a large organisation such as the Council. This policy considers ten key elements, each set out as a procedural document to support the policy statement. Each procedure sets out the Council approach, key responsibilities and expected performance where applicable. These procedures will be updated (and new procedures written as required) on a regular basis to reflect any changes in legislation, Council structures, practices etc.

#### **Governance**

- 2.4 A key element of successful energy management within an organisation is the governance arrangements in place. The Governance Overview and Resource procedure sets out the three key staff groupings within the Council that have a role to play. However the procedure also highlights that there is no one senior

officer with overall active responsibility and accountability for energy across the organisation. With energy prices forecast to increase and a tonne of carbon rising to £16/tonne in 2014 under CRC legislation (currently £12/tonne), having a good corporate overview of energy management across the organisation will be vital to efficient energy management.

2.5 The Carbon Trust advises 'that formal responsibilities for energy management should not reside exclusively with the Energy Management Team and recommend that specific responsibilities should be formally assigned to individuals whose support and engagement is necessary for delivering effective energy management<sup>1</sup>'.

2.6 It is envisaged that this role would be:

- The senior advocate for energy management in the organisation;
- Report regularly to CMT on energy management, progress on targets, key investment projects etc;
- Raise issues of concern or problems arising in satisfying the energy policy; and
- Provide feedback, strategic advice and guidance to the core staff that lead on day to day delivery of the energy policy objectives.

2.7 This report is recommending that a Head of Service is appointed to this role. It is suggested that as the majority of energy related functions (Street Lighting, Stair Lighting, Building energy, Council Housing) are managed by SfC, that this be the Head of Corporate Property. This role is seen as being key to the effective implementation of the proposed policy.

2.8 In addition, there is no forum within the Council to drive forward the energy policy and action plan, discuss energy projects corporately, maximise funding opportunities, address issues raised by Services Areas and to maximise synergies organisation wide. This report recommends that such a forum is established and is chaired by the Head of Corporate Property as proposed in Para 2.7. This forum would be supported by the Carbon, Climate and Sustainability Team in Corporate Governance and meet quarterly in line with reporting requirements to CMT.

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<sup>1</sup> Carbon Trust, Management Guide CTC733 An energy management best practice model for Scottish local authorities

## **Communication**

- 2.9 The Communication procedure outlines the methods of communication employed within the Council and identifies key audiences. To implement the policy effectively and to engage with people in the process, two way communication is vital. The establishment of an energy forum would provide a mechanism within the organisation to inform and target effective communications.

## **Measuring & Monitoring**

- 2.10 In order to manage energy effectively consumption must be measured and monitored. The measuring and monitoring procedure sets out how this is done for building and street lighting within the Council. This is often seen as mundane but is essential to reducing the demand for energy in the first place i.e. identifying wastage, incorrect tariffs, bad practice on site etc. This is the first step outlined in the Council's approach to the energy hierarchy (Low zero carbon statement). It is vital that monitoring information is reported regularly to those responsible for the day to day management of buildings and to senior management so that they can see consumption profiles and associated costs. These regular reports can also assist management in making decisions e.g. opening hours for buildings and the energy implications of any changes to service provision etc.

## **Project Register**

- 2.11 The Council received the Carbon Trust Standard in June 2012. One of the key elements raised as part of the assessment process was the importance of a project register to track, report on and evaluate the carbon impact of energy related projects across the Council property portfolio. Hence a key procedure supporting this policy is the adoption of a project register. This register will be held by the Technical Support Services Team (SfC) and will record key energy and financial information on projects and will inform the Council's Carbon Management Plan.

## **Energy & Emissions Reporting**

- 2.12 The Council reports annually on its energy consumption as part of the Scottish Climate Change Declaration and in compliance with CRC legislation. This policy introduces new monthly reporting to senior management across all electricity, gas and oil consumption in Council buildings. CMT has also requested quarterly reporting on energy consumption for the Council's top twenty five high consuming buildings. The first of these reports went to CMT earlier this month.

## **Sustainable Procurement Statement**

- 2.13 This statement complements the Council's Sustainable Procurement policy (approved 2012). A working group within the Council is addressing sustainability as part of the procurement process and energy is a key element on the work programme. This procedure will be regularly updated to reflect working group progress.

## **Building Design & Refurbishment Procedure**

- 2.14 The design of buildings and their refurbishment can have a huge impact on day to day operational energy performance. New regulations such as the Energy Efficiency Directive to be transposed into UK law in 2015/16, brings legally binding measures to use energy more efficiently. This procedure sets out key elements to be considered from the approach to design through to Post Occupancy surveys.

## **Low / Zero Carbon Statement**

- 2.15 This statement sets out the Council's approach to the energy hierarchy and promotes a reduction in energy demand in the first instance. The use of renewable energy technologies is encouraged once the demand for energy has been minimised. It is proposed that a policy on renewable energy for the Council be prepared to complement this statement.

## **Building Performance**

- 2.16 This is a key procedure that addresses day to day energy performance in Council operational buildings. It introduces a heating season and states the temperature ranges within which Council buildings should operate. There will be exceptions to this but it is important for the Council to establish good management practices and to support FM to manage buildings effectively. This is a very important procedure as buildings make up 40% of the Council's carbon footprint and the annual CRC bill is based on electricity and gas consumption.
- 2.17 The Technical Support Services Team also plan to benchmark buildings grouping them as per building type, age, fabric, use etc. Headline performance information will be disseminated to frontline facilities staff on a regular basis. This will enable a greater understanding of those premises which are underperforming in terms of efficient energy use and enable a greater level of internal reporting.
- 2.18 This procedure also sets out user responsibilities for staff to assist with more effective energy management within buildings.

## Management Review & Internal Audit

- 2.19 This procedure has been put in place to ensure that the energy policy is being effectively implemented. A record of the audits will be held and any issues raised will be formally tracked until they are resolved. This is the first time that such a procedure has been put in place with respect to the monitoring of the Council's energy policy.

## Action Plan

- 2.20 The policy objectives are supported by an annual action plan (Appendix 2). This will be a working document and will be flexible to include additional actions/opportunities as they arise during the course of the year. This initial plan focuses on getting key procedural actions in place e.g. establishing a Council energy forum, reporting requirements and populating the project register.

## Finance

- 2.21 This policy focuses on energy consumed in buildings and by street and stair lighting (i.e. gas and electricity consumption). This is in line with the CRC scheme which is also based on the Council's gas and electricity consumption from buildings and from 2014/15 will also include street lighting.
- 2.22 Table 1 shows consumption and spend on energy for buildings and infrastructure (street & stair lighting, traffic and christmas lights) for 2012/13.

**Table 1**

	<b>Total tonnes CO<sub>2</sub></b>	<b>Spend (£)</b>	<b>% of Council Carbon footprint</b>
<b>BUILDINGS</b> (Gas, Electricity & Fuel Oil)	60,695	~ £10.1 million	40
<b>INFRASTRUCTURE</b> (Street & stair lighting, Traffic & Christmas lights)	21,300	~ £3.8 million	14

2.23 The Council's CRC spend for the financial year 2012/13 is £0.73m. The cost of CRC (based on energy consumed) has a significant impact on the overall cost of energy for the Council. The efficient management of energy and the effective implementation of the policy across the Council will play a key role in keeping these costs to a minimum.

### Reporting & Way Forward

2.24 The policy, procedures and action plan will be published on the web and kept up to date. The action plan and procedural documents will be kept live to reflect legislation updates and any changes within the Council.

2.25 Progress on policy implementation will be reported on annually alongside a new action plan for the following twelve months.

## 3. Recommendations

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To recommend that Committee:

1. approves the policy, supporting procedures and action plan.
2. agrees that a senior officer be the lead responsibility for energy management Council wide.
3. agree that a forum be established to drive the energy policy forward and address energy issues (e.g. reducing energy consumption) across the organisation; and
4. agree to receive annual reports on the implementation of the policy outlining progress made against policy objectives.

**Alastair Maclean**

Director of Corporate Governance

**Mark Turley**

Director of Services for Communities

## Links

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[Sustainable Edinburgh 2020](#)

<b>Coalition pledges</b>	P50 - Meet greenhouse gas targets, including the national target of 42% by 2020.
<b>Council outcomes</b>	CO18 - Green - We reduce the local environmental impact of our consumption and production

<b>Single Outcome Agreement</b>	SO 4 - Edinburgh's communities are safer and have improved physical and social fabric
<b>Appendices</b>	1 Energy Policy & Supporting Procedural Documents 2 Action plan



# ENERGY POLICY FOR COUNCIL BUILDINGS<sup>1</sup>

## VERSION CONTROL

This document is reviewed annually to ensure it is accurate and up to date.

No.	Version	Date	Initials	Description
1	1.0	July 2013	JF	Draft for Committee approval

**DOCUMENT OWNER:** Jenny Fausset, Corporate Governance

[jenny.fausset@edinburgh.gov.uk](mailto:jenny.fausset@edinburgh.gov.uk) 0131 469 3538

<sup>1</sup> Includes street and stair lighting



## 1 EXECUTIVE SUMMARY

The City of Edinburgh Council (CEC) buildings produce 60,695 tonnes of CO<sub>2</sub> annually (2012/13 figures). Its operational buildings use 154 GWh of gas, 59 GWh electricity and 352,000 litres of oil (2012/13 figures) equating to an annual energy bill of £10.1m. Street and stair lighting costs approximately £3.8 million per annum. Climate change is a global challenge and requires a global response. The City of Edinburgh Council has shown its commitment to addressing the cause of climate change by signing the Scottish Climate Declaration. Good energy management will not only support the Council's action in response to the threat of climate change but can provide substantial cost savings especially with raising energy costs.

Energy management is not only an issue for services areas with direct control over energy in the Council; it is an issue that all members of the organisation should be aware of as everyone's behaviour is influential. Each individual has a responsibility to support the energy management targets within this policy to ensure that the City of Edinburgh Council is able to meet its objectives, reducing our impact on the environment and lowering energy costs.

**Signed:**

**Chief Executive**

**Date:**

## 2 VISION & STATEMENT OF COMMITMENT

The use of energy is vital to the delivery of Council services and day to day Council operations. With increasing energy costs, carbon reduction legislation and concerns over climate change; effective energy management is essential to the Council. This policy covers management of energy within Council buildings and lighting (stair & street). The Council's Corporate Management Team shall ensure that:

- Sufficient resources are in place to meet the policy targets and objectives;
- Energy and carbon reduction initiatives shall be recorded, regularly reviewed and targets and objectives amended accordingly;
- There is a continued commitment from all staff to improve energy performance;
- There is a commitment to meeting the training and development needs of energy management staff and raising the energy awareness of all staff; and
- There is compliance with all current legislation and government targets and where practical the Council will endeavour to exceed these targets.

## 3 OBJECTIVES

- The Council will work towards the adoption of qualitative public commitments or an external recognition/accreditation scheme such as ISO 50001, providing a continuous improvement framework for energy management (see Management reviews and internal audits procedure);
- The Council shall reduce energy consumption (see measuring and monitoring plan, project register) and ensure high standards of energy efficiency across non domestic Council properties (see building performance procedure) thereby minimising expenditure and reducing CO<sub>2</sub> emissions in line with Council's climate change targets (see energy and emissions reporting procedure).
- The Council shall act to improve its energy performance by tackling the challenge of improved energy efficiency and incorporating the use of renewable technologies where appropriate across its estate. (See LZC statement)

- Products used within or on behalf of the Council will meet energy efficiency standards as stated in the **Council's sustainable procurement policy (2012)**. (See sustainable procurement statement also).
- The Council shall incorporate energy efficiency measures, material selection, whole life costing and the recycling of building materials into the design and construction of all new build/ refurbishment schemes (see building design and refurb procedure). The Council will also conduct post occupancy assessments across new and refurbished sites.
- The Council shall raise awareness of this policy and the benefits of efficient energy management with key staff sectors and contractors (communications procedure). In addition the Council will create an ethos of shared yet differentiated responsibility for energy management (see governance and resource planning procedure).
- The Council shall implement a structured staff awareness programme as part of the Council's training programmes (including induction for new staff) in relation to energy management and good housekeeping in Council buildings.

#### 4 TARGETS

The Council will reduce its energy consumption from operational buildings by 20% by 2020 (baseline year 2009/10) in line with the Council's Integrated Property and Facilities Management programme.

There are real opportunities within street lighting and stair lighting to improve efficiency and reduce energy consumption. Robust baselines will be established and targets set to 2020.

#### 5 DELIVERY

The policy sets out the key energy commitments which will be applied to all energy activity relating to buildings and lighting within the Council. Compliance with this policy, associated procedures and other linked policies is mandatory. Where the Council employs third party organisations to undertake activity on their behalf and there is an impact on energy consumption, they shall be required to comply with this policy.

Delivery of the objectives stated in this policy will be supported through the development and implementation of a set of procedural documents and an energy action plan. The procedural documents set out the energy management guidelines for efficient energy management across the diverse Council property portfolio whilst still meeting clients' needs. Procedures supporting this policy include:

- Governance overview and resource planning procedure;
- Communication procedure;
- Measuring and monitoring procedure;
- Project register procedure;
- Energy and emissions reporting and legislation register;
- Sustainable procurement statement;
- Building design and refurbishment procedure;
- Low/zero carbon statement;
- Building Performance procedure; and
- Management review and internal audit procedure

#### 6 CONTINUAL IMPROVEMENT

Progress on the implementation of the policy and the meeting of targets will be reported to Committee annually in line with reporting schedules for the Scottish Climate Change Declaration, the Carbon Management Programme and the CRC Scheme. Corporate Governance (Corporate Policy and Strategy Team) will request and collate information from Service Areas in order to report on progress in relation to this policy. Progress will

also be reported to the Member Officer Working Group on carbon, climate and sustainability.

Progress towards the targeted reduction (for buildings) and the development of targets (for street lighting) will be reviewed and reported on annually to Committee.

# GOVERNANCE OVERVIEW AND RESOURCE PROCEDURE



THIS DOCUMENT SUPPORTS THE COUNCIL'S ENERGY POLICY  
(ENPOL2013)

## Contents

### VERSION CONTROL

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**DOCUMENT OWNER** - Jenny Fausset, Corporate Governance  
[jenny.fausset@edinburgh.gov.uk](mailto:jenny.fausset@edinburgh.gov.uk) 0131 469 3538

## 1 APPLICATION

This procedure applies to all elected members, employees and contractors of the City of Edinburgh Council (CEC).

## 2 BACKGROUND

The City of Edinburgh Council has put this procedure in place to outline the governance relating to energy management within the Council and associated resources which are available. This procedure provides a clear outline of the roles and responsibilities for energy management within the Council. This document has been created to support the Council's energy policy (ENPOL2013).

## 3 RESOURCE COMMITMENT

The Council's commitment to resources to manage energy effectively and successfully has been outlined within the energy policy (ENPOL2013).

In addition to the human resource commitment which is evident within sections 4 to 6 of this document, financial resource commitment to energy management can be seen within the project register, building performance procedure and building design and refurbishment procedure.

## 4 EMPLOYEE ROLES AND REONSIBILITIES

Responsibility for energy management across the Council's staff is provided below; teams have been grouped into having either

- Direct<sup>1</sup> energy management roles and responsibility;
- Operational<sup>2</sup> energy management roles and responsibility; and
- Indirect<sup>3</sup> energy management roles and responsibility.

In addition to these, all staff and contractors have a role to play in the effective management of energy throughout the Council.

### 4.1 Direct roles and responsibility

#### Technical Support Services

Day-to-day responsibility for operational energy management is with the Technical Support Services Team in SfC.

Lead officer: Property Manager  
Email: [energy@edinburgh.gov.uk](mailto:energy@edinburgh.gov.uk)

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<sup>1</sup> Direct responsibility has been defined as those teams who have day to day responsibility and report on energy management

<sup>2</sup> Operational responsibility has been defined as those teams who have opportunity to influence energy management through their day to day operations

<sup>3</sup> Indirect responsibility has been defined as those other teams which provide supporting services which help to ensure good energy management practices.

**Technical Support Services responsibilities:**

- Monitoring and targeting of energy consumption for the Council's property portfolio (this shall involve collating and recording information from third parties that manage buildings on the Council's behalf);
- Management of energy conservation programmes (including Central Energy Efficiency Fund (CEEF));
- Assisting Finance with setting energy budgets;
- Undertaking regular surveys of buildings, plant, equipment and services and proposing projects for future investment;
- Advising service areas on energy efficiency projects and providing supporting energy data;
- Benchmarking the performance of the Council property portfolio;
- Promoting energy efficiency good housekeeping; and
- Provision of robust energy data for the following purposes –
  - Carbon Reduction Commitment (CRC) baseline and reports,
  - Monitoring reports (monthly, quarterly, and as requested) for senior management; and
  - Policy progress reports.

**The Climate, Carbon and Sustainability Team**

The Carbon, Climate and Sustainability (CCS) team in Corporate Governance has day to day responsibility for energy policy.

Lead officer: Corporate Policy & Strategy Team Manager

Email: sustainability@edinburgh.gov.uk

**The Climate, Carbon and Sustainability Team responsibilities:**

- Oversee policy development;
- Regular updating of policy to reflect changes in legislation and local authority commitments; and
- Report on progress on policy implementation to committee annually.

**4.2 Buildings Programme Management****Design Team**

The Design Team manager has day to day responsibilities for Engineering Services, Surveying and Architectural projects. The role that these teams play in influencing projects is very much dependent on the requirements as set by the Client Department underpinned by Council policy and standards.

**Design Team Responsibilities**

- To ensure compliance with Council policies;
- To promote good practice; and
- To carry out Post Occupancy Surveys

**Facilities Management**

Facility Management play a key role in providing the management and delivery of supporting services in the operation of Council buildings.

Lead officer: Corporate Facility Manager

E-mail: [facilitiesmanagement.integratedproperty@edinburgh.gov.uk](mailto:facilitiesmanagement.integratedproperty@edinburgh.gov.uk)

### **Facility Management energy management responsibilities:**

- Energy efficiency is a core element of the management approach taken;
- Reading of all utility meters including sub meters on a monthly basis;
- Carry out regular energy audits of buildings, plant and equipment;
- Ensuring Council buildings within the corporate office estate are operated in a manner that uses energy efficiently;
- Reinforcing and implementing good energy practice with building users;
- Liaising with the Technical Support Services team to report issues with buildings that are impacting on that building's energy performance;
- Ensuring that contractors who have responsibility for the facility management of buildings within the corporate office estate are implementing the Council's energy policy; and
- Providing practical support and advice to building users to enable them to be energy efficient in the use of the building.

### **Strategic Property Asset Management**

The Asset Management Team manages the use of the Council's operational property assets, in order to assist Client Departments' in their delivery of key services.

### **Strategic Property Asset Management energy management responsibilities:**

- Take full account of the opportunities for energy savings that arise out of the rationalisation of the estate or of individual buildings;
- Ensuring that the corporate Asset Management Plan promotes and implements good energy management;
- Ensuring that the Council's energy policy is central to the appointment of consultants and developers/contractors for all capital building projects and major maintenance works; and
- Ensuring that energy efficiency options for capital investments are fully appraised on the basis of whole life costing.

### **Housing Asset Management (SfC)**

#### **Housing Engineering Services and Energy Management**

The Housing Asset Management team (HAM) is responsible for developing and delivering high quality, effective, efficient and well managed customer-focused services to council tenants, homeowners and the wider community, ensuring a thriving, safe, energy efficient, well-maintained and managed, housing sector serving the city's housing needs.

This includes the coordination and implementation of energy and climate change strategies and policies to contribute towards meeting local and national energy and climate change targets and legislative requirements for SfC's property folio (principally Housing and also city-wide private sector housing).

### **Engineering services energy management responsibilities:**

- To incorporate energy efficiency measures into Regeneration and Housing strategies;

- To promote energy efficiency as part of all stair lighting programmes and refurbishments; and
- To assist with and implement measures to improve the energy efficiency of homes and make homes warmer across the city.

### **Street lighting**

The street lighting team maintain and manage all aspects of street lighting (including illuminated signs and bollards) across the city.

Lead officer: Lighting Manager

Email:streetlighting@edinburgh.gov.uk

### **Street lighting energy management responsibilities:**

- To promote and integrate energy efficiency as part of all street lighting programmes and refurbishments.

## **4.3 Indirect responsibility**

### **HR energy management responsibilities:**

- Integrating energy efficiency into Council training and induction programmes for all staff;
- Managing energy training and development as part of individual's overall development where energy is a core activity of the job description;
- Including energy performance competencies in job descriptions where relevant; and

### **Communications Service energy management responsibilities:**

- Assist with on-going communication of the energy efficiency message to Council staff via newsletters, e-mails, web etc.;
- Publicity for energy efficiency projects ;
- Supporting Technical Support Services and the Carbon, Climate and Sustainability team with awareness raising campaigns.

### **Procurement energy management responsibilities:**

- Ensuring energy efficiency is used as procurement criteria where relevant in all Goods and Services contracts in line with the Council's Sustainable Procurement policy;
- Encouraging suppliers to offer energy efficient alternatives/options where available;
- Including energy criteria/performance in service contracts; and
- Encouraging energy efficiency in the supply chain: i.e. favouring suppliers that are active themselves in improving their overall energy efficiency.

### **Corporate Finance energy management responsibilities:**

- Assisting with budget provision and management for Carbon Reduction Commitment (CRC) and other energy efficiency related initiatives;
- Establishing budget codes for individual Council buildings (including those that form part of a group of buildings on a site) in order to report accurately on annual spend on a building by building basis;



- Involving the Technical Support Services team in the setting of energy budgets; and
- Encouraging the use of whole life costing, including placing a value on carbon savings.

#### **4.4 All staff and contractors**

Responsibilities for energy management do not reside exclusively with the Technical Support Services Team or those with operational or indirect responsibilities. **Energy management is everyone's responsibility.**

Each of the Council's Services, employees and contractors has responsibility to:

- Recognise their role as energy consumers and accept responsibility for their energy performance;
- Manage energy consumption through good housekeeping and investment;
- Make a departmental commitment to energy efficiency; and
- Promote energy efficiency through their core activity.

### **5 MANAGEMENT RESPONSIBILITIES**

Management has overall responsibility to ensure that all of the aforementioned service areas, contractors and staff adhere to their responsibilities as defined within this procedure. This shall be ensured through:

- regular review of the performance against remit of the service area and staff with direct responsibility for energy management;
- inclusion of energy management duties within job descriptions of appropriate energy management support staff;
- include in appraisals, a level of adherence to energy management responsibilities for all staff

### **6 WORKING GROUPS RESPONSIBILITIES**

Across the Council there are also cross functional teams/working groups who have a remit to manage energy.

#### **Sustainability and Carbon Reduction Group**

Sustainability and Carbon Reduction is one of the four key workstreams identified as part of the Integrated Property and Facility Management programme (iPFM). This seven year programme is being led by SfC. A working group has been established to drive forward defined projects as part of this workstream. This group will be responsible for implementing the policy with respect to buildings.

#### **A Carbon Reduction Commitment (CRC) project board was established in 2010:**

- to ensure the City of Edinburgh Council's overall compliance with the scheme (including legal, financial and operational aspects);
- to ensure input and co-ordination by all Council departments in response to the legislative requirements;
- to facilitate and promote an overall approach by the City of Edinburgh Council to reduce the Council's carbon footprint year on year;
- to receive updated progress reports from the CRC working group on a regular basis to ensure City of Edinburgh Council is on track to meet legislation milestones; and

- to receive reports from other relevant Council groups (e.g. Corporate Asset Management working group) on measures to reduce the Council's overall carbon footprint.

Due to changes (2012) to the CRC legislation (i.e. removal of the trading element), communication with officers on the Board is virtual.

### **Member Officer Working Group**

A member officer working group has been established within the Council. Updates, briefings and progress reports on the implementation of the energy policy will be sent to this group for scrutiny and discussion.

### **Corporate Energy Forum**

There is no corporate working group existing within Council structures at which all energy issues as they impact on the Council can be discussed, debated and driven forward. It is proposed that an energy forum be established to service this function and oversee the implementation of the policy and that it be chaired by the Head of Corporate Property (SfC).

## **7 TRAINING**

The Council understands the need for energy management training for those with direct responsibility over energy management and throughout the Council as whole. Training should be made available where appropriate. Examples of staff with direct responsibility include:

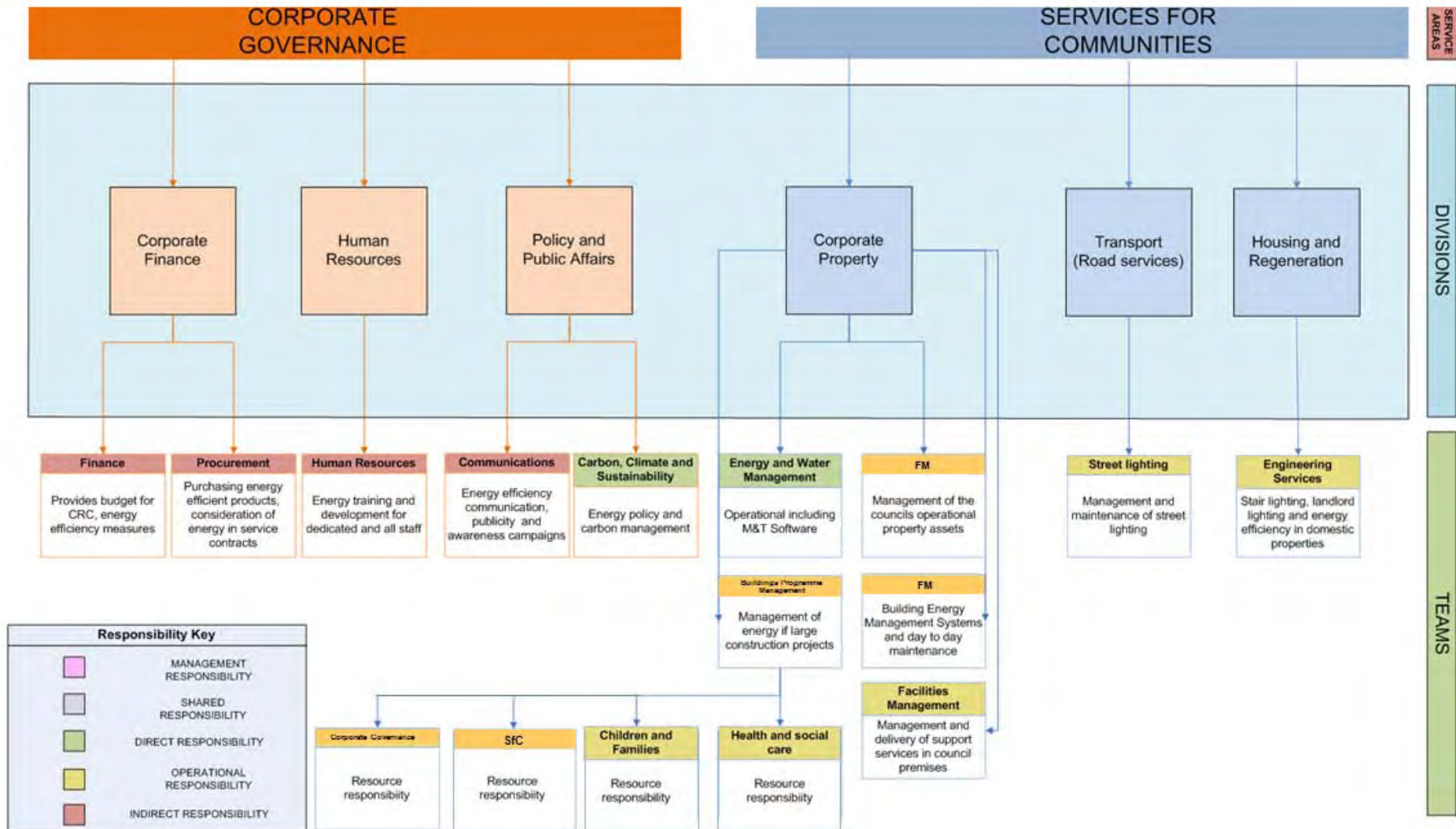
Technical Support Services staff are members of the Scottish Energy Officers Network (SEON) and regularly attend their meetings and training workshops. Staff also attend regular Systems Link workshops, Energy Performance Certificate training events as well as bespoke workshops e.g. on BEMS controls and lighting technologies.

CCS staff are members of the Sustainable Scotland Network (SSN) and attend quarterly meetings and training workshops to learn and share good practice on climate change.

In addition to this, energy management awareness campaigns have been carried out throughout the organisation. Currently the Council is taking part in the Carbon Management Awareness Campaign supported by the Carbon Trust. This programme aims to assist the Council to create, launch and maintain a robust energy awareness campaign that will yield energy, carbon and financial savings over a three year period and beyond.

### 7 ORGANOGRAMS

The diagrams below describe how the teams interconnect within the organisation and the associated level of responsibility.



## **8 FUTURE CHANGES**

The Corporate Property structure is currently under consultation for an extensive reorganisation. As this division holds a number of teams which have direct or operational responsibility for energy management it is essential that any changes which occur are reflected in updated versions of this document as appropriate. The text above is based on the draft format of the reorganisation and will be amended accordingly based on finalisation of this structure.

## **9 CONTINUOUS IMPROVEMENT**

To ensure that all relevant parties are aware of their roles and responsibilities regarding energy management within the Council, this document is reviewed annually and any changes communicated to all stakeholders.

## Appendix 1

## Business Manager (Schools)

- Regularly monitor and validate energy consumption using data from utility bills and onsite readings;
- Play a lead role in the property's approach to energy management;
- Work with local FM staff to identify and progress opportunities for saving energy;
- Liaise with Technical Support Services to identify and develop good practice;
- Monitor performance against benchmarks and targets on an ongoing basis;
- Ensure that objectives identified in School Energy Action Plans are met and that governance documents are kept up to date;
- Support teaching and local FM staff to reduce energy.

## Service Support Officer (Schools)

- Responsible for the day to day management of energy;
- Provide support, assistance and expertise to local energy reduction campaigns;
- Work with Facilities Manager, Business Manager and other relevant staff to identify and progress opportunities for energy saving;
- Liaise with Business Manager/Head Teacher on areas of improvement;
- Read meters frequently and record information;
- Liaise with Technical Support Services on Building Management System (BMS) settings and requirements;
- Ensure that faults to equipment, boilers, controls and plant are reported and properly recorded/monitored until service/repair;
- Ensure that local timers and controls are correctly set to requirements;
- Where applicable ensure that pool covers are deployed when the pool is not in use;
- Work with local staff and FM to develop a bespoke approach to achieving energy reduction within the property.

## Head Teacher

- Lead and support the school's energy reduction campaign;
- Support Business Manager, SSO and teaching staff in reducing energy;
- Show visible support and commitment for the Energy Action Plans/Policy with the whole school community;
- Maintain an overview of the school's energy performance against set targets/benchmarks;
- Maintain an overview of energy policy and associated governance documents for the school;
- Identify and support opportunities for incorporating energy into the school curriculum.

## Technical Support Services to Business Managers/SSOs/Facility Managers etc

- Provide access to energy consumption and cost data;
- Provide benchmarking information and exceptions to performance;
- Carry out energy audits and identify and advise on project proposals;
- Maximise the use of CEEF funding to implement projects;
- Set targets for properties and provide necessary guidance and support to meet these;

- Provide supporting information/evidence to support budget setting;
- Keep abreast of relevant regulatory/government policy requirements and advise accordingly;
- Ensure that boilers and plant are maintained/serviced regularly;
- Liaise with local FM staff to ensure that BMS are set up to meet local requirements and are in line with parameters outlines in the Council's Energy Policy.

#### Facilities Manager

- Responsible for maintaining an overview of energy performance in properties in their area;
- Liaise with Technical Support Services to identify and develop good practice;
- Monitor performance of properties against benchmarks and targets on an ongoing basis raising any issues directly with the site or Technical Support Services as appropriate;
- Ensure that properties are meeting objectives identified in Energy Action Plans and that governance documents are kept up to date;
- Provide support and assistance to energy reduction campaigns
- Maintain an overview of faults to equipment, boilers, controls and plant ensuring that the correct procedure for reporting and monitoring of faults are followed.

# COMMUNICATIONS PROCEDURE



**THIS DOCUMENT SUPPORTS THE COUNCIL'S ENERGY POLICY  
(ENPOL2013)**

## Contents

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DOCUMENT OWNER - **Jenny Fausset, Corporate Governance**  
**[jenny.fausset@edinburgh.gov.uk](mailto:jenny.fausset@edinburgh.gov.uk) 0131 469 3538**

## **1 APPLICATION**

This procedure applies to all elected members, employees and contractors of the City of Edinburgh Council (CEC).

## **2 BACKGROUND**

City of Edinburgh Council has put this procedure in place to outline the communication methods relating to energy efficiency and emissions reduction within the Council and externally to the general public. This procedure provides a clear outline of the communication methods, channels and actions taken to meet the objectives and targets within the energy management policy (ENPOL2013).

## **3 METHODS OF COMMUNICATION**

In order to address the challenges that the Council faces regarding energy and achieve the requirements set out in the Council's energy policy, effective channels for communication are necessary. Communication must be two way allowing the energy policy to be communicated down throughout the organisation but also enable staff to feedback into the process.

At the current time the Communications Team is going through a process of change (June 2013) it is difficult to define exact methods that will be available. The following channels will still be available and supported by the communications team but may be in a different format to those currently established.

- Face to Face;
- Electronic;
- Printed;
- Other forms of media.

Feedback will also be received through these channels. There will be more emphasis placed on electronic feedback for ease, anonymity and to allow a quick response.

## **4 TARGET AUDIENCE**

As noted within the application section this procedure applies to all individuals related to the Council be they elected members, staff or subcontractors. Communications however will be targeted at different groups of staff as there are different actions and priorities which face different groups.

Below are the communication groups that have been created. The internal groups are based on those outlined in the Governance procedure.



<b>Group</b>	<b>Includes</b>
Shared responsibility	All staff
Direct responsibility	Technical Support Services Team; Carbon, Climate & Sustainability Team
Operational responsibility	Asset Management, Major Projects, Property Services, Architectural Services, Facilities Management, Street Lighting, Engineering services
Indirect responsibility	Finance, Procurement, HR, Communications
Management Responsibility	All Heads of Service Management throughout the Council
Client Roles	Departments who act in client roles for projects, such as Children's Services
<b>External</b>	
Partner organisations	e.g. Edinburgh Leisure
Suppliers	Contractors carrying out a service on behalf of the Council e.g. Norland
The Public	Residents of the city of Edinburgh

## 5 SHORT TERM / INTERIM COMMUNICATION PROGRAM

A series of recommendations were drawn up with the communications team which need to be implemented or reviewed before a full communications program can be drawn up. These actions are outlined below.

<b>Recommendations</b>	<b>Completion Date</b>
<b>To implement</b>	
Engage a senior member of management as a champion for the Energy Policy to add credibility and highlight the need to be taken as a serious and currently important issue.	September 2013
Have one dedicated point of contact within the communications team to be able to track what new resources for communication will be available and to develop any reward based scheme.	
Resurrecting Carbon/ Energy Champions (not on a volunteer basis).	
Publication of projects which provide large savings and to also give	

recognition to the good work that has already been undertaken.	
Strengthen internal communication between Service Areas to allow feedback on project successes.	
<b>To Review</b>	
Raise the issue of a minimum energy management standard to be included in the PRD process.	
Possibility of a reward based scheme for those who go above and beyond this minimum standard. Recognition needs to be appropriate to the role of the individual. Integration of these actions with the carbon management awareness training program (CMAC) which is set to commence (January 2013)	

Once these actions have been reviewed the dedicated member of staff from the Communications team will work with the Carbon, Climate and Sustainability and Technical Support Services Team to produce a full communication action plan.

## **6 ENCOURAGING AND ACKNOWLEDGING BEST PRACTICE**

Through internal discussions it has been highlighted that action is required to ensure that staff who have already engaged in actions to improve energy efficiency or management should be recognised retrospectively.

As such, these staff will be identified and used in a program to highlighting the type of action that can be taken under the different member groups. This will then be carried on across the authority using the channels described above in section 3.

# MEASURING, MONITORING AND ANALYSIS PROCEDURE



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[jenny.fausset@edinburgh.gov.uk](mailto:jenny.fausset@edinburgh.gov.uk) 0131 469 3538

## 1 APPLICATION

This procedure applies to all elected members, employees and contractors of the City of Edinburgh Council (CEC).

The City of Edinburgh Council has put this procedure in place to outline the measuring and monitoring practices relating to energy management within the Council and associated resources which are available. This document has been created to support the Council's energy management policy (ENPOL2013).

## 2 DRIVERS OF ENERGY USE

The drivers of energy use come from our service provision. The main drivers are as follows

- Corporate Buildings
- Education Estate
- Street and stair lighting

We also have other requirements for energy which are less significant than those listed above but are addressed in our actions to reduce energy consumption and improve efficiency.

## 3 SIGNIFICANT ENERGY USES

Significant energy uses are the following:

- Gas (for heating);
- Electricity; and
- Gas Oil (for heating – limited sites)

## 4 MEASURING

The Council's street lighting portfolio is administered by Roads Services and is traded on a passive half hourly basis.

The Technical Support Services team receive information from a number of different sources to enable them to build up a profile of energy use within each property.

Measurement methods used by the Technical Support Services team include:

### **Direct meter reads from sites/ Systems Link portal**

The Council recognises that it is important to ensure that measurement from both personnel and equipment is as accurate as possible. Personnel are provided with training and guidance in order to provide accurate meter readings. A number of sites have the ability to directly enter their meter readings into an online portal for the energy management software (SystemsLink). This information can be used to inform billing and the verification process. All billable meters are licensed by our supplier and approved by Ofgem. Suppliers are required to read and inspect meter(s) at least every two years.

**Automatic Meter Reading (AMR)**

The roll out of AMRs across the Council's operational estate has improved the accuracy of invoice data for gas and electricity. The Council currently has 203 gas and 343 electricity AMR devices across an estate of around 1000 supplies.

The Council has a policy of installing AMR equipment on electricity supplies where there is a dynamic consumption profile and annual consumption will be greater than 10,000 KWh per annum and 73,200 KWh per annum for gas supplies. AMRs communicate using GSM signals to allow remote reading of consumption data and meter registers.

This results in the elimination of estimated reads with the benefit of more accurate bills. It also allows for more accurate and automatic monitoring and reporting of consumption data (including half hourly consumption profile data) and carbon emissions. This has increasing importance with greater demands for accurate reporting on internal carbon emission reduction targets and also for external reporting.

**Energy Bills / Delivery notes for fuel**

Accurate billing is vitally important and action has been taken to support this goal through training for staff taking direct readings (as mentioned above) and implementation of AMR. In addition to this, bills are verified based on consumption and financial spend. Sites are also encouraged to notify the Technical Support Services team of errors found in bills so that this can be raised and rectified with the supplier timeously.

**Building Energy Management Systems**

The Property Management team also collect information through the Building Energy Management Systems (BEMS). BEMS allow for more sophisticated control strategies with remote monitoring and adjustments to ensure that faults and energy waste is identified early and that potential energy savings are maximised. A strategic review of the BEMS is currently underway. This will inform a programme of BEMS upgrade across the estate. This will increase the energy efficiency of buildings and allow for better monitoring.

**Street lighting**

Supplies to street lighting are un-metered. Energy is charged on a passive half hourly trading profile based on dusk to dawn burning. This method does not use any actual recorded data and instead relies on the calculated sunrise/sunset times. Passive Half Hourly cannot use any data from a Photo Electric Cell Unit (PECU) Array or a Central Management System (CMS). The Council does not currently operate a CMS system for street lighting.

Energy consumed is declared by the Council on a monthly basis based on data contained within "Hilight Horizon" the Street Lighting Asset Management database. This data is updated daily as the inventory (street lighting, illuminated signs and bollards asset) changes.

## 5 MONITORING

### Technical Support Services Team

The Technical Support Services team record consumption data and monitor consumption on Systems Link. The team has recently set up online access to Systems Link’s web reporting system and are rolling out access across the operational estate. The website will be used as a platform from which to engage with and encourage energy users’ awareness of consumption and associated cost. Furthermore, the ability for property users to submit actual meter readings through the system will increase the accuracy of billing and consumption data where AMR installation has not been feasible. Where users agree to submit monthly readings through the system non-AMR, quarterly billed supplies will have the option of moving to monthly billing. Through the web portal, sites will be able to review half hourly profile consumption data to analyse the impact of changes to the operation of the building, to monitor out of hours and peak consumption and to validate efficiency savings through improved housekeeping.

### Example: Systems Link screen shots for Royal Mile Primary School

**ROYAL MILE PRIMARY SCHOOL**

**Consumption Report**  
17/01/13 Thursday

**Comparison against previous day**

**Comparison against same day last week**

Overall position on day	SAVING	10	kWh
Usage for 16/01/13 Wednesday		291	kWh
Usage for 17/01/13 Thursday		280	kWh

Overall position on day	SAVING	6	kWh
Usage for 10/01/13 Thursday		287	kWh
Usage for 17/01/13 Thursday		280	kWh

**EDINBURGH**  
THE CITY OF EDINBURGH COUNCIL

Powered by SystemsLink

**Data Sets For Site**

Site Name: ROYAL MILE PRIMARY SCHOOL  
 Site Code: PSC/C&F/ROYAM  
 Address: 86 CANONGATE, EDINBURGH, EH8 8BZ

View detailed site information

Edit Table Layout

Type	Meter Serial Number	Custom 3	MPAN/MPRN	Units		
Electricity	K10UP00057	smart meter	1000022289753	kWh		
Electricity	K10UP08058	smart meter	18000351e3812	kWh		
Electricity	P008845869		1800022289744	kWh		
Gas	920203		190046705	kWh		
Gas	7534230		18863205	kWh		
Gas	707180		18863104	kWh		
Water	060273798	Water		Cubic metres		
Water	12M101958	Water		Cubic Metres		

As part of the Council's Energy Awareness Campaign it is planned that Systems Link's web reporting system will be used to provide monthly reports across all supplies to key managers. League table reporting will be one mechanism employed to raise awareness and motivate properties to reduce energy use.

Funding has been secured from the Carbon Trust to carry out energy audits on Council buildings and there is an ongoing relationship with the Carbon Trust to develop further support for strategic low carbon advice and support. A rolling programme of audits across the estate is also undertaken by the Technical Support Services team.

### **CCS team**

The CCS team use an Excel based database ('Carbonstat') for recording corporate Council carbon emissions year on year. The CCS team holds the database and is responsible for collating information from other Service Areas across the organisation. The database was reviewed and updated as part of the Carbon Management Revisited programme (2011).

### **Street lighting team**

All street lighting data is contained within the asset management database "Hilight Horizon" which holds a complete inventory of street lighting, illuminated signs and bollards assets. It is not a monitoring system in terms of being "active" (i.e. a Central Management System (CMS)), it simply holds all the data relating to the type of lighting installation.

Consumption (kWh) and CO<sub>2</sub> emissions are monitored on a monthly basis and can be compared annually. Numerical half hourly data and daily demand are also provided.

## **6 ANALYSIS**

In addition to the data produced from the various measuring and monitoring regimes, analysis is conducted on the building energy data to further determine any issues or areas for improvement.

This includes the following activities:

**Degree Day analysis;**  
**Operating period analysis (i.e. identifying wastage); and**  
**Comparison between actual and expected usage (including target setting).**

Data is also analysed after an energy efficiency project had been implemented to determine the savings that have been made in terms of money, energy and carbon. This information is recorded within the project register (ENPOL\_PROJREG) and available for all relevant parties to view.

## **7 ENERGY PERFORMANCE INDICATORS**

The following energy performance indicators (EnPI) have been established in line with the Council's energy policy objectives and targets:

kWh per m<sup>2</sup>;  
kWh per occupant; and  
kWh per hour open.

Performance of buildings in terms of these indicators will be included as part of the monthly reports to management.

## **8 CONTINUOUS IMPROVEMENT**

A proposal has been developed by the Technical Support Services team with a number of recommendations that will have positive impacts on energy consumption and its management. These are:

- to set performance targets for building tenures;
- to locate the Building Energy Management System (BMS) operations with the Technical Support Services team;
- the Technical Support Services team develop a replacement strategy for the BMS targeting energy savings, best value and building performance.
- the Technical Support Services develop a performance specification for their BMS to deliver on the BMS strategy including procurement, operation and maintenance of the Council's BMS.

These proposals will be reviewed annually by the Technical Support Services team and following decisions made all relevant procedural documents shall be amended. In order to ensure continual improvement the actions taken within this document shall be reviewed annually with an aim to further support the objectives of the energy policy.



# OPPORTUNITIES/PROJECT REGISTER PROCEDURE



**THIS DOCUMENT SUPPORTS THE COUNCIL'S ENERGY POLICY (ENPOL2013)**

## Contents

### VERSION CONTROL

This document is reviewed annually to ensure it is accurate and up to date.

No.	Version	Date	Initials	Description
1	1.0	July 2013	JF	Draft for committee approval

**DOCUMENT OWNER - Jenny Fausset, Corporate Governance**  
**[jenny.fausset@edinburgh.gov.uk](mailto:jenny.fausset@edinburgh.gov.uk) 0131 469 3538**

## 1 APPLICATION

This procedure applies to all elected members, employees and contractors of the City of Edinburgh Council (CEC).

## 2 BACKGROUND

The City of Edinburgh Council has put in place this procedure to outline the process for maintaining and updating the opportunities and project register of all projects directly relating to energy management within the Council. This document has been created to support the Council's energy management policy (ENPOL2013).

## 3 OPPORTUNITIES IDENTIFICATION

Opportunities for energy efficiency projects are identified in a number of ways:

- Data monitoring and analysis (See Measuring, Monitoring And Analysis Procedure );
- Information provided by occupants/contractors;
- Energy audits carried out by City of Edinburgh Council staff;
- Energy audits by external energy contractors;
- Building Energy Management systems (BMS);
- Maintenance;

A variety of different individuals can be involved in this process included Council staff occupying premises, Council staff with a direct energy responsibility (See Governance Procedure), external support services or external contractors.

All opportunities which arise are assessed and recorded within the opportunities/project register, a live document owned by the Technical Support Services team. Contributors are advised to contact the Technical Support Services team to provide details of potential opportunities observed or notified of to ensure they can be tracked.

Opportunities are assigned to an individual to pursue further action and deadlines are created for whether to progress or shelve an opportunity. A tracking system is in place where projects are colour coded based on the likelihood of becoming fully integrated projects.

## 4 OPPORTUNITES ASSESMENT

Opportunities once recorded are further investigated with particular emphasis on the following criteria:

**Maintenance or Energy Efficiency**

The opportunity is assessed to determine whether it is routine required maintenance only or an energy efficiency opportunity. Where the project is a maintenance/refurbishment or design project the appropriate Council department should manage the project with the support of the Technical Support Services team where required.

**Current work in progress**

The project is assessed to ensure that it is not already being carried out or could be added into an existing program of work.

**Financial viability**

At a minimum this includes assessment of available funding and payback period. The Council is trying to integrate a whole life costing approach to this assessment but this is still in the process of being developed.

**Energy and carbon savings potential**

Calculations are conducted to determine the energy and carbon savings that can be achieved and compared to the financial requirement to conduct the project.

**Resource requirement**

Out with financial resource, the human and time elements of the opportunity will be assessed.

**Consequential improvement**

Some opportunities may not exist exclusively and may benefit from additional works or may arise as the result of a works that have been conducted. These aspects will also be considered.

All of the aspects considered, the opportunity is then classed as not viable or transferred over into the project register.

## 5 PROJECT REGISTER

Once an opportunity has been confirmed as viable it is then transferred onto the [project register](#). This includes more detail on the project, expected and actual savings in terms of energy, carbon and financial. This register should be used to track the status of a project and demonstrate if expected savings are equivalent to the actual savings achieved. This information will then be included in any monitoring and management reports (See Measuring, Monitoring and Analysis Procedure).

## 6 CONTINUAL IMPROVEMENT

The project register is continually updated to detail the status of opportunities and projects which have been taken forward by members of the Technical Support Services team. The format of the register is also reviewed to ensure the correct level of detail is recorded to inform future projects of a similar nature.

# ENERGY AND EMISSIONS REPORTING PROCEDURE



THIS DOCUMENT SUPPORTS THE  
COUNCIL'S ENERGY POLICY  
(ENPOL2013)

## Contents

### VERSION CONTROL

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No.	Version	Date	Initials	Description
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DOCUMENT OWNER - **Jenny Fausset, Corporate Governance**  
[jenny.fausset@edinburgh.gov.uk](mailto:jenny.fausset@edinburgh.gov.uk) 0131 469 3538

## 1 APPLICATION

This procedure applies to all elected members, employees and contractors of the City of Edinburgh Council (CEC).

## 2 BACKGROUND

The City of Edinburgh Council has put in place this procedure to outline the internal, mandated and external reporting requirements relating to energy and emissions within the Council. This procedure provides a clear outline of the reporting requirement and actions taken to meet these. This document has been created to support the Council's energy policy (**ENPOL2013**).

## 3 INTERNAL REPORTING

All reports relating to energy and carbon management performance are submitted for approval to Committee. Reports are approved by the Council's Corporate Management Team (CMT) prior to going to Committee. Committee reports are available on the Council's web pages for staff and the public to view.

Progress reports on consumption, emissions and reduction performance are also prepared for senior management to provide an ongoing overview of progress to date. Reports are provided to:

- Internal Boards and Working Groups. This includes the CRC Project Board and the Member Officer working group on Sustainability. The Technical Support Services team provides update reports for Corporate Asset Management Group meetings and for finance.
- The Carbon Climate and Sustainability team and the Technical Support Services team work closely with colleagues from the Council's Internal Audit Team on joint reports to CMT e.g. on CRC compliance and Value for Money (e.g. water management). These reports highlight areas for the attention of senior management and make recommendations.
- The Technical Support Services team has identified the need to produce monthly reporting across electricity, gas and oil consumption and league table reporting to reward high achievers. These reports will be provided for management.
- A diagram of the reporting structure can be seen within appendix A.

## 4 MANDATED EXTERNAL REPORTING

A number of reporting obligations cover wider areas than just energy but have been included demonstrating how energy is sourced and reported within these requirements.

### **Scottish Climate Change Declaration**

The Scottish Climate Change Declaration report is prepared annually by the CCS team on behalf of the Council. Collated estimated [Scottish data](#) is available from the Department for Energy and Climate Change (DECC) for the city as a whole and it is this data which is used for the production based footprint. This footprint includes the following areas

- Industry and commercial;
- Domestic;
- Road Transport;
- Land Use/ Land Use Change; and
- Forestry

CEC also provides a consumption based footprint report for the city using the Stockholm Environment Institute's REAP software.

The current report (2011) was approved by Policy and Strategy Committee on 27 March 2012. It is available on the Council's web and also on the [Sustainable Scotland Network](#) web pages.

### **Carbon Management Plan**

The Council's Carbon Management Plan (CMP) is a 5 year plan with a rolling annual action plan that sets out the Council's commitment to meeting national carbon reduction targets (i.e. 42% by 2020 and 80% by 2050). The Plan is prepared by the CCS team and is reviewed annually. The CMP covers:

- Council buildings (energy data sourced from the Technical Support Services Team)
- Edinburgh leisure (energy data sourced from Edinburgh Leisure)
- Street lighting and stair lighting (energy data sourced from street lighting team and Engineering Services respectively)
- Transport; and
- Waste (municipal).

### **CRC Energy Efficiency Scheme (CRC)**

The Carbon Reduction Commitment Energy Efficiency Scheme (CRC) is a mandatory scheme which requires full participants within the scheme to report annually and hold evidence which supports their reporting submissions.

CRC footprint and annual reports are prepared in compliance with [CRC Scheme guidance](#) as produced by the Environment Agency. The CCS team manages the reporting requirements and the Technical Support Services team collate and provide the data to be reported based on the scheme guidelines.

CRC requires all participants to produce an annual report in every year of a phase (Regulator's Guidance for participants in Phase 1 (2010/11–2013/14)). The annual report is due on the last working day of July.

Participants must purchase enough allowances<sup>1</sup> to cover the CO<sub>2</sub> emissions reported within the annual report by the last working day in July in the scheme year. The allowances must then be surrendered on or before the last working day of September each year.

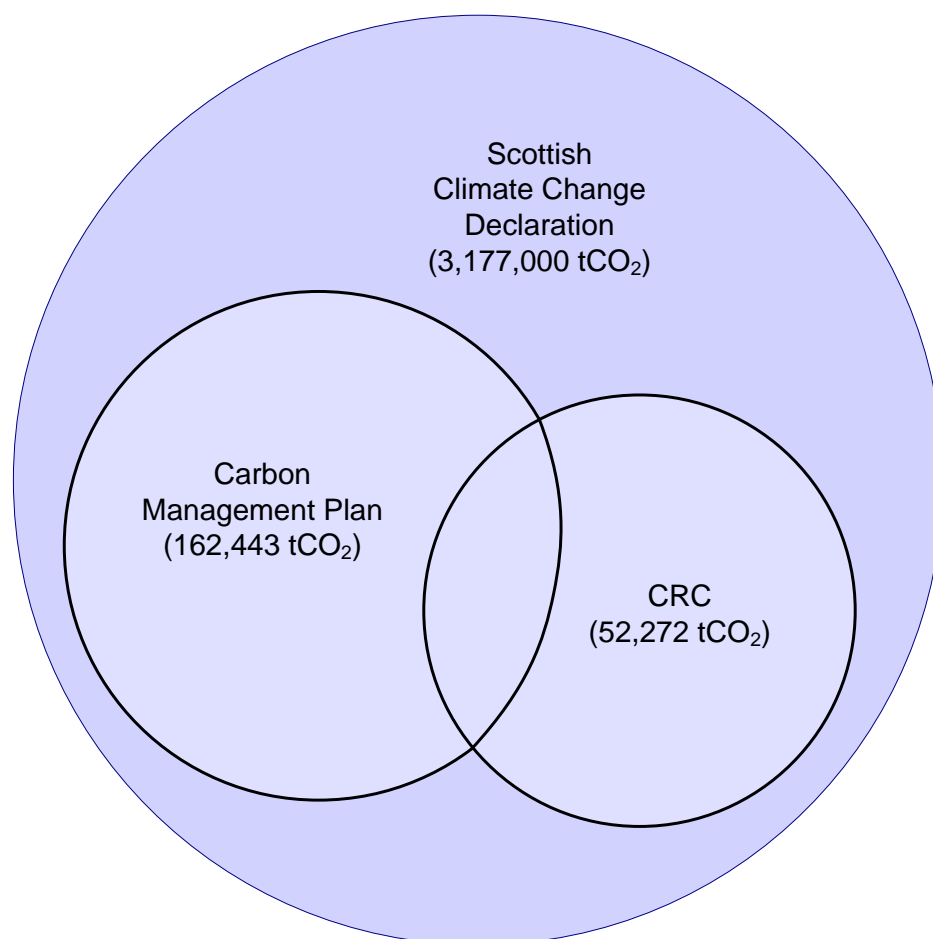
In addition to the yearly reporting and allowance purchase requirements, participants are also required to maintain an evidence pack. The CCS team hold and update the evidence pack for the Council. This includes supporting documentation regarding their qualification and reporting requirements. Reporting is provided in energy terms and converted into CO<sub>2</sub> via an online reporting system.

### **COUNCIL CARBON FOOTPRINTS**

Due to the above range of reporting requirements, the Council has a number of carbon footprints, those which are reported regularly (as described above) are shown in the diagram below (quoting 2011/12 figures).

---

<sup>1</sup> £12/tonne of CO<sub>2</sub> in 2012/13 and will rise to £16/tonne of CO<sub>2</sub> in 2014/15 as per Chancellor's Autumn statement 2012



It should be noted that this diagram is for illustrative purposes only and the accompanying text above should be referred to as it outlines the scope and methodology for each footprint.

Separate to this, is the Council housing footprint. This is not reported as part of the CMP as it distorts the footprint dramatically and influence over it is out with the operational control of the authority. This footprint was first reported in 2012 and was calculated using figures available from DECC and pro-rata techniques based on the Council housing stock. The Council acknowledges that as it has no operational control over the energy use in these premises it is difficult to report more accurately as the data is not available to the Council.

The Council also stores information on all Council properties for which it holds the energy contract, through the Systems Link energy management system. This information feeds into the reporting structures above as appropriate based on the reporting requirements.

## 5 CONTINUAL IMPROVEMENT

It should be noted that the majority of reporting described within this procedure is in terms of CO<sub>2</sub> or CO<sub>2e</sub> depending on the reporting requirement. Although not purely energy the reporting of these emissions highlights the amount of energy being used

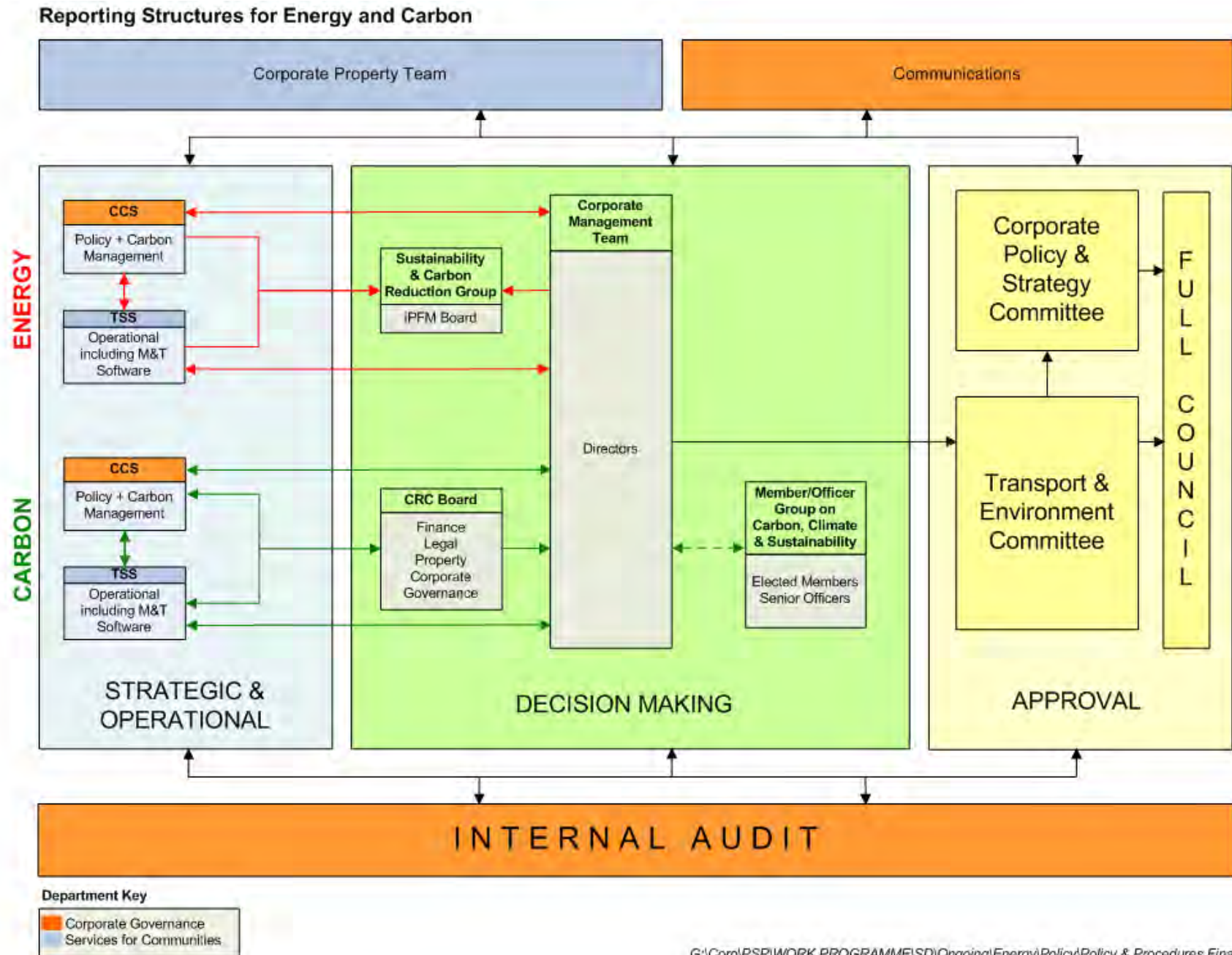


and helps to encourage reduction/more efficient use along with changes in energy source. CEC recognises the importance of reporting energy used along with conversion in to CO<sub>2</sub> or other GHG emissions and aims to improve this reporting both internally and externally.

