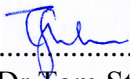
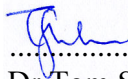


Draft Air Quality Action Plan 2010

Prepared by: 
 Dr Tom Stenhouse
 Principal Environmental Scientist

Checked by: 
 Dr Tom Stenhouse
 Principal Environmental Scientist

Approved by:
 Dr Gareth Collins
 Associate Director

Aberdeen City Council Draft Air Quality Action Plan 2010

Rev No	Comments	Checked by	Approved by	Date
1	Client Submission - DRAFT	TAS		26/02/10
2	Client Submission - DRAFT	TAS		03/03/10
4	Client Submission – FINAL DRAFT for ACC Internal Consultation	TAS		04/03/10

5th Floor, 2 City Walk, Leeds, LS11 9AR
 Telephone: 0113 391 6800 Website: <http://www.aecom.com>

Job No 60098092 M004.020 Reference tas

Date Created March 2010

This document is confidential and the copyright of AECOM Limited. Any unauthorised reproduction or usage by any person other than the addressee is strictly prohibited.

c:\documents and settings\stenhouse\desktop\acc draft air quality action plan 2010_v3.doc

Executive Summary

Introduction

Following the recent declaration of two Air Quality Management Areas (AQMAs), Aberdeen City Council (ACC) had a statutory duty under the Local Air Quality Management (LAQM) framework to produce this Air Quality Action Plan (AQAP). The aim of the AQAP is to describe the measures that ACC will take to improve air quality in Aberdeen, particularly in the two recently declared AQMAs and the city centre AQMA that was originally declared in 2001. This AQAP supersedes the 2006 AQAP.

It is necessary to improve air quality in Aberdeen to protect the health of the city's inhabitants.

ACC commissioned AECOM to assist with the production of the AQAP.

Why has this AQAP been produced?

ACC undertakes monitoring of the main local air pollutants associated with urban areas: nitrogen oxides (NO_x; consisting of nitrogen oxide (NO) and nitrogen dioxide (NO₂)) and fine particulate matter (PM_{2.5} and PM₁₀). The results of the monitoring clearly indicate that health based national objectives and statutory European limits are being exceeded in the city. Predictive modelling studies have also been used to better understand the spatial extent of the problem, and to help determine likely pollutant concentrations in the future.

Based on the monitoring and modelling work undertaken by the Council, several areas have been identified as unlikely to be meeting national objectives and European limits, and hence the Council have declared AQMAs. The air quality problem in Aberdeen is predominantly a result of emissions from road vehicles, as is the case elsewhere in the UK, and this is reflected in the locations of the AQMAs:

- **City Centre** (originally declared in 2001, last amended in 2005; including Union Street, Market Street, Virginia Street, Commerce Street, and parts of Holburn Street, Guild Street and King Street)
- **Anderson Drive** (declared December 2008, incorporating the whole of Anderson Drive and the area around the Haudagain roundabout); and
- **Wellington Road** (declared December 2008, from the Queen Elizabeth II Bridge to Balnagask Road)

Maps of the AQMAs are provided in Appendix 1.

The national air quality objectives and statutory European air quality limit values that are currently being exceeded or at risk of being exceeded are the:

- NO₂ annual and hourly mean; and
- PM₁₀ annual and daily mean (national objectives only);

The aim of the AQAP is to describe the measures that ACC will take to improve air quality in Aberdeen, particularly with regard to the two recently declared AQMAs and the city centre AQMA that was originally declared in 2001. The main pollutants of concern in Aberdeen, NO₂ and fine particulate matter, are known to have an adverse effect on health; studies have demonstrated that poor air quality is estimated on average to reduce the life expectancy of each person in the UK by an average of 7-8 months with estimated annual health costs of up to £20 billion (HMSO, 2007). Therefore it is necessary to improve air quality in Aberdeen to protect the health of the city's inhabitants.

Concentrations well in excess of the relevant objectives and limit values have been measured, particularly within parts of the city centre AQMA (such as Union Street and Market Street), but also at the north end of the Anderson Drive AQMA (around Haudagain roundabout). It is clear that bold and far reaching measures, on a range of fronts, will be necessary to reduce these pollutants to ensure compliance.

Draft Air Quality Action Plan Measures

A large number of potential measures to improve air quality have been discussed and analysed as part of the process of producing this AQAP. A consultation event was held in October 2009 to get the views of a wide range of interested bodies,

businesses and groups. The measures that were identified have been considered in terms of their potential air quality impact, practicality, feasibility, public acceptability, cost, and other environmental and social factors.

The result of the process is the following list of measures. The majority are concerned with reducing the impact of transport emissions, identified as the main cause of the air quality problem in Aberdeen. The list is long; this is a reflection of the fact that action is required on as wide a range of initiatives as possible to address the air quality problem. The measures have been grouped into 6 categories. Actions that have been scored through were considered, but deemed not appropriate to take forward within the draft Action Plan.

Ref.	Measure
1	MODAL SHIFT & INFLUENCING TRAVEL CHOICE
1.1	Increase Bus Use
1.2	Improve Cycling & Walking Provision
1.3	Travel Plans
1.4	Improve public awareness of air quality issues
1.5	Car Clubs / Car Pool Schemes
1.6	Crossrail
1.7	Rail Freight
1.8	Public Transport Subsidies
1.9	Congestion Charge / Road Toll
2	LOWER EMISSIONS & CLEANER VEHICLES
2.1	Green Vehicle procurement & Fuel/Charging Infrastructure
2.2	Eco-driving
2.3	Emissions Testing & Idling Enforcement
2.4	Taxis
2.5	Low Emission Zone
3	ROAD INFRASTRUCTURE
3.1	Pedestrianisation
3.2	Road Building / Junction Alterations
3.3	Traffic Calming
4	TRAFFIC MANAGEMENT
4.1	Intelligent Transport System (ITS)
4.2	High Occupancy Vehicle (HOV) Lane
4.3	Freight and Commercial Vehicle Access
4.4	Speed Regulation
5	PLANNING & POLICIES
5.1	Produce Supplementary Planning Guidance
5.2	Integration of AQAP with Local Transport Strategy (LTS) and Regional Transport Strategy (RTS)
5.3	Integration of AQAP with Health and Transport Action Plan (HTAP)
5.4	Road Hierarchy
5.5	Car Parking Policies
5.6	National Lobbying
5.7	Move Receptors (people) from AQMAs

Ref.	Measure
5.8	Relocate Major Employers
6	NON-TRANSPORT MEASURES
6.1	Control Biomass Installations
6.2	Industry Permitting
6.3	Tree Planting
6.4	Shipping

Consultation

This Air Quality Action Plan is in Draft form. During the consultation period it is important that stakeholders comment on the plan. It will then be necessary for all comments to be considered and the plan revised if appropriate. Once the plan has been approved by ACC members and the Scottish Government, the Council will require to ensure that the measures are implemented and progress reported.

Please direct your comments to:

Aileen Brodie
 Principal Environmental Health Officer
 Environmental Protection Section
 Housing and Environment
 St Nicholas House
 Broad Street
 Aberdeen
 AB10 1BX
 Tel 01224 522216
 Fax 01224 647333
ABRODIE@aberdeencity.gov.uk

Table of Contents

1	Introduction	1
1.1	Why has this AQAP been produced?	1
1.2	Description of Local Authority Area	1
1.3	Consultation	2
1.4	Report Structure	2
2	Legislative Context	3
2.1	Policy Context/Framework	3
2.2	Pollutants of Concern	3
3	Air Quality in Aberdeen	5
3.1	Local Air Quality Management	5
3.2	Pollutant Monitoring	6
3.3	Modelling Studies	7
3.4	Summary: The Scale and Extent of the Air Quality Problem in Aberdeen	9
4	The Development of the Draft Air Quality Action Plan	11
4.1	Introduction	11
4.2	Previous Air Quality Action Plan (2006)	11
4.3	NETCF Feedback Summary	12
4.4	Action Appraisal	13
5	Draft Actions List Appraisal	15
5.1	Action Appraisal	15
	MODAL SHIFT & INFLUENCING TRAVEL CHOICE	16
	LOWER EMISSIONS & CLEANER VEHICLES	22
	ROAD INFRASTRUCTURE	25
	TRAFFIC MANAGEMENT	27
	PLANNING & POLICIES	29
	NON-TRANSPORT MEASURES	33
5.2	Appraisal Discussion	34
5.3	Measures to be Implemented	35
	MODAL SHIFT & INFLUENCING TRAVEL CHOICE	37
	LOWER EMISSIONS & CLEANER VEHICLES	38
	ROAD INFRASTRUCTURE	38
	TRAFFIC MANAGEMENT	39
	PLANNING & POLICIES	39
	NON-TRANSPORT MEASURES	40
5.4	Implementation of the Action Plan	40
6	Summary	41
	References	42
	Appendices	44
	Appendix 1: Air Quality Management Area Maps	44
	Appendix 2: 2006 AQAP Summary	47
	Table 1: Source Apportionment	8
	Table 2: Appraisal of Actions	16
	Table 3: AQAP Draft Measures	37
	Figure 1: City Centre AQMA	44
	Figure 2: Wellington Road AQMA	45

Figure 3: Anderson Drive AQMA46

● Introduction

Following the recent declaration of two Air Quality Management Areas (AQMAs), Aberdeen City Council (ACC) had a statutory duty under the Local Air Quality Management (LAQM) framework to produce this Air Quality Action Plan (AQAP). The aim of the AQAP is to describe the actions that ACC will take to improve air quality in Aberdeen, particularly in the two recently declared AQMAs and the city centre AQMA that was originally declared in 2001.

It is necessary to improve air quality in Aberdeen to protect the health of the city's inhabitants.

ACC commissioned AECOM to assist with the production of the AQAP.

● Why has this AQAP been produced?

ACC undertakes monitoring of the main local air pollutants associated with urban areas: nitrogen oxides (NO_x; consisting of nitrogen oxide (NO) and nitrogen dioxide (NO₂)) and fine particulate matter (PM_{2.5} and PM₁₀). The results of the monitoring clearly indicate that health based national objectives and statutory European limits are being exceeded in the city. Predictive modelling studies have also been used to better understand the spatial extent of the problem, and to help determine likely pollutant concentrations in the future.

Based on the monitoring and modelling work undertaken by the Council, several areas have been identified as unlikely to be meeting national objectives and European limits, and hence the Council have declared AQMAs. The air quality problem in Aberdeen is predominantly a result of emissions from road vehicles, as is the case elsewhere in the UK, and this is reflected in the locations of the AQMAs:

- **City Centre** (originally declared in 2001, last amended in 2005; including Union Street, Market Street, Virginia Street, Commerce Street, and parts of Holburn Street, Guild Street and King Street)
- **Anderson Drive** (declared December 2008, incorporating the whole of Anderson Drive and the area around the Haudagain roundabout); and
- **Wellington Road** (declared December 2008, from the Queen Elizabeth II Bridge to Balnagask Road)

Maps of the AQMAs are provided in Appendix 1.

The aim of the AQAP is to describe the actions that ACC will take to improve air quality in Aberdeen, particularly in the two recently declared AQMAs and the city centre AQMA that was originally declared in 2001. The main pollutants of concern in Aberdeen, NO₂ and fine particulate matter, are known to have an adverse effect on health; studies have demonstrated that poor air quality is estimated on average to reduce the life expectancy of each person in the UK by an average of 7-8 months with estimated annual health costs of up to £20 billion (HMSO, 2007). Therefore it is necessary to improve air quality in Aberdeen to protect the health of the city's inhabitants.

Concentrations well in excess of the relevant objectives and limit values have been particularly measured within parts of the city centre AQMA (such as Union Street and Market Street), but also at the north end of the Anderson Drive AQMA (around Haudagain roundabout). It is clear that bold and far reaching measures, on a range of fronts, will be necessary to reduce these pollutants to ensure compliance. The source apportionment studies that have been undertaken show that the source of the problem varies depending up on the proportions of various vehicle types and the pollutant in question. For instance on Union Street, buses contribute to the ambient NO₂ concentrations to the greatest extent, whereas for Wellington Road, HGVs are the main source of the raised pollution levels. When comparing the pollutants, cars are comparatively more important emitters of PM₁₀ than NO_x.

● Description of Local Authority Area

Aberdeen is situated on the east coast of Scotland by the North Sea and has a population of approximately 220,000. The city acts as a focus for employment, service and leisure activities both for residents of Aberdeen and the surrounding area.

There is little heavy industry within the city and much of the economy is based around services to the oil industry. Road traffic is the main source of atmospheric pollution. Aberdeen's road transportation system is constrained by the River Dee to the south of

the city and the River Don to the north therefore there are limited routes to either arrive at or pass around the city. A Western Peripheral Route is at the early stages of construction and due to open in 2012/13. The A90 and A96 trunk roads, A93 North Deeside Road, A956 Ellon Road and A956 Wellington Road are the most significant routes to converge or pass through the city centre. Much of the commuter traffic entering the city comes from neighbouring Aberdeenshire.

Aberdeen Harbour is located in the city centre and is a thriving environment acting as the UK's main base for supply vessels to offshore installations. There is also a daily fish market and regular ferries to Shetland and Orkney Islands. Aberdeen Airport (Dyce) is located around 7 km to the northwest of the city.

