Appendix G: Woodbridge Air Quality Management Area (AQMA) Revocation Assessment

This appendix provides an assessment of air quality in the East Suffolk Woodbridge AQMA and presents the evidence to support its revocation.

Consideration will be given to:

- The monitoring data obtained over a number of years within the AQMA;
- The projected roadside nitrogen dioxide (NO_2) concentration;
- Local and national trends in NO_2 emissions; and
- Local and regional factors that may impact on the AQMA.

Review & Assessment

Part IV of the Environment Act 1995 (the Act) introduced the Local Air Quality Management regime that places a legal duty on local authorities to regularly review and assess air quality in their areas against Air Quality Strategy (AQS) objectives. The AQS objectives for England are set out in the Air Quality (England) Regulations 2000 and the Air Quality (England) (Amendment) Regulations 2002 and are shown in **Error! Reference source not found.**.

Local authorities must declare an AQMA where any of the AQS objectives are exceeded and subsequently set out the measures they intend to put in place to secure compliance with the AQS objectives under an Air Quality Action Plan (AQAP).

With effective implementation of the Action Plan and national policies aimed at reducing the emission of pollutants it is expected that the air quality within AQMAs should improve to a point that concentrations will remain below the AQS objectives. A revocation of an AQMA can then be formally declared by Order under section 83 of the Environment Act.

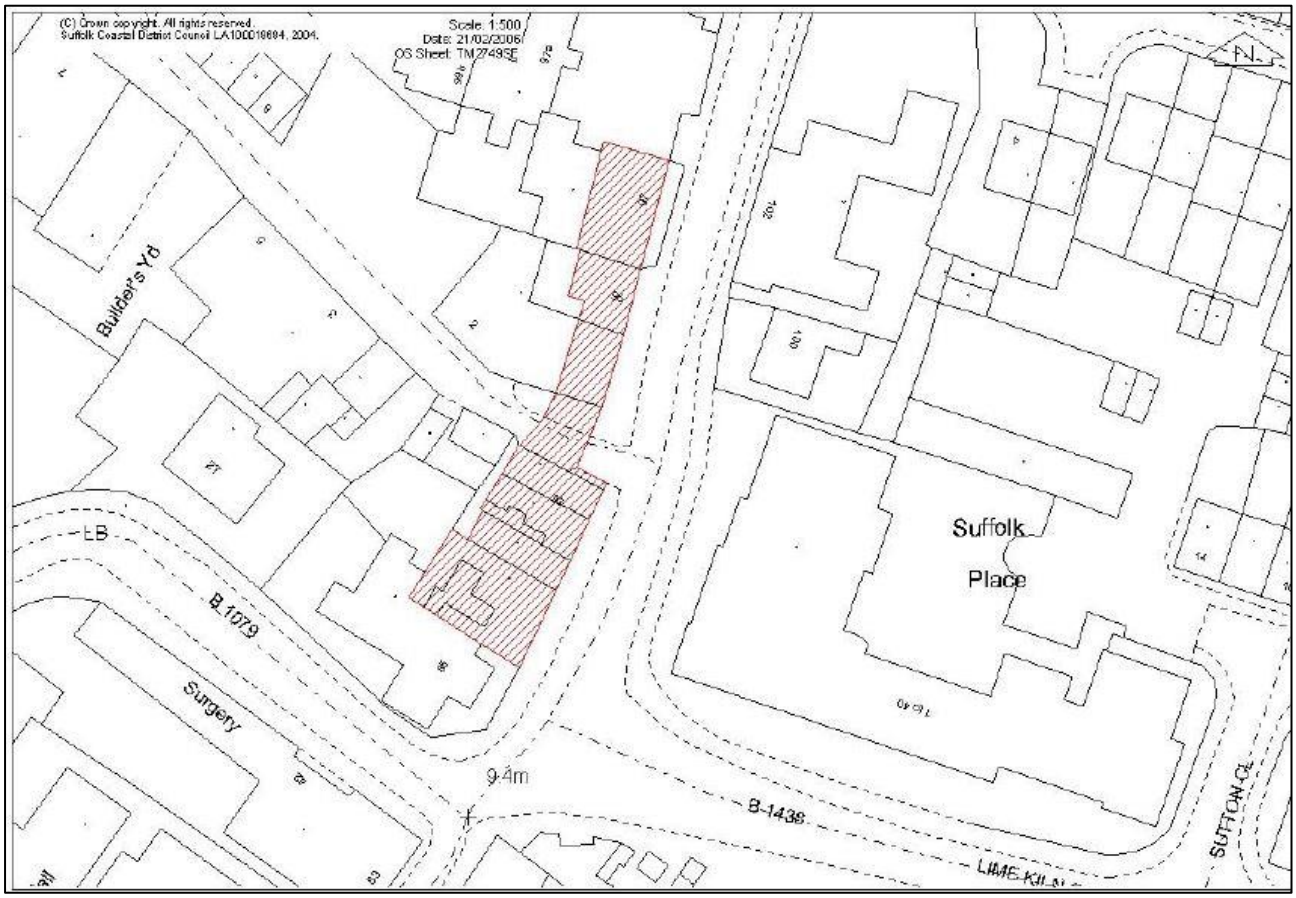
Each year an Annual Status Report (ASR) must be prepared by local authorities detailing the strategies employed to improve air quality and any progress that has been made. Comments made by Defra in relation to the 2020 ASR support the Council's