As part of a Divisional restructuring proposal (January 2013), the mid-term objectives for the Technical Support Services team include detailed target setting for properties, monthly reporting to senior management across all electricity, gas and oil consumption and league table reporting to reward high achievers. This improvement in internal reporting will strengthen the profile of energy management within the Council and highlight the significant gains that can be made across the building portfolio.

The Council has developed a register of all of the legislation relating to energy that it has to comply with and that which is of interest. This will be reviewed regularly and amended as necessary. The register can be found in Appendix B of this document and applies mainly to non-domestic energy use.

APPENDIX A – REPORTING STRUCTURE



APPENDIX A – REPORTING STRUCTURE

APPENDIX B - LEGAL REGISTER (Primarily for Non-Domestic)

Reference	
Mandatory	M
Of Interest	I

Ref	Topic	Legislation	Brief description of how it affects CEC	Affected Aspect or Activity	Method of Control	Responsible Individuals	Enforcement Date
M	Carbon Reduction Commitment Energy Efficiency Scheme	CRC Energy Efficiency Scheme Order 2010 SI 768,  CRC Energy Efficiency Scheme (Amendment) Order 2011 SI 234	The scheme is a mandatory emissions trading scheme in which the council must report of a set boundary of emissions annually and purchase allowances to cover these emissions annually. Further information available from: <a href="http://www.environment-agency.gov.uk/business/topics/pollution/126698.aspx">http://www.environment-agency.gov.uk/business/topics/pollution/126698.aspx</a>	All energy supplies defined within the CRC boundary and including in the organisation's annual report.	Program of actions to increase energy efficiency, reducing emissions and hence reduce allowance purchase.	Senior contact: Project sponsor: CEO Operational responsibility: Energy & Water Management Team and Climate, Carbon & sustainability team.	Since October 2008

APPENDIX A – REPORTING STRUCTURE

Ref	Topic	Legislation	Brief description of how it affects CEC	Affected Aspect or Activity	Method of Control	Responsible Individuals	Enforcement Date
M	Energy Performance of Buildings Directive	<p>Energy Performance of Buildings (Scotland) Regulations 2008 SSI 309</p> <p>The Energy performance of buildings (Scotland) Amendment Regulations 2012 No. 190, The Energy performance of buildings (Scotland) Amendment (No.2) Regulations 2012 No.208,</p> <p>Energy performance of buildings</p>	<p>Requirement to have energy performance certificates (EPCs). Initially for public buildings over 1000m<sup>2</sup>, this has now been revised to over 500m<sup>2</sup>. EPCs required for all sale or let properties domestic and non-domestic.</p> <p><a href="http://www.scotland.gov.uk/Topics/Built-Environment/Building-Building-standards/profinfo/epcintro">http://www.scotland.gov.uk/Topics/Built-Environment/Building-Building-standards/profinfo/epcintro</a> (Directive 2010/31/EU on the Energy Performance of Buildings (recast))</p>	<p>All public buildings above 500m<sup>2</sup>, all sale or let properties domestic and non-domestic.</p> <p><b>Article 9 Nearly Zero Buildings.</b> All new buildings are to be ‘nearly zero-energy’ by 31 December 2020. Public sector role as an exemplar is identified – from 31 December 2018, new buildings occupied and owned by public authorities to be nearly zero-energy buildings.</p>	<p>Instruction of consultants to conduct EPC program for public non domestic sites down to 500 m<sup>2</sup></p>	<p>Corporate property</p>	<p>Since Jan 2009</p>

APPENDIX A – REPORTING STRUCTURE

Ref	Topic	Legislation	Brief description of how it affects CEC	Affected Aspect or Activity	Method of Control	Responsible Individuals	Enforcement Date
		(Scotland) Amendment Regulations 2012 No. 209					
M	EPC Register and lodgement fee	As part of Energy Performance of Buildings (Scotland) Regulations 2008 SSI 309	All domestic and non- domestic EPCs in Scotland will be required to be lodged.  The lodgement fee is set at £1.38 (£1.15 + VAT) for domestic EPCs and £6.43 (£5.36 +VAT) for non- domestic EPCs. VAT is currently payable at the standard rate of 20%.	All non-domestic and domestic EPCs will have to be lodged and payment made for this lodgement.	Ensure that EPCs are registered within the required time frame after completion either as part of the EPC contract or internally.	Corporate Property	It is likely to be operational from early November 2012.
M	Climate Change (Scotland) Act 2009	Climate Change (Scotland) Act 2009	Statutory targets of 80% emissions reductions by 2050 and an interim target of 42% emissions reductions by 2020.	Whole council operations	Reporting through the Climate Change Declaration.		2009 onwards

APPENDIX A – REPORTING STRUCTURE

Ref	Topic	Legislation	Brief description of how it affects CEC	Affected Aspect or Activity	Method of Control	Responsible Individuals	Enforcement Date
			<p>Annual targets must also be set for each year from 2010 to 2050. For each year until 2019 these should be set at a level that ensures that the interim target is met. From 2020, annual emissions targets must be at least 3% less than the target for the preceding year.</p> <p>A duty for public bodies to act in a way that best contributes to these targets, and powers to allow Scottish Ministers to impose further obligations on public bodies in relation to climate change.</p>				

APPENDIX A – REPORTING STRUCTURE

Ref	Topic	Legislation	Brief description of how it affects CEC	Affected Aspect or Activity	Method of Control	Responsible Individuals	Enforcement Date
I	Green Deal	Energy Act 2011	<p>The Act creates a new financing framework to enable the provision of fixed improvements to the energy efficiency of households and non-domestic properties (The Green Deal), funded by a charge on energy bills that avoids the need for consumers to pay upfront costs.</p> <p><b>Quick Guides for the Green Deal can found at</b></p> <p><a href="http://www.decc.gov.uk/en/content/cms/tackling/green_deal/gd_quick_guides/gd_quickguides.aspx">http://www.decc.gov.uk/en/content/cms/tackling/green_deal/gd_quick_guides/gd_quickguides.aspx</a></p>	CEC may wish to participate within or act in another capacity such as funding green deal works.	n/a		The domestic version of the scheme is set to be opened in Jan 2013; the non-domestic scheme will be opened at a later date tbc.
I	Feed In Tariff	Introduced in the	Feed in Tariff is a	Renewable	n/a		2008

APPENDIX A – REPORTING STRUCTURE

Ref	Topic	Legislation	Brief description of how it affects CEC	Affected Aspect or Activity	Method of Control	Responsible Individuals	Enforcement Date
		<p>Energy Act 2008</p> <p>The Feed-in Tariffs ( several amendments)</p>	<p>payment available to generators of renewable electricity at a smaller scale (&lt;5MW) than those claiming renewable obligation certificates. The council may claim FIT for installations of renewable electricity. The tariffs have been altered to include a degression mechanism and energy performance mechanism (for solar PV only) which also affects the amount received by the generator.</p> <p>Further information can be found from <a href="http://www.decc.gov.uk/en/content/cms/meeting_energy/renewable">http://www.decc.gov.uk/en/content/cms/meeting_energy/renewable</a></p>	<p>electricity installations.</p>			



APPENDIX A – REPORTING STRUCTURE

Ref	Topic	Legislation	Brief description of how it affects CEC	Affected Aspect or Activity	Method of Control	Responsible Individuals	Enforcement Date
			<a href="#">ener/feedin_tariff/feedin_tariff.aspx</a>				
I	Renewable Heat Incentive (Non domestic only)	The Renewable Heat Incentive Scheme (several amendments)	<p>Similar to the FIT, RHI is a payment mechanism (though excludes an export payment) for those generators of renewable or low carbon heat.</p> <p>Further information can be found from</p> <p><a href="http://www.decc.gov.uk/en/content/cms/meeting_energy/renewable_ener/incentive/incentive.aspx">http://www.decc.gov.uk/en/content/cms/meeting_energy/renewable_ener/incentive/incentive.aspx</a></p>	Renewable/ low carbon heat installations	n/a		November 2011

# PROCUREMENT STATEMENT



**THIS DOCUMENT SUPPORTS THE COUNCIL'S ENERGY POLICY  
(ENPOL2013)**

## Contents

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1	1.0	July 2013	JF	Draft for committee

**DOCUMENT OWNER - Jenny Fausset, Corporate Governance**  
**[jenny.fausset@edinburgh.gov.uk](mailto:jenny.fausset@edinburgh.gov.uk) 0131 469 3538**

## 1 APPLICATION

This procedure applies to all elected members, employees and contractors of the City of Edinburgh Council (CEC).

## 2 BACKGROUND

The City of Edinburgh Council has put in place this procedure to outline the process for procurement of energy and energy related products. This document has been created to support the council's energy management policy (ENPOL2013).

## 3 ENERGY PROCUREMENT

There are three main aspects of procurement that are relevant to energy management:

- Procurement of energy;
- Procurement energy consuming equipment; and
- Procurement of building design and construction services.

### Energy

The City of Edinburgh Council has signed an agency agreement for Procurement Scotland to procure electricity and gas as follows:

Electricity – Supplier EDF - 01/04/2013 - 31/03/2016 (Option to extend to 31/03/2019)

Gas – Supplier Total Gas and Power - 01/04/2010 - 31/03/2014

Oil - Procured through Government Procurement Services (formerly Buying Solutions) - supplier Scottish Fuels.

It is still the responsibility of the Technical Support Services Team to maintain an accurate database of all the Council's energy supplies across all its operational properties for an effective procurement process and the subsequent management of these contracts during a transfer of supplier, new connections, disconnections and the validation of bills.

### Services and Equipment

The energy performance of services and equipment must be taken into account when procurement decisions are made. All staff involved in procurement should be made aware of this requirement and that they can consult with the Technical Support team over purchasing decisions.

The Council has a [sustainable procurement policy](#) which should be referred to in relation to purchasing of services and equipment. With specific relation to energy this states that

6.24 "We will procure goods, services and works that minimise carbon based energy-use and its associated emissions, use of non-renewable resources, waste-creation and pollution to air, water and land. In doing so, we will consider all stages of the life-

cycle including design, resource extraction and sourcing, manufacturing and production, transportation, service delivery, operation and maintenance, reuse, recycling and disposal”.

6.29 “We will specify the most energy efficient goods, services and works in line with current best practice standards and specifications”.

### **Procurement of Buildings**

The procurement of buildings refers to not only new build projects but refurbishment projects where there is investment in the existing building stock. Please refer to the latest Refurbishment and Design Procedure. Evaluate the future energy and water costs and carbon emissions for the building and aim to minimise these costs through low carbon design principles.

As a minimum all procured buildings must conform to the relevant building regulations. The Council aims to exceed the regulatory standards in terms of energy performance and sustainability.

The [Energy Efficiency Directive](#) places an imperative on the public sector to undertake energy efficiency improvements through renovation works covering at least 3% of their total floor area annually from about 2015/16.

It is likely that more stringent targets will be developed over time and as such it would be useful for the Council to stipulate that new buildings should be of a flexible design to allow for upgrading in future. Section 4 of the Refurbishment and Design Procedure defines the approach to design for the Council and Section 5 describes which areas of a project should be covered by targets.

Section 8 of the Refurbishment and Design Procedure details that budgeting should allow for time and resources to allow sophisticated modelling and design work to be undertaken in order to optimise the design and prioritise passive features.

Section 9 of the Refurbishment and Design Procedure describes the imperative on the Council to take into account whole-life costings when making decisions on building refurbishment or construction.

Also note the statement within the sustainable procurement guidance:

6.31 “Minimisation of energy needs through a combination of design for energy efficiency and the incorporation of low or zero carbon equipment”.

## REFURBISHMENT AND DESIGN PROCEDURE



### THIS DOCUMENT SUPPORTS THE COUNCIL'S ENERGY POLICY (ENPOL2013)

#### Contents

#### VERSION CONTROL

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**DOCUMENT OWNER - Jenny Fausset, Corporate Governance**  
**[jenny.fausset@edinburgh.gov.uk](mailto:jenny.fausset@edinburgh.gov.uk) 0131 469 3538**

## 1 APPLICATION

This procedure applies to all elected members, employees and contractors of the City of Edinburgh Council (CEC).

## 2 BACKGROUND

The City of Edinburgh Council has put this procedure in place to outline the building refurbishment and design elements relating to energy efficiency and emissions reduction within the Council. This procedure provides a clear outline of the aspects of building design and refurbishment actions taken to meet the objectives and targets within the energy management policy (ENPOL2013). The Council already has in place a sustainable design guide which was developed in 2006 and building energy and design is a key chapter.

## 3 REGULATIONS

The Council conforms to all requirements of the building regulations regarding new build and refurbishment projects and ensure that all agents acting on our behalf do the same. Regulations provide the basic legislative requirements for energy performance. It is often more appropriate to measure standards using benchmarking systems. The Council aims to exceed the regulatory standards.

New regulation such as the Energy Efficiency Directive ([http://ec.europa.eu/energy/efficiency/eed/eed\\_en.htm](http://ec.europa.eu/energy/efficiency/eed/eed_en.htm)) will also place an imperative on the Council. The Directive brings forward legally binding measures to step up Member States' efforts to use energy more efficiently. There is to be an exemplary role to be played by the public sector with measures including:

- Progressively reduce the energy consumed in public sector premises by carrying out every year the required renovation works covering at least 3% of their total floor area.

This legislation has just been approved by the European parliament and is set to now be transposed into UK law, coming into force in 2015/2016. There will be more stringent targets in future so designers should ensure that they build flexibility for future use, or for new technologies into their designs.

## 4 APPROACH TO DESIGN

The Council has a defined approach to design which is laid out in the following sections to ensure energy use is a key consideration.

- Understand the main criteria and drivers for the refurbishment or new build such as a good working environment, improved space utilisation etc.;

- Understand how energy will be used in the building type including a thorough assessment of the equipment and small power that will be installed;
- Understand how the use of the building may change in the future;
- Minimise energy demand through choice of fabric, shape and configuration of a building;
- The importance of insulation and air tightness;
- Efficient building services;
- Whole life assessment;
- Sustainable Procurement;
- Use of renewable technologies where appropriate;
- Consider the operation of the building and post occupancy assessments.

## 5 ENERGY PERFORMANCE

Within each new building or refurbishment project the Council shall consider energy performance in use of the premises and act to provide the most efficient solutions based on the building requirements.

Energy Performance Indicators such as kWh/m<sup>2</sup>/yr (as outlined within the Measurement and Monitoring procedure) are used as energy consumption benchmarks.

Targets will be put in place for all new build and refurbishment projects. As a minimum targets for new builds should include:

- Overall operating energy target (kWh/m<sup>2</sup>);
- Heating balance temperature;
- Heating load under design conditions;
- Day lighting;
- Maximum lighting energy;
- Maximum lux levels; and
- Air tightness

Targets for refurbishment projects will depend on the scope of the works. For example, any lighting project should include targets for maximum lighting energy and maximum lux levels.

Guidance on use of these targets is given in Appendix 3 of the Carbon Trust document "Delivering the Future Today: Project Managers Guide". It should be

specified how these targets will be measured during commissioning and first year of operation.

## **6 TENDER PROCESS**

The performance targets discussed above must be reflected in any contractual arrangements. Any failure to meet a target will be classified as a defect and be required to be rectified during the defect liability period.

It should be specified how these targets will be measured during commissioning and first year of operation.

## **7 DETAILED TARGETS**

Detailed environmental schedules and room data sheets must be developed for each room following the guidance on format and targets in Appendices 9 and 10 of the Carbon Trust document “Delivering the Future Today: Project Managers Guide”.

## **8 DESIGN BUDGET**

The budget must have sufficient allowance for the architect and M&E designers to carry out the necessary modelling and liaison to ensure that the building form, fabric and systems are optimised. This should allow passive features to be maximised and services minimised where appropriate.

## **9 WHOLE LIFE COSTING / WHOLE LIFE ASSESSMENT**

The Council has made a commitment to ensure that whole life costing is conducted within any new build or refurbishment project. The Local Government in Scotland Act (2003) Best value guidance (18) chapter five: Characteristics of best value arrangements states. “That it produces clear recommendations based on factual analysis and consideration of quality, social impact and whole-life costs”.

Whole-life costing ensures that decisions are made on the total cost of the building and its component parts over the building lifetime and not only on the initial capital cost. It includes all aspects of project design, construction, commissioning, operation, decommissioning and disposal. The table below taken from the Carbon Trust guidance “Building the Future today” indicates aspects which must be considered (those in bold are deemed essential)



Type	Acquisition/Construction	Operation and maintenance	End of life costs and residual value
New build	<p><b>Site costs (purchase, improvement, infrastructure provision)</b></p> <p><b>Design/Engineering costs</b></p> <p><b>Regulatory/Planning costs</b></p> <p><b>Construction and earthworks</b></p> <p><b>Commissioning costs/fees</b></p> <p><b>Business use of in-house resources and administration</b></p>	<p>The performance over time of each element</p> <p>Costs associated with degraded performance</p> <p><b>The likely lifetime of each element</b></p> <p><b>Maintenance and replacement costs</b></p> <p><b>Cleaning and minor repairs</b></p> <p>Costs associated with loss of amenity due to unavailability or failure</p> <p><b>Energy, other utility and carbon costs</b></p>	<p>Inspection costs</p> <p>Decommissioning costs</p> <p>Recycling costs</p> <p>Disposal costs</p>
Refurbishment	<p><b>Initial survey costs</b></p> <p><b>Design/Engineering costs</b></p> <p><b>Regulatory/Planning costs</b></p> <p><b>Decanting costs</b></p> <p><b>Decommissioning, recycling and disposal costs of existing equipment and building fabric</b></p> <p><b>Construction and earthworks</b></p> <p><b>Commissioning costs/fees</b></p> <p><b>Business use of in-house resources and administration</b></p>	<p>The performance over time of each element</p> <p>Costs associated with degraded performance</p> <p><b>The likely lifetime of each element</b></p> <p><b>Maintenance and replacement costs</b></p> <p><b>Cleaning and minor repairs</b></p> <p>Costs associated with loss of amenity due to unavailability or failure</p> <p><b>Energy, other utility and carbon costs</b></p>	<p>Inspection costs</p> <p>Decommissioning costs</p> <p>Recycling costs</p> <p>Disposal costs</p>
Lease	<p><b>Lease administration costs</b></p> <p><b>Temporary costs/Decanting costs</b></p> <p><b>Design/Engineering costs</b></p>	<p><b>Lease costs</b></p> <p><b>Costs rechargeable by landlord</b></p> <p><b>Maintenance and replacement costs</b></p> <p><b>Cleaning and minor</b></p>	<p><b>Removal costs</b></p> <p><b>Reinstatement costs</b></p>

	<p><b>Regulatory/Planning costs</b></p> <p><b>Fit out costs</b></p> <p><b>Commissioning costs/fees</b></p> <p><b>Business use of in-house resources and administration</b></p>	<p><b>repairs</b></p> <p>Costs associated with loss of amenity due to unavailability or failure</p> <p><b>Energy, other utility and carbon costs</b></p>	
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The Council’s whole-life costing methodology has the following elements:

- All aspects of procurement, construction, operation, maintenance and decommissioning to be included;
- Realistic forecasts of energy and carbon prices must be used; and
- The assessment should last for the expected lifetime of the building or 100 years, whichever is shorter.

A joint Life Cycle Assessment (LCA) and WLC approach can be very useful.

## 10 PROCUREMENT

The Building Programme Management and Corporate Facilities Management teams work closely with colleagues regarding the procurement of materials. The Council’s [Sustainable Procurement Policy](#) and the [Sustainable Timber Policy](#) are key documents.

Sustainable procurement considers the social, economic and environmental consequences of what is procured through all stages of its life-cycle. This includes considering design, resource extraction and sourcing, manufacturing and production, transportation, service delivery, operation and maintenance, reuse, recycling and disposal. It is also about questioning whether the purchase requires to be made in the first place.

## 11 VALUE ENGINEERING

The impact of any value engineering on both building energy performance and carbon emissions, and on the whole life costs of the building must be evaluated prior to agreement of such changes.

## 12 COMMISSIONING

A holistic approach to commissioning should be taken to ensure that the whole building is commissioned, not just individual items of equipment. A commissioning plan should be developed at design stage to ensure that necessary metering and monitoring is installed to allow the required commissioning process to be assessed.

The commissioning process should be agreed at the commencement of the process and shall occur at stages throughout the project as elements of the project are completed, not just at the end of the project.

### **13 BUILDING INFORMATION MODELLING (BIM)**

BIM is the process of generating and managing data about a building, during its life cycle. Typically BIM uses three-dimensional, real-time, dynamic building modelling software to increase productivity in the design and construction stages. It covers geometry, spatial relationships, light analysis, geographic information, quantities and properties of building components. BIM data can be used to illustrate the entire building life cycle, from cradle to cradle; quantities and properties of materials can be extracted easily and the scope of works can be easily defined. Furthermore systems, assemblies and sequences can be shown in a relative scale to each other and relative to the entire project.

BIM systems should be considered by the Council to inform projects. If used by all members of the project team, from early design through to completion, changes can be automatically coordinated across the project and resulting information generated is of high quality. Using a building information model can lead to substantial cost savings, from design and construction through to maintenance.

BIM systems will only be as useful and up to date as the information entered into them. As such, if the Council wishes to use BIM, they shall ensure all parties on the project are aware of this and shall undertake to populate the BIM with all appropriate data.

### **14 LOG BOOK AND USER GUIDES**

It should be ensured that the log book follows the guidance for CIBSE TM31. This should be supplemented with a user guide for the occupant explaining how the building works and how they can influence it. In the case of schools and other buildings with janitors or building managers, a second guide should be produced explaining in clear language how they can control the building. Building user guides should also be developed in accordance with Section 7 of the Building Standards.

### **15 POST OCCUPANCY SURVEYS**

The reassessment of buildings once occupied is a key step in understanding how the effective actions taken in designing or refurbishing the building have been. Reviewing buildings to ensure that they continue to perform as predicted and that they are updated, or adapted, as circumstances change is one area of best practice which the Council intends to develop further, in line with its objectives within its Energy Policy (ENPOL2013).

# LOW AND ZERO CARBON STATEMENT



## Contents

### VERSION CONTROL

This document is reviewed annually to ensure it is accurate and up to date.

No.	Version	Date	Initials	Description
1	1.0	July 2013	JF	Draft for Committee approval

**DOCUMENT OWNER - Jenny Fausset, Corporate Governance**  
**[jenny.fausset@edinburgh.gov.uk](mailto:jenny.fausset@edinburgh.gov.uk) 0131 469 3538**

## 1 LOW AND ZERO CARBON STATEMENT

The Council acknowledges the Scottish Government targets to have 100% of electricity produced in Scotland come from renewable sources by 2020<sup>1</sup>

The Council's approach to supporting this target is to encourage renewable energy developments across the city and where appropriate and effective install renewable/low carbon technologies within its own estate.

The Council will assess opportunities and synergies between renewable energy production and its energy requirements. The Council shall act to improve its energy performance by tackling the challenge of improved energy efficiency firstly and then incorporating the use of renewable technologies where suitable.

## 2 ENERGY HIERARCHY

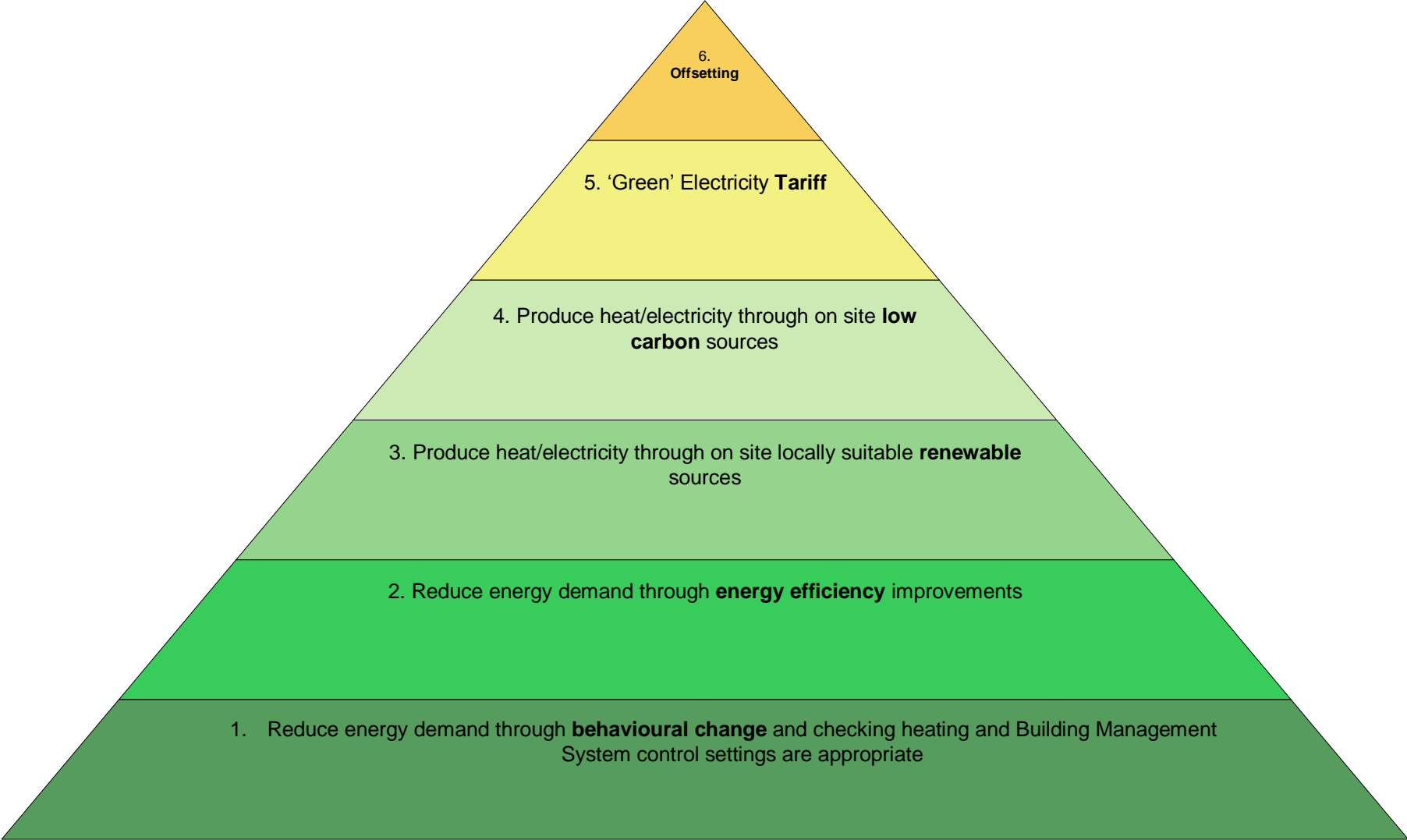
The following hierarchy should be employed in attempts to reduce the negative impacts of energy consumption:

1. Reduce energy demand through no-cost actions such as behavioural changes, and assessing settings (for example on heating systems) to ensure they are appropriate. Encouraging staff to 'dress for the weather' will allow for lower office (heating and cooling) energy consumption.
2. Reduce energy demand through energy efficiency improvement technologies (i.e. replacing old equipment with modern energy efficient equivalents, or improving insulation/draught proofing/lighting technologies levels).
3. Produce heat/electricity on-site through locally suitable renewable sources:
  - a. Wind
  - b. Solar PV
  - c. Solar Thermal
  - d. Anaerobic Digestion
4. Produce heat/electricity on-site through low carbon sources
  - a. Air Source Heat Pumps
  - b. Ground Source Heat Pumps
  - c. Combined Heat and Power
  - d. Biomass – the current Administration does not encourage the use of industrial biomass incineration (Pledge No. 52). Biomass in Edinburgh should be only be deployed in heat-only or combined heat and power schemes, be located off the gas-grid, be located outside the urban area and have appropriate and effective abatement systems to control emissions.
5. Purchase electricity through a 'green tariff' where a guarantee is made that electricity was generated through additional renewable sources.
6. Offset additional emissions through appropriately accredited and auditable offsetting schemes. The City of Edinburgh Council will only partake in offsetting schemes as a last resort, and only after the Council is satisfied that such schemes are suitably robust, with credible accreditation and verification that sustainability standards have been achieved.

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<sup>1</sup> Scotland's Renewables Ambition and Paths to Delivery  
<http://www.scotland.gov.uk/Publications/2011/08/04110353/3>

CITY OF EDINBURGH COUNCIL ENERGY HIERARCHY



## BUILDING ENERGY PERFORMANCE PROCEDURE

THIS DOCUMENT SUPPORTS THE  
COUNCIL'S ENERGY POLICY (ENPOL2013)



### Contents

### VERSION CONTROL

This document is reviewed annually to ensure it is accurate and up to date.

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**DOCUMENT OWNER - Jenny Fausset, Corporate Governance**  
**[jenny.fausset@edinburgh.gov.uk](mailto:jenny.fausset@edinburgh.gov.uk) 0131 469 3538**

## 1 APPLICATION

This procedure applies to all elected members, employees and contractors of the City of Edinburgh Council (CEC) who work in Council owned or leased buildings.

## 2 BACKGROUND

The City of Edinburgh Council has put this procedure in place to cover aspects of building performance relating to energy efficiency and emissions reduction within the Council. This procedure provides a clear outline of building management actions to be taken to meet the objectives and targets within the energy policy (ENPOL2013).

## 3 OPERATIONAL PERFORMANCE

The Council (Technical Support Services) already records energy data as outlined within the Measuring, Monitoring and Analysis procedure

In addition to recording and analysing this data individually, the Technical Support Services team shall produce operational ratings for its large corporate sites. This will initially include the Council's top 100 CO<sub>2</sub> emitting sites and will be produced based on consumption for 2012/13.

This is the start of a wider benchmarking program which will see buildings being grouped as per their building type, age, fabric, use etc. The use of operational performance league tables will also be considered as part of the Council's energy and water awareness campaign.

Headline performance information will be disseminated to Facility Management staff on a regular basis. This will enable greater understanding of those premises which are underperforming in terms of efficient energy use and enable a greater level of internal reporting.

## 4 ASSET PERFORMANCE

Each public building with a floor area greater than 500m<sup>2</sup> requires an Energy Performance Certificate (EPC) to be displayed in a prominent place within the building (as per the Energy Performance of Buildings Directive (applicable Scottish legislation detailed in the legal register within the Energy and Emissions Reporting procedure). An EPC provide the assets rating of the building based on the fabric of the building and not on how it is being used. As per the recast of this directive an EPC rating (A-G) will be required to be displayed in all public buildings over 250m<sup>2</sup> by 2015. The EPC should be displayed in any marketing/sales particulars for all public buildings over 500 m<sup>2</sup> now. (A copy of an EPC has been included in Appendix 1).

The Council in 2008 procured the services of contractors to produce EPCs for over 300 buildings down to 500m<sup>2</sup>. EPCs for sites which are sold or let should be carried out on an on-going basis.



## 5 HEATING AND COOLING

The recommended temperature for a building during the heating season is 18-21°C as per table below (unless special dispensation is given). The heating standard will apply between agreed operational hours, except for holidays, and during the heating season. Exemptions will apply to special schools. Based on weather conditions facility management may take the decision to extend or shorten the heating season. **The heating season will run from 1st October to 30<sup>th</sup> April.**

### Preset Temperatures

Heating season: October to April	
Office	18-21°C
Classroom	18-21°C
Libraries	18-21°C
Community Centres	18-21°C
Residential care homes	23°C
Gyms/Sports Halls	12-18°C
Non heating season: May to September	
Desired temperature for all spaces	24°C +4 / -6°C

### Warm up

Portable heaters shall not be used within Council properties except within the following constraints:

- where permanently installed as part of the designed heating system;
- in areas where Facility Management has agreed that electrical heaters are necessary to maintain the recommended environmental air temperatures and has issued suitable heaters;
- in the event of heating system failure, such heaters may be issued by Facility Management.
- it shall be the Council's policy wherever practical to modify such areas and eliminate the need for temporary electric heaters.

Individuals are prohibited from using their own heaters in Council buildings.

### Cool down

The Council is aware that in certain circumstances additional cooling is required and that there are a range of Council buildings where there is no mechanical cooling. However there are many ways in which to achieve a cooler air temperature than turning to mechanical cooling.

The following steps should be taken before activation of mechanical cooling:

- Switch off – minimise heat output from equipment by switching it off when not required. The location of this equipment is also important. Placing it in a well-ventilated space will reduce heat gains.
- Ventilate – open windows and other natural ventilation means.

Portable fans shall **not** be used within Council properties except within the following constraints:

- When agreed by Facility Management.

Individuals are prohibited from using their own fans in Council buildings.

### **Simple heating improvement measures**

Where there are local controls such as thermostatic radiator valves (TRVs) installed these should be set to obtain the desired room temperature. There are several important aspects of these controls that all staff should be aware of.

- The area surrounding the TRV/temperature sensor should be free from obstruction which will give an inaccurate reading of the temperature, causing over or under heating.
- TRVs should be set to **off** if windows are to be opened as the cool air will cause the TRV to open and the radiator will further heat the room. Once the windows are closed, the TRV can then be turned to the optimal setting.
- Heater emitters such as radiators and floor grills should be free from obstruction.

## **6 BUILDING ENERGY MANAGEMENT SYSTEMS (BEMS)**

The Council operates a network of building energy management systems (BEMS) to control heating, ventilation and cooling equipment and where appropriate to enable remote monitoring and control. BEMS allow for more sophisticated control strategies with remote monitoring and adjustments to ensure that faults and energy waste is identified early and that potential energy savings are maximised. A strategic review of the BEMS is currently underway. This will inform a programme of BEMS upgrade across the estate. This will increase the energy efficiency of buildings and allow for better monitoring.

Where available, BEMS will be used to control operational parameters as set within this procedural document(s).

For staff who work in buildings where there is a BEMS, details of the BEMS specification and requests can be made to the Facilities Management Helpdesk [corporateproperty.helpdesk@edinburgh.gov.uk](mailto:corporateproperty.helpdesk@edinburgh.gov.uk) Telephone 0131 529 7878

In order to allow appropriate monitoring and targeting of consumption, operational hours must be defined and agreed by Facility Managers. Any scheduled changes to operational hours need to be recorded and an assessment of the energy impact considered by Facility Management. Physical changes to the property or service delivery such as an increase in work force or a computer upgrade should also be

recorded. Retaining such information will contribute towards the qualitative assessment of consumption.

## 7 MAINTENANCE

When reactive and planned maintenance is required on building fabric and services then the energy efficiency of the building should be at least be maintained or, preferably, enhanced.

Corrective and improvement actions should be considered at all times based on lifecycle costings and energy efficiency.

### **For example:**

Controls - if a lighting or heating controller fails then it must be replaced with an equivalent or improved controller and not simply bypassed/removed. By-passing of plant/controls to keep a property operational should only be used as a short term solution. Measures shall be taken to ensure that energy efficient operation of plant is maintained.

Insulation – If work is required to be carried out on pipe work or fabric then existing levels of insulation must be maintained/replaced or enhanced.

## 8 METERING

Any works that require new electricity, gas or water supplies to be connected or existing supplies to be upgraded or disconnected must be notified to the Council's suppliers through Corporate Facilities Management. This is so that the supply benefits from the Council's energy contract. This also allows costs and carbon emissions for all sites to be tracked through suppliers. Rates outwith Council contracts can be significantly more expensive than Council procured contract rates.

Template site works forms can be obtained directly from Corporate Facilities Management. These forms should be submitted to Technical Support Services within appropriate time frames.

## 9 IT EQUIPMENT

There is an increased presence of flat screens being erected in Council buildings. These screens are often left on continuously. Facility Management staff (security staff) will switch off any large plasma screens if they are still on when staff are doing their security check of the building at the end of the working day. However, the priority is that staff should take responsibility to switch off their own monitors and any adjacent screens when not in use and at the end of the working day.

A procedure for the Council's approach to good energy practice with respect to 'mobile' and desk top (fixed) IT equipment will be developed to support the policy's objectives and targets.

## 10 USER ENERGY MANAGEMENT RESPONSIBILITIES

The Council appreciates that all staff have a varied role within the organisation and are limited by these roles with regards to the actions that they can undertake to control energy usage. The Council has however set out some basic rules which set a minimum standard which should be adhered to **by all staff**.

In the first instance the room temperature should be measured if there are issues with people feeling uncomfortable. It must be remembered that individuals have different temperature preferences and actions that maintain your own comfort levels which do not affect others should first be exploited. This includes dressing appropriately based on the weather and your personal preference.

### USER RESPONSIBILITIES

- Electrical equipment – **Switch off** when not in use.
- Lighting – **Switch off** when not required.
- Heating - **Check** the room temperature first and then adjust controls, to the appropriate setting not to max. **Do not overheat rooms!**
- Cooling - **Check** is the heating on? Can you adjust controls before opening a window or switching on air conditioning?
- Communication – **Inform** facility management when you see a waste of energy or when you have an idea to reduce wasted energy. If you do not inform facility management the issue may not be resolved.

## 11 CONTINUOUS IMPROVEMENT

Facility Management will work with individuals to address local site specific issues to improve comfort levels

In order to ensure continual improvement the actions outlined within this document shall be reviewed annually with an aim to further support the objectives of the energy policy (ENPOL2013).

Appendix 1 – EPC Example

Energy Performance Certificate for buildings other than dwellings

Energy Performance Certificate	Building Energy Performance		Scotland
	Calculated asset rating using DesignBuilder v.1.8.1.001 [SBEM]	Building type Office	Current rating
	<b>Carbon Neutral</b>		Excellent
	<b>A</b> (0 to 15)		
	<b>B</b> (16 to 30)		
	<b>C</b> (31 to 45)		<b>C</b>
	<b>D</b> (46 to 60)		
	<b>E</b> (61 to 80)		
	<b>F</b> (81 to 100)		
	<b>G</b> (100+)		Very Poor
<b>Carbon Dioxide Emissions</b> The number refers to the calculated carbon dioxide emissions in terms of kg per m <sup>2</sup> of floor area per year			<b>42</b>
Approximate current energy use per m <sup>2</sup> of floor area:			<b>148 kWh/m<sup>2</sup></b>
Main heating fuel: Natural Gas		Building Services: Heating with Nat. Vent.	
Renewable energy source:		Electricity: Grid supplied	
<p>Carbon Dioxide is a greenhouse gas which contributes to climate change. Less Carbon Dioxide emissions from buildings helps the environment.</p>			
<b>Benchmarks</b>			
A building of this type built to building regulations standards current at the date of issue of this certificate would have a rating:		<b>38</b>	<b>C</b>
Where the accompanying recommendations for the cost effective improvement of energy performance are applied, this building would have a rating:		<b>41</b>	<b>C</b>
<b>Recommendations for the cost-effective improvement (lower cost measures) of the energy performance</b>			
<p>1. Some spaces have a significant risk of overheating. Consider solar control measures such as the application of reflective coating or shading devices to windows.</p> <p>2. Add local time control to heating system.</p> <p>3. Consider installing building mounted wind turbine(s).</p>			

Address: Waverley Court, 4 East Market Street, Edinburgh, EH8 8BG  
 Conditioned area (m<sup>2</sup>): 21410  
 Name of protocol organisation: BRE, [EPC00086]  
 Date of issue of certificate: 22 Jan 2009 (Valid for a period not exceeding 10 years)

This certificate is a requirement of EU Directive 2002/91/EC on the energy performance of buildings.  
**NB THIS CERTIFICATE MUST BE AFFIXED TO THE BUILDING AND NOT REMOVED UNLESS REPLACED WITH AN UPDATED VERSION AND FOR PUBLIC BUILDINGS DISPLAYED IN A PROMINENT PLACE**

# AUDIT AND MANAGEMENT REVIEW PROCEDURE



**THIS DOCUMENT SUPPORTS THE COUNCIL'S ENERGY POLICY  
(ENPOL2013)**

## Contents

### VERSION CONTROL

This document is reviewed annually to ensure it is accurate and up to date.

Next review date:

No.	Version	Date	Initials	Description
1	1.0	January 2013	JF	Draft for Committee approval

**DOCUMENT OWNER - Jenny Fausset, Corporate Governance**  
**[jenny.fausset@edinburgh.gov.uk](mailto:jenny.fausset@edinburgh.gov.uk) 0131 469 3538**

## **1 APPLICATION**

This procedure applies to all elected members, employees and contractors of the City of Edinburgh Council (CEC).

## **2 BACKGROUND**

The City of Edinburgh Council has put this procedure in place to outline the internal audit methods relating to energy efficiency and emissions reduction within the Council and externally to the general public. This procedure provides a clear outline of the internal audit methods, channels and actions taken to meet the objectives and targets within the energy policy (ENPOL2013).

## **3 INTERNAL AUDITS**

The Council will work in conjunction with its own internal audit staff to review the energy policy and supporting procedures. Carbon Climate and Sustainability (CCS) staff will work with the Principal Audit Manager from Internal Audit to ensure that the energy policy is effectively implemented and maintained and improves CEC energy performance.

Internal Audit will liaise with staff in the Corporate Policy and Strategy Team in Corporate Governance each year at the Audit Planning stage to agree the scope and timing of audits to be carried out. A record of audits to be conducted will be held and any issues raised will be formally tracked until resolved.

A report will be produced by the auditor for review within the CCS and the Technical Support Services team. Actions will be prioritised and timescales set for addressing any non - conformities. The outputs of the audit will be presented to senior management and will feed into the management review process.

## **4 MANAGEMENT REVIEW**

Management reviews shall be undertaken at a frequency greater than or equal to once per year. The meeting shall be held between at least one of the Heads of Service and an energy representative.

Minutes of the meeting shall be taken and the minutes shall be stored and actions assigned to individual for completion within a defined time period.

The meeting shall cover the following points:

- Follow up on previous management review actions;
- Results of the internal audit;
- Any non-conformances identified;
- Results of evaluation of compliance with legal requirements and other requirements to which CEC subscribes;

- Communications with external interested parties, including complaints;
- Energy performance of CEC and related performance indicators;
- Review Energy Policy;
- The extent to which energy objectives and targets have been met and adherence to energy performance indicators;
- The status of any corrective or preventative actions;
- Follow-up actions from previous management reviews;
- Changes in circumstances, including developments in legal and other requirements related to environmental aspects; and
- Recommendations for improvement.



## ACTION PLAN TO SUPPORT ENERGY POLICY (ENPOL2013) 2013/2014

PRIMARY PROCEDURE	ENERGY POLICY OBJECTIVES	ACTION	TIMESCALE	LEAD RESPONSIBILITY	OTHER LINKED PROCEDURES
GOVERNANCE	1 The Council will work towards the adoption of qualitative public commitments or an external recognition/accreditation scheme such as ISO 50001, providing a continuous improvement framework for energy management.	1.1 Paper to be prepared for CMT outlining the advantages, disadvantages and resources necessary to implement such an accreditation scheme within the Council.	Oct-13	Carbon, Climate & Sustainability Team (Corporate Policy & Strategy Team, Corporate Governance)	Management review and internal audit
		1.2 Forum for overseeing policy implementation and to act as a locus for corporate energy discussions be established.	Sep-13	LEAD: Head of Corporate Property To be supported by the Carbon, Climate & Sustainability Team (Corporate Policy & Strategy Team, Corporate Governance)	
MEASURING AND MONITORING	2 The Council shall reduce energy consumption and ensure high standards of energy efficiency across non domestic Council properties thereby minimising expenditure and reducing CO <sub>2</sub> emissions in line with Council's climate change targets.	2.1 The Technical Support Services Team will report quarterly to CMT on energy performance data for high energy consuming operational Council buildings.	Quarterly (Commencing in August 2013)	Technical Support Services (SfC) & Business Intelligence Services (Corporate Governance)	Project register; Building performance; Energy and emissions reporting
		2.2 A review of the current Building Energy Management System (BEMS) will be carried out and a paper prepared based on the review, setting out future investment required to install and operate a fit for purpose BEMS.	Oct-13	Technical Support Services	
		2.3 The Technical Support Services Team will (i) provide monthly reports to key managers across all supplies; (ii) set energy targets for properties; and (iii) league table reporting to award high achievers	Sep-13	Technical Support Services (SfC) & Business Intelligence Services (Corporate Governance)	
	3 The Council shall act to improve its energy performance by tackling the challenge of improved energy efficiency and incorporating the use of renewable technologies where appropriate across its estate.	3.1 To develop a long term strategy to reduce energy consumption by street lighting, taking into account (1) the procurement of a new street lighting management system (CONFIRM); (2) the preparation of a business case for Spend to Save funding to implement energy efficiency physical works, (3) the impact on the Council's CRC of the inclusion of	(1) 01/01/2014; (2) 31/10/2013; (3) 01/07/2013 and (4) 31/03/2013	Road Services (Street Lighting)	Sustainable procurement procedure

## VERSION CONTROL

This action plan is reviewed annually to ensure it is accurate and up to date.

Additional actions may be added to reflect opportunities.

Verson 1.0 July 2013 JF Draft for Committee Approval

## ACTION PLAN TO SUPPORT ENERGY POLICY (ENPOL2013) 2013/2014

PRIMARY PROCEDURE	ENERGY POLICY OBJECTIVES	ACTION	TIMESCALE	LEAD RESPONSIBILITY	OTHER LINKED PROCEDURES
		3.2 To populate the opportunities/project register and to keep it up to date with respect to key projects and suggestions put forward by staff.	Set up Sept 2013 Ongoing	Technical Support Services	Project Register
<b>SUSTAINABLE PROCUREMENT PROCEDURE</b>	4 Products used within or on behalf of the Council will meet energy efficiency standards as stated in the Council's sustainable procurement policy (2012).	4.1 Guidance on minimising energy use (as part of the Sustainability Outcomes) shall be prepared in partnership with the Procurement Service for inclusion in procurement projects going forward.	Feb-14	Procurement Project Team (Corporate Governance)	Sustainable procurement procedure
<b>BUILDING DESIGN AND REFURBISHMENT</b>	5 The Council shall incorporate energy efficiency measures, material selection, whole life costing and the recycling of building materials into the design and construction of all new build/ refurbishment schemes. The Council will also conduct post occupancy assessments across new and refurbished sites.	5.1 The employment of a whole life costing tool will be researched and rolled out for a pilot number of projects (specific elements of contracts depending on scale) to inform future action.	Feb-14	Building Design	
		5.2 The use of a Building information Modelling system will be used to inform a pilot number of projects	Mar-14	Building Design	Communications; Governance and Resource Planning
<b>COMMUNICATIONS</b>	6 The Council shall raise awareness of this policy and the benefits of efficient energy management with key staff sectors and contractors. In addition the Council will create an ethos of shared yet differentiated responsibility for energy management.	6.1 Policy & procedures will be publicised on the ORB and Council web site, promoted within Service Areas with key staff sectors. (Procedural documents will be kept update to reflect any legislative or structural changes within the organisation).	Sept 2013 Ongoing	Carbon, Climate & Sustainability Team (Corporate Policy & Strategy Team, Corporate Governance)	

### VERSION CONTROL

This action plan is reviewed annually to ensure it is accurate and up to date.  
Additional actions may be added to reflect opportunities.  
Version 1.0 July 2013 JF Draft for Committee Approval

**ACTION PLAN TO SUPPORT ENERGY POLICY (ENPOL2013) 2013/2014**

PRIMARY PROCEDURE	ENERGY POLICY OBJECTIVES	ACTION	TIMESCALE	LEAD RESPONSIBILITY	OTHER LINKED PROCEDURES
	<p><b>7</b> The Council shall implement a structured staff awareness programme as part of the Council's training programmes (including induction for new staff) in relation to energy management and good housekeeping in Council buildings.</p>	<p>7.1 Promote the CECiL course on energy awareness and proactively target staff groups that have not completed course.</p>	<p>Ongoing</p>	<p>Organisational Development Corporate Governance</p>	

**VERSION CONTROL**

This action plan is reviewed annually to ensure it is accurate and up to date.  
 Additional actions may be added to reflect opportunities.  
 Verson 1.0 July 2013 JF Draft for Committee Approval

# Transport and Environment Committee

10:00am, Tuesday, 27 August 2013

## Air Quality Progress Report 2013 and Scottish Government Consultation on Review of Local Air Quality Management in Scotland

Item number	7.13
Report number	
Wards	City-wide

### Links

Coalition pledges	51
Council outcomes	Maintain and enhance the quality of life in Edinburgh
Single Outcome Agreement	Edinburgh's citizens experience improved health and wellbeing, with reduced inequalities in health. Edinburgh's communities are safer and have improved physical and social fabric

### Mark Turley

Director of Services for Communities

Contact: Susan Mooney, Head of Service, Community Safety  
Robbie Beattie Scientific & Environmental Services Senior Manager

E-mail: [susan.mooney@edinburgh.gov.uk](mailto:susan.mooney@edinburgh.gov.uk) | Tel: 0131 529 7587  
[robbie.beattie@edinburgh.gov.uk](mailto:robbie.beattie@edinburgh.gov.uk) | Tel: 0131 555 7980

# Executive summary

## Air Quality Progress Report 2013 and Scottish Government Consultation on Review of Local Air Quality Management in Scotland

### Summary

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#### Monitoring and Assessment Progress Report 2013

This report updates on the outcomes of monitoring and assessment of local air quality in Edinburgh during calendar year 2012 in line with the Council's ongoing statutory obligations set out in the Environment Act 1995, the UK National Air Quality Strategy and Scottish Air Quality Regulations. The report is based on the draft '2013 Air Quality Progress Report for City of Edinburgh Council' (Appendix 4) and will be submitted to the Scottish Government and the Scottish Environment Protection Agency (SEPA) for approval.

The report also updates committee on progress with actions and initiatives to improve air quality in the city. Approval is sought to work with Lothian Buses on a major programme of retrofitting approximately 240 older buses in their fleet up to current Euro emission standards. With an upfront capital cost of approximately £3.6m over two years this will require engagement with Scottish Government to secure grant funding.

#### Local Air Quality Management Review Consultation

The Scottish Government is consulting on a review of Local Air Quality Management (LAQM) in Scotland. The UK government is holding a similar exercise. This is the first full review of how LAQM operates in Scotland since its introduction over 15 years ago, and it considers a number of possible changes to improve and refocus LAQM.

The main themes in the consultation are: consolidation of legislation, streamlining the air quality review and assessment reporting system, revising and strengthening the action planning process and considering the role of local authorities in meeting PM<sub>2.5</sub> obligations.

### Recommendations

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- 1 The Transport and Environment Committee is requested to:
  - a) note the content of this report and the Appendix 4 "2013 Air Quality Progress Report for City of Edinburgh Council" which will be sent to Scottish Government for approval.

- b) note the trends in air quality in Edinburgh during 2012 which show that improvements in air quality are observed at a number of locations however further improvements will be necessary at other locations to comply with legislative requirement.
- c) note the ongoing voluntary improvements in the emissions standards of the main bus fleets operating within Edinburgh and recognise more needs to be done to bring air pollution levels on arterial routes below regulatory limits.
- d) instruct officers to work with Lothian Buses and others in identifying funding options on a major programme of retrofitting approximately 240 older buses in their fleet up to current Euro emission standards. This will require engagement with Scottish Government to secure grant funding due to the required upfront capital cost of approximately £3.6m over two years.
- e) note that Scottish Government have indicated they will engage with stakeholders to review creation of national, regional or local Low Emission Strategies which may include Low Emission Zones as an option.
- f) note that Edinburgh through a number of actions including;
- the pioneering ECOStars scheme which engages with road freight,
  - support of a retrofit bus exhaust improvement programme,
  - encouragement of modal shift from cars to cycles;
  - park and ride schemes;
  - improved traffic management and road junction improvements
- has the basis of a coherent Low Emission Strategy.
- g) Approves the draft response to Scottish Government consultation on a review of LAQM in Scotland (attached at appendix 6)

## Measures of success

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Improvements in the quality of ambient air in Edinburgh, to the benefit of residents and visitors alike, particularly in locations designated as AQMA.

Increased awareness amongst stakeholders of the positive voluntary efforts being made by a range of partners in support of improved air quality in the City.

Completion of Lothian Buses exhaust retrofit programme by the end of 2015.

## Financial impact

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There are no direct financial implications relating to this report.

Scottish Government grant funding may be available to assist the Council with initiatives and measures in the Air Quality Action Plan.

## Equalities impact

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This report does not in itself impact on equalities.

## Sustainability impact

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This report does not in itself produce any direct environmental impact.

## Consultation and engagement

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Consultation with the Scottish Government and the Scottish Environmental Protection Agency following submission of the draft *'2013 Air Quality Progress Report for City of Edinburgh Council'*.

Following approval by Scottish Government, the Council will publish this '2013 Air Quality Progress Report for City of Edinburgh Council' on its website.

## Background reading / external references

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Appendix 1 – Air Quality Management Area Map for St John's Road

Appendix 2 - Air Quality Management Area Map for Great Junction Street

Appendix 3 - Air Quality Management Area Map for St Leonard Air Quality Management Station

Appendix 4 - 2013 Air Quality Progress Report for City of Edinburgh Council

Appendix 5 - Consultation on review of Local Air Quality Management in Scotland

Appendix 6 - Review of Local Air Quality consultation response

[Air Quality Progress Report 2012](#)

## Air Quality Progress Report 2013 and Scottish Government Consultation on Review of Local Air Quality Management in Scotland

### 1. Background

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- 1.1 Under the terms of the Environment Act 1995, the UK and Scottish Governments' LAQM Frameworks require local authorities to undertake a three-year cyclical review and assessment of air quality within their area.
- 1.2 The first year of the LAQM reporting cycle is an Updating and Screening Assessment which reviews air quality and identifies possible new pollutant sources and was presented to Transport and Environment Committee on 23 November 2012. In years two and three of the cycle, annual Progress Reports, which assess any newly identified pollutant sources as well as existing sources, are produced.
- 1.3 Where monitoring data identifies exceedences of an Air Quality Standard for a particular pollutant, and the subsequent assessment verifies earlier findings, the local authority is required under the legislation to declare an Air Quality Management Area (AQMA) and to prepare an Air Quality Action Plan (AQAP).

The Action Plan describes the measures the Council proposes to implement to improve air quality in the affected locations such that pollutant levels are within the relevant Air Quality Standard (AQS).

There are five Air Quality Management Areas currently in place in Edinburgh; City Centre, St John's Road, Corstorphine; Great Junction Street; Newbridge; and Inverleith. All are due primarily to elevated concentrations of nitrogen dioxide associated with exhaust emissions from road traffic.

- 1.4 All LAQM reports are submitted as drafts to the Scottish Government and the Scottish Environment Protection Agency (SEPA) for review and approval. The approvals process normally takes around three months and any recommendations from the review are acted on accordingly.
- 1.5 The Environment Act 1995 requires local authorities to work with Central Government towards achieving Air Quality Standards by 2015. The Air Quality Standards of particular relevance to Edinburgh are stated below:

Nitrogen dioxide	Annual mean concentration:	40 $\mu\text{g}/\text{m}^3$
	Max. hourly concentration:	200 $\mu\text{g}/\text{m}^3$
	Max. no. of exceedences of hourly mean:	18 per year
Particles $\text{PM}_{10}$	Annual mean concentration:	40 $\mu\text{g}/\text{m}^3$
	Scottish Government annual objective:	18 $\mu\text{g}/\text{m}^3$
	24-hour mean	50 $\mu\text{g}/\text{m}^3$
	Max. no. of exceedences of 24h-mean:	7 per year



- 1.6 The Scottish Government is consulting on a review of Local Air Quality Management (LAQM) in Scotland. The UK government is holding a similar exercise. This is the first full review of how LAQM operates in Scotland since its introduction over 15 years ago, and it considers a number of possible changes to improve and refocus LAQM.

## 2. Main report

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### Monitoring Data 2012

- 2.1 Air quality is monitored for a range of pollutants by automatic air quality monitoring stations operating at specific locations across the city. In addition, nitrogen dioxide is monitored city-wide using a network of Passive Diffusion Tube (PDT) samplers.
- 2.2 Air quality monitoring stations measure air pollutants in real-time and data is expressed as concentrations averaged over a one-hour period. PDT samplers are exposed to ambient atmosphere for one month and then subjected to laboratory analysis. Due to the specific nature of PDT monitoring, the raw monthly concentration data is subject to verification and bias correction at year end. The procedure is suitable only for determining annual mean concentrations of nitrogen dioxide.

### Nitrogen Dioxide

- 2.3 Assessment of nitrogen dioxide data collected during 2012 shows a mixed picture for air quality in the city. The annual mean level of  $24\mu\text{g}/\text{m}^3$   $\text{NO}_2$  found at the national monitoring station located in St Leonard's was the lowest since records began in 2004. St Leonard's is a background site expected to be typical of city ambient air quality away from some of main arterial traffic routes. Approximately two per cent of the city by area and three per cent of the population (due to high rise living in city centre arterial routes) are in a declared Air Quality Management Area.
- 2.4 The principle source of  $\text{NO}_2$  is traffic. Improvements in ambient air quality across the UK have been slower to materialise than expected. It has become clear that one of the reasons for this is that engines designed to meet European standards have not achieved the results predicted in bench tests and are producing more nitrogen dioxide than expected particularly in diesel engines.

This situation has been exacerbated with encouragement by National Government to shift to diesel engines to reduce carbon dioxide emissions. The net effect has been higher levels of nitrogen dioxide emissions than had been predicted.

## **Air Quality Management Areas**

- 2.5 2012 monitoring data has shown that a number of monitoring locations on the main arterial traffic routes within each of the existing AQMA's continue to exceed air quality standards. A number of other locations within the AQMA's are meeting the standard. The current AQMA's remain valid however monitoring will continue. If improvements are sustained then it may be possible to explore reductions in the size of some of these areas. Any change in AQMA's would require agreement with Scottish Government.
- 2.6 An area where review may be possible is St John's Road which shows exceedance of the 40ug/m<sup>3</sup> limit around the Clermiston Road junction and only on the wind protected south side of the street due to idling traffic at the junction and poor dispersion. As a result this junction still sees a significant number of failures of the 200ug/m<sup>3</sup> hour mean as outlined in Appendix 1. Other monitoring points within the AQMA are within target limits.
- 2.7 Some progress is also evidenced in the data for the Great Junction Street AQMA which shows that all monitoring sites except Bernard Street junction traffic lights were marginally less the 40ug/m<sup>3</sup> limit, shown in Appendix 2. This is likely due to introduction of hybrid buses and other less polluting buses on the route by Lothian Buses. Bernard Street is affected by significant commercial traffic, including from the docks, which produces approximately 50 per cent of the emissions and so would not be expected to gain from improvements to the bus fleet.

## **Detailed Monitoring Areas**

- 2.8 Beyond the AQMAs, exceedences of the nitrogen dioxide standard continue to be evidenced at the following locations: Angle Park Terrace, Slateford Road area and the Nicolson Street, South Clerk Street arterial route. During the monitoring period there has been significant traffic disruption due to trams works and other road works on Gorgie Road and the closure of Princess Street has seen traffic diverted up and down the Bridges. If there is no improvement in the current year as these affects recede it is anticipated that the Central AQMA may be require to be extended southward at Nicolson Street / South Clerk Street and westward at Angle Park Terrace / Slateford Road.
- 2.9 Detailed monitoring also continues on Queensferry Road and anomalous data continues to be recorded at one discrete section of Queensferry Road, between Drum Brae and Barnton junctions. It is not yet clear what the influencing factors are and investigation is continuing.
- 2.10 Work to determine the individual contribution to overall nitrogen dioxide concentrations from the various vehicle categories eg cars, buses, HGV's are being progressed in a process known as source apportionment at each of the recently declared / extended AQMAs: Bernard Street, Cowgate, Easter Road, Glasgow Road at Newbridge, Gorgie Road, Grassmarket, Inverleith Row and London Road.
- 2.11 These essential assessments, using the UK Government's recently revised Vehicle Emissions Factors, will assist the development of appropriate actions for delivering air quality improvements at these locations. Early data shows that

different actions may be required at different locations. For example around 60% of emissions in London Road were bus related compared to only 4 per cent at Glasgow Road Newbridge. On Gorgie and Easter Roads the percentage contributions from cars buses and commercial vehicles are similar.

