Shepherd Neame Ltd

Queen Court Farm Proposed Development

Air Quality Assessment

Wood Group UK Limited – October 2021

Report for

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1	Draft	September 2021
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Executive summary

This air quality assessment has been prepared by Wood Group UK Ltd (Wood), for Shepherd Neame Ltd, as part of a planning application for the Proposed Development on Water Lane in Ospringe known as Queen Court Farm.

Wood understands that Shepherd Neame Ltd is preparing a planning application for a residential development of nine units in Ospringe. Given the size and location of the Proposed Development, it is considered that a Simple Assessment as recommended in the Institute of Air Quality Management (IAQM) Land-Use Planning & Development Control guidance[1] will be acceptable to the local planning authority. This approach has been confirmed by the Mid Kent Environmental Health Service[2] on behalf of Swale Borough Council (SBC) who recommended the following standard mitigation measures to be implemented at the Proposed Development:

- Electric-vehicle (EV) infrastructure should be included as a standard mitigation in line with SBC Parking Standards Supplementary Planning Document (SPD)[3]:
  - Dwellings with On-Plot Parking - 1 Active Charging Point per dwelling;
  - Dwellings with unallocated communal parking - 10% Active Charging Spaces with all other spaces to be provided as Passive Charging Spaces;
  - Visitor Parking - A minimum of two visitor spaces or 10% of the total visitor provision (whichever is greatest) should be provided with passive charging provisions suitable for future conversion.
- All gas-fired boilers to meet a minimum standard of <40mgNO_X/kWh in line with SBC Air Quality and Planning Technical Guidance[4].

The air quality assessment shows that air quality should not be considered as a constraint to the proposed development of the site as pollutant concentrations are expected to comply with the relevant Air Quality Objectives (AQOs).

[1] http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf
[2] Email dated 06/08/2021
[3] https://services.swale.gov.uk/assets/Planning-Forms-and-Leaflets/Supplementary-Planning-Documents/SBC-Parking-Standards-May-2020.pdf
[4] https://services.swale.gov.uk/assets/planning%20policy%202019/FINAL%20AQ%20Planning%20Tech%20Guide%20July%202019.pdf