- **Consultation**

This Air Quality Action Plan is in Draft form. During the consultation period it is important that stakeholders comment on the plan. It will then be necessary for all comments to be considered and the plan revised if appropriate. Once the plan has been approved by ACC members and the Scottish Government the Council will require to ensure that the actions are implemented and progress reported.

Please direct your comments to:

Aileen Brodie
Principal Environmental Health Officer
Environmental Protection Section
Housing and Environment
St Nicholas House
Broad Street
Aberdeen
AB10 1BX
Tel 01224 522216
Fax 01224 647333
ABRODIE@aberdeencity.gov.uk

- **Report Structure**

The remainder of the report is structured as follows:

- Section 2 provides an overview of relevant air quality legislation and guidance and a summary of the pollutants which are of concern;
- Section 3 contains background to the air quality problem in Aberdeen, including a review of the reports that ACC have produced under the LAQM framework, and a review of pollutant monitoring results in the city;
- Section 4 discusses the approach taken in developing this AQAP;
- Section 5 summarises the results of the appraisal of the various actions to improve air quality;
- Section 6 summarises the outcomes of the appraisal and discusses the necessary steps towards ensuring the actions within this plan are implemented;
- References are then provided; and finally the
- Appendices contain additional figures and information referred to within the body of the report.

• Legislative Context

• Policy Context/Framework

Overview of Recent Air Quality Legislation and Policy

The provisions of Part IV of the Environment Act 1995 (Environment Act Part IV, 1995) establish a national framework for air quality management, which requires all local authorities in England, Scotland and Wales to conduct local air quality reviews. Section 82(1) of the Act requires these reviews to include an assessment of the current air quality in the area and the predicted air quality in future years. Should the reviews indicate that the standards prescribed in the Air Quality Strategy (HMSO, 2007) will not be met, the local authority is required to designate an Air Quality Management Area (AQMA). Action must then be taken at a local level to ensure that air quality in the area improves.

The Air Quality Strategy

The Air Quality Strategy identifies several ambient air pollutants that have the potential to cause harm to human health. These pollutants are associated with local air quality problems, with the exception of ozone, which is recognised as being a regional problem.

The Air Quality Strategy set standards for the pollutants that are associated with local air quality. These objectives aim to reduce the health impacts of the pollutants to negligible levels. The most important pollutants with regard to road traffic are nitrogen dioxide (NO₂) and particulate matter of under 10 µm in diameter (PM₁₀).

The following guidance and strategic documents are important with regard to air quality:

- The technical and policy guidance notes, LAQM.TG(09) and LAQM.PG(S)(09), issued by the Government to assist local authorities in their Local Air Quality Management responsibilities (Defra, 2009a,b);
- Planning Policy Statement 23: Planning and Pollution Control (PPS 23) (ODPM, 2004);
- 'Development Control: Planning for Air Quality', published by the National Society for Clean Air and Environmental Protection (NSCA, 2006). (It should be noted that the NSCA are now known as Environmental Protection UK (EPUK));
- Planning Advice Notice 51 (PAN 51): Planning Environmental Protection and Regulation (Scottish Executive, 2006).
- Institute of Air Quality Management (IAQM), Position on the Description of Air Quality Impacts and the Assessment of their Significance, (IAQM, 2009)
- LAQM Low Emission Zone Guidance, (The Scottish Government, 2009); and
- Low Emissions Strategies: using the planning system to reduce transport emissions (Defra, 2010).

• Pollutants of Concern

Nitrogen Dioxide

The Government and the Devolved Administrations adopted two Air Quality Objectives for nitrogen dioxide (NO₂) to be achieved by the end of 2005. In 2010, mandatory EU air quality limit values on pollutant concentrations will apply in the UK. The EU limit values for NO₂ are the same as the national objectives for 2005 (HMSO, 2007):

- An annual mean concentration of 40 µg/m³; and
- An hourly mean concentration of 200 µg/m³, to be exceeded no more than 18 times per year.

In practice, meeting the annual mean objective has been and is expected to be considerably more demanding than achieving the 1-hour objective. The annual mean objective of 40 µg/m³ is currently widely exceeded at roadside sites throughout the UK, with exceedences also reported at urban background locations in major conurbations.

There is considerable year-to-year variation in the number of exceedences of the hourly objective, driven by meteorological conditions which give rise to winter episodes of poor dispersion and summer oxidant episodes. Analysis of the relationship between 1-hour and annual mean NO₂ concentrations at roadside and kerbside monitoring sites indicate that exceedences of the 1-hour objective are unlikely where the annual mean is below 60 µg/m³ (AEA, 2008). Exceptions were found to be related to a regional pollutant event in December 2007.

NO₂ and nitric oxide (NO) are both oxides of nitrogen, and are collectively referred to as NO_x. All combustion processes produce NO_x emissions, largely in the form of NO, which is then converted to NO₂, mainly as a result of its reaction with ozone in the atmosphere. Therefore the ratio of NO₂ to NO is primarily dependent on the concentration of ozone and the distance from the emission source.

In addition, in recent years a trend has been noted whereby NO₂ concentrations have been increasing at certain roadside monitoring sites, despite emissions of NO_x falling. The 'direct NO₂' phenomenon is having an increasingly marked effect at many urban locations around the country and must be considered when undertaking modelling studies and in the context of future local air quality strategy.

Particulate Matter

This assessment considers the annual mean and daily mean air quality standards, as specified in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland, (HMSO, 2007). Two objectives have been adopted for PM₁₀, to be achieved by the end of 2010:

- An annual mean concentration of 18 µg/m³ (gravimetric); and
- A 24-hour mean concentration of 50 µg/m³ (gravimetric) to be exceeded no more than 7 times per year.

Particulate matter is composed of a wide range of materials arising from a variety of sources, and is typically assessed as total suspended particulates or as a mass size fraction. National and European Objectives/Limit Values apply for the PM₁₀ fraction and national objectives also apply for the PM_{2.5} fraction. These express particulate levels as the total mass size fraction at or below an aerodynamic diameter of 10 and 2.5 µm respectively.

Both short-term and long-term exposure to ambient levels of particulate matter are consistently associated with respiratory and cardiovascular illness and mortality as well as other ill-health effects. Particles of less than 10 µm in diameter have the greatest likelihood of reaching the thoracic region of the respiratory tract.

It is not currently possible to discern a threshold concentration below which there are no effects on the whole population's health. Recent reviews by WHO and the Committee on the Medical Effects of Air Pollutants (COMEAP, 1998) have suggested exposure to a finer fraction of particles (PM_{2.5}, which typically make up around two thirds of PM₁₀ emissions and concentrations) give a stronger association with the observed ill health effects, but also warn that there is evidence that the coarse fraction (between PM₁₀ – PM_{2.5}) also has some effects on health.

Emissions of PM₁₀ have decreased considerably since 1970, mainly due to the decline in coal use and the result of legislative and technical control of emissions from both road traffic and industrial sources. Industrial processes and road transport were the main sources of PM₁₀ in 2005. In general diesel vehicles emit a greater mass of particulate per vehicle kilometre than petrol-engine vehicles (AEA, 2007).

- **Air Quality in Aberdeen**

- **Local Air Quality Management**

An Air Quality Management Area (AQMA) has been in place in the centre of Aberdeen since June 2001, centred on Union Street and Market Street as a result of past and predicted exceedences of the annual mean NO₂ objective (ACC, 2009). The AQMA was extended in 2003 and again amended in 2005 to include adjoining roads.

The 2004 Detailed Assessment (ACC, 2004) indicated that 2010 Scottish objectives for PM₁₀ may be exceeded in the city centre, and an AQMA was declared for the pollutant covering the same area as for NO₂.

The 2006 Updating and Screening Assessment (ACC, 2006) found that NO₂ and PM₁₀ levels were similar to previous years within the AQMA. Potential exceedences of PM₁₀ were identified along the east coast and close to major roads, whilst diffusion tube measurements of NO₂ suggested that there may be potential exceedences of the annual mean along commuter routes. The 2007 progress report indicated that there was a risk of exceeding the annual mean NO₂ objective outside of the existing AQMA, in the following areas:

- South Anderson Drive / Anderson Drive / North Anderson Drive (A90);
- Great Northern Road / (St Machar Drive – Auchmill Road) / Auchmill Road (A96);
- King Street (A956); and
- Wellington Road (A956).

A Detailed Assessment was undertaken for these four areas for both NO₂ and PM₁₀ (ACC, 2008a). The assessment also considered projected scenarios with and without the Western Peripheral Route (AWPR). The Detailed Assessment concluded that exceedences of the annual mean objectives for NO₂ and PM₁₀ were likely at the Haudagain roundabout (A90/A96) and Wellington Road (Queen Elizabeth II Bridge to Balnagask Road) in 2010 without the AWPR. Exceedences were predicted in 2010 on Wellington Road with the AWPR, whilst concentrations were predicted to be slightly below the objective with the AWPR at the Haudagain roundabout. Since the AWPR will not be operational until 2012/13, it was considered prudent to declare AQMAs for NO₂ and PM₁₀ in both areas, and along the length of Anderson Drive.

The 2009 Further Assessment (ACC, 2009b) considered the new Anderson Drive and Wellington Road AQMAs corridors in light of further traffic data and monitoring data; no changes were proposed to the AQMAs.

In support of this document, ACC commissioned a modelling study focussing on the city centre AQMA and surrounding roads (ACC, to be published Spring 2010). The modelling study considers concentrations of NO₂ and PM₁₀.

In summary, based on the work undertaken by ACC, several areas have been identified in the past decade as unlikely to be meeting national objectives and European limits, and hence the Council have declared AQMAs. As is the case elsewhere in the UK, the air quality problem in Aberdeen is predominantly a result of emissions from road vehicles, and this is reflected in the locations of the AQMAs:

- **City Centre AQMA** (originally declared in 2001, last amended in 2005; including Union Street, Market Street, Virginia Street, Commerce Street, and parts of Holburn Street, Guild Street and King Street)
- **Anderson Drive AQMA** (declared December 2008, incorporating the whole of Anderson Drive and the area around the Haudagain roundabout); and
- **Wellington Road AQMA** (declared December 2008, from the Queen Elizabeth II Bridge to Balnagask Road).

Whilst exceedences of the annual mean objectives are more widespread for PM₁₀ than for NO₂, the Scottish annual mean PM₁₀ objective is not mandatory, whereas the NO₂ annual mean EU limit value is mandatory and legally binding. There are, however, less stringent mandatory EU objectives for PM₁₀. Levels of PM₁₀, particularly around the Market Street area, are at risk of exceeding the EU objective.

During 2010, ACC will undertake a review of the boundaries of its AQMAs, based primarily on the latest pollutant monitoring results, and recent modelling studies. ACC has also secured funding to undertake a Low Emission Zone feasibility study, which will be undertaken during the year.

- **Pollutant Monitoring**

NO₂ Monitoring

Automatic monitoring of NO₂ has been undertaken at six sites in Aberdeen in recent years:

- Market Street: a city centre kerbside site (within existing AQMA);
- Union Street: a city centre roadside site (within existing AQMA);
- Errol Place: an urban background site close to the city centre;
- Anderson Drive: a roadside site between Headland Court and Broomhill Road (within the new AQMA);
- Wellington Road: a roadside site (within the new AQMA); and
- King Street: a kerbside site (to the north of the city centre AQMA)

Monitoring began at the Errol Place station in 1999, Union Street and Market Street in 2000, Anderson Drive in 2005, Wellington Road in 2008, and King Street in 2009. The Market Street monitoring site was removed in October 2008 due to the redevelopment of the adjoining area and relocated to a site approximately 400m to the south of the original site.

Data and statistics are reported annually by ACC through the LAQM process (refer to ACC Updating and Screening Assessments and Progress Reports (e.g. ACC, 2009 and ACC, 2008)). However the monitoring data since 2003 at these sites can be summarised as follows:

- The highest concentrations, in excess of the mandatory EU limit values have been recorded at the Market Street and Union Street sites:
 - At the Market Street roadside site, concentrations increased considerably between 2006 and 2008 (from approximately 55 to 73 $\mu\text{g}/\text{m}^3$), prior to its decommissioning; this increase was attributed in the main to considerable construction activity in the vicinity of the site. Market Street is a heavily trafficked route, with a particularly high proportion of HGVs;
 - At the Union Street roadside site, concentrations have fluctuated between approximately 48 and 64 $\mu\text{g}/\text{m}^3$, with no obvious trends emerging. Union Street is the main shopping street in Aberdeen, through which almost all bus routes pass;
 - Exceedences of the hourly limit value have also been recorded at both Union Street and Market Street;
- At the Anderson Drive roadside site, concentrations have fluctuated between approximately 23 and 28 $\mu\text{g}/\text{m}^3$, with no obvious trends emerging;
- Early data from the Wellington Road site indicate concentrations of NO₂ around the EU Limit value of 40 $\mu\text{g}/\text{m}^3$; and
- At the urban background Errol Place site concentrations have fluctuated between approximately 23 and 30 $\mu\text{g}/\text{m}^3$, with no obvious trends emerging.

