Thurrock Air Quality Action Plan: AQMA 25 – Aveley

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

May 2016

Prepared on behalf of
Thurrock Council by:
Small Fish
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Strategy Consultants

Executive Summary

This Air Quality Action Plan (AQAP) has been produced as part of our duty to Local Air Quality Management. It outlines the action we will take to improve air quality in Thurrock's AQMA 25 in Aveley between 2016 and 2020.

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be roughly £16 billion. Thurrock Council is committed to reducing the exposure of people in Thurrock to poor air quality in order to improve health.

We have developed actions for AQMA 25 that can be considered under a number of broad topics:

- Traffic Management
- Prompting Travel Alternatives
- Policy guidance and development control

Our priority is to reduce NO_2 emissions in Aveley as quickly as possible in AQMA 25 by reducing the number of HGV through movements within the town centre, whilst also reducing childhood exposure to pollutants. In order to do so, our top priority will be the development and delivery of an HGV route management scheme.

We have worked hard to engage with stakeholders and communities which can make a difference to air quality in Thurrock. We would like to thank all those who have worked with us in the past and we look forward to working with you again and also with new partners as we deliver this new action plan over the coming years.

In this AQAP we outline how we plan to effectively tackle air quality issues within our control. However, we recognise that there are a large number of air quality policy areas that are outside of our influence (such as vehicle emissions agreed in Europe), but for which we may have useful evidence, and so we will continue to work with regional and central government on policies and issues beyond Thurrock's direct influence.

Responsibilities and Commitment

This AQAP was prepared by the Transport Development Team of Thurrock Council in collaboration with the Council's Air Quality Steering Group with representatives from the following departments:

- Strategic Planning
- Public Protection
- Landscape

This AQAP will be subject to an annual review, appraisal of progress and reporting to the relevant Council Committee (specify if relevant). Progress each year will be reported in the Annual Status Reports (ASRs) produced by Thurrock Council as part of our statutory Local Air Quality Management duties.

If you have any comments on this AQAP please send them to Lee Stevens at:

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1 Introduction

In Thurrock, Air Quality issues have been highlighted in relation to two regulated air pollutants – Nitrogen Dioxide (NO_2) and Particulate Matter (PM_{10}). As highways authority, Thurrock Council has a duty under section 84(2) of the 1995 Act to produce an Air Quality Action Plan (AQAP) for all areas declared as Air Quality Management Areas (AQMAs) under the Act. AQAPs set out the measures to be implemented to work towards meeting the air quality objectives in the designated areas.

The 2013 Air Quality Progress Report showed there to be an exceedence of the annual mean objective for NO_2, along the High Street and Ship Lane in Aveley. The 2014 Detailed Assessment of these exceedences confirms that NO_2 is exceeding the annual mean air quality objective of 40 $\mu g/m^3$ along the High Street and Ship Lane.

The Council is planning to declare an AQMA for breaching the annual mean objective for NO_2 along part of the Purfleet By-pass, Purfleet. Declaration is likely to take place in 2016.

In accordance with Local Air Quality Management Policy Guidance and Technical Guidance this Air Quality Action Plan for AQMA provides details of monitoring, assessment, feasibility analysis, cost effectiveness and an action plan for improving air quality to a safe level in line with the Government's objective.

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2 Statutory Context

Local air quality is of immediate concern due to the adverse effects of air pollutants such as Nitrogen Dioxide (NO_2), Particulate Matter (PM) and Ozone (O_3) on human health. As a result, the Environment Act 1995 imposes a statutory obligation on local authorities to declare Air Quality Management Areas (AQMAs) where levels of specified air pollutants are predicted to be above set limits. In addition, the incorporation of action measures to improve air quality where transport is identified as a contributor to poor air quality into Local Transport Plans is now a statutory requirement.

Part IV of the Environment Act 1995 introduced new responsibilities to both national and local government throughout the UK. These responsibilities include the requirement upon local authorities to periodically review and assess air quality across their areas. Air quality objectives have been set for those air pollutants deemed to be of most concern. Seven of these pollutants are included under the Local Air Quality Management regime and regulations for these were introduced. The air quality objectives for the pollutants relevant to AQMA 25 are given in **Figure 1**.