plans to revoke the Woodbridge AQMA, due to continual compliance with the NO_2 annual mean AQS objective.

Woodbridge AQMA

The Woodbridge AQMA was declared in 2006 to address traffic related NO_2 concentrations in excess of the annual mean AQS objective. The AQMA encompasses six properties on the western side of the Thoroughfare and Melton Hill (B1438), at the junction with Lime Kiln Quay Road (B1438). The extent of the AQMA, as declared under the original order, is demonstrated in Figure G.1.

Figure G.1 - Woodbridge AQMA Extent - Declaration Order No. 1



Revoking an AQMA: The Legal Framework & Guidance

The Environment Act 1995

Section 83 (2b) of the Environment Act (1995) states that an AQMA:

"…..may, as a result of a subsequent air quality review, be revoked by such an order, if it appears on that subsequent air quality review that the air quality standards and objectives are being achieved, and are likely throughout the relevant period to be achieved, within the designated area".

Statutory Guidance

Guidance on the requirements for revoking an AQMA are set out in statutory guidance LAQM.PG16 and LAQM.TG16.

PG16 states that:

- *"An AQMA can be revoked where a review demonstrates that air quality objectives are being met and will continue to do so. The guidance suggests that monitoring results should have been below national objective levels for 3 years or more prior to revocation.*
- *A copy of the revocation should be submitted to Defra and other statutory consultees and made publicly available to ensure the public and local businesses are aware of the situation. It is expected that the local authority will take the relevant action imposed by the Order within four months following receipt of comments from Defra."*

TG16 states that:

- *"In some instances, detailed modelling to revoke an AQMA may not be necessary and an AQMA may be amended or revoked following a screening assessment or on the basis of robust monitoring evidence.*
- *Pollutant concentrations may vary significantly from one year to the next, due to the influence of meteorological conditions, and it is important that authorities avoid cycling between declaring, revoking and declaring again, due simply to these variations."*

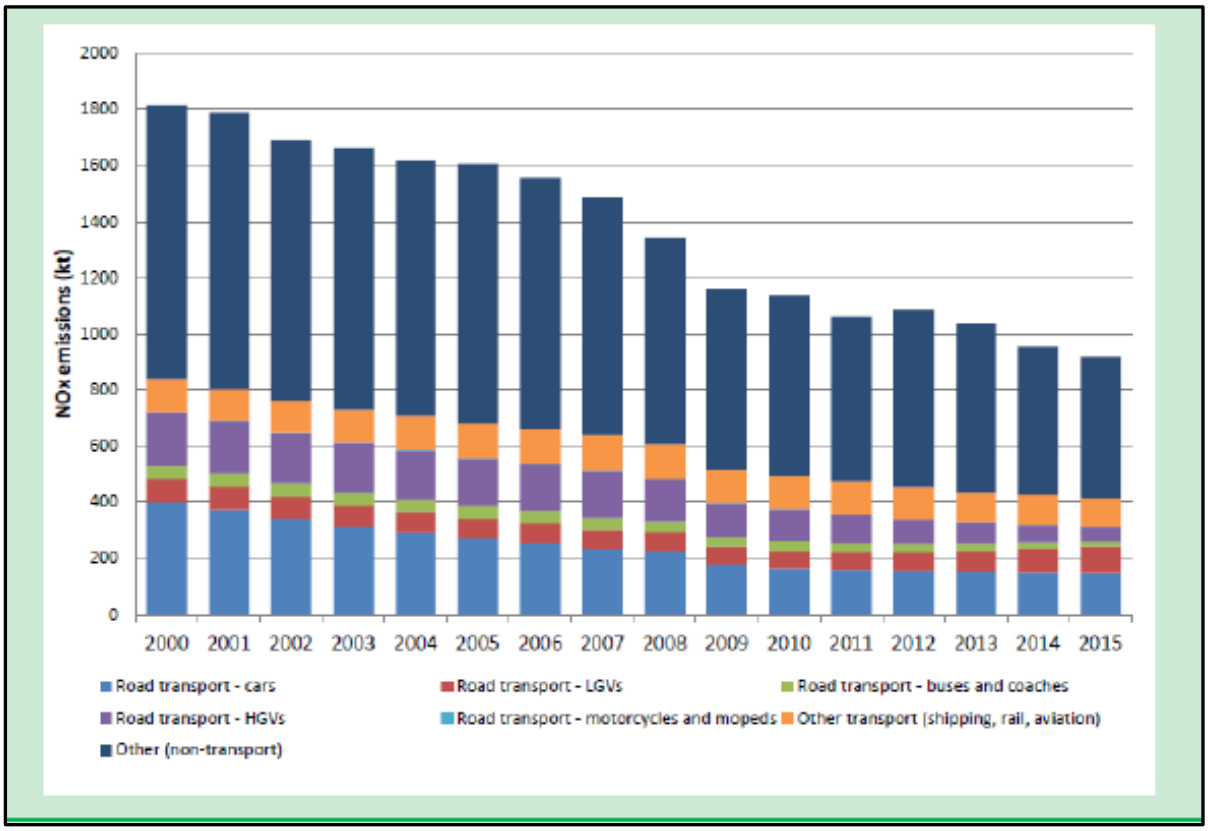
Therefore, before revoking an AQMA on the basis of measured pollutant concentrations, there should be reasonable certainty that any future exceedances