There is also a network of passive diffusion tubes located across the city measuring concentrations of NO₂. Annual mean concentrations up to 80 $\mu\text{g}/\text{m}^3$, double the annual mean EU limit value have been measured, but again no obvious annual trends emerge.

PM₁₀ Monitoring

Continuous monitoring of PM₁₀ is undertaken at the same sites as for NO₂. The monitoring data since 2003 at these sites can be summarised as follows:

- Concentrations in excess of the annual mean Scottish 2010 objective (18 $\mu\text{g}/\text{m}^3$) were recorded at all sites;
- At the Market Street roadside site, concentrations in excess of the 2004 annual and daily mean objective (of 40 $\mu\text{g}/\text{m}^3$) have been recorded; concentrations increased considerably between 2006 and 2008 (from approximately 50 to 85 $\mu\text{g}/\text{m}^3$), attributed to considerable construction activity in the vicinity of the site;
- At the Union Street roadside site, concentrations have fluctuated between approximately 19 and 25 $\mu\text{g}/\text{m}^3$, with no obvious trends emerging. Union Street is the main shopping street in Aberdeen, through which almost all bus routes pass;
- At the Anderson Drive roadside site, concentrations have fluctuated between approximately 17 and 18 $\mu\text{g}/\text{m}^3$;
- Early data from the Wellington Road site indicate concentrations of PM₁₀ around 25 $\mu\text{g}/\text{m}^3$; and

- At the urban background Errol Place site concentrations have fluctuated between approximately 17 and 22 $\mu\text{g}/\text{m}^3$, with no obvious trends emerging.

It is very important to note that PM_{10} concentrations at the urban background site have consistently been higher than those at the roadside Anderson Drive site. This 'anomaly' is likely to be due to coastal influences (sea salt). ACC will be undertaking a monitoring study during 2010 to investigate in further detail the 'coastal' contribution to the PM_{10} fraction.

The values quoted above were derived from TEOM data using a correction factor of 1.3; if the 1.14 factor had been used lower values would have been reported.

- **Modelling Studies**

ACC have undertaken recent dispersion modelling studies, focusing on the three AQMAs, and the pollutants NO_2 and PM_{10} . The 2009 Further Assessment (ACC, 2009b) examined the Anderson Drive and Wellington Road AQMAs, and the 2010 city centre modelling study (ACC, to be published Spring 2010) focussed on the city centre AQMA and surrounding roads. Further details regarding the studies are provided in the reports, These studies involved analyses of the source contribution to the overall concentrations, and estimations of the numbers of properties affected.

Source Apportionment

Table 1 contains the source apportionment information for four roads/areas, where the highest concentrations have been predicted within the three AQMAs.

The contribution from traffic is provided, and compared with the background source contributions (i.e. all other sources). The contribution from different vehicle types is also provided (these have been calculated using the February 2010 version of the Emissions Factor Toolkit (v4.1)).

Table 1: Source Apportionment

Road	Source Contribution	NO _x	PM ₁₀	Traffic Source Breakdown			
				Vehicle Type	NO _x	PM ₁₀	PM _{2.5}
Union St	Background	18%	59%	Car/Taxi	18%	44%	40%
				LGV	6%	15%	15%
	Traffic	82%	41%	Bus/Coach	65%	34%	37%
				OGV1	8%	5%	5%
Wellington Rd	Background	36%	56%	OGV2	4%	2%	2%
				Car/Taxi	14%	35%	31%
	Traffic	64%	44%	LGV	7%	16%	17%
				Bus/Coach	10%	5%	6%
Haudagain Roundabout	Background	8%	52%	OGV1	26%	18%	18%
				OGV2	44%	25%	27%
	Traffic	92%	48%	Car/Taxi	23%	50%	46%
				LGV	6%	12%	13%
Market St	Background	11%	42%	Bus/Coach	23%	11%	12%
				OGV1	21%	13%	13%
	Traffic	89%	58%	OGV2	27%	14%	15%
				Car/Taxi	13%	35%	32%
				LGV	5%	13%	14%
				Bus/Coach	34%	19%	21%
				OGV1	27%	20%	20%
				OGV2	21%	13%	14%

The following observations can be made:

- For NO_x, road traffic is the greatest single contributor, whereas for PM₁₀, the road traffic contribution is from the background sources.
- With regards to NO_x, cars, despite making up the greatest proportion of the traffic, are generally responsible for the least emissions. However for PM₁₀, cars are responsible for a far greater proportion of the total emissions.
- The results for Union Street indicate that for NO_x, buses are the single greatest contributor (65%), but for PM₁₀ the bus contribution is smaller (34%), and the car contribution is greatest (44%).
- For Wellington Road, HGV emissions (OGV1 and OGV2) contribute to the greatest extent, and to a lesser extent the same is true for Market Street.
- For the Haudagain roundabout, cars contribute more significantly to the total, particularly with regards PM₁₀ and PM_{2.5}.

Population Exposure

Technical guidance, LAQM.TG(09), requires local authorities to estimate the number of people who are predicted to be exposed to pollutant concentrations above the Air Quality Strategy objectives, in order to assist Defra and the Devolved Administrations to quantify the health benefits of improving air quality within the LAQM regime.

In the 2009 Further Assessment and 2010 City Centre modelling study reports (ACC, 2009b; ACC, 2010) estimations of population exposure were made based upon local knowledge, and given in accordance with the following terminology (number of properties exposed to concentrations in exceedence of air quality objective):

- Few <10
- Tens 10-100
- Hundreds 100-1000
- Thousands >1000

Wellington Road AQMA:

- *Few* (<10) properties are likely to be exposed to concentrations of NO₂ in excess of the annual mean Standard.
- By 2012, it was deemed unlikely that any properties would be exposed to concentrations of NO₂ in excess of the Standard.
- *Hundreds* (100-1000) of properties are likely to be exposed to PM₁₀ concentrations in excess of the annual mean Standard.
- By 2012 or 2016, it was deemed likely that the number of properties exposed to PM₁₀ concentrations in excess of the Standard would be in the *tens* (10-100) category
- It was added however: that given the discrepancies between the monitored and modelled values it was not appropriate to make a more accurate determination of the number of properties predicted to be exposed to concentrations above the Standard, nor the date by which there will be no properties exposed to concentrations above the Standard.

Anderson Drive AQMA:

- *Tens* (10-100) of properties are likely to be exposed to concentrations of NO₂ in excess of the annual mean Standard (restricted to the vicinity of Haudagain roundabout);
- By 2012 and 2016, it was deemed likely that the number of properties exposed to concentrations in excess of the Standard would be in the *few* (<10) category;
- *Hundreds* (100-1000) of properties are likely to be exposed to PM₁₀ concentrations in excess of the annual mean Standard.
- By 2012 and 2016, it was deemed likely that the number of properties exposed to concentrations in excess of the Standard will be in the *tens* (10-100) category, and mostly clustered around busier junctions.
- It was again added however: given the discrepancies between the monitored and modelled NO₂ it was not appropriate to make a more accurate determination of the number of properties predicted to be exposed to concentrations above the Standard, nor the date by which there will be no properties exposed to concentrations above the Standard.

City Centre AQMA:

- *Hundreds* (100-1000) of properties are likely to be exposed to concentrations of NO₂ in excess of the annual mean Standard;
- By 2012 and 2016, it was deemed likely that the number of properties exposed to concentrations in excess of the Standard would be in the *hundreds* and *tens* categories respectively;
- *Thousands* (>1000) of properties are likely to be exposed to PM₁₀ concentrations in excess of the annual mean Standard.
- By 2012 and 2016, it was deemed likely that the number of properties exposed to concentrations in excess of the Standard will be in the *thousands* and *hundreds* categories respectively.
- It was again added however: given the discrepancies between the monitored and modelled NO₂ it was not appropriate to make a more accurate determination of the number of properties predicted to be exposed to concentrations above the Standard, nor the date by which there will be no properties exposed to concentrations above the Standard.

- **Summary: The Scale and Extent of the Air Quality Problem in Aberdeen**

NO₂ concentrations in excess of the mandatory EU annual mean limit value prevail near to some of the time main roads in Aberdeen, and major junctions, affecting in the order of '*thousands*' of properties. The main areas of concern, where concentrations are well in excess of the annual mean limit value (as high as double) have been measured, are Haudagain roundabout, Union Street, and Market Street. Exceedences of the hourly averaged limit value have also been measured on Union Street and Market Street. Traffic is recognised as being the most significant contributor, accounting for up to 90% of the total NO₂ concentration.

PM₁₀ concentrations in excess of the Scottish annual mean objective are widespread. Whilst the problems areas are associated with traffic, concentrations in excess of the annual mean objective have also been measured at the urban background Errol Place monitoring location. It is likely however that the measured concentrations here are affected by the site's proximity to the coast. Whilst the PM₁₀ exceedence areas cover a greater proportion of Aberdeen, and affect more people than for NO₂, it should be

acknowledged that the Scottish air quality objectives are not mandatory. Nevertheless it is the duty of ACC to reduce these concentrations as effectively as possible.

Whilst trends can be hard to identify due to meteorological influences, there is no evidence to suggest that roadside or background pollutant concentrations are decreasing in Aberdeen. Modelling studies predict that concentrations will fall in the coming years, however such reductions have not materialised in past years so such modelling outcomes must be treated with caution.

In the most polluted areas, traffic emission reductions of the order of 50-75% would be required for compliance with the mandatory NO₂ annual mean limit value.

• The Development of the Draft Air Quality Action Plan

• Introduction

This section of the AQAP describes the process followed in developing the plan. Due regard has been made to the following key guidance:

- Local Air Quality Management Technical Guidance, LAQM.TG(09) (Defra, 2009a); and
- Local Air Quality Management Policy Guidance for Scotland, LAQM.PG(S)(09) (Defra, 2009b)

In essence the plan needs to:

- Show that a wide variety of options have been considered;
This is demonstrated in Section 5.
- Quantify the source contributions, and hence allow appropriate measures to be identified;
This is covered in Section 3.
- Show how ACC will implement the actions;
The organisation/body responsible for implementing each action is indicated in Section 5
- Present clear timescales within which the actions can be implemented;
Potential timescales are indicated in Section 5; following consultation on the draft it will be possible to refine these further
- Where possible quantify the impact of the actions on air quality;
Where possible this has been undertaken, or the impact estimated.
- Show how ACC will monitor and evaluate the effectiveness of the plan.
This is discussed in draft form in the final section.

During the development of the plan there have been various communications and meetings involving several ACC Services, and other stakeholders, such as Nestrans. In particular, during October 2009 a meeting and workshop was held where potential measures to improve air quality were discussed. Members of NETCF (North East Transport Consultative Forum) were invited; approximately 35 members attended from a wide variety of bodies, organisations and businesses. A summary of the views expressed at the meeting is provided in Section 4.

In developing this plan, the following questions have been raised and considered:

- How feasible is the action / what barriers need to be overcome to allow it to be implemented?
- Over what timescale can the action be implemented?
- How 'acceptable' would the option be to the public?
- What would the likely costs associated with the action be, and to whom?
- How beneficial would the action be with regard to improving air quality?
- What would be the impact of the action with regards the wider environment and socio-economically?
- Who would be responsible for ensuring implementation and driving the action forward?

• Previous Air Quality Action Plan (2006)

Appendix 2 summarises the actions and progress made within the 2006 AQAP.

Typically, whilst significant progress has been made against many of the actions, there is a great deal of uncertainty regarding what the effect of the actions has been on air quality. No progress has been made for some of the actions, largely due to the actions turning out to be unfeasible, for a variety of reasons.

In drawing up this new Draft AQAP, due regard has been given to the successes or otherwise, over the past 4 to 5 years, of actions within the 2006 AQAP. It is also noteworthy that the 2006 AQAP covered the city centre AQMA only. Many of the 2006 actions have been considered for inclusion within the new Draft AQAP, although the emphasis of many has been altered.

• **NETCF Feedback Summary**

Below is a summary of the feedback received from those present at the NETCF meeting of 8 October 2009, and from those who could not attend the meeting.