Figure 1: Pollutant Objectives Relevant to AQMA 25

Pollutant	Objective	Concentration Measured as	Date (European obligations)
Nitrogen Dioxide (NO_2)	40 µg/m^3	Annual Mean	1 January 2010

The Local Air Quality Management Regime requires all local authorities to review and assess the quality of their local air quality in a staged process. Should this confirm that any of the objectives will not be met within the required timescale the local authority must designate Air Quality Management Areas (AQMAs) and produce a Local Air Quality Action Plan setting out how it intends to improve air quality in these areas.

As transport authority, Thurrock Council has a duty under section 84(2) of the 1995 Act to produce an Air Quality Action Plan (AQAP). AQAPs set out the measures to be implemented to work towards meeting the air quality objectives in the designated areas. This document is the Air Quality Action Plan for AQMA 25.

3 Air Quality & Health

Local air quality is of immediate concern due to the adverse effects of air pollutants on human health. As a result, the Environment Act 1995 imposes a statutory obligation on local authorities to declare AQMAs where levels of specified air pollutants are predicted to be above set limits. In addition, the incorporation of action measures to improve air quality where transport is identified as a contributor to poor air quality into Local Transport Plans is now a statutory requirement.

All combustion processes in air produce oxides of nitrogen (NO_x). Nitrogen Dioxide (NO_2) and Nitric Oxide (NO) are both oxides of nitrogen and together are referred to as NO_x. Road transport is typically the main source, followed by the electricity supply industry and other industrial and commercial sectors.

The understanding of the effect that air pollution has on human health has increased considerably in the last 20 years, largely through the findings of many epidemiological studies undertaken for populations in various parts of the world. It had previously been recognised that air pollution episodes with very high levels of ambient air pollution are associated with clear and measurable increases in adverse health effects. Recent studies also reveal smaller increases in adverse health effects at the current levels of ambient air pollution typically present in urban areas. The health effects associated with short-term (acute) exposure include premature mortality (deaths brought forward), respiratory and cardio-vascular hospital admissions, and exacerbation of asthma and other respiratory symptoms. It is now reasonably common in the UK for warnings to be issued recommending people avoid exercise or to stay indoors at times of poor air quality.

According to the Government[1] the evidence associating NO_2 with health effects has strengthened substantially in recent years as noted by the Committee on the Medical Effects of Air Pollutants

[1] Draft plans to improve air quality in the UK. Tackling nitrogen dioxide in our towns and cities. UK overview Document (Defra, September 2015)

(COMEAP). It is estimated that the effects of NO_2 on mortality are equivalent to 23,500 deaths annually in the UK. The impact of air pollutants represents a significant public health challenge.

NO_2 is associated causally with adverse effects on human health. At high levels NO_2 causes inflammation of the airways. Long-term exposure may affect lung function and respiratory symptoms. NO_2 also enhances the response to allergens in sensitive individuals.

In summary, short term consequences of air pollution include:

- Worsening of frequency and severity of symptoms for those with respiratory disease (including asthma); and
- Increased hospital admissions for cardiopulmonary related conditions.

Long term consequences of air pollution include:

- Premature death from cardiovascular and respiratory diseases, including lung cancer; and
- Permanent impairment of lung function**.**

Some sections of the population are more vulnerable or susceptible to the adverse effects of air pollution. Factors can be related to:

- Demography, in that older people and young children are especially vulnerable;
- Chronic health issues, such as asthma, Chronic Obstructive Pulmonary Disease, and other cardio-vascular/ respiratory related ill-health;
- Lifestyle, for example smokers and those who are physically inactive are more vulnerable;
- Proximity to the source of pollution, such as living near a busy road.

With regard to the scale or significance of the effects of air pollution, the 2010 Global Burden of Disease (GBD) assessment, showed exposure to air pollution is a significant contributor to ill health and when the impact of air pollution is ranked against other harms it ranks quite highly.