Contents

1. Introduction

1.1 Purpose of this report

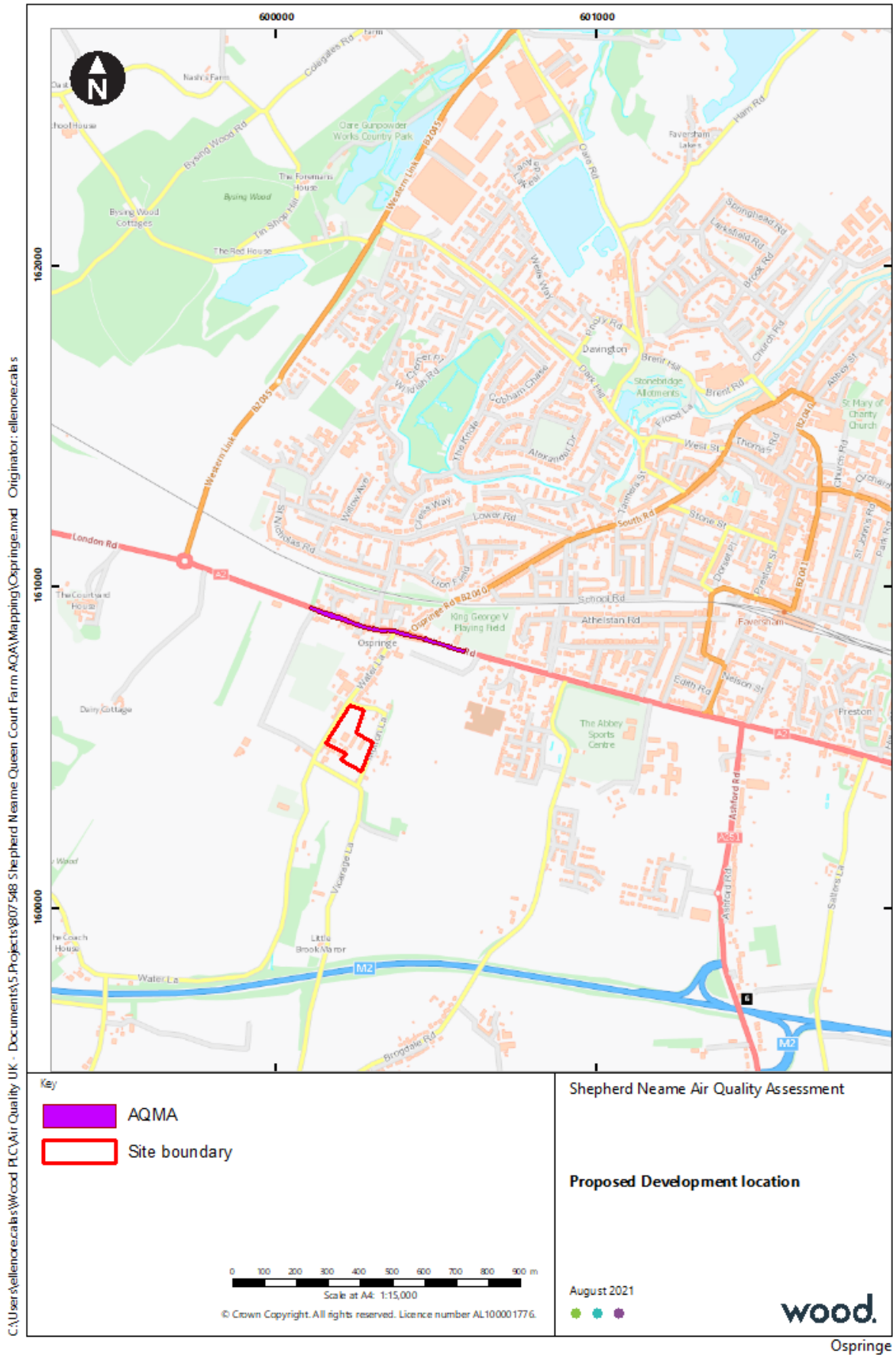
This air quality assessment has been prepared by Wood Group UK Ltd (Wood), for Shepherd Neame Ltd, as part of a planning application for the Proposed Development on Water Lane in Ospringe known as the Queen Court Farm. Wood understands that the Proposed Development is for nine residential units.

This assessment has been carried out for the purpose of identifying the air quality likely to be experienced by future residents of the development and the suitability of the site for the proposed residential use. The assessment is focused on concentrations of the most important traffic derived pollutants, nitrogen dioxide (NO_2) and fine particulate matter (PM_{10} and $PM_{2.5}$).

1.2 Description of the development

The Proposed Development site of nine units is centred at grid reference TR 00248 60526. The Proposed Development is bounded by Water Lane, Mutton Lane and Vicarage Lane. The site boundary is presented in Figure 1.1.

Figure 1.1 Proposed Development location



2. Policy and legislative context

2.1 Relevant policy

Table 2.1 lists policy guidance and policies relevant to the assessment of the effects on air quality, and the issues included in these policies/guidance that were considered when determining the scope of this assessment.

