



Suffolk Coastal District Council  
**Air Quality Action Plan – Stratford St.  
Andrew**

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

February (2017)

**Suffolk Coastal District Council**

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## Executive Summary

This Air Quality Action Plan (AQAP) has been produced as part of our statutory duties required by the Local Air Quality Management framework. It outlines the action we will take to improve air quality within the Stratford St. Andrew Air Quality Management Area (AQMA) in Suffolk Coastal District Council between 2016 and 2021.

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.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion<sup>1</sup>. Suffolk Coastal District Council and Suffolk County Council are committed to reducing the exposure of people in Stratford St. Andrew to poor air quality in order to improve health.

Working together, we have developed actions that can be considered under the topic of Traffic Management as our priority is to tackle emissions from vehicles driving along the A12 in Stratford St. Andrew by reducing speeds and smoothing traffic flow.

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 standards 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 Suffolk Coastal District Council's direct influence.

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<sup>1</sup> Defra. Abatement cost guidance for valuing changes in air quality, May 2013

## Responsibilities and Commitment

This AQAP was prepared by the Environmental Protection Department of Suffolk Coastal District Council in consultation with and support of Suffolk County Council.

This AQAP has been approved by:

Mr Stephen Baker - Chief Executive, Suffolk Coastal District Council



Mr Phil Gore - Head of Environmental Services & Port Health, Suffolk Coastal & Waveney District Councils



Mr Philip Ridley - Head of Planning and Coastal Management, Suffolk Coastal & Waveney District Councils



Ms Sue Roper - Assistant Director, Strategic Development, Suffolk County Council

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This AQAP will be subject to an annual review, appraisal of progress and reporting to the relevant Cabinet Portfolio Holder and County representative. Progress each year will be reported in the Annual Status Reports (ASRs) produced by Suffolk Coastal District Council, as part of our statutory Local Air Quality Management duties.

If you have any comments on this AQAP please send them to Denise Lavender at:

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# 1 Introduction

This report outlines the actions that Suffolk Coastal District Council and Suffolk County Council will deliver between 2016 and 2021 in order to reduce concentrations of air pollutants and exposure to air pollution; thereby positively impacting on the health and quality of life of residents and visitors within the Stratford St. Andrew Air Quality Management Area (AQMA).

It has been developed in recognition of the legal requirement on the local authority to work towards Air Quality Strategy (AQS) objectives under Part IV of the Environment Act 1995 and relevant regulations made under that part and to meet the requirements of the Local Air Quality Management (LAQM) statutory process.

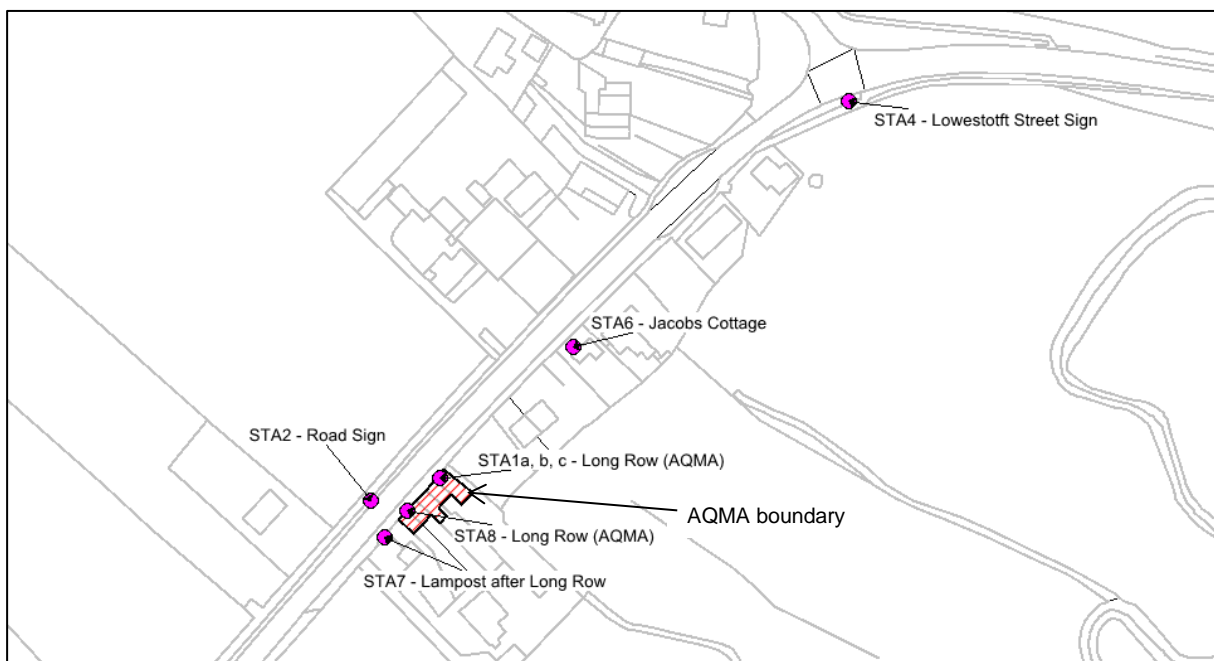
This Plan will be reviewed every five years and progress on measures set out within this Plan will be reported annually within Suffolk Coastal District Council's air quality ASR.