Action Heading	Comments
Encourage Modal Shift	Need to: <ul style="list-style-type: none"> - Change attitudes, habits and travel behaviour to discourage unnecessary car journeys; - Focus on getting people out of cars to free up road space for necessary vehicles; - Free up road space for alternative modes - cycling, walking and modern, clean, public transport; - Encourage public transport priority schemes and attractive public transport: important factors include fares, frequency, comfort, reliability and routes; and - Improve cycling and walking provisions (provide proper safe cycle lanes).
Road Infrastructure/ Traffic Management	<ul style="list-style-type: none"> - Road infrastructure/traffic management measures required to facilitate progress on other actions; - Respondents typically favoured by-pass and road infrastructure measures to decrease congestion, some respondents highlighted that road building only provides short term relief, and encourages more car trips; - Similarly, the benefits of infrastructure measures e.g. AWPR/3rd Don crossing, must be 'locked in' to improve effectiveness of sustainable transport modes and encourage behaviour change; - Alternative routes required to improve flow / reduce traffic volume and congestion on Market Street; - Pedestrianisation generally viewed favourably, although concerns that it may move problems elsewhere, and that it could hinder alternative transport routes for cross city travel, particularly bus providers; - Traffic management: small changes can have a cumulative large effect - Parking: Respondents typically favoured increased parking restrictions and parking charges, discourage commuters, reduce private non-residential parking spaces provided by employers; - Enforced vehicle delivery restrictions at peak hours; - Consider further Park and Rides with fast, reliable buses; - Idling vehicles easy to enforce, but need awareness campaign to promote the benefits; and - Better synchronised traffic lights to avoid stop, start, stop etc
Planning and Strategic Policies	<ul style="list-style-type: none"> - Improved master planning (structure plan); - Essential support from Chief Executives across the public sector & NHS Grampian to enable significant air quality improvement; - Improved links with other strategies e.g. NHS Grampian Public Health and Met office e.g. to enable messages to be sent to people suffering from chronic obstructive pulmonary disease (COPD); - Progress links with Health and Transport Action Plan; - New developments - 'lock in' funding for public transport improvements at early development stage e.g. subsidise over first 3 years;
Increase Cleaner Vehicle Usage	<ul style="list-style-type: none"> - Encourage and promote cleaner vehicles and fuels e.g. electric vehicles (new electric bike available with 60 mile range) - Refuelling and recharging stations required - Scrapping vehicles unlikely to extend to HGVs - Freight Quality Partnerships need to be meaningful and involve all key stakeholders - Public sector must take lead to encourage others - Remove most polluting diesel buses and lorries - ECO driving being implemented by commercial bus operators

Action Heading	Comments
General	<ul style="list-style-type: none"> - Range of measures needed, however need to communicate with public so don't fight against change - Improve public awareness. Also need to direct awareness at individual drivers e.g. via real time air quality information on VMS - Explore use of Park and Ride facilities for secure lorry parking at night - Commercial delivery strategy worth considering - Home zones an option - have limited air quality impact, but significant impact on road safety - Develop initiatives to improve efficiency of freight movement - Encourage rail freight increase by capitalising on rail gauge enhancements between Elgin and Mossend. - Rail freight increase difficult due to location of freight yard and rail line infrastructure
Least Favourable	<ul style="list-style-type: none"> - Road tolls and congestion charging generally viewed to be politically and economically unacceptable, although one comment considered peak period congestion charging a possibility. Only if essential traffic, including HGVs exempt from charge. - Measures that penalise bad behaviour rather than promote good behaviour - Light rail/tram - cost restrictive, limited route, disruption unpopular with public/business. Available resources should concentrate on improving attractiveness of bus fleet - Banning cars in city centre would kill city centre
Low Emission Zones	<ul style="list-style-type: none"> - Generally viewed as a good idea - Should focus on car users as they have travel options - Essential due to pollution levels - Adopted already in many European cities - Could have a massive benefit - Would need public buy-in and be linked to air quality. Support by public awareness, education materials and events, appropriate signage, journey plan information - Political PR?
Other general comments	<ul style="list-style-type: none"> - Subsidised public transport - great in theory, but who pays? Who pays to improve bus fleet? - Bus quality partnerships and Contracts - can be used to specify vehicle emission standards, however quality and convenience have greater impact on modal change and hence improved air quality - Current financial climate is challenging for councils e.g. should lead by example to increase green fleet, but financially difficult

• Action Appraisal

To help determine which actions should be adopted by the AQAP, a scoring system was devised to allow the various actions to be rated and compared.

Feasibility:

- Score:
- 1 - Readily feasible; no barriers
 - 2 - Feasible; minor barriers easily overcome
 - 3 - Potentially feasible
 - 4 - Unlikely to be feasible; significant obstacles to be overcome
 - 5 - Highly unlikely to be feasible

Public Acceptability:

- Score: 1 - Highly acceptable
 2 -
 3 - Neutral
 4 -
 5 - Highly unacceptable

Relative Cost:

The estimated costs relate to the cost of provision where the measure is infrastructure works e.g AWPR, P & R etc... However, where the measure is the development of a plan or a policy, or national lobbying, the costs relate to the provision of the plan/policy (e.g. staff time), and not the actual implementation of the actions within.

For the scoring it is the relative cost that is important, the figures provided are purely indicative. It has not been the intention to carry out a detailed cost analysis; nevertheless the costs will be refined following consultation.

- Score: 1 - Very low £ <10,000
 2 - £ 10,000 - 100,000
 3 - £ 100,000 - 1m
 4 - £ 1m - 10m
 5 - Very High £ >10m

Air Quality Benefit:

It is important to note that when compared to the necessary reductions to meet the air quality objectives, even a score of 1 ('very substantial benefits') is unlikely to ensure that the air quality objectives would be achieved in many areas. The annual mean concentrations provided are indicative.

- | | |
|--|---------------------------|
| Score: 1 - Very substantial benefits, covering wide geographic area, including AQMAs | >2 µg/m ³ |
| 2 - Significant benefits, covering wide geographic area, including AQMAs | 0.5 - 2 µg/m ³ |
| 3 - Small benefits, or significant benefits restricted spatially | 0 - 0.5 µg/m ³ |
| 4 - Negligible / imperceptible benefits | approx. 0 |
| 5 - No benefits / potentially dis-benefits | ≤ 0 |

Other Impacts:

- Score: 1 - Overall large benefits likely
 2 - Feasible; minor barriers easily overcome
 3 - Neutral (either no other impacts or beneficial/detrimental impacts approximately balanced)
 4 - Unlikely to be feasible; significant obstacles to be overcome
 5 - Overall large detrimental impacts likely

Cost/Air Quality Benefit:

The cost/AQ benefit score has been calculated by multiplying the 'cost' score by the AQ benefit score. The best possible score would be 1; the worst 25.

Total Score:

The total score has been calculated by summing the feasibility, public acceptability, cost/AQ benefit, and other impacts scores. The best possible score would be 4; the worst 40.

- **Draft Actions List Appraisal**

- **Action Appraisal**

All of the actions that have been appraised are detailed in Table 2. Details regarding timescales, responsibilities and funding are provided, along with the scores. Some of the scores (Air Quality Benefit, Cost/Benefit, and Total Score) are colour coded to help identify the actions that scored 'best'; lower (better) scores are shaded green, higher (worse) scores are highlighted red, 'medium' scores are highlighted in yellow.

The actions are categorised under the following six headings:

1. Modal Shift and Influencing Travel Choice
2. Lower Emissions and Cleaner Vehicles
3. Road Infrastructure
4. Traffic Management
5. Planning and Policies
6. Non-Transport Measures

Table 2: Appraisal of Actions

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score	
1 MODAL SHIFT & INFLUENCING TRAVEL CHOICE												
1.1a	Increase Bus Use	Park & Ride	S-L	Nestrans		2	2	4	3	12	2	18
1.1b		Commercial Bus fleet improvement	S-L	Nestrans	LABOF, Bus Companies	3	1	3	2	6	3	13
1.1c		QBP (currently voluntary)	S-L	ACC & Bus companies	LABOF, Bus Companies	2	1	2	3	6	2	11
1.1d		BPIP (currently voluntary), King St Improvements	S-L	ACC & Bus companies	LABOF, Bus Companies	3	2	3	2	6	2	13
Comments												
<p>Park and Ride schemes should encourage people to use public transport rather than private vehicles. By reducing the number of vehicles in the city centre they should also help ease congestion. However the relative cost is fairly high, and the air quality benefits are likely to be fairly small (based on studies undertaken so far, such as for the proposed A96 P&R near Dyce). Air quality benefits could be enhanced significantly if the buses that serviced the P&R were required to meet certain emissions conditions. ACC will investigate options to derive greater air quality benefits from P&Rs.</p> <p>Through Nestrans' LA Bus Operators Forum (LABOF) there is the opportunity to improve and modernise the commercial bus fleet in Aberdeen, and hence make catching the bus a more attractive alternative the private car. Newer more modern buses will also pollute less. Opportunities for enforcing particular emissions standard will be examined during the Low Emission Zone feasibility Study (refer to Action 2.5); the potential air quality benefits will be calculated.</p> <p>The Quality Bus Partnership (QBP) (ACC, Stagecoach, First Aberdeen) is voluntary; however it is an important partnership with a target of improving the bus services in the city. It has great potential to encourage more people to use the bus rather than the car.</p> <p>The Bus Punctuality Improvement Partnership (BPIP) has the specific aim of allowing bus services to run to time. It is likely to be relatively more costly than QBP as it involves more implementation of measures rather than policy development. The King Street route (within the city centre AQMA) is given as an example; currently there are delays at the King St/E N E St junction – improvements are being investigating to give buses priority. The aim is to make BPIP work on a voluntary basis before trying to make it a statutory measure.</p>												

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score	
1.2a	Improve Cycling & Walking Provision	Core Paths Plan	S-L	ACC	ACC	2	1	3	4	12	2	17
1.2b		Cycling Strategy	S-L	ACC	ACC	2	2	3	4	12	2	18
Comments												
<p>The Core Paths Plan has been adopted and is statutory; implementation is ongoing.</p> <p>The Cycling Strategy is currently being reviewed; nevertheless the implementation of cycling measures is ongoing, and being promoted to encourage cycling.</p> <p>Encouraging more people to cycle and walk will reduce car trips; an additional benefit is the health impact. However it is anticipated that air quality improvements in the city centre as a consequence of the Core Paths Plan and Cycling Strategy will be minimal.</p>												
1.3a	Travel Plans	Existing Organisations	S-L	ACC & Nestrans	Businesses	3	2	2	3	6	1	12
1.3b		New Developments	S-L	ACC	Businesses	1	1	2	3	6	2	10
1.3c		Council	S-L	ACC	ACC	2	1	2	3	6	2	11
Comments												
<p>Travel Plans provide a framework to encourage employees to travel to work through sustainable means, and hence to minimise their impact on air quality.</p> <p>ACC is responsible for ensuring that new developments submit a Travel Plan as part of the planning process. With regards to existing commercial organisations and businesses ACC will further promote the 'Travel Plan Builder Scheme' (www.northeastscotlandtravelplans.co.uk), and associated Sustainable Travel Grants. Potentially the air quality benefits from targeting existing organisations are greater than for new developments, however greater emphasis is required to persuade existing businesses to adopt greener practices.</p> <p>ACC is currently updating its own Travel Plan. Whilst ACC employs a large number of people in the city area, it is envisaged that the greatest air quality benefits will be indirect due to the fact that ACC will be seen to be leading by example. It is therefore important that ACC make public and advertise their progress with implementing their Travel Plan, emphasising the environmental benefits.</p>												

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score	
1.4a	Improve public awareness of air quality issues	Use of Variable Messaging System (VMS)	S-L	ACC & Transport Scotland	ACC	2	1	2	3	6	3	12
1.4b		ACC Website Improvements	S	ACC	ACC	1	1	2	4	8	3	13
1.4c		'Airtex' Alert Service	S-M	ACC	ACC	3	1	2	4	8	2	14
1.4d		Get About Partnership	S-L	Get About		1	1	3	3	9	2	13
1.4e		Information Events	S-L	ACC	ACC	1	1	2	3	6	3	11
1.4f		Marketing Initiatives (Walk to School)	S-L	ACC	ACC	1	2	2	3	6	2	11

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score
Comments											
<p>It is very hard to measure the impact on air quality of raising the public awareness of air quality issues. However it is very likely that the more people are aware of the connection between their travel choices and the quality of the air they breathe, the more likely they are to change behaviour, and most importantly, their own and their friends and colleagues' habits.</p> <p>VMS is currently used in Aberdeen to provide drivers with general car parking guidance, enabling them to avoid driving unnecessarily looking for car parking spaces. The system has been recently adapted to include messages relating to the environment to encourage less car dependency. ACC will also consider the use of the VMS to post general air quality messages, particularly on peripheral city routes. These messages should raise awareness of air quality, especially during air pollution episodes. Further VMS signs are to be provided in and around the city, with the potential for further traffic management options.</p> <p>Improving the ACC website will provide a means for ACC to raise awareness of air quality issues, to highlight initiatives that people can take part in to improve air quality, and potential be used as a resource for schools. Whilst the air quality benefits are likely to be imperceptible, the costs will be relatively low.</p> <p>The 'Airtext' Alert service is used in a growing number of towns and cities, primarily to alert the vulnerable to episodes of poor air quality, and hence allow them to avoid more polluted areas. Air quality may benefit indirectly through greater awareness of the health implications of poor air quality.</p> <p>The Get About Partnership (www.get-about.com) is a group dedicated to improving public awareness of transport issues. Their aim is to promote healthy and sustainable transport choices. The group includes Nestrans, ACC, Aberdeenshire Council, Robert Gordon University, the University of Aberdeen, Aberdeen College, NHS Grampian, The Energy Savings Trust, and Dyce Transportation Management Organisation. As a member of the group ACC will promote awareness of air quality through the partnership.</p> <p>ACC will hold more information events, at locations such as schools. A laptop and screen has been purchased for public displays and promotion activities. ACC will develop an information package to be distributed at events. Initiatives such as 'Bike to work', 'safer routes to school', and 'walk to school' will be promoted and encouraged.</p>											

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score	
1.5a	Car Clubs / Car Pool Schemes	General Public	S-M	ACC	Businesses	2	1	2	3	6	3	12
1.5b		Corporate	S-L	ACC	Businesses	2	1	2	3	6	3	12
Comments												
ACC is currently undertaking a study looking at the introduction of car clubs to Aberdeen. Car clubs are proving to be very popular in other UK cities; the trend amongst users is to sell their car, and just use car clubs. Users tend to plan their journeys more carefully, and therefore drive fewer kilometres than before, and car club fleets are modern, predominantly small vehicles, for urban driving.												
Corporate car pool schemes offer similar benefits.												
It is intended that the LEZ feasibility study (refer to Action 2.5) will further investigate the potential for low emission car clubs.												
1.6a	Crossrail	Local rail improvements	S-L	Nestrans	Nestrans	2	1	5	2	10	2	15
1.6b		Infrastructure improvements	L	Nestrans	Nestrans	5	1	5	2	10	2	18
Comments												
Crossrail is a frequent cross-city rail service between Inverurie, Aberdeen and Stonehaven, coupled with new stations (such as Kintore). It is to be delivered on an incremental basis, over approximately 7-10 years. Whilst local rail improvements, delivered as part of Cross-rail, are feasible albeit expensive, major infrastructure improvements are unlikely to be progressed due to the cost implications.												
1.7	Rail Freight	Modal Shift from road to rail	M-L	Nestrans	see FAP, p.21	5	2	4	4	16	2	25
Comments												
The Draft ACC Freight Action Plan discusses options to encourage modal shift from road to rail. However, whilst a transition to rail could result in air quality benefits, it is likely that any impacts within the city centre will be limited; in most instances the freight would still need to be transported by road to its final destination.												