Table 2.1 Policy issues relating to air quality considered in preparing the scoping report

Policy reference	Policy issues
National Policy	
National Planning Practice Guidance (NPPG) November 2019[5]	It is stated in the NPPG (Paragraph: 005 Reference ID: 32-005-20191101) that *"Whether air quality is relevant to a planning decision will depend on the Proposed Development and its location. Concerns could arise if the development is likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the implementation of air quality strategies and action plans and/or breach legal obligations (including those relating to the conservation of habitats and species). Air quality may also be a material consideration if the Proposed Development would be particularly sensitive to poor air quality in its vicinity."*
National Planning Policy Framework (NPPF) February 2019[6]	Paragraph 181 of the NPPF states that "*Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas*" and "*Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan*".
Local Policy	
Swale Borough Council (SBC) Adopted Local Plan[7]	Section 7.7.3 of the local plan states that "*Transport and industry are the Borough's main air pollution emitters and a number of Air Quality Management Areas (AQMAs) have been declared at Newington, Teynham, Ospringe, St Paul's Street and at East Street/Canterbury Road in Sittingbourne. Applicants proposing development that could have an impact on air quality levels within the AQMAs should contact the Council's Environmental Protection Team regarding the preparation of an Air Quality Impact Assessment. Developers should also refer to The Kent and Medway Air Quality Partnership's document, Air Quality and Planning Technical Guidance, July 2011 and any updated versions of this document*".

2.2 Relevant legislation

The legislative framework for air quality consists of legally enforceable EU Limit Values that are transposed into UK legislation as Air Quality Standards (AQS) that must be at least as challenging as the EU Limit Values. Action in the UK is driven by the UK's Air Quality Strategy[8] that sets the AQOs.

The EU Limit Values are set by the European directive on air quality and cleaner air for Europe (2008/50/EC)[9] and the European directive relating to arsenic, cadmium, mercury, nickel, and polycyclic aromatic

[5] Ministry of Housing, Communities and Local Government (2019) National Planning Practice Guidance – Air quality
[6] Ministry of Housing, Communities and Local Government (2019) National Planning Policy Framework
[7] http://services.swale.gov.uk/media/files/localplan/adoptedlocalplanfinalwebversion.pdf
[8] Defra in partnership with the Scottish Executive, Welsh Assembly Government and Department of the Environment Northern Ireland (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland.
[9] Official Journal of the European Union, (2008) Directive 2008/50/EC of the European Parliament and of The Council of 21 May 2008 on ambient air quality and cleaner air in Europe.

hydrocarbons in ambient air (2004/107/EC)[10] as the principal instruments governing outdoor ambient air quality policy in the EU. The Limit Values are legally binding levels for concentrations of pollutants for outdoor air quality.

The two European directives, as well as the Council's decision on exchange of information were transposed into UK Law via the Air Quality Standards Regulations 2010[11], which came into force in the UK on 11 June 2010, replacing the Air Quality Standards Regulations 2007[12]. Air Quality Standards are concentrations recorded over a given time period, which are considered to be acceptable in terms of what is scientifically known about the effects of each pollutant on health and on the environment. The Air Quality Strategy sets the AQOs, which give target dates and some interim target dates to help the UK move towards achievement of the EU Limit Values. The AQOs are a statement of policy intentions or policy targets and as such, there is no legal requirement to meet these objectives except in as far as they mirror any equivalent legally binding Limit Values in EU legislation. The most recent UK Air Quality Strategy for England, Scotland, Wales and Northern Ireland was published in July 2007.

Since Part IV of the Environment Act 1995[13] came into force, local authorities have been required periodically to review concentrations of the UK Air Quality Strategy pollutants within their areas and to identify areas where the AQOs may not be achieved by their relevant target dates. This process of Local Air Quality Management (LAQM) is an integral part of delivering the Government's AQOs detailed in the Strategy. When areas are identified where some or all of the AQOs might potentially be exceeded and where there is relevant public exposure, i.e. where members of the public would regularly be exposed over the appropriate averaging period, the local authority has a duty to declare an AQMA and to implement an Air Quality Action Plan (AQAP) to reduce air pollution levels towards the AQOs. The latest guidance on the LAQM process is given in Defra's 2016 Local Air Quality Management Technical Guidance (LAQM TG (16))[14].

