Air Quality Action Plan 2015

Medway Council

Report for Medway Council

Cabinet approved plan
Date 15/12/2015

Medway Council
Serving You

Executive summary

The Environment Act 1995 requires all Local Authorities to review air quality within their districts. If any air quality "Objective" prescribed in the regulations and in the National Air Quality Strategy is not likely to be achieved then the local authority must designate the affected areas as Air Quality Management Areas (AQMAs). The Act then requires an Action Plan to be produced for these designated areas, setting out the actions that the Council intend to take to achieve the National Air Quality Strategy.

Air quality monitoring and modelling carried out by the Council indicates that despite good air quality within most of the Medway Council area, the air quality objectives for Nitrogen Dioxide in some areas were not met.

In 2004 Medway Council declared six AQMAs and then in August 2010, following further consideration of air quality results, the Council consolidated the existing AQMAs along with newly identified areas into three AQMAs, These areas were designated as Central Medway AQMA, Pier Road, Gillingham AQMA and High Street, Rainham AQMA.

The air quality objective for nitrogen dioxide is an annual average of 40ug/m3. This level has been exceeded within these areas.

There are approximately 1007 properties within the three AQMAs that are affected by poor air quality.

The cause of the high levels is due to transport, and in particular heavy goods vehicles, buses and congested traffic are the main sources of nitrogen dioxide and so the Action Plan has been drawn up in consultation with Transport & Highways, Sustainable Development, Public Health and others.

Whilst the three AQMAs are slightly different in nature, the range of actions set out in the action plan is designed to improve air quality and will benefit those living within the AQMAs and also the wider population.

The Action Plan identifies twelve measures to improve air quality and the range of actions include redesigning road layouts, smoothing traffic flow and reducing queuing traffic as well as providing sufficient information to educate residents and businesses about options they can make to help reduce vehicle use in the Medway area. The action plan also sets out the framework of partnership working with internal departments and external organisations, with which the actions have been developed and will be progressed and monitored.

The Action Plan will involve a long-term programme of implementation and progress will be reported through an annual review as part of the Local Air Quality Management Assessment process.

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Section 1 – Historic Background

1.0 Introduction & purpose of the Air Quality Action Plan

While the quality of air across Medway is generally very good and well within the limits set by Government for the protection of human health, three areas across Medway have been identified where levels of pollution give rise for concern.

Like many urban areas of the UK, Medway area has some areas of poor air quality.

The Council declared three Air Quality Management Areas (AQMAs) in August 2010 – Central Medway, Pier Road Gillingham and High Street Rainham. Medway has a statutory duty to develop an Action Plan to improve air quality in these locations.

The purpose of the Air Quality Action Plan (AQAP) is to set out a work programme to reduce nitrogen dioxide pollution concentrations within the three AQMAs. By reducing pollutant levels in these areas it is anticipated that the twelve measures identified in this Action Plan will also improve air quality throughout the Medway urban area.

1.1 Air Quality in Medway

To protect the health of the population, the Government has set out a national air quality strategy[1] that includes statutory objectives (standards) for some key pollutants. These are detailed in table 1 below. Medway has undertaken regular assessments of air quality in line with government guidance and has, as a result, found that levels of nitrogen dioxide in certain areas of Medway are above the objective level prescribed in the regulations, as set out below:

Table 1 Objectives included in the Air Quality Regulations 2000 and (Amendment) Regulations 2002 for the purpose of Local Air Quality Management

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene All authorities	16.25 μg/m^3	running annual mean	31.12.2003
Authorities in England and Wales only	5.00 μg/m^3	annual mean	31.12.2010
Authorities in open areas and coastal areas should be cleaner as air changes more frequently and Northern Ireland only	3.25 μg/m^3	running annual mean	31.12.2010
1,3-Butadiene	2.25 μg/m^3	running annual mean	31.12.2003
Carbon monoxide Authorities in England, Wales and Northern Ireland only	10.0 mg/m^3	maximum daily running 8-hour mean	31.12.2003
Authorities in Scotland only	10.0 mg/m^3	running 8-hour mean	31.12.2003
Lead	0.5 μg/m^3 0.25 μg/m^3	annual mean annual mean	31.12.2004 31.12.2008
Nitrogen dioxide	200 μg/m^3 not to be	1 hour mean	31.12.2005

[1] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/250801/7169_i.pdf

	exceeded more than 18 times a year 40 μg/m^3	annual mean	31.12.2005
Particles (PM_{10}) (gravimetric) All authorities	50 μg/m^3 not to be exceeded more than 35 times a year 40 μg/m^3	24 hour mean annual mean	31.12.2004 31.12.2004
Authorities in Scotland only	50 μg/m^3 not to be exceeded more than 7 times a year 18 μg/m^3	24 hour mean annual mean	31.12.2010 31.12.2010
Sulphur dioxide	350 μg/m^3 not to be exceeded more than 24 times a year 125 μg/m^3 not to be exceeded more than 3 times a year 266 μg/m^3 not to be exceeded more than 35 times a year	1 hour mean 24 hour mean 15 minute mean	31.12.2004 31.12.2004 31.12.2005

Nitrogen Dioxide

The pollutant of significance in Medway is nitrogen dioxide. The air quality objective is 40ug/m3, but within the declared AQMA's, levels of NO2 are in excess of this; tables 2 to 4 give the actual values. The consequence of the exceedences is that Medway Council has declared 3 AQMA's, which are Central Medway, Pier Road, Gillingham and High Street, Rainham.

Nitrogen dioxide (NO_2) and nitric oxide (NO) are collectively known as Nitrogen Oxides (NO_x). Nitrogen Oxides, which are the main source of poor air quality, are produced during combustion processes in air. The pollutant is usually emitted from the source in the form of NO, which subsequently reacts with ozone (O^3) to form NO_2.

In Medway the principle source of nitrogen dioxide is from high volumes of slow moving traffic.

This Action Plan is primarily aimed at reducing NO_2, but the initiatives within it will have a positive effect on the reduction of other air pollutants, especially particulates throughout the district.

1.2 Health effects of poor air quality

NO_2 has been identified as having various adverse health effects particularly on the respiratory system. Short-term exposure to this pollutant can increase the likelihood of reaction to allergens such as pollen and has been known to increase asthma in some people. Children exposed to this pollutant may have an increased risk of respiratory infections.

In Medway, 919 residential properties are within 10 metres of the roads in the Central AQMA, in Pier Road there are 22 such properties and in Rainham there are 66 residential properties.

It has been estimated that poor air quality in the UK causes more than 50,000 deaths per year, and probably causes more mortality and morbidity than passive smoking, road traffic accidents or obesity. Particulate air pollution alone in the UK has been estimated to reduce the life expectancy of every person by an average of 7-8 months, with estimated equivalent health costs of up to £20 billion each year. Table 1.2 below compares the benefits of eliminating man-made $PM_{2.5}$ against the elimination of road traffic accidents and exposure to passive smoking.

Table 1 Comparison of the benefits of reducing $PM_{2.5}$ by 10 µg/m^3 (equivalent to eliminating man-made $PM_{2.5}$ in 2005), the elimination of motor vehicle traffic accidents and the elimination of exposure to passive smoking (EPUK, 2011)

	Reduction in $PM_{2.5}$	Elimination of road traffic accidents	Elimination of passive smoking
Expected gain in life expectancy	7-8 months	1-3 months	2-3 months
Estimated equivalent gain in life years in England and Wales from 2005-2110 for the whole population (including people born during that time)	39,058,000	8,126,000	13,194,000

The health impacts of air pollution in the UK are almost twice those of physical inactivity, estimated to be £10.7 billion per annum and comparable to the cost of alcohol misuse to society, estimated to be £12-£18 billion per annum. However, the effects of poor air quality on health does not received the same level of attention as the latter.

Air pollution also has a detrimental effect on our ecosystems and vegetation. Principal sources of air pollution in the Medway towns arise from high volumes of local traffic and congestion. The main pollutant of concern from road transport is NO_2.

Measurements of air pollution in Medway and predictions for the future (Medway - Local Air Quality Management Reports[2]) show that air quality will not meet the UK health-based standards and objectives for nitrogen dioxide in a number of places in the Medway towns by the date specified in Table 1.

1.3 The legislative framework for air quality

Local Air Quality Management

The Environment Act 1995 gives local authorities duties and responsibilities that are designed to secure improvements in air quality, particularly at the local level. This is carried out under the Local Air Quality Management Regime (LAQM). It includes the review and assessment of key pollutants in their area in a series of rounds every three years. If it appears that any of the air quality objectives set by government are not likely to be achieved, resulting in members of the public being exposed to the pollution, the local authority must by order designate any part of its area so affected as an AQMA. They must then prepare and implement a remedial Action Plan of measures to reduce air pollution levels in that AQMA.

Local Air Quality Management Review

In July 2013 Defra commissioned a review of LAQM. This process is ongoing and as yet it is unclear how this will affect Medway. However, this action plan has been developed in order to ensure the health of the Medway public will remain the focus irrespective of changing legislative formats and will be in keeping with the corporate objectives set out in the Local Plan 2013-2015.

[2] http://www.medway.gov.uk/environmentandplanning/environmentalhealth/airquality.aspx

Localism Act 2011

UK Government is currently in breach of EU air quality limit values for annual average NO_2 and the European Commission has formally launched infraction proceedings. Central Government is seeking to work with Local Authorities to avoid the fines. However, it should be noted that discretionary power in Part 2 of the Localism Act enables the Government to require responsible authorities to pay all or part of an infraction fine. Guidance on the procedures is set out in a policy statement published by Department for Communities and Local Government[3]. It is unclear at this time if or how this could affect Medway Council.