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score	
1.8	Public Transport Subsidies	M-L	ACC & Nestrans	ACC	4	5	4	3	12	2	23	
Comments												
Public Transport subsidies are not considered to be feasible, due to cost feasibility and acceptability; the public are strongly against ACC subsidising bus companies.												
1.9	Congestion Charge / Road Toll	Congestion Charge / Road Toll	M-L	ACC & Nestrans	Public	4	5	4	1	4	3	16
Comments												
Whilst such a measure may lead to considerable air quality benefits it is not considered to be viable due to political, financial and public acceptably.												

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score
2 LOWER EMISSIONS & CLEANER VEHICLES											
2.1a	Green Council Fleet	S-L	ACC	ACC	2	2	3	3	9	3	16
2.1b	Vehicle procurement & Fuel/Charging Infrastructure	S-L	LABOF, ACC & Bus companies	ACC & Bus Companies	2	2	4	2	8	2	14
2.1c	Infrastructure	M-L	ACC & Nestrans	Businesses	3	2	4	2	8	2	15
2.1d	General Public / Local business Incentives	M-L	ACC		3	3	3	3	9	2	17

Comments

ACC is to continue procuring 'green' vehicles (all diesel vehicles Euro V, particulate traps fitted to Euro III and older vehicles). This is being implemented as part of ACC's Carbon Management Programme. An Energy Saving Trust grant application is proposed to help fund.

The **Quality Bus Partnership (QBP)** (ACC, Stagecoach, First Aberdeen) is voluntary rather than statutory. Nevertheless, it is an important partnership with a target of improving the bus services in the city. As partners, ACC will push to ensure that as 'green' vehicles as possible are procured by the bus companies. This will be examined in greater detail through the LEZ feasibility study.

Through the ACC Freight Action Plan (FAP) a Freight Quality Forum has recently been set up. Through this forum and through the framework set out in the FAP, ACC will examine ways of encouraging and assisting the procurement of greener vehicles by the freight industry. In particular Action 13 within the FAP can be used to encourage procurement of greener vehicles. The main problem is the associated costs.

ACC will examine opportunities to encourage smaller local businesses to use greener vehicles and fuels.

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score
2.2a	Energy Saving Trust driving simulator	S-L	ACC	EST	1	1	1	4	4	3	9
2.2b	Eco-driving Publicity	S-L	ACC	ACC	2	1	2	4	8	3	14
2.2c	FQ Forum, BQP	S-L	ACC & Nestrans	Bus Companies	2	1	2	3	6	3	12

Comments

There is the potential for all road users to use less fuel, and therefore save money and reduce air quality impacts, purely through altering their driving behaviour and looking after their vehicle.

The Energy Saving Trust (EST), for no cost, made their eco driving simulator available to Council staff over several days in 2009. ACC will seek to ensure this is a regular event, which is publicised locally, to raise awareness of how all drivers can reduce the impact of their driving on the environment.

ACC will consider ways to encourage other organisations and businesses and the public to drive more efficiently, through a marketing campaign.

ACC will use its role in both the FQ forum and BQP to encourage businesses and bus companies to train their drivers to drive more efficiently, to save fuel and reduce tyre wear. First Aberdeen already have a system in place whereby its bus drivers are monitored, and the drivers who drive most efficiently are rewarded. In the short time First Aberdeen have been running this scheme they have seen significant reductions in fuel consumption, and are recognising the economic benefit.

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score	
2.3a	Emissions Testing & Idling	Roadside Emissions Testing	S-L	ACC	ACC	2	2	2	4	8	3	15
2.3b	Enforcement	Idling Vehicles	S-L	ACC	ACC	1	2	1	4	4	3	11
Comments												
<p>The direct impact to air quality of roadside emissions testing is likely to be negligible. So far only a small number of vehicles have failed the test. Therefore to ensure maximum benefit ACC will ensure that the tests are publicised as widely and effectively as possible to raise awareness of the importance of car maintenance in reducing the environmental and health impact of driving.</p> <p>ACC has adopted the powers under the Road Traffic (Vehicle Emissions)(Fixed Penalty)(Scotland) Regulations 2003 that permit local authorities to request drivers to switch off vehicle engines being run unnecessarily when parked and to issue fixed penalty of £20 to those drivers who fail to co-operate. To date no fixed penalty notices have been served and the direct impact of enforcement of the powers is likely to be negligible. However, greater enforcement, for example via Environmental Wardens and greater publicity will contribute further to raising awareness of air quality issues.</p>												
2.4a	Taxis	Non-idling signs	S-M	ACC	ACC	2	2	2	4	8	3	15
2.4b		Licensing: vehicle inspections, emissions restrictions	S-M	ACC		3	1	3	3	9	2	15
Comments												
<p>ACC will encourage taxi drivers to turn off their engines at taxi ranks; signs will be put up, and leaflets delivered to the taxi companies explaining the rationale. Whilst the impacts to air quality may be imperceptible, and highly localised, the measures will contribute further to raising awareness of air quality issues.</p> <p>ACC will investigate options to improve the emissions profile of the licensed taxi fleet, potentially through further vehicle inspections, vehicle age restrictions, and emissions restrictions (this will be examined in greater detail in the LEZ feasibility study).</p>												

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score	
2.5	Low Emission Zone	Low Emission Zone	M	ACC & Nestrans	ACC & Nestrans	3	3	3	1	3	2	11

Comments

EU funding has been secured to undertake an LEZ feasibility study. This will be undertaken during 2010.

In general terms a LEZ is a geographic area within which particular vehicle emissions restrictions are imposed. Whilst there are few LEZs in the UK there are many in Europe, ranging greatly in size and area, vehicles targeted, and method of enforcement.

The feasibility study will consider various options, including the potential air quality benefits, spatial extent, costs, implementation and vehicle classes that could be restricted from entry to a LEZ.

The costs would be heavily dependent on the nature of the LEZ.

3 ROAD INFRASTRUCTURE

3.1	Pedestrianisation of Union Street	of Union Street	M	ACC	ACC	2	2	4	3	12	2	18
-----	-----------------------------------	-----------------	---	-----	-----	---	---	---	---	----	---	----

Comments

The pedestrianisation of a section of Union Street is to be completed by 2012. Modelling work has shown that (other than the obvious benefits for the pedestrianised section) there will be wider benefits due to the fact Union Street will not be such an attractive 'through route' for drivers. Nevertheless there will also be detrimental air quality impacts for routes circuiting the pedestrianised area. Other benefits include pedestrian safety and improved access to retail premises.

ACC has no plans to pedestrianise other roads.

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score	
3.2a	Road Building / Junction Alterations	Aberdeen Western Peripheral Route	M	ACC	ACC, Aberdeenshire & Transport Scotland	2	2	5	2	10	3	17
3.2b		Third Don Crossing	M	ACC	ACC	3	3	5	5	25	3	34
3.2c		Berryden Corridor Improvements	M	ACC	ACC	3	2	5	4	20	3	28
3.2d		Haudagain Improvements	M	ACC	ACC, Aberdeenshire & Transport Scotland	3	2	5	3	15	2	22

Comments

Construction of the Aberdeen Western Peripheral Route (AWPR) will be complete by 2012/13. The Environmental Statement, and further modelling undertaken for the 2008 Detailed Assessment predicted significant air quality impacts in the centre of Aberdeen and on Anderson Drive, due to a reduction in traffic. The AWPR will provide a route around Aberdeen for traffic travelling from north to south. The benefits in Aberdeen out-weighed the detrimental impacts near to the proposed route.

ACC is currently undertaking an air quality assessment for the proposed Third Don Crossing (a third crossing of the River Don, 2-3 km north of the city centre). Based on an earlier air quality assessment undertaken in 2005 the scheme is predicted to have an overall detrimental impact, although the areas expected to be detrimentally impacted are not areas of concern. Beneficial impacts are likely in existing areas of poor air quality, such as King Street and the Haudagain roundabout.

ACC is undertaking an air quality assessment for the proposed Berryden Corridor improvements to the north of the city centre. The scheme is likely to improve the flow of traffic to and from the city from the north, but may bring traffic closer to certain properties. However, overall the air quality impacts were predicted to be neutral. The cost will be high, but it is favoured by the majority of the public.

ACC is proposing improvements to the Haudagain roundabout, currently an area of poor air quality within an AQMA. An air quality assessment has been undertaken. The improvements could lead to a reduction in exposure to pollutants, depending upon the finalised plans, due to the proposed road realignment and faster flowing traffic, although only a small area affected. The cost will be high, but it is favoured by the majority of the public.

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score	
3.3	Traffic Calming	S-L	ACC	ACC	2	2	3	5	15	2	21	
Comments												
Whilst traffic calming measures may discourage driving, traffic calming is primarily implemented for safety. Air quality benefits would not be anticipated due to a potential increase in vehicle emissions.												
4 TRAFFIC MANAGEMENT												
4.1	Intelligent Transport System (ITS)	To reduce city centre congestion	M	ACC	ACC	2	1	2	3	6	2	11
Comments												
ITS has the potential to significantly improve air quality through reducing congestion. As is the case in many urban areas nationwide, congestion is responsible for poor air quality. The relative costs will be low as the system is in place, and therefore only requires updating and refinement. ACC will investigate specific ITS interventions to improve air quality.												
4.2	High Occupancy Vehicle (HOV) Lane	Stonehaven Road	M-L	ACC	ACC	2	3	3	3	9	3	17
Comment												
ACC is considering the implementation of a HOV lane on Stonehaven Road to the south of the city centre. Through encouraging people to car share it has the potential to reduce the number of vehicles on the road and hence improve air quality; however the air quality assessment is yet to be undertaken. It can be uncertain predicting the impact of measures such as HOV lanes, mainly due to the uncertainty regarding the effect that the lane would have on vehicle flows and speeds. It will not be feasible for it to be progressed until the AWPR is operational and the proposed P&R to the south is also operational.												

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score
4.3a	HGV Priority Measures	M	ACC	ACC	3	3	3	3	9	3	8
4.3b	Freight and Commercial Vehicle Access	M	ACC	ACC	3	2	2	3	6	2	3
4.3c	Freight Consolidation Centre	M	ACC	ACC	3	2	5	3	15	2	22
4.3d	Weigh Bridge relocation	S-M	VOSA		3	2	3	3	9	3	17

Comments

Freight is responsible for a significant proportion of road traffic emissions in Aberdeen; particularly on roads such as Market Street and Wellington Street (refer to Section 4.3).

ACC is considering various HGV priority measures, such as the HOV lane on Stonehaven Road and junction alterations on Wellington Road. Through reducing congestion in this manner the impact of HGVs on air quality is likely to reduce.

The Freight Action Plan (FAP) has identified that current HGV delivery restrictions may actually be contributing to congestion. Action 24 of the FAP highlights the need for the restrictions to be reviewed. ACC will review the Commercial Delivery Strategy, with due regard for opportunities to reduce emissions, and consideration of enforcement.

Currently there is a statutory requirement for HGVs once loaded to visit the nearest weighbridge. This means that freight may be required to use the Aberdeen Harbour facility and hence contribute to pollution levels on Market Street. Consideration is being given to the re-instatement of the former weighbridge at Portlethan which may result in fewer HGVs requiring to travel along Market Street to use the Harbour facility.

An intermodal freight consolidation centre scoping study will be undertaken to consider the demand for such a facility, options and cost implications. Whilst the costs of a new facility would be high, there would be the potential for air quality improvements should fewer vehicles need to travel through the city centre.

4.4	Speed Regulation	20 mph areas	S-L	ACC	ACC	3	2	2	5	10	2	17
-----	------------------	--------------	-----	-----	-----	---	---	---	---	----	---	----

Comments

20 mph speed regulation may discourage driving, but would be primarily implemented for safety. Air quality benefits would not be anticipated due to a potential increase in vehicle emissions.