4 Monitoring, Review and Assessment

Thurrock Council has been monitoring levels of NO_2 in Aveley since 2012. Results have shown an exceedence of the annual mean NO_2 limit value in 2012 and 2013. 2014 data remained below the limit value, albeit only marginally.

In 2014, a Detailed Assessment of NO_2 was undertaken on Aveley. Modelling results indicated that an AQMA should be declared in this area. The full extent of the AQMA to be declared in Aveley is shown in **Figure 4** overleaf, which shows that there are a large number of residential or mixed-use residential / commercial properties which fall within the annual mean exceedence line for NO_2. All properties which fall inside this line have their property boundaries incorporated with the AQMA, and any properties adjoining them are included even if they fall just outside the exceedence line to keep the structure of the AQMA contiguous.

The total number of properties included within the AQMA totals 76 properties, of these approximately 61 of these are residential houses, the remaining 15 properties are mixed commercial residential. Of these properties only 66 of them fall inside the modelled exceedence line. However the 10 properties which are not within the exceedence line do sit very close to it, in most cases they are within 1-2 metres.

Annual mean concentrations of NO_2 since 2012 in this area are shown in **Figure 2** below.

Figure 2: Annual Mean Concentrations of NO2 2012 – 2014 (µg/m³)

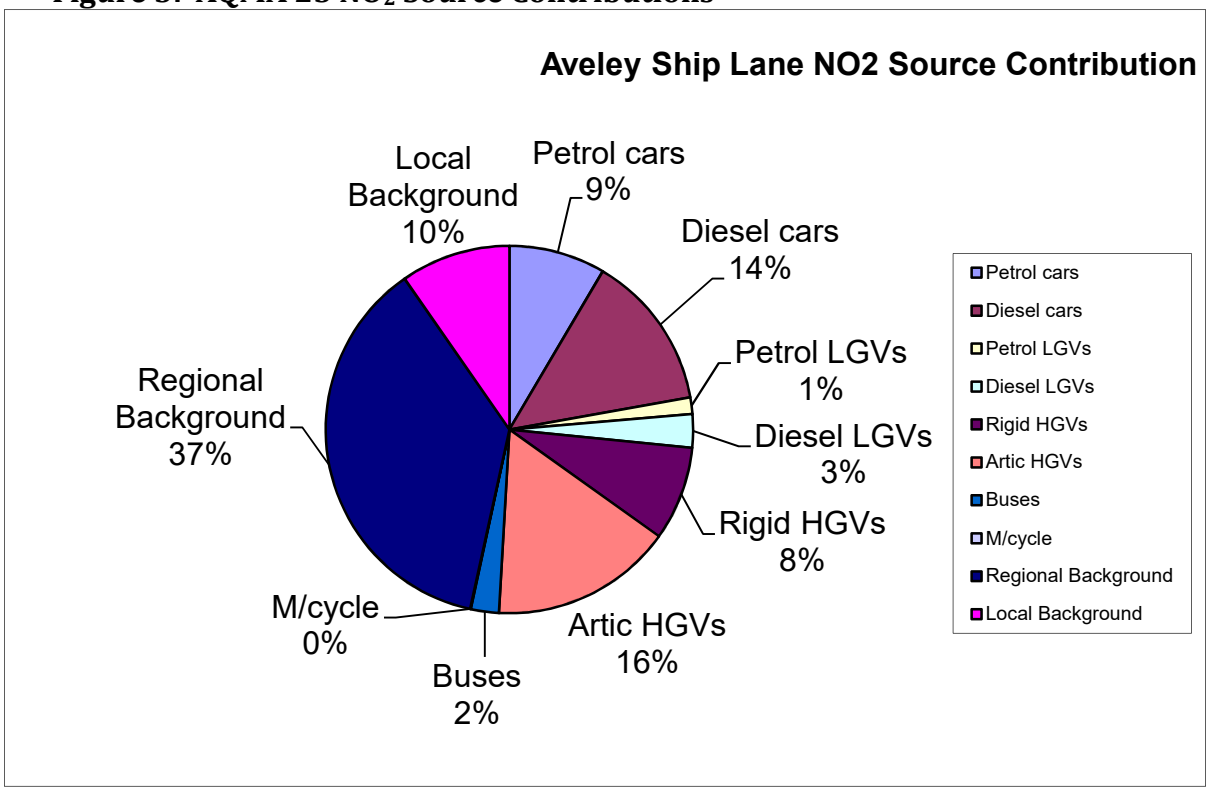
Year	Ship Lane	High Street
2012	46.99	38.96
2013	45.15	39.41
2014	45.43	38.50