## 2 Summary of Current Air Quality in Stratford St. Andrew

Please refer to the latest air quality information from Suffolk Coastal District Council for more detailed information on current air quality in the district<sup>2</sup>.

With specific regard to the Stratford St Andrew AQMA, diffusion tube monitoring for nitrogen dioxide (NO<sub>2</sub>) has been undertaken along the A12 in the village since 2011. Concentrations above the annual mean objective have been recorded at a relevant receptor on Long Row cottages and following detailed assessment, an Air Quality Management Area (AQMA) was declared for 4 houses from 1-5 Long Row on 18<sup>th</sup> June 2014 (see Figure 2-1).

**Figure 2-1: Map of AQMA boundary (striped area) in Stratford St. Andrew (from AQMA order) and location of diffusion tubes<sup>3</sup>**

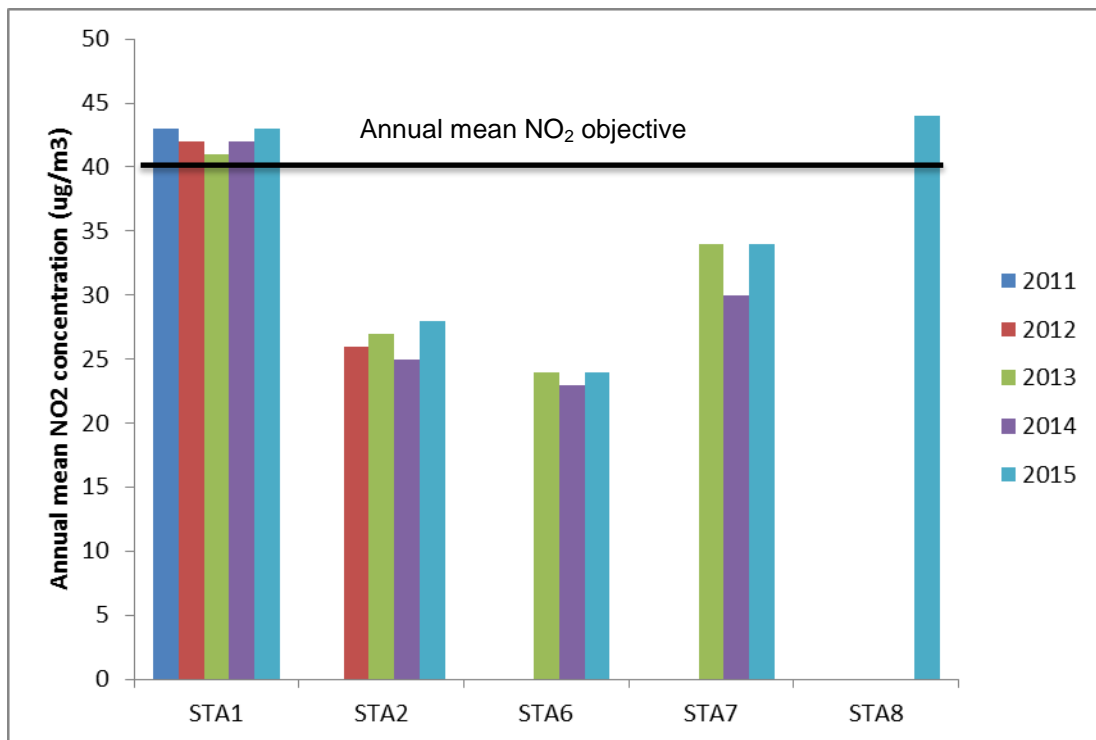


The most recent annual mean concentrations measured in 2015 within the AQMA remain above the annual mean objective of 40 µg/m<sup>3</sup>, with 43 µg/m<sup>3</sup> measured at site STA1 and 44 µg/m<sup>3</sup> at a new site STA8. Although concentrations vary slightly from year to year, the 2015 annual mean concentration at STA1 remains the same as the level measured in 2011 as shown in Figure 2-2.

<sup>2</sup> <http://www.eastsuffolk.gov.uk/environment/environmental-protection/air-quality/air-quality-reports/>

<sup>3</sup> <http://www.suffolkcoastal.gov.uk/assets/Documents/District/Air-quality/StratfordStAndrewAQMAJune2014.pdf>

Figure 2-2: Trends in annual mean NO<sub>2</sub> concentrations in Stratford St. Andrew





## 3 Suffolk Coastal's Air Quality Priorities

### 3.1 Public Health Context

Local air quality has a clear public health issue and following a reform of public health services, local authorities now have a new duty to carry out a public health function. Local authorities therefore need to promote links with departments including public health, environmental protection, transport, planning and sustainability to raise awareness of the effect of air pollution on public health and to encourage local action to be taken. Within Suffolk, the wider Air Quality Group is working with the Public Health division within the County Council on ways to better integrate and promote LAQM work across these disciplines.

The Department for Health's Public Health Outcomes Framework includes an indicator related to air pollution on the "fraction of all-cause adult mortality associated with man-made particulate pollution (PM<sub>2.5</sub>)", broken down by local authority. In Suffolk Coastal District Council this fraction is reported as 5.4% which is slightly higher than the English average of 5.3%.<sup>4</sup> Actions that are considered to reduce road traffic related emissions of NO<sub>x</sub> and PM<sub>10</sub> may also address emissions of PM<sub>2.5</sub> thus contributing to an improvement in this indicator.