1.4 Conclusions of previous air quality review and assessment

The Council has completed its LAQM duties in compliance with the government guidance. The bulk of the work to date has been to review air quality in Medway and to assess whether any problems with achieving the health based air quality objectives exist now or are predicted for the future. The outcomes of the various reports are available on line at www.kentair.org.

As a result of this work, in August 2010, Medway Council revoked the Maidstone Road Chatham AQMA and declared three new AQMAs in light of the predicted exceedences. The existing AQMAs were consolidated along with newly identified areas of Luton Road, Chatham, High Street, Chatham and Chatham Hill, Chatham into a larger, single area designated as Central Medway AQMA. Two new, smaller AQMAs were also declared.

Medway's current AQMAs

The locations of the AQMA's within Medway are shown in Figures 1 to 3.

Monitoring of nitrogen dioxide is undertaken using diffusion tubes and automatic monitoring.

The measured levels of NO_2 from automatic and diffusion tubes are shown in Tables 2 – 4. The locations of the diffusion tubes are spread throughout the Council area and not just within the AQMA's. In tables 2 – 4 highlighted numbers indicate levels of nitrogen dioxide at or above the objective level.

Figure 1 Central Medway AQMA

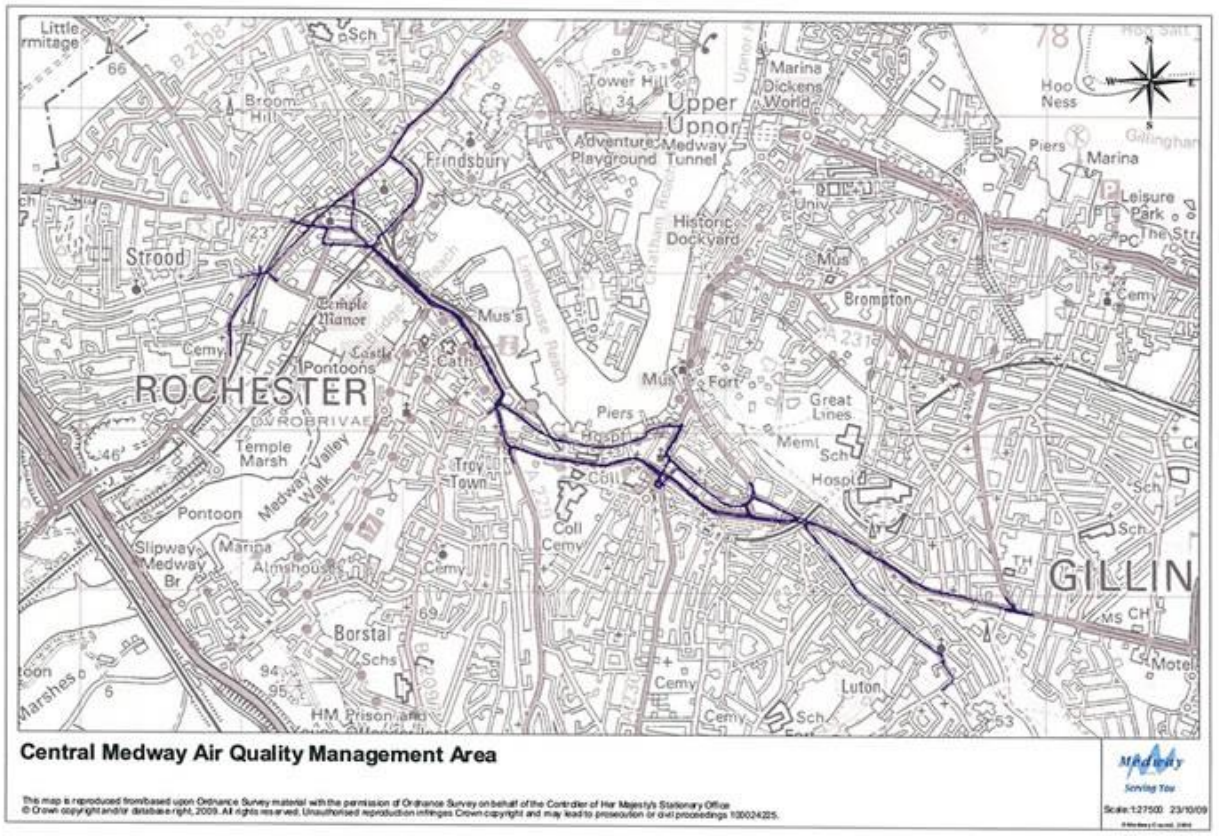


Table 2 Automatic and diffusion tube monitoring data – Central Medway AQMA

Site	OS x,y	Annual mean NO_2 (µg m^{-3})				
		2009	2010	2011	2012	2013
Chatham AQ automatic monitoring station	577434 166993	33	33	30	32	26
Canterbury Street/Chatham Hill Junction	577763 166924	**49.2**	**43.6**	**45**	**46**	**40**
27 Luton High Street	577419 166501	39.0	36.8	32	36	33
Luton Road (Funeral Directors)	576565 167336	**47.6**	36.5	39	**40**	34
Luton Arches Junction	576504 167411	**52.6**	**52.1**	**51**	**50**	**44**
Chatham High Street (Orbit Housing)	576395 167497	**45.7**	38.0	39	38	32
The Brook (*now closed*)	576003 167902	30.4	---			
Railway Street	575642 167779	**47.4**	**40.2**	**43**	**44**	36
Flat 4 New Road	575683 167691	**40.1**	32.8	36	39	34
Chatham/Rochester High Street	575348 167914	**43.4**	31.3	32	32	27
18 Star Hill	574592 168087	**57.0**	**48.0**	**51**	**56**	**46**
Corporation Street	574493 168510	32.9	28.2	29	30	27
28 Frindsbury Road *(triplicate)*	573866 169647	**42.7**	35.1	39	39	35
92 Cuxton Road	573078 168908	**43.0**	37.7	**40**	**44**	39
High Street, Strood (Tanning Shop)	573470 169283	**48.7**	**46.4**	**48**	**48**	**45**
High Street, Strood (Southern Heating)	573793 169164	**58.4**	**51.8**	**52**	**58**	**52**
London Road, Strood	573329 169294	**53.3**	**44.7**	**48**	**50**	**42**

Figure 2 Pier Road, Gillingham AQMA

Table 3 Diffusion tube monitoring data – Pier, Road, Gillingham AQMA

Site	OS x,y	Annual mean NO_2 (µg m^{-3})				
		2009	2010	2011	2012	2013
Pier Road	577942 169279	**52.7**	**40.9**	**47**	**47**	36

Figure 3 High Street, Rainham AQMA

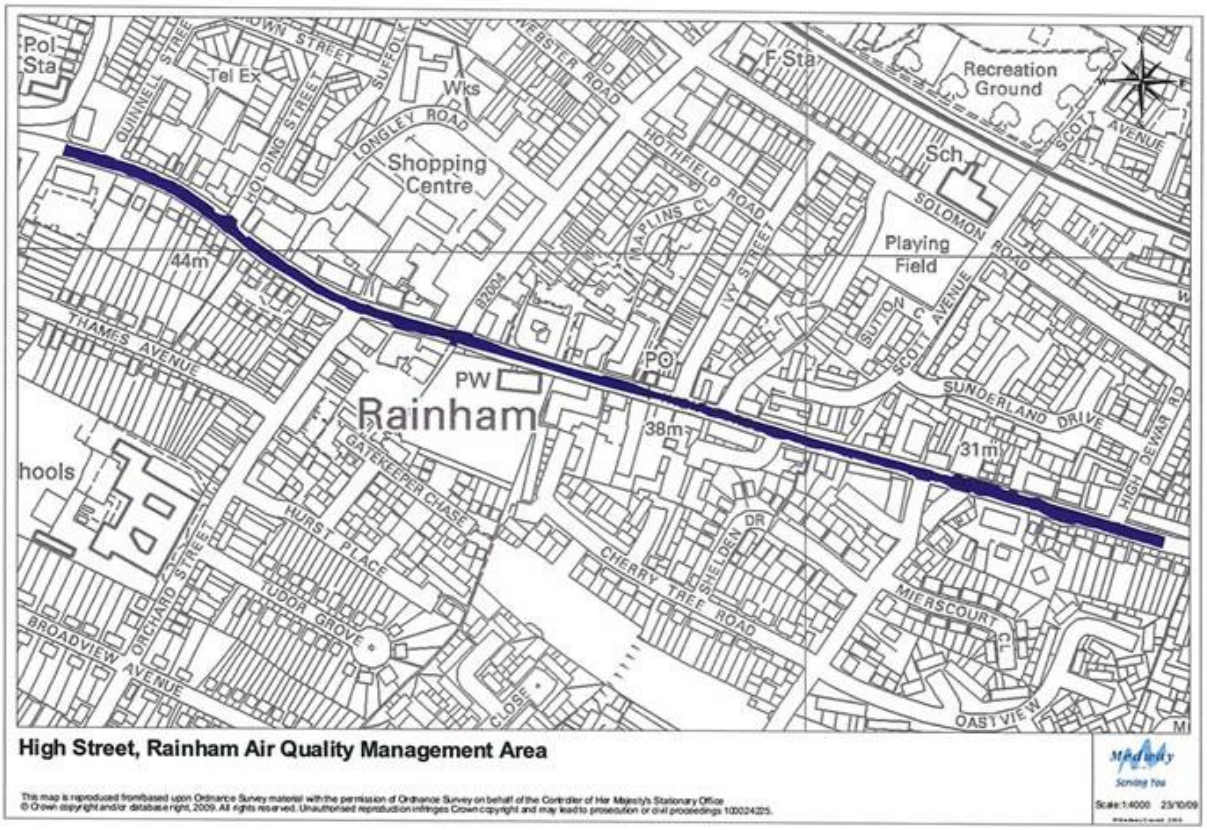


Table 4 Diffusion tube monitoring data – High Street, Rainham AQMA

Site	OS x,y	Annual mean NO_2 (µg m^{-3})				
		2009	2010	2011	2012	2013
60 High Street	581565 165955	**52.9**	**40.7**	**46**	**49**	**40**
White Horse Pub, High Street	581709 165922	39.0	35.7	36	38	33
Care Home, High Street	581843 165886	30.3	28.8	27	31	26