### **Fine Particles (PM<sub>10</sub>)**

- 2.12 Data from the automatic stations in 2012 met the EU Limit Values and UK National Objectives of 40ug/m<sup>3</sup> at all monitoring sites. The data also met the more stringent Scottish Government annual mean objective value of 18ug/m<sup>3</sup> at all but one site, at Salamander Street in Leith. The 24-hour objective value 50ug/m<sup>3</sup> was also breached there on 13 occasions which is just over twice the permitted number of 7 in Scotland for any single year. UK legislation allows 35 exceedances per year.
- 2.13 Work to identify causes of the elevated levels at Salamander Street suggests sources other than just road vehicles. Fugitive emissions from industrial activities within Leith Docks are probable sources, however further analysis is still required. Findings will be reported in the citywide Detailed Assessment of PM<sub>10</sub> which is due to conclude at the end of this year.
- 2.14 The annual mean level of 11ug/m<sup>3</sup> PM<sub>10</sub> non-volatile fraction found at the national monitoring station located in St Leonard's was the lowest since monitoring began at the site in 2004 and equates to a 25 per cent reduction. This shown in Appendix 3. St Leonard's is a background site expected to be typical of city air quality away from some of the main arterial routes.

### **Improvement Actions: Update**

#### **Bus operations**

- 2.15 Further improvements in the emissions standards of the bus fleet operating within the city have been realised since the 2012 Updating and Screening Assessment Report in November 2012.
- 2.16 **Lothian Buses** have removed the last of their Euro 2 vehicles from operational service and recently introduced a further 25 new EEV (Euro 5/6) buses to their fleet. This means nearly 45% of all Lothian Buses vehicles are of Euro 5 standard or better, with the remainder being mostly Euro 3.
- 2.17 On the routes where the company have invested in new buses such as AirLink through St John's AQMA and service 10 hybrid bus though Great Junction Street, AQMA improvements have been seen in air quality. The company recognise that improvements need to be made to the remaining fleet which includes approximately 240 Euro 3 emission standard double deckers. However, as their vehicles are only seven or eight years old and halfway through their anticipated life span to scrap them would be very costly. Lothian Buses have in the recent past at a cost of £650,000 retrofitted new exhaust systems on 44 Euro 2 & 3 single decker buses under the brand "Auld but not Reekie".
- 2.18 Exhaust retrofits add weight to the bus and require fitting space so have not been possible on the double decker fleet until now. A new development, SCRT technology exhaust system, is currently on trial and reported to be working well.

Lothian Bus have indicated that they are supportive of retrofitting all their remaining Euro 3 buses. At an approximate cost of £15,000 per bus this means around 15 to 20 buses can be retrofitted to meet the best emission standards for the same cost as purchasing one new bus. The capital cost of the project for 240 buses would be significant at £3.6M spread over two years.

- 2.19 This programme will require grant funding from Scottish Government perhaps through Green Bus funding or specific air quality improvement grants. With Scottish Government developing a Low Emission Strategy consultation and the deadline for UK compliance with air quality standards in 2015 approaching it is hoped a positive response will be forthcoming.
- 2.20 **First Scotland (East)** substantially reviewed their operations in Edinburgh during 2012. A positive outcome of the rationalisation has been a substantial improvement in the overall emissions standard of their fleet. In 2011 (the last year of full data) more than 50% of First's fleet in Edinburgh were either Euro 1 or Euro 2 standard but in 2013 100% of their fleet is now a minimum Euro 3 or better.
- 2.21 **Stagecoach and Citylink** both operate a sizeable range of longer-distance bus services through Edinburgh and their fleets are relatively clean and modern. By the nature of their services, the vehicles spend proportionately less time overall on Edinburgh's roads, compared to the main city service fleets. However, diesel powered buses generally are at the higher end of the vehicle emissions spectrum and it is therefore essential for air quality in Edinburgh that all of the main operators maintain as high a Euro standard of fleet as practicable.
- 2.22 Officers will continue to work with Lothian Buses and other bus operators to support them in seeking funding for investment in cleaner fleets.

### **Road Freight**

- 2.23 **ECOSTars Edinburgh Fleet Recognition Scheme** continues to attract new members. The scheme is voluntary and provides free auditing, advice and support to fleet operators on fuel efficiency measures, with consequential reductions in tailpipe emissions.
- 2.24 The scheme is a 'star-rating' audit system and assists member operators to progress to higher ratings through evidence of successive improvements in their operational practices. At June 2013, 35 fleet operators with a combined total of over 3000 vehicles were registered with the Edinburgh scheme. City of Edinburgh Council co-ordinates the scheme locally and is part of consortium that includes other member local authorities in the UK and in Europe.
- 2.25 Edinburgh's present scheme is part-funded by the EU until June 2014 and alternative funding options that will allow the scheme to continue are currently being explored. Scottish Government view the Edinburgh scheme as an exemplar of good practice and are considering options to expand this scheme nationwide. A further report outlining possible options to continue the scheme will be presented to committee in due course.

## **Council Fleet**

- 2.26 The Council's operational fleet consists of nearly 1000 vehicles, spread across a diverse range of services and includes HGVs, LGVs, Mini Buses, Vans and Cars. 95 per cent of the fleet is Euro 4 / 5. Only four per cent is Euro 3 and no vehicles fall below the latter category. There are 10 fully electric vehicles in the fleet, accounting for one per cent of the total. Wherever feasible, traditional power train vehicles (diesel / petrol) are being actively replaced with downsized engine capacities, reducing overall fuel consumption and emissions.
- 2.27 A Scottish Government- funded trial of enhanced on-board telematics in a range of City of Edinburgh Council vehicles has recently concluded and a report on the outcomes has been received from the trial technology partners, Masternaut. Initial findings appear positive, with significant reductions in overall travelled mileage and engine idling reported. A full assessment of the trial data will be carried out and outcomes will be reported to committee and Scottish Government later this year.

## **Low Emission Strategies**

- 2.28 The improvement in the euro engine composition of the bus and freight fleet operating in Edinburgh is to be welcomed. This can be evidenced in improvement in general air quality at St Leonard's air quality monitoring station. But more needs to be done.
- 2.29 The Council has committed to investigate low emission zones and how they could be implemented and what the effects may be. Voluntary engagement of bus and freight operators through ECOSTARS has been successful, but it has limitations in that it is a voluntary scheme. The challenge for this council and others is to change driver behaviour and encourage improvements to fleet without, if possible, the need for some compulsory scheme.
- 2.30 Low Emission Strategies can be implemented on a local basis, a regional basis across the central belt of Scotland or countrywide in a coordinated approach with central government guidance. The Scottish Government have advised they will initiate a consultation with stakeholders in the autumn looking at the options.
- 2.31 Work exploring options around low emission options is being taken forward in conjunction with the development of the Local Transport Strategy for the City and will be reported back to Committee once the outcome of the Scottish Government consultation is available.

## **Consultation on Review of Local Air Quality Management in Scotland**

- 2.32 The Scottish Government is consulting on a review of Local Air Quality Management (LAQM) in Scotland. The UK government is holding a similar exercise. This is the first full review of how LAQM operates in Scotland since its introduction over 15 years ago, and it considers a number of possible changes to improve and refocus LAQM.

- 2.33 The main themes in the consultation are: consolidation of legislation, streamlining the air quality review and assessment reporting system, revising and strengthening the action planning process, considering the role of local authorities in meeting PM<sub>2.5</sub> obligations. The key issues relating to these themes are: LAQM and EU reporting; Public Health; Streamlining Reporting Requirements; Review of EU air quality legislation.
- 2.34 Officers have considered a list of 16 questions which relate to these issues and have prepared responses to each for consideration of committee. The questionnaire and recommended responses are attached at Appendix D. The Scottish Government has also issued guidance to assist respondents in completing the questionnaire. The guidance is included at Appendix E. Committee is asked to approve the draft response.

### 3. Recommendations

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- 3.1 The Transport and Environment Committee is requested to:
- a) note the content of this report and the “2013 Air Quality Progress Report for City of Edinburgh Council” which will be sent to Scottish Government for approval.
  - b) note the trends in air quality in Edinburgh during 2012 which show that improvements in air quality are observed at a number of locations whilst further improvements will be necessary at other hot spot locations to comply with legislative requirements and population growth.
  - c) note the on-going voluntary improvements in the emissions standards of the main bus fleets operating within Edinburgh and recognise more needs to be done to bring air pollution levels on arterial routes below regulatory limits.
  - d) instruct officers to work with Lothian Buses and others on a major programme of retrofitting approximately 240 older buses in their fleet up to current Euro emission standards. This will require engagement with Scottish Government to secure grant funding due to the required upfront capital cost of approximately £3.6m over two years.
  - e) note that Scottish Government have indicated they will engage with stakeholders to review creation of national, regional or local Low Emission Strategies which may include Low Emission Zones as an option.
  - f) note that Edinburgh through its pioneering ECOSTars scheme which engages with road freight, support of a retrofit bus exhaust improvement programme, encouragement of modal shift from cars to cycles and cars to buses and tram through park and ride schemes along with improved traffic management and road junction improvements has the basis of a coherent Low Emission Strategy.

- g) agree the contents of the response to Scottish Government consultation on a review of Local Air Quality Management (LAQM) in Scotland which includes local suggestions for controls on wood burning stoves and garden waste burning.

## **Mark Turley**

Director, Services for Communities

## **Links**

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<b>Coalition pledges</b>	51
<b>Council outcomes</b>	Maintain and enhance the quality of life in Edinburgh
<b>Single Outcome Agreement</b>	Edinburgh's citizens experience improved health and wellbeing, with reduced inequalities in health. Edinburgh's communities are safer and have improved physical and social fabric
<b>Appendices</b>	Appendix 1 – Air Quality Management Area Map for St John's Road Appendix 2 - Air Quality Management Area Map for Great Junction Street Appendix 3 - Air Quality Management Area Map for St Leonard Air Quality Management Station Appendix 4 - 2013 Air Quality Progress Report for City of Edinburgh Council Appendix 5 - Consultation on review of Local Air Quality Management in Scotland Appendix 6 - Review of Local Air Quality consultation response

## Appendix 1



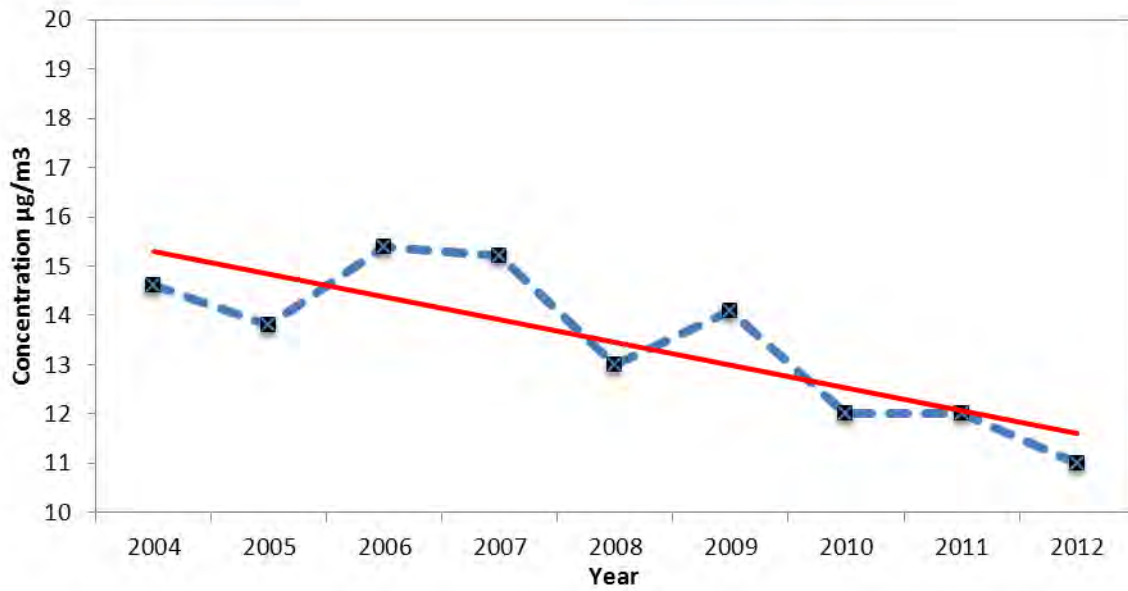
## Appendix 2





### Appendix 3

#### St Leonard's Air Quality Monitoring Station - Non Volatile Fraction PM<sub>10</sub> Trend





## 2013 Air Quality Progress Report for City of Edinburgh Council

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

Date July, 2013

<b>Local Authority Officers</b>	Robbie Beattie
<b>Department</b>	Services for Communities
<b>Address</b>	City of Edinburgh Council 2.03 East Neighbourhood Centre 101 Niddrie Mains Road Edinburgh EH16 4DS
<b>Telephone</b>	0131 469 5475
<b>e-mail</b>	environmentalassessment@edinburgh.gov.uk
<b>Report Reference number</b>	PR13
<b>Date</b>	July 2013

## Executive Summary

This report fulfils the requirements of the Local Air Quality Management (LAQM) process as set out in Part IV of the Environment Act 1995 and the National Air Quality Strategy 2007. The report has been completed in accordance with Technical Guidance (LAQM, TG09) document, produced by DEFRA and the Devolved Administrations.

### **Nitrogen dioxide**

Concentrations of the pollutant within the Air Quality Management Areas (AQMA) continue to exceed the national objectives and therefore the AQMA remain valid. It is noted that some data points in the AQMA have fallen below the annual mean objective. Outwith the AQMA, exceedences of the annual mean objective are identified at the following locations; Queensferry Road, Angle Park Terrace, Slateford Road, Nicolson Street and South Clerk Street.

In respect to Detailed Assessment work at Nicolson Street, Clerk Street and South Clerk Street assessment was complicated due to closure of Princess Street for tram works and rerouting of traffic up North Bridge towards Nicolson Street. In the area around Angle Park Terrace and Slateford Road assessment was complicated due to extended road works on Gorgie Road, diversions for tram works and loss of the SCOOT system at traffic junctions. Monitoring will continue as these extenuating factors unwind. If exceedences continue it will be necessary to extend the Central AQMA to include these two areas.

Further monitoring is required for detailed assessment work at Fountainbridge due to lack of data collected during 2012. In addition, monitoring will continue at Hillhouse Road and Queensferry Road to investigate local circumstances.

Ongoing detailed assessment work at Portobello Road/Sir Harry Lauder Road junction is expected to be completed in April 2014, while further assessment work pertinent to the recently declared AQMA at Inverleith Row/Ferry Road junction and Glasgow Road as well as the extension to the Central and Great Junction Street AQMA, is due for completion Summer 2013.

### **Fine Particles PM<sub>10</sub>**

The report concludes that the EU limit values and UK national objectives are met. The tighter Scottish objective of 18ug/m<sup>3</sup> was not met at Salamander Street and the annual mean objective is borderline at Queensferry Road. It is anticipated that the city wide assessment for PM<sub>10</sub> can be progressed and completed in 2013.

It is difficult to formulate reliable assumptions on data trends for both NO<sub>2</sub> and PM<sub>10</sub> due to disruptions to normal traffic flows, arising from construction works associated with the Edinburgh Tram project and other major infrastructure projects.

New local developments in respect to a traffic management system in the core city centre and road/environmental improvements in the Leith Walk area are currently

being considered by the Local Authority and require further consideration in respect to the impact they may have on air quality.

A revised **Air Quality Action Plan** (AQAP) will be produced during 2013/14 to address the new areas of concern, and to account for any decision taken by the Council in respect of a Low Emissions Strategy/Zone for the city, anticipated autumn 2013. Nevertheless, there has been steady progress with respect to the two main measures contained in the current AQAP relating to management of emissions from buses and freight, via voluntary partnerships.

All bus companies operating in Edinburgh continue to improve their fleet, although it is recognised that without substantial financial input it will not be possible to achieve the draft Voluntary Emissions Reduction Partnership target of Euro 5 or better by 2015. However, Lothian Bus have indicated a willingness to retrofit the 40 per cent of their fleet that is Euro 3 up to Euro 5/6 standard. This is made possible by technological improvements allowing fitment of their tested system to double decker buses.

Edinburgh ECOSTARS freight recognition scheme is enabling the Council to engage much more effectively with the road freight sector on local air quality issues and is encouraging an increasing number of fleet operators to improve operational performance and to reduce fuel consumption and tailpipe emissions.

There are other initiatives in the AQAP relating to the council's fleet, electric vehicle charging infrastructure, the use of SCOOT (traffic management system) and a trial of remote real-time pollutant trial with MOTES, which are also progressing. A trial of a vehicle telematic system in part of the Council's fleet has recently been completed and findings will be reported to the Scottish Government.

A number of policies within the Council's **Local Transport Strategy** (to be updated during 2013) aim to reduce traffic levels overall and encourage modal shift e.g. Park and Ride, Controlled Parking Zones, Priority Parking Zones and the development and implementation of an Active Travel Action Plan. These will benefit local air quality on a city-wide basis.

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# 1 Introduction

## 1.1 Description of Local Authority Area

Edinburgh is the capital city of Scotland and the seat of the Scottish Parliament. It is the second largest city in Scotland and the seventh most populous in the United Kingdom. Located in the south east of Scotland's central belt it is bounded by the Firth of Forth to the North and the Pentland Hills to the South. The latter comprises 20 miles of farming and recreational land. The peripheral areas of the city to the West and South West are predominately semi-rural. The city is a financial, commercial and tourist centre and attracts over one million visitors annually.

Edinburgh's population grew by nearly 28,000 between the 2001 Census and the 2011 Census – an increase of 6.2%, to 476,600. In terms of absolute numbers this was the largest increase of any local authority area in Scotland. Although there has been a substantial growth in population, the Census has shown that this has not been as fast as previously thought [1]. This means that future population estimates and projections will need to be recalibrated to reflect the detailed and comprehensive information now available. The revised population figure for the city could have a number of implications for future land use allocations as well as other matters.

In Edinburgh, a large number of people live within the core of the city centre. Approximately 55% of Edinburgh's population live in tenements or high-rise flats, compared to the Scottish average of 33%. The majority of tenement properties are located in the central and northern areas of the city. There has been a substantial growth of residential flats within these locations due to the development of many former industrial sites. The southern and western peripheral areas of the city have predominantly detached and semi-detached housing. Approximately two per cent of the city is covered by an AQMA and due to the property type in the AQMAs around three per cent of the population are in an AQMA.

Many of Edinburgh's main streets and the major radial routes into the city are narrow, with tenement buildings four to five stories high on either side of the road carriageway, which form street canyons. In many instances, the distances from the edge of the road to the façade of residential properties can be as little as two metres.

As a major employment centre, Edinburgh attracts a substantial amount of road and rail commuter traffic. The main means of transport within Edinburgh is via the road network. In 2011 30% of the population used the bus and train, 25% walked and 7% cycled. The main UK East Coast rail line is routed through the city centre and there are further rail links to Glasgow, Fife and the major centres of the north.

Smoke Control Orders cover the entire Edinburgh Council area and significant improvements in air quality have been achieved since their introduction due to use of natural gas in the domestic and commercial sectors.

A major cause of poor air quality in certain parts of Edinburgh, as in many urban environments, can be related to road traffic.

## 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.

These reports 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 Scotland are set out in the Air Quality (Scotland) Regulations 2000 (Scottish SI 2000 No 97), the Air Quality (Scotland) (Amendment) Regulations 2002 (Scottish SI 2002 No 297), and are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre  $\mu\text{g}/\text{m}^3$  (milligrammes per cubic metre,  $\text{mg}/\text{m}^3$  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 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	3.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10 $\text{mg}/\text{m}^3$	Running 8-hour mean	31.12.2003
Lead	0.50 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particulate Matter( $\text{PM}_{10}$ ) (gravimetric)	50 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2010
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

## 1.4 Summary of Previous Review and Assessments

The UK Review and Assessment process of Local Air Quality Management (LAQM) commenced in 1997.

A summary of the City of Edinburgh's findings and description of the three AQMAs are detailed in Tables 1.2 and 1.3. Maps of the boundaries of the AQMAs are presented in Figures 1.1 to 1.5.

Table 1.2 Summary of previous Review and Assessments

Round / Report	Date	Outcome
1 Review & Assessment of Air Quality Stage 1/2	1998	Potential exceedences of NO <sub>2</sub> and PM <sub>10</sub>
1 City of Edinburgh Council Review Stage 3	2000	Exceedences of NO <sub>2</sub> annual mean objective. Attributed to traffic emissions <a href="#">AQMA declared for City Centre 31.12.2000</a>
1 Review & Assessment of Air Quality Stage 4	2002	Source apportionment identified that buses were the major contributors of NO <sub>2</sub>
2 Air Quality Action Plan	2003	Key actions; cleaner vehicles HGVs and buses, congestion charging, tram network.
2 Updating & Screening Assessment Phase 2	2003	Detailed Assessment required city-wide for PM <sub>10</sub> due to high background concentrations and tightening of air quality objectives for Scotland. Detailed Assessment for NO <sub>2</sub> St John's Road.
2 Detailed Assessment Report	2004	Partisol co-location study with TEOM gave local gravimetric conversion factor of 1.14 AQMA not required for PM <sub>10</sub> using 1.14. AQMA required for NO <sub>2</sub> at St John's Road.
2 Progress Report	2005	Potential exceedences of NO <sub>2</sub> at West Port and Great Junction Street Four locations in Central AQMA likely to fail EU limit value – West Maitland St, Torphichen PI, Princes St and Roseburn Terrace. Concerns were raised with respect to density of development in city centre and North Edinburgh Waterfront.
3 Updating & Screening Assessment Report	2006	Exceedences of NO <sub>2</sub> within Central AQMA & St John's Road <a href="#">AQMA declared for St John's Rd 31.12.2006</a>

Round / Report	Date	Outcome
3 Detailed Assessment for Nitrogen Dioxide at Great Junction St and West Port	2007	AQMA required for NO <sub>2</sub> at Gt Junction Street and West Port. West Port also likely to not meet hourly NO <sub>2</sub> objective. Council to explore various options to extend existing Central AQMA to cover both areas or West Port. Declare two separate AQMAs. Preferred option to extend Central AQMA.
3 Air Quality Progress Report.	2008	<p>NO<sub>2</sub> exceedences within AQMAs. Number of locations also did not meet hourly mean objective. Based on 2007 data predictions EU limit values are likely to be exceeded within AQMAs. Exceedences of NO<sub>2</sub> at Bernard St, Commercial St, Ferry Rd, Easter Rd, London Rd, Hope Park Terrace, Glasgow Rd. Detailed Assessment required.</p> <p>City-wide Detailed Assessment required for PM<sub>10</sub> due to exceedences of Scottish Air Quality Objectives using 1.14 local gravimetric factor.</p> <p><a href="#">AQMA declared for Gt Junction Street 09.03.2009 to include area of exceedence on Ferry Road. Central AQMA amended to include West Port and exceedences of hourly mean NO<sub>2</sub> objective. St John's Rd AQMA amended to include exceedence of hourly mean NO<sub>2</sub></a></p>
3 Air Quality Action Plan	2008	Revised, Congestion charge removed as an action. Include St John's Road AQMA
4 Updating and Screening Assessment	2009	<p>NO<sub>2</sub> exceedences within AQMAs. Existing AQMAs remain valid. NO<sub>2</sub> annual exceedences noted at Glasgow Rd, Easter Rd, London Rd, Bernard St, Grassmarket, Cowgate, Queensferry Rd/ Barnton and Hillhouse Rd. Potential exceedences of NO<sub>2</sub> at Hope Park Terrace, Broughton Rd and Commercial Street.</p> <p>City-wide Detailed Assessment for PM<sub>10</sub> required, which will address the four biomass installations and poultry farm complex at Gogarburn. Most congested main roads in city centre are likely to exceed Scottish annual objective for PM<sub>10</sub> based on monitoring at Queen Street, Haymarket and DMRB modelling.</p>
4 Progress Report	2010	NO <sub>2</sub> exceedences within all 3 AQMAs. AQMAs remain valid. Exceedences of NO <sub>2</sub> at, Portobello High St, Inverleith Row, Bernard Street, Glasgow Road, Easter Road,

Round / Report	Date	Outcome
		London Road, Queensferry Road, Grassmarket. Potential exceedences at, Broughton Rd, Commercial St, Hope Park Terrace, Cowgate, Hillhouse Road.
<b>4 Further Assessment:</b> <b>St John's Road</b> <b>West Port (extension of Central AQMA)</b> <b>Great Junction Street</b>	2011	<p>NO<sub>2</sub> exceedence within 3 AQMAs, which remain valid.</p> <p>Source apportionment -Within local vehicle fleet, buses contribute the greatest percentage of the measured NO<sub>2</sub> at St John's Rd and Gt Junction St, whilst at West Port the greatest contribution is attributed to cars.</p> <p>% Range of roadside NO<sub>x</sub> reduction required to meet NO<sub>2</sub> Annual Mean Objective (40µg/m<sup>3</sup>). Using both UK and Scottish (SG) background maps.</p> <p>Gt Junction St UK 40.7% SG49.9%</p> <p>St John's Rd UK 70.6%SG76.8%</p> <p>West Port UK 74.9% SG86.4%</p>
<b>4 Progress Report</b>	2011	<p>NO<sub>2</sub> exceedences in all 3 AQMAs. Existing AQMAs remain valid.NO<sub>2</sub> exceedencesoutwith existing AQMAs – London Road, Easter Road, Grassmarket, Cowgate, Bernard Street, Hope Park Terrace, Queensferry Road, Glasgow Road, Inverleith Row, Hillhouse Road Angle Park Terrace, Slateford Road, Fountainbridge / Tollcross and Gorgie Road / Delhaig.NO<sub>2</sub> potential exceedences identified at Broughton Road, Ferry Road, Commercial Street, Salamander Street/Bath St and Portobello High St.</p> <p>NO<sub>2</sub> Detailed Assessment work being progressed at Queensferry Road, Portobello, Inverleith Row and required for Hope Park Terrace / Clerk Street junction, Hillhouse Road, Slateford Road, Fountainbridge / Tollcross and Angle Park Terrace</p> <p><a href="#">Extend Central AQMA and &amp; Great Junction St AQMA for exceedences of NO<sub>2</sub></a>  <a href="#">Declare Glasgow Road/Newbridge for exceedences of NO<sub>2</sub></a></p> <p>PM<sub>10</sub> citywide Detailed Assessment progressing</p>



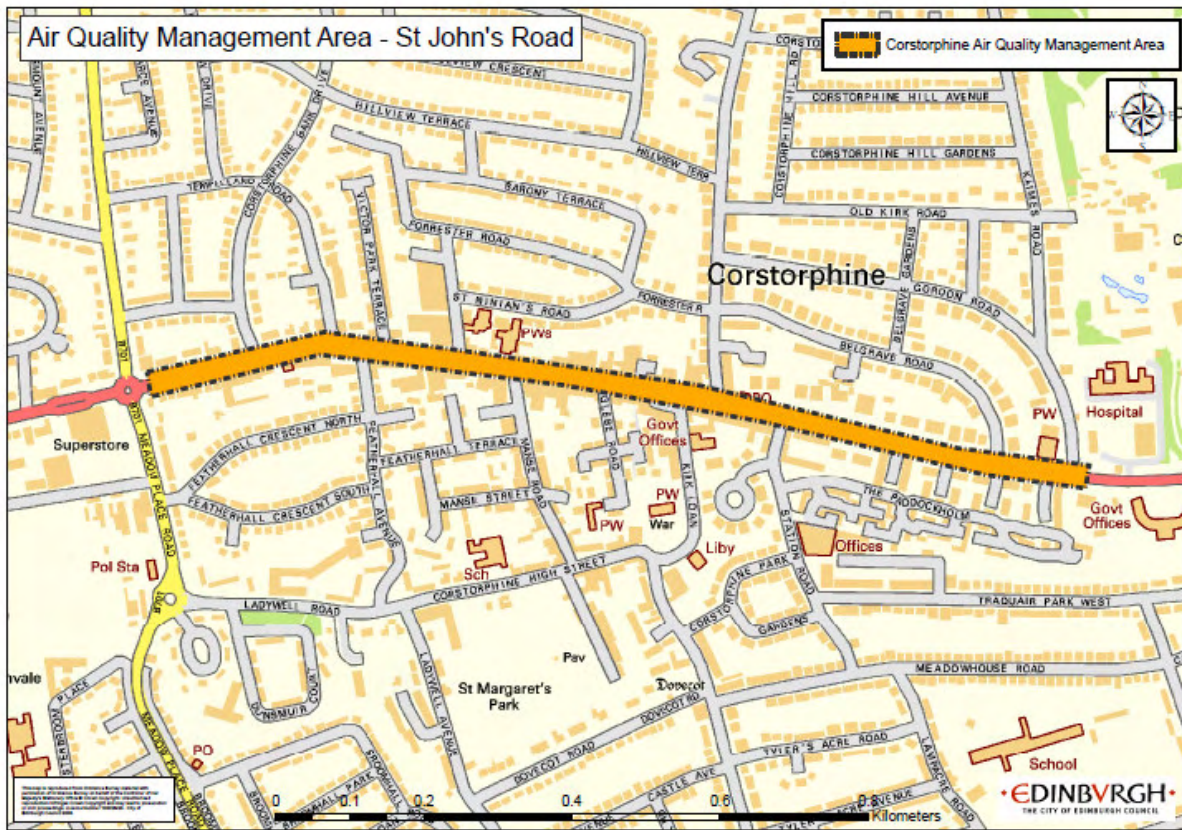
Round / Report	Date	Outcome
5	<b>Updating and Screening Assessment</b>	<p>2012</p> <p>NO<sub>2</sub> exceedences in all 3 AQMAs. Existing AQMAs remain valid. Exceedences in proposed new Glasgow Road AQMA and extensions to existing Central and Great Junction Street AQMAs. Other exceedences at Inverleith Row, Queensferry Road, Portobello Road and Angle Park Terrace. Potential exceedences of NO<sub>2</sub> identified at Slateford Road, Fountainbridge/Tollcross, Hope Park Terrace, Hillhouse Road, Salamander Street/Baltic, Salamander Street/Bath Road and Ferry Road. Ongoing Detailed Assessment work at Hope Park Terrace/Clerk Street, Hillhouse Road, Slateford Road, Fountainbridge/Tollcross and Angle Park Terrace. Progress with declaration of Glasgow Road AQMA and extensions of Central and Great Junction Street AQMAs.</p> <p><a href="#">Declare AQMA at Inverleith Row for exceedences of annual mean objective for NO<sub>2</sub></a></p> <p>PM<sub>10</sub> Detailed Assessment progressing city-wide</p>

Table 1.3 Descriptions of AQMAs

Description AQMA / Declaration (Date)	Pollutant/ Source	Amendments
<p><b>Central AQMA</b>            <b>31/12/2000</b></p> <p>Includes area of City Centre and main arterial routes leading into the city centre. Exceedences mostly in locations where there are street canyons, high percentage of bus movements and congested traffic. Residential properties at basement, ground, first, second, third, and fourth level, 2 - 4 metres from road edge.</p> <p>Busy shopping areas include Princes Street, George Street, Dalry/Gorgie Rd, Roseburn Terrace, Leith Walk and North Bridge.</p> <p>Upwards road gradient Leith Walk/North Bridge (south bound).</p>	<p><b>NO<sub>2</sub></b></p> <p><b>Traffic</b></p>	<p><b>09/03/2009</b></p> <p>Extended to include West Port - Amended to cover hourly breach as well as annual breach of NO<sub>2</sub> air quality objective</p> <p><b>26/04/2013</b></p> <p>Extended to include Gorgie Road, Grassmarket/Cowgate and London Road/Easter Road</p>
<p><b>St John's Road</b>            <b>31/12/2006</b></p> <p>Part of the A8 route at Corstorphine area. Residential properties at ground, first, second, third and fourth floor level within 2m of kerb edge. Street canyon effect in part. Busy shopping area. Congested flat road with high percentage of bus movements.</p>	<p><b>NO<sub>2</sub></b></p> <p><b>Traffic</b></p>	<p><b>09/03/2009</b></p> <p>Amended to cover hourly breach as well as annual breach of NO<sub>2</sub>.</p>
<p><b>Great Junction Street</b>    <b>09/03/2009</b></p> <p>The full length of road to the depth of the building facades, including the Ferry Road Junction area. Residential properties at first, second, third and fourth floor level. Street canyon, congested traffic and busy shopping area. Receptors close to road edge. High percentage of bus movements.</p>	<p><b>NO<sub>2</sub></b></p> <p><b>Traffic</b></p>	<p><b>26/04/2013</b></p> <p>Extended to include Bernard Street, Commercial Street and North Junction Street.</p>
<p><b>Glasgow Road</b>            <b>26/04/2013</b></p> <p>Part length of A8, between Newbridge Roundabout and Ratho Station, to the</p>	<p><b>NO<sub>2</sub></b></p> <p><b>Traffic</b></p>	



Figure 1.2 Map of St. John's Road AQMA Boundaries



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Figure 1.3 Map of Great Junction Street AQMA Boundaries

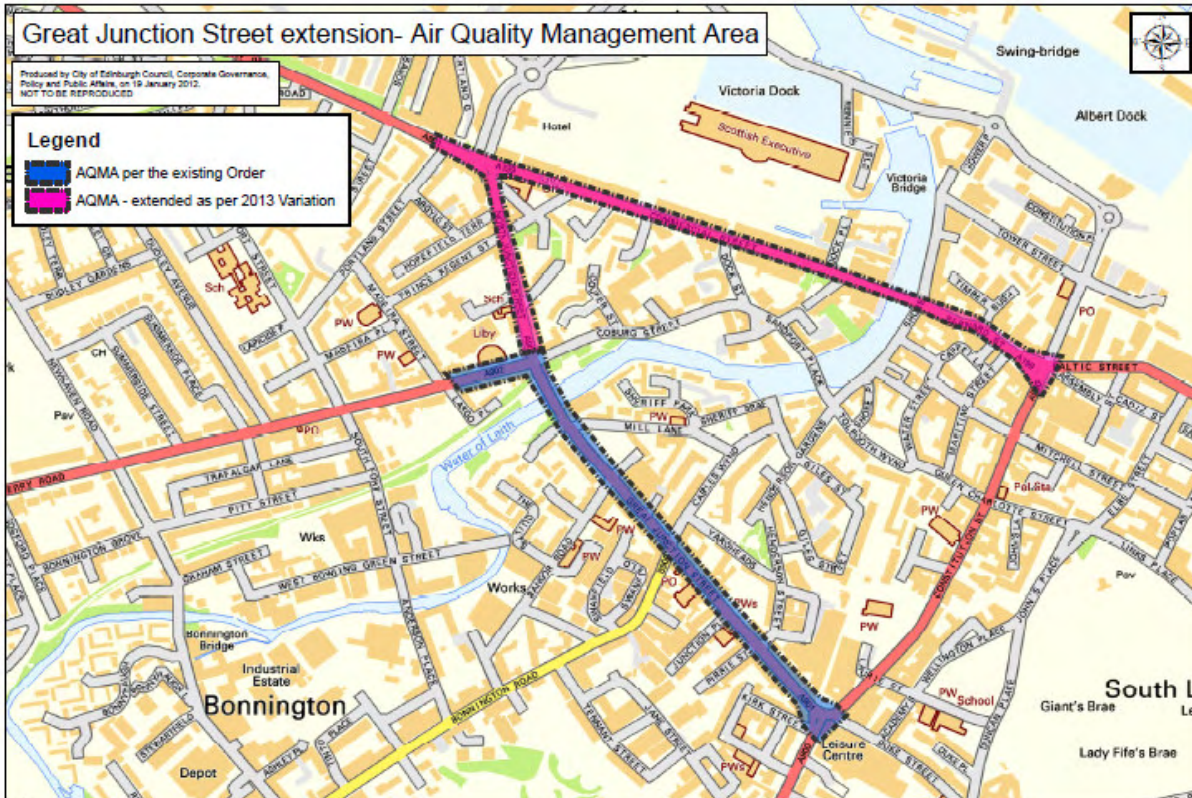
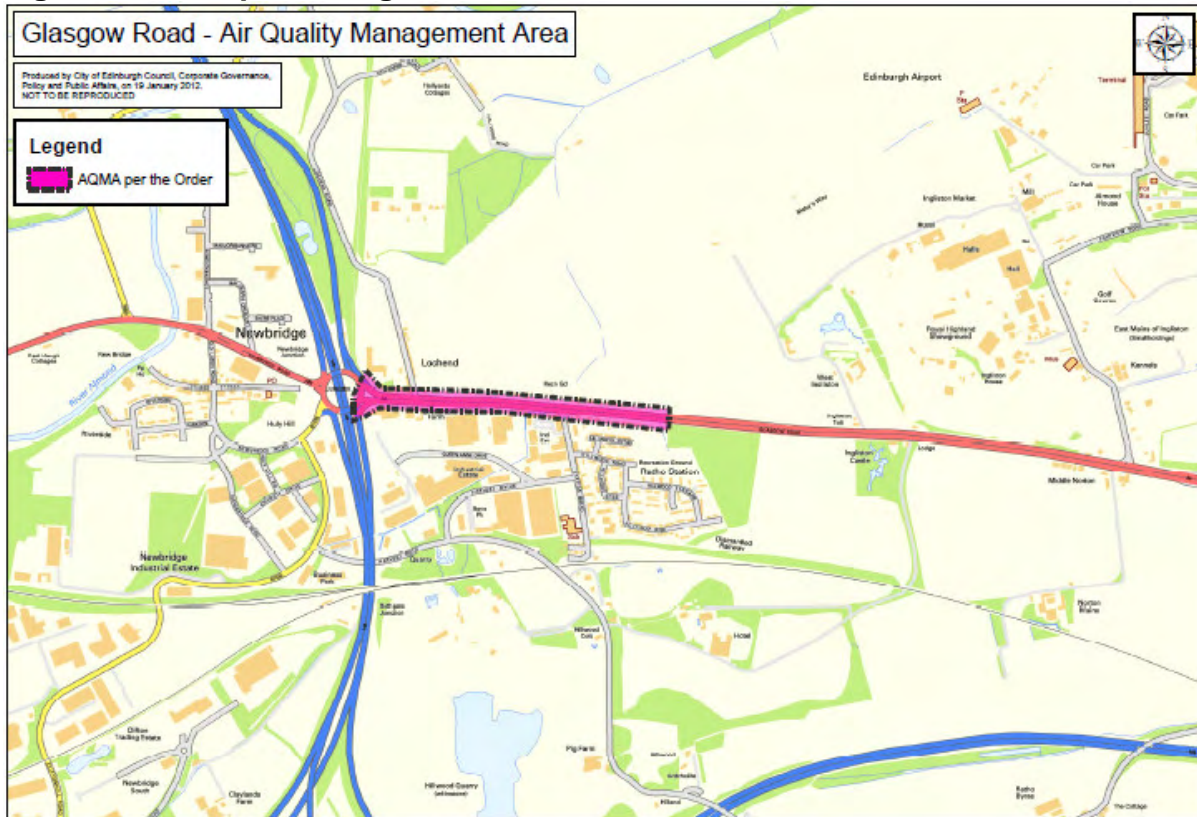
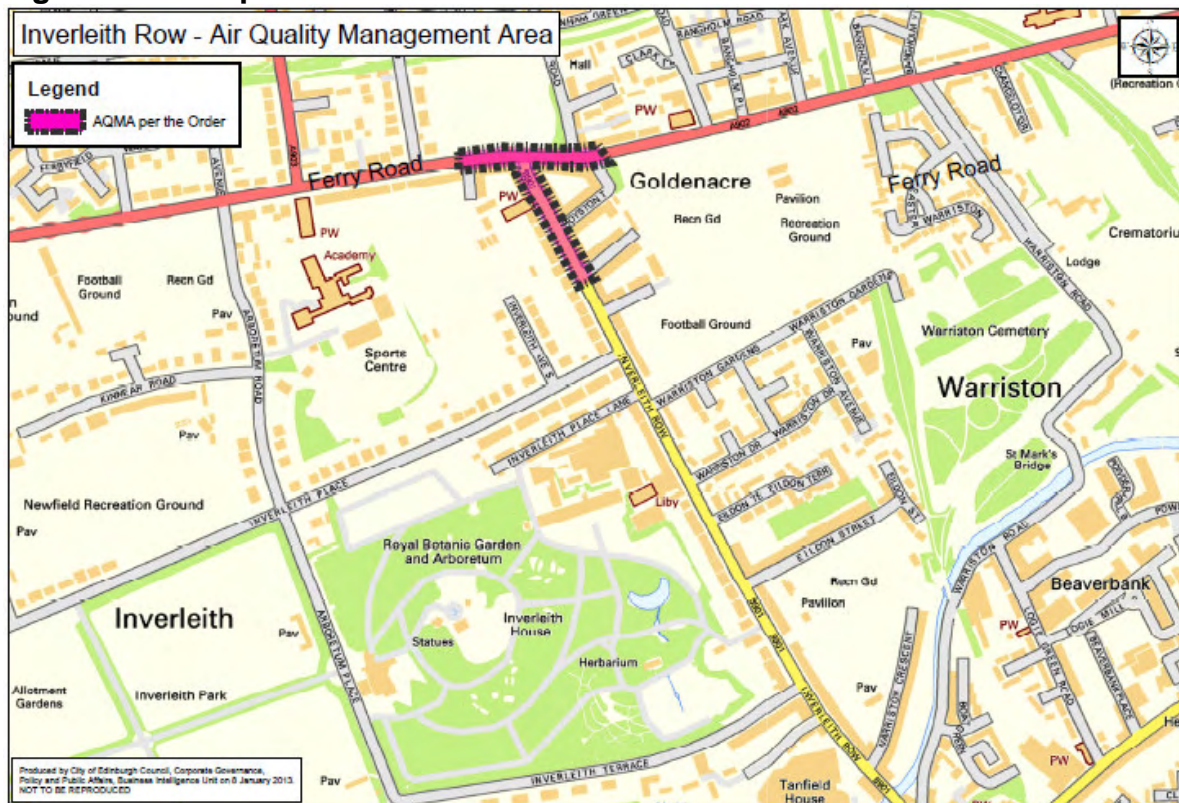


Figure 1.4 Map of Glasgow Road AQMA Boundaries



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Figure 1.5 Map of Inverleith Row AQMA Boundaries



## **Developments since Updating and Screening Assessment 2012 Nitrogen Dioxide**

New AQMAs have been declared at Glasgow Road, Newbridge and Inverleith Row/Ferry Road junction for exceedences of the annual mean nitrogen dioxide objective. Extensions have been made to the Central and Great Junction Street AQMAs, also for breach of the annual mean objective.

Additional monitoring was established in 2013 at Portobello Road/Sir Harry Lauder Road junction in order to progress Detailed Assessment work. As a precautionary measure, monitoring also commenced at Balgreen and Hamilton Place where increases in traffic have been identified.

### **Particulate Matter PM<sub>10</sub>**

Although data capture at the St Leonard's AURN site was poor in 2012 due to technical difficulties with the instrument, it is anticipated that the city wide assessment for PM<sub>10</sub> can be progressed and completed in 2013.

### **Further assessment work**

Further assessment work is current being undertaken with regards to the recently declared AQMAs at Inverleith Row/Ferry Road junction and Glasgow Road as well as the extension to the Central and Great Junction Street AQMAs. This includes source apportionment work at Inverleith Row, Glasgow Road, Gorgie Road, Cowgate, Grassmarket, Easter Road, London Road and Bernard Street.

## 2 New Monitoring Data

### 2.1 Summary of Monitoring Undertaken

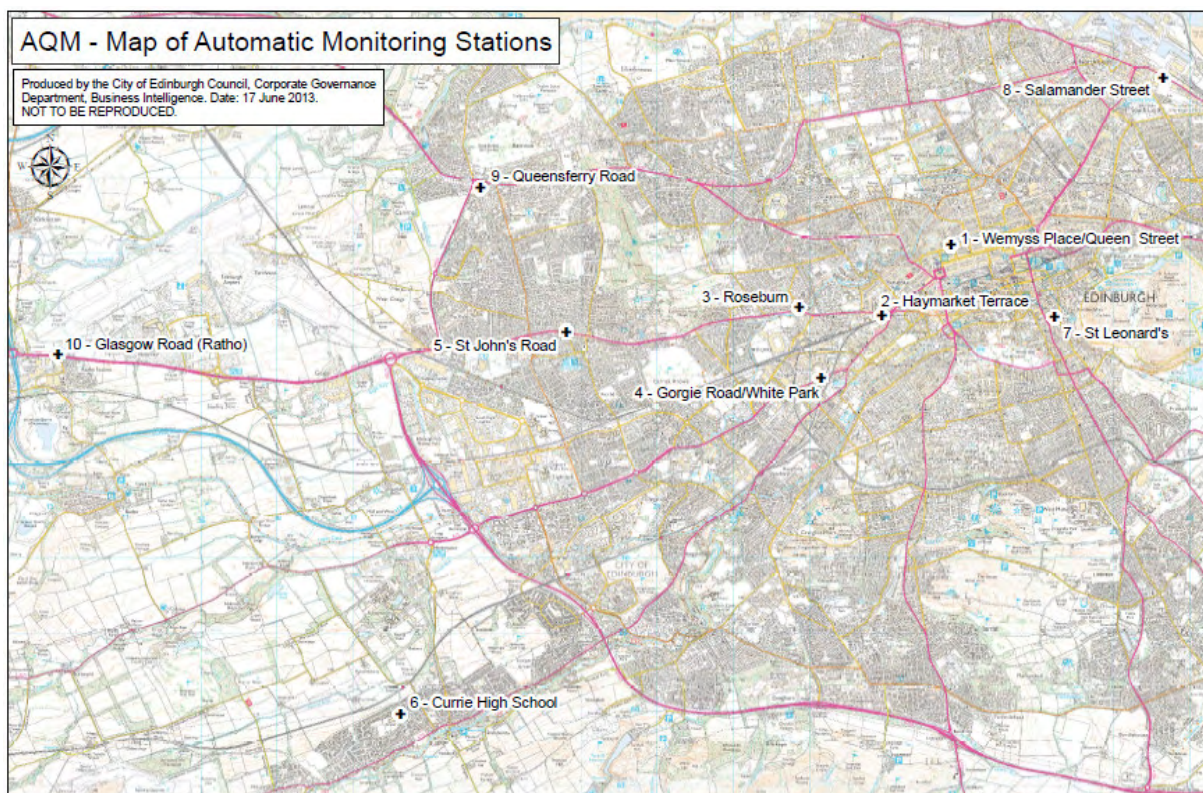
#### 2.1.1 Automatic Monitoring Sites

Edinburgh has eight automatic monitoring stations. One of the stations at St Leonard's is part of the UK Automated Urban and Rural National Network (AURN). The Roseburn station was moved to Glasgow Road at Ratho Station and became operational in September 2012. All other stations were operational during 2012.

Details and descriptions of the automatic monitoring stations for 2012 are shown in Figure 2.1 and Tables 2.1 and 2.1a.

QAQC procedures on the automated monitoring sites are shown in Appendix A.

**Figure 2.1 Map of Automatic Monitoring Sites**



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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) 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?
ID1	Queen Street	Roadside	324826	674078	2.87	NO <sub>2</sub> PM <sub>10</sub>	Yes	Chemilum TEOM	Y (façade)	5.2m	Y
ID2	Haymarket	Roadside	323896	673197	N/A	NO <sub>2</sub> PM <sub>10</sub>	Yes	Chemilum TEOM	Y (7m)	9.2m	N
ID3	Roseburn	Roadside	322939	673233	n/a	NO <sub>2</sub> PM <sub>10</sub>	Yes	Chemilum TEOM	Y (4.9m)	7.6m	N
ID4	Gorgie Road	Roadside	323121	672314	2.63	NO <sub>2</sub>	Yes	Chemilum	Y (façade)	2.5m	Y
ID5	St. John's Road	Kerbside	320101	672907	1.98	NO <sub>2</sub>	Yes	Chemilum	Y (1.35m)	0.5m	Y
ID6	Currie High School	Suburban	317595	667909	3.59 3.24	NO <sub>2</sub> PM <sub>10</sub>	No	Chemilum TEOM	Y (rear of school)	N/A	N/A



City of Edinburgh Council

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) 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?
ID7	St. Leonard's	Urban Back-ground (AURN)	326265	673129	3.4m - 3.2m - 3.1m - 3.4m - 3.4m - 3.4m - 3.4m -	NO <sub>2</sub> PM <sub>10</sub> PM <sub>2.5</sub> O <sub>3</sub> CO SO <sub>2</sub> PAH	No	Chemilum FDMS FDMS UV absorp IR absorp UV absorp Digitalsamp	Y (29.0m)	26m	N/A
ID8	Salamander Street	Roadside	327615	676333	2.86	NO <sub>2</sub> PM <sub>10</sub>	No	Chemilum TEOM	Y (façade)*	2.13m	Y
ID9	Queensferry Road	Roadside	318736	674930	2.96	NO <sub>2</sub> PM <sub>10</sub>	No	Chemilum TEOM/FDMS	Y (6.5m)	1.7m	Y
ID10	Glasgow Road	Roadside	313103	672663	2.84	NO <sub>2</sub> PM <sub>10</sub>	Yes	Chemilum TEOM	Y (facade)*	6m	Y

\*Adjacent residential properties which are same distance from roadside as the monitoring station

Table 2.1a Description of Automatic Monitoring Locations

Site ID	Site Name	Description of automatic monitoring location
ID1	Queen Street	Pavement in line with residential property located 5.2m from road edge. No buildings at rear of monitoring unit. Relevant exposure.
ID2	Haymarket	Now decommissioned, this monitoring site was located in a car parking bay at Haymarket Station 9.2m from the main road, set back from the façade of residential property. Not in street canyon.
ID3	Roseburn	Located on footbridge over the water of Leith 7.6m from kerb edge. Set back from line of residential property. Does not take account of canyon at Roseburn Terrace.
ID4	Gorgie Road	Located in line with façade of adjacent residential flats on edge of children's play park. Within 2.5m of kerb edge. Not located in canyon area of street. Relevant exposure.
ID5	St John's Road	Pavement (kerbside) of busy shopping street. Residential properties within 2.1m of kerb edge. Takes account of junction and street canyon. Relevant exposure and worst-case location.
ID6	Currie High School	Located adjacent to school building at rear of school. Representative of suburban / semi-rural exposure.
ID7	St. Leonard's	Located in small park area adjacent to Medical centre 45m from nearest main road. Representative of urban exposure.
ID8	Salamander Street	Located on pavement 2.13m from road edge, in line with adjacent residential property.
ID9	Queensferry Road	Located on pavement 1.7m from busy road edge and adjacent bus stop. 6.5m in front of residential property.
ID10	Glasgow Road	Located on recreational land 6m from A8 northbound carriageway, in line with nearby residential properties.

### 2.1.2 Non-Automatic Monitoring Sites

Edinburgh has an extensive network of passive diffusion tube samplers located throughout the city, which monitor **nitrogen dioxide**. These are within and outwith the AQMAs. The majority of the locations are in street canyons where tenement-style residential properties are within 2 to 3 metres of the road edge. Most of the passive diffusion tubes are sited at the building facades of residential properties. Details are provided in Table 2.2, catalogued in six different geographical areas of the city, as shown in Figure 2.1a.

Additional monitoring was established in 2012 at the following locations in order to progress Detailed Assessment work: Hope Park Terrace/Clerk Street, Hillhouse Road, Slateford Road, Angle Park Terrace and Fountainbridge/Tollcross.

Monitoring at the Inverleith Tanfield site (ID55a) was discontinued due to removal of a post. The St John's Road (ID39) and Queen Street (ID33) monitoring sites were re-located in close proximity and with similar site conditions due to an overgrown hedge and risk of people smoking nearby, respectively.

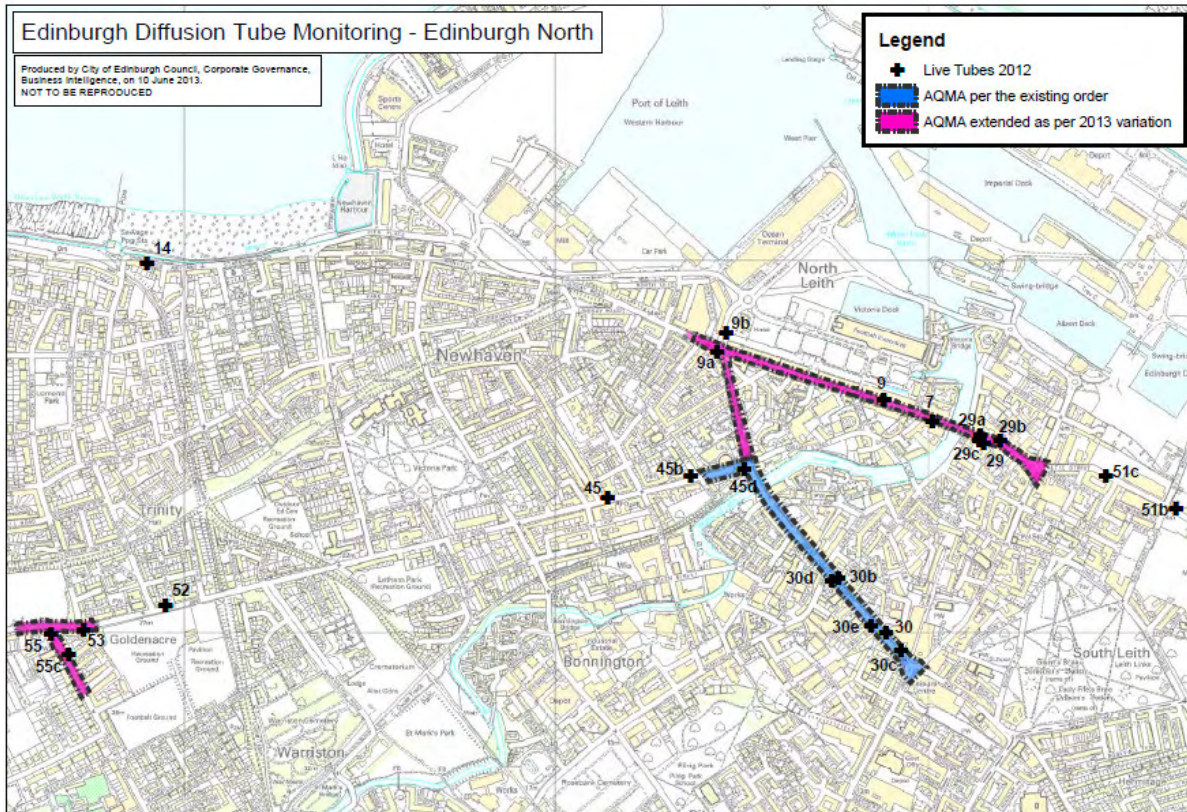
QC/QA work associated with passive diffusion tube method of monitoring is contained in the following Appendices:

- A1 Nitrogen Dioxide (NO<sub>2</sub>) Diffusion tube bias adjustment factors
- A2 NO<sub>2</sub> Bias Adjustment Factor from Local Co-location studies
- A3 Discussion of Choice of factor to use
- A5 Short-term to Long-term data adjustment for NO<sub>2</sub>
- A7 QA/QC of diffusion tube monitoring.

Maps illustrating the network of non-automatic monitoring locations for NO<sub>2</sub> across the city are shown in Figures 2.2a – 2.2f.

All passive diffusion tubes are fixed at a height of approximately two meters. It is the intention to collect exact heights throughout 2013 and 2014 and report these in the next progress report.

