



A10 Main Road Air Pollution

Date: December 2021

Introduction

We have received enquiries regarding the monitoring of traffic emissions along the A10 in the West Winch and North Runcton areas. This is a technical note to provide the current picture of background air quality in the area.

Background

This Council under Part IV of the Environment Act 1995 (Local Air Quality Management; LAQM) has for several years been monitoring air quality in the area. Hot spots of traffic emissions occur in the town centre and around the Gaywood clock junction that have resulted in the Council declaring air quality management areas with formal air quality action plans to mitigate raised NO₂ concentrations.

We are required to review and assess air quality and to carry out monitoring where ambient pollutants are considered likely to exceed any of the objectives and where relevant exposure occurs. This includes nitrogen dioxide (NO₂) and small particulates of less than 10 microns (PM₁₀).

Results of this work are published on the Council's website which can be found here https://www.west-norfolk.gov.uk/info/20137/air_quality/169/air_quality_information

Use the drop-down box at the bottom of the page to view previous air quality reports.

Please note, that there is no current requirement to monitor PM_{2.5} but we are guided by the LAQM process to work with public health towards reducing these emissions as there is clear evidence that PM_{2.5} has a significant impact on human health.

Monitoring Results

Air quality monitoring of nitrogen dioxide (NO₂) has been undertaken along the A10 in the West Winch for many years. Table 1 shows summary results from 2012 for NO₂ (objective 40µg/m³) with levels consistently well below the annual mean objective level of 40µg/m³.

Table 1: Annual mean monitoring results recorded Main Road West Winch from 2012-2020

Monitoring Location	Annual Mean NO ₂ Concentration (ug/m ³)									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Newsagents Main Road, West Winch	21.2	22.8	28.0	*	*	19.6	24.3	22.1	16.2**	

* Monitoring was stopped after 2014 due to recorded concentrations being below the NO₂ annual mean objective level of 40 ug/m³.

** 2020 levels will have been impacted by Covid traffic flow changes

Previously monitoring was undertaken at two locations, opposite each other at the pedestrian crossing adjacent to the Church. Results showed that the NO₂ annual means were below the annual mean objective level of 40 µg/m³.

Tube site No. 73 has constantly shown low levels of NO₂ and therefore monitoring ceased at the end of 2014.

Monitoring at the same location started again in 2017 to monitor any likely impact of the new Combined Heat & Power (CHP) Combined Cycle Gas Turbine (CCGT) plant installed at Palm Paper.

DEFRA TG (16) Screening

We have also performed a screening assessment using Annual Average Daily Flow (AADF) data sourced from the Department of Transport for 2019. The Annual Average Daily Flow is the average over a full year of the number of vehicles passing a point in the road network each day.

The nearest relevant receptors are located approximately 4.5 metres from the centre of the A10, West Winch or roughly within 2 metres of the kerb.

The traffic data and receptor locations were firstly screened using the Defra's LAQM TG (16) guidance based on the following criteria:

- a narrow road with poor air dispersion (street canyon effect)
- a street where people may spend 1 hour or more close to traffic
- a road with over 2,500 HDVs a day.
- a large junction.
- a newly constructed road; or
- a road with a significantly changed traffic flow.

The number of HGV movements in 2019 were 2207, below the screening threshold of 2,500. No part of the A10 in West Winch/North Runcton meets the above screening criteria whereby a more detailed assessment and/or monitoring of pollutants would be required.

DMRB Screening Assessment

Although Defra's LAQM TG (16) guidance states that no further action is required, additional screening has also been undertaken using the Design Manual for Roads and Bridges Screening Model.

The Design Manual for Roads and Bridges (DMRB) Screening Model is a screening tool published by Highways England that can be used to predict pollutant concentrations at receptor locations near to roads.

The distance of the nearest relevant receptors to the road, total AADF, average speed of traffic on the road, traffic composition, and background pollutant concentrations are all considered as part of the screening model.

For NO₂, as the annual mean concentration at the relevant receptors is predicted to be less than 60µg/m³, in accordance with Defra's LAQM TG (16), an exceedance of the short-term 1-hour mean objective is unlikely.

The results 10m from the kerb are as follows:

- NO₂ annual mean **19.5ug/m³** (objective 40.0ug/m³)
- PM₁₀ annual mean **19.8ug/m³** (objective 40.0ug/m³)
- Short-term mean of 24-hours for PM₁₀ (50.0ug/m³) was predicted to be exceeded for **3-days** in the year. The air quality objective is set at no more than 35 exceedances of this standard are allowed per year.

The results obtained are consistent with our monitoring results being observed and demonstrates no breaches of the National Air Quality Standards for either NO₂ or PM₁₀.

Development proposal in West Winch for housing

The current planning proposal (planning ref: 13/01615) is an outline application for up to 1,110 residential units plus primary school and local centre which has the potential to create additional emissions on the A10 until the proposed link road is operational.

The planning application has been considered for air quality and its likely impact on new receptors and impacts to the existing road network.

If other planning applications are made in the area, then we will carry out further reviews of each planning application including the overall impact.

Conclusion

In summary, the existing monitoring that the Council performs is considered valid and representative of public exposure. Results of air quality monitoring at the newsagents adjacent to the A10 Main Road shows low levels of NO₂ over the last few years.

DEFRA LAQM TG (16) screening guidance shows the road and its residential receptors are unlikely to require more detailed assessment and/or monitoring for PM₁₀ or NO₂, or the short terms objectives for either PM₁₀ or NO₂.

The DMRB screening tool further shows no breaches of the PM₁₀ or NO₂ objective levels at residential receptors along the A10 Main Road in West Winch and North Runcton.

Whilst there may be concerns that the road is busy and has queuing traffic at times, the overall picture shows levels are well below the required national air quality standards. This is in part to improvements in U.K. fleet with more efficient Euro type low emission engines plus a gradual replacement of older vehicles, more vehicles with stop / start technology but also the dispersion of emission due to the separate distances from road to residential building facades.

Traffic flows will be kept under review and further work completed as required.

We will continue to monitor the situation and report the latest situation in the next Annual Status Report.