1.5 Recent trends in air quality within Medway's three current AQMAs

The monitoring data in the tables above show the results of NO_2 measurements across Medway from 2009 – 2013. The diffusion tube data, which has been presented here, has been corrected for laboratory bias. The bias correction factor for each year has been calculated from co-location studies undertaken within the Medway area.

Central Medway AQMA

Exceedences of the NO_2 annual mean objective are still prevalent across the Central Medway AQMA although the general trend in levels is downwards. The area within this AQMA has high levels of nitrogen dioxide due to slow moving, congested streets and junctions. The recent changes in road layout, linked with the opening of the new bus station have resulted in greatly reduced traffic flows along Chatham High Street. As a result levels of NO_2 have fallen significantly. The highest levels of NO_2 are at either end of the designated AQMA.

Pier Road, Gillingham

In 2013 the level of NO_2 along the AQMA in Pier Road was, for the first time, below the objective level. The reason for this is not known but the area will continue to be monitored especially in light of the extensive redevelopment of the dock area for residential and student accommodation.

High Street, Rainham

The Rainham AQMA shows exceedance at one location but the other two sites have been below the objective level for the past five years. The main area of congestion and slow moving traffic is around the traffic lights in Rainham. The diffusion tubes showing the lower NO_2 levels are to be relocated in 2015 to the east of the traffic lights to measure the air quality impact of traffic entering Rainham.

Automatic Monitoring Sites

The automatic monitoring sites at Chatham and Rochester Stoke continue to measure a range of pollutants and no exceedance of objective levels have been recorded at these sites.

Source apportionment

Understanding the number and type of vehicles passing through an area allows us to determine the proportion of emissions from the different vehicle types. This is known as source apportionment and assists in determining the types of actions that are needed within an AQAP to reduce pollutant levels.

Source apportionment is based on concentrations of oxides of nitrogen (Nox) rather than NO_2 as Nox is the primary emissions source from vehicle tail pipes. There are some Nox emissions from domestic sources but these are considered to have relatively small impact when compared to that generated by road traffic. Nox = NO_2 + NO

The Nox emissions figures come from modelling information that takes into account background levels of pollution and knowledge about typical levels of emissions from the different types of vehicles passing through the AQMA. The model is then used to forecast the reduction in different types of vehicles passing through the AQMA that are needed to deliver the necessary reductions in NO_2 emissions to below the target level.

Detailed source apportionment data is presented in Appendix 2.

Reduction in NOx emission required

Reductions needed in emissions from road vehicles to meet the national air quality NO_2 objective are presented in Appendix 3.

In the Central Medway AQMA, the makeup of the traffic can vary quite significantly from street to street, for example, in Strood High Street cars account for 85% of traffic, producing 36% of Nox emissions, whilst Heavy Goods Vehicles (HGVs) only make up 1% of traffic but account for 10% of Nox. At Luton Arches, cars account for 84% of the traffic and 22% Nox whilst HGVs still only account for 1% of traffic numbers and contribute 6.5% Nox.

In the High Street, Strood, to meet the target NO_2 level, a 50% reduction in cars, Light Good Vehicles (LGVs) and HGVs would be required. At Luton Arches, to achieve the necessary reduction in NO_2, car numbers would need to reduce by 30%, LGVs by 20% and HGVs by 30%. In Pier Road, Gillingham AQMA, the national air quality objective was met for 2013, so whilst source apportionment has been undertaken for this AQMA, no reduction in Nox is currently required.

In Rainham High Street a 35% reduction in Nox is required to get below the objective level.

1.6 Summary conclusions for Section 1

All three currently declared AQMAs show locations where levels of NO_2 are above the health-based annual mean standard of 40 µg/m^3. Seven monitoring sites show annual mean exceedences of this standard.

Road transport is the dominant local source of Nox emissions within Medway's AQMAs. Therefore it is intended that this Action Plan will be integrated into the Council Local Transport Plan (LTP).

Based on the source apportionment analysis, options to reduce traffic emissions should focus on reducing vehicle movements and reducing congestion.

Although this Action Plan will focus on making progress towards achieving the annual mean objective for NO_2, it will have additional value for the community by improving air quality throughout Medway.

Section 2 – Development of Action Plan 2011-2014

2.0 Development of the draft Action Plan

As part of the process in identifying actions, the Council is obliged to consider all possible measures available to improve air quality and evidence that all the options have been considered on the grounds of cost-effectiveness and feasibility.

The Council must also show how it will work in conjunction with other organisations in pursuit of the air quality objectives together with timescales for implementation.

The actions must show a quantification of the expected impacts of the proposed measures and where possible an indication as to whether the measures will be sufficient to meet the air quality objectives.

Once the Action Plan is adopted, the Council must report to Defra on the progress of implementing the Action Plan annually and revise it from time to time depending on circumstances.

2.1 Action Plan workshops

An action-planning workshop to examine the options available to Medway Council to improve air quality in an integrated manner was held on 23rd January 2014. The aim was to raise the importance of air quality in relevant Council departments and seek to explore how work in these areas could positively impact air quality.

The action plan options that were raised during the workshop include those listed in Table 5 below which were the ones recommended for further assessment. In addition, options that were not deemed suitable are the following:

Roadside emissions testing involving spot emission tests of vehicles was not to be considered further as this was seen as a public awareness exercise only, which could be done in a more constructive manner.

Low Emission Zones were not thought appropriate to Medway at the present time as a large proportion of traffic through Medway is regional with high proportions of HGVs.

2.2 Action Plan options and their assessment

In developing the draft Action Plan, consideration has been given to a full range of relevant options to change traffic in the three AQMAs. The process has been one of narrowing down the range of potential options to ones that are focussed on the problem, feasible, do not adversely impact on other locations or vulnerable highway users, and are cost-effective compared to others.

The results of the assessment identified those options to prioritise and to adopt as measures in the Action Plan.

There is a very wide range of options available to reduce the emissions from road transport. The Council does not necessarily have the power to implement them all directly but potentially it does have a role in attempting to influence those bodies or individuals who could implement them. Therefore, it is appropriate to initially consider all options.

2.3 Measures to improve air quality

Twelve key measures have been identified for inclusion in this Action Plan as priorities for the improvement of air quality in the three AQMAs and wider exceedence areas. A summary of them is presented in the next section and in Table 5.

The Action Plan aims to reduce transport emissions in the AQMA by an estimated 10%. Further reductions of up to another 10% are anticipated upon implementation of measure 4, although this will depend on the outcome of the feasibility of traffic management schemes identified for known congestion hotspots. It is anticipated that a reduction of this scale is unlikely to lead to the achievement of the annual mean NO_2 air quality standard ($40\mu g/m^3$) within the AQMA. However the measures identified in the action plan are those that can be reasonably expected to be delivered by Medway Council in working towards improving air quality. A number of factors are outside of Medway Council's control, and require further support at the National and International level to effect the necessary behavioural change, and reduce vehicle emissions. No additional cost effective measures have, as yet, been identified.

The measures

Funding for the implementation of this Action Plan is through a mixture of sources including the LTP where existing projects complement the Action Plan. Further funding will be sought through the Defra air quality grant annual award scheme for the implementation of specific tasks within measures and other funding streams as they become available.

Section 3 - Proposed Measure 1-12 Details

Table 5 Table of measures for the draft Action Plan for the Medway AQMAs .