Figure 2.2a Map of Non-Automatic Monitoring Sites – North



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Figure 2.2b Map of Non-Automatic Monitoring Sites – City Centre (North)

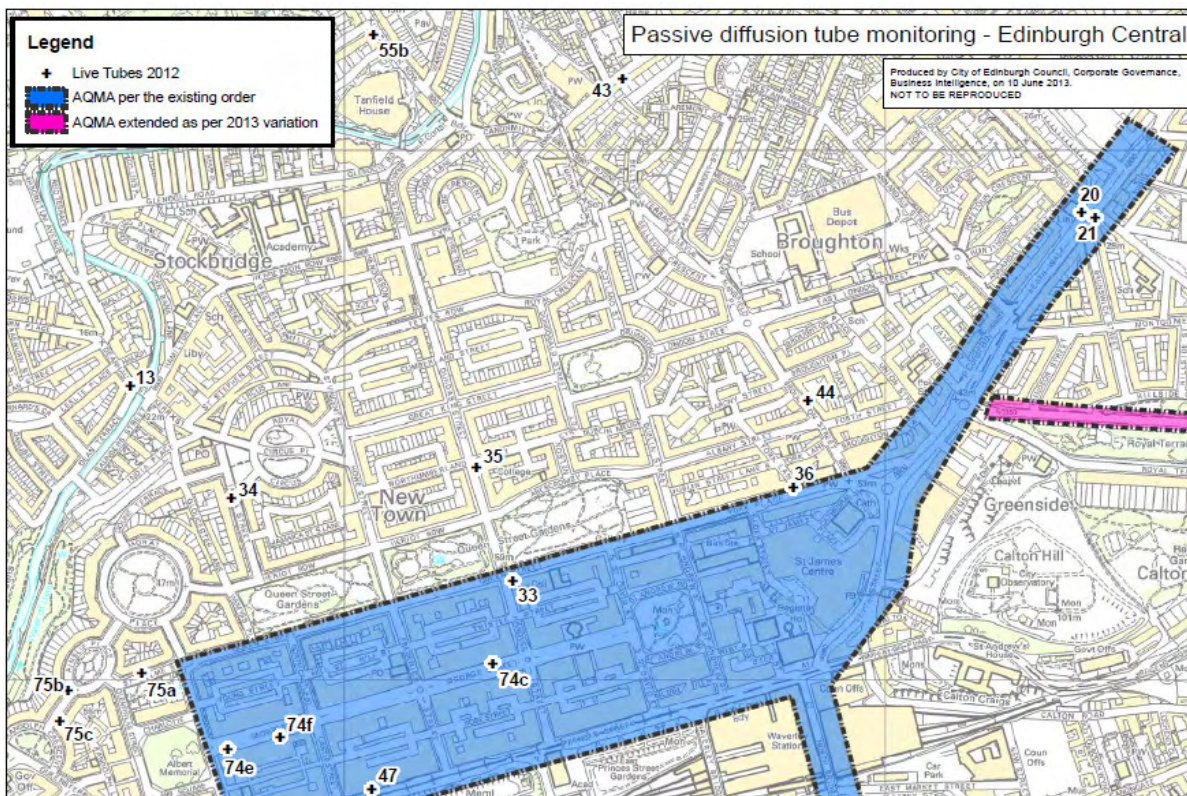
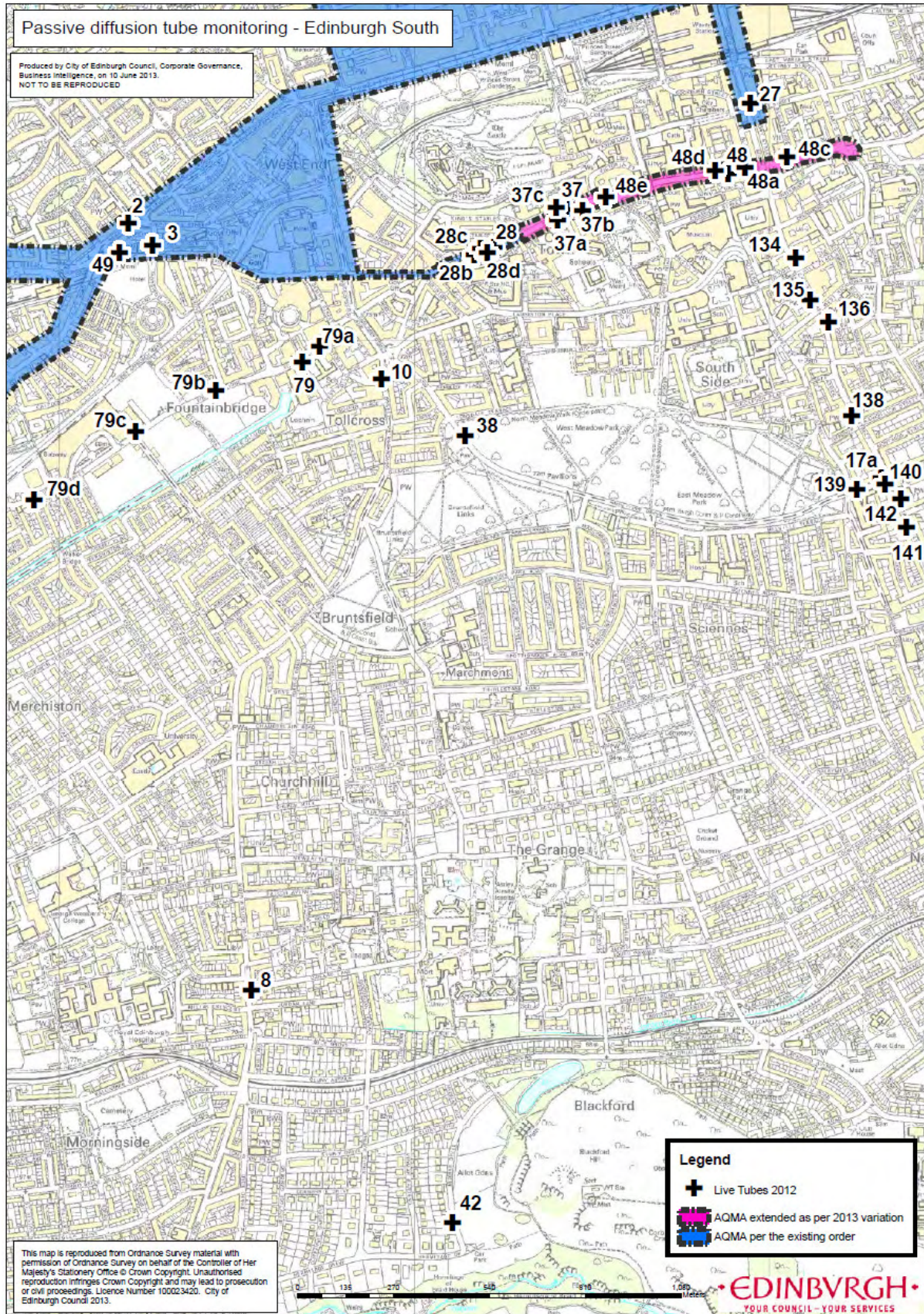
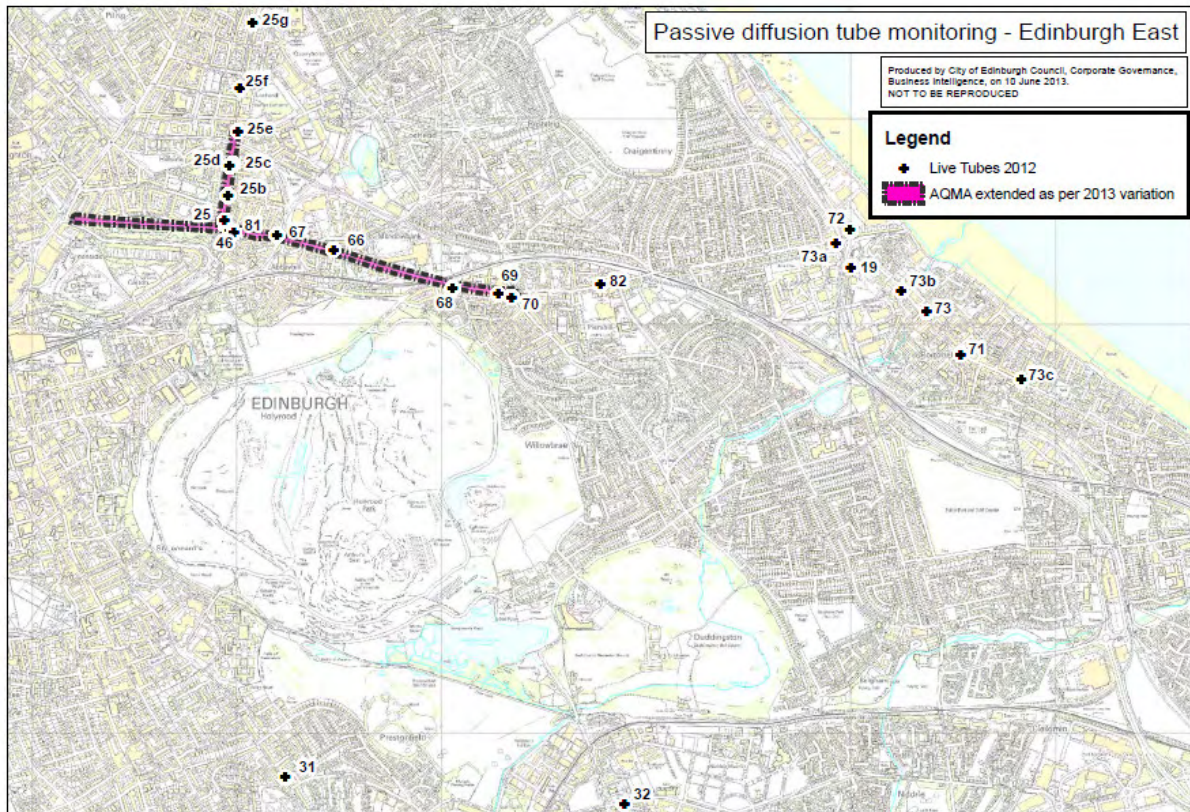


Figure 2.2c Map of Non-Automatic Monitoring Sites – City Centre (South)



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Figure 2.2d Map of Non-Automatic Monitoring Sites – East



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Figure 2.2e Map of Non-Automatic Monitoring Sites – South West Edinburgh

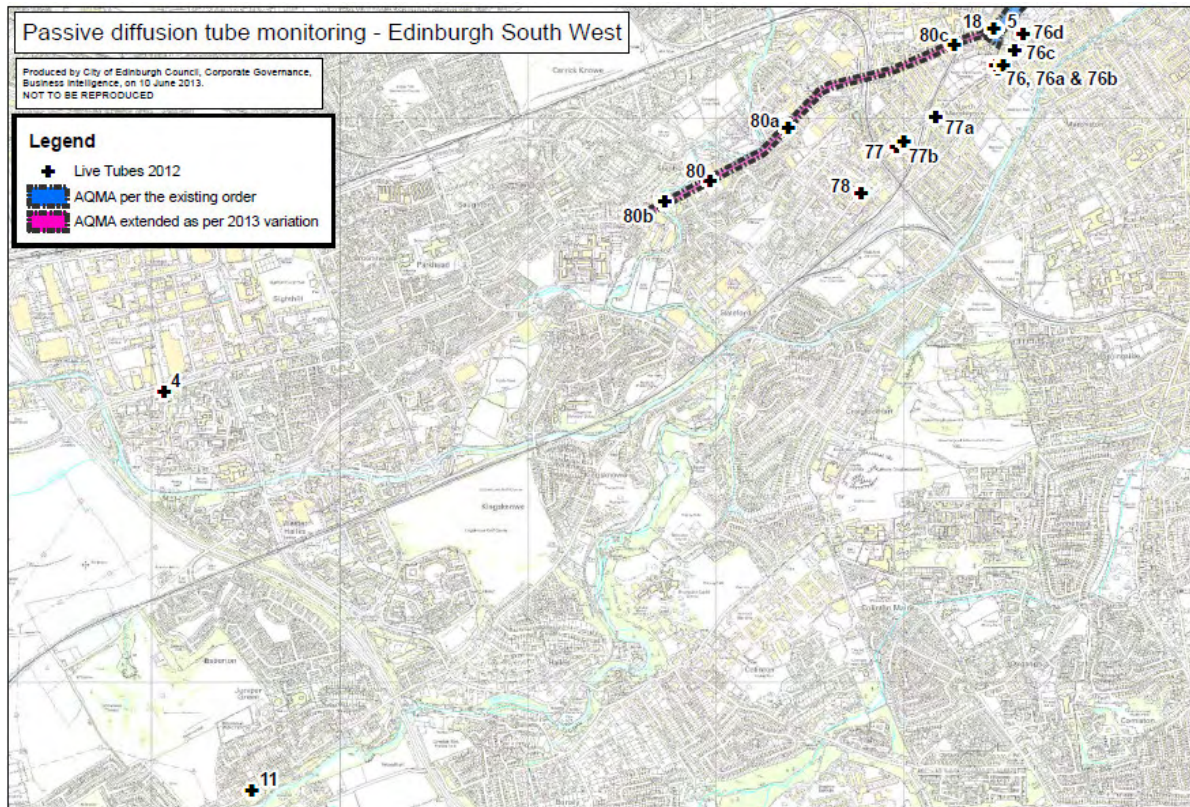
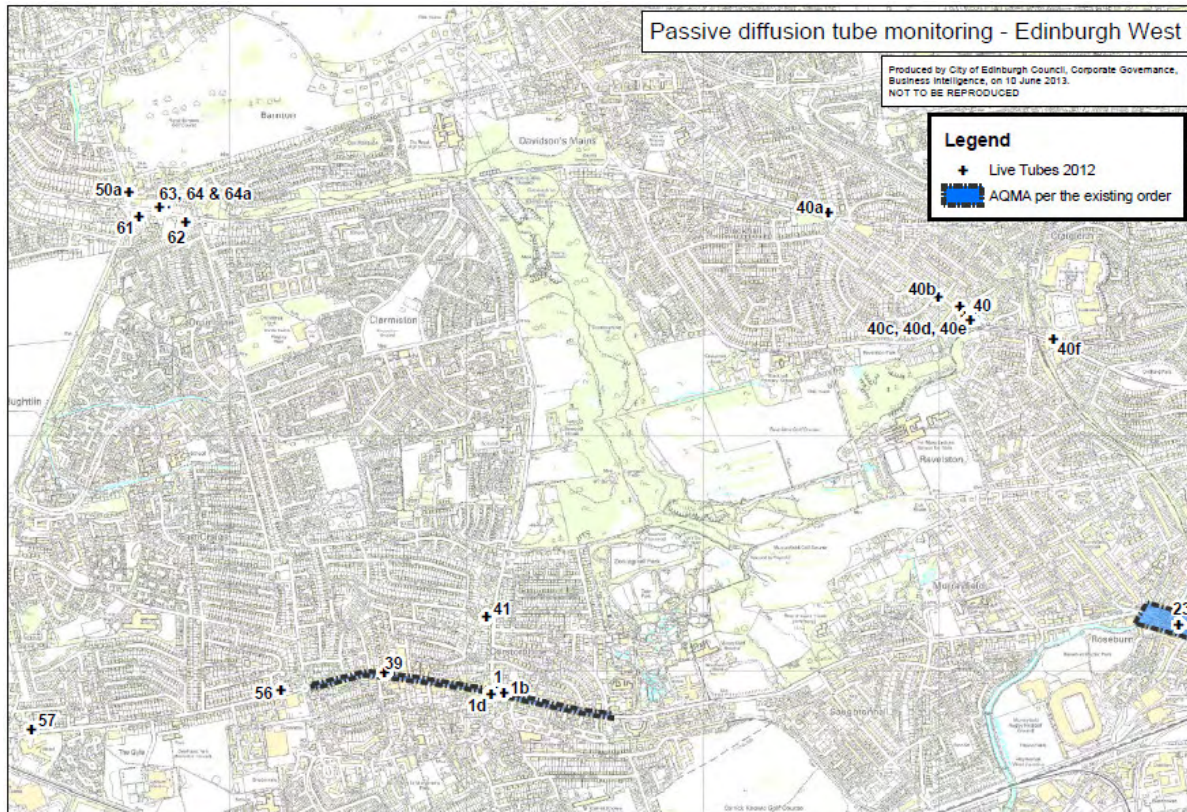


Figure 2.2f Map of Non-Automatic Monitoring Sites – West



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Table 2.2 Details of Non- Automatic Monitoring Sites for Nitrogen Dioxide

Site ID	Site Name	Site Type	X OS Grid Ref.	Y OS Grid Ref.	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (m) (N/A if not applicable)	Worst-case Location ?
	<b>NORTH</b>							
29	<b>Bernard Street/CA</b>	Roadside	327148	676507	Yes	Y façade	2.2	Y
29a	<b>Bernard Street/King Chambers</b>	Roadside	327137	676529	Yes	Y façade	2.1	Y
29b	<b>Bernard StreetNo 32</b>	Roadside	327192	676513	Yes	Y façade	2.2	Y
29c	<b>Bernard Street/PS</b>	Roadside	327135	676515	Yes	Y façade	2.1	Y
7	<b>Commercial Street No 11</b>	Roadside	327009	676565	Yes	Y façade	2.47	Y
9	<b>Commercial Street No 78</b>	Roadside	326879	676626	Yes	Y façade	2.6	Y
9a	<b>Commercial St/Portland Place</b>	Roadside	326430	676754	Yes	Y (3.90)	1.47	Y
52	<b>Ferry Road No 268</b>	Roadside	324946	676070	No	Y (4.6)	1.65	Y
53	<b>Ferry Road/Bowhill Terrace No6</b>	Roadside	324726	676004	Yes	Y (1.57)	1.75 +2.85 <sup>b</sup>	Y
45b	<b>Ferry Road/Maderia Street</b>	Roadside	326359	676420	No	Y façade	7.5	Y
45	<b>Ferry Road/North Fort Street</b>	Roadside	326136	676361	No	Y façade	3.7	Y
45d	<b>Ferry Road/North Junction St</b>	Roadside	326503	674436	Yes	Y façade	3.1	Y
30b	<b>Great Junction Street No137</b>	Roadside	326740	676138	Yes	Y façade	2.9	Y
30c	<b>Great Junction Street No14</b>	Roadside	326925	675949	Yes	Y façade	2.8	Y
30e	<b>Great Junction Street/CG</b>	Roadside	326845	676015	Yes	Y façade	2.7	Y
30	<b>Great Junction Street/FV</b>	Roadside	326884	675997	Yes	Y façade	2.8	Y
30d	<b>Great Junction Street/WC</b>	Roadside	326757	676144	Yes	Y façade	2.8	Y
55	<b>Inverleith Row/Ferry Road</b>	Roadside	324638	675993	Yes	Y façade	4.65	Y
55c	<b>Inverleith Row/Montague</b>	Roadside	324686	675941	Yes	Y (1.06)	2.28 + 2.0 <sup>b</sup>	Y
9b	<b>Ocean Drive/Leith</b>	Roadside	326455	676805	No	Y façade	4.2	Y
51c	<b>Salamander Street/Baltic Street</b>	Roadside	327476	676418	No	Y façade	2.25	Y



Site ID	Site Name	Site Type	X OS Grid Ref.	Y OS Grid Ref.	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (m) (N/A if not applicable)	Worst-case Location ?
51b	<b>Salamander Street/Bath Street</b>	Roadside	327665	676331	No	Y façade	1.8	Y
14	<b>Trinity Crescent</b>	Roadside	324896	676991	No	Y (4.0)	2.0	Y
	<b>EAST</b>							
19	<b>Baileyfield Road</b>	Roadside	329997	674274	No	Y (3.5)	2.0 + 2.1 <sup>b</sup>	Y
31	<b>Dalkeith Road No187</b>	Roadside	327231	671782	No	Y (4.9)	1.8	Y
25	<b>Easter Road/CH Shop</b>	Roadside	326934	674503	Yes	Y façade	2.3	Y
25b	<b>Easter Road/Rossie Place</b>	Roadside	326950	674624	Yes	Y façade	3.3	Y
25c	<b>Easter Road No105/109</b>	Roadside	326958	674770	Yes	Y façade	3.25	Y
25d	<b>Easter Road/Bothwick</b>	Roadside	326974	674780	Yes	Y façade	2.8	Y
25e	<b>Easter Road No 198</b>	Roadside	326999	674940	Yes	Y façade	3.95	Y
25f	<b>Easter Road No 271</b>	Roadside	327010	675149	No	Y façade	2.8	Y
25g	<b>Easter Road No 327</b>	Roadside	327071	675467	No	Y façade	3.0	Y
81	<b>London Rd/East Norton Place</b>	Roadside	326980	674446	Yes	Y façade	2.5	Y
67	<b>London Road/Earlston Place</b>	Roadside	327190	674433	Yes	Y façade	2.7	Y
68	<b>Parsons Green Terrace</b>	Roadside	328049	674174	Yes	Y façade	2.7	Y
69	<b>London Road/Wolseley Place</b>	Roadside	328272	674143	Yes	Y façade	2.62	Y
70	<b>London Road/Wolseley Terrace</b>	Roadside	328337	674129	Yes	Y façade	4.6	Y
66	<b>London Road/Cadzow Place</b>	Roadside	327468	674362	Yes	Y façade	2.04 + 2.0 <sup>b</sup>	Y
46	<b>London Road/Easter Road</b>	Roadside	326944	674472	Yes	Y façade	5.6	Y
32	<b>Niddrie Mains Road No 28</b>	Kerbside	328889	671649	No	Y (4.7)	0.2 + 2.4 <sup>b</sup>	Y
82	<b>Piersfield Terrace</b>	Roadside	328771	674190	No	Y façade	4.0 + 2.1 <sup>b</sup>	Y
73b	<b>Portobello High Street No 23</b>	Roadside	330242	674162	No	Y façade	3.8	Y
73c	<b>Portobello High Street No 292</b>	Roadside	330830	673726	No	Y façade	2.3	Y
73	<b>Portobello High Street No 74</b>	Roadside	330366	674057	No	Y façade	3.1	Y

Site ID	Site Name	Site Type	X OS Grid Ref.	Y OS Grid Ref.	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (m) (N/A if not applicable)	Worst-case Location ?
71	Portobello High StreetNo185	Roadside	330533	673850	No	Y façade	3.0	Y
73a	Portobello Road/Ramsay	Roadside	329923	674389	No	Y (1.98)	2.8	Y
72	Seafield Road East No10	Roadside	329993	674457	No	Y façade	4.5	Y
	<b>CITY CENTRE NORTH</b>							
43	Broughton Road	Roadside	325513	675134	No	Y façade	2.0	Y
44	Broughton Street	Roadside	325855	674527	No	Y façade	4.5	Y
13	Deanhaugh Street	Kerbside	324603	674555	No	Y (5.1)	0.6 + 2.1 <sup>b</sup>	Y
35	Dundas Street	Kerbside	325243	674400	No	Y (7.3)	0.3 + 2.1 <sup>b</sup>	Y
74f	George Street No 112	Roadside	324880	673891	Yes	Y façade	6.8	Y
74c	George Street No 41	Roadside	325273	674030	Yes	Y (4.3)	0.54	Y
74e	George Street/Charlotte Sq	Kerbside	324783	673868	Yes	Y (5.2)	0.3	Y
75c	Great Stuart Street No18	Kerbside	324473	673920	No	Y (6.9)	0.36 + 2.4 <sup>b</sup>	Y
75b	Great Stuart Street No 7	Kerbside	324488	673978	No	Y (6.14)	0.4 + 2.1 <sup>b</sup>	Y
34	India Street	Background	324790	674341	No	N	0.4 + 2.1 <sup>b</sup>	N
55b	Inverleith Row/Summer Place	Roadside	325052	675217	No	Y façade	6.1	Y
21	Leith Walk/Brunswick Road	Roadside	326386	674872	Yes	Y (3.4)	1.16	Y
20	Leith Walk/McDonald Road <sup>a</sup>	Kerbside	326361	674882	Yes	Y façade	5.6	Y
47	Princes Street (Eastbound)	Roadside	325049	673791	Yes	Y façade	9.0	Y
24	Princes Street/Mound	Kerbside	325397	673869	Yes	Y (10.2)	1.0	Y
33	Queen Street/Hanover Street <sup>a</sup>	Roadside	325362	674205	Yes	Y (4.25)	2.2 + 2.0 <sup>b</sup>	Y
75a	St Colme Street	Kerbside	324624	674012	No	Y (5.1)	0.6	Y
36	York Place	Roadside	325828	674362	Yes	Y (2.7)	5.5	Y

Site ID	Site Name	Site Type	X OS Grid Ref.	Y OS Grid Ref.	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (m) (N/A if not applicable)	Worst-case Location ?
	<b>CITY CENTRE SOUTH</b>							
48	<b>Cowgate/Gurthrie Street</b>	Roadside	325881	673471	Yes	Y façade	4.5	Y
48a	<b>Cowgate/Blair St</b>	Roadside	325929	673490	Yes	Y façade	3.2	Y
79	<b>Fountainbridge/Tollcross</b>	Roadside	324682	672939	No	Y façade	3.3	Y
37	<b>Grassmarket/PS</b>	Roadside	325427	673371	Yes	Y (5.0)	2.0 + 2.1 <sup>b</sup>	Y
37a	<b>GrassmarketNo 41</b>	Roadside	325401	673340	Yes	Y façade	3.4	Y
37b	<b>GrassmarketNo 75</b>	Roadside	325471	673369	Yes	Y façade	5.0	Y
10	<b>Home Street</b>	Roadside	324905	672893	No	Y façade	2.8	Y
17a	<b>Hope Park Terrace/VS</b>	Roadside	326312	672614	No	Y façade	5	Y
38	<b>Melville Drive</b>	Roadside	325141	672733	No	Y (10.0)	2.8	Y
42	<b>Midmar Drive</b>	Background	325105	670511	No	N	1.4	N
8	<b>Morningside Road</b>	Kerbside	324538	671166	No	Y (2.8)	0.7	Y
49	<b>Morrison Street</b>	Roadside	324167	673249	Yes	Y (2.4)	2.2	Y
27	<b>North Bridge – South</b>	Roadside	325944	673670	Yes	Y façade	3.5	Y
3	<b>Torphichen Place</b>	Roadside	324260	673270	Yes	Y (1.55)	0.73	Y
2	<b>West Maitland Street</b>	Kerbside	324192	673332	Yes	Y (4.2)	0.65	Y
28	<b>West Port/Grassmarket</b>	Roadside	325221	673263	Yes	Y façade	1.9	Y
28b	<b>West Port No 62</b>	Roadside	325166	673242	Yes	Y façade	1.4	Y
28c	<b>West Port OppNo 50</b>	Roadside	325184	673261	Yes	Y façade	3.0	Y
28d	<b>West Port No 42</b>	Roadside	325203	673250	Yes	Y façade	2.7	Y
	<b>WEST</b>							
56	<b>Glasgow Road /Drumrae</b>	Roadside	319212	672921	No	Y (4.6)	0.57 + 2.0 <sup>bc</sup>	Y
57	<b>Glasgow Road No158</b>	Roadside	318185	672756	No	Y (8.5)	3.6	Y

Site ID	Site Name	Site Type	X OS Grid Ref.	Y OS Grid Ref.	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (m) (N/A if not applicable)	Worst-case Location ?
16	<b>Glasgow Road No 68</b>	Roadside	313028	672633	Yes	Y (4.4)	1.8	Y
15	<b>Glasgow Road Newbridge</b>	Roadside	312664	672672	Yes	Y (3.8) <sup>c</sup>	1.6 + 2.4 <sup>bc</sup>	Y
58	<b>Glasgow Road Newbridge</b>	Roadside	312693	672670	Yes	Y (5.2) <sup>c</sup>	2.8	Y
41	<b>Hillview Terrace</b>	Background	320081	673232	No	N	1.0	N
61	<b>Maybury Road/Barnton</b>	Roadside	318612	674924	No	Y (12.5)	2.8	Y
40	<b>Queensferry Rd/Hillhouse Rd</b>	Roadside	322144	674497	No	Y façade	2.0 + 2 <sup>d</sup>	Y
62	<b>Queensferry Road No 561</b>	Roadside	318810	674903	No	Y façade	16.9	Y
63	<b>Queensferry Road No 544</b>	Roadside	318723	674963	No	Y façade	13.6	Y
64	<b>Queensferry Road No 550</b>	Roadside	318698	674955	No	Y (9.2)	1.49	Y
23	<b>Roseburn Terrace</b>	Kerbside	323007	673198	Yes	Y (2.3)	0.23	Y
1	<b>St John's Road SB</b>	Kerbside	320122	672917	Yes	Y (1.8)	0.54	Y
1b	<b>St John's Road IR</b>	Roadside	320154	672911	Yes	Y façade	2.0	Y
1d	<b>St John's Road No 131</b>	Roadside	320096	672907	Yes	Y façade	2.1	Y
39	<b>St John's Road<sup>a</sup></b>	Roadside	319651	672995	Yes	Y (4.15)	1.56	Y
50a	<b>Whitehouse Rd/Barnton Grove</b>	Roadside	318571	675028	No	Y (1.57)	3.5	Y
	<b>SOUTH WEST</b>							
76	<b>Angle Park/Harrison Road</b>	Roadside	323498	672263	No	Y façade	2.20	Y
4	<b>Calder Road</b>	Roadside	319062	670543	No	Y (25)	1.6	Y
18	<b>Gorgie Road No 8</b>	Roadside	323477	672476	Yes	Y façade	2.4	Y
80	<b>Gorgie Road / Delhaig</b>	Roadside	321967	671666	Yes	Y façade	2.6	Y
5	<b>Gorgie Road/Murieston Road</b>	Kerbside	323484	672478	Yes	Y (4.9)	0.3	Y
11	<b>Lanark Road No No610</b>	Roadside	319527	668420	No	Y (3.7)	1.5	Y
77	<b>Slateford Road No 97</b>	Roadside	322960	671846	No	Y façade	2.67	Y
78	<b>Slateford Road/The Maltings</b>	Roadside	322772	671606	No	Y façade	2.2	Y

Table 2.2a Details of New Non-Automatic Monitoring Sites 2012 for Nitrogen Dioxide

Site ID	Site Name	Site Type	X OS Grid Ref.	Y OS Grid Ref.	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (m) (N/A if not applicable)	Worst-case Location ?
	<b>CITY CENTRE - SOUTH</b>							
138	Clerk Street No 15	Roadside	326229	672287	No	Y façade	2.35 + 2 <sup>b</sup>	Y
48D	CowgateNo 148	Roadside	325845	673480	Yes	Y façade	2.0	Y
48B	CowgateNo 301	Roadside	326132	673519	Yes	Y façade	3.8 + 2 <sup>b</sup>	Y
48C	Cowgate Blackfriars	Roadside	326047	673519	Yes	Y façade	2.4	Y
48E	CowgateheadNo 2	Roadside	325537	673405	Yes	Y façade	1.9	Y
79C	Dundee StreetNo 114	Roadside	324213	672743	No	Y façade	3.4	Y
79D	Dundee Street/Yeaman Place	Roadside	323962	672550	No	Y façade	2.3	Y
79A	FountainbridgeNo103	Roadside	324731	672984	No	Y façade	2.2	Y
79B	Fountainbridge/Grove Street	Roadside	324438	672859	No	Y façade	2.2	Y
37C	Grassmarket/Thompsons Court	Background	325397	673377	Yes	Y façade	21 + 2.1 <sup>b</sup>	N
139	Hope Park Terrace No 5	Roadside	326244	672581	No	Y facade	4.9	Y
140	Hope Park Terrace/Clerk Street	Roadside	326323	672596	No	Y (3.5)	1.3	Y
137	Nicolson Street No 124	Roadside	326181	672971	No	Y façade	3.4 + 2 <sup>b</sup>	Y
135	Nicolson Street No 69	Roadside	326112	673115	No	Y façade	3 + 2	Y
136	Nicolson Street No 92	Roadside	326164	673054	No	Y façade	3.74 + 2 <sup>b</sup>	Y
134	Nicolson St/Surgeons Hall	Roadside	326072	673234	No	Y façade	3.35	Y
142	South Clerk Street No 41a	Roadside	326367	672554	No	Y façade	1.96 + 2 <sup>b</sup>	Y
141	South Clerk Street No 84	Roadside	326383	672472	No	Y façade	2.57 + 2 <sup>b</sup>	Y

Site ID	Site Name	Site Type	X OS Grid Ref.	Y OS Grid Ref.	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (m) (N/A if not applicable)	Worst-case Location ?
	<b>WEST</b>							
40F	Hillhouse Road No 118	Roadside	322478	674406	No	Y (2.57)	2.6	Y
40C	Hillhouse Road No240	Roadside	322082	674543	No	Y façade	3.2	Y
40A	Hillhouse Road/Telford Road	Roadside	321526	674945	No	Y façade	4.5 + 7 <sup>b</sup>	Y
40B	Hillhouse/Craigcrook Terrace	Roadside	321990	674586	No	Y (4.9)	2.1	Y
40E	Hillhouse/Marisshall Place No1	Roadside	322153	674470	No	Y façade	2.8	Y
40D	Hillhouse/Marisshall Place No 4	Roadside	322123	674492	No	Y façade	3.1	Y
64A	Queensferry Road No 552	Roadside	318698	674964	No	Y façade	10.5	Y
	<b>SOUTH WEST</b>							
76C	Angle Park Terrace No 25	Roadside	323587	672360	No	Y façade	4.75	Y
76B	Angle Park Terrace No 74	Roadside	323526	672285	No	Y façade	2.1	Y
76A	Ardmillan Terrace No 22	Roadside	323487	672287	No	Y façade	2.2	Y
80C	Gorgie Road No 87	Roadside	323265	672394	Yes	Y façade	2.5	Y
80B	Gorgie Road No 549	Roadside	321724	671557	Yes	Y façade	2.5	Y
80A	Gorgie Road Glen Lea	Roadside	322381	671950	Yes	Y façade	2.6	Y
76D	Henderson Terrace	Roadside	323632	672449	No	Y façade	1.8	Y
77A	Slateford Road No 51	Roadside	323167	672999	No	Y façade	2.3	Y
77B	Slateford Road No 93/95	Roadside	322999	671876	No	Y façade	2.6	Y

<sup>a</sup> Site relocated in 2012 in close proximity to previous site

<sup>b</sup> Distance to nominal kerb, due to parking bay in front of monitoring location

<sup>c</sup> Amendments made to distance measurement following review of site location

## **2.2 Comparison of Monitoring Results with Air Quality Objectives**

### **2.2.1 Nitrogen Dioxide (NO<sub>2</sub>)**

#### **Automatic Monitoring Data**

Data from a number of the automatic monitoring stations has been corrected using DEFRA's Distance Correction Calculator Tool [2] to account for relevant exposure. At Queensferry Road the monitoring station is set 6.5m to the front of residential facades; hence measured concentrations are likely to overestimate relevant exposure. The Roseburn and Haymarket stations were setback from residential properties, so the tool was used to calculate exposure closer to the roads, in alignment with residential properties.

The automatic monitoring data for 2012, corrected where necessary, complies with the annual and hourly mean nitrogen dioxide objectives except at St John's Road. Data from the Queensferry Road monitoring site is borderline in comparison with the annual mean objective, as the result is 40µg/m<sup>3</sup>. Data capture for the year was 87%. There has also been a slight increase in measured concentrations at Queensferry Road passive diffusion tube monitoring sites. This may be attributable to major road-works to accommodate utilities infrastructure work and footway crossing maintenance, resulting in traffic congestion.

Automatic data is shown in Tables 2.3a and 2.3b.

Table 2.3a Results of Automatic Monitoring for NO<sub>2</sub>: Comparison with Annual Mean Objective

Site ID	Site Name	Within AQMA?	Valid Data Capture for Monitoring Period % <sup>a</sup>	Valid Data Capture 2012 % <sup>b</sup>	Annual Mean Concentration (µg/m <sup>3</sup> )				
					2008	2009	2010	2011	2012
1	Queen Street	Y	N/A	95	32	33	37	29	28
2	Haymarket	Y	N/A	N/A	<b>41 (49)</b>	-	N/A	N/A	N/A
3	Roseburn	Y	N/A	N/A	28 (31)	26 (28)	30 (33)	24 <sup>c</sup>	N/A
4	Gorgie Road	Y	N/A	99	<b>42</b>	38	<b>41</b>	37	39
5	St John's Road	Y	N/A	92	<b>75</b>	<b>70</b>	<b>47</b>	<b>65</b>	<b>58</b>
6	Currie	N	N/A	99	-	-	10	6	8
7	St Leonard's	N	N/A	99	31	24	31	25	24
8	Salamander Street	N	N/A	98	-	30	30	29	30
9	Queensferry Road	N	N/A	87	-	-	N/A	41(29)	52( <b>40</b> )
10	Glasgow Road	Y	98	32	N/A	N/A	N/A	N/A	29 <sup>c</sup>

**Notes for table;**

In bold and red, exceedence of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> and in bold, result of 40µg/m<sup>3</sup> shown

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

b i.e. data capture for the full calendar year

c Mean "annualised" as valid data capture is less than 75%. Calculation for Glasgow Road 2012 is shown in Appendix 5

Data in brackets represents the estimated annual concentration at relevant receptors using the NO<sub>2</sub> Fall Off with Distance calculator (DEFRA website, LAQM, Tools, 2013).

Currie air quality monitoring station is not currently supported by the Scottish Government's data ratification programme. The data for this site has therefore not been ratified. See Appendix A6 for further information.



Table 2.3b Results of Automatic Monitoring for NO<sub>2</sub>: Comparison with 1-hour Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % <sup>a</sup>	Valid Data Capture 2012 % <sup>b</sup>	Number of Hourly Means > 200µg/m <sup>3</sup>				
					2008	2009	2010	2011	2012
1	Queen Street	Y	N/A	95	0	0	0	0	0
2	Haymarket	Y	N/A	N/A	1	N/A	N/A	N/A	N/A
3	Roseburn	Y	N/A	N/A	0	0	1	0 (101) <sup>c</sup>	N/A
4	Gorgie Road	Y	N/A	99	0	0 (130) <sup>c</sup>	0 (122) <sup>c</sup>	0	0
5	St John's Road	Y	N/A	92	<b>166</b>	<b>114</b>	<b>60</b>	<b>52</b>	<b>62</b>
6	Currie	N	N/A	99	N/A	N/A	0	0	0
7	St Leonard's	N	N/A	99	0	0	0	0	0
8	Salamander St	N	N/A	98	0	0 (144) <sup>c</sup>	0	0	0
9	Queensferry Rd	N	N/A	87	N/A	N/A	N/A	0	3
10	Glasgow Road	Y	98	32	N/A	N/A	N/A	0	0

**Notes for table;**

In bold and red, exceedence of the NO<sub>2</sub> hourly mean objective (200µg/m<sup>3</sup> – not to be exceeded more than 18 times per year)

<sup>a</sup> data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

<sup>b</sup> data capture for the full calendar year

<sup>c</sup> If the data capture for full calendar year is less than 90%, the 99.8<sup>th</sup> percentile of hourly means is in brackets

Currie air quality monitoring station is not currently supported by the Scottish Government's data ratification programme. The data for this site has therefore not been ratified. See Appendix A6 for further information.

**Trends in Annual Mean NO<sub>2</sub> Concentrations Measured at Automatic Monitoring Sites**

Trend analysis has been undertaken at monitoring locations with five or more years of valid data. Annual mean nitrogen dioxide concentrations have been plotted for successive years at St Leonard’s, Queen Street, Gorgie Road and St John’s Road and trend lines have been drawn using an Excel simple regression statistical program. Data trends are shown in Figures 2.3 to 2.7 and summarised in Table 2.4.

**Table 2.4 Summary of Annual Mean Nitrogen Dioxide trends measured at Automatic Monitoring Sites**

<b>Nitrogen Dioxide Automatic Monitoring Data – Annual Trend</b>			
<b>Monitoring Location</b>	<b>Site Type</b>	<b>Trend in annual mean NO<sub>2</sub> (years included)</b>	<b>Concentrations of NO<sub>2</sub></b>
St Leonard’s	Urban background	--- (2004 to 2012)	Flattening
Queen Street	Roadside	↓ (2006 to 2012)	Decreasing
Gorgie Road	Roadside	--- (1999 to 2012)	Flattening
St John’s Road	Kerbside	↓ (2007 to 2012)	Decreasing

The annual mean concentration of 24ug/m<sup>3</sup> at the urban background site at St Leonard’s is the lowest since monitoring began there in 2004. There is also a flattening trend at Gorgie Road. The data show a downward trend from 1999 to 2005 followed by a significant uptick in 2006 with no falling pattern since. This is coincident with a large upgrade in the bus fleet to Euro 3 engined vehicles.

Monitoring at Queen Street and St John’s Road shows a downward trend since it commenced in 2006 and 1999 respectively.

The number of hourly exceedences of nitrogen dioxide have significantly reduced at St John’s Road from 166 in 2008 to 62 in 2012. This shows a downward trend although there was a slight increase in exceedences between 2011 and 2012. Exceedences are restricted to the winter months with nine in January, nine in February, three in November and 41 in December of which 29 occurred between 10<sup>th</sup> to 13<sup>th</sup> December

An investigation report on Scottish Air Quality website focussed on PM<sub>10</sub> in Glasgow area stated the following<sup>(19)</sup> “Weather conditions over the 11th and 12th December, and leading up to this time, was dominated by a high pressure system and air masses sourced from the Arctic and Scandinavia. Air masses from this direction normally bring in clean air however the high pressure system created very cold and dry conditions with temperatures staying around or below freezing throughout both days. It also created very little or no breeze and large pockets of freezing mist. These very poor pollution dispersion conditions caused pollutants to re-circulate and stagnate.”

The temporary changes in traffic management for tram construction works continued throughout the city in 2012. Conclusive analysis of trends is therefore difficult to ascertain.

Figure 2.3 Trend in Annual Mean Nitrogen Dioxide Concentrations ( $\mu\text{g}/\text{m}^3$ ) measured at St Leonard's AURN

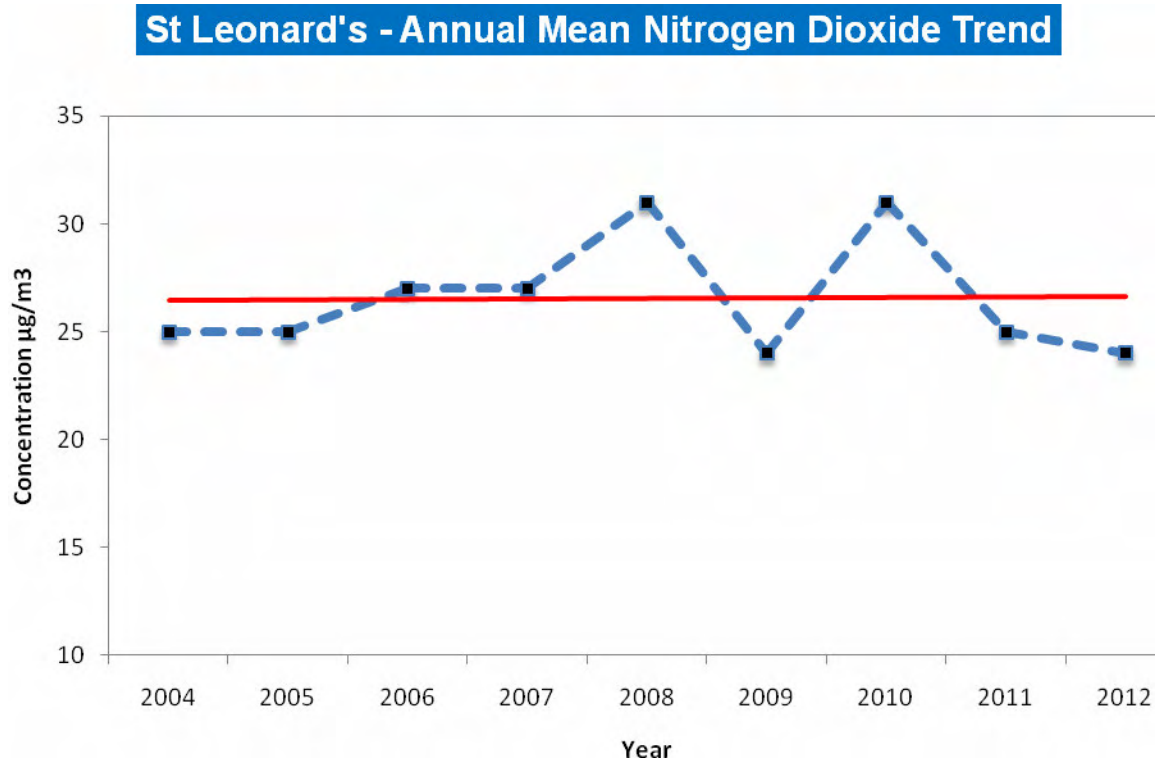
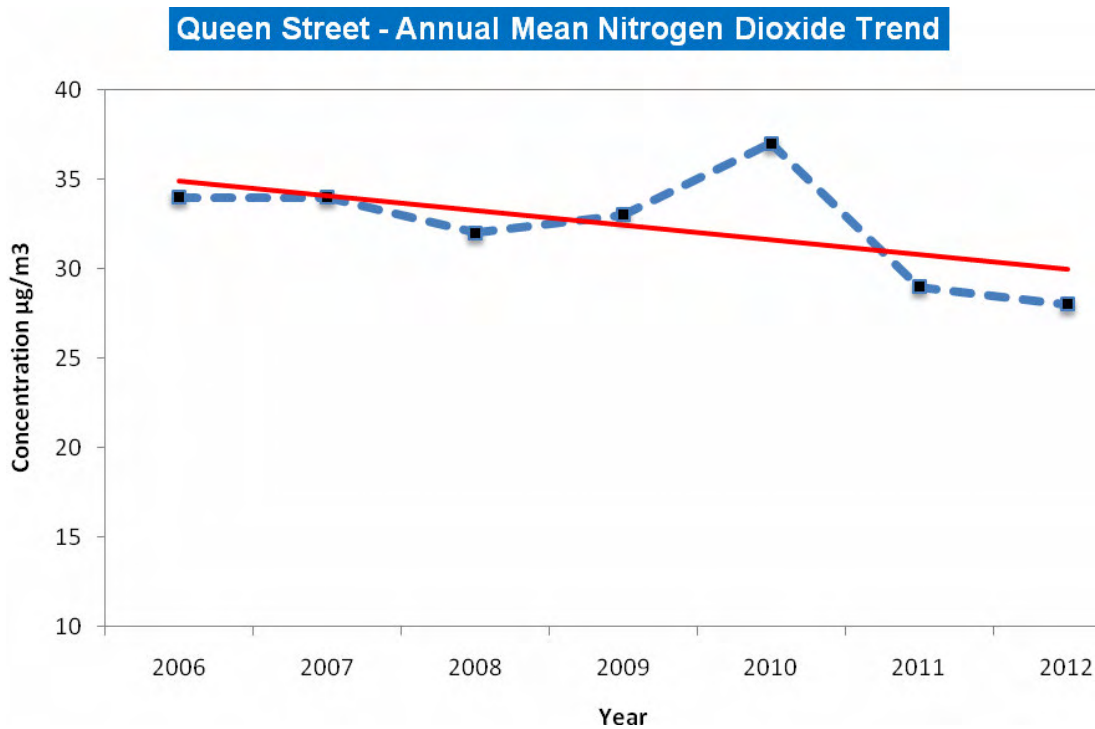
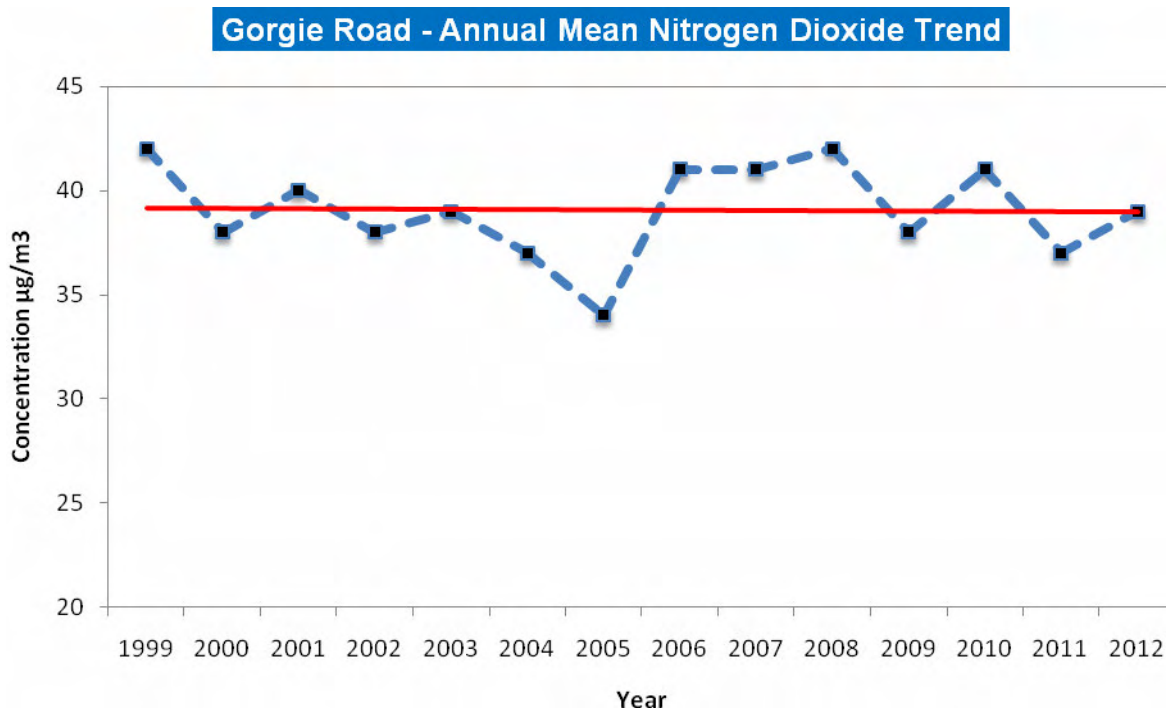


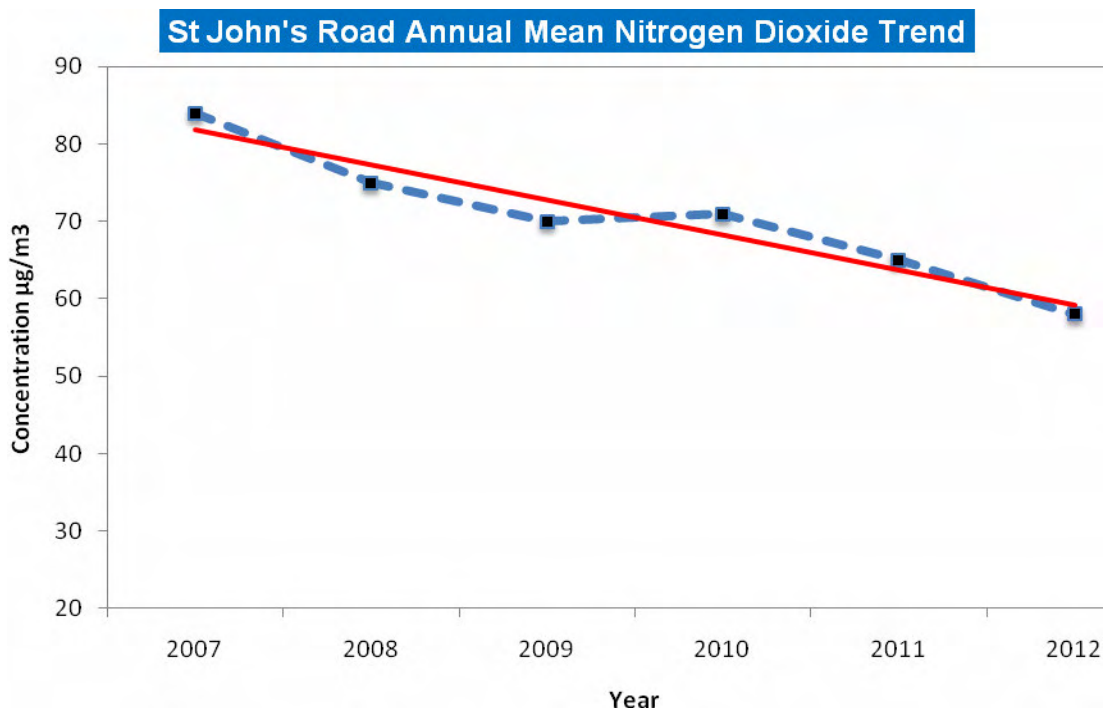
Figure 2.4 Trend in Annual Mean Nitrogen Dioxide Concentrations ( $\mu\text{g}/\text{m}^3$ ) measured at Queen Street



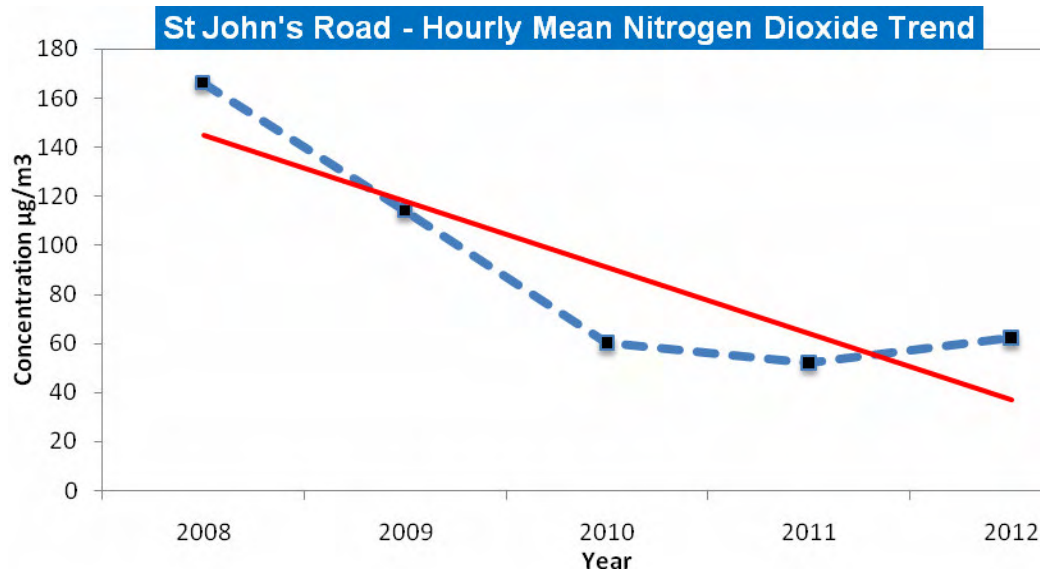
**Figure 2.5 Trend in Annual Mean Nitrogen Dioxide Concentrations ( $\mu\text{g}/\text{m}^3$ ) measured at Gorgie Road**



**Figure 2.6 Trend in Annual Mean Nitrogen Dioxide Concentrations ( $\mu\text{g}/\text{m}^3$ ) measured at St John's Road**



**Figure 2.7 Trend in the Number of Exceedences of the Hourly Mean Objective for Nitrogen Dioxide at St John's Road**



## Non-Automatic (Diffusion Tube) Monitoring Data – Discussion of Results

### Exceedences

The passive diffusion tube monitoring for 2012 shows exceedences of the annual mean nitrogen dioxide objective within each of the AQMAs, with likely exceedence of the hourly mean objective in West Port. Results show all the AQMAs remain valid. See Table of Results 2.5 and 2.5a.

Exceedences at monitoring locations outwith the AQMAs are identified at the following locations, Queensferry Road, Angle Park Terrace, Slateford Road, Nicolson Street and South Clerk Street; and are shown in Table 2.6.

All these sites are considered in more detail in the Detailed Assessment section below, except Queensferry Road (ID64). Distance corrected monitoring at this roadside location has been showing consistently elevated concentrations ( $50\mu\text{g}/\text{m}^3$ , 2012) compared to adjacent sites. In August 2012 an additional passive diffusion tube (ID64a) was located at the facade of a property, coincident with the existing site.

Data was collected for five months and an estimated annual concentration derived using annualisation details prescribed in Technical Guidance 09 (TG09) [3]. This resulted in an estimated concentration of  $30\mu\text{g}/\text{m}^3$  at ID64a, which is contrary to result at ID64. Monitoring will continue throughout 2013 at these sites to gather further data and investigations with local residents will also be undertaken.

Other monitored concentrations in the Queensferry Road area remain below the annual mean objective, although slightly higher in 2012 than the previous year (comparable with data from the automatic monitoring). This may be attributable to major roadworks to accommodate utilities infrastructure work and footway crossing maintenance, resulting in traffic congestion.

Table 2.7 shows data of diffusion tube monitoring from 2008 to 2012.

### **Potential exceedences**

Locations which are considered borderline with respect to exceeding the annual mean objective are detailed in Table 2.8. The site at Hillhouse Road (ID40) shows a result of  $40\mu\text{g}/\text{m}^3$  and is considered further in the Detailed Assessment section below. A detailed assessment is also carried out at Hope Park Terrace (ID17a,  $39\mu\text{g}/\text{m}^3$ ).

Data from monitoring at Salamander Street remains close to the annual mean objective; ID51b =  $38\mu\text{g}/\text{m}^3$  (and ID51c =  $35\mu\text{g}/\text{m}^3$ ). The result from the automatic monitoring site was  $30\mu\text{g}/\text{m}^3$ . Monitoring will continue at these sites.

### **Areas of Compliance in AQMAs**

A review of results from locations within current AQMAs show that some areas have fallen below the annual mean objective and are in borderline compliance. The data is tabulated in Table 2.8b

#### **St John's Road AQMA**

Data from 2012 has been plotted on the AQMA map and is shown in Figure 2.8a. Exceedences in this year were limited to the prevailing wind protected south side of St John's Road canyon around the Clermiston Road junction. This area appears to be particularly affected by weather conditions such as high pressure events with little air movement causing exceedences of the hourly mean. Discussions are on-going within the Council about further potential measures in addition to the MOTES trial that could be taken to mitigate the idling of traffic at this junction. If the 2013 data shows a continuation of the localisation of the problem on St John's Road the extent of the AQMA boundaries can be reviewed.

#### **Great Junction Street AQMA**

Data from 2012 has been plotted on the AQMA map and is shown in Figure 2.8b. All results within the original AQMA boundary were less than the annual mean objective and are in borderline compliance with the objective. The average nitrogen dioxide level has been falling gradually, perhaps due to introduction by Lothian Buses of a number of low emission hybrid buses on the route in 2011. If the 2013 data shows a continuation of the nitrogen dioxide reduction the extent of the AQMA boundaries can be reviewed in future years.

Data from the extended portion of the AQMA shows only the junction at Bernard Street above the annual mean objective. The Transport Infrastructure & Environment Committee at its meeting on 13 September 2012 agreed to a Transport Regulation Order to make the Shore at Bernard Street junction one way only south bound which is expected to reduce the traffic using the junction. At the time of writing work had not yet commenced.

## Central AQMA

Due to tram work the majority of Shandwick Place has been closed to traffic for a number of years. The automatic station at Queen Street at Wemyss Place remains well below the annual mean objective and the non-automatic sites on Leith Walk remain in borderline compliance with the objective. A major project of works is ongoing around Leith Walk following the tram roadwork's which may impact traffic flow. Further detail is contained within section 3.1. It would be prudent to include these areas in the next review which should be post tram implementation to determine if their inclusion in the AQMA remains valid.

## General Notes

Monitoring at George Street (ID74c) ceased in September 2012 due to the post being lost. Data collected was therefore annualised to obtain an estimated annual mean concentration of  $56\mu\text{g}/\text{m}^3$ .

All passive diffusion tube data reported in the tables below are representative of relevant exposure, except at background sites India Street (ID34), Hillview Terrace (ID41) and Midmar Drive (ID42).

Appendix C details the calculations used to estimate annual concentration at relevant receptors using the NO<sub>2</sub> Fall Off with Distance calculator (DEFRA website, LAQM, Tools, 2013).

Appendix A5 (Short-term to Long-term Data adjustment for NO<sub>2</sub>) shows the calculations undertaken to estimate the annual mean concentration where data capture was poor, as per instruction in TG09 and with further advice from the LAQM Helpdesk. All monthly periods of data collected in 2012 have been used for the estimation process. With 2011 data, the annualisation calculation was undertaken only with extensive periods of consecutive monthly data.

In 2012, data from a number of sites were not 'annualised' due to the extreme sporadic nature of data capture and concerns about achieving robust and confident estimations. Generally it has been possible to use other monitoring sites in close proximity.