As can be seen from **Figure 2** above, there have been exceedences of the annual mean objective at Ship Lane, although modelling indicates exceedences along High Street as well, which has been monitored as being very close to the limit value.

Local Air Quality Management Technical Guidance (TG16) Table 7.6 was also used to predict future NO_2 concentrations in AQMA 25 in 2020, which projected that concentrations will be significantly below the limit value by 2020 at 31.35 µg/m^3. Regardless, action is needed in the intervening years to ensure that the limit value is met as soon as possible.

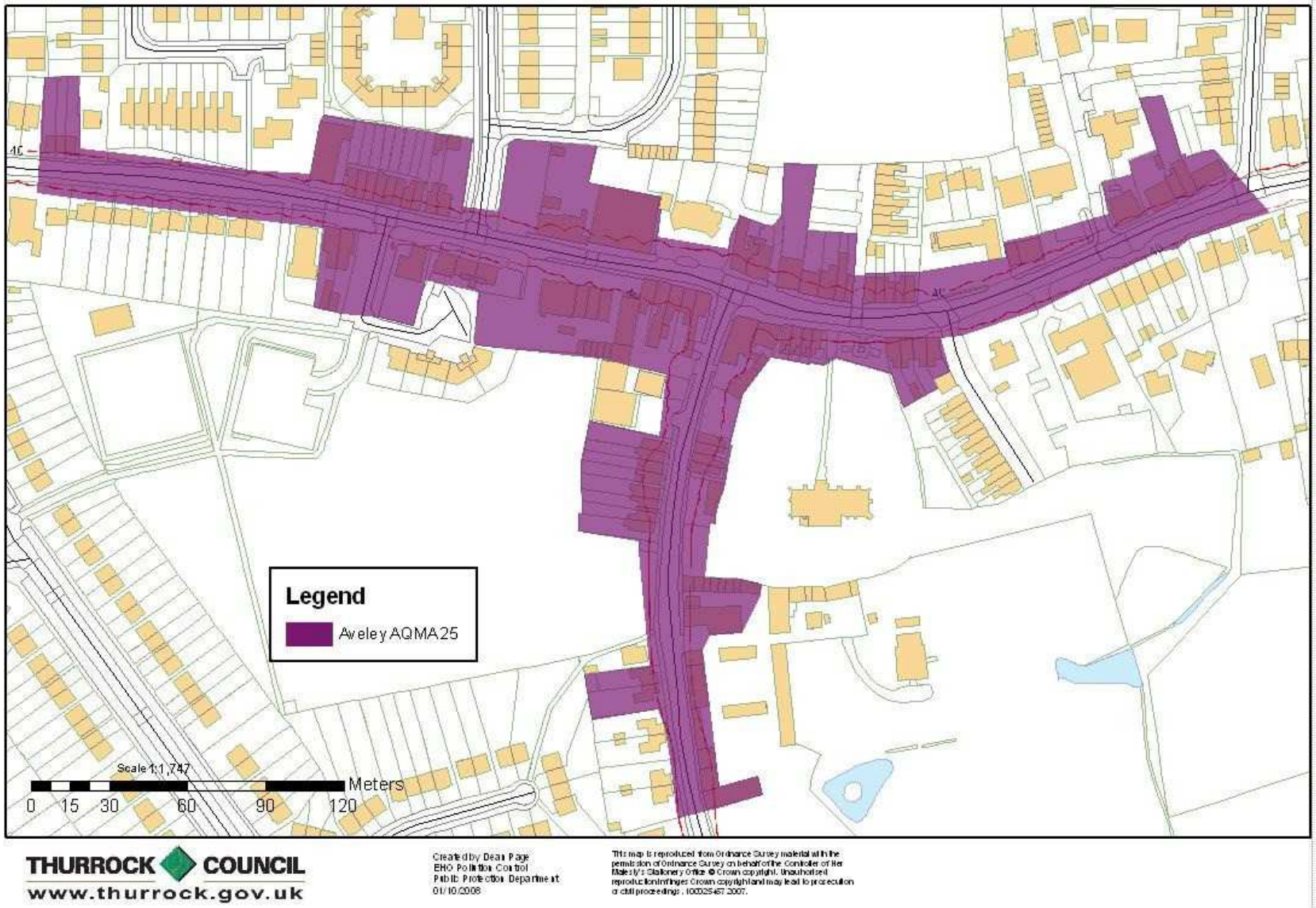
Source apportionment exercises undertaken in September 2015 have resulted in identifying the proportional source contributions within AQMA 25. As can be seen in **Figure 3** below, 37% of NO_2 emissions arise from regional and local background sources. The majority of the remaining emissions arise from HGVs which account for 24% of NO_2 emissions and 23% from cars and 4% light goods vehicles.