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score
5 PLANNING & POLICIES											
5.1a	Produce Development Control	S	ACC	ACC	1	1	2	3	6	2	10
5.1b	Supplementary Planning Contributions	S	ACC	ACC	2	2	2	4	8	3	15
5.1c	Guidance Construction Code of Practice	S	ACC	ACC	2	1	2	4	8	3	14
Comments											
<p>Through development control ACC can prevent developments going ahead, or implement planning conditions, to protect air quality. By producing supplementary planning guidance (SPG) for air quality, ACC will be able to further reduce the impact of new development, both during construction and once operational. ACC will seek for new developments to have beneficial impacts where possible. The SPG will provide a framework whereby Section 75 monetary contributions can be sought from developers where adverse impacts are predicted. Such contribution could be used to fund measures (within this AQAP) to improve air quality. The SPG will also consider a Construction Code of Practice, which developers would be required to follow to minimise impacts from construction sites and construction vehicles.</p>											
5.2	Integration of AQAP with Local Transport Strategy (LTS) and Regional Transport Strategy (RTS)	M	ACC and Nestrans	ACC	2	1	1	4	4	3	10
Comments											
<p>The LTS is due for renewal in 2012. It is very important that both the LTS and RTS have a strong air quality focus, thereby raising the profile of air quality issues and ensuring that air quality concerns are given high priority.</p>											

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score
5.3	Integration of AQAP with Health and Transport Action Plan (HTAP)	S	ACC / NHS	ACC	2	1	1	4	4	3	10
Comments											
The Health and Transport Action Plan (HTAP) is being developed by NHS Grampian for the Grampian region with Grampian Police, Grampian Fire and Rescue, NESTRANS, ACC and Aberdeenshire Council. ACC will ensure that the actions within the AQAP and the HTAP complement one another, and where appropriate are implemented in a coordinated manner.											
5.4	Road Hierarchy	S	ACC		2	2	1	4	4	3	11
Comments											
Union Street is an A-road, and consequently is identified by satellite navigation systems as a priority route. By reclassifying Union Street (and Denburn Rd), this should reduce unnecessary traffic from using Union Street, and reduce congestion. ACC will investigate reclassification through a TRO.											

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score
5.5a	Low Emission Vehicle Parking Incentives	S-M	ACC		3	2	2	3	6	2	3
5.5b	Limit car parking for new developments	S-L	ACC		3	2	1	4	4	2	11
5.5c	Development of Local and Regional Car Parking Policies	S-M	ACC & Nestrans	ACC & Nestrans	2	3	4	2	8	2	15
5.5d	Workplace Parking Levy	M-L	ACC		5	4	2	3	6	2	17

Comments

ACC will consider the feasibility of encouraging drivers to use low emission vehicles through city centre parking incentives. This will also be examined further through the LEZ feasibility study.

ACC will consider the feasibility of further limits on car parking for new developments. Potential obstacles could include business acceptability issues.

Through the development of local and regional car parking policies, the potential exists for significant air quality benefits to be realised. ACC will work with Nestrans to ensure that the Policies are formulated with due regard for air quality considerations.

Currently, under Scottish law, a workplace parking levy would not be lawful and therefore is unfeasible.

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score	
5.6a	National Lobbying	Incentives/funding/tax breaks for Low Emission Initiatives	S-L	ACC	ACC	2	2	1	3	3	3	10
5.6b		Shipping Emissions Reductions	S-L	ACC	ACC	3	2	1	4	4	3	12
5.6c		HGV/Bus Scrappage schemes	S-L	ACC	ACC	4	2	1	2	2	2	10
Comments												
ACC will lobby nationally whenever appropriate to influence policies that may affect air quality in Aberdeen. The relative cost here refers to the cost to ACC of staff time. Incentives/funding/tax breaks for Low Emission Initiatives could have a significant air quality impact. ACC would also like to lobby nationally for more stringent shipping emissions regulations and fuel standards.												
A hypothetical HGV/Bus scrappage scheme would be envisaged to have potential significant air quality benefits, although it is unlikely to be feasible.												
5.7	Move Receptors (people) from AQMAs		S-L	ACC		5	4	4	2	8	3	20
Comments												
Such a measure was widely agreed to be unfeasible.												
5.8	Relocate Major Employers		S-L	ACC	Businesses	4	4	5	2	10	3	21
Comments												
Such a measure was widely agreed to be unfeasible.												

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score	
6 NON-TRANSPORT MEASURES												
6.1	Control Biomass Installations	Enforce new developments to only install 'cleanest' biomass boilers	S-L	ACC		2	2	2	4	8	4	16
Comments												
Biomass boilers and combined heat and power (CHP) plant have received a considerable level of attention recently as they are more and more frequently integrated into low-carbon developments, and encouraged by the UK Government to help meet climate change and renewable energy targets. However, alongside the benefits, these installations also have the potential to create local air quality problems, as a widespread uptake of biomass technology utilising wood fuel could lead to an increase in fine particulate emissions. ACC will ensure that through the planning process appropriate assessment of proposed boiler installations are undertaken, and new developments will install only the 'cleanest' boilers.												
6.2	Industry Permitting		S-L	ACC and SEPA		2	1	2	3	6	2	11
Comments												
ACC will continue to review permit applications, and request additional abatement to minimise impacts to as low level as possible.												
6.3	Tree Planting	Pro-active planting of tree species with a positive air quality impact and avoid planting varieties that may have detrimental air quality impact	S-L	ACC	ACC	2	2	2	4	8	3	15
Comments												
ACC are currently developing a tree planting policy. Whilst trees are all perceived to be good for air quality, it is now well-known that certain species can have a detrimental air quality impact in an urban environment. Whilst the likely impacts will be very small, ACC will ensure that such species that have an adverse impact on air quality are not planted.												

Measure	Detail	Timescale	Responsibility for driving forward	Funding	Feasibility	Public Acceptability	Relative Cost	AQ Benefit	Cost/AQ Benefit Score	Other Impacts (e.g. Carbon)	Total Score
6.4	Shipping	Consider actions available at Aberdeen Harbour	S-L	ACC & Aberdeen Harbour	2	1	3	3	9	2	14
Comments											
The harbour is critical to the economy of Aberdeen, and in certain respects is the focus of the city. In conjunction with Aberdeen Harbour ACC will investigate initiatives to improve air quality in the environs of the harbour.											

• **Appraisal Discussion**

Modal Shift and Influencing Travel Choice

Typically most measures scored well, although those that would deliver the greatest air quality benefit would also be the most unfeasible and unacceptable (1.9 Congestion charging / Road tolls).

The measures with the best total score would not necessarily deliver significant air quality benefits (e.g. 1.4f Marketing initiatives), but scored well due to being readily feasible, acceptable and of low cost. Measures likely to give more significant benefits scored comparatively worse due to greater costs (e.g. 1.1b Bus fleet improvement).

The Park and Ride option did not score as well as may have been expected. Air quality benefits could be enhanced significantly if the buses that serviced the P&R were required to meet certain emissions conditions. ACC will investigate options to derive greater air quality benefits from P&Rs.

In summary numerous measures have been identified to encourage modal shift. Whilst no one measure was predicted to result in significant air quality benefits, the combined impact of the many measures should result in a significant impact. The majority of the measures scored well in terms of feasibility and acceptability, with relatively fast implementation.

Public Transport Subsidies and Congestion Charging (1.8 and 1.9) will not be included within the draft AQAP.

Lower Emissions and Cleaner Vehicles

Measure 2.5 (LEZ) scored very well, and promises the greatest air quality benefits, of any action in the draft plan. It will be the subject of a feasibility study during 2010.

The other measures that scored best overall, again were predicted to offer very small to negligible air quality benefits and scored well by virtue of their low cost, feasibility and acceptability (e.g. Eco-driving (2.2)).

Green vehicle procurement (2.1) was generally identified to offer the greatest beneficial air quality impacts, and will be considered in conjunction with the LEZ study.

All of the measures will be included in the Draft AQAP.

Road Infrastructure

The pedestrianisation of (a section of) Union Street is expected to be complete by 2012. Overall, benefits will be likely, although there will also be localised detrimental impacts ouwith the city centre AQMA,

Of the road building measures, only the AWPR was predicted to result in a beneficial air quality impact. However the improvements at Haudagain also have the potential to result in a localised beneficial impact. ACC will ensure that the final proposals offer the maximum air quality benefit. An air quality assessment is currently being undertaken for the Third Don Crossing; however it is not anticipated that the scheme will deliver overall air quality benefits. Similarly the Berryden corridor improvements are not likely to benefit air quality overall. Traffic calming (3.3) is primarily implemented for safety; air quality benefits would not be anticipated and therefore it will not be in the draft AQAP.

Traffic Management

No one measure was predicted to offer significant air quality benefits, however, the combined impact of the measures should result in a significant impact.

Of the measures, ITS (4.1) resulted in the best overall score, primarily due to scoring favourably for feasibility, acceptability and cost. It also has the potential to significantly improve air quality locally by reducing congestion.

Measures to address freight (4.3) typically did not result in particularly favourable scores, mainly due to issues regarding feasibility and cost.

Speed regulation (4.4) will not be included within the draft AQAP; air quality benefits would not be anticipated.

Planning and Policies

Within planning and policies, the direct impact to air quality was determined to be fairly minimal for most actions. However for many of the actions the associated costs are low, and the actions can be implemented quickly.

National lobbying scored well, in part due to the minimal costs involved in lobbying. However the likelihood of the lobbying being successful (e.g for HGV/bus scrappage schemes) was typically low.

Car parking policies were determined to have the potential to have a significant air quality impact, ACC will explore ways in which air quality issues can be given high priority.

The following actions will not be in the draft AQAP: Workplace Parking Levy (5.5d), Movement of Receptors (5.7) or Relocation of Employers (5.8).

Non-Transport Measures

The non-transport measures that were considered will all be a part of the draft AQAP. Typically none of the measures are considered, on their own, to have a significant air quality impact, although the control of biomass installations, and industry permitting are clearly essential, and without which air quality could deteriorate further.

With regards to options to minimise the impact of the shipping and the harbour, ACC will investigate various initiatives in liaison with the Harbour.

• **Measures to be Implemented**

The measures in Table 3 over the following pages, categorised under the following six headings, form the Draft AQAP.

1. Modal Shift and Influencing Travel Choice
2. Lower Emissions and Cleaner Vehicles
3. Road Infrastructure
4. Traffic Management

5. Planning and Policies
6. Non-Transport Measures

Table 3: AQAP Draft Measures

Measure	Detail	Timescale	Responsibility (for driving forward)
1 MODAL SHIFT & INFLUENCING TRAVEL CHOICE			
1.1 a	Increase Bus Use	Park & Ride	Nestrans
1.1 b		Commercial Bus fleet improvement	Nestrans
1.1 c		QBP (currently voluntary)	ACC & Bus companies
1.1 d		BPIP (currently voluntary), King St Improvements	ACC & Bus companies
1.2 a	Improve Cycling & Walking Provision	Core Paths Plan	ACC
1.2 b		Cycling Strategy	ACC
1.3 a	Travel Plans	Existing Organisations	ACC & Nestrans
1.3 b		New Developments	ACC
1.3 c		Council	ACC
1.4 a	Improve public awareness of air quality issues	Use of Variable Messaging System (VMS)	ACC & Transport Scotland
1.4 b		ACC Website Improvements	ACC
1.4 c		'Airtex' Alert Service	ACC
1.4 d		Get About Partnership	Get About
1.4 e		Information Events	ACC
1.4 f		Marketing Initiatives (Walk to School)	ACC
1.5 a	Car Clubs / Car Pool Schemes	General Public	ACC
1.5 b		Corporate	ACC

Measure		Detail	Timescale	Responsibility (for driving forward)
1.6 a	Crossrail	Local rail improvements	S-L	Nestrans
1.6 b		Infrastructure improvements	L	Nestrans
1.7	Rail Freight	Modal Shift from road to rail	M-L	Nestrans
1.8	Public Transport Subsidies		M-L	ACC & Nestrans
1.9	Congestion Charge / Road Toll	Congestion Charge / Road Toll	M-L	ACC & Nestrans
2 LOWER EMISSIONS & CLEANER VEHICLES				
2.1 a	Green Vehicle procurement & Fuel/Charging Infrastructure	Council Fleet	S-L	ACC
2.1 b		QBP	S-L	LABOF, ACC & Bus companies
2.1 c		FQ Forum	M-L	ACC & Nestrans
2.1 d		General Public / Local business Incentives	M-L	ACC
2.2 a	Eco-driving	Energy Saving Trust driving simulator	S-L	ACC
2.2 b		Publicity	S-L	ACC
2.2 c		FQ Forum, BQP	S-L	ACC & Nestrans
2.3 a	Emissions Testing & Idling Enforcement	Roadside Emissions Testing	S-L	ACC
2.3 b		Idling Vehicles	S-L	ACC
2.4 a	Taxis	Non-idling signs	S-M	ACC
2.4 b		Licensing: vehicle inspections, emissions restrictions	S-M	ACC
2.5	Low Emission Zone	Low Emission Zone	M	ACC & Nestrans
3 ROAD INFRASTRUCTURE				
3.1	Pedestrianisation	of Union Street	M	ACC
3.2 a	Road Building / Junction Alterations	Aberdeen Western Peripheral Route	M	ACC