Table 2.5 Results of NO<sub>2</sub> Diffusion Tubes 2012

Site ID	Site Name	Site Type	In AQMA?	Result is Mean of Duplicate	Data Capture for calendar year 2012 %	2012 Annual Mean Concentration (µg/m <sup>3</sup> ) Bias Adjustment factor = 0.76 <sup>a</sup>
	<b>NORTH</b>					
29	<b>Bernard Street/CA</b>	Roadside	Yes	No	100	37
29a	<b>Bernard Street/King Chamber.</b>	Roadside	Yes	Yes	88	<b>40</b>
29b	<b>Bernard StreetNo 32</b>	Roadside	Yes	No	100	33
29c	<b>Bernard Street/PS</b>	Roadside	Yes	Yes	92	<b>44</b>
7	<b>Commercial StreetNo 11</b>	Roadside	Yes	No	92	29
9	<b>Commercial StreetNo 78</b>	Roadside	Yes	No	100	35
9a	<b>Commercial St/PortlandPlace</b>	Roadside	Yes	No	92	39
52	<b>Ferry Road No 268</b>	Roadside	No	No	92	34
53	<b>Ferry Road/Bowhill Terrace No6</b>	Roadside	Yes	No	100	35
45b	<b>Ferry Road/Maderia Street</b>	Roadside	No	No	92	31
45	<b>Ferry Road/North Fort Street</b>	Roadside	No	No	100	36
45d	<b>Ferry Road/North Junction St</b>	Roadside	Yes	No	92	37
30b	<b>Great Junction StreetNo 137</b>	Roadside	Yes	No	92	38
30c	<b>Great Junction StreetNo 14</b>	Roadside	Yes	No	92	38
30e	<b>Great Junction Street/CG</b>	Roadside	Yes	No	83	37
30	<b>Great Junction Street/FV</b>	Roadside	Yes	Yes	96	38
30d	<b>Great Junction Street/WC</b>	Roadside	Yes	No	100	38
55	<b>Inverleith Row/Ferry Road</b>	Roadside	Yes	Yes	100	<b>46</b>
55c	<b>Inverleith Row/Montague</b>	Roadside	Yes	No	100	32
9b	<b>Ocean Drive/Leith</b>	Roadside	No	No	83	32
51c	<b>Salamander Street/Baltic Street</b>	Roadside	No	No	100	35



Site ID	Site Name	Site Type	In AQMA?	Result is Mean of Duplicate	Data Capture for calendar year 2012 %	2012 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) Bias Adjustment factor = 0.76 <sup>a</sup>
51b	Salamander Street/Bath Street	Roadside	No	No	92	38
14	Trinity Crescent	Roadside	No	No	100	28
	<b>EAST</b>					
19	Baileyfield Road	Roadside	No	No	100	22
31	Dalkeith RoadNo 187	Roadside	No	No	92	29
25	Easter Road/CH Shop	Roadside	Yes	No	92	<b>45</b>
25b	Easter Road/Rossie Place	Roadside	Yes	No	100	35
25c	Easter RoadNo 105/109	Roadside	Yes	No	92	<b>41</b>
25d	Easter Road/Bothwick	Roadside	Yes	No	100	34
25e	Easter RoadNo 198	Roadside	Yes	No	100	33
25f	Easter RoadNo 271	Roadside	No	No	58	N/A
25g	Easter RoadNo 327	Roadside	No	No	75	28
81	London Rd/East Norton Place	Roadside	Yes	No	100	<b>46</b>
67	London Road/Earlston Place	Roadside	Yes	No	100	<b>46</b>
68	Parsons Green Terrace	Roadside	Yes	No	92	33
69	London Road/Wolseley Place	Roadside	Yes	No	82	<b>42</b>
70	London Road/Wolseley Terrace	Roadside	Yes	No	92	<b>41</b>
66	London Road/Cadzow Place	Roadside	Yes	No	100	36
46	London Road/Easter Road	Roadside	Yes	No	100	<b>41</b>
32	Niddrie Mains RoadNo 28	Kerbside	No	No	100	30
82	Piersfield Terrace	Roadside	No	No	100	28
73b	Portobello High Street No23	Roadside	No	No	100	28
73c	Portobello High Street No 292	Roadside	No	No	100	24
73	Portobello High StreetNo 74	Roadside	No	No	92	25
71	Portobello High StreetNo 185	Roadside	No	Yes	83	33

Site ID	Site Name	Site Type	In AQMA?	Result is Mean of Duplicate	Data Capture for calendar year 2012 %	2012 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) Bias Adjustment factor = 0.76 <sup>a</sup>
73a	Portobello Road/Ramsay	Roadside	No	No	100	37
72	Seafield Road East No 10	Roadside	No	No	100	37
	<b>CITY CENTRE - NORTH</b>					
43	Broughton Road	Roadside	No	No	100	37
44	Broughton Street	Roadside	No	No	100	34
13	Deanhaugh Street	Kerbside	No	No	92	32
35	Dundas Street	Kerbside	No	No	100	31
74f	George Street No 112	Roadside	Yes	No	92	47
74c	George Street No 41	Roadside	Yes	No	67	56 <sup>b</sup>
74e	George Street/Charlotte Sq	Kerbside	Yes	No	75	43
75c	Great Stuart Street No 18	Kerbside	No	No	100	32
75b	Great Stuart Street No 7	Kerbside	No	No	100	31
34	India Street	Background	No	No	100	23
55b	Inverleith Row/Summer Place	Roadside	No	No	92	32
21	LeithWalk/Brunswick Road	Roadside	Yes	No	83	36
20	Leith Walk/McDonald Road	Kerbside	Yes	No	100	37
47	Princes Street (Eastbound)	Roadside	Yes	No	100	34(45) <sup>c</sup>
24	Princes Street/Mound	Kerbside	Yes	No	92	38
33	Queen Street/Hanover Street	Roadside	Yes	No	67	49 <sup>b</sup>
75a	St Colme Street	Kerbside	No	No	48	38
36	York Place	Roadside	Yes	No	83	41
	<b>CITY CENTRE - SOUTH</b>					
48	Cowgate/Gurthrie Street	Roadside	Yes	No	92	40
48a	Cowgate/Blair Street	Roadside	Yes	No	100	40

Site ID	Site Name	Site Type	In AQMA?	Result is Mean of Duplicate	Data Capture for calendar year 2012 %	2012 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) Bias Adjustment factor = 0.76 <sup>a</sup>
79	Fountainbridge/Tollcross	Roadside	No	No	100	37
37	Grassmarket/PS	Roadside	Yes	No	83	35
37a	GrassmarketNo 41	Roadside	Yes	Yes	83	43
37b	GrassmarketNo 75	Roadside	Yes	No	75	39
10	Home Street	Roadside	No	No	75	33
17a	Hope Park Terrace/VS	Roadside	No	Yes	83	39
38	Melville Drive	Roadside	No	No	92	29
42	Midmar Drive	Background	No	No	100	18
8	Morningside Road	Kerbside	No	No	75	26
49	Morrison Street	Roadside	Yes	No	100	46
27	North Bridge – South	Roadside	Yes	No	100	52
3	Torphichen Place	Roadside	Yes	No	92	48
2	West Maitland Street	Kerbside	Yes	Yes	100	40
28	West Port/Grassmarket	Roadside	Yes	No	42	N/A
28b	West PortNo 62	Roadside	Yes	No	83	61
28c	West PortOppNo 50	Roadside	Yes	No	58	N/A
28d	West PortNo 42	Roadside	Yes	No	92	60
	<b>WEST</b>					
56	Glasgow Road /Drumbrae	Roadside	No	No	100	31
57	Glasgow Road No 158	Roadside	No	No	100	36
16	Glasgow RoadNo 68	Roadside	Yes	Yes	100	47
15	Glasgow RoadNewbridge	Roadside	Yes	No	100	40
58	Glasgow RoadNewbridge	Roadside	Yes	Yes	96	48
41	Hillview Terrace	Background	No	No	100	21
61	Maybury Road/Barnton	Roadside	No	No	100	16

Site ID	Site Name	Site Type	In AQMA?	Result is Mean of Duplicate	Data Capture for calendar year 2012 %	2012 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) Bias Adjustment factor = 0.76 <sup>a</sup>
40	Queensferry Rd/Hillhouse Rd	Roadside	No	No	100	<b>40</b>
62	Queensferry Road No 561	Roadside	No	No	100	25
63	Queensferry Road No 544	Roadside	No	No	100	26
64	Queensferry Road No 550	Roadside	No	No	100	<b>50</b>
23	Roseburn Terrace	Kerbside	Yes	No	75	38
1	St John's Road SB	Kerbside	Yes	No	92	38
1b	St John's Road IR	Roadside	Yes	No	100	<b>44</b>
1d	St John's Road No 131	Roadside	Yes	No	100	<b>52</b>
39	St John's Road	Roadside	Yes	No	92	32
50a	Whitehouse Rd/Barnton Grove	Roadside	No	No	67	32 <sup>b</sup>
	<b>SOUTH WEST</b>					
76	Angle Park/Harrison Road	Roadside	No	No	100	<b>48</b>
4	Calder Road	Roadside	No	No	100	32
18	Gorgie Road No 8	Roadside	Yes	Yes	92	<b>49</b>
80	Gorgie Road / Delhaig	Roadside	Yes	No	100	<b>42</b>
5	Gorgie Road/Murieston Rd	Kerbside	Yes	No	100	<b>43</b>
11	Lanark Road No 610	Roadside	No	No	92	24
77	Slateford Road No 97	Roadside	No	No	100	<b>43</b>
78	Slateford Road/The Maltings	Roadside	No	No	100	31

See notes for table on Page 53

Table 2.5a Results of New NO<sub>2</sub> Diffusion Tubes 2012

Site ID	Site Name	Site Type	In AQMA?	Result is Mean of Duplicate	Data Capture for calendar year 2012 %	2012 Annual Mean Concentration (µg/m <sup>3</sup> ) Bias Adjustment factor = 0.76 <sup>a</sup>
	<b>CITY CENTRE - SOUTH</b>					
138	Clerk Street No 15	Roadside	No	N	67	40 <sup>b</sup>
48D	CowgateNo 148	Roadside	Yes	N	17	N/A
48B	CowgateNo 301	Roadside	Yes	N	83	33
48C	Cowgate Blackfriars	Roadside	Yes	N	67	43 <sup>b</sup>
48E	CowgateheadNo 2	Roadside	Yes	N	58	N/A
79C	Dundee Street No 114	Roadside	No	N	33	N/A
79D	Dundee Street/Yeaman Place	Roadside	No	N	50	N/A
79A	FountainbridgeNo 103	Roadside	No	N	83	39
79B	Fountainbridge/Grove Street	Roadside	No	N	75	32
37C	Grassmarket/Thompsons Court	Background	Yes	N	92	30
139	Hope Park Terrace No 5	Roadside	No	N	100	34
140	Hope Park Terrace/Clerk Street	Roadside	No	N	92	35
137	Nicolson Street No 124	Roadside	No	N	92	41
135	Nicolson Street No 69	Roadside	No	N	100	50
136	Nicolson Street No 92	Roadside	No	N	92	42
134	Nicolson Street/Surgeons Hall	Roadside	No	N	42	N/A
142	South Clerk Street No 41a	Roadside	No	N	92	42
141	South Clerk Street No 84	Roadside	No	N	92	44
	<b>WEST</b>					
40F	Hillhouse Road No 118	Roadside	No	N	100	35

Site ID	Site Name	Site Type	In AQMA?	Result is Mean of Duplicate	Data Capture for calendar year 2012 %	2012 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) Bias Adjustment factor = 0.76 <sup>a</sup>
40C	Hillhouse Road No 240	Roadside	No	N	100	30
40A	Hillhouse Road/Telford Road	Roadside	No	N	100	28
40B	Hillhouse/Craigcrook Terrace	Roadside	No	N	100	26
40E	Hillhouse/Marischall PI 1	Roadside	No	N	83	28
40D	Hillhouse/Marischall PI 4	Roadside	No	N	83	32
64A	Queensferry Road No 552	Roadside	No	N	42	30 <sup>b</sup>
	<b>SOUTH WEST</b>					
76C	Angle Park Terrace No 25	Roadside	No	N	100	36
76B	Angle Park Terrace No 74	Roadside	No	N	100	<b>51</b>
76A	Ardmillan Terrace No 22	Roadside	No	N	83	32
80C	Gorgie Road No 87	Roadside	Yes	N	67	39 <sup>b</sup>
80B	Gorgie Road No 549	Roadside	Yes	N	83	33
80A	Gorgie Road Glen Lea	Roadside	Yes	N	58	N/A
76D	Henderson Terrace	Roadside	No	N	83	38
77A	Slateford Road No 51	Roadside	No	N	83	<b>41</b>
77B	Slateford Road No 93/95	Roadside	No	N	100	<b>46</b>

In bold and red, exceedence of the NO<sub>2</sub> annual mean objective of 40 $\mu\text{g}/\text{m}^3$  and in bold, results of 40 $\mu\text{g}/\text{m}^3$  shown

Underlined, annual mean greater than 60 $\mu\text{g}/\text{m}^3$ , indicating a potential exceedence of the NO<sub>2</sub> hourly mean objective

<sup>a</sup> All data is representative of relevant exposure, except at background sites India Street (ID34), Hillview Terrace (ID41) and Midmar Drive (ID42), which are not distance corrected.

<sup>b</sup> Means "annualised" as in Box 3.2 of TG(09), where full calendar year data capture is less than 75%

<sup>c</sup> Princes Street (ID47) data in brackets represents pavement exposure 2.5m from the kerb. Data without brackets represents concentrations at the facade

**Table 2.6 Locations outwith AQMAs where 2012 monitoring results showed exceedences of the Annual Mean Nitrogen Dioxide Objective**

Site ID	Location	Data Capture %	Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ )
76	<b>Angle Park/Harrison Road</b>	100	<b>48</b>
76B	<b>Angle Park Terrace No 74 *</b>	100	<b>51</b>
137	<b>Nicolson Street No 124*</b>	92	<b>41</b>
135	<b>Nicolson Street No 69*</b>	100	<b>50</b>
136	<b>Nicolson Street No 92*</b>	92	<b>42</b>
64	<b>Queensferry Road No 550</b>	100	<b>50</b>
142	<b>South Clerk Street No 41a*</b>	92	<b>42</b>
141	<b>South Clerk Street No 84*</b>	92	<b>44</b>
77	<b>Slateford Road No 97</b>	100	<b>43</b>
77A	<b>Slateford Road No 51*</b>	83	<b>41</b>
77B	<b>Slateford Road No 93/95*</b>	100	<b>46</b>

\* New monitoring locations not previously reported

In bold and red, exceedence of the NO<sub>2</sub> annual mean objective of 40 $\mu\text{g}/\text{m}^3$

Table 2.7 Results of NO<sub>2</sub> Diffusion Tubes (2008 to 2012)

Site ID	Site Name	Within AQMA ?	Annual mean concentration (adjusted for bias) µg/m <sup>3</sup>				
			2008 (Bias Adjustment Factor = 0.88)	2009 (Bias Adjustment Factor = 0.86)	2010 (Bias Adjustment Factor = 0.85)	2011 (Bias Adjustment Factor = 0.81)	2012 (Bias Adjustment Factor = 0.76)
	<b>NORTH</b>						
29	Bernard Street/CA	Yes	<b>45.3</b>	<b>45.1</b>	<b>43.7</b>	38.9	37
29a	Bernard Street/King Chambers	Yes	<b>48.0</b>	<b>42.0</b>	<b>44.6</b>	<b>41.9</b>	<b>40</b>
29b	Bernard Street No 32	Yes	<b>41.3</b>	32.9	36.9	32.7	33
29c	Bernard Street/PS	Yes	<b>53.4</b>	<b>48.2</b>	<b>49.4</b>	<b>44.6</b>	<b>44</b>
7	Commercial Street No 11	Yes	38.6	34.8	34.2	32.2	29
9	Commercial Street No 78	Yes	<b>40.4</b>	31.6	36.7	31.2	35
9a	Commercial Street /Portland Place	Yes	-	-	38.1	<b>41.0</b>	39
52	Ferry Road No 268	No	-	32.1	32.4	32.5	34
53	Ferry Road/Bowhill Terrace No 6	Yes	-	36.4	34.8	32.5	35
45b	Ferry Road/Maderia Street	No	35.3	30.9	33.5	32.7	31
45	Ferry Road/North Fort Street	No	<b>39.6</b>	35.4	<b>41.5</b>	32.6	36
45d	Ferry Road/North Junction Street	Yes	<b>42.4</b>	<b>40.9</b>	38.3	39.6	37
30b	Great Junction Street No 137	Yes	38.4	38.5	39.9	<b>40.0</b>	38
30c	Great Junction Street No 14	Yes	<b>50.2</b>	<b>42.6</b>	<b>44.1</b>	38.4	38
30e	Great Junction Street/CG	Yes	<b>43.1</b>	<b>41.9</b>	38.7	<b>41.2</b>	37
30	Great Junction Street/FV	Yes	<b>44.6</b>	<b>44.1</b>	<b>41.8</b>	39.1	38
30d	Great Junction Street/WC	Yes	39.0	37.1	39.9	33.8	38
55	Inverleith Row/Ferry Road	Yes	-	<b>42.6</b>	<b>44.0</b>	<b>43.8</b>	<b>46</b>
55c	Inverleith Row/Montague	Yes	-	-	-	28.2	32
9b	Ocean Drive/Leith	No	-	-	33.0	26.2	32
51c	Salamander Street/Baltic Street	No	-	37.1	36.2	38.5	35



Site ID	Site Name	Within AQMA ?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
			2008 (Bias Adjustment Factor = 0.88)	2009 (Bias Adjustment Factor = 0.86)	2010 (Bias Adjustment Factor = 0.85)	2011 (Bias Adjustment Factor = 0.81)	2012 (Bias Adjustment Factor = 0.76)
51b	Salamander Street/Bath Road	No	-	37.4	<b>40.3</b>	37.0	38
14	Trinity Crescent	No	28.3	28.6	27.5	28.9	28
	<b>EAST</b>						
19	Baileyfield Road	No	24.6	22.5	27.5	24.3	22
31	Dalkeith Road No 187	No	31.8	28.1	27.8	28.0	29
25	Easter Road/CH shop	Yes	<b>58.2</b>	<b>50.8</b>	<b>49.7</b>	<b>43.6</b>	<b>45</b>
25b	Easter Road/Rossie Place	Yes	<b>44.9</b>	38.8	39.1	35.8	35
25c	Easter Road No 105/109	Yes	<b>43.8</b>	38.0	37.7	<b>41.0</b>	<b>41</b>
25d	Easter Road/Bothwick	Yes	<b>40.8</b>	37.3	37.1	32.7	34
25e	Easter Road No 198	Yes	37.3	34.1	34.2	32.0	33
25f	Easter Road No 217	No	35.0	30.1	32.5	27.9	-
25g	Easter Road No 327	No	33.4	27.9	30.3	26.8	28
81	London Road/East Norton Place	Yes	-	-	-	<b>51.2</b>	<b>46</b>
67	London Road/Earlston Place	Yes	-	<b>47.9</b>	<b>51.3</b>	<b>45.5</b>	<b>46</b>
68	London Road /Parsons Green Ter	Yes	-	30.4	36.6	31.5	33
69	London Road/Wolseley Place	Yes	-	<b>56.2</b>	<b>50.6</b>	<b>50.4</b>	<b>42</b>
70	London Road/Wolseley Terrace	Yes	-	<b>47.3</b>	<b>46.1</b>	<b>42.4</b>	<b>41</b>
66	London Road/Cadzow Place	Yes	-	<b>43.0</b>	<b>40.5</b>	-	36
46	London Road/Easter Road	Yes	<b>52.3</b>	<b>43.4</b>	<b>46.2</b>	<b>40.4</b>	<b>41</b>
32	Niddrie Mains Road No 28	No	26.9	30.7	32.5	30.9	30
82	Piersfield Terrace	No	-	-	-	27.8	28
73b	Portobello High StreetNo 23	No	-	-	-	31.2	28
73c	Portobello High StreetNo 292	No	-	-	-	22.9	24

Site ID	Site Name	Within AQMA ?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
			2008 (Bias Adjustment Factor = 0.88)	2009 (Bias Adjustment Factor = 0.86)	2010 (Bias Adjustment Factor = 0.85)	2011 (Bias Adjustment Factor = 0.81)	2012 (Bias Adjustment Factor = 0.76)
73	Portobello High Street East No 74	No	-	26.3	25.5	26.3	25
71	Portobello High Street West No 185	No	-	43.0	39.2	36.0	33
73a	Portobello Road/Ramsay Institute	No	-	-	-	41.6	37
72	Seafield Road East No 10	No	-	35.0	38.4	33.1	37
	<b>CITY CENTRE – NORTH</b>						
43	Broughton Road	No	40.4	38.1	39.8	34.6	37
44	Broughton Street	No	37.7	35.1	35.3	32.8	34
13	Deanhaugh Street	No	32.3	30.1	33.0	33.5	32
35	Dundas Street	No	28.9	27.2	31.6	30.6	31
74f	George Street No 112	Yes	-	-	43.4	44.7	47
74c	George Street No 41	Yes	-	-	39.5	41.1	56
74e	George Street/Charlotte Square	Yes	-	-	42.6	42.5	43
75c	Great Stuart Street No 18	No	-	-	-	32.4	32
75b	Great Stuart Street No 7	No	-	-	36.2	33.4	31
34	India Street	No	22.7	22.6	22.7	23.6	23
55b	Inverleith Row/Summer Place	No	-	-	-	33.7	32
21	Leith Walk/Brunswick Road	Yes	37.3	35.3	35.4	34.2	36
20	Leith Walk/McDonald Road	Yes	53.1	36.8	38.1	N/A	37
47	Princes Street East Bound	Yes	51.7 (64) <sup>a</sup>	31.6 (34) <sup>a</sup>	47.5 (58) <sup>a</sup>	38.9 (45.3) <sup>a</sup>	34(45) <sup>a</sup>
24	Princes Street/Mound	Yes	51.5	36.2	49.3	N/A	38
33	Queen Street/Hanover Street	Yes	43.7	50.8	56.3	50.0	49
75a	St Colme Street	No	-	-	38.5	36.5	38
36	York Place	Yes	40.5	37.5	39.0	35.4	41

Site ID	Site Name	Within AQMA ?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
			2008 (Bias Adjustment Factor = 0.88)	2009 (Bias Adjustment Factor = 0.86)	2010 (Bias Adjustment Factor = 0.85)	2011 (Bias Adjustment Factor = 0.81)	2012 (Bias Adjustment Factor = 0.76)
	<b>CITY CENTRE - SOUTH</b>						
138	Clerk Street No 15	No	-	-	-	-	40
48	Cowgate/Guthrie Street	Yes	46.6	39.8	46.2	40.2	40
48	Cowgate/Blair Street	Yes	-	-	37.7	31.4	40
48B	CowgateNo 301	Yes	-	-	-	-	33
48C	Cowgate Blackfriars	Yes	-	-	-	-	43
79A	FountainbridgeNo 103	No	-	-	-	-	39
79B	Fountainbridge/Grove Street	No	-	-	-	-	32
79	Fountainbridge/Tollcross	No	-	-	42.0	36.3	37
37	Grassmarket /PS	Yes	35.1	35.4	38.4	32.5	35
37a	GrassmarketNo 41	Yes	42.3	40.5	60.0	42.0	43
37b	GrassmarketNo 75	Yes	-	-	-	37.1	39
37C	Grassmarket/Thompsons Court	Yes	-	-	-	-	30
10	Home Street/Tollcross	No	37.4	32.3	36.5	25.7	33
17a	Hope Park Terrace/VS	No	-	38.8	43.4	37.4	39
139	Hope Park Terrace No 5	No	-	-	-	-	34
140	Hope Park Terrace/Clerk Street	No	-	-	-	-	35
38	Melville Drive	No	26.2	25.3	27.6	27.3	29
42	Midmar Drive	No	17.4	15.2	18.4	16.1	18
8	Morningside Road	No	30.0	27.1	28.8	28.6	26
49	Morrison Street	Yes	61.4	44.6	49.3	48.5	46
137	Nicolson Street No 124	No	-	-	-	-	41
135	Nicolson Street No 69	No	-	-	-	-	50

Site ID	Site Name	Within AQMA ?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
			2008 (Bias Adjustment Factor = 0.88)	2009 (Bias Adjustment Factor = 0.86)	2010 (Bias Adjustment Factor = 0.85)	2011 (Bias Adjustment Factor = 0.81)	2012 (Bias Adjustment Factor = 0.76)
136	Nicolson Street No 92	No	-	-	-	-	42
27	North Bridge - South	Yes	52.3	48.4	49.4	48.7	52
142	South Clerk Street No 41a	No	-	-	-	-	42
141	South Clerk Street No 84	No	-	-	-	-	44
3	Torphichen Place	Yes	58.2	26.3	55.6	55.1	48
2	West Maitland St/Palmerston Place	Yes	70.1	45.6	52.4	55.3	40
28	West Port/Grassmarket	Yes	53.3	47.7	51.0	43.5	-
28b	West Port No 62	Yes	72.5	66.7	62.4	57.0	61
28c	West Port OppNo 50	Yes	51.5	43.5	41.5	39.0	-
28d	West Port No 42	Yes	66.6	60.2	54.9	55.2	60
	WEST						
56	Glasgow Road/Drumbrae	No	-	28.6	30.7	29.5	31
57	Glasgow Road No 158	No	-	34.9	36.3	36.5	36
16	Glasgow Road No 68	Yes	42.4	46.8	44.5	43.8	47
15	Glasgow Road Newbridge	Yes	35.7	42.0	37.6	40.9	40
58	Glasgow Road Newbridge	Yes	-	51.1	51.3	51.5	48
40F	Hillhouse Road No 118	No	-	-	-	-	35
40C	Hillhouse Road No 240	No	-	-	-	-	30
40A	Hillhouse Road/Telford Road	No	-	-	-	-	28
40B	Hillhouse/Craigcrook Terrace	No	-	-	-	-	26
40E	Hillhouse/Marisshall PlaceNo 1	No	-	-	-	-	28
40D	Hillhouse/Marisshall PlaceNo 4	No	-	-	-	-	32
41	Hillview Terrace	No	19.6	21.2	22.4	18.4	21

Site ID	Site Name	Within AQMA ?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
			2008 (Bias Adjustment Factor = 0.88)	2009 (Bias Adjustment Factor = 0.86)	2010 (Bias Adjustment Factor = 0.85)	2011 (Bias Adjustment Factor = 0.81)	2012 (Bias Adjustment Factor = 0.76)
61	Maybury Road/Barnton	No	-	24.2	27.0	25.8	16
40	Queensferry Road/Hillhouse Road	No	<b>44.4</b>	37.4	<b>42.4</b>	34.2	<b>40</b>
62	Queensferry Road No 561	No	-	22.0	25.6	19.2	25
63	Queensferry Road No 544	No	-	27.6	29.4	25.2	26
64	Queensferry Road No 550	No	-	<b>46.8</b>	<b>47.5</b>	<b>43.9</b>	<b>50</b>
64A	Queensferry Road No 552	No	-	-	-	-	30
23	Roseburn Terrace	Yes	<b>49.5</b>	37.2	<b>43.2</b>	34.5	38
1	St John's Road SB	Yes	<b>41.2</b>	36.7	38.6	35.1	38
1b	St John's Road IR	Yes	<b>48.8</b>	<b>44.2</b>	<b>43.5</b>	38.4	<b>44</b>
1d	St John's Road No 131	Yes	<b>84.9</b>	<b>57.8</b>	<b>58.8</b>	<b>56.3</b>	<b>52</b>
39	St John's Road	Yes	31.7	28.2	31.1	30.0	32
50a	Whitehouse Road/Barnton Grove	No	31.4	29.8	32.1	27.8	32
	<b>SOUTH WEST</b>						
76	Angle Park/Harrison Road	No	-	-	<b>52.9</b>	<b>44.4</b>	<b>48</b>
76C	Angle Park Terrace No 25	No	-	-	-	-	36
76B	Angle Park Terrace No 74	No	-	-	-	-	<b>51</b>
76A	Ardmillan Terrace No 22	No	-	-	-	-	32
4	Calder Road	No	29.5	26.3	25.9	31.7	32
80C	Gorgie Road No 87	Yes	-	-	-	-	39
80B	Gorgie Road No 549	Yes	-	-	-	-	33
18	Gorgie Road No 8	Yes	<b>51.5</b>	<b>45.0</b>	<b>54.5</b>	<b>48.2</b>	<b>49</b>
80	Gorgie Road /Delhaig	Yes	-	-	<b>47.4</b>	<b>42.2</b>	<b>42</b>
5	Gorgie Road/Murieston Road	Yes	<b>44.3</b>	<b>42.6</b>	<b>42.9</b>	<b>44.4</b>	<b>43</b>

Site ID	Site Name	Within AQMA ?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
			2008 (Bias Adjustment Factor = 0.88)	2009 (Bias Adjustment Factor = 0.86)	2010 (Bias Adjustment Factor = 0.85)	2011 (Bias Adjustment Factor = 0.81)	2012 (Bias Adjustment Factor = 0.76)
<b>76D</b>	<b>Henderson Terrace</b>	No	-	-	-	-	38
<b>11</b>	<b>Lanark Road No 610</b>	No	24.8	22.3	23.5	22.5	24
<b>77A</b>	<b>Slateford Road No 51</b>	No	-	-	-	-	<b>41</b>
<b>77B</b>	<b>Slateford Road No 93/95</b>	No	-	-	-	-	<b>46</b>
<b>77</b>	<b>Slateford Road No 97</b>	No	-	-	<b>47.6</b>	38.1	<b>43</b>
<b>78</b>	<b>Slateford Road/The Maltings</b>	No	-	-	35.9	30.2	31

In bold and red, exceedence of the NO<sub>2</sub> annual mean objective of 40 $\mu\text{g}/\text{m}^3$  and in bold, results of 40 $\mu\text{g}/\text{m}^3$  shown.

Underlined, annual mean greater than 60 $\mu\text{g}/\text{m}^3$ , indicating a potential exceedence of the NO<sub>2</sub> hourly mean AQS objective.

All data is representative of relevant exposure. Princes Street (ID47) data in brackets represents pavement exposure 2.5m from the kerb. Data without brackets represents concentrations at the facade.

Data expressed in full integer from 2012 onwards.

Table 2.8a Locations outwith AQMAs where monitoring results indicate potential exceedences of the Annual Mean Nitrogen Dioxide Objective

Site ID	Site Name	Within AQMA?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
			2008 (Bias Adjustment Factor = 0.88)	2009 (Bias Adjustment Factor = 0.86)	2010 (Bias Adjustment Factor = 0.85)	2011 (Bias Adjustment Factor = 0.81)	2012 (Bias Adjustment Factor = 0.76)
43	Broughton Road	No	<b>40.4</b>	38.1	<b>39.8</b>	34.6	37
40	Queensferry Road/Hillhouse Road	No	<b>44.4</b>	37.4	<b>42.4</b>	34.2	<b>40</b>
17a	Hope Park Terrace/VS	No	-	38.8	<b>43.4</b>	37.4	39
45	Ferry Road/North Fort Street	No	<b>39.6</b>	35.4	<b>41.5</b>	32.6	36
51c	Salamander Street/Baltic Street	No	-	37.1	36.2	38.5	35
51b	Salamander Street/Bath Road	No	-	37.4	<b>40.3</b>	37.0	38
79	Fountainbridge/Tollcross	No	-	-	<b>42.0</b>	36.3	37

In bold and red, exceedence of the  $\text{NO}_2$  annual mean objective of  $40\mu\text{g}/\text{m}^3$  and in bold, results of  $40\mu\text{g}/\text{m}^3$  shown

Data expressed in integer from 2012 onwards.

Table 2.8b Locations within AQMAs where monitoring indicates compliance with Annual Mean Nitrogen Dioxide Objective

Site ID	Site Name	Within AQMA	2008	2009	2010	2011	2012
			Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
	<b>Great Junction Street AQMA</b>						
30	Great Junction Street/FV	Yes	45	44	42	39	38
30b	Great Junction Street No 137	Yes	38	39	40	40	38
30c	Great Junction Street No 14	Yes	50	43	44	38	38
30d	Great Junction Street/WC	Yes	39	37	40	34	38
30e	Great Junction Street/CG	Yes	43	42	39	41	37
45d	Ferry Road/North Junction Street	Yes	42	41	38	40	37
	Average of sites		43	41	40	39	38
	<b>Gt Junction Street AQMA Extension</b>						
29	Bernard Street/CA	Yes	45	45	44	39	37
29b	Bernard Street No 32	Yes	41	33	37	33	33
7	Commercial Street No 11	Yes	39	35	34	32	29
9a	Commercial Street /Portland Place	Yes	-	-	38	41	39
9	Commercial Street No 78	Yes	40	32	37	31	35
	Average of sites		41	36	38	35	35
	<b>St John's Road AQMA</b>						
1	St John's Road SB	Yes	41	37	39	35	38
39	St John's Road	Yes	32	28	31	30	32
	Average of sites		36	32	35	33	35
	<b>Central AQMA</b>						
21	Leith Walk/Brunswick Road	Yes	37	35	35	34	36
20	Leith Walk/McDonald Road	Yes	53	37	38	N/A	37
	Average of sites		45	36	37	34	37
			Annual mean concentration $\mu\text{g}/\text{m}^3$				
1	Queen Street Automatic Station	Yes	32	33	37	29	28



Fig 2.8a Monitoring Locations – St John’s Road AQMA

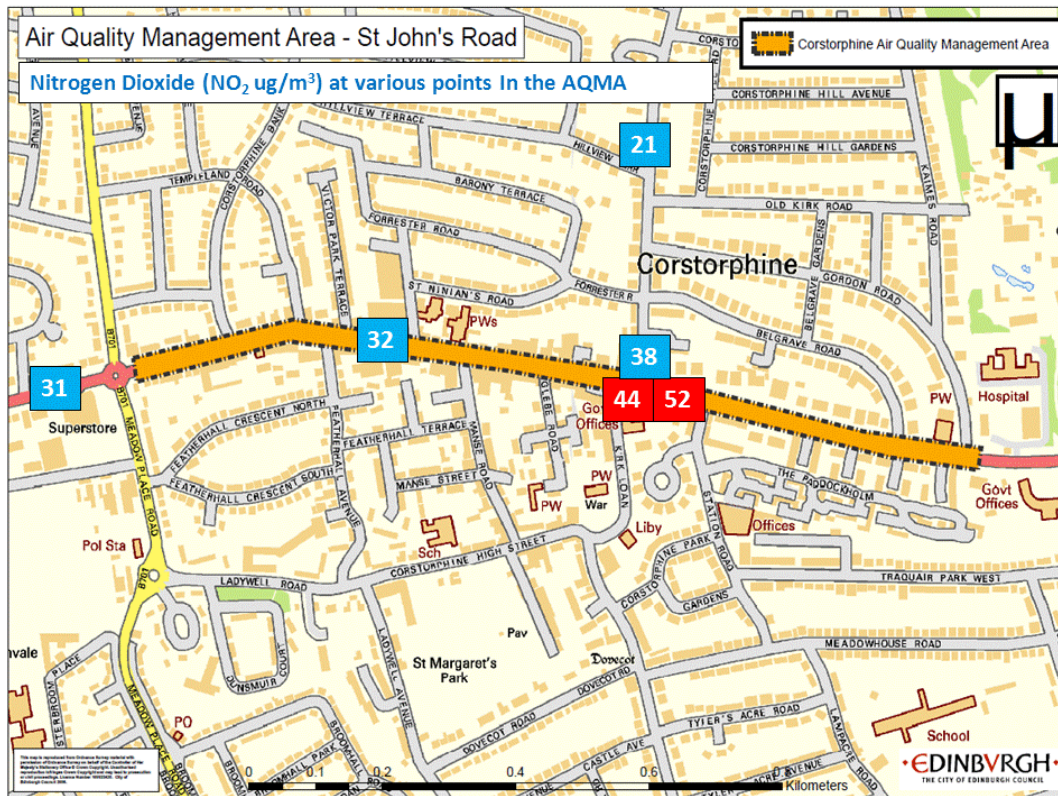


Fig 2.8b Monitoring Locations – Great Junction Street AQMA



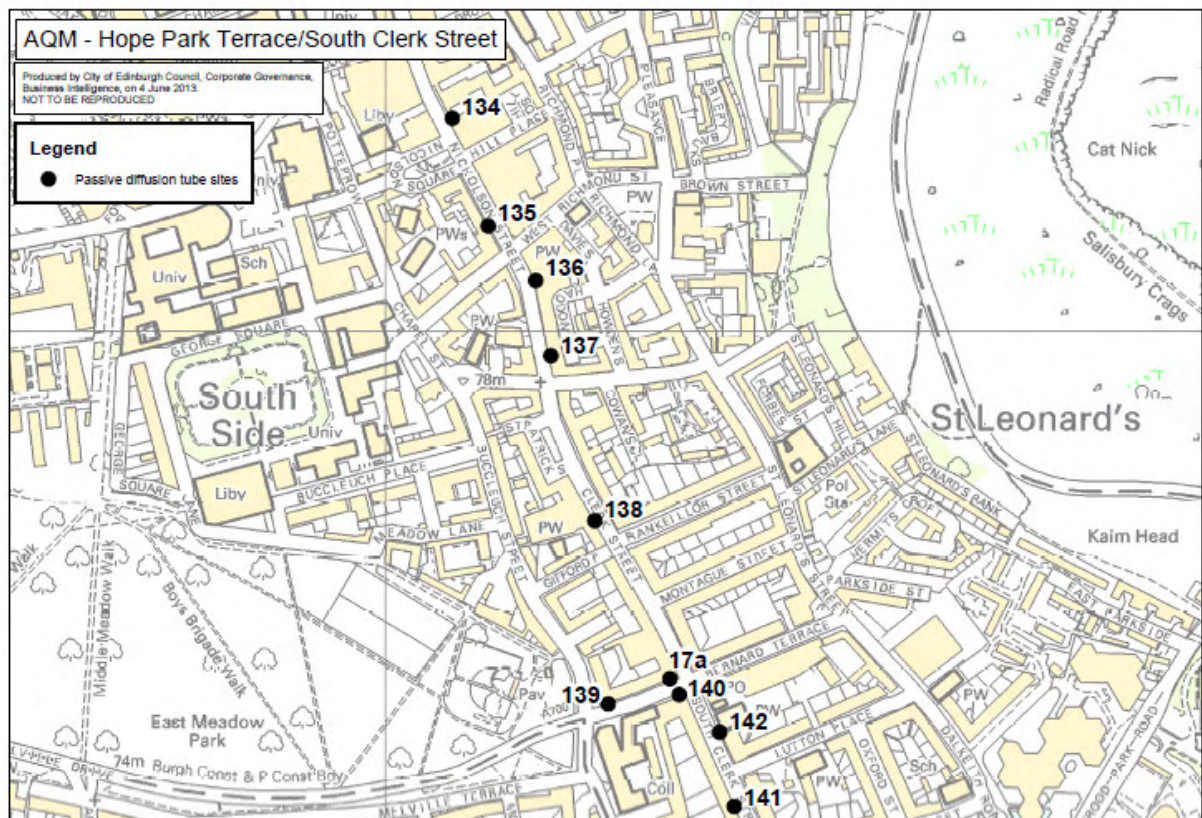
**Detailed Assessment at Hope Park Terrace/ClerkStreet**

Eight additional monitoring sites were established along Nicolson Street, Clerk Street and South Clerk Street and around Hope Park Terrace junction. Figure 2.9 shows the locations. Data capture at one monitoring site, Surgeon’s Hall (ID134) was considered poor and was not utilised. The presence of other sites allowed for the assessment to be undertaken.

At Clerk Street, (ID138), the results were annualised as data capture was 67%. All other sites had good data capture.

A summary of the monitoring undertaking in the vicinity since 2009 is summarised in Table 2.9.

**Figure 2.9 Monitoring Locations - Hope Park Terrace/Clerk Street Detailed Assessment**



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**Table 2.9 Monitoring Results - Hope Park Terrace/Clerk Street Detailed Assessment**

Site ID	Site Name	Annual mean concentration at relevant receptors, adjusted for bias ( $\mu\text{g}/\text{m}^3$ ) Data capture in brackets (%) <sup>a</sup> =annualised data			
		2009 (bias adjustment factor = 0.86)	2010 (bias adjustment factor = 0.85)	2011 (bias adjustment factor = 0.81)	2012 (bias adjustment factor = 0.76)
134	Nicolson St/Surgeon's Hall	-	-	-	N/A (42%)
135	Nicolson Street No 69	-	-	-	<b>50</b> (100%)
136	Nicolson Street No 92	-	-	-	<b>42</b> (92%)
137	Nicolson Street No 124	-	-	-	<b>41</b> (92%)
138	Clerk Street No 15	-	-	-	<b>40<sup>a</sup></b> (67%)
17a	Hope Park Terrace/VS	39(100%)	<b>43</b> (100%)	37 (100%)	39 (83%)
140	Hope Park Terrace/Clerk St	-	-	-	35 (100%)
142	South Clerk Street No41a	-	-	-	<b>42</b> (92%)
141	South Clerk Street No 84	-	-	-	<b>44</b> (92%)
139	Hope Park Terrace No 5	-	-	-	34 (100%)

The monitoring shows exceedences of the annual mean objective at all sites along a main arterial route in and out of the city centre, except at Clerk Street ID138, where the estimated concentration was marginal ( $40\mu\text{g}/\text{m}^3$ ). The other results range from  $42\mu\text{g}/\text{m}^3$  to  $50\mu\text{g}/\text{m}^3$ . The monitored concentration at site ID17a was also borderline ( $39\mu\text{g}/\text{m}^3$ ), although at new sites around the Hope Park Terrace junction, ID139 and ID140, concentrations were lower at  $34\mu\text{g}/\text{m}^3$  and  $35\mu\text{g}/\text{m}^3$  respectively. The relevant exposure (residential property) is furthest from the road at these locations and this section of road does not normally experience queuing traffic.

Assessment was complicated due to closure for tram works of Princess Street which is the main east west route for buses and other traffic through the city centre. This resulted in re-routing of traffic up North Bridge towards Nicolson Street.

Monitoring will continue as these extenuating factors unwind with Princess Street now open to some traffic again and plans being made for tram to become operational. The Council have also brought forward proposals to have traffic moving east bound only on Princess Street and west bound on George Street which has the potential to impact traffic flow on the Bridges towards Nicolson Street. More detail on road traffic sources is given in section 3.1 If exceedances continue it will be necessary to extend the Central AQMA to include this area.

### Detailed Assessment at Hillhouse Road

Six additional monitoring sites were established along the Hillhouse Road section of Queensferry Road. Figure 2.10 details the location of the sites which were identified as being worse case as they are located in the built-up area of Hillhouse Road or near junctions. Other properties along Hillhouse Road are set far back from the road. There was good data capture at all sites in 2012. A summary of the monitoring undertaken in the vicinity since 2008 is shown in Table 2.10.

Figure 2.10 - Monitoring Locations – Hillhouse Road Detailed Assessment



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Table 2.10 Monitoring Results – Hillhouse Road Detailed Assessment

Site ID	Site Name	Annual mean concentration at relevant receptors, adjusted for bias ( $\mu\text{g}/\text{m}^3$ ) Data capture in brackets (%)				
		2008 (bias adj. factor = 0.88)	2009 (bias adj. factor = 0.86)	2010 (bias adj. factor = 0.85)	2011 (bias adj. factor = 0.81)	2012 (bias adj. factor = 0.76)
40	Queensferry/Hillhouse Rd	44(92%)	37(92%)	42(92%)	34(92%)	40(100%)
40F	Hillhouse Road No 118	-	-	-	-	35(100%)
40C	Hillhouse Road No 240	-	-	-	-	30(100%)
40A	Hillhouse Road/Telford Rd	-	-	-	-	28(100%)
40B	Hillhouse/Craigcrook Ter	-	-	-	-	26(100%)
40E	Hillhouse/Marisshall PI No1	-	-	-	-	28(83%)
40D	Hillhouse/Marisshall PI No4	-	-	-	-	32(83%)

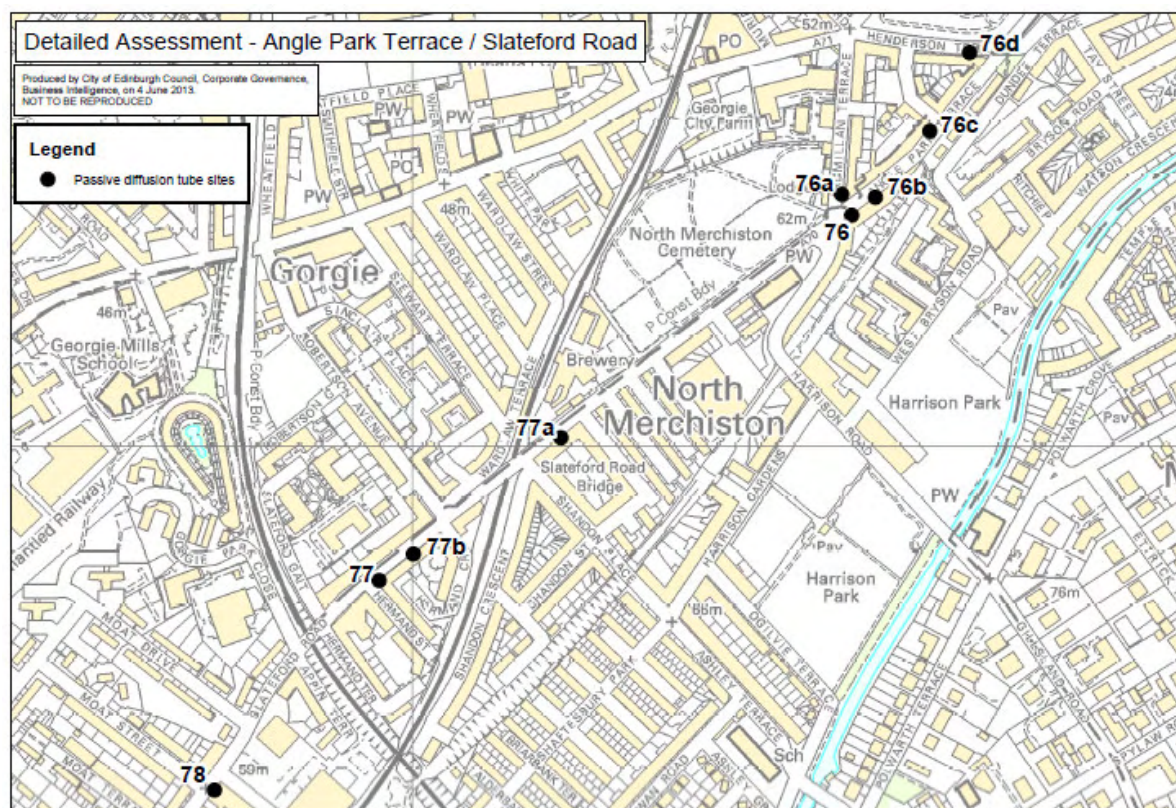
There were no exceedences of the annual mean objective at any of the sites considered in the Hillhouse Road detailed assessment in 2012. The concentration at the long established site at Queensferry Road/Hillhouse Road junction (ID40) was borderline at  $40\mu\text{g}/\text{m}^3$ . This site is at the bottom of a dip where the traffic narrows due

to parked vehicles to a single lane from double lanes each way and a pedestrian crossing is installed which halts traffic. It will not be necessary to declare a AQMA at this location, however monitoring will continue.

### Detailed Assessment at Angle Park Terrace / Slateford Road

Six additional monitoring sites were identified on Angle Park Terrace, Henderson Road and Ardmillan Terrace ('Ardmillan Triangle') and Slateford Road for the Detailed Assessment and consideration has been given to long- term sites. Figure 2.11 shows location of the monitoring sites which represent worst case locations. A summary of the monitoring in the area since 2010 is shown in Table 2.11. There was good data capture at all sites in 2012.

**Figure 2.11 Monitoring Locations- Angle Park Terrace / Slateford Road Detailed Assessment**



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**Table 2.11 Monitoring Results - Angle Park Terrace / Slateford Road Detailed Assessment**

Site ID	Site Name	Annual mean concentration at relevant receptors, adjusted for bias ( $\mu\text{g}/\text{m}^3$ ) Data capture in brackets (%)		
		2010 (bias adjustment factor = 0.85)	2011 (bias adjustment factor = 0.81)	2012 (bias adjustment factor = 0.76)
78	Slateford Rd/The Maltings	36 (75%)	30 (83%)	31 (100%)
77	Slateford Road No 97	48 (92%)	38 (100%)	43 (100%)
77B	Slateford Road No 93/95	-	-	46 (100%)
77A	Slateford Road No 51	-	-	41 (83%)
76	Angle Park/Harrison Road	53 (100%)	44 (100%)	48 (100%)
76A	Ardmillan Terrace No 22	-	-	32 (83%)
76B	Angle Park Terrace No 74	-	-	51 (100%)
76C	Angle Park Terrace No 25	-	-	36 (100%)
76D	Henderson Terrace	-	-	38 (83%)

A number of monitoring sites show exceedence of the annual mean objective, particularly sites close to the Angle Park Terrace and Harrison Road junction and on Slateford Road. Exceedences are high at a number of sites ranging from  $46\mu\text{g}/\text{m}^3$  on Slateford Road (ID77B) to  $48\mu\text{g}/\text{m}^3$  and  $51\mu\text{g}/\text{m}^3$  at Angle Park Terrace (at ID76 and ID76B respectively). The concentration at Henderson Terrace (ID76D) site was borderline at  $38\mu\text{g}/\text{m}^3$ .

Assessment was complicated due to extended road works on Gorgie Road, diversions for tram works around Haymarket and Dalry Road area and loss of the SCOOT system at traffic junctions in the area – see section 8.7.1. More detail on changes in road traffic sources is given in section 3.1.

Monitoring will continue as these extenuating factors unwind with plans being made for tram to become operational and removal of road closures and roadworks. If exceedences continue it will be necessary to extend the Central AQMA to include this area.

### Detailed Assessment at Fountainbridge / Tollcross

A number of additional monitoring sites were identified in the Fountainbridge area for the detailed assessment (see Figure 2.12); however, data collection was poor for many of the sites. It has not been possible to conclude the assessment with this data, therefore monitoring will continue in the area.

A summary of all the monitoring undertaken since 2008 is shown in Table 2.12.

Figure 2.12 Monitoring Locations – Fountainbridge Detailed Assessment

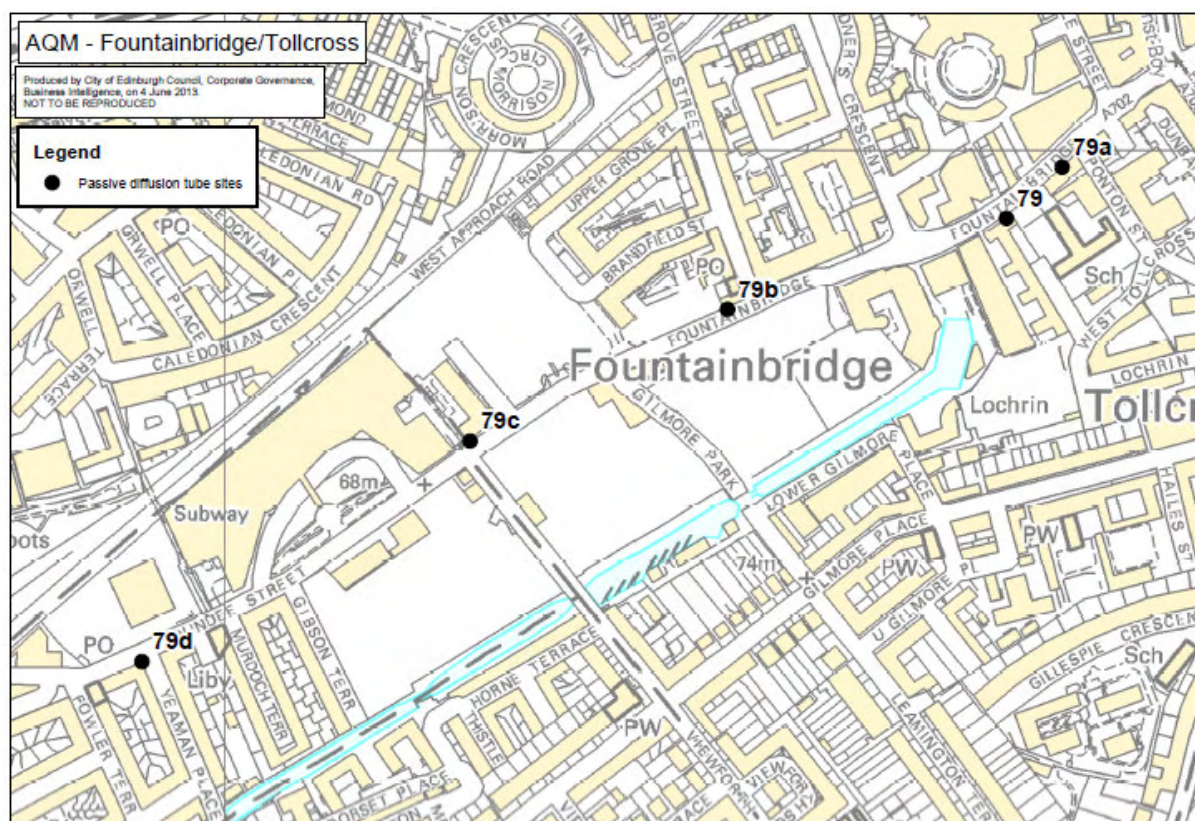


Table 2.12 Monitoring Results - Fountainbridge Detailed Assessment

Site ID	Site Name	Annual mean concentration at relevant receptors, adjusted for bias ( $\mu\text{g}/\text{m}^3$ ) Data capture in brackets (%)				
		2008 (bias adj. factor = 0.88)	2009 (bias adj. factor = 0.86)	2010 (bias adj. factor = 0.85)	2011 (bias adj. factor = 0.81)	2012 (bias adj. factor = 0.76)
79C	Dundee Street/No 114	-	-	-	-	N/A(33%)
79D	Dundee St/Yeaman Place	-	-	-	-	N/A(50%)
79A	Fountainbridge/No 103	-	-	-	-	39(83%)
79B	Fountainbridge/Grove St	-	-	-	-	32(75%)
79	Fountainbridge/Tollcross	-	-	42 (50%)	36(92%)	37(100%)

### Trend Data from Nitrogen Dioxide Passive Diffusion Tubes within AQMAs

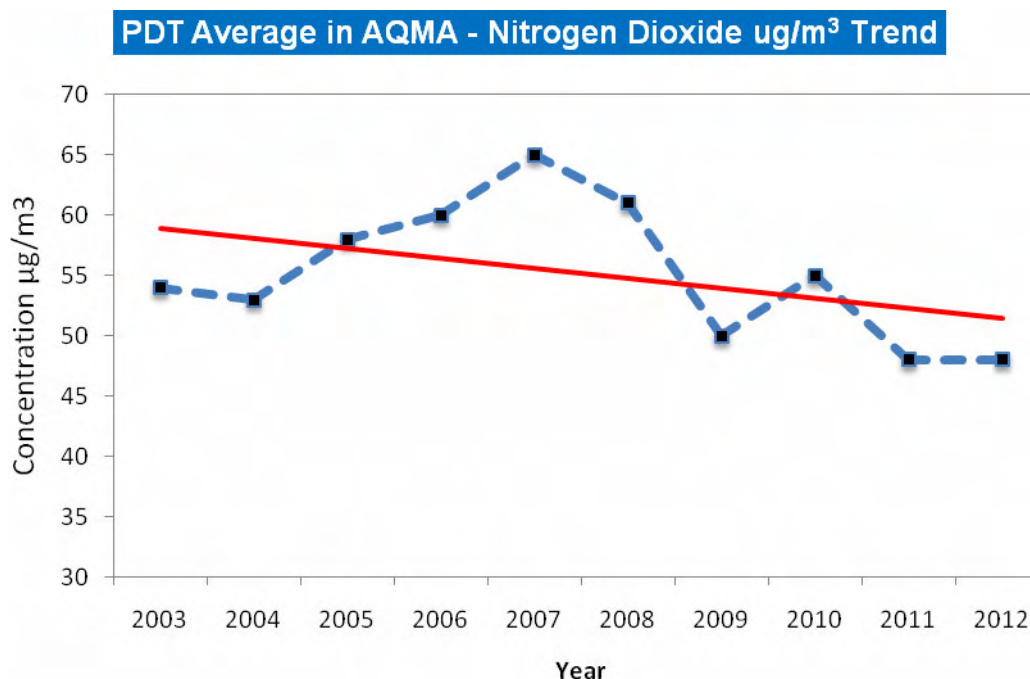
Passive diffusion tube data used in the trend assessment has been corrected for bias and taken from the point of measurement (see Figure 2.13). This is to ensure consistency due to the change in methodology in 2008 for calculating nitrogen dioxide fall off with increasing distance from source.

Many of Edinburgh's historic monitoring sites within the Central AQMA were positioned at the kerbside/roadside and these locations have been retained for continuity. Trend lines have been drawn using an Excel simple regression statistical program. The trend data is based on the average mean concentrations obtained from passive diffusion tube monitoring at the following locations each year.

- |                            |                               |
|----------------------------|-------------------------------|
| St John's Road (ID1)       | Gorgie Road (ID18)            |
| St John's Road (ID1b)      | Princes Street (ID 24)        |
| St John's Road (ID1d)      | North Bridge (ID 27)          |
| Queen Street (ID33)        | York Place (ID 36)            |
| Torphichen Place (ID3)     | West Port (ID 28b)            |
| Roseburn Terrace (ID 23)   | Great Junction Street (ID 30) |
| West Maitland Street (ID2) |                               |

The Queen Street (ID33) monitoring site was relocated at the end of 2011 in close proximity to the previous site, however for the purpose of trend analysis, data from this site will no longer be used. Data used to establish the average trend is shown in Appendix D.

**Figure 2.13 Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites**





In 2012 the average data is the same as that monitored in 2011, however there is a general downward trend since analysis began in 2003.

In 2012 the bias adjustment factor was the lowest since monitoring began, but it is in keeping with the previous year's assessment. There was a step change in the bias adjustment in 2011. These factors may be contributing to the downward trend, but general disruption to traffic movements in the city centre is also likely to be a factor. Traffic disruption is due to road closures and traffic diversions associated predominately with construction of Edinburgh Trams. A review of recent air quality review reports by the other three cities in Scotland show that they have also found a falling bias correction factor.

The observed decrease has resulted in the year-on-year trend for diffusion tube monitoring data to exhibit a fall. However, caution should be applied to this considering the significant level of temporary changes in traffic.

### **2.2.2 Particulate Matter (PM<sub>10</sub>)**

St Leonard's (AURN) and Queensferry Road operate a Filter Dynamics Measurement System (FDMS) unit to monitor PM<sub>10</sub>. All other monitoring stations use Tapered Element Oscillating Microbalance (TEOM) instruments.

The data at Queen Street, Salamander Street, Currie and Glasgow Road has been corrected to provide a gravimetric equivalent, using the Kings College Volatile Correction Model (VCM). This is discussed in Appendix A4.

The data has also been gravimetrically corrected using Edinburgh's local derived gravimetric factor of 1.14 for comparison and continuity with historical data. The data shows that the two correction methodologies are comparable. Data is shown in Tables 2.7 and 2.8.

All monitoring locations are representative of relevant public exposure.

PM<sub>10</sub> data from all monitoring locations in 2012 meet the EU limit values and UK National Objectives. Background sites at St Leonard's and Currie, and roadside locations at Queen Street, Glasgow Road and Queensferry Road also meet the tighter Scottish Air Quality Annual Mean Objective of 18ug/m<sup>3</sup>, although monitoring at Queensferry Road (18µg/m<sup>3</sup>) shows the concentration of PM<sub>10</sub> at the objective.

Salamander Street did not meet the annual mean Scottish Air Quality Objective or the permitted number of daily exceedences.

Initial results from qualitative analysis of dust samples taken from within the monitoring station identified fragments of fine silt and sand, amongst a variety of particles of typical background dust. There were no metal fragments identified. Further investigations will be undertaken for the city-wide PM<sub>10</sub> Detailed Assessment including the contribution from road traffic pollution and that derived from other sources.

Based on new and historical data the requirement to progress the city-wide Detailed Assessment remains valid.

Table 2.13 Results of Automatic Monitoring for PM<sub>10</sub>: Comparison with Annual Mean Objective

Site ID	Site Location & Equipment Type	Within AQMA?	Valid Data Capture 2012 % <sup>a</sup>	Annual Mean Concentration (µg/m <sup>3</sup> )				
				2008	2009	2010	2011	2012
1	Queen Street TEOM	Y (NO <sub>2</sub> )	96	<b>19(vcm)</b> <b>19(1.14)</b>	<b>18(vcm)</b> <b>18(1.14)</b>	<b>18 (vcm)</b> <b>19 (1.14)</b>	16 (vcm) 16 (1.14)	16 (vcm) 16 (1.14)
3	Roseburn TEOM	Y (NO <sub>2</sub> )	N/A	16 (vcm) 16 (1.14)	15 (vcm) 15 (1.14)	15 (vcm) 15 (1.14)	15 (vcm) 15 (1.14)	N/A
6	Currie TEOM	N	98	N/A	N/A	11 (vcm) 11 (1.14)	13 (vcm) 11 (1.14)	11 (vcm) 11 (1.14)
7	St Leonard's FDMS	N	68	15	17	14	15	16
8	Salamander St TEOM	N	96	N/A	<b>22(vcm)</b> <b>23(1.14)</b>	<b>26(vcm)</b> <b>27(1.14)</b>	<b>26(vcm)</b> <b>27(1.14)</b>	<b>23(vcm)</b> <b>24(1.14)</b>
9	Queensferry Rd FDMS	N	86	N/A	N/A	N/A	<b>21</b>	<b>18</b>
10	Glasgow Road TEOM	Y (NO <sub>2</sub> )	32	N/A	N/A	N/A	N/A	15 (vcm) 15 (1.14)

In bold and red, exceedence of the PM<sub>10</sub> annual mean objective of 18µg/m<sup>3</sup> and in bold, result of 18µg/m<sup>3</sup> shown.

In *italic*, poor data capture

<sup>a</sup>Data capture for the full calendar year

Table 2.14 Results of Automatic Monitoring for PM<sub>10</sub>: Comparison with 24-hour Mean Objective

Site ID	Site Type	Within AQMA?	Data Capture 2012 %	Confirm Gravimetric Equivalent (Y or N/A)	Number of Daily Means > 50µg/m <sup>3</sup>				
					2008	2009	2010	2011	2012
1	Queen Street TEOM	Y (NO <sub>2</sub> )	96	Y	0	1	1	0	2
3	Roseburn TEOM	Y (NO <sub>2</sub> )	N/A	Y	0	0	0	0 (34) <sup>a</sup>	N/A
6	Currie TEOM	N	98	Y	N/A	N/A	0	0	0
7	St Leonard's FDMS	N	68	Y	0	2	1	0	2 (40) <sup>a</sup>
8	Salamander St TEOM	N	96	Y	N/A	2 (44) <sup>a</sup>	<b>19</b>	<b>22</b>	<b>13</b>
9	Queensferry Rd FDMS	N	86	Y	N/A	N/A	N/A	2	3
10	Glasgow Road TEOM	Y (NO <sub>2</sub> )	32	Y	N/A	N/A	N/A	N/A	0 (35) <sup>a</sup>

In bold and red, exceedence of the PM<sub>10</sub> daily mean objective 50µg/m<sup>3</sup> – not to be exceeded more than 7 times per year

<sup>a</sup> if data capture for full calendar year is less than 90%, include the 98.1<sup>th</sup> percentile of 24-hour means in brackets (expressed in µg/m<sup>3</sup>)

**Trend in Annual Mean PM<sub>10</sub> concentrations**

Uncorrected TEOM data (non-volatile fraction) has been used to assess PM<sub>10</sub> trends due to changes in gravimetric correction methodology.

The non-volatile fraction of the FDMS data for years 2008 to 2012 at St Leonard’s has also been used to ensure a consistent approach. Although non-volatile data was used for the trend assessment at St Leonard’s, this has to be viewed with caution as the TEOM instrument was replaced with a FDMS unit in 2008. Trend lines have been drawn using an Excel simple regression statistical program.

Data trends are shown in Figures 2.14 and 2.15 are summarised.