Figure 3: AQMA 25 NO_2 Source Contributions



The full extent of the AQMA to be declared in Aveley is shown in **Figure 4** overleaf.

Figure 4: AQMA 25



5 Steering Group

In early 2015, Thurrock Council convened an Air Quality and Health Steering Group with the core aim of developing an Air Quality and Health Strategy, developing Air Quality Action Plans for the new AQMAs and reviewing the existing AQAPs.

The steering group meet on a quarterly basis, with sub-groups meeting more often during key stages of the strategy's production phases.

Led by the Transport Development Team, the steering group will continue to meet regularly to discuss progress against the strategy and actions plans. The group is comprised of

- transport planners;
- land use planners;
- public health officers;
- environmental health officers;
- landscaping/climate change officer; and
- specialist air quality and transport consultants.

6 Options

A long list of potential options provided within the forthcoming Local Air quality Management Technical Guidance (TG16) and Policy Guidance (PG16) was given through consideration as a starting point. These documents recommend that a suite of options are examined for improving air quality in AQMAs and are shown in the **Figure 5** below. Measures that were considered to be infeasible due to infeasibility, controversial political unacceptability or excessive cost were excluded from further consideration in action planning and this is also shown in **Figure 5** below.

Figure 5: Potential Options for Improving Air Quality in AQMA 25 (Long List)

Measures	Description	Feasible?
Zoning		
20 mph zones	Implementation of 20pmh speed limits in AQMAs. However, a recent study[2] highlighted that NOx emission factors are higher for petrol vehicles over 20mph drive cycles compared to 30mph drive cycles, therefore not considered suitable for implementation, as it would not meet local air quality objectives.	✘
Low Emissions Zones/Clean Air Zones	Not likely to be financially or politically feasible across such a small area.	✘
Clear Zone/Traffic free areas/ Vehicle Bans	Not likely to be feasible across given the level of retail deliveries and residential access points and lack of alternative routes within the AQMA.	✘
Engine Switch Off Zones	May be possible outside of Aveley Primary, where parents may be idling.	✓
Public Transport		
Bus Priority	The reallocation of road space for buses only in order to improve journey times and ensure buses are not subject to congestion. This makes public transport more attractive, thus can encourage modal shift. However, the reallocated of road space generally leads to increased congestion and therefore air pollution, and as a result has not been considered further for Thurrock, as it would be contrary to both local air quality and congestion objectives.	✘

[2] Transport and Environmental Analysis Group, Centre for Transport Studies, Imperial College London. *An evaluation of the estimated impacts on vehicle emissions of a 20mph speed restriction in central London: FINAL REPORT*, April 2013.