No	Measure	Long term focus	Long term indicator owner	Short term action	Short term action indicator	Indicator owner	Department	Target emission reduction estimates
1	Improving Freight Movement	reduce HGV journey time through AQMA and increase low emitting vehicles	Martin Morris	Review Regional Freight Strategy	Completed or not	Martin Morris	Integrated Transport	5%
1	Improving Freight Movement			HGV Route Optimisation	Completed or not	Martin Morris	Integrated Transport	
1	Improving Freight Movement			HGV Sat Nav review	Completed or not	Martin Morris	Integrated Transport	
1	Improving Freight Movement			Monitor % HGV through AQMAs	Completed or not	Martin Morris	Integrated Transport	
2	Encouragement of public transport use	Increasing patronage, quality of fleet/cleaner vehicles		Investigate the feasibility of a Quality Bus Partnership (or equivalent) with the local bus operator	Completed or not	David Bond	Integrated Transport	
2	Encouragement of public transport use			Increase proportion of Euro V, and subsequent, (equivalent) buses in fleet	Annual Fleet status	David Bond	Integrated Transport	5%

No	Measure	Long term focus	Long term indicator owner	Short term action	Short term action indicator	Indicator owner	Department	Target emission reduction estimates
2	Encouragement of public transport use			Increase bus patronage	Annual bus patronage figures	David Bond	Integrated Transport	
2	Encouragement of public transport use			Improve bus flow & reliability	Number of bus infrastructure improvements	David Bond	Integrated Transport	
3	Improvements in Taxi Emissions	Reduce high emitting licensed vehicles operating within AQMA areas	Mandy Francis	Review Licensing conditions	Completed or not	Mandy Francis	Licensing	
3	Improvements in Taxi Emissions			Annual audit of taxi fleet	% ULEV in taxi fleet	Mandy Francis Licensing	Licensing	
4	Traffic Management	Reduce queue length and improve journey times within AQMAs	Martin Morris	Carry out maintenance of E-mote system to protect asset for future use.	Completed or not	Martin Morris	Integrated Transport& Environmental Protection	~8-10%
4	Traffic Management			Annually reported number and location of roadworks in or around AQMA	Completed or not	Martin Morris	Integrated Transport	
4	Traffic Management			Report AADT annually	Completed or not	Martin Morris	Integrated Transport	

No	Measure	Long term focus	Long term indicator owner	Short term action	Short term action indicator	Indicator owner	Department	Target emission reduction estimates
4	Traffic Management			Link ANPR vehicle class data to provide detailed source apportionment to support feasibility study work	Completed or not	Martin Morris	Integrated Transport	
5	Promotion of cycling and Walking	Increase non-vehicle travel modes within AQMA and reduce traffic flows in AQMA - AADT through AQMA	James Sutton	Monitor number of cyclists/pedestrians	Medway Mode of Travel Data	David Bond	Safer Journeys Team	1%
5	Promotion of cycling and Walking			develop and continue walk or cycle to school schemes and events	Number of schools participating	Bryan Shawyer	Safer Journeys Team	
5	Promotion of cycling and Walking			Develop and continue healthy walk scheme and cycle scheme	Number of individuals involved	Scott Elliott	Supporting Healthy Weight Team	
6	Eco-driving	Reduce emissions from vehicles driving through AQMA		Run internal Eco-driving courses	Number of drivers on training courses	Fleet Manager	Business Development & Environmental Protection	<1%
6				Engage with business to promote Eco-driving	Number of businesses engaged/events attended	Business Development Team/Wayne Saunders	Business Development Team	

No	Measure	Long term focus	Long term indicator owner	Short term action	Short term action indicator	Indicator owner	Department	Target emission reduction estimates
7	Procurement	Reduce emissions from own fleet and procurement activities - increase ULEV component within Medway fleet		Annual Medway fleet audit	Number of ULEV & EU classes & Fuel type within Medway Fleet	Mike Kelly Procurement		
7	Procurement			Review of Medway Procurement Policy to ensure positive support for ULEV and third party emission reduction	Completed or not	Carl Rogers Procurement		
8	Travel Planning	Reduce car trips in Medway and specifically the AQMAs		Safer Journey Team to develop and improve School Travel Plans	Number of Schools with active travel plan	Bryan Shawyer Safer Journey Team		
8	Travel Planning			Medway Travel Plan - review and align with AQAP	Completed or not	Terri Wiliams		
8	Travel Planning			Work place travel plans	Number of Businesses with travel plan	Terri Williams Business Development Team		
9	Car Sharing	Promote car sharing and reduce number of trips		Monitor and promote the liftshare scheme	Number registered on liftshare scheme	David Bond	Integrated Transport	

No	Measure	Long term focus	Long term indicator owner	Short term action	Short term action indicator	Indicator owner	Department	Target emission reduction estimates
10	Development planning	Avoid worsening Air Quality, develop opportunities to improve the publics health through development	Number of decision notices that refer to AQ beneficial policies (currently BNE24)	Review and re-write relevant planning policies and develop a supplementary planning document to reflect this action plan and relevant and related corporate strategies	Number of Relevant policies reviewed, re-written beneficial to AQ and linked to Long term objective	Dave Harris Planning, Carly Stoddart, Mark Pullin, Catherine Smith	Planning & EP	
11	Promotion health awareness and air quality issues	Improve and then maintain awareness of the health and financial impacts of air pollution to all stakeholder groups; business, schools, public, vulnerable groups, internal members, internal managers,		Identify Corporate Policies and Strategies where consultation of changes is requested and notify accountable department	Number of notifications and consultations carried out	Council Wide	Performance – put EIA in place to bring to EP attention??	
11	Promotion health awareness and air quality issues			Development of promotional material to support Measure 6 Eco-driving	Number of press releases, reports on websites, presentations delivered, workshops delivered, leaflets developed	Lucy Kirk	EP/Comms	<1%

No	Measure	Long term focus	Long term indicator owner	Short term action	Short term action indicator	Indicator owner	Department	Target emission reduction estimates
11	Promotion health awareness and air quality issues			Develop an air quality communications strategy with comms team.	Completed or not	Julia Duke-McRae/Lucy Kirk Comms team	Comms & EP	
11	Promotion health awareness and air quality issues			Set up AQAP steering group and book 6 monthly meetings with stakeholders	Completed or not	Lucy Kirk	Environmental Protection	
11				Engage with business, internal members and managers as priority	Number of events/presentations where the AQAP has been represented	Wayne Saunders	Comms & EP	
11				Integrate, where appropriate, AQAP target into internal service plans	Number of internal service plans with AQAP related actions included.	Performance hub + EP & relevant service managers	Performance hub & EP	
11				Identify Corporate Policies and Strategies where consultation of changes is requested and notify accountable department	Number identified	Lucy Kirk	Environmental Protection	
12	Feasibility Studies and Funding	To more fully understand the impact of identified		Develop business cases for evaluation or quantification	Completed or not	Lucy Kirk	Environmental Protection	0

No	Measure	Long term focus	Long term indicator owner	Short term action	Short term action indicator	Indicator owner	Department	Target emission reduction estimates
		measures		studies to take forward to 2016-17				

Measure 1: Improving Movement of Freight

HGV movements in all AQMAs give rise to significant emissions, although the number of HGVs in the fleet is much lower than LGVs and cars.

Medway Council, through its LTP, will work with key strategic partners including Kent County Council and Network Rail to seek to:

Continue to improve the A228 to Grain.

Improve the Thamesport freight line, including Hoo junction.

Improve the efficiency of road-based freight movements through Medway, with HGV traffic being directed away from unsuitable roads.

Ensure major freight traffic-generating developments provide access to the rail network for freight movements.

Encourage freight movements to use rail and river transport.

Monitor growth in freight movements originating from International Gateways throughout Kent and work sub-regionally to mitigate negative consequences.

Investigate the provision of faster and more reliable highway linkages from business, storage and distribution sites to the strategic highway network supporting wider connectivity.

In March 2012 Kent County Council published a Freight Action Plan 2012-2016 to tackle the problems caused by large, mainly foreign lorries, using unsuitable routes in the county. This is noted as a particular problem in Kent and Medway as the region is the gateway to mainland Europe and the associated heavy cross-Channel traffic and the need to service rural businesses. Medway Council, as a strategic partner will be consulted on any updates and this represents an opportunity to work towards improving freight movements and lowering their negative impact on air quality.

The Freight action plan seeks to work with business to reduce the pressure on rural communities while maintaining the County's economic vitality. Measures include:

Developing route maps electronically for business to use when planning their deliveries.

Working together with the Freight Transport Association to ensure the impact of freight is minimised.

Review the signing strategy across the county to ensure that the most suitable routes are signed correctly.

Enabling the public to share their concerns over freight issues.

Measure 2: Encouragement of Public Transport Use

Generally in the UK, 25% of Britain's car journeys are less than 2 miles, it is therefore important to consider the promotion of public transport uptake, car sharing and travel planning within the AQMAs and Medway in general.

Arriva in Medway operates approximately 95% of the local bus network, by mileage, on a commercial basis. A bus quality partnership is in place between the Council and Arriva to improve bus journey times and promote patronage increase. There is no commitment at the present time within the bus quality partnership to reduce emissions from the bus fleet by complying with an agreed Euro vehicle emissions standard.

Water transport. A peak time ferry service between Chatham and Medway City Estate is to be introduced in summer 2015 for a trial period.

Measure 3: Improvement in Taxi Emissions

Taxis provide a flexible transport solution, which can be especially important for the elderly and disabled users. The Council has committed to:

Review of taxi rank locations and waiting facilities for accessibility and personnel safety.

Incentivise and support the Medway taxi industry to use lower emitting vehicles.

Measure 4: Traffic Management

Slow moving vehicles during congestion periods give rise to a high proportion of emissions relative to moving traffic. Congestion is a known issue in the Medway AQMAs. Consequently, measures to reduce traffic queues are likely to reduce emissions.

Urban Traffic Management (UTMC)

Medway's Urban Traffic Management and Control system (UTMC) incorporates some advanced features related to bus priority and air quality assessment. Medway Council operates this system proactively to:

Improve the operational efficiency of the highway network;

Provide real time travel and parking information to drivers;

Respond to incidents on the network;

Enable bus services to be more punctual and have improved journey times;

Monitor traffic-related air quality and respond to short term increases in pollution levels where possible;

Share information with Highways England and neighbouring local authorities.