### 3.2 Planning and Policy Context

Suffolk Coastal District Council adopted their Local Plan in the form of a Core Strategy and Development Management Policies (DMP) in 2013. With specific reference to the A12 and the air quality issue at Stratford St. Andrew, this road is a key route that runs north to south through the district connecting some of the more rural coastal areas to the primary road network (e.g. the A14). The District and County Councils have aspirations for a four village by-pass for the villages of Farnham, Little Glemham, Marlesford and Stratford St. Andrew. If this was to happen, this could potentially deal with some of the issues along the road such as slow speeds and poor air quality at houses located very close to the road.

The designation of an AQMA at Stratford St. Andrew and the publication of his action plan will form a material planning consideration in the determination of planning applications that may affect air quality in the area. A notable development that could

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<sup>4</sup> <http://www.phoutcomes.info/public-health-outcomes-framework#page/0/gid/1000043/pat/6/par/E12000004/ati/101/are/E10000007>

have an impact on this area is Sizewell C nuclear power station as this road is part of the planned route for construction traffic. This development is still within the pre-application planning stage but potential impacts have been considered as part of this action plan.

### 3.3 Source Apportionment

The measures presented in this report are intended to be targeted towards the predominant sources of emissions within the Stratford St. Andrew AQMA.

A source apportionment exercise was carried out by Suffolk Coastal District Council as part of their Further Assessment modelling report in 2015. This report identified that within the AQMA, the percentage source contributions were primarily from road traffic emissions along the A12 compared to background and rural sources (Table 3-1). On the A12, the key contributors to NO<sub>x</sub> emissions are cars and HGVs. However, it is important to note that although HGVs and buses only make up 6% of the traffic flow on the A12, their combined contribution to road NO<sub>x</sub> concentrations is disproportionate at 53.5%.

**Table 3-1: Percentage contribution of sources to NO<sub>x</sub> concentrations within the AQMA**

Site	A12	Minor Roads	Other sources	Rural
STA 1	82.8%	0.4%	0.5%	16.3%

**Table 3-2: Percentage contribution of road traffic sources to road NO<sub>x</sub> concentrations within the AQMA**

Site	Motorbike	Car	LGV	Rigid HGV	Articulated HGV	Bus and Coach
STA 1	0.3%	39.4%	6.8%	27.6%	20.8%	5.1%

### 3.4 Required Reduction in Emissions

Based on the most recent 2015 concentrations, a reduction in NO<sub>2</sub> concentration of 3 µg/m<sup>3</sup> (STA1) and 4 µg/m<sup>3</sup> (STA8) would be required to attain the annual mean objective of 40 µg/m<sup>3</sup> within the AQMA.

However, when considering emissions from road traffic, reductions should be expressed in terms of NO<sub>x</sub> rather than NO<sub>2</sub> as there is a non-linear relationship between NO<sub>x</sub> and NO<sub>2</sub>. Therefore, following the methodology in the Guidance and using the NO<sub>x</sub>-NO<sub>2</sub> calculator tool, the reduction in road-NO<sub>x</sub> has been calculated for both diffusion tube sites. These results show that in 2015, a 7.9 µg/m<sup>3</sup> reduction (11%) and 13.4 µg/m<sup>3</sup> reduction (17%) in road NO<sub>x</sub> would be required at STA1 and STA8 respectively to meet the NO<sub>2</sub> objective.

### **3.5 Key Priorities**

The further assessment concluded that the main source of NO<sub>x</sub> emissions within the Stratford St Andrew AQMA is from vehicles driving along the A12 (which contributed 82%), with nearly half of this contribution from heavy goods vehicles (HGVs) despite these making up only 6% of the total traffic flow and 39% of emissions from cars.

Within the village of Stratford St. Andrew, the A12 is a single carriageway with a current speed limit of 30 mph. There is a 50 mph speed limit sign leaving the village towards the south just outside the AQMA. The further assessment modelling work showed that vehicles increased their speed as they started to leave the village with the highest emissions found on the southbound carriageway closest to the AQMA.

The A12 is on the local highway network and managed by Suffolk County Council (SCC). There are limited options available to reduce traffic flow and specifically the number of HGVs along this route. To assist in the development of alternative measures as part of the action plan, a drive cycle study was conducted around the AQMA as part of the further assessment. This involved driving an instrumented vehicle at different speeds and styles (e.g. acceleration) and considering the impact these styles had on emissions and modelled NO<sub>2</sub> concentrations. The study found that if vehicles were able to be driven in a smoother manner (i.e. more passively) than in the existing situation, it may be possible to reduce NO<sub>x</sub> emissions sufficiently to meet the annual mean NO<sub>2</sub> objective.

Based on these findings, measures that have been considered by the District and County Council for action for the Stratford St. Andrew AQMA are to:

- Move the location of the 30 mph speed limit sign at least 200 metres out of the village.

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- Introduce vehicle activated speed signs, ideally one at the start of the AQMA (southbound) and one at the position of the existing 30 mph sign on the northbound side.
- Introduce southbound speed cameras prior to cottages
- Introduce average speed cameras on both sides of the road within the 30 mph speed limit
- Physically move the A12 carriageway away from the houses in the AQMA
- In the long term to put in place a village by-pass
- To discuss mitigation measures to reduce emissions from HGVs associated with construction traffic from the proposed Sizewell C power station

These measures have been considered by the District and County Council and by the steering group (see section 4.2).