The UK Government and the Devolved Administrations have set national AQOs for particulate matter smaller than 2.5 µm in diameter ($PM_{2.5}$). These objectives have not been incorporated into the LAQM Regime, and authorities have no statutory obligation to review and assess air quality against them. However, given that $PM_{2.5}$ is a pollutant of concern at the national and EU levels it has been included in this assessment.

This assessment has focused on emissions of nitrogen oxides (NO_X), PM_{10} and $PM_{2.5}$, in order to assess concentrations of NO_2, PM_{10} and $PM_{2.5}$ as these are the pollutants of greatest health concern associated with road traffic. The NO_X (nitrogen monoxide (NO) and NO_2) emitted from vehicle exhausts and other combustion sources undergoes photochemical oxidation in the atmosphere, with NO_2 being formed by oxidation of NO to NO_2 and, conversely, NO_2 undergoing photolysis (in the presence of sunlight) to create NO and ozone.

Emissions of other exhaust gases, such as carbon monoxide (CO), small quantities of sulphur dioxide (SO_2) and non-methane volatile organic compounds (NMVOC) including 1,3-butadiene and benzene, will also occur from vehicles. National level measurement and modelling assessments carried out by Defra have shown that policy measures already in place have reduced levels of CO, 1,3-butadiene and benzene to ensure compliance with the respective standards and objectives, even at busy roadside locations.

For NO_2, it is the annual mean AQO that is the more stringent AQO; it is generally considered that the 1-hour mean NO_2 AQO will not be exceeded if the annual mean AQO is not exceeded. For PM_{10}, the 24-hour mean AQO is more stringent than the annual mean.

[10] Official Journal of the European Union, (2004) Directive 2004/107/EC of the European Parliament and of The Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air.
[11] The Stationery Office Limited (2010) Statutory Instrument 2010 No. 1001 Environmental Protection – The Air Quality Standards Regulation 2010.
[12] The Stationery Office Limited (2007) Statutory Instrument 2010 No. 64 Environmental Protection – The Air Quality Standards Regulation 2007.
[13] HMSO (1995) Environment Act 1995.
[14] Defra (2016) Local Air Quality Management Technical Guidance LAQM.TG (16).

Table 2.2 sets out the AQOs that are relevant to this assessment, and the dates by which they are to be achieved.

Table 2.2 Summary of relevant air quality standards and objectives

Pollutant	Objective (UK)	Averaging Period	Date to be Achieved by and Maintained thereafter (UK)
Nitrogen dioxide - NO_2	200 μgm^{-3} not to be exceeded more than 18 times a year	1-hour mean	31 Dec 2005
	40 μgm^{-3}	Annual mean	31 Dec 2005
Particles - PM_{10}	50 μgm^{-3} not to be exceeded more than 35 times a year	24-hour mean	31 Dec 2004
	40 μgm^{-3}	Annual mean	31 Dec 2004
Particles - $PM_{2.5}$	25 μgm^{-3}	Annual mean	2020
	Target of 15% reduction in concentration at urban background locations	3 year mean	Between 2010 and 2020

The likelihood of exceedance of the NO_2 and PM_{10} short-term AQOs can be assessed with reference to the predicted annual means and the relationships recommended by LAQM.TG(16):

The 1-hour mean NO_2 objective is unlikely to be exceeded[14] if the annual mean is less than 60 μgm^{-3};

An estimate of potential exceedances of the 24-hour mean PM_{10} objective is given by:

$$Number\ of\ 24\ hour\ mean\ exceedences = -18.5 + 0.00145\ x\ annual\ mean^3 + \frac{206}{annual\ mean}$$

On the basis of the above relationship, the 24-hour mean AQO for PM_{10} is likely to be met if the predicted annual-mean PM_{10} concentration is 31.8 μgm^{-3} or less.

2.3 Relevant guidance

The Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK)

The IAQM and Environmental Protection UK (EPUK) has produced guidance[15] regarding the assessment of air quality issues within planning applications, which includes a summary of relevant legislation and the assessment of significance. Using this guidance, the magnitude of change due to an increase/decrease in the annual mean concentration of NO_2 and PM_{10} and other pollutants due to the development is described using specified criteria. The overall significance of the development is then determined using professional judgement.