Measures	Description	Feasible?
Park & Ride	Only likely to be feasible for single high draw destination, so unlikely to be feasible for Aveley town centre.	✗
Bus Quality Partnerships	Bus emissions only account for 2% of NO_2 emissions in this AQMA.	✗
Light Rail or Tram	Delivery of such a scheme would be incredibly expensive, particularly for such as small area, and therefore unlikely due to cost and feasibility.	✗
Rapid Transit	Thurrock, in consortium with Southend and Essex County Council, previously bid for a South Essex Rapid Transit scheme to the DfT as a major scheme, which was unsuccessful. It is therefore not considered feasible for delivery to improve air quality.	✗
Contracted Public Transport	Where the local transport authority subsidised private public transport operators to continue to run bus routes, typically for accessibility reasons, that are not financial viable.	✓
Fiscal Measures		
Congestion Charging/ Tolls	Generally only undertaken in densely populated urban areas, such as London. Not likely to be suitable for Thurrock and such schemes can be very politically challenging, as they tend to be publicly unpopular. It is therefore not considered feasible for delivery to improve air quality in Thurrock.	✗
Workplace Parking Levy	Not likely to be suitable for Aveley as there is no specific concentration of employers as there would be in a city centre.	✗
Parking Charges	Only likely to be effective in areas with a single large attraction.	✗
Smarter Choices		
Personalised Journey Planning	Journey planning undertaken by experts or volunteers on a personal level to find sustainable alternative modes to regular and frequent journeys.	✓
Car-sharing	Unlikely to be any more effective than the Borough wide scheme across such a large area.	✗
School Travel Plans	A School Travel Plan (STP) is a working document developed by the school in partnership with local highway authority which aims, amongst other things, to reduce congestion at the school gates, encourage more sustainable forms of transport on the school journey and promote a healthier lifestyle.	✓
Travel Plans	Not likely to be suitable for Aveley as there is no specific concentration of large employers within the AQMA, which is predominantly retail.	✗

Measures	Description	Feasible?
Traffic Management		
Urban Traffic Management and Control	Not likely to be a large enough concentration of signals within the AQMA, as tailbacks are unlikely with the road having a relatively smooth flow.	✗
Specified Traffic Management Scheme	Traffic management scheme specific to area and/or vehicles types.	✓
Dedicated Lanes/ High Occupancy Vehicle Lanes	AQMA 25 does not contain any roads with multiple lanes, so measure is considered unsuitable.	✗
Infrastructure Improvement		
Pedestrianisation	Not likely to be affordable or feasible in AQAP timescales.	✗
Improved walking and cycling provision	The delivery of additional walking and cycling infrastructure to encourage a modal shift.	✓
Traffic Calming	The delivery of measures in a specified area to deliberately slow of traffic, typically in residential areas, by building road humps or other obstructions. However, this can lead to traffic travelling at speeds which increase air pollution emission, so not considered suitable for meeting local air quality objectives in Thurrock.	✗
Road System Re-design	Not likely to be affordable or feasible in AQAP timescales.	✗
Bypasses and Road Building	Not likely to be affordable or feasible in AQAP timescales.	✗
Planning		
Land Use Planning	Consideration of air quality issues during the determination of planning applications for new development, particularly within or near to AQMAs.	✓
Car-free Residential Development	Best focused in areas with large scale growth allocations and only acceptable in areas where excellent services and facilities are accessible by sustainable transport.	✗
Low Emission Transport		
Retrofit Pollution Reduction Equipment	Most effective on disproportionately polluting vehicles, such as HGVs and buses, of which few numbers travel through this AQMA, so unlikely to be effective.	✗

Measures	Description	Feasible?
Alternative fuel use	Most effective on disproportionately polluting vehicles, such as HGVs and buses, of which few numbers travel through this AQMA, so unlikely to be effective.	✘
Eco Driving	Unlikely to be effective in area with low traffic volumes.	✘
Other		
Pollution Barriers	Unlikely to be appropriate due to impact on town centre and public realm.	✘
Landscaping	Unlikely to be appropriate due to lack of sufficient verge space and impact on town centre and public realm.	✘
Pollution Absorbent Materials	Area too large to be cost-effective for a relatively untested technology.	✘

7 Actions

Figure 6 overleaf shows the AQMA 25 AQAP measures. It contains:

- a list of the actions that form part of the plan
- the responsible individual and departments/organisations who will deliver this action
- estimated cost of implementing each action (overall cost and cost to the local authority)
- expected benefit in terms of pollutant emission and/or concentration reduction;
- the timescale for implementation
- how progress will be monitored

NB. Please see future ASRs for regular annual updates on implementation of these measures.