## 4 Development and Implementation of the Stratford St. Andrew AQAP

### 4.1 Consultation and Stakeholder Engagement

In developing this AQAP, we have consulted and/or worked with other local authorities, 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 Table 4.1. In addition, we have undertaken wider consultation and stakeholder engagement initially in July 2014 following AQMA declaration and in March 2016 as part of the Further Assessment results and development of the action plan:

- Consultations published on the Council website
- Articles in local newspaper and Coastline magazine (delivered to every household in the district)
- Consultation letters requesting ideas/comments distributed directly to households within in the AQMA and along the A12 in Stratford St. Andrew and Farnham

The response to our consultation stakeholder engagement is given in Appendix A.

**Table 4-1 – Consultation Undertaken**

Yes/No	Consultee
Yes	the Secretary of State
Yes	the Environment Agency
Yes	the highways authority
Yes	all neighbouring local authorities including Parish Councils, District Councils and County
Yes	other public authorities as appropriate, such as Public Health officials and Councillors
Yes	bodies representing local business interests and other organisations as appropriate

## 4.2 Steering Group

The A12 is on the local highway network and managed by Suffolk County Council (SCC). This includes responsibility for road works, condition of roads and pavements, street lighting and traffic management and road safety including speed limit and signage. Although it is the District Council that is responsible for LAQM and working towards the annual mean objective for NO<sub>2</sub>, the County Council is fully involved and engaged to put in place appropriate measures to improve vehicle emissions and air quality in the AQMA.

Following declaration of the Stratford St. Andrew AQMA in June 2014, we have set up a steering group with representatives from the District, County and Parish Councils to consider measures that could be adopted within the action plan. To date there have been four meetings held in September 2014 and 2015, November 2014 and February 2015. A further meeting to discuss measures and progress with the County was held in June 2016. The draft action plan was presented to the steering group before publication.

The steering group members have discussed the key priorities and various options for Stratford St. Andrew, focusing on physical measures or infrastructure that could reduce and smooth vehicle speeds (see Section 3.5). Various matters related to these measures have been considered at the meeting, including costs for signage, installation and running of cameras, responsibility for these (i.e. County or District), planning consent issues and agreements required by organisations such as Suffolk Roadsafe Board and the police.

## 5 AQAP Measures

A number of measures have been considered by the Steering Group during the development of the plan. As outlined in Appendix B, two that will not be pursued as part of this action plan included physically moving the A12 away from the houses in the AQMA, and painting buildings and/or roads and pavements with Titanium Dioxide paint to reduce NO<sub>x</sub>. Those that are being actively pursued aim to result in a change in vehicle driving style and smoothing of speed close to the AQMA. The air quality further assessment showed that this could potentially reduce NO<sub>x</sub> emissions from vehicles and therefore contribute to meeting the annual mean NO<sub>2</sub> objective (Savage and Turpin, 2015).

The lead authority for funding and implementing the measures to be taken forward is SCC through their Local Transport Plan (LTP) strategic improvement work. The LTP identifies a bypass on the A12 of the villages of Marlesford, Little Glemham, Stratford St. Andrew and Farnham as a strategic transport infrastructure improvement to be delivered in the next 5-7 years. The Government has provided funding of £1 million to develop the full business case for this bypass, and this is anticipated to be prepared by Summer 2017. The measures considered in this action plan are in addition to this LTP scheme.

The measures considered in the action plan are listed in Table 5.1. This includes information on:

- the responsible individual and departments/organisations who will deliver each action
- the estimated cost of implementing each action (overall cost and cost to the local authorities)
- the expected benefit in terms of pollutant emission and/or concentration reduction
- the timescale for implementation
- how progress will be monitored

A summary of a few of the priority measures is given below. The first option considered would be to physically move the existing 30 mph sign further south away

from the AQMA in order to deter drivers from accelerating past the AQMA as they leave the village. This measure would require a new permanent Traffic Regulation Order (TRO) to alter the signage and put in place the required traffic management at a cost of approximately £20,000. This capital funding has been agreed. The County and District have agreed a suitable location for this and the County Council has organised for the local and statutory consultation process to be undertaken to implement this TRO. This consultation finishes at the end of February. Following this process, the new speed limit extension needs to be drafted and advertised for 21 days to give time for any potential objections, which if received need consideration by the Rights of Way Committee. To allow time for this process, and for the design and construction phase, it is anticipated that the works will be completed by Autumn 2017 at the latest.

More aspirational measures that may be considered in the future would be for the County and District to investigate installing a vehicle activated sign (s) northbound and/or southbound to re-inforce the change to the 30 mph speed limit at the AQMA. The results from the further assessment suggested that installing a camera on both carriageways would be the most effective way to smooth the two-way traffic flow. The cost for each sign would be approximately £8,000 to install and would take 8 months following the agreement of a suitable location with sufficient space and sightline. There would also be ongoing revenue costs including electricity supply and maintenance to consider. The capital and revenue funding for these signs has not yet been agreed.

The District Council will continue to monitor NO<sub>2</sub> along the A12 in Stratford St. Andrew and through the planning process they will determine the likely impacts of any new developments that may affect traffic flow and emissions along this route, in particular the proposed Sizewell C power station. An indication of the likely future impacts of this development is provided in Appendix C.