Tackling congestion hotspots.

Congestion hotspots have been identified in the road network within the Local Transport Plan. These are listed below, along with the intended programming of schemes designed to achieve improvements. Normally this will be in the form of capacity improvements to junctions to relieve bottlenecks and aid free flowing. They are also intended to improve air quality. In addition with the network changing due to the growth in Medway the list below is not exhaustive, and may be subject to revision, these revisions will be shown in the next reworking of the Network Management Plan.

Location (link or junction)	Programme period	Justification of programme position
A229 gyratory junction with former Mid Kent College, Horsted	Short	To be delivered as part of the site redevelopment
A289 link between Four Elms roundabout and Medway Tunnel including Sans Pareil and Anthony's Way roundabouts and exit from Medway City Estate	Short /medium	Phased intervention to link to the development of Lodge Hill, Chattenden development to improve capacity and junction operation. This will be facilitated/financed through the Local Growth Fund.
A2 junctions and link between Chatham Hill and Canterbury Street junctions	Medium	Localised traffic congestion. Major intervention required to tackle problem and increase capacity
A2/A228 links through Strood town centre	Medium	Schemes to be developed as part of Strood Local Growth Fund projects
A231 Dock Road junction with Wood Street roundabout	Medium	Transport modelling indicates increasing traffic hence this position in programme
A2 junction with Mierscourt Road, Rainham	Medium	Significant localised congestion. Major intervention required
A2 junctions with A278 Hoath Way & A289 Ito Way	Long	Transport modelling indicates future pressure, hence this position in programme. External funding being sought.
B2004 link through Lower Rainham	Long	Transport modelling indicates future pressure, hence this position in programme. External funding being sought.

Measure 5: Promotion of Cycling and Walking

Measures to encourage cycling and walking rather than using the car especially for local journeys are important to reduce emissions and hence improve air quality. These are supported in the Council's LTP. A provisional Cycle Action Plan is in place for the period 2014 to 2017.

Working in partnership with key stakeholders, the future priorities include:

Participation in the development of a sub-regional cycle network and enhancement of the National Cycle Routes.

Promotion of the cycle facilities and the health benefits of cycling.

Organised cycling activities.

Ensuring new development provides adequate facilities for cyclists, including off-site cycle links.

Support the Sustrans cycle ranger scheme.

Enhancing the existing routes, by improved maintenance and minor improvements.

Increasing and improving secure cycle parking.

Creating new opportunities for recreational cycling, by developing more facilities off-road and on quiet roads.

Expanding the existing utility cycle network by infilling gaps and making linkages to key destinations.

Measure 6: Eco-Driving

Eco-driving, which is the technique of driving in a smooth controlled manner, has been demonstrated to reduce fuel consumption and hence lower emissions of both air pollutants and carbon. A key benefit of this measure is fuel cost savings and is particularly effective in the haulage industry but will be of benefit to other sectors.

Consideration of eco-driving training should be investigated and promoted for selected haulage operators and also for the Council refuse collection vehicle fleet.

Eco-driving will also be included in Measure 8 when Medway engages with businesses and included within the context of developing travel plans.

Measure 7: Procurement

In February 2011, the UK Government published its *Action Plan for driving sustainable operations and procurement across Government,* setting out the aims of leading by example, introducing efficiency and reform and improving transparency and accountability with regard to Government performance.

There are several approaches to including environmental criteria as part of a vehicle procurement specification or as part of an emission reduction strategy associated with the delivery of goods and services. While it would not be possible under EU procurement rules to restrict the tendering of goods and services to local companies, it is possible to include award criteria based on the total emissions arising from the delivery of goods and services. In terms of vehicle procurement, the most common environmental performance criteria relate to either carbon dioxide emissions, expressed as g/km or g/kWhr (for HGVs), or regulated air quality pollutants, expressed in relation to the European Emission Standards, or both combined.

As well as looking at the air quality impact of its own operations, the Council can have an important part to play in highlighting to its wider partners, and contractors, the importance of air quality considerations when considering vehicle fleet replacement, and potential retrofitting of vehicles to achieve tighter emissions standards where their replacement is not feasible.

Measure 8: Travel Planning

Workplace travel plans

A Travel Plan (sometimes referred to as a green travel plan) is a package of measures designed to influence the travel behaviour of individuals, businesses, schools or other organisations through promoting sustainable travel. The general aim is to reduce the negative effects of traffic by encouraging alternatives to single-occupancy car-use.

School Travel Plans (STPs)

The Council's Safer Journeys team continues to work with schools to develop their travel plans through a variety of methods, including the virtual learning platform. The STP continues to serve as the most effective means for schools to voice their issues and suggestions, assess levels of sustainable travel modes and develop achievable targets through a range of measures identified by the school community. As an increasing number of schools convert to academy status and suchlike, there is potential to integrate the STP with local business travel plans to further assist with the reduction of car use. The Council have two strategies in place that supports the Safer Routes to School in Medway. These are Medway Schools Active Travel Strategy - August 2014 and the Medway Sustainable School Travel Strategy 2012-17.

Measure 9: Car Sharing

Encouragement for travellers to plan their journey and share transport, whenever possible is likely to lead to fewer vehicle trips and lower emissions. Car sharing and travel planning are therefore important measures to improve air quality.

Car sharing schemes operate in urban areas around the UK. If everyone who drives on their own to work every day were to catch a lift with someone just once a week, the commuting car journeys would reduce by 20%[3]. Medway Council has a current database www.medwaycarshare.com, which is managed by Liftshare. This was launched in 2006, and is open to both Medway Council employees and to members of the public. There are around 300 people registered on the database. Increasing awareness and uptake of this service could contribute to reducing congestion and emissions in the AQMAs.

Measure 10: Development Planning

The planning system plays a key role in protecting and improving the environment. Land use planning and development control can become an effective tool to improve air quality by first locating developments in such a way as to reduce emissions overall, and secondly reducing the direct impacts of those developments.

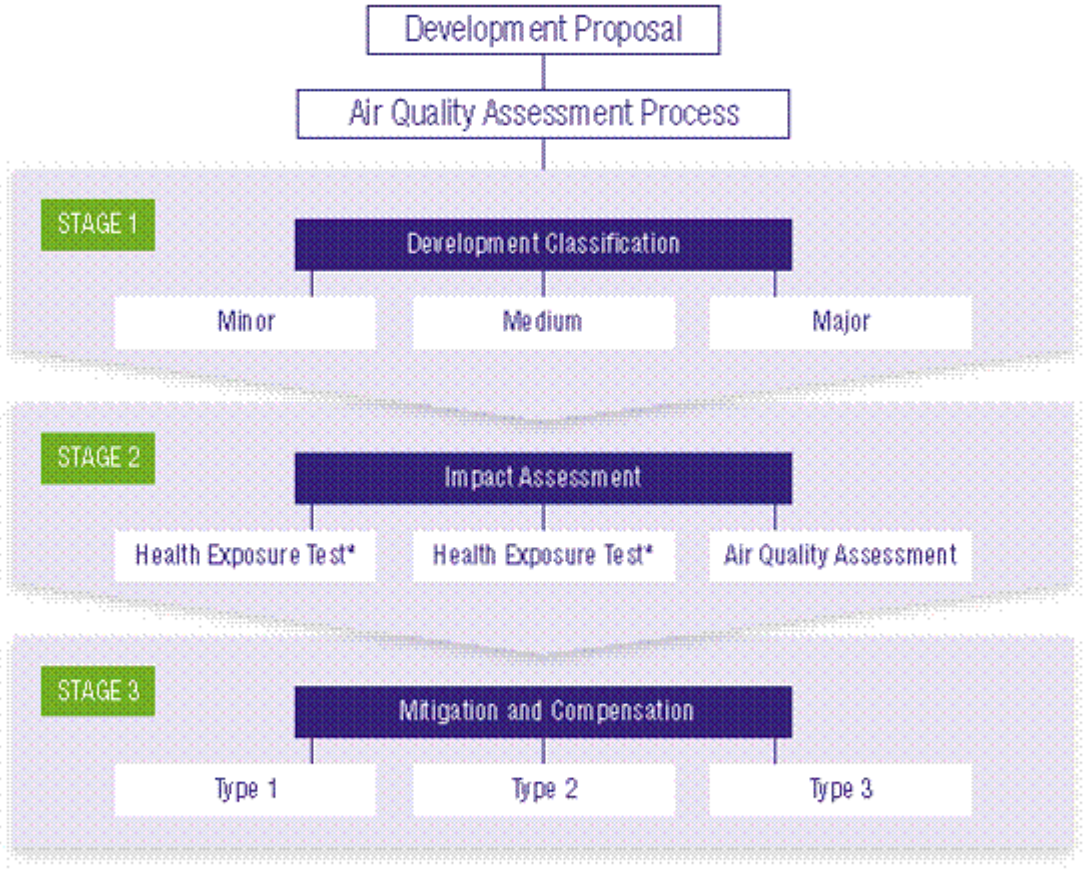
As the Local Plan develops, reference to this action plan will be incorporated into relevant policies in order to ensure it fits with the National Planning Policy Frameworks (NPPF) principle of encouraging sustainable development.