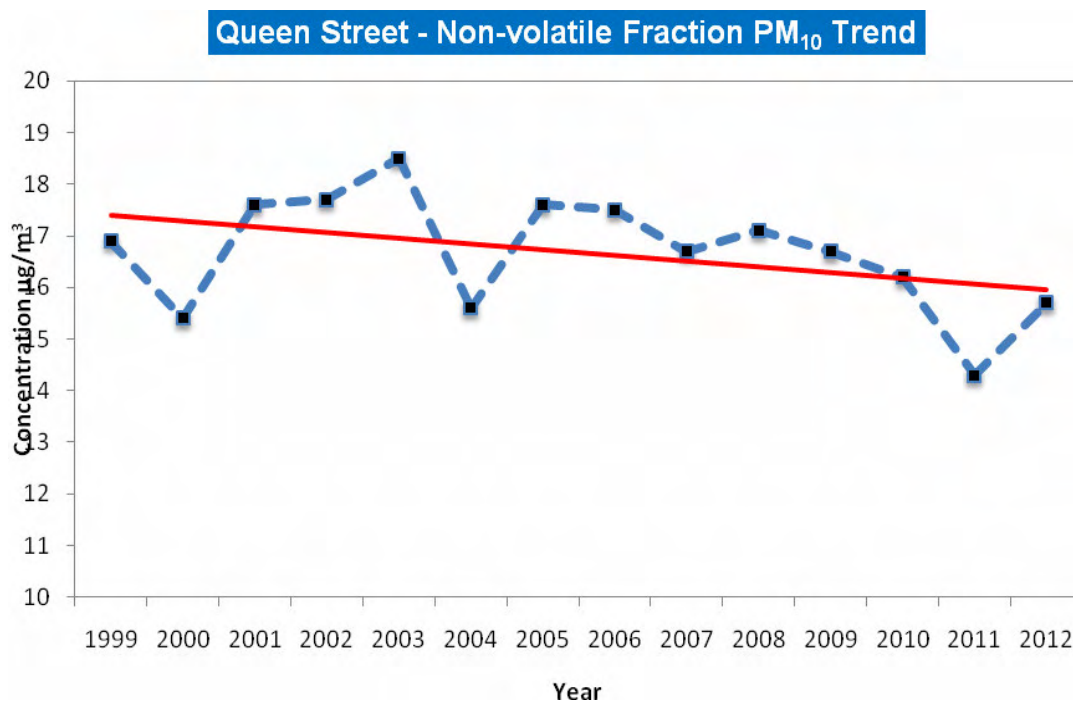
**Table 2.15 Summary of PM<sub>10</sub> Annual Mean Trend Data**

Monitoring Location / Type	Trend in annual mean PM <sub>10</sub> (years)	Concentrations of PM <sub>10</sub>
Queen Street (Roadside)	↓ (1999 to 2012)	Decreasing
St Leonard’s (Urban background)	↓ (2004 to 2012)	Decreasing

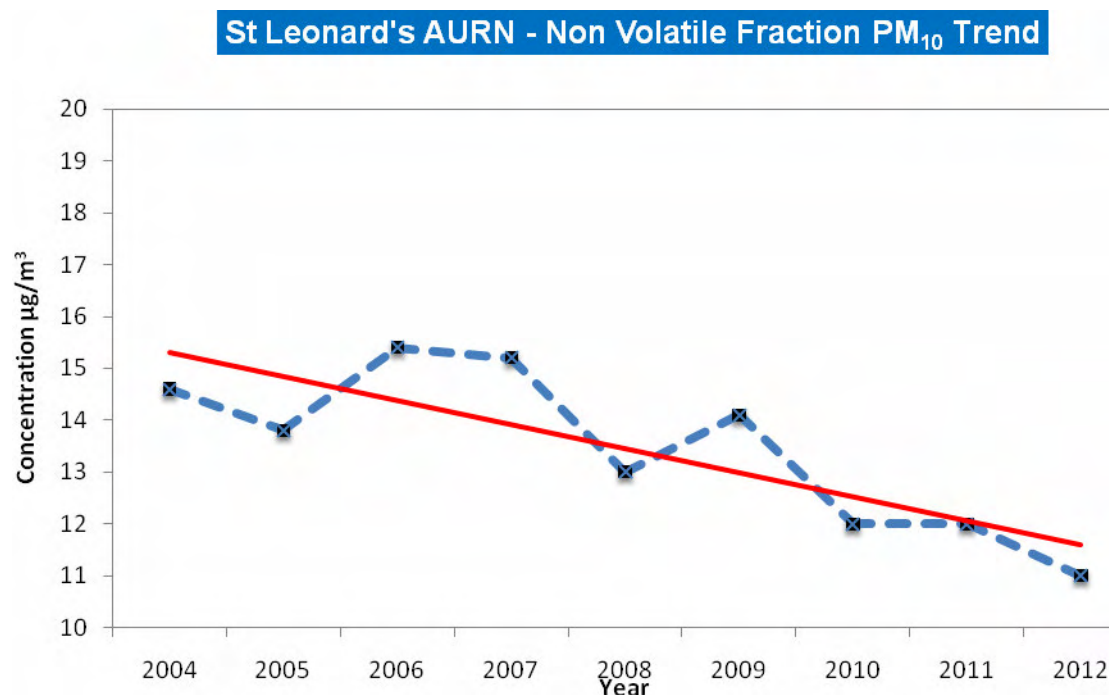
Downward trends in PM<sub>10</sub> concentrations are noted at St Leonard’s and Queen Street.

The city-wide detailed assessment due for completion in 2013/14 will undertake a full assessment of trend analysis.

**Figure 2.14 Trend in Uncorrected Annual Mean Non Volatile Fraction PM<sub>10</sub> Concentrations (µg/m<sup>3</sup>) measured at Queen Street**



**Figure 2.15 Trend in Uncorrected Annual Mean Non Volatile Fraction PM<sub>10</sub> Concentrations (µg/m<sup>3</sup>) measured at St Leonard's**



### 2.2.3 Sulphur Dioxide (SO<sub>2</sub>)

Historical and current data from the urban background site at St Leonard's shows that the 15-minute, 1-hour and 24-hour monitoring periods all met their appropriate Objectives, Table 2.16.

**Table 2.16 Results of Automatic Monitoring of SO<sub>2</sub>**

Site ID	Site Type	Within AQMA?	Monitoring Year (% Data Capture)	Number of Exceedences (percentile in bracket µg/m <sup>3</sup> )		
				15-minute Objective (266 µg/m <sup>3</sup> )	1-hour Objective (350 µg/m <sup>3</sup> )	24-hour Objective (125 µg/m <sup>3</sup> )
St Leonard's	Urban Background	N	2009 (95%)	0	0	0
			2010 (92%)	0	0	0
			2011 (98%)	0	0	0
			2012 (98%)	0	0	0

### 2.2.4 Benzene

Benzene is no longer monitored within the Local Authority area.

## 2.2.5 Other Pollutants Monitored

The UK Government and Devolved Administrations are responsible for the review and assessment of the following pollutants: Ozone, Polycyclic Aromatic Hydrocarbons (PAHs) and PM<sub>2.5</sub>. These pollutants were monitored at the AURN site at St Leonard's and data is presented below.

### 2.2.5.1 Ozone

Ozone concentrations did not meet UK objective between the years 2007 and 2009, but did meet in 2010 and 2011. In 2012, the objective was not met due to 43 exceedences of the 8-hour running mean being recorded (Table 2.17). These mainly occurred throughout a pollution episode in April and May 2012, which showed increased levels of ozone across the country.

**Table 2.17 Number of Ozone exceedences at St Leonard's**

St Leonard's Urban Background site	2007	2008	2009	2010	2011	2012
No. of exceedences	11	14	12	0	0	43
<b>Ozone Objective</b> 100µgm <sup>-3</sup> not to be exceeded more than 10 times per year as an 8-hour running mean by 31 <sup>st</sup> December 2005						

### 2.2.5.2 PM<sub>2.5</sub>

PM<sub>2.5</sub> monitoring commenced at St Leonard's in November 2008. There was a slight decrease in the annual mean concentration between 2011 and 2012, from the limit value of 12µg/m<sup>3</sup> to 11µg/m<sup>3</sup>, however data capture was poor throughout 2012 (72%). See Table 2.18.

**Table 2.18 PM<sub>2.5</sub> Average annual concentrations**

St Leonard's Urban Background site	2009	2010	2011	2012
Annual Concentration (µg/m <sup>3</sup> )	8	9	12	11
<b>PM<sub>2.5</sub> Scottish Objective</b> 12µg/m <sup>3</sup> annual average (limit) 2010. This target is not in Air Quality Regulations				

### 2.2.5.3 Polycyclic Aromatic Hydrocarbons (PAHs)

The area range of PAHs with benzo (a) pyrene (BaP) used as a marker. Monitoring is undertaken at St Leonard's using a digital sampler. Results since 2009 are shown in Table 2.19. In 2012 the objective was met.

Table 2.19 PAH (B(a)P) Monitoring: Comparison with Objective

St Leonard's Urban Background site	2009	2010	2011	2012
Annual Concentration (ngm <sup>-3</sup> )	0.131	0.129	0.099	0.109
<b>BaP Objective</b> 0.25ngm <sup>-3</sup> as an annual average by 31 December 2010				

### 2.2.6 Summary of Compliance with AQS Objectives

Edinburgh has measured concentrations of **nitrogen dioxide** and **PM<sub>10</sub>** above the annual mean and 24-hour mean (PM<sub>10</sub>) at relevant locations outside of the AQMAs, and **will need to proceed to a Detailed Assessment**, at the following locations:

#### **PM<sub>10</sub>**

City-wide for exceedences of Scottish Objectives as identified in Progress Report 2010 and previous Review and Assessment Reports.

#### **Nitrogen dioxide**

**Detailed Assessments** are being progressed currently at the following locations,

- Angle Park Terrace / Slateford Road
- Fountainbridge
- Hope Park Terrace / Clerk Street
- Portobello Road/Sir Harry Lauder Road junction (additional monitoring commenced in 2012)

## 3 New Local Developments

The current economic down turn has meant that a number of planning applications with existing permission are being developed with reduced density, which is likely to have a positive impact on air quality. Other major developments such as Pennywell, Western Harbour, Granton Harbour and Caltongate have requested re-granting of permission, to extend the time period requiring these developments to commence. Originally Air Quality Impact Assessments were undertaken; however revised assessments are not being sought by the Local Authority.

### 3.1 Road Traffic Sources

With the Edinburgh tramline due to begin passenger services in 2014, the Local Authority is currently considering views on proposed changes to the traffic management system within the core city centre area [4]. The benefits that may be realised include;

- improved quality of pedestrian experience in the core City Centre area;
- increased space for pedestrian and other uses;
- opportunity for dedicated cycle provision in the area; and
- reduced detrimental impact of vehicles on the City Centre environment.

Proposals include a reorganisation of the road network and pavement availability. It is expected that details will be considered in a report to the Local Authority's Transport and Environment Committee in October 2013.

The Council is progressing a major infrastructure project which involves road, footway and environmental improvements to Leith Walk and Constitution Street. Traffic modelling assessments are currently being undertaken to assess the impact that traffic flow changes might have on Easter Road and Bernard Street (AQMA's).

The issue of potential impacts from cumulative development remains an issue for the Local Authority. In 2012 a number of planning application were consented amid concerns of the methodology for the air quality impact assessment and/or associated mitigation measures. These include developments in areas of rising air quality concern (Ferry Road) and in the south west of the city (Ingles Green Road).

An air quality impact assessment (AQIA) was carried out for a housing development for 121 properties in Ratho Station in August 2010 [5]. The assessment stated that a new junction on the A8, to accommodate the development is likely to increase queuing on both eastbound and westbound carriageways. The Local Authority has since declared the Glasgow Road AQMA along the traffic corridor from Ratho Station to Newbridge roundabout and is currently carrying out Further Assessment work. Funding has also been provided by the Scottish Government to investigate solutions with Newbridge roundabout to improve traffic flow.



## 3.2 Other Transport Sources

There are no new/newly identified non-road traffic sources since the last Updating and Screening Assessment that require assessment. To update, Edinburgh Airport published an Airport Surface Access Strategy in 2012 which aims to ensure a public transport mode share of 35% of total departing passengers by 2017 [6]. It states the airport's commitment as a member of the Edinburgh International Development Partnership (EIDP) which oversaw production of TISWEP (Transport Infrastructure Study for West Edinburgh); TISWEP identified a series of transport interventions, necessary in order to meet the transport needs of the development proposed within west Edinburgh area over the next 10 years.

The strategy states;

“Edinburgh Airport recognises and accepts the need for future interventions, many of which are essential to alleviate congestion and improve traffic flows on access roads to the airport and in the surrounding area. The interventions when implemented are expected to meet the needs of both airport growth, and other planned growth in the area...”

*Edinburgh Airport, Airport Surface Access Strategy, 2012*

## 3.3 Industrial Sources

Leith Docks and Dundee were designated Enterprise Areas (EA) which form the East of Scotland EA that will focus on a manufacturing industry, developing low carbon technologies to support Scotland's off-shore renewable energy industry. In this regard the Local Authority has signed a Memorandum of Understanding with Scottish Enterprise and Forth Ports to work jointly to explore the feasibility of further developing Leith Docks. Currently there is uncertainty as to whether any significant positive or negative effects to air quality would be likely with this proposed change [7].

It is the intention to prepare a new Leith Docks Masterplan to facilitate appropriate development through a combination of a Harbour Revision Order and a planning application(s). Impacts on air quality will need to be considered as a part of these processes.

## 3.4 Commercial and Domestic Sources

Since the Updating and Screening Assessment 2012 there have been no new biomass combustion installations nor areas identified where the combined impact of several biomass sources may be relevant. The Council issued Interim Planning Policy (2010) that discourages the installation of commercial biomass combustion installations in the city. Albeit a foodstore development at Inglis Green Road received planning permission that would allow development of a biomass unit [8]. The company subsequently withdrew the proposals following further clarity from the Local Authority on the rationale behind the policy.

Smoke Control Orders cover the entire local authority area. There are currently no areas where significant coal burning takes place.

### 3.5 New Developments with Fugitive or Uncontrolled Sources

In conjunction with SEPA (the Scottish Environmental Protection Agency), the Local Authority has undertaken qualitative sampling at the Salamander Street monitoring station, to investigate potential contributions to PM<sub>10</sub> concentrations from a number of fugitive sources - a scrap yard and a cement batching process at Bath Street. Initial results identified fragments of fine silt and sand, amongst a variety of particles of typical background dust. There were no metal fragments identified. Further investigations will be undertaken for the city-wide PM<sub>10</sub> Detailed Assessment including the contribution from road traffic pollution and that derived from other sources.

City of Edinburgh Council has identified the following new or previously unidentified local developments which may impact on air quality in the Local Authority area;

#### **Road traffic sources**

- Re-organisation of the way general traffic and public transport services move through the core City Centre, following implementation of the tram;
- Major road, footway and environmental improvements to Leith Walk and Constitution Street; and
- New road junction on A8 Glasgow Road, at Ratho Station.

**Possible fugitive emissions from a scrap yard and a cement batching plant** in Leith contributing to exceedences of PM<sub>10</sub> at Salamander Street, will be investigated further as part of city-wide Detailed Assessment.

These will be taken into consideration in the next Updating and Screening Assessment

## 4 Planning Applications

In terms of the strategic plans for development, the Local Authority is currently seeking representations on a Proposed Local Development Plan, which will cover the whole of the administration area. The Proposed Local Development Plan (LDP) sets out policies and proposals relating to the development and use of land, focusing on four Strategic Development Areas. These areas are consistent with the Strategic Development Plan, prepared by SESPlan (the Strategic Development Planning Authority for Edinburgh and South East Scotland) and the Local Authority's economic strategy [9]. Three of the four areas are in locations where there are current air quality concerns; City Centre, Edinburgh Waterfront and West Edinburgh. The fourth area is South East Edinburgh.

Some of the proposals defined in the Proposed LDP have already received planning permission or been identified in previous plans, others are 'new opportunity' sites. Tables 5.1 and 5.2 describe these sites. The Proposed plan states that new housing is being brought forward in South East and West Edinburgh to meet strategic housing requirements.

**Table 4.1 Areas of land previously identified for residential development in the Proposed Local Development Plan (LDP)**

LDP Reference	Name	Area of Local Authority	Estimated Total Capacity
HSG1	Springfield, Queensferry	West	150
HSG2	Agilent, South Queensferry	West	400
HSG3	North Kirkliston	West	680
HSG 4	West Newbridge	West	500
HSG 5	Hillwood Road, Ratho Station	West	50-100
HSG 6	South GyleWynd	West	180
HSG 7	Edinburgh Zoo	West	80
HSG 8	Telford College (North Campus)	North	300
HSG 9	City Park	North	200
HSG 10	Fairmilehead Water Treatment Works	South East	275
HSG 11	Shrub Place	East	400
HSG 12	Lochend Butterfly	East	556
HSG 13	Eastern General Hospital	East	270
HSG 14	Niddry Mains	South East	900 -1100
HSG 15	Greendykes Road	South East	145
HSG 16	Thistle Foundations, Craigmillar	South East	170
HSG 17	Greendykes	South East	900 -1000
HSG 18	New Greendykes	South East	1000
CC 2	New Street	Centre	250
CC 3	Fountainbridge	Centre	1200
CC 4	Quartermile	Centre	1000

LDP Reference	Name	Area of Local Authority	Estimated Total Capacity
EW 1a	Leith Waterfront (western Harbour)	North	3000
EW 1b	Central Leith Waterfront	North	5600
EW 1c	Leith Waterfront (Salamander Place)	North	1500
EW 2a	Forth Quarter	North	1800
EW 2b	Central Development Area	North	2050
EW 2c	Granton Harbour	North	3400
EW 2d	North Shore	North	850

**Table 4.2 New housing opportunity sites in the Proposed Local Development Plan (LDP)**

LDP Reference	Name	Area of Local Authority	Estimated Total Capacity
HSG 19	Maybury	West	1000 -1400
HSG 20	Cammo	West	500 -700
Policy Emp6	International Business Gateway	West	300-400
Policy DtS 5	Edinburgh Park/South Gyle	West	450 -700
HSG 21	Broomhills	South East	425 -595
HSG 22	Burdiehouse	South East	250-350
HSG 23	Gilmerton Dykes Road	South East	50 -70
HSG 24	Gilmerton Station Road	South East	350 490
HSG 25	The Drum	South East	125 -175
HSG 26	Newcraighall North	South East	150 -210
HSG 27	Newcraighall East	South East	275 -385
HSG 28	Riccarton Mains Road	South West	50
HSG 29	Curriemuirend	South West	100
HSG 30	Moredunvale	South	50

Economic growth is a key aim of the Strategic Development Plan, which requires the LDP to retain existing levels of strategic employment land and provide a range and choice of employment sites in accessible locations. The land, which must accommodate businesses of varying types and sizes, includes strategic office locations in the City Centre, Leith and Edinburgh Park, planned industrial estates, areas such as Newbridge and seven different special economic areas.

Table 5.3 details the ‘special economic areas’, all of which are of national or strategic economic importance.

**Table 4.3 Special Economic Areas detailed in the Proposed Local Development Plan (LDP)**

Name	Location	Area of Local Authority	Size of land (hectares)
<b>Edinburgh Bio-Quarter</b>	East of A7	South East	72 ha
<b>Riccarton University Campus and Business Park</b>	South of A71	South West	153 ha
<b>Edinburgh Airport</b>	North of A8	West	380 ha
<b>Royal Highland Centre</b>	North of A8	West	132 ha
<b>International Business Gateway</b>	North of A8	West	136 ha
<b>RBS Headquarters, Gogarburn</b>	North of A8	West	45 ha
<b>Leith Docks</b>	North & East part of Leith Waterfront	North	128 ha

Leith Docks was also designated an Enterprise Area (EA) in January 2012. Coupled with the Proposed LDP, there is a major shift from the previously planned residential focus in the area. The reduction in volume of traffic associated with this change may bring some benefit to air quality. However, this requires further consideration.

### **Strategic Environmental Assessment for the Proposed Development Plan**

An Environmental Report forming part of the Strategic Environmental Assessment for the proposed LDP recognises air quality as one of the main environmental issues within the Local Authority area where supportive development policies may lead to negative cumulative effects, particularly within key transport corridors. The existing urban area/brown field sites and the four strategic development areas [9].

The report refers to the Local Authority’s Air Quality Action Plan which sets out measures to help reduce vehicle emissions in the AQMAs (predominately along traffic corridors). It also states that there are wider environmental considerations that lead to the preference of supporting development within the existing built-up area and that a different strategy of supporting Greenfield release would likely lead to a cumulative negative effect.

In respect to the likelihood of numerous development proposals within close proximity of one another in the four strategic development areas, there is an acknowledgement that there may be short to medium term harmful impacts, which could be exacerbated in the short term where development comes forward in advance of planned public transport infrastructure. This could be of particular concern in the North and West of the city where development of the tram line is currently no longer proceeding. Further analysis of these impacts will need to be considered.

There are policies prescribed in the Proposed LDP that set out mitigation to these cumulative impacts, including environmental, employment, housing and transport policies [7]. These aim to direct major new development to accessible locations as well as supporting a number of public transport improvements. Policy Env22

considers the impact of development on air from new development, however it is considered in the context of protecting natural resources rather than protecting human health. Comments in this regard, will be made during LDP consultation process.

All these policies are discussed further in Chapter 5.

Additionally, the proposed LDP states there are a number of development site briefs and principles which provide further mitigation to support improvements to air quality including; new bus routes linked through new sites, opportunities for a mix of uses including local services within new housing sites and high densities for parts of sites that are closer to public transport hubs [7]. Through their very nature, some of these proposals could be counter-productive, so consideration of the air quality implications would have to be made for individual development site briefs. Principles of good design may need to be applied in some circumstances, which is absent from the proposed LDP.

Comments regarding these elements of the proposed LDP will be made during the consultation process which ends on 14<sup>th</sup> June 2013.

In December 2013 a draft version of the LDP, taking account of any representations, will be submitted to Scottish ministers for examination before being adopted. It should be noted that the Proposed LDP has been prepared on the basis of a Proposed Strategic Development Plan, which may mean modifications are necessary when the outcome of the SDP examination is known.

## 5 Air Quality Planning Policies

There are policies described in the Local Authority's Proposed Local Development Plan which is currently out for consultation [9]. Table 5.1 describes the policies which aim to mitigate any cumulative impact that development may have on air quality. Policy Env22 specifically considers the impact of development on air (as a natural resource) from new development.

**Table 5.1 Key Policies in Edinburgh's Proposed Local Development Plan to deal with the cumulative impact of development on air quality**

Policy	Statement
Env 22	<p>Planning permission will only be granted for development where;</p> <ul style="list-style-type: none"> <li>a) There will be no significant adverse effects for health, the environment and amenity and either;</li> <li>b) There will be no significant effects on air, water or soil quality or</li> <li>c) Appropriate mitigation to minimise any adverse effects can be provided.</li> </ul>
Emp1	<p>High quality, office developments, including major developments, will be supported;</p> <ul style="list-style-type: none"> <li>a) In the City Centre as identified on the Proposal Maps.</li> <li>b) In the other strategic business centres identified on the Proposals Map at Edinburgh Park/South Gyle, International Business Gateway and Leith, preferable as part of business led mixed use proposals.</li> <li>c) At other accessible, mixed use locations in the urban area near to public transport nodes, where the scale of development must be compatible with the accessibility of the location by public transport and the character of the local environment.</li> </ul>
Emp 10	<p>Hotel development will be permitted:</p> <ul style="list-style-type: none"> <li>a) In the City Centre where developments may be required to form part of mixed use schemes, if necessary to maintain city centre diversity and vitality, especially retail vitality on important shopping frontages.</li> <li>b) Within the boundaries of Edinburgh Airport, the Royal Highland Centre and the International Business Gateway.</li> <li>c) In locations within the urban area with good public transport access to the city centre.</li> </ul>
Hou 4	<p>The Council will seek an appropriate density of development on each site having regard to:</p> <ul style="list-style-type: none"> <li>a) Its characteristics and those of the surrounding area.</li> <li>b) The need to create an attractive residential environment and safeguard living conditions within the development.</li> <li>c) The accessibility of the site to public transport and other relevant services.</li> <li>d) The need to encourage and support the provision of local facilities necessary to high quality urban living.</li> </ul>

	Higher densities will be appropriate within the City Centre and other areas where a good level of public transport accessibility exists or is to be provided. In established residential areas, proposals will not be permitted which would result in unacceptable damage to local character, environmental quality or residential amenity.
Tra 1	<p>Planning permission for major development which would generate significant travel demand will be permitted on suitable sites in the City Centre. Where a non City Centre site is proposed, the suitability of a proposal will be assessed having regard to:</p> <ul style="list-style-type: none"> <li>a) The accessibility of the sites by modes other than the car.</li> <li>b) The contribution the proposal makes to Local Transport Strategy objectives and the effect on targets in respect of overall travel pa and car use.</li> <li>c) Impact of any travel demand generated by the new development on the existing road and public transport networks.</li> </ul> <p>In general, applicants should demonstrate that the location proposed is suitable with regard to access by public transport, cycling and walking that measures will be taken to mitigate any adverse effects on networks and bring accessibility by and use of non-car modes up to acceptable levels if necessary.</p>
Tra 8	<p>Planning permission will not be granted for development which would:</p> <ul style="list-style-type: none"> <li>a) Prevent the implementation of proposed cycle paths/footpaths shown on the Proposals Map.</li> <li>b) Be detrimental to a path which forms part of the core paths network or prejudice the continuity of the off-road network generally.</li> <li>c) Obstruct or adversely affect a public right of way unless satisfactory provision is made for its replacement.</li> <li>d) Prejudice the possible incorporation of an abandoned railway alignment into the off-road path network.</li> </ul>
Tra 9	Planning permission will not be granted for development which would prejudice the proposed new roads and road network improvements listed in Table 9 and shown indicatively on the Proposals Map.

The Local Authority also has interim Planning Policy to assist the Council to manage and control the introduction of biomass combustion installations in development proposals in the current absence of proven, cost-effective abatement technologies [10].

The policy states that proposals for biomass installations of 50MW (e) or less will only be considered acceptable where it is demonstrated that the following conditions can be met;

- An appropriate and effective abatement system to control emissions of concern can be applied to the plant, and maintained.
- Contributions to levels of pollutants of concern in Edinburgh do not conflict with the requirements of the UK National Air Quality Strategy and/or the Council's statutory obligations in Local Air Quality Management per the Environment Act 1995 (Part 4).



In view of the challenges in meeting air quality standards in many parts of the city and in the ongoing absence of effective abatement technologies, continuation of this position is viewed as an important tool for managing emissions of fine particles and Black Carbon, as well as nitrogen dioxide.

In November 2012, the Council's Transport and Environment Committee agreed to continue the interim biomass policy until the outcomes of the delayed city-wide Detailed Assessment of PM<sub>10</sub> are reported.

## 6 Local Transport Plans and Strategies

Local authorities are advised in Technical Guidance document LAQM TG (09) to align AQAPs with those local transport policies which contribute towards improving air quality. Key synergistic policies identified in City of Edinburgh Council's Local Transport Strategy 2007 to 2012 (extended to 2013) are listed in Table 6.1.

**Table 6.1 Key Air Quality Improvement Policies Contained in the City Of Edinburgh Council's Local Transport Strategy 2007 – 2012**

Policy	Statement
Env1	The Council will continue to review transport measures that can contribute to achieving air quality objectives.
Env2	The Council will continue to implement the transport-related measures in the Air Quality Action Plan (AQAP) within available budgets.
Cars3	The Council will consider supporting congestion charging only at a national level for Scotland or the whole UK. The Council will develop a congestion indicator that can be monitored and will set targets in the context of the Regional Transport Strategy.
Cars4	The Council will promote the expansion of the City Car Clubs
Park19	The Council will keep under review the need for new Controlled Parking Zones (CPZs) and /or further extensions to the existing CPZ.
P+R1 Park & Ride	The Council will provide, promote and enlarge Park and Ride (P+R) sites at the edge of urban areas on main radial routes and will work with operators to ensure that the most attractive ticket packages are available to users.
P+R2 Park & ride	The Council will promote access to P+R sites by bus, cycle, and on foot and will seek the provision of high quality public transport services to link P+R sites to major destinations outside the city centre.
PT22	The Council will work in partnership with the rail industry, South East of Scotland Regional Transport Partnership (SEStran), other Councils, the Scottish Executive, Transport Scotland, developers and others to improve services and promote new rail schemes where appropriate including: <ul style="list-style-type: none"> <li>• Edinburgh Airport link</li> <li>• Borders rail link</li> <li>• Bathgate to Airdrie link</li> <li>• Edinburgh South Suburban line reopening to passengers</li> </ul>
PT20	The Council will promote further bus priorities within the city where needed to maintain and improve public transport service quality and reliability and will work with SEStran to develop bus priority schemes that will support orbital bus

Policy	Statement
	services linking key growth areas in and around the city, including considerations of priorities on trunk roads and motorways.
Goods 3	The Council will work with the industry, SEStran and other partners to evaluate the benefits of a Freight Quality Partnership at the regional level.
Goods 4	The Council will support the use of rail and sea freight, in particular through the planning process by: <ul style="list-style-type: none"> <li>• Safeguarding rail access to key industrial sites</li> <li>• Ensuring that major new freight generating developments are accessible to the rail network where possible</li> <li>• Encouraging developments which are likely to benefit from sea freight to be located so that they are easily accessible to the freight handling ports in the Forth and;</li> <li>• working to ensure multi-modal freight operations where possible.</li> </ul>
Goods 5	The Council will make every effort to ensure that Edinburgh's domestic waste continues to be moved out of Edinburgh by rail and will examine other ways in which the council can lead by example.
EX2	The Council will work with GIP and other partners to increase significantly the use of sustainable travel modes for access to Edinburgh Airport, including the provision of rail and tram links.

The Local Authority is currently reviewing the Local Transport Strategy (LTS) and has carried out consultation on a number of 'Issues for Review' for developing the new strategy [11]. These include ten issues, one of which specifically relates to air quality and includes a number of options to deal with concerns - ranging from continuing with voluntary efforts to reduce emissions, to introducing a type of 'Low Emission Zone' to Edinburgh.

The results of this consultation and the draft LTS are expected to be published in August 2013 for a period of consultation before the new strategy is adopted.

Several other significant policy issues are covered by separate processes which will also inform the revised LTS. These include development of Action Plans covering public transport and maintenance and renewals of roads, and a process to come forward with proposals for the City Centre, following operation of the tram.

In addition the Local Authority will be taking forward actions to manage traffic flows, where possible, through its computerized traffic light control system (Intelligent Transport Systems) and work with Transport Scotland to deliver a package of public transport enhancements that will complement the new Forth Crossing.

The proposed Local Transport Strategy will be aligned with the Scottish Government's National Transport Strategy and Regional Transport Strategy [11].

In addition to the LTS, City of Edinburgh Council's Transport 2030 Vision document provides an overarching strategy for the future development of transport in Edinburgh over a 20 year period from 2010 [12]. This document compliments and informs the revision of the LTS. A number of its outcomes and indicators include reductions in nitrogen dioxide and carbon dioxide emissions and overall traffic volumes. The

measures in the Transport 2030 Vision that assist delivering improvements in local air quality are listed below:

1. 'Low Emission Zones' if other measures do not make the necessary progress towards improved air quality.
2. Working with operators towards an emissions-free public transport fleet and supporting initiatives for electric and hybrid vehicles.
3. Air quality improvements in partnerships with the public transport and freight industries.
4. Active Traffic Management to mitigate pollution hot-spots.
5. Working through Planning and Economic Development initiatives to foster low impact development that reduces the need to travel by car.
6. Engaging with the Scottish Government and other partners to encourage a shift to low carbon transport including supporting use of electric vehicles.
7. Parking permit charges based on vehicle emissions.
8. Green procurement when purchasing new vehicles for the Council's fleet.
9. Promotion of ecological driving and slower speeds.
10. Creating walkable and cyclable neighbourhoods through 20mph speed limits.
11. Promote smarter travel through support for behaviour-change programmes including travel plans.
12. Targeting the school run, school travel plans and safe routes to school.
13. Improved cross-River Forth services to Fife.
14. Expansion of Park and Ride facilities.
15. Supporting growth of the 'City Car Club'.

*Transport 2030 Vision, City of Edinburgh Council, 2010*

## 7 Climate Change Strategies

The Council is working with support from the Scottish Government's new agency, Resource Efficient Scotland, to revise the Council's Carbon Management Plan. The effective rolling-out of the revised Carbon Management Plan (CMP) will be part of the Council's response to its commitment under the Carbon Reduction Commitment (CRC) Energy Efficiency Scheme.

The specific objectives of this programme are:

- to update the Council's CMP;
- to quantify the potential carbon savings from Council projects;
- to determine the remaining carbon savings required to meet the Council's carbon reduction target; and
- to develop an Action Plan.

In January 2007 the Council signed Scotland's Climate Change Declaration. The Declaration includes commitments both to mitigate the Council's impact on climate change through reducing greenhouse gas emissions and to adapt to predicted climate change impacts. A comprehensive annual report on the Council's progress against these commitments is prepared each year and is available from the Scotland's Climate Change Declaration website. Further targets to achieve a climate responsive city by 2020 were approved in June 2011 as part of the Council's new Sustainable Development Framework "Sustainable Edinburgh 2020". This framework and annual performance reports are published on the Council's website.

Although, climate change initiatives can be beneficial with respect to improving air quality, there is potential for conflict between the two statutory obligations. It is essential that measures proposed to improve air quality and those relating to Climate Change are assessed for possible adverse impacts. The Council will work to avoid such conflicts.

Building on earlier partnership activity, in early 2013 a new Edinburgh Sustainable Development Partnership (ESDP) was established as part of the Edinburgh Partnership structure. A detailed remit for the ESDP is still under development but in general terms the ESDP is likely to contribute to Edinburgh achieving the vision set out in SE2020 by providing a strategic city-wide cross-sector and participative voice for sustainability.

## 8 Implementation of Action Plans

### 8.1 Action Plan Summary

City of Edinburgh Council's initial Air Quality Action Plan (AQAP) was approved in 2003 following declaration of the Central AQMA for exceedences of the pollutant nitrogen dioxide. This plan contained a number of radical transport measures including Congestion Charging which if fully implemented were estimated to reduce nitrogen oxides (NO<sub>x</sub>) by 40% [13].

An additional 40% reduction was expected to occur without intervention due to improvements in vehicle technology and subsequent fleet replacement. Therefore the overall reduction in NO<sub>x</sub> emissions which could be achieved was estimated at 80% of the 2001 baseline.

The level of reduction in roadside NO<sub>x</sub> concentrations required to meet the 2005 annual mean air quality objective within the Central AQMA were calculated to be between 33% and 68% [14]. Therefore, the proposed actions within the AQAP 2003 were anticipated to deliver the improvement required.

Source apportionment work undertaken in 2002 within the Central AQMA identified that the majority of NO<sub>x</sub> emissions were derived from buses; Leith Walk (56%), Gorgie Road (55%) and West Maitland Street (63%) [14]. Therefore, the main challenge for the Local Authority was to stimulate a vehicle clean-up programme, targeting bus operators in the city.

A key element of the AQAP 2003 was the introduction of a vehicle congestion charging scheme. In addition to reducing traffic and congestion levels in the citycentre, the scheme was expected to generate sufficient revenue to enable provision of grants to assist a clean-up of older 'more' polluting vehicles. However, following a Council Referendum in 2005, congestion charging was not progressed. The AQAP was revised in 2008, to remove Congestion Charging as an Action and to include the new AQMA designation at St John's Road (2006) [15].

The focus of the current AQAP is to have cleaner bus and road freight vehicles operating in the city. A Low Emission Strategy Feasibility study commissioned by the Council was undertaken in 2007 by the consultancy Transport and Travel Research 2007 (TTR) [16]. The study concluded that, the greatest reductions in NO<sub>x</sub> and PM<sub>10</sub> emissions for the Council's administrative area would be achieved by implementing a mandatory emission reduction scheme for bus and road freight operators. Voluntary Partnership Agreements were deemed the next best option, depending on the percentage of fleet improvement that could be achieved.

Further Assessment work at St John's Road and Great Junction Street also identified that buses were the main contributors of NO<sub>x</sub> emissions [17].

As well as targeting bus and freight vehicles it was considered that the Council should lead by example and strive to operate cleaner low emission vehicles.

The current AQAP also highlighted the failure to address cumulative impacts associated with development. Therefore, to gain a more accurate understanding of

cumulative impacts, a Policy Initiative to develop a Land Use and Traffic model capability was included in the AQAP. However, no progress has been achieved with this initiative, primarily due to the high capital and revenue costs involved. It is unlikely that such a model will be available in the foreseeable future. Consequently, the issue of un-quantified impacts from cumulative development is likely to continue.

## 8.2 Progress made with Actions

It is well recognised that the expected NO<sub>x</sub> emission reductions from improvements in vehicle technology have not been delivered in 'real life' driving situations. This is one of the reasons why Edinburgh like the majority of other cities with air quality issues has not evidenced the anticipated decrease in concentrations of roadside nitrogen dioxide. In addition, there is now a greater than anticipated proportion of diesel-engined vehicles in the national fleet which emit more direct NO<sub>2</sub> compared with petrol-engined vehicles.

It is expected that DEFRA's revised Vehicle Emission factors for each Euro engine class will be more realistic and enable local authorities to gain a more accurate understanding of what level of improvement can be achieved.

The measures and progress made during 2012/13 are summarised in Table 8.1 and supplementary information is described under the headings below:

### 8.2.1 Managing emissions from buses

During 2009, all bus companies operating services in the city were invited to enter into a Voluntary Emissions Reduction Partnership (VERP) with the Council. The proposal was to eliminate vehicles below Euro 4 from the AQMAs by October 2012, with the aim of achieving 100% Euro 5 standard buses by October 2015. However, the two main bus companies operating in the city, Lothian Buses and First Scotland (East) considered the proposal too onerous in the absence of substantial financial support. Consequently no formal agreement was reached.

The Low Emissions Strategy Feasibility study 2007 undertaken by Transport and Travel Research (TTR) on behalf of City Edinburgh Council was based on the bus fleet profile in 2005/2006. Due to a significant improvement of the bus fleet operating in Edinburgh, introduction and expansion of Park and Ride services and an increase of bus frequency on some routes, it was deemed necessary to re-visit the original study outcomes.

Consequently, an update was commissioned in 2011 to take account of these changes. The new study focussed on the total number of bus movements and their NO<sub>x</sub> and PM<sub>10</sub> emissions in each of the three AQMAs. It concluded that the optimistic scenario (Euro 5) as set out in the VERP would provide the greatest reductions in NO<sub>x</sub> and PM<sub>10</sub> emissions by 2015 [18].

### 8.2.2 Bus Improvements 2012/2013

All bus companies operating in Edinburgh continue to improve their fleet, although it is recognised that without substantial financial input it will not be possible to achieve the draft Voluntary Emissions Reduction Partnership target of Euro 5, or better, by 2015.

**Lothian Buses**

Lothian Buses are the main service operator in the urban areas of Edinburgh. More than half of the main service fleet (59%) is Euro 4 or higher. Significant improvements have been made since 2006 with the assistance of Scottish Government funding (see Table 8.1). The company has recently been successful in obtaining £1.5million funding from the Scottish Government Green Bus Fund (Round 3) for 20 hybrid buses.

**Table 8.1 Number of older vehicles retrofitted and number of new buses purchased**

Technology	2011 (Funding)	2012(Funding)	2013(Funding)
<b>Retro fit using SCRT (EMINOX) Euro 3 to Euro 5/6 (EEV standard)</b>	43 <sup>(A)</sup> In service		
<b>New hybrid Double Deck vehicles Euro 5 Standard</b>	15 <sup>(B)</sup> In service		
<b>New hybrid Single Deck vehicles Euro 5 Standard</b>		10 <sup>(C)</sup> In service	20 <sup>(E)</sup>
<b>Double Deck EEV Standard</b>	60 <sup>(D)</sup> In service		
<b>Single Deck EEV Standard</b>		5 <sup>(D)</sup> In service	

a Lothian Buses is contributing to total cost £500,000 (Lothian buses £243,000, CEC £50,000 Scottish Government £207,000)

b Total cost £5M (Scottish Government £1M Green bus fund round 1)

c Total cost £2.65M (Scottish Government £750,000 Green bus fund round 2)

d Lothian Buses self-funding

e Scottish Government £1.5M Green bus fund round 3

Lothian Buses use Euro 5 standard buses on high frequency services (Airlink 100 and the Number 26) which both pass through the Central and St John’s Road AQMAs. Service 22 is also a high frequency service and buses are either Euro 4 or Euro 5 standard. This route transits both the Central and Great Junction Street AQMAs. The 15 diesel-electric hybrid vehicles which entered service late 2011 are used on the Number 10 route, which is another high-frequency service operating through the Central and Great Junction Street AQMAs. The new single deck hybrids are used on the Number 1 route which transits the Central AQMA including the newly extended areas Easter Road and London Road. The degree of improvement in the fleet is illustrated in Tables 8.2 and 8.3.

Table 8.2 shows that five additional Euro 2 buses entered the network in 2012. These vehicles were utilised by Lothian Buses on a temporary basis to provide new services into East Lothian which were previously operated by First Scotland (East). The latter bus company withdrew a number of their services in Spring 2012 due to a major business review.

The deployment of new Euro 5 and diesel- electric hybrid vehicles in March 2013 has enabled the removal of all Euro 2 vehicles from Lothian Buses service fleet.



In 2011, Lothian Buses installed a 4 minute idling engine cut out system across the entire fleet. It has been anticipated that there will be significant fuel savings with this initiative which ultimately will result in reduced emissions.

**Table 8.2 Euro Standard of Service Bus Fleet (Lothian Buses 2006 to 2013)**

Euro Standard	2006 Base year	Sept 2010	Oct 2011	Aug 2012	May 2013
Pre Euro	63 (10%)	0	0	0	0
Euro 1	33 (5%)	0	0	0	0
Euro 2	202 (32%)	64 (10%)	7 (1%)	12 (2%)	0
Euro 3	317 (52%)	307 (52%)	257 (43%)	254 (42%)	251 (41%)
Euro 4	0	79 (13%)	79 (13%)	81 (13%)	81 (13%)
Euro 5	0	136 (23%)	141 (23%)	141 (23%)	141 (23%)
EEV (5/6)	0	1 (0.1%)	117 (20%)	117 (19%)	142 (23%)
<b>Total</b>	<b>615</b>	<b>587</b>	<b>601</b>	<b>605</b>	<b>615</b>

Data provided by Lothian Buses, May 2013

**Table 8.3 Euro Standard of City Tour Bus Fleet (Lothian Bus 2010 to 2013)**

Euro Standard (Lothian Bus)	Sept 2010	Oct 2011	Aug 2012	May 2013
Pre Euro	9	0	0	0
Euro 1	0	0	0	0
Euro 2	37	45	38	38
Euro 3	0	0	1	1
Euro 4	0	0	0	0
Euro 5	0	1	1	1
<b>Total</b>	<b>47</b>	<b>46</b>	<b>40</b>	<b>40</b>

Data provided by Lothian Buses, May 2013

It is recognised that the majority of the City Tour bus fleet consists of Euro 2 standard vehicles. In a trial during 2011, one vehicle was retrofitted to a Euro 5 emissions standard. Currently a further trial is underway to explore the EMINOX SCRT system on one of the Denis Trident open top buses, which is the model of most of the open top fleet. The tour fleet has a high operational presence in the City Centre AQMA and adjoining areas. City of Edinburgh Council and Lothian Buses are committed to exploring possibilities for reducing emissions from the Tour fleet and presently further options for improvement are being considered.

Lothian Buses have indicated that EMINOX have developed a solution which would allow conversion of their 251 Euro 3 double decker buses purchased around 2005/6 to Euro 5/6 standard. This would be a significant step forward in NO<sub>x</sub> and PM<sub>10</sub> reduction from their fleet.

### First Scotland (East)

First Scotland (East) is the second major operator in Edinburgh. However, as previously mentioned a number of their services were withdrawn in Spring 2012 as a result of a company business review. There are now fewer First Scotland (East) buses operating in Edinburgh; the majority of which are now Euro 3 standard vehicles and all Euro 1 and 2 standard vehicles have been removed from routes within the city. The current fleet which operates in Edinburgh is shown in Table 8.4

**Table 8.4 First Scotland (East) Fleet operating in Edinburgh in 2011 and 2013**

Euro Standard	2011	2013
Euro 1	2 (7%)	0
Euro 2	14 (45%)	0
Euro 3	11 (35%)	75 (69%)
Euro 4	3 (10%)	24 (22%)
Euro 5	1 (3%)	10 (9%)
<b>Total vehicles</b>	<b>330</b>	<b>109</b>

Data provided by First Scotland (East), June 2013

There has been a significant improvement in the emissions standards of the First Scotland (East) fleet operating in Edinburgh, compared to 2011 where 7% of the fleet was Euro 1 and 45% was Euro 2. Currently 9% of the fleet or ten buses are of Euro 5 standard.

### Stagecoach

Stagecoach operates approximately 40 buses into Edinburgh. The current Euro standard shows that 90% of the fleet are Euro 4 or better (Table 8.5)

**Table 8.5 Current standard of Stagecoach operating in Edinburgh**

Euro Standard	2012 (%)	2013 (%)
Euro 1	0 (0%)	0 (0%)
Euro 2	2 (5%)	0 (0%)
Euro 3	4 (10%)	4 (10%)
Euro 4	27 (69%)	27 (64%)
Euro 5	6 (15%)	11 (26%)
<b>Total vehicles</b>	<b>39</b>	<b>42</b>

Data supplied by Stagecoach June 2013

### Citylink

The Citylink bus fleet is comprised of 72 buses which operate throughout Scotland. The anticipated fleet standard at October 2012 is shown in Table 8.6. At the time of reporting City of Edinburgh Council were not in receipt of an update from Citylink.

**Table 8.6 Projected standard of Citylink Bus fleet October 2012**

<b>Euro Standard</b>	<b>Oct 2012 (%)</b>
<b>Euro 1</b>	0
<b>Euro 2</b>	0
<b>Euro 3</b>	4 (6%)
<b>Euro 4</b>	1(1%)
<b>Euro 5</b>	67(93%)
<b>Total</b>	<b>72</b>

Data provided by Citylink, September 2012

### 8.3 Managing emissions from freight

The road freight sector is extremely diverse, with a large number of individual and corporate operators, a variety of fleet types and sizes and a substantial range of operating models. As a result, it has been a more difficult grouping for the Local Authority to access and co-ordinate. In previous reports, it was believed that the most feasible way of delivering voluntary reductions in emissions, from road freight vehicles in Edinburgh, was through engagement with the South East Scotland Regional Transport Authority (SESTRAN) Regional Freight Quality Partnership. However, SESTRAN's regional remit means that it is more difficult for Edinburgh-centred actions to be pursued and alternative options have been considered.

#### 8.3.1 ECOSTARS Edinburgh

In an attempt to encourage road freight operators to voluntarily reduce their emissions, the Local Authority became a partner in an EU project-funding bid, ECOSTARS Edinburgh. This is a voluntary, free to join freight recognition scheme which provides guidance on environmental best practice to operators of goods vehicles, buses and coaches whose fleets regularly serve the Edinburgh area. The project is an extension of a similar scheme, which has been trialled successfully by a consortium of South Yorkshire local authorities in partnership with TTR.

The scheme was officially launched in January 2012 and to date 35 operators have joined and a total of 2,900 vehicles have been registered. The majority of member operators are from the freight haulage sector (25) followed by passenger transport sector (8) and public sector (2). A number of other operators have expressed an interest in joining ECOSTARS Edinburgh but have not yet submitted applications.

The scheme is part funded by Intelligent Energy Europe and will run until at least May 2014. This will provide a relatively low-cost, 'partnership' mechanism to assist the Council encourage and facilitate emissions improvements from the road freight sector operating in the city. The targets which have been set are very ambitious and are shown in Table 8.8.

Other Scottish Local Authorities are now engaging in similar schemes which will bring wider benefits.

Table 8.7 Targets for ECOSTARS Edinburgh

Year	Number of vehicles required to become part of scheme
2012 (Year1)	3000
2013 (Year2)	4000
2014 (Year3)	4000

## 8.4 Improvement in Council Fleet Vehicles

All Pre-Euro 1, Euro 1 and Euro 2 vehicles have now been eliminated from the Council's fleet and Euro 3 forms a very small proportion (4%). The Council has been successful in obtaining Scottish Government Funding via the Low Carbon Vehicle Procurement Support Scheme and 1% of the vehicle fleet are now electric (Table 8.8)

Table 8.8 City of Edinburgh Council Fleet (Including hire vehicles) improvement by year

Euro Standard	2003		2011		2012		2013	
	No. of Vehicles	%	No. of Vehicles	%	No. of Vehicles	%	No. of Vehicles	%
Pre Euro	12	1	0	0	0	0	0	0
Euro 1	96	12	0	0	0	0	0	0
Euro 2	374	45	0	0	0	0	0	0
Euro 3	338	41	78	8.3	45	4.6	38	4
Euro 4	12	1	627	67.1	561	58.2	476	50
Euro 5	0	0	227	24.2	348	36.1	430	45
Electric	0	0	3	0.3	10	1.0	10	1.0
<b>Total</b>	<b>832</b>	<b>100</b>	<b>935</b>	<b>99.9</b>	<b>964</b>	<b>100</b>	<b>954</b>	<b>100</b>

There are plans in 2013 to deliver further fleet efficiencies and savings by reducing fleet numbers and replacing approximately 300 fleet vehicles. It is intended that this process will eliminate most Euro 3 standard engine vehicles and a substantial number of Euro 4's, replacing them with Euro 5 and Euro 6 engine vehicles. Stop Start technology will be mandatory for replacement like-for-like cars and small vans.

Consideration will be also given to downsizing vehicles where possible, or the use of petrol powered vehicles instead of diesel. The Local Authority also actively seeks financial assistance to off-set costs involved in the purchase of hybrid or electric vehicles. To date, there are a number of vehicles purchased through the Low Carbon Vehicle Procurement Scheme operating in Edinburgh, listed below, although funding is not currently available;

### 2010/2011

City of Edinburgh Council	2 x Nissan leaf and 1x Mitsubishi
Lothian & Borders Fire & Rescue Service	2x Ashwood diesel electric hybrid vans

**2011/2012**

City of Edinburgh Council	7x Kangoo electric vans
Lothian and Borders Police	1x Ampera1x Connect
NHS Lothian	2x Citroen C Zeros – leased
Edinburgh Napier University	2 charging points

## **8.5 Managing traffic emissions via a Mandatory Low Emission Zone**

In late 2009, the Council's Transport, Infrastructure and Environment Committee instructed that a stakeholder consultation take place on the feasibility of introducing a Low Emission Zone (LEZ) for the city. A number of technical and financial considerations delayed the process; however, the Council's current administration restated its commitment to investigate LEZ's following the local elections in 2012.

The Council's intention is to progress the LEZ feasibility study work during 2013, in accordance with the UK Government's recently revised Vehicle Emissions Factors and Local Fleet Profile toolkits.

The Scottish Government indicates that a national LEZ framework from DEFRA will be delayed to allow further consideration with the Department of Energy and Climate Change (DECC), and Department for Transport (DfT) (UK). It was anticipated that the Framework would provide guidance to Local Authorities considering introducing a LEZ.

The Scottish Environment Protection Agency (SEPA) and Transport Scotland (TS) jointly established a new national forum in October 2012: the Scottish Transport Emissions Partnership (STEP) to promote and share 'best practice' between key organisations and individuals with an interest and capability to influence the delivery of improvements in local air quality in Scotland. The forum consists of a range of partners, including Scottish Government, Local Authorities and representatives from the transport, planning and road user sectors.

On 25<sup>th</sup> July 2013 a 'Low Emission Zones' summit was hosted by STEP at the Local Authority's City Chambers. The aim of the event was to share experience and best practice across the different sectors. The Scottish Government indicated they will bring forward stakeholder consultation on creation of a Low Emission Strategy including Low Emission Zones which may be area, region or country specific.

## **8.6 Electric vehicles / Plugged in places**

City of Edinburgh Council has recently reviewed its policy on Parking Standards. The Policy now states that developers should consider provisions to encourage electric vehicle charging infrastructure throughout all types of development. This is currently being progressed via the inclusion of an informative on planning consents, rather than use of Section 75 Legal Agreements or use of planning conditions. It is recognised that the Council may need to provide more encouragement if increased electric charging provision is to be realised.

The United Kingdom Office for Low Emission Vehicles (OLEV) has provided funding for the second wave of its 'Plugged in Places' programme, which part funds electric vehicle infrastructure. The current programme will provide funds to establish charging points in public sector car parks through all 32 of Scotland's Community Planning Partnership areas.

The Central Scotland Plugged in Places Project (PiP) consortium, led by Transport Scotland, submitted a successful bid to the PiP programme. As a result Edinburgh Community Planning Partnership obtained funding and is currently concluding procurement for a number of electric vehicle charging points. Tenders relating to the project specified the installation of Combi-Rapid Chargers at three park and ride sites in the city. This type of charger consists of a 70 or 50 kW (32 Amps) DC and 43 kW (32 Amp) AC combined unit. However, the number of chargers eventually installed will depend on the prices tendered.

Currently there are electric vehicle charging points at nine Council premises, offering 13 charging heads for use by its own and NHS vehicles. Further charging points, at Scientific Services, Seafield and the Drumbrae Hub Garage, will be introduced during 2013, funded by Scottish Government, for use by City of Edinburgh Council and NHS electric vehicles and there are plans to install a charging point in the Quadrangle, City Chambers and further charging points at Waverley Court.

## **8.7 Traffic Management**

### **8.7.1 SCOOT**

Spilt Cycle Offset Optimisation Technique (SCOOT) systems are automatically responsive to traffic flow and demand, and therefore help to ease congestion by effective control over traffic signals. The City of Edinburgh Council upgraded their UTC server in March 2013. This includes an upgrade of SCOOT to the latest version, SCOOT MMX SP1. This has an enhanced emission models derived from the latest research by TRL, and along with numerous other tools and improvements, which should help to keep traffic moving and reduce emissions related problems around the city.

SCOOT is in place on a number of road networks in the city. However, a backlog of loop repairs and validation requirements has prevented the full operational benefits in some areas. Problems associated with the repair and installation of new loops has now been addressed and the following programme of works are being progressed by the Council. The status of SCOOT around the city is detailed in Table 8.9. Implementation and repair work is subject to funding availability.

#### **Gorgie Road**

Loops have been re cut at Westfield Road and Robertson Avenue Junction. Following the road re-surfing project loops will be reconnected and SCOOT re-commissioned at these two junctions.

#### **Ferry Road**

Repairs will commence on Ferry Road to address the following junctions, Inverleith Row, Granton Road, East Fettes Avenue and Pilton Drive. The majority of loops have been re-cut and programming of further loops is anticipated late 2013.

**Ardmillan Triangle**

This area encompasses Angle Park Terrace, Henderson Road, Ardmillan and Gorgie Road. Scottish Government funding has enabled SCOOT to be implemented at this junction. Gorgie Road/Dalry junction is part of the Central AQMA and Angle Park Terrace is subject to a Detailed Assessment. Loops have now been cut at the junctions; final work on junction configurations is underway with a view to validating the region in summer 2013.

**St John’s Road**

It is anticipated that SCOOT will be completed and commissioned in 2013 in association with the MOTES trial (see section 8.7.2). Cabling for loops at Manse Road has commenced. Scottish Government funding has been secured for this work.

**Table 8.9 Status of SCOOT in Edinburgh 2012**

SCOOT Status	Areas	In AQMA/area of concern
<b>Fully operational (Loops all functional)</b>	Causewayside, Dalkeith Road Gorgie Road junction Chesser Avenue/Balgreen Road	No, No Yes
<b>Operational in part (Loops functional but revalidation required)</b>	Bridges St John's Road	Yes Yes
<b>Loops need repaired. (Validation not required)</b>	Lothian Road, Slateford/ Shandon, Ardmillan, Queensferry Road, New Town, Ferry Road, London Road.	Yes (all)
<b>New loops required (Validation required)</b>	Roseburn, Slateford near Union Canal, Bristo Triangle	Yes, Yes No
<b>Never been installed</b>	High St and Mound, Telford Rd, Queensferry St, Morningside, St Mary's St, Stockbridge, Polwarth	No (all)
<b>Unlikely to be reinstalled due to tram receiving priority</b>	Queen Street, Princes Street, Haymarket, Leith Walk, Leith, St Andrew Square	Yes (all)

**8.7.2 MOTES (Real-time Remote Sensor system)**

MOTES sensors provide instant qualitative real-time NOx data, which can be linked to SCOOT systems and govern traffic signalling with respect to ambient concentrations of NOx.

A trial involving MOTES sensors was commissioned early in 2013 and a number of units were installed in March 2013 along St John’s Road (within the AQMA). The initial phase of the trial will involve the assessment of NOx data gathered from a co-located MOTES sensor at the real time air quality monitoring station at St John’s Road prior to linking with traffic signalling. It is hoped that improvements in traffic flow coupled with the knowledge of real time NOx data will lead to a reduction in hourly exceedences and the annual mean at this location.

## 8.8 Telematics Trial

Scottish Government support funding was provided during 2010/2011 for the Council to carry out a trial of a vehicle Telematics system, to assess its ability to deliver fuel efficiencies through improved vehicle and driver management. The trial is being carried out on a collaborative basis with the system provider Masternaut (Cybit) UK Ltd.

The aim is to reduce fuel consumption through more efficient driving, better route planning and improved utilisation of vehicles.

Fifteen vehicles that operate primarily within the AQMAs were selected for the trial and fitted with the necessary components and software. Following commissioning, the system was operated for a period of three months without intervention to obtain baseline information. Eco Driving training was then provided to the vehicle drivers and post-training data is now being gathered.

Relevant real-time data is gathered from the vehicle as it operates and fed back to a web-based collation system. The Council obtains weekly reports on driver/vehicle performance e.g. speeds, braking, idling and fuel consumption.

The trial has recently been completed and a report on the findings will be prepared and submitted to Scottish Government.

## 8.9 Local Transport Strategy Initiatives

Progress on Local Transport Strategy (LTS) policy measures which are included in AQAP and aim to reduce car traffic are detailed below:

### 8.9.1 Park and Ride

Edinburgh is served by a number of Park and Ride locations around the periphery of the city. The current number of spaces available has the potential to reduce the daily work commuter traffic journeys by 9174 if operated at maximum capacity (Table 8.10).

**Table 8.10 Park & Ride Sites serving Edinburgh & Number of Parking Spaces**

Park and Ride Site	Number of Parking Spaces
Wallyford, East Lothian	321
Hermiston	470
Sheriffhall, Midlothian	561
Newcraighall	565
Straiton	600
Ingliston	1030
Ferrytoll, Fife	1040
<b>Total</b>	<b>4587</b>

Data on usage rates for bus based Park and Ride sites in Edinburgh is collected by automated counting equipment and verified by twice daily manual counts.



Hermiston has the highest utilisation, which at times reaches 100% of existing spaces. Ingliston currently has utilisation of around 56%. However, this is post expansion and there is evidence of recent growth to fill the additional capacity. Straiton and Newcraighall (operated by Network Rail) have lower utilisation levels, but offer opportunity of spare capacity to meet future demand. Ferrytoll (operated by Fife Council) has shown steady increase in patronage since it was established in 2007 (expanded 2010). Data on usage shows that the site is approaching capacity during periods of peak demand.

In September 2009, the Local Authority's Transport, Infrastructure and Environment Committee approved a report recommending further capacity for Park and Ride sites at Hermiston (400 spaces) and Sheriffhall Midlothian (600 spaces). Plans to double the capacity at Hermiston are at an advanced stage with the final design complete and finance secured to acquire the necessary land.

Informatives and conditions attached to the planning consent placed a requirement to investigate the installation of electric vehicle charging points and stipulated that the site be serviced by Euro 5 (or better) buses. Current average peak occupancy rates at Sherrifhall vary between 60 and 75%, whilst near-capacity occupancy is observed during the Edinburgh Festival and Christmas period. Recent advice from Midlothian Council is that the proposed expansion at Sheriffhall has still to progress.

In addition to the existing Park and Ride sites the Scottish Government has identified a priority need for a new Park & Ride facility at Hillend, on Edinburgh's boundary with Midlothian. This project, which falls under the remit of Midlothian Council, will reduce car journeys into the city of Edinburgh from the south-west.

### **8.9.2 Promotion of Walking, Cycling and Safe Routes to School**

Edinburgh's LTS contains a number of cycling and walking policies intended to encourage these modes of travel. In further support of these ambitions the Council also introduced an Active Travel Action Plan (ATAP) in 2012. The Plan aims to deliver significant increases in the numbers of pedestrian and cycling journeys travelled within Edinburgh, and sets targets of 35% for walking and 10% for cycling of all trips in the city by 2020. A core element of the plan is the development of a 'Family Network' of cycle routes that enable people to travel around the city on safe routes, away from the busier roads.

The Council has also secured European funding for a cycling project, '*Managing Energy Reduction through Cycling eXcellence*' (MERCX). This project will fund cycling promotion through marketing and promotional activities including the development and distribution of publicity materials and the planning and delivery of workplace initiatives. This project commenced in October 2011 and is due to run for three years. The lead partner is Traject Mobility Management, Ghent, Belgium.