Table 5-1 – Air Quality Action Plan Measures

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
<b>SHORT-TERM AND PRIORITY ACTIONS</b>											
1	Move the location of the southern 30mph speed limit sign southwards	Traffic Management	Reduction of speed limits	SCC	2016	2017	Reduction in NO <sub>2</sub> concentrations in AQMA	Reduction in concentration by up to 2 µg/m <sup>3</sup>	Speed limit panel agreed experimental TRO to move sign for up to 18 months. Police has approved the application.	By Autumn 2017 following statutory consultant and design procedures.	Capital funding has been agreed to amend the TRO at approx. £20,000 (£6,000 for design and £14,000 for construction)
2	Assessment of planning applications for impact on air quality	Policy Guidance and Development Control	Air Quality Planning	SCDC	Ongoing	Ongoing	No new housing introduced into area of exceedence (AQMA) unless mitigation measures are in place to offset impacts	No significant increases in concentrations due to new developments	Officers in Environmental Protection work with Planning to ensure that each application is appropriately assessed for air quality.	2021	The assessment process takes account of national guidance (including EPUK) and local procedures
<b>LONG-TERM AND ASPIRATIONAL MEASURES</b>											
3	Measure 1 together with a southbound permanent vehicle activated sign	Traffic Management	Reduction of speed limits	SCC	2017	2018	Reduction in NO <sub>2</sub> concentrations in AQMA	Reduction in concentration to below the objective	Discussions between SCDC and SCC	2018	Follow on from measure 1. Would need a site assessment.  Would require capital funding (min £8,000) and revenue funding. <b>Not yet approved.</b>

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Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
4	Measure 1 together with a northbound permanent vehicle activated sign	Traffic Management	Reduction of speed limits	SCC	2017	2018	Reduction in NO <sub>2</sub> concentrations in AQMA	Reduction in concentration to below the objective	Discussions between SCDC and SCC	2018	<p>Ideally this camera would be installed alongside measure 3 to smooth all traffic flow close to the AQMA.</p> <p>Would need a site assessment and would require capital funding (min £8,000) and revenue funding. <b>Not yet approved.</b></p>
5	Southbound speed camera just prior to cottages	Traffic Management	Reduction of speed limits	SCC	Dependent on measure 1-3	12 months from agreeing location	Reduction in NO <sub>2</sub> concentrations in AQMA	Reduction in concentration to below the objective	Some discussions between SCDC and SCC	2019-2020?	<p>Would need a site assessment to confirm adequate location and radar sightline. Need support from Suffolk Roadsafe Board and police.</p> <p>Would require capital funding of £40,000 and ongoing revenue funding. SCC advise that source for funding not currently identified. <b>Not yet approved.</b></p>
6	Average speed camera system throughout Stratford St Andrew and Farnham	Traffic Management	Reduction of speed limits	SCC	Dependent on measure 1-3	18 months from agreeing scheme	Reduction in NO <sub>2</sub> concentrations in AQMA	Reduction in concentration to below the objective	Consideration of option only. Aspirational measure due to high costs.	Dependent on measure 1-3	<p>Would need a site assessment to confirm adequate location and radar sightline. Need support from Suffolk Roadsafe Board and police.</p> <p>Would require high capital funding of £250,000 and high revenue funding unlikely to be affordable. <b>Not yet approved.</b></p>

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Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
7	Possible A12 Stratford St Andrew bypass	Traffic Management	Strategic highway improvements	SCC	Not known currently	Not known currently	Reduction in NO <sub>2</sub> concentrations in AQMA	Reduction in concentration to below the objective	The Government has provided funding of £1 million to develop the full business case for a 4 villages bypass, and this is anticipated to be prepared by Summer 2017	Not known currently	. Consideration of part funding by Sizewell C being investigated. The bypass would be completed within the next 5-7 years if it goes ahead. Sizewell C Stage 2 Consultation proposals include the option of a 2 village bypass for Farnham and Stratford St Andrew.
8	Mitigation of emissions from Sizewell construction traffic through planning process	Policy Guidance and Development Control	Low Emissions Strategy/Other Policy	SCDC	2020	Beyond 2020	Number of low emission vehicles in fleet	No significant increase of concentrations	Preliminary discussions on likely impacts with EDF Energy at pre-application stage	Long term (post 2030)	Initial modelling predicts increases in vehicles (particularly HGVs) associated with construction traffic along A12 accessing Sizewell. Peak construction year of 2024 could have increases 375 HGVs and >1000 total vehicle movements per day.  Modelling of the potential impact on AQMA has been conducted (see Appendix C).

In summary, the priority measure in the action plan is for the County Council to move the 30 mph speed sign further south out of the village of Stratford St. Andrew on the A12 by putting in place a permanent TRO. This action has been agreed and if there are no objections, it should be in place by Autumn/2017. The District Council will continue to monitor the impact of this measure on NO<sub>2</sub> concentrations.. If there are no improvements, then the District and County Councils will consider taking forward measures 3 and 4. The local authority will provide regular annual updates on implementation of these actions and changes to measured concentrations as part of their ASR.