7.1 Detailed Description of AQAP Measures

7.1.1 HGV Traffic Management Scheme

There is currently an issue with heavy goods vehicles travelling through Aveley Town Centre in order to access a large industrial facility on the other side of the M25. The Council is currently investigating a scheme to restrict HGV access to Aveley town centre with introduction of a bus gate. They are also working on a restrictive routing agreement with the business in question. The removal of through HGV movements from the town centre should enable the limit value to be reached upon implementation.

7.1.2 Engine Switch Off Zones

This measure has already been implemented at the taxi rank outside Grays Rail Station in AQMA 1. It also has potential for areas outside of Aveley Primary School within AQMA 25. Although unlikely to result in revocation of AQMAs on its own, it should be considered a critical health intervention to reduce childhood exposure to pollutants.

7.1.3 School Travel Plans

School Travel Plans are already being delivered throughout Thurrock, but could benefit from focused efforts on Aveley Primary School within AQMA 25. Although unlikely to result in revocation of AQMAs on its own, it should be considered a critical health intervention to reduce childhood exposure to pollutants.

7.1.4 Land Use Planning

Planning policies have been developed through the Thurrock Air Quality and Health Strategy for incorporation into the new Local Plan which focus on avoiding exacerbating existing AQMAs, avoiding the creation of new AQMAs, ensuring planning permissions include measures that deliver the Air Quality Strategy, car-free developments as part of masterplanning, and include air quality measures in the Community Infrastructure Levy.

Figure 6: AQAP for AQMA 25

Measure No.	Measure	EU Category	EU Classification	Lead Authority/ Department	Planning Phase	Implementation Phase	Indicator	Target Pollution Reduction	Estimated Completion Date	£	Comments
1	HGV Traffic Management Scheme	Freight and Delivery Management/ Traffic Management	Route Management	Transport	Jan – Mar 2016	Apr 2016 – Apr 2017	Number of HGVs movements along Aveley High Street & Ship Lane	8.0 $\mu g/m^3$	April 2017	£TBD	Exact scheme and costs to be determined during planning phase.
2	Engine Switch Off Zone	Traffic Management	Anti-Idling Enforcement	Transport	Apr – Aug 2016	Sep 2016	NO_2 concentrations at School Facade	3.0+ $\mu g/m^3$*	Sep 2016	£5k	*At school facade in comparison to Broadway Intersection.
3	School Travel Plans	Promoting Travel Alternatives	School Travel Plans	Transport	Apr – Aug 2016	Sep 2016	Number of children walking or cycling to school	3.0 $\mu g/m^3$ overall	Sep 2016	£7.5k	Review existing STP and deliver required measures.
4	Land Use Planning	Policy Guidance & Development Control	Air Quality Planning & Policy Guidance	Planning	Jan – Mar 2016	April 2016 onwards	No further AQMAs created in this area as a result of new development	N/A	Ongoing	N/A	See Policy AQS8 in Thurrock Air Quality and Health Strategy.

8 Consultation and Stakeholder Engagement

In developing this AQAP, the Council has worked with other agencies, businesses and the local community to improve local air quality.

Schedule 11 of the Environment Act 1995 requires local authorities to consult the bodies listed in **Figure 7**. In addition, we have undertaken the following stakeholder engagement:

- Website
- Articles in local newspaper
- Questionnaires distributed directly to households within AQMA

Figure 7: Consultation Undertaken

Consultee	Summary of Response
Secretary of State	
Environment Agency	
Highways Agency	
Neighbouring Local Authorities:	
Basildon	
Bexley	
Castle Point	
Havering	
Medway	
Local Residents	
Local Businesses	