[15] IAQM and EPUK (2017). Land-Use Planning & Development Control: Planning For Air Quality

Swale Borough Council Air Quality Supplementary Guidance[4]

In 2019 SBC produced a technical guidance seeking to explain how air quality is dealt with in planning applications in the borough. The 2019 guidance was adapted from the Kent and Medway Air Quality Partnership's 2015 Air Quality Planning Guidance[16] and SBC 2016 Air Quality Planning Technical Guidance[17], in response to changes in national planning policy, including updates to the National Planning Policy Framework, and increased number of planning applications in which air quality has been a specific issue.

The 2019 guidance aims to:

- Explain how air quality is dealt with in planning applications in Swale, providing clarity and consistency of the process for developers, the local planning authority (LPA) and local communities;
- Explain the standard mitigation requirements expected for all development;
- Explain the emissions mitigation assessment (including damage cost calculations) expected for development with potential air quality impacts; and
- Set out when an Air Quality Assessment (AQA) is required, how this should be undertaken and how it will be used to determine the air quality impacts of planning applications.

[16] https://kentair.org.uk/air-quality-planning-guidance
[17] http://archive.swale.gov.uk/assets/Planning-Forms-and-Leaflets/Development-Control/Swale-Air-Quality-Planning-Technical-Guidance-v3.pdf

3. Baseline air quality

Information on air quality in the UK is available from a variety of sources, including local authorities and national network monitoring sites. This section presents information with respect to baseline air quality and compliance with the AQOs. Information on baseline air quality has been obtained from SBC latest available Annual Status Report (ASR)[18] which reports concentrations monitored in 2019.

3.1 Local authority review and assessment

As a result of SBC extensive air quality monitoring, five AQMAs have been identified and declared to date. These AQMAs are located where the level of air pollution, specifically nitrogen dioxide, has historically exceeded the UK's air quality objectives. The five AQMAs are listed below:

- AQMA 1: Newington, (A2 / High St) - declared in 2009;
- AQMA 2: Ospringe Street, Faversham (A2 / Ospringe) - declared in June 2011 and revised (as AQMA 6) in May 2016;
- AQMA 3: East Street, Sittingbourne (A2 / Canterbury Road) - declared January 2013;
- AQMA 4: St Paul's Street, Milton, Sittingbourne (B2006) - declared January 2013, and
- AQMA 5: Teynham (A2 / London Rd) - declared December 2015.

AQMA 2 in Ospringe is located along a section of the A2, approximately 260m to the north of the Proposed Development site boundary.

Dust deposition

Dust deposition rates are not monitored extensively in the UK. Monitoring that is undertaken, is usually connected with specific activities such as mining and mineral extraction operations and major infrastructure projects. Dust monitoring may also be undertaken to investigate specific complaints received by local authorities, who are then empowered to investigate dust nuisance under the Environmental Protection Act (1990). There are no available dust measurement data for the area surrounding the Development site.

[18] Swale Borough Council. 2019 Air Quality Annual Status Report. https://www.havant.gov.uk/air-quality

3.2 Air quality monitoring

Automatic monitoring

SBC undertook automatic (continuous) monitoring of NO_2 and PM_{10} at three sites during 2019 including at one monitoring site within Ospringe AQMA. Details on the automatic monitors and annual mean concentrations recorded between 2015 and 2019 are given in Table 3.1. For NO_2, the number of exceedances of the NO_2 1-hour mean AQO of 200 μgm^{-3} (not to be exceeded more than 18 times a year) are presented in brackets. For PM_{10}, the number of exceedances of the 24-hour mean AQO of 50 μgm^{-3} (not to be exceeded more than 35 times a year) are presented in brackets. There was an exceedance of the PM_{10} 24-hour AQO recorded at ZW3 in 2019.