## Appendix A: Response to Consultation

Table A.1 – Summary of Responses to Consultation and Stakeholder Engagement on the AQAP

Consultee	Category	Response
District Councillor	Local authority	I think I made my comments at the briefing we had regarding the situation in Stratford St. Andrew - and I suppose my only thought was how it could be improved knowing one of the reasons for the build-up of pollution being the cars entering and exiting the garage and the necessary car engine operations needed to slow down or speed up as the case may be. I think moving the 30 mph signs was one suggestion - but .....As always an excellent piece of work.
Stratford St Andrew Parish Council	Local authority	The 50mph sign going south out of the village is right next to this row of cottages and it is our view that when drivers see this sign they speed up towards it thus increasing emissions. We have written before about this matter, there is no buffer zone between the 30mph limit and 50mph limit thus giving drivers insufficient time to slow down adequately before reaching the village. It also means they speed up before they are out of the village proper. This is the case both southbound and northbound in both Stratford St Andrew and Farnham.
Member of the Public, Long Row, Stratford St Andrew	Member of the Public	As occupiers of the above cottage we are extremely worried about the above. As Mrs Lavender pointed out, and of course we are well aware, the traffic starts speeding up outside our cottages, because of the badly placed 50 mile per hour road sign. In the short time, wouldn't it be prudent to move this sign further down the A12, then hopefully the traffic will not accelerate outside our cottages? ... Obviously, because of the air pollution, no extra traffic should be allowed through this part of the village, and perhaps Sizewell should be made aware of this, on our behalf.

## Appendix B: Reasons for Not Pursuing Action Plan Measures

Table B.1 – Action Plan Measures Not Pursued and the Reasons for that Decision

Action category	Action description	Reason action is not being pursued (including Stakeholder views)
Traffic Management	Move the A12 road westwards by 1 metre.	Modelling shows that this would be unlikely to result in a measurable reduction in NO <sub>2</sub> concentration at the receptor and there would be a high cost associated with this
Other	Painting the buildings or roads/pavements with Titanium dioxide	Results from other studies show that there is inconclusive evidence that this measure would reduce NO <sub>2</sub> concentrations in this type of environment. Concerns also raised by Suffolk County Council regarding durability of the paint and the potential to reduce skid resistance on the road surface.

## Appendix C: Additional modelling to consider Sizewell C

As part of the Council's Air Quality Further Assessment (Savage and Turpin, 2015), the impact of measures to reduce acceleration events leaving the village in the southbound direction were tested based on data from a drive cycle survey. The modelling assessment showed that the annual mean NO<sub>2</sub> objective could potentially be achieved by moving the existing 50 mph sign 200 metres out of the village and installing average speed cameras in both directions.

Traffic along the A12 is predicted to increase in the future and this may be further exacerbated if the current proposals for the Sizewell C nuclear power station go ahead. Therefore to consider the potential impact this could have on annual mean NO<sub>2</sub> concentrations within the AQMA, additional modelling was conducted for the planned peak construction year of 2024. By then, the traffic flow without Sizewell C is predicted to increase to more than 18,000 vehicles per day (from approximately 15,000 in 2014) and the additional traffic associated with Sizewell is given in Table C1. This has been estimated based on information given by WSP as part of initial modelling conducted in 2014. It is noted that there ongoing refinements to these data, so these figures are considered to be indicative only.<sup>5</sup>

**Table C.1. Indicative additional traffic data on the A12 at Stratford St. Andrew due to Sizewell C for peak construction year, 2024**

Vehicle type	Additional daily traffic
HGVs	375
Buses	210
LGVs	300
Cars	330
<b>Total</b>	<b>1215</b>

These data were used to re-compile the fleet weighted emissions to re-model annual mean NO<sub>2</sub> concentrations within the AQMA for the year 2024. Based on the drive

<sup>5</sup> Personal communication, David Deakin, Aecom on behalf of EDF Energy

cycle data from the further assessment, the model was re-run firstly assuming that no new signs or cameras are installed and then assuming that these are in place in this year (i.e. drivers adopt a more passive style with less acceleration events).

Initially, a conservative approach was taken using Defra’s recommended method. The vehicle fleet for 2024 was taken from Defra’s Emission Factor Toolkit (EFT) which assumes that the national vehicle fleet will be much cleaner. For example, all articulated heavy goods vehicles are predicted to be Euro VI emission standard. In addition, the contribution from the background pollution is predicted to decline. The background maps provided by Defra have recently been revised in July 2016 based on 2013 monitoring data<sup>6</sup>, these estimate that the nitrogen oxide (NO<sub>x</sub>) concentration in Stratford St. Andrew will be 7.9 µg/m<sup>3</sup> and the NO<sub>2</sub> concentration would be 6.1 µg/m<sup>3</sup> in 2014. This is a large reduction compared to the 2014 background value of 15.5 µg/m<sup>3</sup> for NO<sub>x</sub> and 10.7µg/m<sup>3</sup> for NO<sub>2</sub> that was used in the original further assessment modelling<sup>7</sup> (undertaken using the previous set of Defra background maps). The results of this conservative modelling based on these assumed improvements to future fleet, changes to traffic flows and reductions in background contribution are shown in Table C.2.