Measure		Detail	Timescale	Responsibility (for driving forward)
3.2 b		Third Don Crossing	M	ACC
3.2 e		Berryden Corridor Improvements	M	ACC
3.2 d		Haudagain Improvements	M	ACC
3.3	Traffic Calming		S-L	ACC
4 TRAFFIC MANAGEMENT				
4.1	Intelligent Transport System (ITS)	To reduce city centre congestion	M	ACC
4.2	High Occupancy Vehicle (HOV) Lane	Stonehaven Road	M-L	ACC
4.3 a	Freight and Commercial Vehicle Access	HGV Priority Measures	M	ACC
4.3 b		Commercial Delivery Strategy (routing, timing, idling control)	M	ACC
4.3 c		Freight Consolidation Centre	M	ACC
4.3 d		Weigh Bridge	S-M	VOSA
4.4	Speed Regulation	20 mph areas	S-L	ACC
5 PLANNING & POLICIES				
5.1 a	Produce Supplementary Planning Guidance	Improve Development Control	S	ACC
5.1 b		Section 75 monetary contributions	S	ACC
5.1 c		Construction Code of Practice	S	ACC
5.2	Integration of AQAP with Local Transport Strategy (LTS) and Regional Transport Strategy (RTS)		M	ACC and Nestrans
5.3	Integration of AQAP with Health and Transport Action Plan (HTAP)	Highlight Health Impacts	S	ACC / NHS
5.4	Road Hierarchy	Reclassification of Union St / Denburn (requires TRO)	S	ACC

Measure		Detail	Timescale	Responsibility (for driving forward)
5.5 a	Car Parking Policies	Low Emission Vehicle Parking Incentives	S-M	ACC
5.5 b		Limit car parking for new developments	S-L	ACC
5.5 c		Development of Local and Regional Car Parking Policies	S-M	ACC & Nestrans
5.5 d		Workplace Parking Levy	M-L	ACC
5.6 a	National Lobbying	Incentives/funding/tax breaks for Low Emission Initiatives	S-L	ACC
5.6 b		Shipping Emissions Reductions	S-L	ACC
5.6 c		HGV/Bus Scrappage schemes	S-L	ACC
5.7	Move Receptors (people) from AQMAs	█	S-L	ACC
5.8	Relocate Major Employers	█	S-L	ACC
6 NON-TRANSPORT MEASURES				
6.1	Control Biomass Installations	Enforce new developments to only install 'cleanest' biomass boilers	S-L	ACC
6.2	Industry Permitting		S-L	ACC and SEPA
6.3	Tree Planting	Pro-active planting of tree species with a positive air quality impact and avoid planting varieties that may have detrimental air quality impact	S-L	ACC
6.4	Shipping	Consider actions available at Aberdeen Harbour	S-L	ACC & Aberdeen Harbour

- Implementation of the Action Plan**

Once adopted, the Council will ensure that the plan is implemented, and will monitor each measure to determine the progress achieved and any associated improvements in air quality. This shall be achieved through regular meetings of the Council's Air Quality Working Group. Timescales for the implementation of the proposed Actions will be further refined following completion of the consultation on the draft Action Plan. Progress will also be reported to the Scottish Government through the Local Air Quality Management review and assessment regime. The Plan will additionally be reviewed and updated to account for changes in Council policies, funding and pollution levels.

- **Summary**

The following three Air Quality Management Areas (AQMAs) have been designated in Aberdeen due to existing and predicted exceedences of national air quality objectives and European limit values for nitrogen dioxide (NO₂) and fine particles (PM₁₀):

- **City Centre** (including Union Street, Market Street, Commerce Street, Virginia Street and parts of Holburn Street, King Street and Guild Street)
- **Anderson Drive** (incorporating the whole of Anderson Drive and the area around the Haudagain roundabout)
- **Wellington Road** (Queen Elizabeth II Bridge to Balnagask Road)

Road traffic is the main source of the raised NO₂ concentrations and significantly contributes to the PM₁₀ concentrations. It is necessary to improve air quality to protect the health of the city's inhabitants and comply with the objectives.

This draft Air Quality Action Plan describes the measures Aberdeen City Council will take to improve air quality in the three AQMAs and replaces the outdated 2006 City Centre Action Plan. Measures to be implemented have been categorised into the following six headings:

1. Modal Shift and Influencing Travel Choice
2. Lower Emissions and Cleaner Vehicles
3. Road Infrastructure
4. Traffic Management
5. Planning and Policies
6. Non-Transport Measures

It is clear that a range of innovative and far reaching measures must be implemented to achieve considerable reduction in pollution levels and compliance with the air quality objectives. Many of the proposed Actions are committed infrastructure measures such as the Aberdeen Western Peripheral Route and pedestrianisation of Union Street or build on existing plans and policies. Additional measures aim to support modal shift and reduce car dependency, encourage the use of cleaner vehicles, promote greater awareness of the air quality issues in Aberdeen and consider further traffic management measures. A feasibility study is also ongoing into the potential for a Low Emission Zone in Aberdeen which could significantly improve air quality.

The Council will consult widely on the Draft Air Quality Action Plan. Following this consultation the Council's Air Quality Working Group will review the comments received and amend the draft Plan if required. It is anticipated that the final Action Plan will be issued around October/November 2010.

Once adopted the implementation of the Action Plan will need to be monitored and the Plan reviewed and updated to account for changes in Council policies, funding opportunities and pollution levels. This will be achieved via regular meetings with the Air Quality Working Group. Progress also must be reported to the Scottish Government through the Local Air Quality Management regime.

References

- Aberdeen City Council (2003). *Air Quality Progress Report*
- Aberdeen City Council (2004). *Local Air Quality Management Detailed Assessment, BMT Cordah Limited*
- Aberdeen City Council (2006). *Updating & Screening Assessment of Air Quality in Aberdeen*
- Aberdeen City Council (2007). *Air Quality Progress Report*
- Aberdeen City Council (2008a). *Local Air Quality Management Detailed Assessment, AECOM (formerly Faber Maunsell)*
- Aberdeen City Council (2008b). *Air Quality Progress Report*
- Aberdeen City Council (2009a). *Updating & Screening Assessment of Air Quality in Aberdeen*
- Aberdeen City Council (2009b). *Local Air Quality Management Further Assessment, AECOM*
- Aberdeen City Council (2010). *Local Air Quality Management City Centre Modelling Study, AECOM*
- AEA Energy & Environment (2007). *UK Emissions of Air Pollutants 1970 to 2005*
- AEA Technology (2008) *Analysis of the relationship between annual mean nitrogen dioxide concentration and exceedences of the 1-hour mean AQS Objective.*
- Air Quality Archive (2009) <http://www.airquality.co.uk/archive/index.php>
- Baker J., Walker H.L., Cai X. (2004) *A study of the dispersion and transport of reactive pollutants in and above street canyons: a large eddy simulation. Atmospheric Environment, 38, (39), 6883-6892*
- COMEAP (1998). *The Quantification of the Effects of Air Pollution on Health in the United Kingdom. HMSO, London.*
- Defra (2009a) *Local Air Quality Management, Technical Guidance LAQM.TG(09)*
- Defra (2009b) *Local Air Quality Management, Policy Guidance for Scotland LAQM.PG(S)(09)*
- Defra (2010) *Low Emissions Strategies: using the planning system to reduce transport emissions. Good Practice Guidance*
- Highways Agency (2007) *Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 1, HA 207/07*
- HMSO (2007) *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland*
- Institute of Air Quality Management (IAQM) (2009) *Position on the Description of Air Quality Impacts and the Assessment of their Significance.*
- National Atmospheric Emissions Inventory (2008) <http://www.naei.org.uk/>
- NSCA (2006) National Society for Clean Air (now Environmental Protection UK), *Development Control: Planning for Air Quality*
- Office of the Deputy Prime Minister (2005) *Minerals Policy Statement 2: Controlling and Mitigating the Environmental Effects of Minerals Extraction in England: Annex 1 Dust.*
- Office of the Deputy Prime Minister (2004) *Planning Policy Statement 23: Planning and Pollution Control*
- Quality of Urban Air Research Group (QUARG) (1993) *Diesel Vehicle Emissions and Urban Air Quality. Second Report of the Quality of Urban Air Review Group, Prepared at the request of the Department of the Environment*
- Scottish Executive (2006) *Planning Advice Notice 51 (PAN 51): Planning Environmental Protection and Regulation*
- Scottish Government (2009) *Local Air Quality Management Low Emission Zone Guidance*

Appendices

Appendix 1: Air Quality Management Area Maps

Figure 1: City Centre AQMA

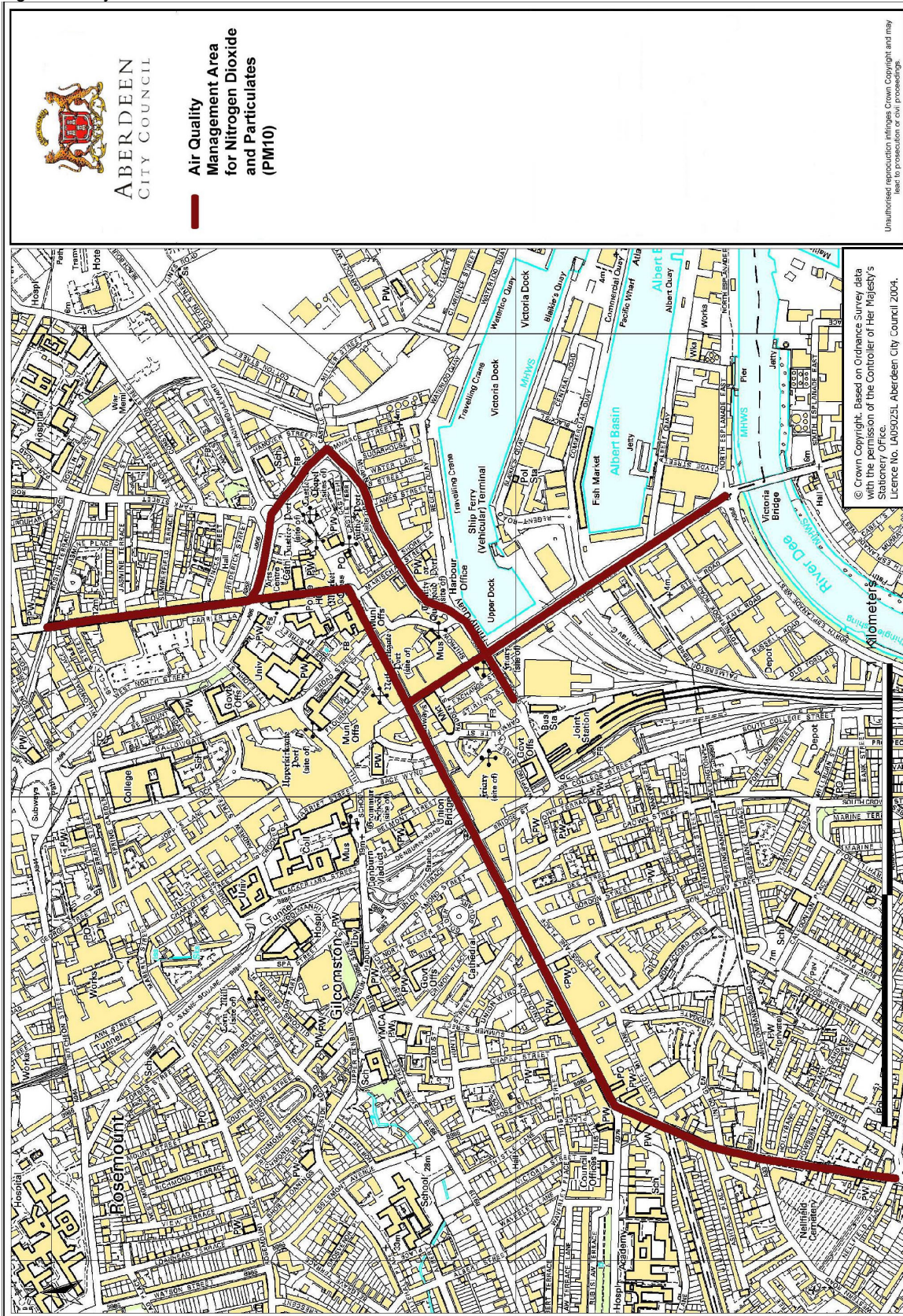
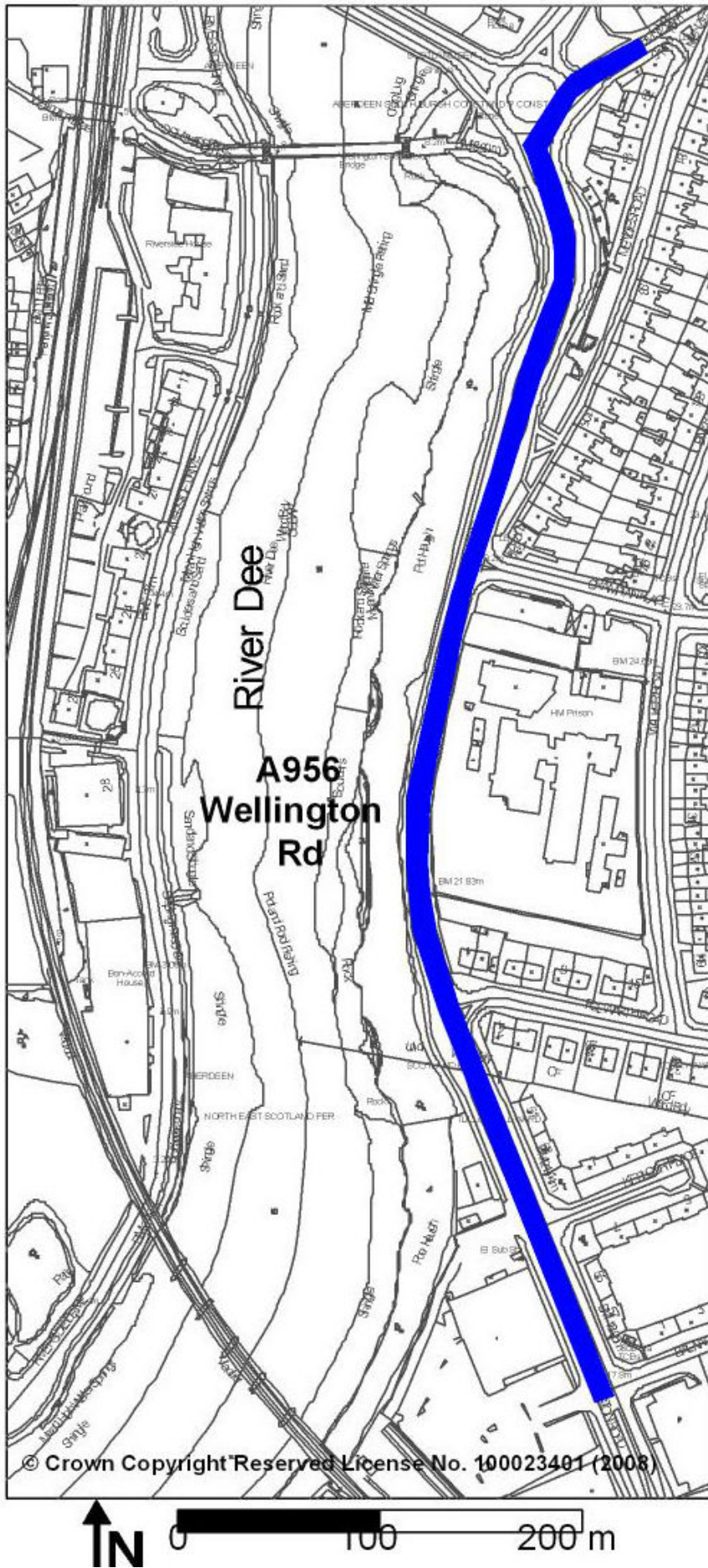