(that might occur in more adverse meteorological conditions) are unlikely. For this reason, it is expected that authorities will need to consider measurements carried out over several years or more, national trends in emissions, as well as local factors that may affect the AQMA, including measures introduced as part of an AQAP, together with information from national monitoring on high and low pollution years.

National Influence

National strategies, policies and plans have and will continue to influence local polluting emissions. Total UK emissions of NOx fell by almost 70% between 1970 and 2015 and by over 19% between 2010 and 2015. Figure G. 2 shows the reduction for each source sector with cars having the largest proportion of transport emissions. It also shows an increasing proportion of Light Goods Vehicle (LGV) emissions from 2010 above that of 2000 which mirrors the increasing proportion of LGVs in the local traffic fleet.

Figure G. 2 - Annual UK Nitrogen Oxides Emissions Since 2000



Future influence on emissions is considered in a revised Clean Air Strategy**Error! Bookmark not defined.** with a major transport emission objective that states:

"*We will end the sale of new conventional petrol and diesel cars and vans by 2040. We will position the UK as the best place in the world to develop, manufacture and use zero exhaust emissions vehicles and, during the transition, we will ensure that the cleanest conventional vehicles are driven on our roads'".*

This transition to ultra-low and zero emission vehicles presents the largest potential for the reduction of future road traffic emissions in this AQMA.