The Kent and Medway Air Quality Partnership is currently reviewing and updating the Air Quality and Planning technical guidance document which is aimed at local authorities, developers and consultants. It provides advice on how to deal with planning applications that could have an impact on air quality and human health. It is hoped that this guidance document can also help to inform the development of air quality and planning policies and will provide a valuable source of information for local authorities. If the procedures in this guidance document are followed, it will help to ensure consistency in the approach to dealing with air quality and planning across Kent and Medway[4].

The Council will investigate options for producing an air quality supplementary planning document based on the air quality assessment process used in West Yorkshire which is shown in the diagram below and can be found at: -

http://www.wakefield.gov.uk/Documents/bins-environment/environmental-health/pollution/air-quality-and-planning-technical-guidance-plan.pdf

[3] http://www.nationalcarshare.co.uk/ -
[4] http://www.kentair.org.uk/



This process would apply across the whole of Medway and would therefore not be limited to just those developments within or close to Medway's three AQMAs. The first stage would be to classify a development as a minor, medium or major development in air quality terms. For example the Council could require low NOx boilers to be installed as standard mitigation for all classifications of development, whereas medium applications that require type 2 mitigation could also be required to provide electric vehicle charging points as part of the development. However, a major application would need to be supported by a detailed air quality assessment which would be required to include a damage cost assessment. This would mean that if a development was predicted to have a negative impact on air quality, then the proposals would have to include additional mitigation/compensation for the scheme to be acceptable in air quality terms. A good example of this would be that contributions to the Council's cycle infrastructure could be agreed.

Measure 11: Promotion of health and air quality awareness

In the Environment Audit Commission report[5] the importance of raising public awareness on the health implications of poor air quality was noted. Government research[6] has identified the health impacts of poor air quality in the UK as being almost twice those of physical inactivity (£20 billion a year compared to £10.7 billion) yet most commentators recognise that air pollution fails to receive anywhere near the same level of attention within the media or medical world. Additional studies have suggested that the cardiovascular risk of exposure to traffic pollution may well be similar to that from passive smoking, though it clearly fails to get comparable attention.

[5] http://www.publications.parliament.uk/pa/cm200910/cmselect/cmenvaud/229/229i.pdf
[6] As footnote 3.

As many of the measures within this AQAP rely on behaviour change in travel modes, the Council will also seek to raise awareness of the health issues. To inform this, an analysis is required of the air quality and health effects in Medway, which will be published as part of the Joint Strategic Needs Assessment.

To monitor the impact of this Action Plan on the improvement of ambient air quality it is important that the Council measures the air pollutant concentration and reports this into the public domain. With effective communications the Council can raise awareness about the air pollution problem to encourage more sustainable travel in the AQMAs.

The Council will continue to undertake routine monitoring of air pollution in the existing AQMAs and locations around the District. The Council will continue to report progress on air pollution monitoring.

Measure 12: Feasibility Studies and Funding

In preparing this Action Plan Medway Council has not had all relevant traffic data available to undertake a detailed analysis of all measures. Target emission reductions for each measure that have been derived are therefore uncertain for some measures and have been based on judgement and available information. It is therefore important that the Council undertakes some further feasibility studies, for example, to determine if junction alterations in identified congestion hotspots (under measure 4) is appropriate.

The Council will undertake identified feasibility studies of measures to determine more robustly the effectiveness and cost of options. These feasibility studies will require traffic counts to be undertaken which will be used in transport modelling to investigate the impact of the measure on traffic flows and emission reduction.

There have been considerable changes to the structure of public health and the recent introduction of the Joint Strategic Needs Assessment (JSNA) will provide the opportunity for health-based intervention. These opportunities will be explored under measure 12.

Section 4 Governance and Internal Partnerships

4.0 Governance

Medway Council has clearly set out its vision for the short term in the Council Plan 2013-2015. This sets out four priorities with clear commitments for each. The measures proposed in this action plan all support the delivery of the Council Plan and will be carried out under the principles upheld in the Sustainable Community Strategy 2010-2026. The Council Plan emphasises the opportunity afforded by the inclusion of Public Health teams within upper tier authorities and this AQAP is another example of how the council can not only deliver its statutory air quality function but in doing so support its Council Plan.

As a unitary authority, Medway Council provides a broad range of services (broader than second tier authorities). This assists with internal communication and clear governance of action plans and helps in bringing responsibilities for the overall transport strategy, within the Council. As the AQMAs in Medway are dominated by emissions from transport, a partnership arrangement between the Environmental Protection and Transport teams for the development of this Action Plan has been used. The Transport team has put forward proposed actions, which they themselves can implement in pursuit of the air quality objectives.

In order to manage progress made against the identified measures and associated actions outlined in this document, the Environmental Protection team will incorporate the actions and ownership to the relevant stakeholders using the performance management tool, which is currently Covalent (measure 6).

In order to improve and build on stakeholder engagement, a steering group will be set up. This will include relevant stakeholders and a review of members will be undertaken annually (measure 6). Key internal partnerships where co-ordination and joint working will be required in order to maximise the potential for improving air quality and public health through the measures in this action plan are identified in sections 4.2 to 4.7 below.

4.1 Integration with Local Transport Plan

Medway adopted its third Local Transport Plan (LTP) in March 2011 and it has two parts; a long-term policy and strategy document, Medway LTP 3 which will run until 2026, and a shorter-term Implementation Plan for the period 2011 – 15.

The plan sets out Medway's transport strategy for the next 12 years and one of its key actions includes:

encouraging alternatives to the private car by:

- improving the quality of bus services, including the development of Fastrack style bus links;

- encouraging walking and cycling for short journeys.

• more efficient management of the highway network including air quality, traffic management schemes and tackling congestion hotspots.

Local Enterprise Partnership Funding

During early 2014 Medway put together a package of schemes as part of the Local Enterprise Partnerships (LEP) bid for the Government's Local Growth Fund (LGF). A total of £68.1million was granted to the Kent and Medway federated area for projects that will commence in 2015/16, with £28.6million allocated for five successful Medway schemes. The five successful schemes and the allocated LGF is as follows:

- Chatham Town Centre and Public Realm Package (£4m LGF)
- A289 Four Elms Roundabout to Medway Tunnel Journey Time and Network Improvements (£11.1m LGF)
- Medway City Estate Connectivity Improvement Measures (£2.0m LGF)
- Strood Town Centre Journey Time and Accessibility Enhancements(£9.0m LGF) (provisional allocation)
- Medway Cycling Action Plan (£2.5m LGF)

Within the LPT there is the Cycle Action Plan and, for walking, the Public Rights of Way Improvement Plan.

4.2 Partnership with Land Use and Development Planning

The planning system plays a key role in protecting and improving the environment. Land use planning and development control can be an effective tool to improve air quality by first locating developments in such a way as to reduce emissions overall, and secondly reducing the direct impacts of those developments. Although the presence of an AQMA makes consideration of the air quality impacts of a proposed development more important, there is still a need to regard air quality as a material factor in determining planning applications in any location. This is particularly important where the proposed development is not physically within the AQMA, but could have adverse impacts on air quality within it, or where air quality in that given area is close to exceeding guideline objectives itself.

The NPPF, 2012, sets the basis for the consideration of air quality in development planning in paragraph 124:

The Government's commitment to the principles of sustainable development is set out in the 'UK Sustainable Development Strategy Securing the Future, 2005, and the five guiding principles, 2005[7]'

In developing an air quality Action Plan the Council has engaged with land-use and transport planners to ensure the actions are supported by all parts of the authority.

Sustainability is also central to the Medway Sustainable Community Strategy 2010-2026, which includes "Sustainability: will our actions work for tomorrow as today" is one of the four principles adopted by the council through this strategy. Medway Council is working on a new Local Plan, following the withdrawal of an advanced draft Core Strategy in late 2013. This will replace the current policy set out in the 2003 Medway Local Plan. The council is seeking to promote a sustainable development pattern for Medway, to achieve successful growth whilst respecting natural and heritage assets. The spatial strategy will recognise the AQMAs and policies will seek to contribute to the objectives set in the AQAP. Planning officers will work with Environmental Protection and Transport departments in developing new policies to protect and enhance air quality in Medway, for the benefit of communities and the wider environment.

The Kent and Medway Air Quality Partnership have prepared an Air Quality and Planning technical guidance document (adopted by Kent Planning Officers Group (KPOG) in 2010 aimed at local authorities, developers and consultants. It provides advice on how to deal with planning applications that could have an impact on air quality and human health. It is hoped that this guidance document can also help to inform the development of air quality and planning policies and provide a valuable source of information for local authorities. If the procedures in this guidance are followed, it will help to ensure consistency in the approach to dealing with air quality and planning across Kent[9]

[7] *https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69412/pb10589-securing-the-future-050307.pdf*
[9] http://www.kentair.org.uk/

4.3 Partnership with Medway Public Health Directorate

Poor air quality is seen as a very significant public health issue. The burden of air pollution in the UK in 2008 was estimated to be equivalent to nearly 29,000 deaths a year at typical ages and an associated loss of population life of 340,000 life years lost[8].

Locally, The Medway Health and Wellbeing Board's role is to provide public health leadership across agencies, by influencing the economic, social and environmental determinants of health. Interventions to improve air quality and mitigate the health impacts of air pollution have many synergies with other important measures to improve the public's health. For example, addressing climate change adaptation and mitigation, increasing active travel and improving green spaces are all likely to have co-benefits for air quality.