Table 3.1 SBC automatic monitoring sites parameters and 2015-2019 concentrations

						Annual mean concentrations (μgm^{-3})				
Site ID	**Site Name**	**Site Type**	**X OS Grid Ref (Easting)**	**Y OS Grid Ref (Northing)**	**Distance to road (m)**	**2015**	**2016**	**2017**	**2018**	**2019**
ZW6	Newington 3	Roadside	585861	164817	1.6	NO_2				
						29.7 (0)	28.1 (1)	29.7 (0)	29.1 (0)	26.8 (0)
ZW8	St Pauls Street	Roadside	590264	164396	2.5	NO_2				
						35.1 (1)	37.7 (0)	35.1 (1)	39.7 (0)	39.1 (0)
						PM_{10}				
						-	-	-	28.1 (10)	31.5 (15)
ZW3	Ospringe Roadside	Roadside	600360	160869	1.7	NO_2				
						32.6 (0)	-	-	31.6 (0)	31.4 (0)
						PM_{10}				
						26.0 (15)	25.0 (11)	23.0 (8)	27.6 (3)	24.8 (**42**)

Diffusion tube monitoring

The ambient NO_2 pollution levels are monitored by SBC via a network of 80 diffusion tube sites, including 10 in Ospringe. Details and latest annual mean concentrations of the Ospringe diffusion tube sites are presented in Table 3.2 and their location is shown in Figure 3.1.

In 2019, exceedances of the NO_2 annual mean AQO were recorded at four out of ten monitoring sites within the Ospringe AQMA.

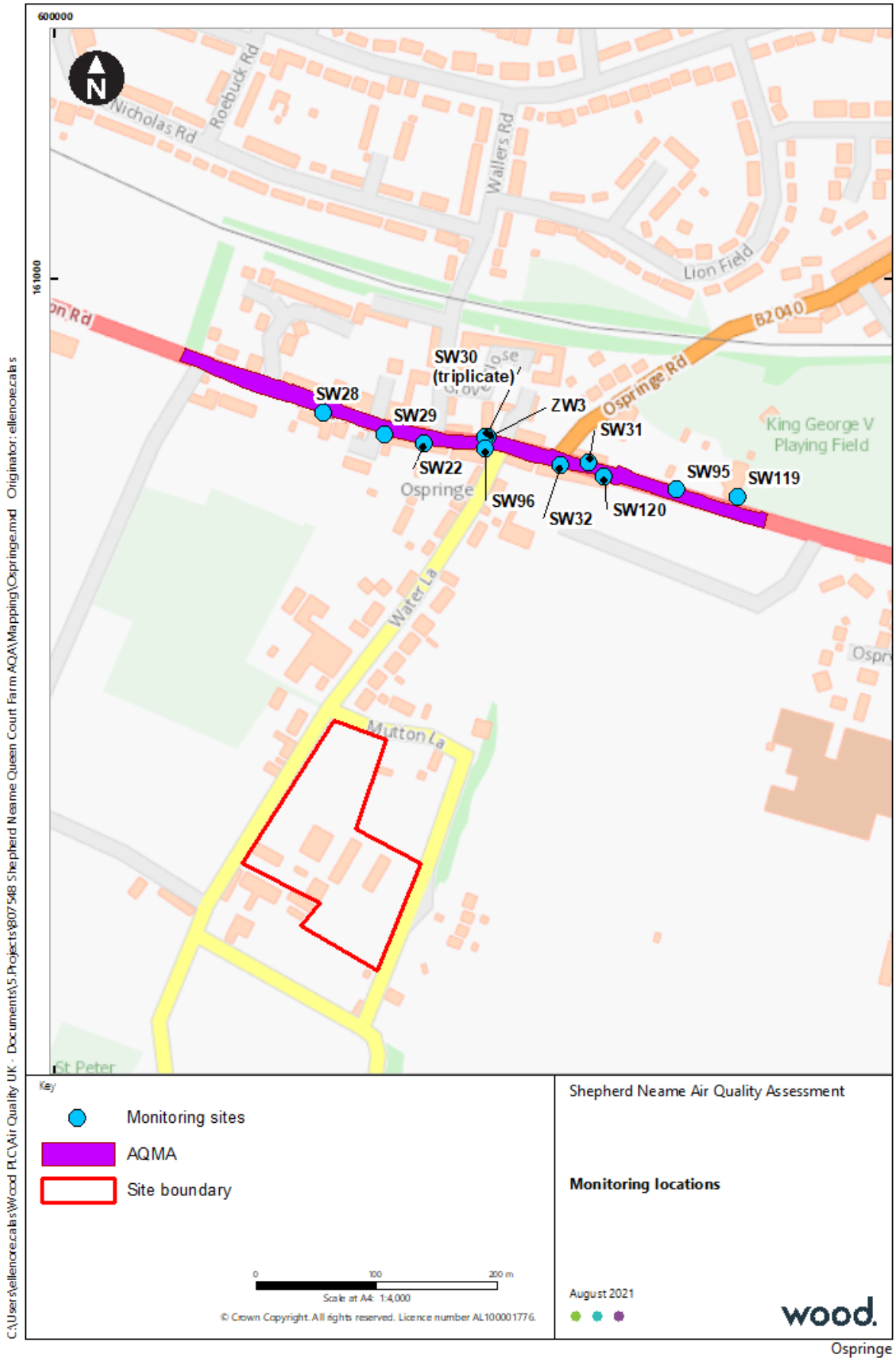
The Proposed Development is situated approximately 260m to the south of the A2. In comparison the monitoring locations with concentrations exceeding the annual mean AQO are located less than 3m from the A2, as detailed in Table 3.2. Due to this distance, NO_2 and PM_{10} concentrations are considered to be below the relevant AQOs at the Proposed Development site.