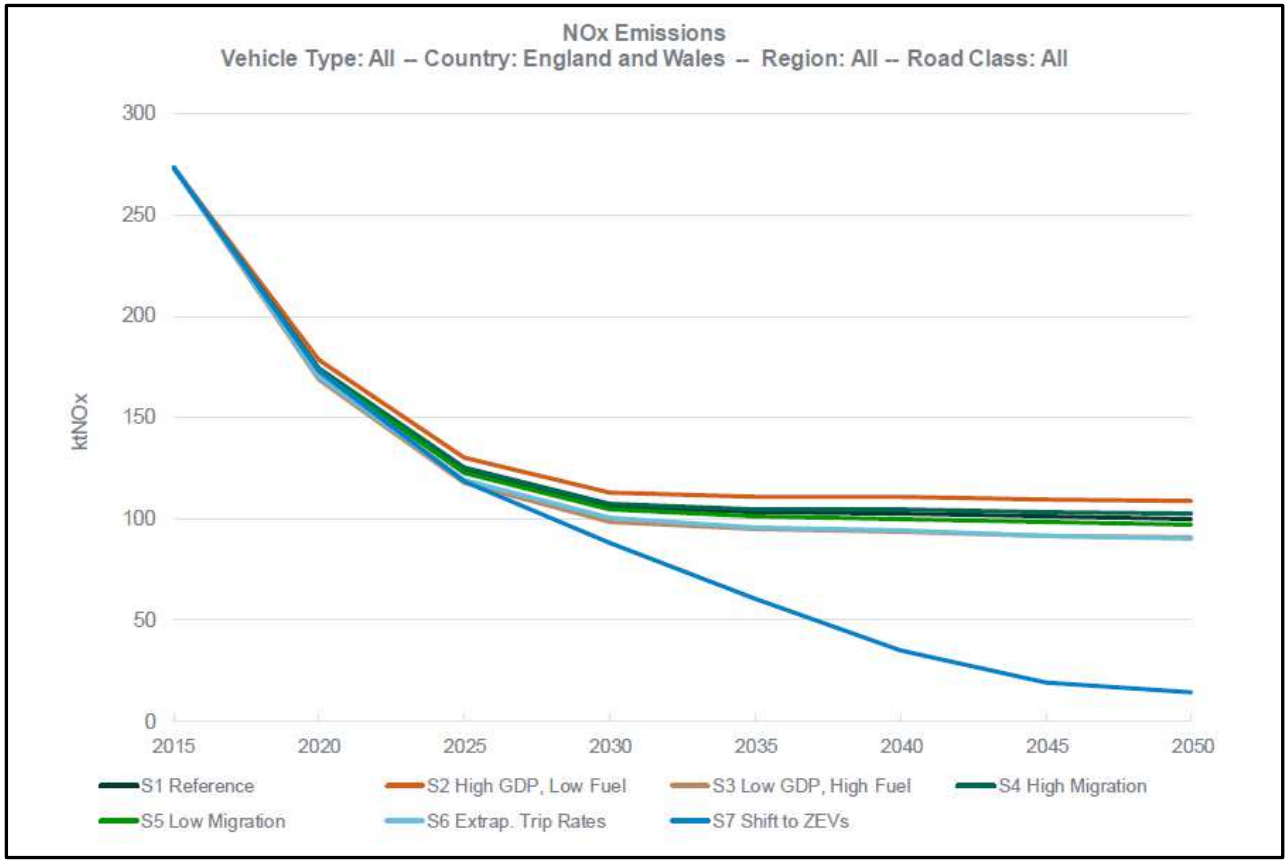
Department for Transport (DfT) road traffic forecasts[1] provide future numbers, compositions and emissions based on seven scenarios linked to changing population, economic and social well-being and technological changes. The findings include:

- From 2015, traffic is forecast to grow by between 17% and 51% by 2050;
- Traffic growth on the Strategic Road Network (SRN) ranges between growth of 32% and 66% by 2050;
- Forecast growth on principal roads and minor roads is between 10%-47% and 11%-50% respectively;
- Car traffic is forecast to grow between 11% and 48% by 2050, whilst LGV traffic is forecast to continue growing significantly in all scenarios (between 23% and 108%);
- HGV traffic growth is forecast to be lower than other vehicle types, with growth ranging from 5% to 12% by 2050;
- Congestion is forecast to grow as a result of increases in traffic. The proportion of traffic in congested conditions in 2050 is forecast to range from 8% to 16% depending on the scenario, compared to 7% in 2015; and
- 'There is great uncertainty around the possible impact of transport technology on road traffic demand and it is unclear how far our existing understanding of the drivers of demand will continue to apply'.

[1] Department for Transport (DfT), July 2018 'Road Traffic Forecast 2018 Moving Britain Forward'

In terms of future transport emissions, the national transport model (NTM) produces forecasts of emissions of Carbon Dioxide (CO_2), Oxides of Nitrogen (NO_x) and Particulate Matter (PM_{10}) measured at the tailpipe (though this does not capture any upstream emissions produced) as shown in **Error! Reference source not found.**. Scenarios 1-6 take account of the impact of committed transport policies to reduce emissions from road travel whilst scenario 7 assumes a higher level of ultra-low emission vehicle (ULEV) uptake, assuming 97% of cars and LGVs are Zero Emission Vehicles (ZEVs) by 2050 and almost all cars and LGVs sold from 2040 have zero emissions at tailpipe. For NO_x emissions the forecast shows a decline of between 60% and 95% by 2050 (Figure G.3). Despite the predicted increase in vehicle numbers the introduction of low emission vehicles is likely to lead to continued reduction in NO_2 levels from transport.

Figure G.3 - Forecast NOx Road Traffic Emissions (kt) for England & Wales



As already highlighted in **Error! Reference source not found.**, COVID-19 also had notable impacts on NO_2 concentrations in 2020. The Air Quality Expert Group (AQEG) has estimated that during the initial lockdown period in 2020, within urbanised areas of the UK reductions in NO_2 annual mean concentrations were between 20 and 30% relative to pre-pandemic levels, which represents an absolute reduction of between 10 to 20µg/m^3 if expressed relative to annual mean averages.

Regional Influence

Local Plan

The Suffolk Coastal Local Plan (SCLP) sets out a vision for the communities of the former Suffolk Coastal area up to 2036. The National Institute for Health and Care Excellence (NICE) encourages Local Authorities to address the issue of air pollution in their Local Plan. The SCLP seeks to improve air quality not only in AQMAs but across the plan area and elsewhere. In particular, development proposals are expected to minimise and mitigate air pollution and to contribute towards the achievement of air quality objectives.