### **8.9.3 Differential Residential Car Parking Permits**

In October 2010, the Council implemented a 'Park Green' scheme; a tiered pricing system for residential parking permits with charges based on vehicle CO<sub>2</sub> emissions (or engine size for vehicles registered prior to March 2001). The scheme aims to

encourage those living in residential parking zones to buy and run lower emission vehicles. The scheme effectiveness will be assessed through Permit Charges data.

#### **8.9.4 Controlled Parking Zones**

The boundary of the city centre Controlled Parking Zone (CPZ) was substantially extended in 2006-2007. By allocating a proportion of on-road parking to residents, CPZ's effectively discourage car commuting into the city centre.

An alternative form of CPZ, a Priority Parking Zone (PPZ) - trialled recently in the south-central area of the city - has delivered positive outcomes and will be made permanent. The operational times of the PPZ have been set to coincide with peak travel periods and, as with the standard PCZs, serve to influence commuter travel. Introduction of new CPZs or PPZs and extensions will be kept under review.

#### **8.9.5 Borders Rail link**

Construction work has commenced to reinstate a thirty-mile rail link between Galashiels in Scottish Borders to Edinburgh Waverley Station. When completed, this major infrastructure project is likely to deliver air quality benefits in the city as a result of commuter modal shift from road to rail.

#### **8.10 Other policies & initiatives to improve air quality, not related to traffic sources.**

##### **8.10.1 Planning Guidance on Biomass Installations in Edinburgh**

The Council's Planning Committee introduced Interim Planning Guidance (IPG) in November 2009 to manage the introduction of unabated biomass combustion in new development proposals. The IPG '*Use of Biomass in Edinburgh of 50MW (e) or less in Edinburgh*' has discouraged the growth of commercial-scale biomass units within the city. Due to the challenges in meeting air quality standards in many parts of the city and on-going absence of effective abatement technologies continuation of this position is an important tool for managing emissions of fine particles and nitrogen dioxide.

In November 2012, the Council's Transport & Environment Committee agreed to continue the Biomass IPG until the outcomes of the delayed city-wide Detailed Assessment of PM<sub>10</sub> are reported.

##### **8.10.2 Clean Air Act & Smoke Control Areas**

Although Smoke Control Orders are in place across the whole of the Council's administrative area, it is apparent from a range of information sources, that increasing numbers of residents (the majority being anonymous) are burning coal and wood in open fires. To address the issue, the Council has adopted a pro-active approach and towards the end of each summer, runs a publicity campaign to draw attention to the air quality impacts and legal requirements of the Clean Air Act.

Table 8.11 Action Plan Progress

No.	Measure	Focus	Lead authority	Planning phase	Implement phase	Indicator	Target annual emission reduction in AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
1	Manage bus emissions	Reduce Emissions through establishment of Voluntary Emissions Reduction Partnership, between City of Edinburgh Council and Bus Companies	CEC/ SFC	2009 - 2011	2011 to 2014	Euro 4 by 2012 Euro 5 by 2015  Formal agreement not reached. Bus operators consider too onerous in the absence of financial support	<b>Central</b> 59% NOx  <b>St John's</b> 48% NOx  <b>GtJunct</b> 61% NOx  Target year <b>2015</b>  (per TTR study)	TTR study completed	Lothian Bus Main Fleet  Euro 3 (41%) Euro 4 (13%) Euro 5 (23%) Euro 5/6(23%)  First Scotland (East)  Euro 3 (69%) Euro 4 (22%) Euro 5 (9%)	Ongoing	Further improvement will require substantial additional funding
1a	Manage bus emissions and potentially emissions from other vehicle classes	Reduce emissions via implementation of a LEZ	CEC SFC/ transport	2010-2012	Feasibility study / consultations will have influence	Euro 5 by 2015	Not calculated  This work will be central to feasibility study  <b>Note</b> largest reduction in bus NOx emissions identified in LES study would be via <b>mandatory</b> scheme	CEC decision to consult with stakeholders on feasibility of LEZ  Scottish Govt. support funding secured for consultation	Delayed due to national re-evaluation of Vehicle Emission Factors and publication of DEFRA National LEZ Framework (anticipated Spring 2013)  Position agreed with Scottish Government – feasibility study delayed until 2013		Revised study in 2011 on buses within AQMAs show significant NOx reductions could be achieved with buses operating at Euro 5.  2013 LEZ feasibility study will also consider other vehicles classes

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No.	Measure	Focus	Lead authority	Planning phase	Implement phase	Indicator	Target annual emission reduction in AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
	Manage Road freight emissions	Reduce emissions via establishment of Freight Quality Partnership	SESTRAN	On going	On going	Euro 5	Not calculated			On going	Regional Freight Quality Partnership established by South East of Scotland Regional Transport Partnership. Progress to date has been limited with little direct impact in Edinburgh.
<b>2a (2)</b>	Manage Road Freight Emissions	Edinburgh ECOSTARS Europe.  Freight Recognition Scheme. Rating system includes - Emissions Stds; Types of Fuel; Driver training; Fuel efficiency; Scheduling techniques;	CEC	2010-11	2011 - 2014	Target number of vehicles to join scheme in each of the 3 funded years:  Yr 1 3000 Yr 2 4000 Yr 3 1667	Not calculated	Number of vehicles joined scheme to May 2013  2900 vehicles 35 operators	Recruitment of operators and vehicles ongoing. Membership levels consistent with scheme targets.  Increasing emphasis in 2013 on bus and coach operators	June 2014	
<b>3</b>	Council Fleet Cleaner Vehicles	Improve emissions by ensuring highest Euro std. for vehicle replacement. Increase uptake of electric vehicles		2003 onwards	Ongoing		Not calculated	Since 2003 all pre-Euro, Euro 1 and Euro 2 vehicles removed from fleet Euro 3 now small percentage	Current fleet profile  Euro 3 4% Euro 4 50% Euro 5 45% EEV 1%	Ongoing	
<b>3a</b>	Council Fleet	Reduction in fuel usage	CEC/SFC			Reductions in fuel		SG funding secured to	15 vehicles selected which	2013	If successful in reducing fuel consumption may be

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No.	Measure	Focus	Lead authority	Planning phase	Implement phase	Indicator	Target annual emission reduction in AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
	Develop driver eco training program. / carry out trial of vehicle telematics system.	beneficial to air quality	Corporate			consumption		trial vehicle telematics in CEC vehicles; Eco-driving instruction integral component	operate through all AQMAs  Baseline for 3 months established (no Intervention) for 10 vehicles Eco driving instruction provided to vehicle operators.		installed on other CEC vehicles  Report trial findings, including to Scottish Government, Spring 2013
4	LTS Park and Ride sites established	Reduce emissions by easing traffic congestion at peak travel times			Complete	Patronage rates	Not quantified NOTE Older buses were serving P&R; now minimum Euro 3 std.	Ferrytoll(1040) Ingliston(1030) Straiton(600) N'craighall(565) Sheriffhall(561) Hermiston(470) Wallyford(321)	Hermiston and Ferrytoll sites approaching capacity  Council approved additional capacity at:  Hermiston(+400) Sheriffhall(+600)	Proposals for further additional capacity at Hermiston & Sheriffhall  Total 1000 new spaces.	Now utilising minimum Euro 3 std. buses.  Further improvements still necessary
5	LTS Differential Parking	Carbon and LAQM pollutants	CEC Transport	2008	Oct 2010	Number of low carbon vehicles registered	Not quantified			Ongoing	

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No.	Measure	Focus	Lead authority	Planning phase	Implement phase	Indicator	Target annual emission reduction in AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
6	LTS Tram	Reduced Emissions - Zero at Source	CEC Transport	2008-11 (revised to 2014)	Issues with funding	Patronage	Not quantified		Tram Line 1 will now run between Edinburgh Airport and St Andrews Sq	2014	Not quantified Potential issues with bus and general traffic displacement Possible congestion where tram and bus routes coincide
7	LTS New rail line/stations	One of a package of measures to reduce road traffic entering Edinburgh from Airdrie / Bathgate and Newcraighall	CEC Transport			Passenger numbers	Not quantified	Bathgate / Airdrie and Newcraighall		Lines completed	Passenger growth recorded for all stations
8	LTS Cycle Initiatives	Modal shift Reduce emissions via Active Travel plan and MERCX cycling promotion project	CEC Transport			Modal shift All trips by 2020  35% walking 10% cycling	Not quantified	Development of cycle routes to enable travel around the city on safe routes CEC secured EU funding (MERCx project)		2014	
9	Traffic Management systems  <b>SCOOT</b>					Reduce congestion	Not calculated	Ferry Road, majority of loops re-cut and will now programme repairs from 2013.  SG funding for loop		2014	SCOOT – damaged systems to be repaired  Additional installation subject to funding availability

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No.	Measure	Focus	Lead authority	Planning phase	Implement phase	Indicator	Target annual emission reduction in AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
	<b>MOTEs (trial)</b>							repairs at St Johns Rd (on-going)  Ardmillan 'Triangle' Junction Validation Summer 2013  Trial start date early 2013 in St John's Rd AQMA -.		2014	MOTEs – Series of 10 remote pollutant sensing devices to be connected to SCOOT. Trial will establish if real-time pollutant data can be successfully linked with reactive traffic management processes
<b>10</b>	Development of city-wide Land Use and Traffic (LUTi) model	Measure would enable more accurate prediction of air quality impacts from cumulative development	CEC / SFC			Manage density of development/ locate new development such that traffic emissions impacts can be minimised		Limited due to high capital & revenue costs involved. Model requires high output resolution to enable meaningful dispersion modelling of AQ pollutants.	None		Land use and traffic modelling will continue to be considered.  Existing traffic modelling capability within CEC to be considered by Air Quality Working Group in 2013

## 9 Conclusions and Proposed Actions

### 9.1 Conclusions from New Monitoring Data

#### 9.1.1 Nitrogen Dioxide

Nitrogen Dioxide data for the year 2012 shows that monitoring locations within each of the AQMAs continue to exceed air quality objectives. Although some monitoring is below the annual mean objective, the AQMAs remain valid.

Exceedences at monitoring locations outwith the AQMAs are identified at the following locations, Queensferry Road, Angle Park Terrace, Slateford Road, Nicolson Street and South Clerk Street. A summary of all locations where monitoring results are at or exceed the objective are shown in Table 9.1.

**Table 9.1 Summary of locations where monitoring results are at or exceed the Nitrogen Dioxide objective in 2012**

Site ID	Area / Site Name	In AQMA?	Data Capture %	Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) (Bias Adjust. Factor = 0.76)
	<b>NORTH</b>			
29a	Bernard Street	Y Gt. Junction St.	88	<b>40</b>
29c	Bernard St/PS	Y Gt. Junction St.	92	<b>44</b>
55	Inverleith Row/Ferry Rd.	Y Inverleith Row	100	<b>46</b>
	<b>EAST</b>			
25	Easter Road/CH Shop	Y Central	92	<b>45</b>
25c	Easter Road No 105/109	Y Central	92	<b>41</b>
81	London Rd/East Norton Pl.	Y Central	100	<b>46</b>
67	London Rd/Earlston Pl.	Y Central	100	<b>46</b>
69	London Rd/Wolseley Pl.	Y Central	82	<b>42</b>
70	London Rd/Wolseley Terr.	Y Central	92	<b>41</b>
46	London Rd/Easter Road	Y Central	100	<b>41</b>
	<b>CITY CENTRE - NORTH</b>			
74f	George Street No 112	Y Central	92	<b>47</b>
74c	George Street No 41	Y Central	67	<b>56<sup>a</sup></b>
74e	George Street/Charlotte Sq.	Y Central	75	<b>43</b>
47	Princes Street (Eastbound)	Y Central	100	34 ( <b>45<sup>b</sup></b> )
33	Queen Street/Hanover St.	Y Central	67	<b>49<sup>a</sup></b>
36	York Place	Y Central	83	<b>41</b>
	<b>CITY CENTRE - SOUTH</b>			
138	Clerk Street No 15	No	67	<b>40<sup>a</sup></b>
48C	Cowgate Blackfriars	Y Central	67	<b>43<sup>a</sup></b>
48	Cowgate/Gurthrie Street	Y Central	92	<b>40</b>
48a	Cowgate/Blair Street	Y Central	100	<b>40</b>
37a	Grassmarket No 41	Y Central	83	<b>43</b>



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Site ID	Area / Site Name	In AQMA?	Data Capture %	Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) (Bias Adjust. Factor = 0.76)
49	Morrison Street	Y Central	100	46
137	Nicolson Street No 124	No	92	41
135	Nicolson Street No 69	No	100	50
136	Nicolson Street No 92	No	92	42
27	North Bridge – South	Y Central	100	52
142	South Clerk Street No 41a	No	92	42
141	South Clerk Street No 84	No	92	44
3	Torphichen Place	Y Central	92	48
2	West Maitland Street	Y Central	100	40
28b	West PortNo 62	Y Central	83	61
28d	West PortNo 42	Y Central	92	60
	<b>WEST</b>			
16	Glasgow RoadNo 68	Y Glasgow Road	100	47
15	Glasgow Rd Newbridge	Y Glasgow Road	100	40
58	Glasgow Rd Newbridge	Y Glasgow Road	96	48
40	Queensferry/Hillhouse Rd	No	100	40
64	Queensferry Rd No 550	No	100	50
9#	Queensferry Road	No	87	52(40)
1b	St John's Road IR	Y St. John's Rd.	100	44
1d	St John's Road No 131	Y St. John's Rd.	100	52
5#	St John's Road	Y St. John's Rd.	92	58
	<b>SOUTH WEST</b>			
76B	Angle Park Terrace No 74	No	100	51
76	Angle Park/Harrison Road	No	100	48
18	Gorgie RoadNo 8	Y Central	92	49
80	Gorgie Rd / Delhaig	Y Central	100	42
5	Gorgie Road/Murieston Rd	Y Central	100	43
77	Slateford RoadNo 97	No	100	43
77A	Slateford Road No 51	No	83	41
77B	Slateford Road No 93/95	No	100	46

<sup>a</sup> Means "annualised"

<sup>b</sup> Princes Street (ID47) data in brackets represents pavement exposure 2.5m from the kerb, data without brackets represents concentration at the facade

<sup>#</sup> Passive Diffusion Tube analysis except 5# and 9#, which is automatic monitoring

The Detailed Assessment for Nicolson Street, Clerk Street, South Clerk Street and Hope Park Terrace junction shows that there are exceedences of the annual mean objective along this section of road and marginal concentrations at the Hope Park Terrace junction. Assessment was complicated due to closure of Princess Street for tram works and rerouting of traffic up North Bridge towards Nicolson Street. Monitoring will continue as these extenuating factors unwind. If exceedences continue it will be necessary to extend the Central AQMA to include this area.

Monitoring locations established along Hillhouse Road fulfilling Detailed Assessment work show that there is no exceedance of the objective. An AQMA will not be required for this area, however, monitoring will continue as the data from the long term site was marginally close to the objective. (It also previously exceeded the objective in 2008 and 2010.)

Six additional monitoring sites were identified around the 'Armillan Triangle' and Slateford Road for the Detailed Assessment and good data capture was achieved. A number of the sites show exceedance of the annual mean objective, particularly sites close to the Angle Park Terrace and Harrison Road junction and on Slateford Road. Assessment was complicated due to extended road works on Gorgie Road, diversions for tram works and loss of the SCOOT system at traffic junctions. Monitoring will continue as these extenuating factors unwind. If exceedances continue it will be necessary to extend the Central AQMA to include this area.

A number of additional monitoring sites were identified in the Fountainbridge area for the Detailed Assessment. However data collection was poor for many of the sites, so it was not possible to make any conclusion. This Detailed Assessment work will continue in this area.

There has been a general increase in nitrogen dioxide concentrations measured at Queensferry Road, although the majority of sites remain below the annual mean objective. Monitoring at the automatic station was marginal when corrected back to the facade of the nearest residential properties. There was major road works and congestion on Queensferry Road associated with gas replacement infrastructure work. This work is now complete. One monitoring location continues to exceed the objective, while coincident sites meet the objective. It is anticipated that there may be local reasons for this and hence further investigations will be carried out and real time monitoring will continue.

There are a number of areas of compliance within the AQMAs. Exceedances in St John's Road AQMA were limited to the prevailing wind protected south side of St John's Road canyon around the Clermiston Road junction. Discussions are on-going within the Council about further potential measures in addition to the MOTES trial that could be taken to mitigate the idling of traffic at this junction.

All results within the original Great Junction Street AQMA boundary were less than the annual mean objective and are in borderline compliance with the objective. The average nitrogen dioxide level has been falling gradually, perhaps due to introduction by Lothian Buses of a number of low emission hybrid buses on the route in 2011. Data from the extended portion of the AQMA shows only the junction at Bernard Street above the annual mean objective.

In the Central AQMA, the majority of Shandwick Place has been closed to traffic for a number of years due to tram work. The automatic station at Queen Street at Wemyss Place remains well below the annual mean objective and the non-automatic sites on Leith Walk remain in borderline compliance with the objective.

If the 2013 data shows a continuation of the nitrogen dioxide reduction the extent of the AQMA boundaries can be reviewed in future years.

### 9.1.2 Particulate Matter PM<sub>10</sub>

2012 data from all monitoring locations met with the PM<sub>10</sub> EU limit values and the UK National Objectives. The background sites at St Leonard's and Currie, and roadside locations at Queen Street and Glasgow Road, met with the Scottish Air Quality Objectives.

Salamander Street did not meet the annual mean Scottish Air Quality Objective or the permitted number of daily exceedences. Monitoring at Queensferry Road shows the concentration of PM<sub>10</sub> is marginal (18µg/m<sup>3</sup>) in relation to the annual mean objective. The requirement to progress to city-wide Detailed Assessment of PM<sub>10</sub> remains valid and will be completed in 2013/14.

### 9.1.3 Trend Data

It has proved difficult to formulate reliable assumptions on data trends for both NO<sub>2</sub> and PM<sub>10</sub> due to disruptions to normal traffic flows, arising from construction works associated with the Edinburgh Tram project.

The average roadside trend of nitrogen dioxide within the AQMAs (2003 to 2012) using passive diffusion tubes is falling slightly; however, this has to be viewed with caution due to the major traffic disruption. The mean for 2012 is the same as that monitored in 2011.

At the automatic monitoring sites, the AURN background site at St Leonard's show the lowest nitrogen dioxide level (24ug/m<sup>3</sup>) since monitoring began at the site in 2004. The roadside site at Gorgie Road shows a flattening trend.

Decreasing annual mean NO<sub>2</sub> concentrations at Queen Street and St John's Road show downward trends. There is also a downward trend in the number of hourly exceedences at St John's Road, although there was a slight increase in the number of exceedences between 2011 and 2012.

Downward trends showing a decrease in PM<sub>10</sub> concentrations are noted at St Leonard's and Queen Street.

## 9.2 Conclusions relating to New Local Developments

With the Edinburgh tramline due to begin passenger services in summer 2014, the Local Authority is currently considering views on proposed changes to the traffic management system within the core city centre area. Details will be considered in a report to the Local Authority's Transport and Environment Committee on 27<sup>th</sup> August 2013.

A major infrastructure project involving road, footway and environmental improvements to Leith Walk and Constitution Street has the potential to impact traffic flow on Easter Road and Bernard Street (AQMAs). Traffic modelling assessments are currently being undertaken.

## 9.3 Other Conclusions

### 9.3.1 Implementation of AQAP plans

Steady progress has been made with respect to the two main measures contained in Air Quality Action Plan relating to management of emissions from buses and freight, via informal voluntary partnerships.

All bus companies operating in Edinburgh continue to improve their fleet, although it is recognised that without substantial financial input it will not be possible to achieve the draft Voluntary Emissions Reduction Partnership target of Euro 5, or better, by 2015.

Edinburgh ECOSTars freight recognition scheme is enabling the Council to engage much more effectively with the road freight sector on local air quality issues and is encouraging an increasing number of fleet operators to improve operational performance and to reduce fuel consumption and tailpipe emissions.

Other Scottish Local Authorities are now engaging in similar schemes which will bring wider benefits.

The Council is also setting a positive example by ensuring that emissions are reduced from its own fleet through operating newer, smaller and cleaner vehicles and undertaking a trial study of in-vehicle telematics to facilitate fuel efficiencies.

SCOOT (Split Cycle Optical Optimisation Technique) Traffic Management systems are being progressed some with Scottish Government air quality grant funding. SCOOT should be re-instated and fully functional at St John's Road and a new system installed at the '*Ardmillan Triangle*' in 2013. Repairs to pre-existing SCOOT systems have also commenced at Ferry Road and Gorgie Road. All locations are in areas where there are air quality concerns. Additional deployment of SCOOT is subject to funding availability, including Scottish Government air quality support grant.

A trial of remote real-time pollutant sensors (MOTEs) is to be incorporated with SCOOT at St John's Road. The combined system will govern traffic signals with respect to qualitative real-time NO<sub>x</sub> data. It is anticipated that peak concentrations of NO<sub>2</sub> will reduce, leading to a lower number of hourly exceedences and annual mean concentration.

A number of policies within the Council's Local Transport Strategy (to be updated during 2013) aim to reduce traffic levels overall and encourage modal shift e.g. Park and Ride, Controlled Parking Zones, Priority Parking Zones and the development and implementation of an Active Travel Action Plan – these benefit local air quality on a city-wide basis.

A revised Air Quality Action Plan will be produced during 2013/14 to address the new areas of concern and to account for any decision taken by the Council in respect of a Low Emissions Zone for the city. The revised Action Plan will be developed following the outcomes from the Further Assessment (Source Apportionment) work.

### 9.3.2 Additional Monitoring not covered by LAQM

Monitoring data for pollutants that are not directly the responsibility of the Council under the LAQM regime have also been included in this report for completeness. These pollutants are measured at the AURN background site at St Leonards.

The 2012 monitoring results show that PAH and PM<sub>2.5</sub> comply with their specified objectives and Ozone exceeded the national objective.

### 9.3.3 Planning Applications

The Proposed Local Development Plan focuses on four strategic development areas detailing a number of housing development sites and 'special economic' areas for development, which are considered to be of national or strategic economic importance. All these sites are described in Tables 5.1 to 5.3. Given the desire for continued economic growth in the city and wider region, it remains that radical city-wide transport initiatives and interventions will be required to deal with the impacts on local air quality.

## 9.4 Proposed Actions

### 9.4.1 Nitrogen dioxide

#### **Detailed assessment – Work in Progress; Expected completion April 2014**

Additional monitoring commenced in January 2012 at Portobello Road/Sir Harry Lauder Road junction to support detailed assessment work.

#### **Detailed assessment – Further investigation**

The Detailed Assessment work will continue at Nicolson Street, Ardmillan/Slateford Road area and Fountainbridge.

Further investigation will continue at Queensferry Road where monitoring from one passive diffusion site continues to show exceedence, which is not in keeping with the neighbouring automatic and non-automatic monitoring.

Monitoring will also continue at Hillhouse Road where one marginal result from a passive diffusion tube site was obtained during the detailed assessment (which included six other close sites).

#### **Further Assessment – Expected completion; Summer 2013**

Further assessment work is currently being undertaken with regards to the recently declared AQMAs at Inverleith Row/Ferry Road junction and Glasgow Road as well as the extension to the Central and Great Junction Street AQMAs. This includes source apportionment work at Inverleith Row, Glasgow Road, Gorgie Road, Cowgate, Grassmarket, Easter Road, London Road and Bernard Street.

### 9.4.2 PM<sub>10</sub>

#### **City-wide Detailed Assessment; Expected completion 2013**

Although data capture at the St Leonard's AURN site was poor in 2012, it is anticipated that the city wide assessment for PM<sub>10</sub> can be progressed and completed in 2013.

**9.4.3 Revision of the Air Quality Action Plan**

A revised Air Quality Action Plan will be produced during 2013/14 to address the new areas of concern, and to account for any decision taken by the Council in respect of a Low Emissions Zone for the city, anticipated in August 2013. The revised Action Plan will be developed following the outcomes from the Further Assessment (Source Apportionment) work.

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# Appendices

## Appendix A: Quality Assurance / Quality Control (QA/QC) Data

- A1 Nitrogen Dioxide (NO<sub>2</sub>) Diffusion Tube Bias Adjustment Factors
- A2 NO<sub>2</sub> Bias Adjustment Factor from Co-location Studies
- A3 Discussion of Choice of Factor to Use
- A4 PM Monitoring Adjustment
- A5 Short-term to Long-term Data adjustment for NO<sub>2</sub>
- A6 QA/QC of automatic monitoring
- A7 QA/QC of Diffusion Tube Monitoring

## Appendix B: Raw Passive Diffusion Tube Data

## Appendix C: Passive diffusion tube Distance Correction Calculations

## Appendix D: Passive diffusion tube data used in Trend analysis



## Appendix A: QA/QC Data

### A1 Nitrogen Dioxide (NO<sub>2</sub>) Diffusion Tube Bias Adjustment Factors

Edinburgh Scientific Services supply and analyse the passive diffusion tubes. The tubes are made of acrylic and the laboratory uses 50% v/v Triethanolamine (TEA) in acetone for the adsorbent; the grids are dipped into this solution and allowed to dry before insertion into the tube. The tubes are exposed for 4 or 5 week periods in accordance with the recommended calendar supplied by DEFRA. The method has remained unchanged during the monitoring periods.

The annual mean data from the historical local co-location studies always show that passive diffusion samplers over read the real time analysers by average factors from 0.85 to 0.91. See Tables A1a and A1b.

In 2011 there was a step change so the bias was calculated using a combination of local factors and the factors contained in the National Bias Data Base for Marylebone Road and West Lothian (Edinburgh Scientific Services carried out the analysis of passive diffusion tubes located at both of these sites). This involved undertaking a manual approximate orthogonal regression calculation which resulted in a combined bias factor representing the worse-case scenario bias factor of 0.81 (see Table A1b)

**Table A1a Historical bias data used in previous reports 2001 - 2006**

Site	Type	2001	2002	2003	2004	2005	2006
Queen St	Roadside	0.91	0.91	0.91	0.90	0.84	0.83
Haymarket	Roadside	0.93			0.88	0.93	0.91
Leith Walk	Roadside	0.89					
Currie	Suburban				0.91		
Gorgie	Roadside					0.86	
Roseburn	Roadside					0.92	
<b>Mean</b>		<b>0.91</b>	<b>0.91</b>	<b>0.91</b>	<b>0.89</b>	<b>0.89</b>	<b>0.87</b>

**Table A1b Historical bias data used in previous reports 2007 - 2011**

Site	Type	2007	2008	2009	2010	2011
Queen Street	Roadside	0.85	0.81	0.83	0.84	0.69
Haymarket	Roadside	0.92	0.87			
Gorgie	Roadside	0.91	0.94			0.87
Roseburn	Roadside		0.91	0.82	0.85	
St. John's Road.	Kerbside	0.93	0.86	0.92	0.92	0.79
Salamander	Roadside				0.79	0.77
Queensferry Road	Roadside					0.66
<b>Mean</b>		<b>0.90</b>	<b>0.88</b>	<b>0.86</b>	<b>0.85</b>	<b>0.76</b>
<b>Combined Mean*</b>						<b>0.81*</b>

\* An approximate orthogonal regression calculation undertaken with National Bias Database data

## A2 NO<sub>2</sub> Bias Adjustment Factor from Local Co-location Studies

Five automatic monitoring stations were considered for the co-location study during 2012. The monitoring station located at Glasgow commenced operation in September 2012, therefore data capture was insufficient to undertake co-located work at this site. The factors for 2012 studies are shown in Table A2.

**Table A2 Bias factors used for 2012 data**

Site	Type	Analyser	PDT* Mean	PDT* Precision	DC# % Analyser	Period	Bias Factor A	Bias B (%)
Gorgie Road	Road-side	39	46	4	99	11	0.86	17
Queen Street	Road-side	28	43	6	95	12	0.65	53
Queensferry Road	Road-side	52	73	5	92	10	0.71	41
Salamander Street	Road-side	30	38	4	98	12	0.80	25
St John's Road	Kerb-side	56	76	5	92	11	0.74	35

\* PDT - Passive Diffusion Tube

# DC - Data Capture for periods used

## A3 Discussion of Choice of Factor to Use

Edinburgh co-locates triplicate tubes on the sampler head cages of each roadside/kerbside monitoring station. The analysis has been undertaken for a number of years using Edinburgh Scientific Services Laboratory and the preparation of tubes has remained the same. Generally the passive diffusion tubes give higher concentrations than the real time analysers over an annual period.

Prior to 2011 historical data shows that the annual mean bias factors (Bias A) ranged from 0.85 to 0.91. As previously mentioned, the local co-location study for 2011 showed a step change in the mean bias factor (A) 0.76, therefore a combination of local factors and the factors contained in the National Bias Data Base were used which resulted in a factor 0.81.

In 2012, an annual mean bias factors (Bias A) of 0.75 was calculated. Although in keeping with the 2011 study, checks were carried out with respect to the automated and passive diffusion tube data to assess the reliability of the bias factor. AEA confirmed that there were no issues with the real time data.

With respect to analysis of passive diffusion tubes, Edinburgh Scientific Services stated that there had not been any change in laboratory procedures. Sample results for WASP were submitted and within range for 2012.

The co-located studies showed that overall precision of triplicate tubes and data capture from the automatic sites was good.

In conclusion, a combination of the local factors and the factor available on the National Bias Data Base, for Marylebone Road was used. A manual approximate orthogonal regression calculation was undertaken using the bias B values in accordance with Air Quality Consultant Guidance document paragraph 2.4 (see Table A3). This method resulted in a combined bias factor of 0.76 and represents the worse-case scenario.

**Table A3 Manual approximate orthonogel regression calculation for 2012 bias**

Site	Bias A 2012	Bias B 2012	Calculation as AQC Guidance Para 2.4	Bias 2012
<b>Local</b>				
Queen Street	0.65	53%		
Queensferry Road	0.71	41%		
Salamander Street	0.80	25%		
St John's Road	0.74	35%		
Gorgie Road	0.86	17%		
<b>National</b>				
Marylebone Road	0.86	16%		
<b>Mean Local Bias B</b>	<b>0.75</b>	34%	$0.34+1 = 1.34$	
			$1/1.34 =$	<b>0.75</b>
<b>Mean Combined</b>		31%	$0.31 +1 = 1.31$	
			$1/1.31 =$	<b>0.76</b>

#### A4 PM Monitoring Adjustment

Ricardo-AEA provided Volatile Correction Model (VCM) corrected Tapered Element Oscillating Microbalance (TEOM) data to the Local Authority under the Scottish Air Quality Database and Website project for the following automatic monitoring stations, Queen Street, Salamander Street and Glasgow Road.

Data from the Currie station was corrected by the Local Authority using the VCM correction spreadsheet provided by Kings College to provide a gravimetric equivalent concentration. The PM<sub>10</sub> FDMS purge data over the same period was obtained from Ricardo-AEA and included 23 monitoring sites in the Scottish network. Temperature and pressure data were obtained from Edinburgh Airport.

TEOM data was also corrected to provide a gravimetric equivalent using Edinburgh's local gravimetric factor 1.14, which was derived from undertaking a co-location study with a partisol unit and TEOM instrument in Detailed Assessment Report 2004.

#### A5 Short-term to Long-term Data adjustment for NO<sub>2</sub>

Data from St Leonards monitoring site was used to estimate annual nitrogen dioxide concentrations from short term measurements as it was the only site that met appropriate criteria in 2012. It is located in central Edinburgh and part of the national

Automatic Urban and Rural Network (AURN). Data capture (DC) was also considered to be within acceptable limits. The Bush Estate monitoring site has been used in previous years, however data capture was low during 2012 (76%).

### Automatic Monitoring at Glasgow Road

Monitoring at Glasgow Road started on 4<sup>th</sup> September 2012 after the station was moved from the Roseburn site. The period mean was therefore calculated from 04/09/2012 to 31/12/2012. The annual mean was for a full calendar year January to December 2012. The mean ratio which was used to calculate the estimated annual mean for Glasgow Road was 0.837.

#### Estimation of Annual Mean Concentration for Nitrogen Dioxide at Glasgow Road.

Site	Site Type	Annual Mean $\mu\text{g}/\text{m}^3$	Period Mean $\mu\text{g}/\text{m}^3$	Ratio
St Leonard's	Urban background	24.1	34.0	0.837

Glasgow monitoring data for the period 4/9/12 to 31/12/12 =  $33.8\mu\text{g}/\text{m}^3$  (Data capture 98%)

Annual estimated mean  $34.0 \times 0.837 = 28.5$  ( **$29\mu\text{g}/\text{m}^3$** )

### Non-Automatic Monitoring (Passive Diffusion Tubes)

The period mean for each diffusion tube exposure period is calculated to approximately noon of the day of exposure. The annual means were calculated from January 2012 until the 4<sup>th</sup>/5<sup>th</sup> of January 2013 which was end of exposure for 2012 tubes. The calculation for each tube is detailed in the subsequent tables.

Site ID / Location 33 – Queen Street			
Monitored Periods; 31/1/12 – 24/4/12, 29/5/12 – 37/7/12, 28/8/12 – 27/11/12			
Monitored Mean Value (M) = 65.3			
Background Site	Annual Mean	Period Mean	Ratio (R)
St Leonard's	24.1	22.9	1.052
Adjusted Mean (M x R) = 68.7			

Site ID / Location 138 – Clerk Street			
Monitored Periods; 5/1/12 – 1/2/12, 29/2/12 – 27/6/12, 26/9/12 – 4/1/13			
Monitored Mean Value (M) = 57.6			
Background Site	Annual Mean	Period Mean	Ratio (R)
St Leonard's	24.1	26.3	0.916
Adjusted Mean (M x R) = 52.7			

<b>Site ID / Location 48c – Cowgate/Blackfriars</b>			
<b>Monitored Periods;</b> 5/1/12 – 24/4/12, 27/6/12 – 29/8/12, 26/9/12 – 31/10/12, 28/11/12 – 4/1/13			
<b>Monitored Mean Value (M) = 60.5</b>			
<b>Background Site</b>	<b>Annual Mean</b>	<b>Period Mean</b>	<b>Ratio (R)</b>
St Leonard's	24.1	26	0.927
<b>Adjusted Mean (M x R) = 56.1</b>			

<b>Site ID / Location 64a – Queensferry Road</b>			
<b>Monitored Periods;</b> 1/8/12 – 4/1/13			
<b>Monitored Mean Value (M) = 44.1</b>			
<b>Background Site</b>	<b>Annual Mean</b>	<b>Period Mean</b>	<b>Ratio (R)</b>
St Leonard's	24.1	26.6	0.906
<b>Adjusted Mean (M x R) = 39.9</b>			

<b>Site ID / Location 50a – Whitehouse Road</b>			
<b>Monitored Periods;</b> 5/1/12 – 1/2/12, 29/2/12 – 26/9/12			
<b>Monitored Mean Value (M) = 37.9</b>			
<b>Background Site</b>	<b>Annual Mean</b>	<b>Period Mean</b>	<b>Ratio (R)</b>
St Leonards	24.1	20.8	1.159
<b>Adjusted Mean (M x R) = 43.9</b>			

<b>Site ID / Location 74c, George Street</b>			
<b>Monitored Periods;</b> 4/1/12 – 28/8/12			
<b>Monitored Mean Value (M) = 93.2</b>			
<b>Background Site</b>	<b>Annual Mean</b>	<b>Period Mean</b>	<b>Ratio (R)</b>
St Leonards	24.1	22.1	1.090
<b>Adjusted Mean (M x R) = 101.6</b>			

<b>Site ID / Location 80c, Gorgie Road</b>			
<b>Monitored Periods;</b> 4/1/12 – 31/1/12, 28/2/12 – 37/3/12, 29/5/12 – 26/6/12, 31/7/12 – 3/1/13			
<b>Monitored Mean Value (M) = 55.1</b>			
<b>Background Site</b>	<b>Annual Mean</b>	<b>Period Mean</b>	<b>Ratio (R)</b>
St Leonards	24.1	26	0.927
<b>Adjusted Mean (M x R) = 51.1</b>			

## **A6 QA/QC of Automatic Monitoring**

All monitoring stations except Currie, are subject to an independent audit and stringent QA/QC procedures which are undertaken by Ricardo-AEA on behalf of DEFRA and the Scottish Government. This agreement commenced in 2007. Nevertheless, all data, including calibration data, is scrutinised on a daily basis by Local Authority officers (Monday to Friday) by visual examination, to see if they contained unusual measurements. Any data which was considered to be suspicious e.g. large spikes, is flagged to undergo further checks.

### **Staff competence**

Officers are trained as local site operators in relation to the management of the stations and undertake the necessary calibrations and basic maintenance. Training was carried out by Ricardo-AEA in February 2013.

### **Calibration procedures**

The three ML 9841 B NO<sub>x</sub> analysers (located at Queen Street, Glasgow Road and Salamander Street) perform an auto-calibration each day with zero air and NO gas. Warning limits are set at +/- 5 % on the software program.

All other sites including those listed above are visited fortnightly, apart from the National Network site AURN which is visited monthly, and manual calibration checks are carried out using certified NO gas at approximately 500ppb plus a zero check. All cylinders are replaced at 12 - 18 month intervals. Nitric Oxide cylinders were supplied by Air Liquide UK prior to September 2012 and thereafter, by BOC.

Details of manual calibration checks and precision and accuracy of instruments can be made available on request.

### **Servicing**

All instruments are serviced and recalibrated every six months by the appropriate supplier. The service contracts include a support package for software and replacement parts, plus any necessary call outs to the sites.

The TEOM heads on the automatic PM<sub>10</sub> units are cleaned monthly and filters are changed regularly - approximately every 2 weeks.

During all visits to the monitoring stations, actions which are taken and activities adjacent to the site, are recorded in the site log book.

### **Data validation and ratification for the Currie Monitoring Station**

Data from the Currie Monitoring station is not subject to the independent audit and QA/QC procedures by DEFRA/the Scottish Government (Ricardo/AEA). However some basic checks are made to data on a daily basis (Monday to Friday) by visual examination. If suspicious data e.g. large spikes, is noted then this is flagged to undergo further checks.

PM<sub>10</sub> data sets which require further investigation are checked with respect to the following:

- Assessment of calibration records for drift precision /accuracy of analyser
- Negative values e.g. during /after TEOM filter change
- Spikes generated by analysers.
- Time/date of manual calibration no out of service switch Mobile AQ unit
- Examination of data gathered from other sites to ascertain if high values are caused by pollution episodes.
- Assessment of local activity construction/roadworks.
- Data capture rates distribution of missing or suspect data.

Nitrogen dioxide data from the Currie station does not undergo such investigation and is therefore raw data.

### **A7 QA/QC of Diffusion Tube Monitoring**

Sampling staff at Scientific Services Laboratory, City of Edinburgh Council are trained to fulfil the requirements associated with passive diffusion tube samplers. The tubes are also supplied and analysed by the laboratory. It is UKAS accredited for this task and participates in the Workshop Analysis Scheme for Proficiency (WASP) inter laboratory QC/QA. The laboratories performance was rated as being good over the monitoring periods 2008 to 2012.

NO<sub>2</sub> diffusion tube monitoring is conducted in accordance with the quality requirements contained in the UK NO<sub>2</sub> Survey Instruction Manual for local/unitary authorities and Government Guidance Document LAQM.TG (09). The kerbside diffusion tubes are located within 1 metre of the edge of the kerb, roadside locations are greater than 1 metre from the road edge or at the façade of residential property. The tubes are attached to sign posts/lampposts using plastic spacer holders at a height of 2.0m above ground level.

Three diffusion tubes from each monthly batch are used as blanks. These tubes are not exposed and are stored in the refrigerator during the exposure period. They are analysed along with the appropriate batch of exposed tubes. The purpose of blanks is to determine whether or not NO<sub>2</sub> contamination occurred during tube preparation.

All passive diffusion tube monitoring data shown in this report has been corrected for diffusion tube bias in accordance with LAQM TG (09). The monthly exposed passive diffusion tubes in Edinburgh over read real-time analysers. Pre-2011 this was by a factor range of 0.85 to 0.91, which were derived from local co-location studies. There was then a step change in the studies, so to achieve worse-case scenario the bias adjustment factor was calculated from a combination of national and local studies. In 2011 and 2012 the factors were 0.75 and 0.76 respectively.

## **Appendix B: Raw Passive Diffusion Tube Data 2012**

Data highlighted in bold red was excluded from the annual set due to very low or extremely high values that were not in keeping with the monitoring location nor related to pollution episodes. Other highlighted data was removed due to poor duplicate data.



City of Edinburgh Council

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Corrected
1	55.5	49.3	42.7	68.8	M	70.4	49.9	59.6	40.9	61.2	54.6	64.5	56.1	
2	90.7	101	102	61.9	60.2	60.3	49.8	53.4	45.6	57.5	49.2	66.7	66.5	
2	93.3	99.9	94.3	57.8	57.5	54	47.8	51.4	44.5	58	54.4	59.2	64.3	
3	77.7	85.5	INV	69.5	57.4	54.8	57.9	65.1	72.2	76.5	80.8	89.7	71.6	
4	52.7	46.1	48.9	55.6	60.8	55.9	51.1	51.9	44.7	55.8	44.8	58.5	52.2	
5	65.2	76.8	75.8	68.2	64.6	59.8	64	67.8	38.9	79.6	69.4	89.4	68.3	
7	38.3	46.4	40.2	35.6	27.2	25.4	35	40.5	33.3	41.1	58.7	M	38.3	
8	M	37.1	40	37.9	36.3	33	24.3	M	28.7	34.6	45.3	M	35.2	
9	41.3	34.7	40.1	48.5	54.6	54.2	46	51.5	36.5	51.6	43.5	51.9	46.2	
10	M	38.4	M	43.5	49.7	46.8	30.6	44.6	29.4	46	M	55.9	42.8	
11	M	33.6	37.8	37	36.7	34.1	28	26.7	27.9	38.1	30.3	42.2	33.9	
13	49.2	45.9	M	50.3	32.3	35.7	37.5	41.8	44	48.4	46.4	58.5	44.5	
14	48.3	41.4	43.5	31	32.3	33.2	37	35.3	34.8	41.9	48.3	46.6	39.5	
15	64.5	68.3	59.7	54.8	38.9	38.5	42.8	49.5	46.2	58.3	79.9	69.3	55.9	
16	64.2	54.8	56.8	91.8	79	76.1	84.8	80.7	57.6	89.1	75.2	78.3	74.0	
16	59.7	44.8	51.9	73.9	57.3	94.1	77.8	88.7	65	80.1	76.3	71.9	70.1	
18	58.3	55.4	67.8	78.7	73.6	48.9	M	67.5	51.2	73.8	64.3	69.4	64.4	
18	67.3	57.1	72	70.6	60.1	60.5	M	63.8	46.1	72.3	69.1	80.6	65.4	
19	38.4	33.9	36.4	26.8	19.1	18.7	19.4	22.1	24.6	31.6	40.1	38	29.1	
20	52.1	42.2	57.7	56.3	45.7	43.9	43.4	45.8	44.3	53.3	53.7	52	49.2	
21	58.8	55.1	M	53.6	36.1	39	M	53.5	46.1	53.2	59.8	54.7	51.0	
23	NS	45.4	46.1	65.5	77.2	77.1	49.7	58.0	43.2	M	M	71.7	59.3	
24	56.2	49.6	44.2	56.9	42.3	39.5	61.3	80.5	81.9	80.7	90.5	101	65.4	
25	55.2	46.1	59.7	67.8	70.3	66.2	M	68.9	43.2	61.7	59.5	55.2	59.4	
27	60.6	54.8	60.5	76.2	83.8	87.5	64.8	80.7	55.3	63.7	60.4	66.3	67.9	
28	M	M	57.2	62.4	53.6	M	51.3	M	46.8	M	M	M	54.3	N/A
29	54.3	51.7	52.6	50.6	39.5	33.4	42.8	45.8	40.2	52.5	54.3	63.1	48.4	

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Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Corrected
30	55.3	41.1	41.9	59.4	50.6	49.7	43.6	49.8	38.4	57.5	36.8	60.1	48.7	49.8 <sup>a</sup>
30	53.8	38.5	48.2	62.7	51.5	48.2	44	50.9	36.5	51.9	53.6	59.3	49.9	
31	47.7	41.8	M	42.5	45.4	46.6	34.6	40.9	31.2	41.5	41.2	48.8	42.0	
32	52.5	40.4	50.4	35.1	36.5	38.6	31.7	42.0	39.5	51.4	56.9	52.5	44.0	
33	M	64.8	80.1	73.6	M	83.8	61.9	M	49.4	52.1	56.8	M	65.3	68.7 <sup>b</sup>
34	37.8	36.5	31.7	29.1	26	23.1	24.7	30.2	23.1	32.3	35.4	38.2	30.7	
35	46.5	46.5	49.7	33.4	33.4	35.3	37.9	49	32.7	55.3	53.8	59.7	44.4	
36	56.5	40.8	69.4	72.1	69.7	65.7	52.6	54.6	M	42.7	M	42.6	56.7	
37	51.5	M	53.5	60.1	49.2	45.9	40.8	43.0	40.1	M	53.2	60.3	49.8	
38	48.1	44.7	41.8	38.9	29.1	26.1	26.9	32.2	M	42.1	48.4	55	39.4	
39	46.7	38.9	45.1	44.2	40.1	42.2	38.4	38.9	54.1	M	62.7	68.2	47.2	
40	52.6	50.3	52.9	53.4	60.6	58.3	47.3	51.7	35.9	51.7	50.2	61.9	52.2	
41	35.7	26.7	23.7	24.3	28.4	34.5	22.9	22.2	18.5	28.9	26.3	33.6	27.1	
42	30	29.5	25.5	22.7	18.1	19.1	16.6	18.3	17.7	23.8	23.8	33.9	23.3	
43	50.9	47.5	53.9	31.3	42.7	47.3	52.9	58.8	38.1	52.5	50.5	52	48.2	
44	42.8	47.4	44.2	40.1	48	45.7	33.6	48.9	37.4	46.6	47.8	57.4	45.0	
45	44.1	36.5	48.9	55.5	57.1	52.8	40.1	49.6	36.7	52.6	43.2	56.2	47.8	
46	64.5	62.2	55.6	25.8	54.2	52.9	44.5	54.8	50.6	59.2	58.7	57.9	53.4	
47	42.1	33.2	40.2	38	34.6	34.1	49.3	M	46.3	58.9	58.8	60.9	45.1	
48	55.9	55.1	47.3	56.2	47.5	49.8	47.7	58.9	46.6	M	58.3	58.1	52.9	
49	64.4	71	67.8	70.6	76.9	71	62.3	62.0	51.8	74.8	62.2	67.8	66.9	
52	53	55.3	53.9	50.6	48.2	M	45.9	48	44.5	57.1	56.3	52.8	51.4	
53	57.3	58.7	58.5	37.8	36.3	32.5	40.2	47.3	46.1	54.5	60.4	50.9	48.4	
55	61.5	69.2	70.5	59.4	52	54.9	56.9	62.1	57.2	67.3	66.7	68	62.1	
55	60.4	65.9	59.6	51.3	56.6	49	52.8	59.6	53.7	66.3	63	65.8	58.7	
56	47.2	42.8	39.6	48.1	47.2	38.5	32.7	45.8	36.4	50.5	47.8	52.2	44.1	
57	60.8	54.8	66.1	56.4	40.4	37.5	45.8	56.6	52.8	61.3	69.1	71.3	56.1	

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Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Corrected
58	65.7	71.9	62.9	76.6	52.3	M	60.5	74.8	74.2	77.6	89.5	87.2	72.1	
58	62.6	65.8	78.2	69.7	55.1	59.5	63.2	79.4	73.5	75.8	95.8	83.5	71.8	
61	46	38.4	25.8	28.7	47.9	43	38.7	46.6	38.4	46.1	45.3	55.3	41.7	
62	32.8	22.4	42.8	44.2	37.1	31.9	26.6	28.9	26.1	32.6	26.4	37.1	32.4	
63	42.9	41.4	35	32	25.6	23	25.5	31.8	32.8	37.3	43.3	46.2	34.7	
64	85.8	74.4	89	96.6	93.1	100	93.2	113	86.3	117	104	106	96.6	
66	46.3	47.8	46.8	48.3	54.2	53.9	36.5	44.8	39.4	45.8	41.1	57.5	46.9	
67	62.7	63.7	62.4	59.7	57.3	63.7	54.2	54.8	53.1	62.7	64.3	66.9	60.5	
68	43.6	48	47.2	48.1	35.1	38.2	34.7	M	38.9	45.1	42.9	50.9	43.0	
69	63.3	61.1	<1.0	114	43.8	47.2	27.2	47.2	53.7	80.5	66.8	62.7	60.7	55.4 <sup>a</sup>
70	66.1	67.8	70.9	51.8	38.6	34.7	39.7	52.7	M	51.3	55.3	58.7	53.4	
71	M	52.5	57.6	42.1	28.4	30.4	33.4	45.7	41.5	47.1	66.1	M	44.5	
71	M	47	53.7	38.7	28.5	27.2	32.4	41.0	39.4	42.7	59.3	M	41.0	
72	49.4	35.3	43.3	44.3	49	63.2	49.1	50.1	36.9	53	49.5	54.2	48.1	
73	42.7	32.9	34	35.4	28	25.1	23.6	26.0	27	M	41.1	47.9	33.1	
76	69.6	53.5	58.2	62.1	61.9	67.6	62.2	66.6	53.9	68.4	61.7	74	63.3	
77	55.2	47.2	52.9	61.2	62.1	60.9	51.6	56.3	41.8	64.2	57.4	62.7	56.1	
78	45.6	40	41.8	40	35.7	37.8	35	41.3	27.8	41	46.2	52.4	40.4	
79	53.5	47	47.8	46	56.3	48.6	47.3	47.8	30	51.1	54.7	56.4	48.9	
80	51.9	47.3	62.1	56.7	59.4	55.7	46.5	56.7	49.8	59.3	55	59.2	55.0	
81	72.1	67.7	70	55.5	39.3	40.5	39.2	55.3	59.6	66	77	77.1	59.9	
82	45.3	36.6	41	38.3	30.1	30	29.2	32.8	31.8	41.8	37.8	43.8	36.5	
134	M	M	54.6	53.2	M	M	M	M	M	49.2	56.9	58.6	54.5	N/A
135	67.4	67.9	78.6	70.5	62.2	56.1	54.3	66.5	52.9	75.2	74.9	67.9	66.2	
136	M	46.5	56.6	65.6	66.1	48	52.9	60.3	47.1	49.7	59.3	57.1	55.4	
137	55.3	46.2	49.8	58.4	70.8	63.6	M	57.3	37.1	48.7	52.6	47.7	53.4	
138	61.2	M	65.9	52.4	44.7	42.5	M	M	M	59.2	70.2	64.3	57.6	52.7 <sup>b</sup>

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Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Corrected
139	44.8	37.8	38.4	47.2	51.7	66.2	24.3	53.4	30.7	54	42.1	49.7	45.0	
140	54.6	48.7	45.3	46.3	44.3	45.9	48	62.1	40.5	52.2	53	M	49.2	
141	60.5	63.5	63.5	55.2	43.6	M	45.8	56.3	49.6	58.7	67.6	67.9	57.5	
142	M	62.5	60.6	54.6	58.3	55.7	43.4	57.5	41.2	48.2	61.7	56.3	54.5	
17a	54.5	54	47.1	<1.0	95.5	55.1	45.5	55.0	42.2	54.3	56.1	52.9	55.7	51.7 <sup>a</sup>
17a	58.4	56.1	52.6	<1.0	55.6	54.4	45.5	53.7	43.6	48.7	49.2	58.2	52.4	52.0 <sup>a</sup>
1b	55.8	43.5	52.4	75.2	69.4	70.8	56.1	56.8	46	56.3	53.6	61.9	58.2	
1d	74.7	73.9	74.2	66.6	50.9	53.7	61.9	68.9	65.8	68.5	83.6	84.2	68.9	
25b	30.9	53.3	42.4	52.2	42.7	44.3	43.2	51.6	37.3	51.1	52.2	51.2	46.0	
25c	52.5	41.2	52.8	55.3	33.3	56.9	35	83.6	44.5	88.8	66.5	64.6	56.3	53.8 <sup>a</sup>
25d	46.6	45.3	41.5	39.4	45.1	43.8	39.8	49.4	35.3	48.9	48	52.9	44.7	
25e	46.4	43.7	45.2	41.4	45.2	45.5	37.4	45.9	33.2	44.5	40	46.6	42.9	
25f	47.8	46.5	M	32.9	M	27.6	M	29.9	33	<1.0	104	47.4	46.2	N/A
25g	45.1	43.5	INV	27.9	M	29.3	26.7	33.4	31.7	INV	48.1	40.5	36.2	
28b	M	66	85.7	79	INV	79.4	81.8	84.7	59.3	80.2	97.3	93.7	80.7	
28c	M	53.4	55.8	M	53.8	M	53.9	M	47.6	59.8	M	64.7	55.6	N/A
28d	76	88.9	81.1	74.8	73.1	67.2	66.4	86.9	8.2	82.4	90.9	80.5	73.0	78.9 <sup>a</sup>
29a	M	42.4	51	61.7	55	54	50.7	56.9	36.5	44.8	53.2	58.9	51.4	52.9 <sup>a</sup>
29a	47.7	43.8	45	53.1	56.6	56.1	50.4	60.2	54.6	53.5	63.9	59.1	53.7	53.6 <sup>a</sup>
29b	46.5	37.9	43.1	45.4	45.8	42.6	40.6	45.0	30.9	47.2	49.1	50.1	43.7	
29c	58.6	49.3	60.1	57.2	53.8	51.5	58.6	64.4	51.7	52.6	73.4	64.9	58.0	58.6 <sup>a</sup>
29c	58.2	44.3	56.5	55.7	50	54.8	50.4	59.0	36	63.2	71.1	65.9	55.4	57.2 <sup>a</sup>
30b	59.2	60.8	58.1	46.8	37.6	34.9	41.8	49.6	48.8	M	65.9	50.5	50.4	
30c	49.1	50.5	50.4	59.7	58.3	52.6	50.4	M	36.6	31	52.2	61.8	50.2	
30d	48.9	44.7	43	59.4	55.8	52.5	44.9	55.4	34.4	49.4	53.8	58.3	50.0	
30e	52	56.5	M	49.4	38.9	30	39.9	M	41	52.7	63.1	60.4	48.4	
37a	M	59.1	53.6	58.1	57.7	55.8	44.3	61.0	47	73.8	59.4	73.3	58.5	

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Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Corrected
37a	M	47	64.4	53.8	55.5	57.9	41	59.7	49.7	97.6	63.8	117	64.3	54.8 <sup>a</sup>
37b	M	45.6	M	M	42.3	51	48.5	61.2	41.4	56.5	54.8	57.1	50.9	
37c	41.7	43.8	37.2	M	39.7	34.9	32.4	39.5	31.4	44.6	41.5	49	39.6	
40a	44.9	49	38.8	34.2	30.6	27	27.9	37.2	29.1	41.3	41.9	46.4	37.4	
40b	42.3	33.5	41.5	42.2	40.7	44.8	41.8	54.9	30.1	47.5	43.2	58.2	43.4	
40c	39.4	38	34.7	44.7	41.9	51.5	37.5	39.9	29.1	41.5	35.8	45.7	40.0	
40d	51.4	38.7	M	41.3	34.5	35.9	38.8	43.8	37.1	INV	51.6	50.1	42.3	
40e	43.6	35.3	M	36.3	31.8	36.1	32.9	41.3	30.2	39.5	39.7	M	36.7	
40f	47.2	35.3	37.8	57.9	65.9	68.9	45.5	53.5	37.9	49.9	44	54.7	49.9	
45b	52.3	42	M	47.6	42	38.8	21	40.9	31.4	42.9	40.5	45.6	40.5	
45d	55.6	48.4	57.5	51.8	40	36.3	41.8	49.4	41.5	47.2	62.3	M	48.3	
48a	46.9	42.1	58	50.6	62.6	57.9	52.6	49.9	43.3	53.3	53	57.8	52.3	
48b	49	46	45.4	43.7	44.3	38.7	42.2	50.2	36.5	41.7	M	M	43.8	
48c	57.9	69	62.4	49.3	M	M	51	65.6	M	61.2	M	67.4	60.5	56.1 <sup>b</sup>
48d	51.7	M	54.5	M	M	M	M	M	M	M	M	M	53.1	N/A
48e	47.9	49.9	M	66.3	66.2	62.4	M	M	49.7	M	53.8	M	56.6	N/A
50a	49.2	M	35	38	38.4	33.7	32.5	42.0	34.5	INV	M	M	37.9	43.9 <sup>b</sup>
51b	N/A	38.8	40.4	53.1	61.3	59.4	49	56.8	36.9	47	52.7	57.7	50.3	
51c	52.9	54.9	53.3	43.8	30	27	36.9	41.1	42.3	46.8	62	55.5	45.5	
55b	49.9	57.6	47.2	37.2	29.1	27.1	M	39.4	40.4	40	42.9	53.3	42.2	
55c	39.2	33.8	34.8	50.5	60.9	56	41.7	45.9	29.3	42.8	37.8	43.1	43.0	
64a	NS	NS	NS	NS	NS	NS	NS	43.5	36.5	45.1	44.1	51.2	44.1	39.9 <sup>b</sup>
73a	57.6	55.7	59.2	44.3	44	40.6	42.4	56.4	46.6	47.8	66	63.8	52.0	
73b	50.6	37.4	49.9	32	22.6	20.4	25.6	29.5	34.6	37.3	51.6	44.5	36.3	
73c	38.7	30.3	36.5	32.6	30.1	29.7	23.9	29.3	23.2	34.6	35.6	37.5	31.8	
74c	101	83.7	99.4	124	112	105	66.4	53.8	M	N/A	N/A	N/A	93.2	101.6 <sup>b</sup>
74e	M	89.5	97.9	89.6	85.1	91.2	M	M	48.5	56.6	72.9	78.6	78.9	

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<b>74f</b>	75.1	57.8	78.4	<b>M</b>	71.8	78.7	50.2	47.8	44.9	57.3	58.1	56.5	<b>61.5</b>	
<b>75a</b>	60.1	65.6	65	64.9	68.9	73.1	57.2	59.4	49.3	64.3	59.8	<b>M</b>	<b>62.5</b>	
<b>75b</b>	60.5	54.1	58.8	44.2	30.4	32.2	33.3	33.2	40.3	46.6	51.9	56.5	<b>45.2</b>	
<b>75c</b>	54.4	45.3	51	38.5	48.2	46.8	40.4	44.0	36.6	47.8	52.3	59.9	<b>47.1</b>	
<b>76a</b>	43.7	42.9	39.6	42.9	42.6	37.7	<b>M</b>	38.3	38.7	50.1	43.8	<b>M</b>	<b>42.0</b>	
<b>76b</b>	72	61.2	71.3	60	62	62.8	63.6	63.0	64.8	72.9	79.4	76.3	<b>67.4</b>	
<b>76c</b>	55.8	56.4	52.1	47.2	39.6	39.2	39.5	36.1	44.3	49.8	50.8	51.8	<b>46.9</b>	
<b>76d</b>	<b>M</b>	53	56.8	<b>M</b>	48.7	48.3	45.4	50.1	37.9	52.3	51.5	54.3	<b>49.8</b>	
<b>77a</b>	55.3	<b>M</b>	56.9	50	<b>M</b>	43.2	40.1	54.8	44.4	64.7	62.7	61.8	<b>53.4</b>	
<b>77b</b>	62.9	59	63	55.9	59.1	55.2	55.1	58.2	51.4	64.6	71.1	63.7	<b>59.9</b>	
<b>79a</b>	54.8	50.3	49.5	54.3	57.6	55.5	50.1	52.7	39.2	52	<b>M</b>	<b>M</b>	<b>51.6</b>	
<b>79b</b>	<b>M</b>	37.4	30.7	46	52.6	45.6	37.5	40.3	<b>M</b>	<b>M</b>	42	47.7	<b>42.2</b>	
<b>79c</b>	<b>M</b>	<b>M</b>	<b>M</b>	<b>M</b>	36.7	<b>M</b>	<b>M</b>	<b>M</b>	30.9	<b>M</b>	46.9	51.6	<b>41.5</b>	<b>N/A</b>
<b>79d</b>	<b>M</b>	59.4	<b>M</b>	62	62.9	<b>M</b>	<b>M</b>	<b>M</b>	<b>M</b>	73.3	74.8	74.2	<b>67.8</b>	<b>N/A</b>
<b>80a</b>	50.8	48.4	<b>M</b>	<b>M</b>	55.3	46	<b>M</b>	50.8	33	51	<b>M</b>	<b>M</b>	<b>47.9</b>	<b>N/A</b>
<b>80b</b>	46.9	35.5	48.6	45.8	53.5	<b>M</b>	32.1	46.4	36.2	51.7	38.5	<b>M</b>	<b>43.5</b>	
<b>80c</b>	56.6	<b>M</b>	68.3	<b>M</b>	<b>M</b>	45.1	<b>M</b>	57.3	51.2	42	61.2	59	<b>55.1</b>	<b>51.1<sup>b</sup></b>
<b>9a</b>	61.5	61.5	66.6	56	58.4	51.3	55.9	58.9	48.1	<b>M</b>	64.5	60.1	<b>58.4</b>	
<b>9b</b>	<b>M</b>	36.7	<b>M</b>	46.7	52.9	39.2	37	41	27.3	43	44.1	46.4	<b>41.4</b>	

<sup>a</sup> Correction made to mean calculation having regard to outliers or problematic data

<sup>b</sup> Correction related to annualised data, i.e. estimation of annual mean concentrations from short term monitoring

M – Tube missing on collection

INV – Tube inverted on collection; not analysed

NS – Monitoring not started

N/A – Data not used

Figures in bold red – Problematic data not used

## Appendix C: Passive diffusion tube Distance Correction Calculations

The following data was used to estimate annual concentration at relevant receptors using the NO<sub>2</sub> Fall Off with Distance calculator (DEFRA website, LAQM, Tools, 2013).