Medway's Air Quality JSNA (Joint Strategic Needs Assessment) provides an assessment of the health impact of poor air quality on the health of Medway's population. It recommends a number of measures to monitor and mitigate the health impact, including more detailed analysis of the exposure to air pollution for different socio-economic and age groups, scoping of a text message alert system for vulnerable groups, information for GPs on air quality and its impact upon asthma and existing COPD (Chronic Obstructive Pulmonary Disease) conditions. The Public Health Directorate works in partnership through the Kent & Medway Air Quality Partnership Health Sub group.

Medway's Public Health Directorate supports measures within this action plan that provide either direct or indirect benefits to outcomes and targets set out in Medway's JSNA chapter.

4.4 Partnership with Other Teams identified in Measures Table

Measures that involve engagement with schools and businesses either as part of programmes aimed at enhancing sustainable practices or providing economic guidance or healthy promotion works are led by a range of departments within Medway including:

a) Business Development Team

b) Safer Journey Team- Recent strategies include Medway Schools Active Travel Strategy – August 2014 and Medway Sustainable School Travel Strategy 2012 – 17 as well as the Road Safety Action Plan currently being drafted.

c) Supporting Healthy Weight Team

d) Economic Development

These teams deliver services that have the potential to increase the penetration of this action plan and will be included in the steering group going forward in order to enhance the co-benefits that joint working can provide.

4.5 Integration with Climate Change Delivery

Medway Council is committed to deliver carbon reduction savings as set out in the Climate Change, Renewables and Flooding report updated January 2012, the co-benefits of combining air quality improvements at the same time as making carbon savings are well recognised. A simple example is shown in "Air Pollution: Action in a Changing Climate, Defra, 2011"[9]. It demonstrates that the costs associate with buying a petrol, diesel or hybrid petrol vehicle will affect the outcome of a cost benefit analysis depending on whether air pollution costs are incorporated or not:

[8] Defra reference http://laqm.defra.gov.uk/documents/air_quality_note_v7a-(3).pdf)
[9] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69340/pb13378-air-pollution.pdf

Table taken from Air Pollution: Action in a Changing Climate (Defra, 2011)

Costs with regards to	Petrol car	Diesel car	Petrol Hybrid
Climate Change[1]	£166	£146	£98
Air Quality[2]	£1[3]	£21	£1
Total	£167	£167	£99

1 Based on the non-traded shadow price of carbon
2 Primarily based on health effects of particulate matter (IGCB). Euro 5 standards, which will apply to all new cars from January 2011, will introduce PM emission standards for diesel cars which are similar to those for petrol cars.
3 The difference in scale between these costs reflects the extensive emission control already introduced for cars in terms of air quality pollutant.

4.7 Communications team

A communication strategy has been drawn up by the Communications Team (Measure 11) in collaboration between Medway Public Health and Environmental Protection teams in order to co-ordinate internal and external communication in a manner that is end-user focussed.

4.8 Implementation Plan

The implementation of this action plan will be undertaken in three stages in order to deliver the finalised action plan and continually evolve and develop it into the future to ensure it remains fit for purpose.

Step 1: Consultation & Finalisation

The development of this draft action plan has included stakeholder meetings with key Council department officers including transport and planning.

This draft Action Plan will be issued to the following consultees and as appropriate, the plan will be amended to reflect their views and comments within 6 months of the publication of the draft.

- All properties in the Air Quality Management Areas
- Kent County Council
- Defra
- All Parish and Town Councils within Medway
- Local Chambers of Commerce
- Federation of Small Businesses
- Bus Operators in Medway
- Taxi Operators
- Neighbouring District Councils
- All Medway Council Departments
- Highways Agency
- Environment Agency
- Natural England
- Freight Transport Association

The draft plan will also be published for public consultation.

Step 2: Governance

The AQAP will be incorporated into the Environmental Protection team's Service Plan and the measures and actions assigned to each stakeholder will be allocated on the in-house performance management tool to enable efficient collation of monitored progress for both in house and external reporting purposes.

Step 3: Monitoring

The Action Plan will be monitored at least annually and the results collated for the yearly progress report on the implementation of the plan. This will be managed using the in-house performance management software, Covalent.

Section 5 - Final Conclusions

This Action Plan describes the air quality assessment process that has taken place in Medway to date, identifies the role of traffic in the current problem and sets out a range of transport-focussed measures that could help improve air quality. In total, twelve measures have been recommended for implementation or further feasibility studies. Some of these are based on measures already under consideration, and have been drawn from existing plans and policies. Additional measures have been suggested to complement planned and ongoing activity.

The objective of this Action Plan is to improve air quality at the Central Medway, Pier Road, Gillingham and High Street, Rainham AQMA to work towards meeting the national air quality objective for the protection of human health. The delivery of this objective directly supports the Councils Local Plan and Sustainable Communities Strategy and is a key component in delivering against the Councils Public Health Outcome framework targets. Prior to the implementation of this Action Plan a consultation process as described will be undertaken. Following the receipt of comments, a final plan will be produced followed by implementation.

Appendices

Appendix 1 - UK air quality standards and objectives

Objectives included in the Air Quality Regulations 2000 and (Amendment) Regulations 2002 for the purpose of Local Air Quality Management

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene All authorities	16.25 μg/m^3	running annual mean	31.12.2003
Authorities in England and Wales only	5.00 μg/m^3	annual mean	31.12.2010
Authorities in open areas and coastal areas should be cleaner as air changes more frequently and Northern Ireland only	3.25 μg/m^3	running annual mean	31.12.2010
1,3-Butadiene	2.25 μg/m^3	running annual mean	31.12.2003
Carbon monoxide Authorities in England, Wales and Northern Ireland only	10.0 mg/m^3	maximum daily running 8-hour mean	31.12.2003
Authorities in Scotland only	10.0 mg/m^3	running 8-hour mean	31.12.2003
Lead	0.5 μg/m^3 0.25 μg/m^3	annual mean annual mean	31.12.2004 31.12.2008
Nitrogen dioxide[b,e]	200 μg/m^3 not to be exceeded more than 18 times a year 40 μg/m^3	1 hour mean annual mean	31.12.2005 31.12.2005
Particles (PM_{10}) (gravimetric)[c] All authorities	50 μg/m^3 not to be exceeded more than 35 times a year 40 μg/m^3	24 hour mean annual mean	31.12.2004 31.12.2004
Authorities in Scotland only[d]	50 μg/m^3 not to be exceeded more than 7 times a year 18 μg/m^3	24 hour mean annual mean	31.12.2010 31.12.2010
Sulphur dioxide	350 μg/m^3 not to be exceeded more than 24 times a year 125 μg/m^3 not to be exceeded more than 3 times a year 266 μg/m^3 not to be exceeded more than 35 times a year	1 hour mean 24 hour mean 15 minute mean	31.12.2004 31.12.2004 31.12.2005

b. The objectives for nitrogen dioxide are provisional.
c. Measured using the European gravimetric transfer standard sampler or equivalent.
d. These 2010 Air Quality Objectives for PM10 apply in Scotland only, as set out in the Air Quality (Scotland) Amendment Regulations 2002.
e. The annual average and 1 hour average nitrogen dioxides objectives are the same as the EU Limit Values but the EU Limit Values have to be achieved by the 1 January 2010 and maintained thereafter

Efforts to achieve these objectives should be focussed on locations where members of the public are likely to be exposed over the averaging period of the objective. The table below summarises the locations where these objectives should and should not apply.

Typical locations where the objectives should and should not apply			
Averaging Period	**Pollutants**	**Objectives *should* apply at …**	**Objectives should *not* generally apply at …**
Annual mean	1,3 Butadiene Benzene Lead Nitrogen dioxide PM_{10}	All background locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, libraries etc.	Building facades of offices or other places of work where members of the public do not have regular access. Gardens of residential properties. Kerbside sites (as opposed to locations at the building facade), or any other location where public exposure is expected to be short term
24-hour mean and **8-hour mean**	Carbon monoxide PM_{10} Sulphur dioxide	All locations where the annual mean objective would apply. Gardens of residential properties	Kerbside sites (as opposed to locations at the building facade), or any other location where public exposure is expected to be short term.
1 hour mean	Nitrogen dioxide Sulphur dioxide	All locations where the annual mean and 24 and 8-hour mean objectives apply. Kerbside sites (e.g. pavements of busy shopping streets). Those parts of car parks and railway stations etc, which are not fully enclosed. Any outdoor locations to which the public might reasonably be expected to have access.	Kerbside sites where the public would not be expected to have regular access.
15 minute mean	Sulphur dioxide	All locations where members of the public might reasonably be exposed for a period of 15 minutes or longer.	

Appendix 2 – Source apportionment

Central Medway AQMA

Broadly speaking, the contribution in the Central Medway AQMA from free flowing heavy and light vehicles is quite similar, though there are areas where heavy vehicles contribute more (this relates to some locations having a higher percentage of heavy vehicles).

The contribution from queuing vehicles is dependent on the location - where congestion is an issue (for example the areas around Luton Arches, Star Hill and High Street), the contribution from stationary vehicles is greater. Table 1 and Table 2 summarise the relevant Nox, contributions from the above sources at each of the monitoring locations in the Central Medway AQMA.