The SCLP area comprises both urban and rural settlements and within certain parts there are limited public transport opportunities, resulting in a heavy reliance on private cars as a form of transport. Due to this, there has been a focus on sustainable transport mechanisms in the SCLP. This complements the Local Transport Plan (LTP), identifying changes that will secure an improved transport network and contributing to the shared priority of improving air quality.

Policy SCLP7.1: Sustainable Transport, impacts on air quality by regulating developments to ensure they encourage and facilitate the use of sustainable transport options where possible and support the efficient use of existing transport networks.

Developments are supported in the SCLP area only when:

- Any significant impacts on the highways network are mitigated;
- It is proportionate in scale to the existing transport network;
- All available opportunities to enable and support travel on foot, by cycle or public transport have been considered and taken;

- It is located close to, and provides safe pedestrian and cycle access to services and facilities;
- It is well integrated into and enhances the existing cycle network including the safe design and layout of new cycle routes and provision of covered, secure cycle parking
- It is well integrated into, protects and enhances the existing pedestrian routes and the public rights of way network;
- It reduces conflict between users of the transport network including pedestrians, cyclists, users of mobility vehicles and drivers and does not reduce road safety; and
- The cumulative impact of new development will not create severe impacts on the existing transport network.

Other specific policies relevant to the improvement of air quality include Policy SCLP 10.3 Environmental Quality, which requires development proposals to protect the environment and minimise all forms of pollution where possible, including air pollution. Policy SCLP 11.2 Residential Amenity requires the Council to include air quality and pollution when considering the impact of a development on residential amenity.

Additionally, Policy SCLP 12.31: Strategy for Woodbridge is an area specific policy which sets out a strategy which acknowledges physical and environmental constraints. Opportunities to enhance the historic environment and the riverside character area of the town will be only supported where they bring economic and social benefits which do not have a significant adverse impact on the environmental designations. Part F of the policy, therefore is to consolidate a town that promotes improvements to air quality.

Local Transport Plan (LTP)

The Suffolk County Council LTP (2011-2031) also provides a strategy for transport management until 2031. The plan prioritises the growth of business, reducing the demand for car travel, making efficient use of transport networks and improving infrastructure, which should all help to ensure continued compliance within the Woodbridge AQMA.

Air Quality Action Plan

An Air Quality Action Plan was prepared for the Woodbridge AQMA, first published in May 2011. The Action Plan consists of 20 measures that could be undertaken at the junction to ease the congestion or reduce the overall traffic flows, in turn reducing NO_2. The measures can be considered within two main categories; ‘on the ground works’ and 'softer measures’.

The ‘on the ground works’ started with the installation of a new computerised Microprocessor Optimised Vehicle Actuation (MOVA) system to the traffic lights whose aim is to reduce congestion and therefore queue lengths. This reduced the extreme queue lengths at each arm of the junction but not the average number of vehicles queuing at the junction.

A feasibility study supported the further measures which involved physical junction alterations, which had two recommendations; to install a weather station for 3 months within the AQMA, and to trial holding back traffic a distance from the lights (therefore away from the AQMA) and pulse it through.

The weather station was installed from July to November 2015 and results showed that the topography of the junction itself is a major factor in the AQMA. The layout of the junction is such that the wind speed is much lower than expected and the wind direction is slightly altered from the norm. The study suggested that vehicle emissions are ‘funnelled’ along Melton Hill away from the junction, and are then dispersed very slowly due to the low wind speeds and canyon like effect of the buildings on both sides. Emissions therefore tend to accumulate rather than disperse resulting in higher than expected NO_2 concentrations at this road junction.

As has been demonstrated, NO_2 concentrations within the AQMA have reduced to below the AQS objective without a discernible change in traffic volume. It is hypothesised that the general fleet emissions reductions, achieved as older vehicles are replaced with newer, cleaner ones, is the primary cause. This, alongside the incremental improvements brought about through the implementation of the AQAP, has led to the potential for revocation of the AQMA.

The AQAP was in the process of being updated, and a draft version has been approved by Defra. Due to the decision to revoke this AQMA, it is the Council’s

intention that the draft updated Action Plan will not be finalised, but will be retained and archived for future use if needed.

Air Quality Strategy

In 2021 East Suffolk Council published its first Air Quality Strategy, which aims to:

- Raise public awareness of the importance of air quality;
- Reduce emissions of $PM_{2.5}$ within the district;
- Encourage and enable active travel to benefit air quality and improve public health;
- Document the efforts made to improve air quality across the different areas of the Council.