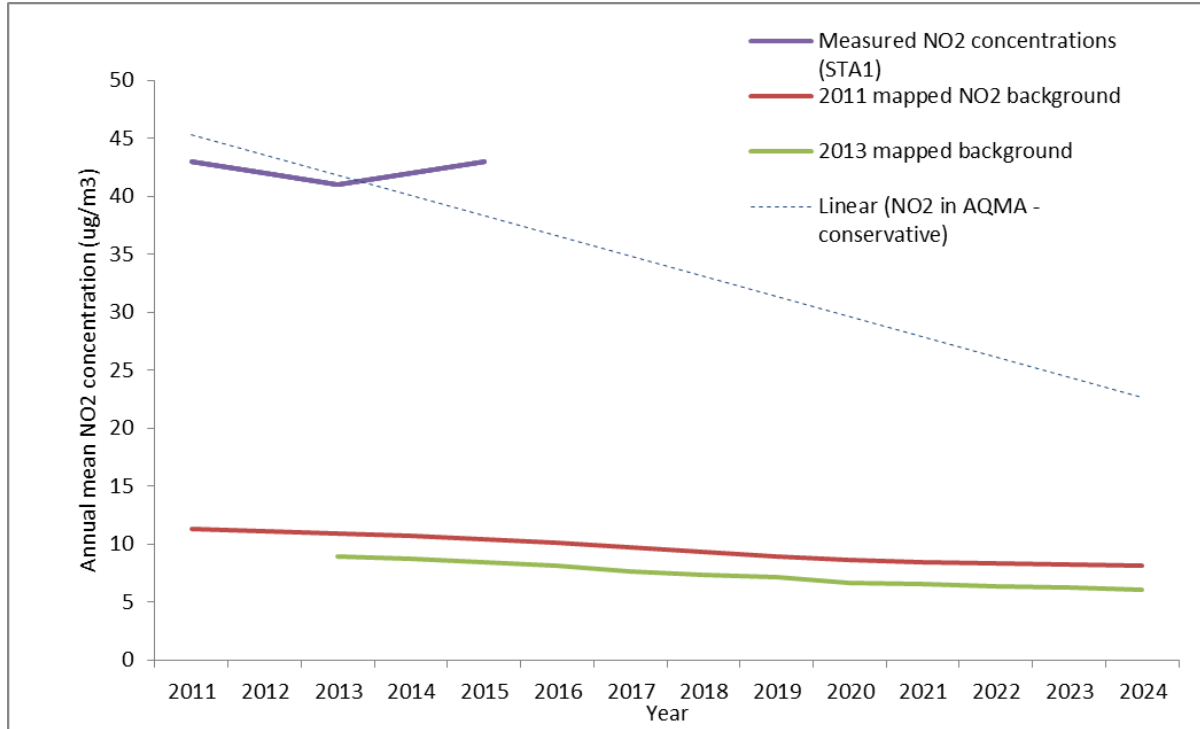
**Table C.2. Predicted modelled annual mean NO<sub>2</sub> concentration in 2024 at site STA1**

Situation	Annual mean NO <sub>2</sub> concentration (µg/m <sup>3</sup> )	
	No signs or cameras (typical driving)	With signs/cameras (passive driving)
With Sizewell	21.1	19.0
No Sizewell	20.9	18.9

These results show that the impact of the increased total traffic associated with Sizewell C would be an increase of NO<sub>2</sub> concentrations of less than 0.5 µg/m<sup>3</sup> within the AQMA (i.e. 1 percent increase). Despite an increase in total daily traffic flow of approximately 5 percent (with an increase in HGV flow of 2 percent), this is a relatively small increase in concentrations. This is to be expected with the overall level of traffic flow on the road and constant background concentration. Table C.2.

<sup>6</sup> <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2013>  
<sup>7</sup> <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2011>

also shows that if the measures proposed in the action plan were in place by 2024, then these could contribute to a reduction of around 2-3  $\mu\text{g}/\text{m}^3$ . However, in all situations, this modelling approach predicts that the annual mean  $\text{NO}_2$  objective would be easily met within the AQMA in 2024 (also see Figure C.1).



**Figure C.1. Conservative modelled reduction in  $\text{NO}_2$  concentration (dotted line) within the AQMA in 2024 compared to predicted background concentrations and existing measured concentrations.**

The results provided above make use of Defra’s currently approved method, i.e. based on their assumed fleet and projected improvements in background concentrations. However, caution should be taken when considering these results. Figure C.1 illustrates that the predicted future modelled  $\text{NO}_2$  concentrations are not in line with the predicted reduction in background concentrations (based on either the 2011 or 2013 monitoring data) or the existing monitoring results within the AQMA which are not declining. Recent evidence has shown that on-road  $\text{NO}_x$  emissions from diesel vehicles do not meet the set Euro 5/V and Euro 6/VI emission standards, particularly for light duty vehicles. To take this into account, the model was re-run to consider a worst-case situation as outlined below:



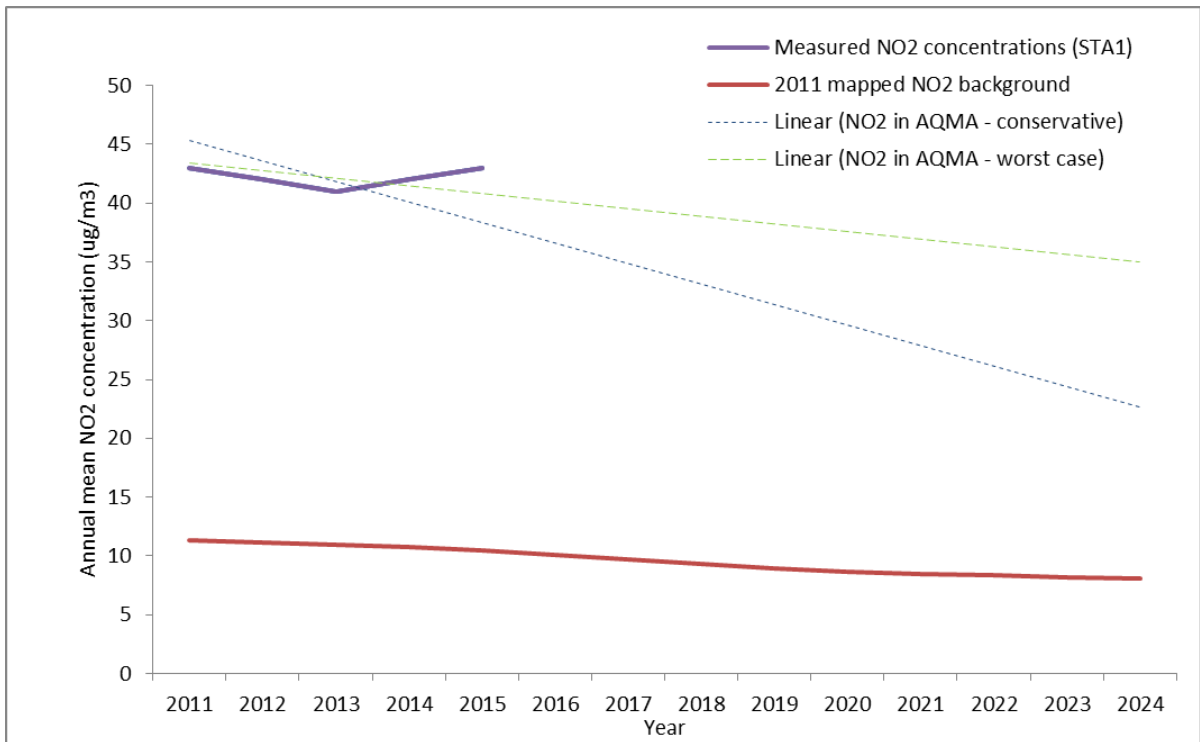
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- Background concentrations were considered to decline more in line with the 2011 background maps which were used in the previous modelling (i.e. NO<sub>2</sub> concentration will be 8.1 µg/m<sup>3</sup> in 2024 as shown in Figure C.1.)
- NO<sub>x</sub> emissions from Euro 5 diesel cars and LGVs were 3 times higher and Euro 6 were 2 times higher than previously assumed.
- HGV NO<sub>x</sub> emissions stayed the same for Euro V and Euro VI vehicles.
- No further changes were made for the future vehicle fleet breakdown as without any data on the local fleet, it is assumed that the fleet will renew in line with national predictions.

The results of the worst case scenario are given in Table C.3. These show that the modelled concentrations in 2024 based on the more worst-case assumptions will be below the objective but noticeably higher than in the more conservative approach. These reductions from the worst case modelling appear to be more in line with the background reductions as shown in Figure C.2 compared to the conservative predictions.

**Table C.3. Worst case modelled annual mean NO<sub>2</sub> concentration in 2024 at site STA1**

Situation	Annual mean NO <sub>2</sub> concentration (µg/m <sup>3</sup> )	
	No signs or cameras (typical driving)	With signs/cameras (passive driving)
With Sizewell	34.4	31.3
No Sizewell	34.2	31.1



**Figure C.2. Worst case modelled reduction in NO<sub>2</sub> concentration (green dotted line) within the AQMA in 2024 compared to the more conservative prediction**

## Appendix D: Steering Group members

The named steering group members who have signed of this action plan are given below.

<b>Name</b>	<b>Job title</b>	<b>Signed</b>
Councillor Carol Poulter	Ward Councillor for Stratford St. Andrew and Cabinet Member for the Green Environment, Suffolk Coastal District Council	
Councillor Andrew Reid	Ward Member for Wilford Division covering Stratford St. Andrew, Suffolk County Council	
Daniel Pont	Farnham with Stratford St Andrew Parish Council	
Deborah Tayler	Clerk to Farnham with Stratford St. Andrew Parish Council	
Andrew Reynolds	Environmental Protection Manager, Environmental Protection, Suffolk Coastal District Council	
Denise Lavender	Environmental Protection Officer, Environmental Protection, Suffolk Coastal District Council	
Louise Burns	Environmental Protection Officer, Environmental Protection, Suffolk Coastal District Council	
David Chenery	Assistant East Area Highways Manager, Resource Management, Suffolk County Council	
Suzanne Buck	Transport Policy & Development Manager, Transport Strategy, Strategic Development, Suffolk County Council	
Lisa Chandler	Sizewell C Planning Project Advisor, Sizewell project Team, Suffolk Coastal District Council	
Phillip Perkin	Principal Planner (Major Projects), Development Management, Suffolk Coastal District Council	

## Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
AQS	Air Quality Strategy
ASR	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
EFT	Emission Factor Toolkit
EU	European Union
LAQM	Local Air Quality Management
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less

## References

Defra (2007). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. Department for Environment, Food and Rural Affairs in partnership with the Scottish Executive, Welsh Assembly Government and Department of the Environment Northern Ireland.

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Suffolk Coastal District Council (2015). 2015 Updating and Screening for Suffolk Coastal District Council. In fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management. July 2015.