Table 1 Central Medway AQMA NO_2 source apportionment diffusion tube sites where 2013 annual mean concentration greater than 40 µg.m^{-3}

Location	Total NO2	Road NO2	Background	Cars	HGV	LGV	Buses	Motor cycles
Luton Arches Junction	44.2	24.5	19.7	11.4	2.5	3.3	7.2	0.05
18 Star Hill	45.6	25.9	19.7	11.5	4.5	3.2	6.7	0.05
High Street, Strood (Tanning Shop)	45	25.3	19.7	11.8	5.6	4.2	3.7	0.04
High Street, Strood (Southern Heating)	52.4	32.7	19.7	16.9	4.5	5.8	5.5	0.06
London Road, Strood	41.6	21.9	19.7	10	4.2	5.1	2.5	0.03
33 London Road, Strood	42.9	23.2	19.7	11.2	3.8	6	2.2	0.03

Table 2 Required reduction in road traffic NO_2 emissions to achieve compliance with 40 µg.m^{-3} NO2 annual mean objective at diffusion tube sites

Location	Total measured NO2	Background	Road NO2	Reduction required to meet 40ug/m3 annual mean objective (µgm3)	Reduction in road Nox required (%)
Luton Arches Junction	44.2	19.7	24.5	4.2	17.1
18 Star Hill	45.6	19.7	25.9	5.6	21.6
High Street, Strood (Tanning Shop)	45	19.7	25.3	5	19.8
High Street, Strood (Southern Heating)	52.4	19.7	32.7	12.4	37.9
London Road, Strood	41.6	19.7	21.9	1.6	7.3
33 London Road, Strood	42.9	19.7	23.2	2.9	12.5

Modelled traffic counts by vehicle type at adjacent model road links to diffusion tube sites where 2013 annual mean conc.40ug/m3

Total number of vehicles	AADT	Car	LGV	HGV	Bus & Coach	Motorcycle
Luton Arches Junction	**12370**	**10435**	**1361**	**135**	**291**	**147**
18 Star Hill	**20771**	**17656**	**2015**	**388**	**460**	**252**
High Street, Strood (Tanning Shop)	**10246**	**8630**	**1105**	**222**	**163**	**126**
High Street, Strood (Southern Heating)	**34240**	**29162**	**3908**	**412**	**390**	**368**
London Road, Strood	**17326**	**13799**	**2930**	**311**	**139**	**147**
33 London Road, Strood	**17326**	**13799**	**2930**	**311**	**139**	**147**

Modelled traffic vehicle fleet splits at adjacent model road link to diffusion tube sites where 2013 NO2 annual mean conc. 40ug/m3

Total number of vehicles	AADT	Car	LGV	HGV	Bus & Coach	Motorcycle
Luton Arches Junction	**12370**	**84%**	**11%**	**1%**	**2%**	**1%**
18 Star Hill	**20771**	**85%**	**10%**	**2%**	**2%**	**1%**
High Street, Strood (Tanning Shop)	**10246**	**84%**	**11%**	**2**	**2**	**1%**
High Street, Strood (Southern Heating)	**34240**	**85%**	**11%**	**1**	**1**	**1%**
London Road, Strood	**17326**	**80%**	**17%**	**2**	**1**	**1%**
33 London Road, Strood	**17326**	**80%**	**17%**	**2**	**1**	**1%**

Pier Road, Gillingham AQMA

The road Nox in the Pier Road, Gillingham AQMA (at the single monitoring location) shows a higher contribution from heavy vehicles, and the entire predicted road Nox is derived from moving vehicles (Medway Council indicated that queuing was not an issue at this location). Table 3 and Table 4 summarise the relevant Nox contributions from the above sources at the Pier Road monitoring location in the Gillingham AQMA.

Table 3 Pier Road, Gillingham AQMA Nox source apportionment- Nox µg.m^{-3}

Location	Total NOx	Road Nox	Background	All LDV	All HDV	Petrol cars	Diesel cars	Petrol LGV	Diesel LGV	HGV	Coach	Motorcycle
Pier Road	61.9	33	28.9	24	9	4.4	14.4	0.1	5	7	2	0.1

Table 4 Pier Road, Gillingham AQMA Nox source apportionment- sources as % of total Nox

Location	Total NOx	Road Nox	Background	All LDV	All HDV	Petrol cars	Diesel cars	Petrol LGV	Diesel LGV	HGV	Coach	Motorcycle
Pier Road	100	53.3	46.7	38.8	14.6	7.1	23.2	0.2	8.1	11.3	3.2	0.2

High Street, Rainham AQMA

The road Nox in the High Street, Rainham AQMA shows a slightly higher contribution from heavy vehicles, and the contribution from queuing traffic is dominant at both High Street and the White Horse pub. Table 5 and Table 6 summarise the relevant Nox contributions from the above sources at the three monitoring locations in the High Street, Rainham AQMA.

Table 5 High Street, Rainham AQMA Nox source apportionment- µg.m^{-3}

Location	Total NOx	Road Nox	Background	All LDV	All HDV	Petrol cars	Diesel cars	Petrol LGV	Diesel LGV	HGV	Coach	Motorcycle
60 High Street	71	43.7	27.3	26.4	17.3	3.9	15.2	0.1	7.1	12.2	5.1	0.1
White Horse PH	54.6	27.3	27.3	16.6	10.8	2.5	9.5	0.1	4.5	10.1	3.2	0.1
Care Home	39.1	11.8	27.3	8.1	3.7	1.3	4.4	0.1	2.2	2.7	1	9.1

Table 6 High Street, Rainham AQMA Nox source apportionment- sources as % of total Nox

Location	Total NOx	Road Nox	Background	All LDV	All HDV	Petrol cars	Diesel cars	Petrol LGV	Diesel LGV	HGV	Coach	Motorcycle
60 High Street	100	61.5	38.5	37.1	24.4	5.5	21.4	0.1	10	17.2	7.2	0.1
White Horse PH	100	50	50	30.3	19.7	4.5	17.4	0.1	8.2	13.8	5.8	0.1
Care Home	100	30.1	69.9	20.7	9.4	3.4	11.3	0.1	5.8	6.9	2.6	0.1

Appendix 3 – Required reduction in ambient NOx concentrations

The required reduction in Road-Nox concentrations to attain the objectives allows the Local Authority to judge the scale of the effort required to comply with the NO_2 objective. For NO_2, the required reduction in road contribution to ambient concentrations should be expressed in terms of Nox as this is the primary emission and a non-linear relationship exists between NO_x and NO_2 concentrations. The ambient concentrations of Nox required to achieve the annual mean objective for NO_2 at the locations of worst case relevant exposure have been derived using the Nox/NO_2 model described previously.

It should be noted that these data pertain to the ambient concentration reductions required to achieve the NO_2 annual mean objective. In reality the mass emissions reductions required to realise the ambient reductions could be much less - for example street canyons amplify the ambient effect of a unit of Nox emission. Also, the background concentrations in the three AQMAs are reasonably high which means that the local road contribution has to be quite low in order to meet the objective.

Central Medway AQMA

The largest reduction is required at High Street Strood (Southern Heating) with a required Road-Nox concentration reduction of 64%. Calculation of the required Road- Nox_x reduction at the relevant monitoring locations is shown in Table 1 below.

Table 1 Reductions required in Nox concentrations to achieve the NO_2 annual mean objective- Central Medway AQMA

Receptor	Current Road-NO_x ($\mu g.m^{-3}$)	Required Road-NO_x ($\mu g.m^{-3}$)	Road NO_x Reduction required (%)
Canterbury St/Chatham Hill Junction	63.8	41.1	35.6
Chatham AQ Station	29.5	41.1	0
27 Luton High Street	47.0	41.1	12.6
Luton Road (Funeral Directors)	70.9	41.1	42.0
Luton Arches Junction	75.0	41.1	45.2
Chatham High Street (Orbit Housing)	63.2	41.1	35.0
Railway Street	56.0	41.1	26.6
Flat 4 New Road	47.0	41.1	12.6
Chatham/Rochester High Street	59.6	41.1	31.0
18 Star Hill	83.3	41.1	50.7
Corporation Street	32.7	41.1	0
28 Frindsbury Road	47.1	41.1	12.7
92 Cuxton Road	44.1	41.1	6.8
High Street, Strood (Tanning Shop)	60.4	41.1	32.0
High Street, Strood (Southern Heating)	116.5	41.1	64.7
London Road, Strood	73.1	41.1	43.8

Pier Road, Gillingham AQMA

The Nox reduction required in 2009 at Pier Road was 46.8%. Calculation of the required Road-Nox reduction at the relevant monitoring location is shown in Table 2 below:

Table 2 Reductions required in Nox concentrations to achieve the NO_2 annual mean objective- Pier Road, Gillingham AQMA

Receptor	Current Road-NO_x ($\mu g.m^{-3}$)	Required Road-NO_x ($\mu g.m^{-3}$)	Road NO_x Reduction required (%)
Pier Road	85.9	45.7	46.8

High Street, Rainham AQMA

The largest reduction is required at High Street Rainham with a required Road-NO_x concentration reduction of 35.5%. Calculation of the required Road-NO_x reduction at the relevant monitoring locations is shown in Table 3 below.

Table 3 Reductions required in NO_x concentrations to achieve the NO_2 annual mean objective- High Street, Rainham AQMA

Receptor	Current Road-NO_x ($\mu g.m^{-3}$)	Required Road-NO_x ($\mu g.m^{-3}$)	Road NO_x Reduction required (%)
High Street	68.2	44.0	35.5
White Horse	45.3	44.0	2.9
Care Home	26.5	44.0	0