By setting a strategic direction on air quality at both district and county levels across the district, it is anticipated that greater improvements can be made, including within the Woodbridge AQMA. The strategy sets out a number of statutory and non-statutory obligations, ranging from sustainable transport to public information, that set the agenda the Council will be working towards in the coming years. As per paragraph 4.11 of LAQM.PG(16), the strategy effectively supersedes local action planning work in the event of revocation, ensuring continued air quality improvements beyond statutory designations.

Local Development

Development Consent Order (DCO) applications have been submitted for Sizewell C (SZC), East Anglia ONE North and East Anglia TWO (EA1N and EA2) Offshore Windfarms, which it is recognised may have an impact on Woodbridge. Further information on these DCO applications can be found at:

- The Sizewell C Project | National Infrastructure Planning;
- East Anglia ONE North Offshore Windfarm; and
- East Anglia TWO Offshore Windfarm.

All three applications have had detailed air quality assessments submitted, which the Council have had independently reviewed. The applications assess the individual DCO impacts and the 'in-combination' impacts of all three DCOs together. None of the

DCOs, either individually or in-combination, are assessed to cause significant impacts within the Woodbridge AQMA.

Air quality monitoring within and around the Woodbridge AQMA will be continued by the Council throughout the construction period of these DCOs. Traffic mitigation for the construction phase of SZC has been included in the DCO through the inclusion of Park and Ride sites for workers, a Freight Management Centre for construction vehicles, and in the form of a Construction Traffic Management Plan and Construction Worker Travel Plan which are under discussion as part of the DCO. These should ensure that local air quality considerations are met, within which Woodbridge will be included.

Discussions are also underway to agree the use of the latest EURO emission classifications for the construction fleet where possible for all DCO applications, to minimise their impacts on emissions.

The District Council office was moved out of Woodbridge in 2016, though the site is yet to be developed. An application (*DC/19/2641/FUL - Former Council Offices, Melton Hill, Woodbridge IP12 1AU - Residential development (100 no units) including 32 no affordable housing units (Class C3) plus a community space (91 sq.m) (Class D1) and a retail unit (157.7sq.m) (A1/A2/A3), car parking, means of access and landscaping, all following demolition of the buildings on site*) was permitted for the site in November 2019. The air quality assessment submitted for the application indicated that fewer journeys would be made through the AQMA under the revised land use. Full details can be found via the Council's Simple Search planning website. The site was remarketed in Summer 2021 and the procurement process is currently being followed to identify the preferred bidder.

The new Council Offices are located at Riduna Park in Melton, approximately 1 mile from the original site and the AQMA. In August 2016 a Travel Plan was published for the Riduna Park site which helps to mitigate the number of journeys made by Council employees, including through the AQMA. During the first Covid-19 pandemic lockdown in 2020 East Suffolk Council staff were given the ability to work from home where appropriate and this has continued to the present day. Emissions associated with ESC travel will have been much reduced during the lockdowns and this reduction is continuing.

Air Quality within the Woodbridge AQMA

A comparison of the annual mean AQS objective for NO_2 against the ratified monitoring results between 2000 and 2020 from diffusion tubes located with the East Suffolk Woodbridge AQMA can be seen in Figure G.4.

Figure G.4 - Woodbridge AQMA NO_2 Diffusion Tube Monitoring Trend.