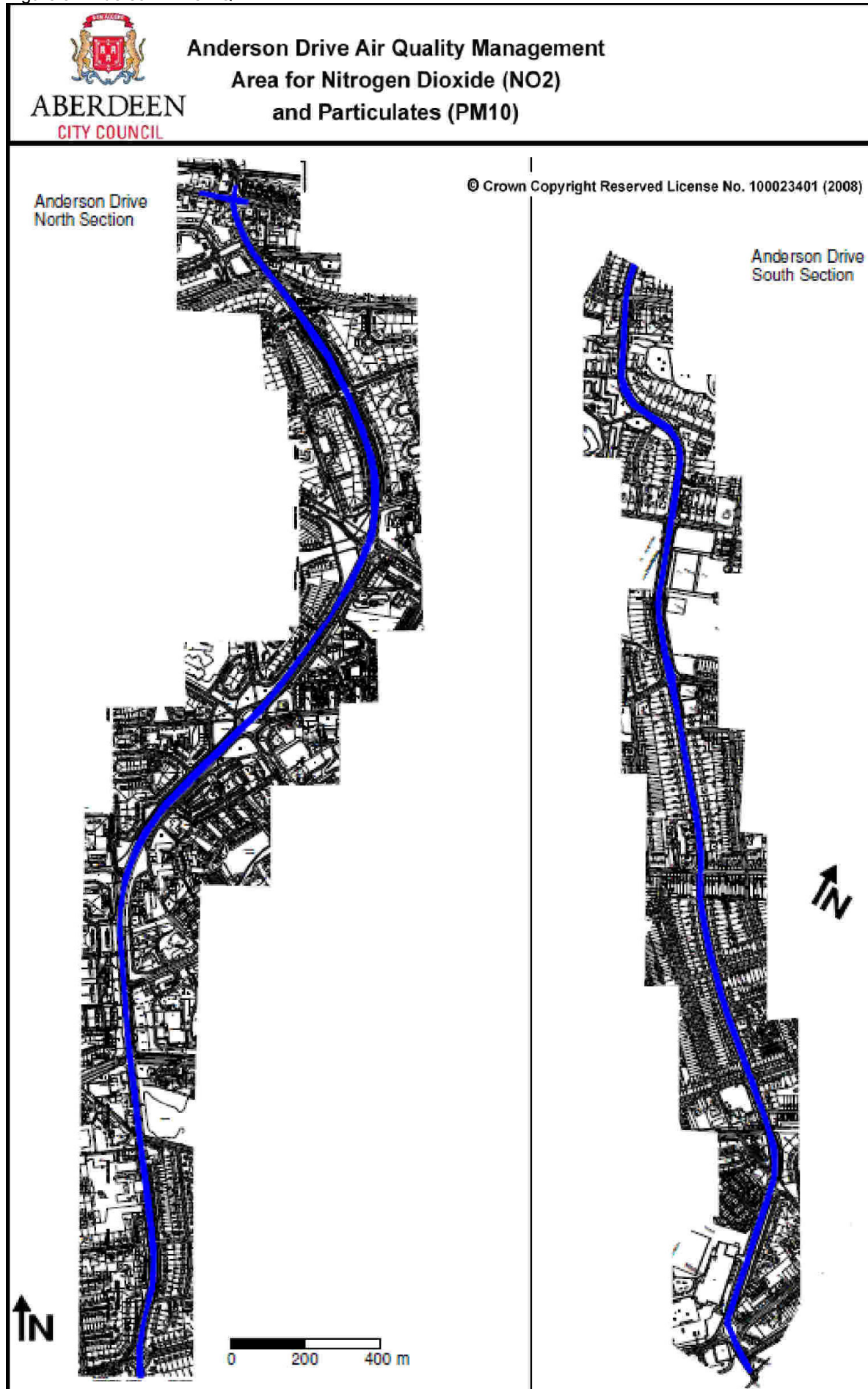
Figure 2: Wellington Road AQMA



ABERDEEN
CITY COUNCIL

Wellington Road
Air Quality Management
Area for Nitrogen Dioxide (NO₂)
and Particulates (PM₁₀)

Figure 3: Anderson Drive AQMA



Appendix 2: 2006 AQAP Summary

2006 AQAP Summary					
Ref	2006 Proposed Action	Time Frame	Are impacts Quantifiable?	AQ AP page	Progress
Short Term Actions (up to 2 years)					
1	Raise Public Awareness	Actions within 6 months	NO	17	<ul style="list-style-type: none"> - Web-based public information system; - Reports available online etc. - Air Quality issues promoted at ECO and other events (e.g. Aberdeen Highland Games), Air Quality leaflet produced in 2006; - Variable Message System provides general information on air quality <p>Summary: Awareness raised, the likely impact on air quality unknown.</p>
2	Use of cleaner fuels in own fleet; replace council vehicles	Gradual	NO	18	<ul style="list-style-type: none"> - Council Policy to replace LGVs after 7yr, HGVs after 9yr. - All purchased diesels Euro 5; - Particulate traps fitted to pre-Euro 4; - 2 LGVs on LPG; - Vehicle tracking system on many refuse vehicles with aim of reducing routes & improving efficiency; - Joint Aberdeen City/Shire contract in 2006 - council fleets incorporating fuel efficiency <p>Summary: The Council fleet is cleaner than it was, but progress has been slower than originally envisaged. The likely impact on air quality unknown.</p>
3	Roadside Emissions Testing	intermittent	NO	18	<ul style="list-style-type: none"> - Testing undertaken during 3 days in 2008; 12 vehicles failed, 199 passed. - No further testing in 2009. <p>Summary: The likely impact on air quality unknown, but assumed to be negligible. However the scheme has been successful in raising awareness; greater publicity would have been useful.</p>
4	Idling vehicles/ request engine switch off	ongoing	NO	19	<ul style="list-style-type: none"> - Training provided for Traffic Wardens; no FPN served - Traffic wardens replaced by new Community Wardens in 2008, community wardens not yet trained. <p>Summary: The likely impact on air quality unknown, enforcement remains a problem.</p>
5	Support Increased use of Public transport	n/a	NO	19	<ul style="list-style-type: none"> - Bus Action Plan completed; - Quality Bus Partnership formed; - During 2007-2009 approximately £1m was invested on upgrading bus corridors, and other improvements. <p>Summary: Since 2006 bus services have improved. Data on the impact this has had on passenger numbers (and hence on modal shift) are not reported here.</p>
6	Advisory Signs for HGVs to avoid AQMA	within 12 months of approval of plan	NO	19	<ul style="list-style-type: none"> - VMS Car Park Guidance system (CPG) for city centre introduced in 2007; <p>Summary: No progress with regards advisory signs for HGVs due to issues regarding feasibility and acceptability.</p>

2006 AQAP Summary					
Ref	2006 Proposed Action	Time Frame	Are impacts Quantifiable?	AQ AP page	Progress
7	Development Control - Green Transport Plans	ongoing	NO	20	<ul style="list-style-type: none"> - Development of regional car-share database; - Introduction of Sustainable Travel Grant Scheme; - Green Transport Week; - Bike Week; - Green Transport Plans now always required for large developments; - Council updated Travel Plan; and - Local Transport Strategy adopted (2008-12). <p>Summary: Good progress made; however the likely impact on air quality unknown.</p>
8	All new developments/ road schemes within City require AQ assessments	Ongoing	YES	20	<ul style="list-style-type: none"> - Many air quality assessments undertaken, and mitigation measures sought. (e.g. Aberdeen Western Peripheral Route (AWPR), Union St Pedestrianisation) <p>Summary: Many large developments/road schemes are still at planning stage, or have been approved. The air quality impacts of these are unlikely to result in a significant degradation in air quality, due to planning control. Some schemes, predicted to improve air quality.</p>
Medium Term Actions (2 to 5 years)					
9	2 new Park & Rides	2011	YES	21	<ul style="list-style-type: none"> - A90 and A96 Park & Rides committed. - Existing Bridge of Don P&R may relocate further north & increase capacity. - Bus Action Plan considers bus priority options. <p>Summary: Traffic modelling to demonstrate the likely benefits in AQMAs not undertaken; therefore the likely impact on air quality in AQMAs unknown, but assumed to be small</p>
10	Pedestrianisation of Union St	2011-12	YES	22	<ul style="list-style-type: none"> - Traffic management /road infrastructure improvements completed/ongoing. - Expected completion by 2012 to align with AWPR. <p>Summary: Dispersion modelling indicates overall beneficial impacts. Refer to Section □.</p>
11	Parking Policy	ongoing	NO	23	<ul style="list-style-type: none"> - New zones in Ferryhill and George St. - Council currently developing Car Parking Strategy; - NESTRANS developing regional Parking Strategy <p>Summary: The likely impact on air quality unknown, but likely to be negligible to date.</p>
12	Accord Card		NO	23	<ul style="list-style-type: none"> - Accord card introduced for bus users; - Integrated ticketing considered in Bus Action Plan <p>Summary: The likely impact on air quality likely to be negligible.</p>
Long Term Actions - subject to extensive public consultation					
13	Restrict traffic through AQMA using VMS		YES	24	<ul style="list-style-type: none"> - Originally stated that this "would only progress if other measures failed". <p>Summary: Not progressed; action concluded to be unfeasible, costs would be too large.</p>

2006 AQAP Summary					
Ref	2006 Proposed Action	Time Frame	Are impacts Quantifiable?	AQ AP page	Progress
14	Low Emission Zones		YES	25	<ul style="list-style-type: none"> - Originally stated that this "would only progress if other measures failed". <p>Summary: Funding was secured for LEZ feasibility study, to be undertaken in 2010.</p>
15	AWPR	2012/13	YES	26	<ul style="list-style-type: none"> - Route finalised March 2006, EIA published Dec 2006; - Public Enquiry heard December 2008 and reported April 2009 - Anticipated completion 2011/12 <p>Summary: Notable air quality benefits predicted for the city centre and Anderson Drive.</p>
16	Cross-rail from/to city & outwith city	Phase implementation over 7 years	YES	26	<ul style="list-style-type: none"> - NESTRANS developing rail action plan breaking down components of Cross-rail. - Laurencekirk station opened May 2009. - Proposals for Kintore being developed. - (subject to appropriate traffic modelling being undertaken) <p>Summary: Beneficial air quality impacts likely.</p>

This page is intentionally left blank