<b>SITE NO.</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>8</b>	<b>9a</b>	<b>11</b>	<b>13</b>
Step 1 How far from kerb was measurement made (m)	0.54	0.65	0.65	0.73	1.6	0.3	0.7	1.47	1.5	2.7
Step 2 How far from kerb is receptor in metres (m)	2.34	4.85	4.85	2.28	26.6	5.2	3.5	5.37	5.2	7.8
Step 3 Local background concentration of NO <sub>2</sub>	23	24*	24*	24*	28	32	25	25	20	24*
Step 4 Annual mean bias corrected value	42.7	50.5	48.9	54.4	39.7	51.9	26.8	44.4	25.7	33.9
<b>Result; Predicted annual mean at receptor</b>	38.4	40.6	39.6	47.8	32.4	43	26.3	38.9	24.1	31.3
<b>SITE NO.</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>16</b>	<b>19</b>	<b>21</b>	<b>23</b>	<b>24</b>	<b>31</b>	<b>32</b>
Step 1 How far from kerb was measurement made (m)	2	4	1.8	1.6	4.1	1.16	0.23	1	1.8	2.6
Step 2 How far from kerb is receptor in metres (m)	6	7.8	6.2	6.2	7.5	4.56	2.53	10	6.7	7.3
Step 3 Local background concentration of NO <sub>2</sub>	21	27.6	25.4	25.4	22.1	29.6	24.8	24*	22.6	20.1
Step 4 Annual mean bias corrected value	30	42.5	56.3	53.3	22.1	38.8	45.1	49.7	31.9	33.4
<b>Result; Predicted annual mean at receptor</b>	27.7	39.7	47.6	45.4	N/A	36.2	37.5	37.8	29.1	30
<b>SITE NO.</b>	<b>33</b>	<b>35</b>	<b>36</b>	<b>37</b>	<b>38</b>	<b>39</b>	<b>49</b>	<b>50a</b>	<b>52</b>	<b>53</b>
Step 1 How far from kerb was measurement made (m)	4.2	2.4	5.5	4.1	2.8	1.56	2.2	3.5	1.65	4.6
Step 2 How far from kerb is receptor in metres (m)	6.45	9.7	8.2	9.1	12.8	5.71	4.6	5.07	6.25	6.17
Step 3 Local background concentration of NO <sub>2</sub>	24*	24*	24*	24*	26.3	23.2	24*	15.7	20.9	20.9
Step 4 Annual mean bias corrected value	52.2	33.8	43.1	37.8	29.9	35.9	50.8	33.4	39.1	36.8
<b>Result; Predicted annual mean at receptor</b>	48.8	30.5	40.8	34.7	28.5	32.3	46.1	31.6	33.7	35.4

City of Edinburgh Council

<b>SITE NO.</b>	<b>55c</b>	<b>56</b>	<b>57</b>	<b>58</b>	<b>58</b>	<b>61</b>	<b>64</b>	<b>73a</b>	<b>74c</b>
Step 1 How far from kerb was measurement made (m)	4.28	2.57	3.6	2.8	2.8	2.8	1.49	2.8	0.54
Step 2 How far from kerb is receptor in metres (m)	5.34	7.17	12.1	8	8	15.3	10.69	4.78	4.84
Step 3 Local background concentration of NO <sub>2</sub>	22.1	23.2	22.1	27.6	27.6	18.2	18.2	22.1	24*
Step 4 Annual mean bias corrected value	32.7	33.5	42.6	54.8	54.6	31.7	73.4	39.5	77.2
<b>Result; Predicted annual mean at receptor</b>	32	30.9	35.8	47.5	47.4	25.9	49.6	37.1	56.3

<b>SITE NO.</b>	<b>74e</b>	<b>75a</b>	<b>75b</b>	<b>75c</b>	<b>40b</b>	<b>40F</b>	<b>140</b>	<b>47</b>
Step 1 How far from kerb was measurement made (m)	0.3	0.6	2.5	2.76	2.1	2.6	1.28	9
Step 2 How far from kerb is receptor in metres (m)	5.5	5.7	8.64	9.66	7	5.17	4.78	2.5
Step 3 Local background concentration of NO <sub>2</sub>	24*	24*	24*	24*	19.9	22.3	27.0	24*
Step 4 Annual mean bias corrected value	59.9	47.5	34.3	35.8	28.4	37.9	37.4	38
<b>Result; Predicted annual mean at receptor</b>	43	37.8	31.1	32.1	26	35.2	34.5	44.5

\* Measured background data from St Leonard's used



## Appendix D: Passive diffusion tube data used in trend analysis

Data which has been used to establish the average trend is shown below.

	Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	<b>Bias</b>	<b>0.91</b>	<b>0.89</b>	<b>0.89</b>	<b>0.87</b>	<b>0.90</b>	<b>0.88</b>	<b>0.86</b>	<b>0.85</b>	<b>0.81</b>	<b>0.76</b>
<b>Site ID</b>	<b>Site Name</b>										
<b>1</b>	<b>St John's Road</b>	46	45	52	57	54	50	43	47	39	43
<b>1b</b>	<b>St John's Road</b>		41	59	51	51	49	44	44	38	44
<b>1d</b>	<b>St John's Road</b>		66	79	80	82	76	58	59	56	52
<b>2</b>	<b>West Maitland St</b>	78	77	85	96	104	97	57	73	75	50
<b>3</b>	<b>Torphichen Place</b>	63	72	87	77	87	67	65	64	63	54
<b>18</b>	<b>Gorgie Road</b>	46	43	43	48	47	52	45	55	48	49
<b>21</b>	<b>McDonald Road</b>	41	39	38	42	47	42	40	41	36	39
<b>23</b>	<b>Roseburn Terrace</b>	47	40	49	52	70	67	48	58	41	45
<b>24</b>	<b>Princes Street</b>	84	85	84	87	93	79	46	73		50
<b>27</b>	<b>North Bridge</b>	58	54	49	52	56	52	48	49	49	52
<b>33</b>	<b>Queen Street</b>	44	44	44	46	53	53	51	56	50	
<b>36</b>	<b>York Place</b>	44	42	46	44	52	54	38	41	37	43
<b>30</b>	<b>Gt. Junction Street</b>	40	43	39	43	49	45	44	42	39	38
<b>28b</b>	<b>West Port</b>				68	65	73	67	62	57	61
	<b>Mean</b>	<b>54</b>	<b>53</b>	<b>58</b>	<b>60</b>	<b>65</b>	<b>61</b>	<b>50</b>	<b>55</b>	<b>48</b>	<b>48</b>

# **Consultation on review of Local Air Quality Management in Scotland**

**June 2013**

## Responding to this consultation paper

We are inviting written responses to this consultation paper by 6 September 2013. Please send your response with the completed Respondent Information Form to:

[andrew.taylor2@scotland.gsi.gov.uk](mailto:andrew.taylor2@scotland.gsi.gov.uk)

or

Andrew G Taylor  
Air Quality Policy Manager  
Directorate for Environment & Forestry  
Environmental Quality Division  
Area 1-H(N)  
Victoria Quay  
Edinburgh EH6 6QQ

If you have any queries or require further information about the consultation please contact Andrew Taylor on 0131 244 7813 or at the above email address.

We would be grateful if you could clearly indicate in your response which questions or parts of the consultation paper you are responding to as this will aid our analysis of the responses received.

This consultation, and all other Scottish Government consultation exercises, can be viewed online on the consultation web pages of our website at <http://www.scotland.gov.uk/consultations>

The Scottish Government has an email alert system for consultations, <http://register.scotland.gov.uk>. This system provides a weekly email containing details of all new consultations (including web links). It complements the Scottish Government distribution lists, and is designed to allow individuals and organisations to keep up to date with all Scottish Government consultation activity, and therefore be alerted at the earliest opportunity to those of most interest.

## **Handling your response**

We need to know how you wish your response to be handled and, in particular, whether you are happy for your response to be made public. Please complete and return the Respondent Information Form, which can be found at the end of this consultation paper, as this will ensure that we treat your response appropriately. If you ask for your response not to be published we will regard it as confidential, and we will treat it accordingly.

All respondents should be aware that the Scottish Government is subject to the provisions of the Freedom of Information (Scotland) Act 2002 and therefore has to consider any request made to it under the Act for information relating to responses made to this consultation exercise.

## **Next steps in the process**

Where respondents have given permission for their response to be made public and after we have checked that it contains no potentially defamatory material, responses will be made available to the public in the Scottish Government Library at Saughton House, K Spur, Saughton House, Broomhouse Drive, Edinburgh, EH11 3XD, (telephone 0131 244 4565) and on the Scottish Government consultation web pages within six weeks of the consultation closing date. You can make arrangements to view responses by contacting the Library on 0131 244 4552. Responses can be copied and sent to you, but a charge may be made for this service.

## **What happens next ?**

Following the closing date, all responses will be analysed and considered along with all other available evidence to help us reach a decision on any changes to the Local Air Quality Management system that may be required and how these should be implemented. We aim to issue a report on this consultation process within four weeks of the closing date and introduce any necessary legislation as soon as possible.

## **Comments and complaints**

If you have any comments about how this consultation exercise has been conducted, please use the contact details on page 2.

## **Purpose of consultation**

The purpose of this consultation paper is to invite discussion on the best way to address shortcomings identified in Local Air Quality Management (LAQM) delivery. Although air quality is a devolved matter, LAQM is currently operated to a large extent on a joint basis by the four UK administrations, as many of the issues and challenges are similar across the UK. This consultation focuses on LAQM in Scotland, with the other administrations conducting their own exercises.

Specific questions on which the Scottish Government is seeking views can be found in boxes throughout this paper and are summarised on the Respondent Information Form at the end. To aid our analysis it would be helpful if responses could be structured around these questions. However we welcome contributions on any aspect of the LAQM system and consultees are free to provide additional comments and evidence which they feel are not covered by this format.

## **Background**

Air quality has improved significantly over recent decades. However in the last few years reductions in concentrations of some major pollutants, most notably nitrogen dioxide (NO<sub>2</sub>) and particulate matter, have started to tail off, with exceedences of both domestic air quality objectives and EU limit values continuing in many urban areas. New Air Quality Management Areas (AQMAs) are still being declared for these pollutants and air quality action plans appear generally to be having little impact, despite many local authorities having had plans in place for several years now.

Local authorities play a key role in efforts to improve air quality but recent experience suggests that LAQM, the system devised to facilitate this work, is not delivering to the extent that it should be, particularly in relation to action planning. In addition to this, work undertaken in 2011 to produce a submission to the European Commission seeking a time extension for achieving the NO<sub>2</sub> limit value has highlighted differences in how air quality is assessed nationally and locally, leading to uncertainty amongst local authorities as to their role in contributing towards the achievement of EU air quality limit values and an underplaying of their part in UK level reporting to the EU.

Separately, a review of LAQM completed in 2010<sup>1</sup> concluded that its ability to diagnose air quality problems was effective but the capacity to deliver improvements was less so. Particular areas for improvement identified were a need for better information about what measures or actions worked in what circumstances and clearer direction on responsibilities and roles of those involved in managing air quality. Reporting arrangements were also described as burdensome and overly prescriptive, compounded by the complex regulatory landscape involving both the LAQM system and the requirements of the EU Directive.

## **Summary of proposals**

This consultation considers a number of possible changes to improve and refocus LAQM, including:

- consolidation of legislation;
- streamlining the review and assessment reporting system;
- revising and strengthening the action planning process; and
- considering the role of local authorities in meeting PM<sub>2.5</sub> obligations.

## **Key issues**

### **LAQM and EU reporting**

One consequence of the different requirements of LAQM and EU legislation is that local authorities do not always feel a shared ownership of air quality problems identified through assessment for EU reporting. In particular, there is a widely held view that the measures taken at local level are not sufficiently taken into account during this process. Central government therefore needs to do more to explain the links between local and national data gathering, and to explore how outputs from the LAQM regime can be utilised more effectively in EU reporting. Both systems are key to our efforts to improve air quality and we need to ensure that we are drawing maximum benefit from the information available to us. A demanding air quality regime operates at EU level and it is necessary for all who can contribute to the achievement of the requirements to recognise and understand their particular roles.

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<sup>1</sup> <http://www.defra.gov.uk/environment/quality/air/air-quality/laqm/>

A number of pollutants covered by the EU Directive 2008/50/EC on ambient air quality and 4<sup>th</sup> Daughter Directive 2004/107/EC need to be considered as part of the LAQM review. For example, there is a requirement in the 2008 directive that “Member States shall take all necessary measures, not entailing disproportionate costs, to reduce exposure to PM<sub>2.5</sub>”. Evidence for the adverse effects of PM<sub>2.5</sub> on human health is now well established and it is important to consider how local authorities can work towards meeting these new challenges. Therefore as part of this review we are considering in what capacity authorities can help central government achieve its PM<sub>2.5</sub> targets, taking into account local circumstances.

## **Public health**

Poor air quality can have significant impacts on health and wellbeing in areas of high pollution, and improvements can make a vital contribution to public health goals, such as improving life expectancy. Air quality policy across the UK is based on health priorities, but there is a feeling that this message is not being communicated as effectively as it might be. Thus, as part of this review, the Scottish Government wishes to develop a more clearly defined role for air quality management in addressing public health issues, at both national and local levels.

## **Streamlining requirements**

There are objectives for some pollutants under LAQM which are not mirrored by EU limit values, such as tighter objectives for PM<sub>10</sub> and PM<sub>2.5</sub>, an annual objective for 1,3 butadiene and a 15 minute objective for SO<sub>2</sub>. Conversely there are target values at EU level for ozone, which local authorities are not currently required to work towards. We need to consider what responsibilities local authorities have or should have in regard to such obligations, for instance whether we completely align local objectives with EU limit values or adopt a smaller, more focused set of targets under LAQM. There is also the potential to streamline legislation through merging of regulations covering LAQM and EU requirements, and to consider changes to the review and assessment reporting system.

The Scottish Government’s view is that consolidating regulations would convey little improvement to LAQM, although we welcome views on this issue (which is considered in more detail in section 2 of this paper). Simplifying LAQM reporting arrangements, on the other hand, could help to free up time and resources which would be better focused on action planning. This aspect is covered in section 3.

## **Review of EU air quality legislation**

The European Commission is undertaking a review of EU air quality legislation, which is due for completion later in 2013, with publication of a package of measures including an update to the 2005 Thematic Strategy on air pollution, a proposal to ratify the revised UNECE Gothenburg Protocol and a proposal to amend the National Emissions Ceilings Directive, setting tighter ceilings to be met by 2025 and or 2030. This could potentially result in tighter limits on some pollutants, for instance, PM<sub>2.5</sub> and other new challenges to reduce air pollution further in the future. Some of these changes may have implications for LAQM. In the meantime, this does not prevent us from moving forward with considering changes to air quality delivery at the local level, although developments as the Commission's review progresses will need to be borne in mind.

**Q1 a) Do you agree that these are the key issues which any changes to LAQM should take account of?  
b) Are there any other key issues which the Scottish Government should consider as part of the review?**



# 1. Current situation

## Local Air Quality Management

Part IV of the Environment Act 1995<sup>2</sup> provides the framework for Local Air Quality Management (LAQM) in the UK, and local authorities' duties under this Act. The Air Quality (Scotland) Regulations 2000<sup>3</sup> and Air Quality (Scotland) Amendment Regulations 2002<sup>4</sup> prescribe air quality objectives and the dates for achieving them. For each objective, local authorities have to consider present and future air quality and assess whether the objectives are likely to be achieved by these dates and in subsequent years. The procedures for doing this are set out in the 1995 Act and in policy<sup>5</sup> and technical<sup>6</sup> guidance issued by the Scottish Government.

Where a local authority concludes that any objective is unlikely to be achieved by the require date, an Air Quality Management Area (AQMA) must be declared by means of an order under section 83(1) of the 1995 Act. Within an AQMA, section 84(1) of the Act requires local authorities to carry out a further assessment of air quality within 12 months of the designation order. Section 84(2) requires that an air quality action plan is produced, setting out the measures that the authority will introduce in pursuit of the air quality objectives. There is no prescribed timescale for the submission of the action plan but the Scottish Government expects plans to be submitted between 12-18 months following the designation order.

Local authorities are not legally required to meet the air quality objectives but must do all that is reasonably possible in pursuit of them and report on progress annually. The Scottish Environment Protection Agency (SEPA), acting with the approval of the Scottish Ministers, has reserve powers under section 85 of the Act to require local authorities to take action where they are failing to make sufficient progress. These powers have never been used and are generally regarded as a last resort.

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<sup>2</sup> <http://www.legislation.gov.uk/ukpga/1995/25/contents>

<sup>3</sup> <http://www.legislation.gov.uk/ssi/2000/97/contents/made>

<sup>4</sup> <http://www.legislation.gov.uk/ssi/2002/297/contents/made>

<sup>5</sup> <http://www.scotland.gov.uk/Topics/Environment/waste-and-pollution/Pollution-1/16215/PG09>

<sup>6</sup> <http://www.scotland.gov.uk/Topics/Environment/waste-and-pollution/Pollution-1/16215/TG09>

**Table 1: LAQM objectives and EU limit/target values<sup>7</sup>**

<b>Pollutant</b>	<b>Air Quality Objective</b>	<b>Date to be achieved</b>	<b>Date to be achieved (EU target values<sup>8</sup>)</b>	<b>Date to be achieved (EU limit values<sup>9</sup>)</b>
Benzene	16.25 µg/m <sup>3</sup> running annual mean	31 December 2003	This is not an EU target value	This is not an EU limit value
	3.25 µg/m <sup>3</sup> running annual mean	31 December 2010		1 January 2010
1,3 – Butadiene	2.25 µg/m <sup>3</sup> running annual mean	31 December 2003	This is not an EU target value	This is not an EU limit value
Carbon Monoxide	10.0 µg/m <sup>3</sup> running 8-hour mean	31 December 2003		1 January 2005
Lead	0.5 µg/m <sup>2</sup> annual mean	31 December 2004		1 January 2005
	0.25 µg/m <sup>3</sup> annual mean	31 December 2008	This is not an EU target value	This is not an EU limit value
Nitrogen Dioxide (NO <sub>2</sub> )	200 µg/m <sup>3</sup> (not to be exceeded more than 18 times a year – 1 hour mean)	31 December 2005		1 January 2010
	40 µg/m <sup>3</sup> annual mean	31 December 2005		1 January 2010

<sup>7</sup> Air quality is a devolved matter so each UK administration has its own regulations transposing EU requirements. However UK wide EU provisions are the responsibility of the UK Government and are covered in each set of regulations.

<sup>8</sup> Target values differ from limit values in that they are to be attained where possible by taking all necessary measures not entailing disproportionate costs.

<sup>9</sup> Limit values are legally binding EU parameters which must not be exceeded.

Particles (PM <sub>10</sub> )	50 µg/m <sup>3</sup> not to be exceeded more than 35 times a year – 24 hour mean	31 December 2004		1 January 2005
	50 µg/m <sup>3</sup> not to be exceeded more than 7 times a year – 24 hour mean	31 December 2010		This is not an EU limit value
	40 µg/m <sup>3</sup> annual mean	31 December 2004		1 January 2005
	18 µg/m <sup>3</sup> annual mean	31 December 2010		This is not an EU limit value
Sulphur Dioxide (SO <sub>2</sub> )	350 µg/m <sup>3</sup> not to be exceeded more than 24 times a year – 1 hour mean	31 December 2004		1 January 2005
	125 µg/m <sup>3</sup> not to be exceeded more than 3 times a year – 24 hour mean	31 December 2004		1 January 2005
	266 µg/m <sup>3</sup> not to be exceeded more than 35 times a year – 15 minute mean	31 December 2005	This is not an EU target value	This is not an EU limit value
Polycyclic Aromatic Hydrocarbons (PAHs)	0.25 ng/m <sup>3</sup> – annual average	Not currently a requirement under LAQM	31 December 2012 (target of 1ng/m <sup>3</sup> )	

Ozone (O <sub>3</sub> )	100 µg/m <sup>3</sup> not to be exceeded more than 10 times per year – 8 hour mean	Not currently a requirement under LAQM	31 December 2012 (target of 120 µg/m <sup>3</sup> not to be exceeded more than 25 times a year – averaged over 3 years)	
PM 2.5	12 µg/m <sup>3</sup> – annual mean	Provisional objective not currently in regulations	This is not an EU target value	This is not an EU limit value
	25 µg/m <sup>3</sup> – annual mean		2010	2015
	20 µg/m <sup>3</sup> - annual mean (subject to review in 2013)			2020
	National Exposure Reduction Target – average concentration over 2009/10/11	Not currently a requirement under LAQM	Between 2010 and 2020	

## EU Directives

Scottish and UK policy on air quality is to a large extent driven by EU legislation. Directive 2008/50/EC on ambient air quality<sup>10</sup> sets legally binding limits for concentrations in outdoor air of major air pollutants that impact public health such as particulate matter and nitrogen dioxide. As well as having direct effects on human health and the environment, these pollutants can combine in the

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<sup>10</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:152:0001:01:EN:HTML>

atmosphere to form ozone, a harmful air pollutant and potent greenhouse gas, which can be transported great distances by weather systems.

The 2008 directive replaced nearly all the previous EU air quality legislation and was transposed in Scotland through the Air Quality Standards (Scotland) Regulations 2010<sup>11</sup>. The 4th air quality daughter directive 2004/107/EC that sets targets for levels in outdoor air of certain toxic heavy metals and polycyclic aromatic hydrocarbons will be incorporated at a later date. Equivalent regulations exist in England, Wales and Northern Ireland.

Table 1 summarises the similarities and differences between LAQM and EU requirements. The key points are:

- Ambient air quality is assessed at LAQM level via screening using local monitoring and modelling, following the Scottish Government's policy and technical guidance.
- UK reporting to the EU is based on monitoring data from the Automatic Urban and Rural Network (AURN) and modelling data from the Pollution Climate Mapping model, taking into account assessment criteria set out in the directive.
- Local authorities are not legally required to achieve the LAQM objectives, whereas EU limit values are mandatory for Member States.
- In some cases, timescales for meeting objectives and limit values are different.
- LAQM currently has an annual mean objective for 1,3-butadiene, a 15 minute objective for SO<sub>2</sub> and tighter objectives for PM<sub>10</sub> which are not replicated in EU legislation. There are also additional objectives for benzene and lead.
- Exposure reduction for PM<sub>2.5</sub> is not currently required under LAQM, whereas the 2008 directive sets provisions for Member States to achieve PM<sub>2.5</sub> targets by certain dates.

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<sup>11</sup> <http://www.legislation.gov.uk/ssi/2010/204/contents/made>

## 2. Should EU and LAQM air quality regulations be consolidated?

Currently we operate with two sets of air quality regulations, with LAQM objectives being followed by local authorities and EU limit values being the responsibility of the UK Government and the devolved administrations. There is a significant degree of overlap between the two but in some cases LAQM objectives go beyond EU requirements. There are also differences in how air quality is assessed at domestic and European levels.

The 2008 directive sets minimum standards, with Member States or devolved administrations able to adopt more ambitious national standards provided EU obligations are covered. This has been done in the UK where the LAQM compliance deadlines have for some pollutants been earlier than the EU equivalents and some pollutants have additional objectives to be achieved. For example LAQM objectives for NO<sub>2</sub> were to have been achieved by 2005 but the deadline for the equivalent limit values was 2010. Similarly, in LAQM we have an annual mean objective for 1,3-butadiene, a 15 minute objective for SO<sub>2</sub> and tighter objectives for PM<sub>10</sub> and PM<sub>2.5</sub> which do not have EU equivalents. This approach has not however been reflected in the transposition of air quality directives, where UK Government and devolved administration policy is to go no further than directive provisions. These differences could be perceived as confusing for those seeking to understand how air quality management operates in the UK, although there is no indication that there is any widespread misunderstanding in Scotland of how the two regimes complement each other.

The Scottish Government is seeking views from consultees on whether merging the two sets of regulations would have any significant benefit. Aligning achievement dates could provide enhanced clarity, but we would also like to hear what additional benefits could be delivered by merging, given that there are some quite fundamental differences between the requirements of LAQM and EU legislation. It would be helpful if consultees in favour of combining the regulations could set out how they think this could be done in a way that would make them less rather than more confusing, and indeed why this would be desirable.

**Q2 Do you think the regulations covering LAQM and EU legislation should be merged? Please provide reasons for or against this approach.**

## **Is there a case for removing some pollutants from LAQM?**

### **1,3-butadiene**

1,3-butadiene derives mainly from combustion of petrol, therefore motor vehicles and machinery are the dominant sources. It is also emitted from some processes such as the production of synthetic rubber for tyres. It is recognised as a genotoxic carcinogen and therefore no absolutely safe level can be defined.

The UK is the only EU Member State to have adopted the 1,3-butadiene standard, based on proposals by the Expert Panel on Air Quality Standards (EPAQS), despite limited monitoring data being available and considerable uncertainties surrounding the evidence on the effects on human health of the very low concentrations found in ambient air. Epidemiological data derived from animals has, however, provided good evidence on the health effects of 1,3-butadiene. The objective was set at a level deemed to be of very minimal health risk to the population. No AQMA has ever been declared anywhere in the UK for this pollutant.

### **Sulphur dioxide 15 minute objective**

SO<sub>2</sub> derives mainly from combustion of fuels containing sulphur, such as coal and heavy oils, by power stations and refineries. Between 1990 and 2009 there was an 89% reduction in SO<sub>2</sub>, driven largely by efforts in the refining industry to reduce the sulphur content of petroleum-based fuels, shifts in power generation fuel mix and the installation of Flue Gas Desulphurisation abatement on power stations. SO<sub>2</sub> is a precursor to secondary particular matter and therefore contributes to the ill health effects caused by PM<sub>10</sub> and PM<sub>2.5</sub>.

EPAQS proposed the 15-minute averaging period because the effects of SO<sub>2</sub> on the lung's airways may occur very rapidly, therefore as short an averaging period as practical is desirable. An impact assessment in 2007 concluded that there might be additional health costs of between £11 and £41m if this objective were not applied. There are uncertainties associated with this objective due to limited data availability and the fact that it is based on effects on vulnerable groups rather than on the population in general. There is currently one AQMA for this objective in Scotland, and 11 in the rest of the UK.

## **Carbon monoxide and lead**

The EU limit values for both lead and carbon monoxide are similar to the LAQM objectives for these pollutants. Improvements in fuel standards and engine technology have led to significant reductions in both these pollutants so that their levels in ambient air are now very low. No Scottish local authority has ever declared an AQMA for either of these pollutants. Therefore a case could be made for removing these objectives from the LAQM regime.

## **Consideration**

Although SO<sub>2</sub> is not an issue on the same scale as particulate matter or NO<sub>2</sub>, it can have significant localised effects and the Scottish Government is of the view that there is no case for the removal of the 15 minute objective. For the remaining objectives covered in this section, a stronger case could be made. However, the reporting requirements for these objectives are not burdensome and removal could create the perception that the Scottish Government is weakening its approach to air quality management, even though concentrations of these pollutants are now very low.

**Q3 Do you think we should retain the LAQM objectives for 1,3-butadiene, SO<sub>2</sub> (15 minute), carbon monoxide and lead?  
Please state your reasons for or against, including potential implications.**



### **3. Streamlining the review and assessment process**

All local authorities must submit an updating and screening assessment (USA) every three years, and a progress report (PR) in intervening years. Where the USA or PR highlights an exceedence or possible exceedence of any objective then the local authority must prepare a detailed assessment, declare an AQMA if the DA confirms the exceedence or the risk of exceedence, and then prepare a Further Assessment (FA) to inform the development of the action plan.

Local authority monitoring data are considered in the preparation of the annual UK assessment of compliance with the limit values, although only AURN sites are actually included in the assessment. Non-AURN sites can be considered for inclusion subject to such sites meeting criteria and standards in the 2008 directive, and to other sites potentially dropping out. A more detailed assessment is undertaken where a site might change the compliance status of a zone.

Local authority action plans are referred to in UK reports to the EU, for example the time extension application for the NO<sub>2</sub> limit value submitted in 2011. These arrangements could be more formalised so that the local authority contribution to meeting limit values is clearer, for example by ensuring that limit value exceedences are taken into account in the development of action plans.

#### **Considerations**

Whilst the current system of review and assessment is very good at identifying air quality problems, the action planning element of LAQM has been less effective. This review offers an opportunity to consider whether anything can be done to reduce and/or simplify the reporting requirements and thereby free up more time and resources for a greater focus on action planning work.

There are clearly a number of ways in which the current reporting system could be modified. One possible approach is to do away with all reports except a PR for all local authorities, incorporating an action plan annual report for those authorities concerned. We are at the stage where we know the locations of just about all the areas where poor air quality still needs to be addressed. USAs appear to add little to what we know, but are more time consuming to prepare than a progress report. Given the comprehensive monitoring network and body of historical data we now have, it should be possible in most cases to identify the need for an AQMA

without a DA. DAs in general have a major negative impact on action planning by using up resources and postponing action plan development while work is completed. The option for a one off piece of work where absolutely necessary e.g. a modelling exercise or emissions inventory, could be retained but as an exception rather than the rule.

Likewise, FAs are of relatively limited value and may be contributing to delays in the action planning process. There seems to be a clear consensus that the FA is the least valuable part of the reporting process, and the Scottish Government is already taking steps to remove the requirement for this by amending the Environment Act 1995 through the Regulatory Reform (Scotland) Bill, which is currently progressing through the Scottish Parliament. Local authorities will still be expected to undertake source apportionment work, which has usually been done as part of the FA, but will have greater flexibility to incorporate this into action planning.

It is also the case that local authorities generally seek approval of significant reports from elected members before progressing, and this usually adds considerably to delays. Removing the requirements for most reports would also remove this bottleneck. The Scottish Government's preferred option is to move to a system of annual progress reports with all other reporting requirements removed, but we would welcome views on this proposal and also any other suggestions for changing the reporting process.

Whilst a case can be made for reducing the frequency of reports for local authorities with fewer air quality issues i.e. from annually to less often, the resources saved are likely to be minimal and the Scottish Government considers that it would probably lose more than it gains. The burden for small rural authorities producing a basic annual report is light and there has been no pressure from Scottish authorities to reduce the reporting frequency. There is a stronger case for reducing reporting for authorities with major issues, as it can be argued that the time and resources spent on producing reports could be more usefully directed towards action planning.

Should consideration be given to different reporting requirements for different local authorities, there is the question of what criteria would be used to decide who reports what and how often. More explicit encouragement for authorities to work together on a regional basis, or possibly even a formal requirement for this, could produce more effective action and efficient resource use.

An argument could also be made for reducing local authority monitoring and relying predominantly on central government monitoring and modelling, supplemented by local work where necessary. However Scottish and UK level assessment does not always pick up local issues, as has been evident in the time extension submission process, and there does not appear to be a strong case for any reduction in local monitoring effort. This would in effect represent a move away from LAQM towards concentrating on compliance with EU requirements and would be likely to result in a weakening of efforts to improve local air quality with consequential implications for human health. The Scottish Government is of the view that any change in the balance of focus between domestic and European obligations would deliver no obvious benefit, and instead attention should centre around how to make the two systems work better together.

Consideration could also be given to removing the requirement for AQMA declaration to free up further resources for action planning. However, there appears to be little merit in this approach. The AQMA approach serves as a valuable foundation for action planning and focuses attention on the issues of concern amongst those who have a role in helping to improve air quality.

**Q4 What do you think are the basic air quality information requirements for local authorities and central government to meet their obligations under LAQM and EU legislation?**

**Q5 Do you agree there is a case for streamlining reporting, altering frequency of the report cycle etc.? If so, how should this be done?**

**Q6 Can Scottish and UK data help to reduce the level of assessment required by local authorities and would this be appropriate?**

**Q7 How can work undertaken by local authorities be used more effectively to support UK Government reporting to the European Commission?**

**Q8 Do you agree we should retain AQMAs?**

## 4. Revise and strengthen action planning

There is a clear need to refocus action planning away from diagnosis to delivery. Despite LAQM having been established for many years now, progress with implementing action plans has been disappointingly slow. The main barriers to successful implementation are common to most local authorities and include:

- lack of political will and public support for radical measures;
- lack of funding for large infrastructure projects;
- difficulties in engaging all local authority departments in the action planning process; and
- a general lack of resources for air quality work.

Although a wide range of action plan measures have been implemented by many authorities, the majority of these have tended to be measures that are relatively inexpensive, politically acceptable and easy to implement, which often means that their impact on air quality can be low. This isn't to say that such measures do not make an important contribution, as success is judged on the overall impact of an action plan.

However, another issue associated with action planning is the lack of robust quantification of measures that have been implemented, making it difficult to assess how effective different measures have been in reducing emissions. It may be the case that the action planning process could be made more effective by switching to a focus on emissions reduction outcomes, whilst retaining a concentrations i.e. objectives based for the review and assessment side of LAQM. The Scottish Government would welcome consultees' views on this and how such an approach could be successfully implemented.

There is no firm evidence that action plan measures have directly resulted in the revocation of any AQMAs to date, not just in Scotland but anywhere else in the UK, but there is some evidence that the action planning process has played a significant role in contributing to the information base to support or influence local measures that have delivered improvements to local air quality, and that substantial improvements have been achieved.

## Action planning guidance

There are many tools and pieces of guidance available to assist in action planning. However there are some indications that it is difficult for local authorities to assess exactly what information exists due to the wide range of authors, sources and formats. It may be that a centralised repository of all available tools and guidance would allow these resources to be utilised more effectively. In 2011 the UK administrations published a review of the current guidance that was available on action planning. This review highlighted that:

- there are some shortcomings in current central government guidance relating mainly to the availability and accessibility of information to support action plan development;
- guidance and tools currently available are located within a range of different documents or websites of government departments and other organisations, and this makes them difficult to find and utilise;
- a detailed and regularly updated library that includes all of the guidance and information, which is easy to find online, would be of use to local authorities;
- local authorities would like to see more real life examples of the implementation of air quality improvement measures that explain how the measures were selected, also information as to how successful they have been in terms of reducing emissions or improving ambient air quality; and
- central government should consider developing measures based action planning tools that would assist local authorities in identifying measures that are appropriate to their specific situation, based on the nature of the emission source and what level of concentration reduction is required to meet the objectives.

- Q9 Do you agree there needs to be more focus on action planning and delivery? Do you have any suggestions on how to improve delivery? What have been the main barriers to effective delivery to date?**
- Q10 Do you agree that local authorities should be provided with more detailed advice and guidance on what action they can take to make their action plans more effective?**
- Q11 Do you agree that relevant information from local authority action plans should be included in central government reports to the EU?**
- Q12 Do you agree that a more emissions based focus on action planning would help to improve outcomes?**

## 5. The role of local authorities in meeting PM<sub>2.5</sub> obligations

The 2008 directive on ambient air quality requires Member States to take all necessary measures, not entailing disproportionate costs, to reduce exposure to PM<sub>2.5</sub>. As part of this review of LAQM, we are considering in what capacity local authorities can help the Scottish Government achieve its PM<sub>2.5</sub> targets, taking into account local circumstances.

To date, PM<sub>2.5</sub> reductions have been achieved indirectly through existing legislation that has focused on action to tackle PM<sub>10</sub> concentrations. The 1<sup>st</sup> Air Quality Daughter Directive (1999/30/EC) introduced daily and annual limits for PM<sub>10</sub> that have since driven efforts to curb emissions, particularly from road transport in urban areas. These limits were consolidated in the 2008 directive, which also set new targets and limits for PM<sub>2.5</sub> concentrations to 2020 (see table 1).

### Considerations

It is important to establish what contribution local authorities can make to evaluating and assessing source apportionment, and to identifying measures that could be included in action plans. If there is a strong view that the most effective controls on PM<sub>2.5</sub> are at national or international level then further consideration will be needed as to what role local authorities can play.

Given the legal obligations on EU Member States with respect to exposure reduction for PM<sub>2.5</sub>, it may be that a different approach is needed from the other pollutants covered by LAQM. In addition to local considerations, should authorities also be asked to make a contribution to the national exposure reduction targets and, if so, what form should this contribution take? Is the standard hot spot focused approach appropriate in this context and would there be benefits in additional background monitoring? Given the different monitoring site location criteria for LAQM and EU reporting, how can the data gathered from local authority sites be formally used in exposure reduction assessment? Would it be more appropriate to focus on emissions reductions rather than concentrations?

**Q13 What role do you see for local authorities in meeting PM<sub>2.5</sub> obligations?**

**Q14 Are there specific measures that authorities could take to reduce PM<sub>2.5</sub> that differ from those already being undertaken for PM<sub>10</sub>?**



## **6. Air quality and public health**

Poor air quality can have a significant impact on public health and wellbeing and it is important that this is taken into account by local authorities when undertaking their LAQM duties. Air quality policy across the UK is based on health priorities and there are major opportunities for local air quality improvements to contribute to wider public health goals, such as increasing life expectancy. Authorities can play a key role to play in contributing to these improvements.

Good communications not only help to inform the population about local health risks from air pollution but also to encourage awareness of and discussion about measures to improve air quality. Several local authorities in Scotland have developed effective communications campaigns in relation to their LAQM activities, notably in the context of vehicle emissions testing and idling targeting. At the beginning of 2012, the Scottish Government introduced the Know and Respond alert service, which provides a text or voice message to registered users whenever air pollution levels are moderate or higher, based on the banding system used by the UK administrations. These initiatives, and others like them, can be built upon to further enhance and strengthen the message, and the Scottish Government would like to hear from consultees any ideas and suggestions as to how this might be done.

**Q15 What approaches and strategies are currently being used to communicate the health impacts of poor air quality?  
How can these be built upon and improved to strengthen the message?**

**Q16 What role should the Scottish Government be playing in promoting the links between air pollution and public health?**

# Review of Local Air Quality Management in Scotland



## RESPONDENT INFORMATION FORM

**Please Note** this form **must** be returned with your response to ensure that we handle your response appropriately

### 1. Name/Organisation

Organisation Name

Title Mr  Ms  Mrs  Miss  Dr  Please tick as appropriate

Surname

Forename

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<input type="text"/>		
<input type="text"/>		
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### 3. Permissions - I am responding as...

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(a) Do you agree to your response being made available to the public (in Scottish Government library and/or on the Scottish Government web site)?

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**Please tick as appropriate**

Yes  No

Yes, make my response, name and address all available

**or**

Yes, make my response available, but not my name and address

**or**

Yes, make my response and name available, but not my address

**(d)** We will share your response internally with other Scottish Government policy teams who may be addressing the issues you discuss. They may wish to contact you again in the future, but we require your permission to do so. Are you content for Scottish Government to contact you again in relation to this consultation exercise?

**Please tick as appropriate**

**Yes**

**No**

## CONSULTATION QUESTIONS

- Q1 a) Do you agree that these are the key issues which any changes to LAQM should take account of?  
b) Are there any other key issues which the Scottish Government should consider as part of the review?**

Comments

- Q2 Do you think the regulations covering LAQM and EU legislation should be merged? Please provide reasons for or against this approach.**

Comments

- Q3 Do you think we should retain the LAQM objectives for 1,3-butadiene, SO<sub>2</sub> (15 minute), carbon monoxide and lead? Please state your reasons for or against, including potential implications.**

Comments

- Q4 What do you think are the basic air quality information requirements for local authorities and central government to meet their obligations under LAQM and EU legislation?**

Comments

**Q5 Do you agree there is a case for streamlining reporting, altering frequency of the report cycle etc.? If so, how should this be done?**

Comments

**Q6 Can Scottish and UK data help to reduce the level of assessment required by local authorities and would this be appropriate?**

Comments

**Q7 How can work undertaken by local authorities be used more effectively to support UK Government reporting to the European Commission?**

Comments

**Q8 Do you agree we should retain AQMAs?**

Comments

**Q9 Do you agree there needs to be more focus on action planning and delivery? Do you have any suggestions on how to improve delivery? What have been the main barriers to effective delivery to date?**

Comments

**Q10 Do you agree that local authorities should be provided with more detailed advice and guidance on what action they can take to make their action plans more effective?**

Comments

**Q11 Do you agree that relevant information from local authority action plans should be included in central government reports to the EU?**

Comments

**Q12 Do you agree that a more emissions based focus on action planning would help to improve outcomes?**

Comments

**Q13 What role do you see for local authorities in meeting PM<sub>2.5</sub> obligations?**

Comments

**Q14 Are there specific measures that authorities could take to reduce PM<sub>2.5</sub> that differ from those already being undertaken for PM<sub>10</sub>?**

Comments

**Q15 What approaches and strategies are currently being used to communicate the health impacts of poor air quality?  
How can these be built upon and improved to strengthen the message?**

Comments

**Q16 What role should the Scottish Government be playing in promoting the links between air pollution and public health?**

Comments



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## Review of Local Air Quality Management in Scotland

### RESPONDENT INFORMATION FORM

**Please Note** this form **must** be returned with your response to ensure that we handle your response appropriately

#### 1. Name/Organisation

Organisation Name

City of Edinburgh Council

Title Mr  Ms  Mrs  Miss  Dr  Please tick as appropriate

Surname

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- (a) Do you agree to your response being made available to the public (in Scottish Government library and/or on the Scottish Government web site)?

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Yes  No

- (b) Where confidentiality is not requested, we will make your responses available to the public on the following basis

Please tick **ONE** of the following boxes

- (c) The name and address of your organisation **will be** made available to the public (in the Scottish Government library and/or on the Scottish Government web site).

Are you content for your **response** to be made available?

Please tick as appropriate

Yes  No

## Appendix 6

Yes, make my response,  
name and address all  
available

**or**

Yes, make my response  
available, but not my  
name and address

**or**

Yes, make my response  
and name available, but  
not my address

- (d)** We will share your response internally with other Scottish Government policy teams who may be addressing the issues you discuss. They may wish to contact you again in the future, but we require your permission to do so. Are you content for Scottish Government to contact you again in relation to this consultation exercise?

**Please tick as appropriate**

**Yes**

**No**

## Appendix 6

### CONSULTATION QUESTIONS

- Q1 a) Do you agree that these are the key issues which any changes to LAQM should take account of?**
- b) Are there any other key issues which the Scottish Government should consider as part of the review?**

The conclusion of the LAQM review in 2010 referred to in the guidance document remains valid and identifies the key challenges in this area.

Diagnosis of air quality has been effective but the focus and capacity to deliver improvement remains a key challenge.

Monitoring and reporting arrangements require to be reviewed and streamlined and the option of consolidating legislation would be welcome.

In meeting the challenges of improvement in air quality there is a need for much clearer information and support on which actions are effective in different locations. Support and resource to address the significant investment is required across public and private sectors for both commercial and bus fleets and in developing and implementing effective low emission strategies.

Research indicates that significant behaviour shift will be required to meet targets if population growth is factored in. Local Authorities do not have the necessary resources to address these major challenges and considerable investment is also required from private sector.

It is therefore suggested that funding options and cost effectiveness of solutions should be part of the review.

Further guidance would also be welcomed where there is conflict between meeting both carbon reduction requirements and air quality targets e.g. encouragement of diesel usage in vehicles.

- Q2 Do you think the regulations covering LAQM and EU legislation should be merged? Please provide reasons for or against this approach.**

The current situation adds to both the complexity in monitoring and also to confusion around air quality requirements among the wider community.

Some more detailed factors which the review could consider are:

- Given the significant and ongoing challenge in meeting air quality standards any merging of regulations should retain current arrangements that Local Authorities are required to 'work towards' targets. Member States should retain responsibility for achieving target values.

## Appendix 6

- Currently consideration is not given to places of work or other commercial locations, such as shops where there is public exposure. Many people are away from their homes during the day, returning during the evening. Consequently, maximum traffic pollution exposure is likely to be during daytime hours, when people are travelling to / from work or at work. Levels of pollution derived from traffic sources are likely to be lower in the evening.
- Monitoring requirements differ in the EU regulations from those under LAQM. For example, under EU legislation, exposure to NO<sub>2</sub> is not considered within 25m of a road junction, neither are roads shorter than 100m in length.
- In cases where roadside monitoring data is not available, the assessment to meet EU requirements has been carried out using the Pollution & Climate Model (PCM) This model estimates concentrations 3m from the kerb edge of a road - however, many residential properties, especially in historic cities like Edinburgh, are set closer than 3m to the kerb edge. The PCM assessment is likely to produce less representative results with respect to NO<sub>2</sub> exposure due to the exponential decrease in concentration of this pollutant with distance from source.
- Scottish National Objectives for PM<sub>10</sub> and PM<sub>2.5</sub> are more onerous than elsewhere in the UK. Fine Particulate matter is reported in some literature to be a non- threshold pollutant, consequently some experts say there may be no safe concentration with respect to health. The Objectives in Scotland are in keeping with the World Health Organisation recommendation of 20µg/m<sup>3</sup> for PM<sub>10</sub> and 10µg/m<sup>3</sup> for PM<sub>2.5</sub>. Merging regulations may have implications with respect to the Scottish Objectives.

### **Q3 Do you think we should retain the LAQM objectives for 1,3-butadiene, SO<sub>2</sub> (15 minute), carbon monoxide and lead? Please state your reasons for or against, including potential implications.**

#### Carbon Monoxide and Lead:

There is scope to remove the objectives for these pollutants as neither has been identified as problematic under the LAQM process. Concentrations of lead in ambient air have decreased significantly due to the EU requirement for its removal from petrol.

#### 1, 3-butadiene

Monitoring has ceased at most locations, including in Edinburgh, where measured concentrations were well below the Air Quality Objective under LAQM. However, there may be merit in maintaining the Objective in the event of any shift from diesel back to petrol.

#### SO<sub>2</sub>.

We agree with the view of the Scottish Government that the reporting requirements are not burdensome and that the 15- minute average concentrations of this pollutant can have significant localised effects on some vulnerable groups. Therefore, it should be retained.

## Appendix 6

### **Q4 What do you think are the basic air quality information requirements for local authorities and central government to meet their obligations under LAQM and EU legislation?**

A robust air quality monitoring regime is essential. Only a few Automatic Urban and Rural Network (AURN) locations in Scotland are at the roadside (4 in total) which monitor the main pollutants of concern PM<sub>10</sub> and NO<sub>2</sub>. These are located in three urban areas: Glasgow (2) Aberdeen and Inverness. In the UK overall, the AURN network is biased towards background locations; 56 urban background sites compared with 34 representing urban traffic. It is our view that the AURN network, as currently configured, does not sufficiently represent exposure in densely populated areas, where residential properties are close to the road. This has the potential to understate the situation when reported to the EU.

Other air quality data is available from local automatic air quality monitoring stations and networks of manual passive diffusion tubes (with robust QA/QC procedures in place) Consideration should be given to exploring with the EU Commission use of this data as an 'indicative' form of measurement for nitrogen dioxide.

Robust traffic data is essential for air quality dispersion modelling and for the meaningful development of actions and review of progress.

The present requirement for reporting measured data on an annual basis as a minimum should continue but streamlined where possible. The identification of local changes and pollutant trends and the analysis of causes and exploration of remedies are best served with regular collation and reporting of data. The time required to prepare on an annual basis a report detailing new local developments, planning applications, local transport plans and climate change strategies is onerous and should be reviewed.

### **Q5 Do you agree there is a case for streamlining reporting, altering frequency of the report cycle etc.? If so, how should this be done?**

There is a strong case for streamlining reporting to free up resources to carry out actions. From experience in Edinburgh, we consider that the preparation of Progress Reports can be just as onerous as Updating and Screening Assessments.

The report templates (for PRs and U&SA) issued by DEFRA entail the input of very detailed information, including data calculations. The report templates might benefit from being aligned, but it is important that key changes in local circumstances are not missed in doing so. As indicated above the time required to prepare on an annual basis a report detailing new local developments, planning applications, local transport plans and climate change strategies is onerous

Where additional monitoring/dispersion modelling has been carried out, the outcomes of these Detailed Assessments can be discussed within a Progress Report, rather than being reported separately. This will cut down the amount of unnecessary formal reporting. City of Edinburgh Council has already adopted this approach with the prior agreement of the Scottish Government.

## Appendix 6

We agree that Further Assessment work involving Source Apportionment can be combined with the Action Plan progress update reports. This work could be attached as a technical appendix to offer justification for any continuing or new actions.

### **Q6 Can Scottish and UK data help to reduce the level of assessment required by local authorities and would this be appropriate?**

It would be helpful for local authorities to have access to the specific locations of air quality exceedences within the *agglomerations* and *zones*, identified by Government PCM methodology in respect of UK submissions to the EU. This would enable local authorities to know the actual areas where Limit Values are not being met and allow them to carry out targeted local investigations thus saving resource.

More information on the inputs and their application in the PCM process would be of assistance to this local authority in understanding the modelled outcomes.

### **Q7 How can work undertaken by local authorities be used more effectively to support UK Government reporting to the European Commission?**

Data reported to the EU by the UK Government in respect of Assessment for Compliance with Limit Values appears to derive primarily from monitoring at AURN sites only. Data from local authority automatic monitoring sites could also be reported, providing it has been subjected to the required QC/QA standards. Data obtained from Scottish local authority automatic stations is independently assessed and subjected to the same QA/QC procedures adopted for the AURN sites.

### **Q8 Do you agree we should retain AQMAs?**

AQMAs provide a focus for deriving actions. From experience, when seeking the support of partners / stakeholders regarding identified air quality issues, one of the most important pieces of information is the location and geographical extent of any problem. The AQMA provides the formal underpinning for developing actions.

However, while important in focussing attention on specific areas the process to declare and subsequently amend is onerous and should be simplified.

It also requires to be emphasised that AQMA's do not provide any measure of comparison between local authority areas as by definition they are specific to the locality and vary hugely in geographical extent.

### **Q9 Do you agree there needs to be more focus on action planning and delivery? Do you have any suggestions on how to improve delivery? What have been the main barriers to effective delivery to date?**

## Appendix 6

More focus requires to be given to action planning and action delivery. Since inception, the LAQM process has been heavily focussed around measurement and assessment. However, the often complex nature of local air quality problems would mean that an effective action delivery programme will require the commitment of additional financial resources, from both the public and commercial sectors. It is likely to require Scottish Government to fund or pump prime initiatives.

Identified potential solutions to air quality issues, such as cleaner engines in commercial or bus fleets and/or development of low emission strategies or zones all require significant investment and to date this has been a major obstacle to achieving improvements. Public buy in to changes in traffic useage is also critical in changing behaviours/

Responding to centrally directed Climate Change carbon reduction policies can sometimes conflict with air quality improvement requirements clearer guidance on this would be useful.

Further guidance for service areas such as planning, transport, procurement and economic development in how air quality issues should be addressed would also be welcome

### **Q10 Do you agree that local authorities should be provided with more detailed advice and guidance on what action they can take to make their action plans more effective?**

There is a strong need for detailed guidance on the degree of improvements that can actually be achieved. More detailed advice and guidance is required especially for the more robust forms of action e.g LEZs, Traffic Reduction Plans. As stated above more clarity is required on effective and tested measures and a funding solution.

### **Q11 Do you agree that relevant information from local authority action plans should be included in central government reports to the EU?**

Where these contribute to effective solutions this could be relevant however as outlined in question 2 Local Authorities should not however become liable to the EU for delivery of targets as many factors require a wider approach.

### **Q12 Do you agree that a more emissions based focus on action planning would help to improve outcomes?**

An emissions based focus would be useful. Emission Limit Values (ELV) set for industrial processes have been beneficial in reducing emissions to ambient air. However, emission reductions standards associated with road vehicle engine technology have not been met in practice. In our view, this has been of significant detriment to Action Planning. A better understanding of emissions from various classes of vehicles especially in relatively hilly cities such as Edinburgh would be useful in determining where actions should be focussed.

Controlling NO<sub>2</sub> emissions will be difficult because of the interactions and complex

## Appendix 6

atmospheric chemistry associated with this pollutant.

### **Q13 What role do you see for local authorities in meeting PM<sub>2.5</sub> obligations?**

We see a very limited role for local authorities due to the issue of trans boundary secondary PM<sub>2.5</sub>. A significant proportion is imported into the UK having been formed from precursor gases eg NO<sub>x</sub>, SO<sub>2</sub>, and NH<sub>3</sub> originating in continental Europe. Therefore, we believe the main focus should be the control of emissions of precursor gases in continental Europe.

The reduction of secondary PM<sub>2.5</sub> that could be achieved at a local level by reducing local emissions of NO<sub>x</sub> has not to our knowledge been evaluated.

### **Q14 Are there specific measures that authorities could take to reduce PM<sub>2.5</sub> that differ from those already being undertaken for PM<sub>10</sub>?**

There are limited measures which a Local Authority can take in reducing these pollutants. Options which could be considered include:

- Public Health publicity campaign supported by Scottish Government to highlight the potential health impact of the uptake and use of wood burning appliances/boilers in urban environments with air quality issues.
- Public Health publicity campaign supported by Scottish Government to highlight the potential health impact of garden bonfires.

The limited impact of these actions should however be recognised.

### **Q15 What approaches and strategies are currently being used to communicate the health impacts of poor air quality? How can these be built upon and improved to strengthen the message?**

In raising public awareness it is critical that Scottish Government and Local Authorities can identify effective actions to improve air quality this will require support in finding effective investment solutions.

Stronger cross-engagement between Scottish Government and Local and Health Authorities is required, to develop and deliver co-ordinated and targeted messages about the links between health and poor air quality, and achievable options for change. eg healthier travel options and modal shift.

### **Q16 What role should the Scottish Government be playing in promoting the links between air pollution and public health?**

The Scottish Government should play a more active role with respect to promoting the links between air pollution and public health.



## Appendix 6

Focussed campaigns and media coverage to highlight the issues are necessary. People should be incentivised to reduce their car use, especially in urban areas.

To date, Scottish Government campaigning emphasis has been largely focused on Climate Change issues.

# Transport and Environment Committee

10.00 am, Tuesday, 27 August 2013

## Interim Report on the South West Edinburgh Legionnaires Disease Outbreak June 2012

Item number	7.14
Report number	
Wards	City Wide

### Links

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Coalition pledges	Not applicable
Council outcomes	Not applicable
Single Outcome Agreement	<a href="#">SO2</a>

**Mark Turley**

**Director of Services for Communities**

Contact: Colin Sibbald, Food Health & Safety Manager

E-mail: [colin.sibbald@edinburgh.gov.uk](mailto:colin.sibbald@edinburgh.gov.uk) | Tel: 0131 469 5924

# Executive summary

## Interim Report on the South West Edinburgh Legionnaires Disease Outbreak June 2012

### Summary

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The purpose of this report is to present for information the Interim Report on the Legionnaires Disease Outbreak in June 2012 which has been produced by NHS Lothian Incident Management Team (IMT). This report was considered by the Board of NHS Lothian on 24 July 2013 following which the Board agreed to accept all the recommendations and to commend all those involved in dealing with the consequences of the outbreak.

On 3 June 2012, NHS Lothian identified an outbreak of Legionnaires Disease. The outbreak was declared over on 17 July 2012. During the intervening 45 days there were 56 confirmed, 10 probable and 26 possible cases (Total 92) identified and treated by NHS Lothian. Tragically, four confirmed cases died as a consequence of the disease.

Epidemiological evidence through mapping of cases, analysis of travel diaries and of wind speed and direction suggested that a common outdoor airborne exposure occurred over South-West Edinburgh, near to or in the EH11 2 postcode sector, which is in the Gorgie area, with an end date of around the 30 May 2012.

An Incident Management Team led by NHS Lothian was established on 3 June, in accordance with Guidance on the Management of Public Health Incidents, published by the Scottish Government, and The Management of Legionella Incidents, published by the Health Protection Network. The Council's Environmental Health and Scientific Services are members of the IMT, as are the Health and Safety Executive. To date the IMT has met a total of 18 times.

Health and Safety enforcing authorities are investigating the circumstances of the deaths under the direction of the Crown Office and Procurator Fiscal Service Health and Safety Division.'

The conclusion to the executive summary of the Interim IMT Report is that "a coordinated response and prompt action by Public Health, Primary Care, Acute Services, Environmental Health, and Lothian Unscheduled Care Services (LUCS) resulted in less morbidity and fewer deaths than in previous outbreaks of similar size".

Council officers continue to work closely with partner agencies taking forward the recommendations listed in the interim report.

It is proposed that a further detailed report on the lessons learned and measures to be taken to minimise the risk of a future outbreak of the disease will be made to the Transport and Infrastructure Committee following publication of the full IMT report on the incident. Publication of the full report has had to be delayed due to the ongoing investigations by the Police and the Health and Safety Executive.

## Recommendations

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It is recommended that Committee;

- a) note the recommendations for action contained within the Interim Report to NHS Lothian's Board;
- b) instruct the Director of Services for Communities to provide such support and assistance as is necessary, to assist Lothian Health to take forward the actions and activities identified in the report as a result of the Incident Management Team's review of experience gained in investigating and controlling the outbreak.

## Measures of success

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An assessment of the effectiveness of the Incident Management Team and supporting personnel across all stakeholders in dealing with this outbreak will be included in the final report of the IMT.

## Financial impact

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There are no cost implications directly arising from this report.

## Equalities impact

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This report proposes no change to current policies and procedures and as such a full impact assessment is not required. The contents have no relevance to the public sector Equality Duty of the Equality Act 2010.

## Sustainability impact

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This report has no relevance to the Council's legal duty under the Climate Change (Scotland) Act 2009.

## Consultation and engagement

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This interim report has been produced following detailed discussions with all members of the Lothian Health led Incident Management Team.

## Background reading / external references

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1. Management of Public Health Incidents Guidance on the Roles and Responsibilities of NHS Lothian Incident Management Teams Scottish Government Act 2011.
2. Guidance on Management of Legionnaires Incidents, Outbreaks and Clusters in the Community Health Protection Network 2009.

3. Initial report on the Legionnaires Disease Outbreak NHS Lothian 21 June 2012.
4. [Update on Legionnaires Incident in South West Edinburgh - Policy and Strategy Committee 12 June 2012](#)
5. [Report on South West Edinburgh Legionnaires Disease Outbreak June to July 2012 -TIE Committee 11 October 2012.](#)

## Recommendations

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- b) instruct the Director of Services for Communities to provide such support and assistance as is necessary, to assist Lothian Health to take forward the actions and activities identified in the report as a result of the Incident Management Team's review of experience gained in investigating and controlling the outbreak

**Mark Turley**

**Director of Services for Communities**

## Links

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<b>Coalition pledges</b>	Not applicable
<b>Council outcomes</b>	Not applicable
<b>Single Outcome Agreement</b>	SO2 Edinburgh's citizens experience improved health and wellbeing with reduced inequalities in health.
<b>Appendices</b>	<p>Appendix 1a - Board Paper</p> <p>Appendix 1b - Report to NHS Lothian Board, dated 24 July 2013, Title: Edinburgh Legionnaires' Outbreak June 2012 and the associated appendix, 2013 Interim Report to NHS Lothian Board, Legionnaires' Disease Outbreak June 2012 Summary of Results of Epidemiological and Microbiological Investigation.</p>