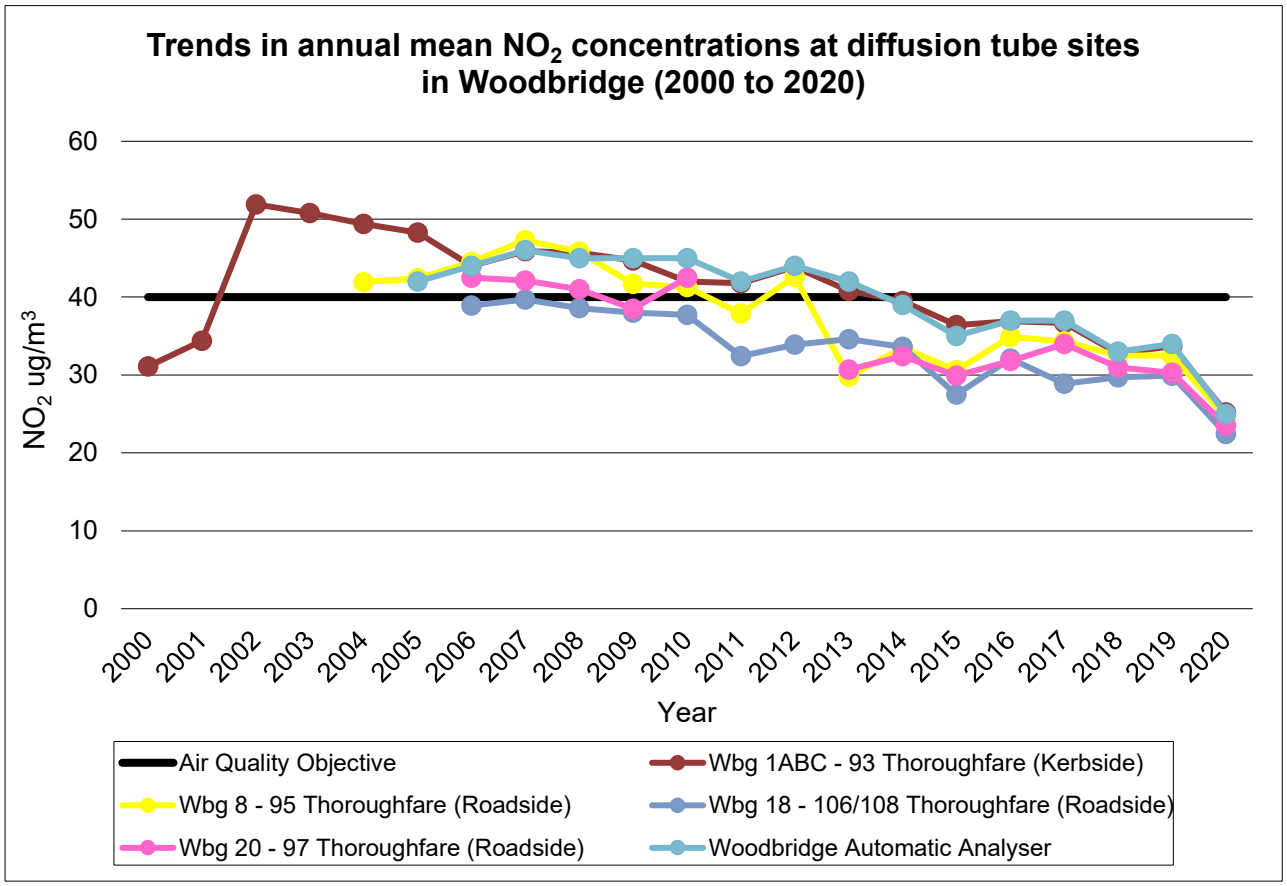


Figure G.4 shows that all five monitoring locations within the AQMA, the monitored NO_2 concentrations have been consistently below the annual mean AQS objective of 40 µg/m³ for seven years (since 2014). Furthermore, given that the concentrations have consistently been below 60 µg/m³ it is unlikely that the hourly mean AQS objective has been exceeded during this period. This is reflected by the automatic monitoring data, which has recorded just one hourly mean concentration in excess of 200 µg/m³ in the last five years, and that in 2017.

Predicted Trends

To provide confidence that compliance with the objective will continue, Defra's Roadside NO_2 Projection factors (Table G.3) have been used. The 2020 monitored concentrations have been projected forward five years (2021-2025) to demonstrate concentrations are expected to remain below the AQS objective. The adjustment factors applied for Woodbridge were the 'Rest of UK HDV=<10%'. The projected results for the diffusion tube locations within the AQMA are presented in Table G.1.

Table G.1 – 2020-based Projected Annual NO_2 Mean Concentrations - Woodbridge

Site	Monitored Annual NO_2 mean concentration ($\mu g/m^3$)	Projected Annual NO_2 mean concentration ($\mu g/m^3$)				
	2020	2021	2022	2023	2024	2025
WBG 1 ABC (93 Thoroughfare)	25.2	23.8	22.5	21.3	20.1	19.1
WBG 8 (95 Thoroughfare)	24.5	23.2	21.9	20.7	19.6	18.6
WBG 18 (106/108 Thoroughfare)	22.5	21.2	20.0	19.0	17.9	17.0
WBG 20 (97 Thoroughfare)	23.5	22.2	20.9	19.9	18.8	17.8
Woodbridge Automatic Analyser	25.0	23.6	22.3	21.1	20.0	18.9

In recognition of the likelihood that 2020 is somewhat of an anomalous year, similar projections have been made based on 2019 data, as follows in Table G.2, to provide further confidence in the assessment of continued compliance.

Table G.2 – 2019-based Projected Annual NO_2 Mean Concentrations - Woodbridge

Site	Monitored Annual NO_2 mean concentration (µg/m³)	Projected Annual NO_2 mean concentration (µg/m³)				
	2019	2021	2022	2023	2024	2025
WBG 1 ABC (93 Thoroughfare)	33.7	30.2	28.5	27.1	25.6	24.3
WBG 8 (95 Thoroughfare)	32.5	29.2	27.5	26.1	24.7	23.4
WBG 18 (106/108 Thoroughfare)	29.9	26.8	25.3	24.0	22.7	21.5
WBG 20 (97 Thoroughfare)	30.3	27.2	25.7	24.3	23.0	21.8
Woodbridge Automatic Analyser	34.0	30.5	28.8	27.3	25.8	24.5

From **Error! Reference source not found.** and Table G.2, it can be observed that in either case, the forecasted concentrations of NO_2 decrease over the five-year period, and remain well below the AQS annual mean objective, even assuming a return to 2019 activity levels. The Government's commitment to net zero emissions by 2050 and the adoption of the Road to Zero transport strategy are expected to deliver significant further reductions in emissions from road transport. In its publication "Road Traffic Forecasts 2018"[2] the Department of Transport has predicted that vehicular emissions of NO_2 will fall between 60% and 90%. In turn, this provides confidence that the Woodbridge AQMA can be revoked without concern that the objective concentration will be exceeded, unless significant new sources arise, at which point the NO_2 concentrations will be assessed again. The Council intend to continue its existing monitoring regime in order to observe this.

[2] Department of Transport. Road Traffic Forecasts 2018. Available at: https://www.gov.uk/government/publications/road-traffic-forecasts-2018

Table G.3 - Defra's Roadside NO_2 Projection Factors

Projecting Annual Mean Roadside NO_2 Concentrations to Future Years						
	Adjustment Factor to be Applied					Worked Example
Year	Central London	Inner London	Outer London	Rest of UK (HDV = <10%)	Rest of UK (HDV >10%)	
2018	1.000	1.000	1.000	1.000	1.000	The measured NO_2 concentration at a roadside site in Outer London in 2019 is 44.5µg/m^3. The projected concentration for 2021 would be: 44.5 x (0.829/0.945) = 39.0µg/m^3. Roadside locations are typically within 1 to 5 metres of the kerbside, but may extend up to 15 metres depending upon the road configuration and traffic flow.
2019	0.813	0.909	0.945	0.953	0.942	
2020	0.766	0.811	0.878	0.906	0.889	
2021	0.740	0.767	0.829	0.855	0.835	
2022	0.715	0.727	0.775	0.807	0.785	
2023	0.696	0.693	0.738	0.765	0.743	
2024	0.676	0.661	0.695	0.724	0.703	
2025	0.660	0.634	0.657	0.686	0.667	
2026	0.652	0.616	0.630	0.653	0.637	
2027	0.645	0.598	0.606	0.622	0.610	
2028	0.638	0.580	0.582	0.595	0.587	
2029	0.632	0.563	0.560	0.571	0.566	
2030	0.626	0.546	0.542	0.550	0.549	

Summary, Conclusion and Recommendation

This assessment sets out the evidence relied upon by East Suffolk Council in seeking to revoke the Woodbridge AQMA.

Part IV of the Environment Act 1995 requires Local Authorities to review air quality in its area and assess whether AQS objectives will be achieved. Where it has been shown that the AQS objectives will not be achieved Local Authorities must declare an AQMA and put an AQAP in place to bring air quality within acceptable levels.

Where it can be subsequently demonstrated that AQS objectives are being and will continue to be met a Local Authority can revoke an AQMA by Order under the Environment Act 1995.

The Woodbridge AQMA was designated in 2006 to address exceedances of traffic related NO_2 concentrations. Since 2006, monitoring has shown a continued reduction in pollutant concentrations, with recorded values having fallen below the AQS consistently for several years, since 2014.

National, regional and local policies have influenced the reduction in polluting emissions within the AQMA and it is reasonable to expect that further reductions will be achieved through the increasing use of ultra-low and zero emission vehicles in the coming years.

Having considered the historical monitoring data associated with the Woodbridge AQMA, national trends in emissions and any likely impacts on the air quality within the AQMA, the Council is satisfied that the AQMA can be revoked. Whilst NO_2 concentrations within the Woodbridge AQMA have been consistently below the AQS objective for seven years, it has also been demonstrated that this is likely to continue into the future.

It is therefore recommended that the Woodbridge AQMA be revoked at the earliest opportunity. A draft Revocation Order is presented in **Error! Reference source not found.**, which provided Defra grants approval via the appraisal process, will be enacted as soon as possible, provisionally 1st February 2022.

As per paragraph 4.11 of LAQM.PG(16), the Council's recently published Air Quality Strategy will effectively supersede local action planning work in the event of revocation, ensuring continued air quality improvements beyond statutory designations.