Table 3.2 SBC Ospringe diffusion tubes monitoring sites parameters and 2015-2019 concentrations

						Annual mean concentrations (μgm^{-3})				
Site ID	**Site Name**	**Site Type**	**X (m)**	**Y (m)**	**Distance to road (m)**	**2015**	**2016**	**2017**	**2018**	**2019**
SW22	35 Ospringe Street, Ospringe	Kerbside	600307	160863	2.7	**47.7**	**47.9**	**47.0**	**43.3**	**42.4**
SW28	Mayors Arms, Ospringe	Kerbside	600223	160889	1.5	**49.4**	**45.5**	**47.0**	**45.4**	**43.0**
SW31	Site 7, 4 Ospringe Street	Kerbside	600444	160848	1.5	**45.2**	**48.3**	**40.7**	**42.6**	37.9
SW95	The Mount, London Road, Ospringe	Kerbside	600517	160825	1.6	**70.2**	**59.6**	**61.3**	**61.7**	**54.3**
SW29	Opp Lions Yard, Ospringe Street	Kerbside	600274	160871	2.4	**48.6**	**48.0**	**46.2**	**41.1**	**40.9**
SW30 triplicate	ZW3 Ospringe Street	Kerbside	600358	160869	2.3	33.4	31.6	37.2	36.3	31.1
SW32	11 Ospringe Street, Ospringe	Kerbside	600420	160845	2.3	**40.2**	38.2	39.1	36.8	36.9
SW96	Maison Dieu, Ospringe Street	Kerbside	600358	160859	1.9	**47.0**	39.4	**40.0**	36.4	36.6
SW119	Flats, The Mount, Ospringe	Roadside	600568	160819	8	-	-	-	27.0	24.7

Exceedances of the annual mean AQO of 40 μgm^{-3} are presented in **bold**. Exceedances of 60 μgm^{-3} are underlined.

Figure 3.1 Locations of monitoring locations in Ospringe



3.3 Estimated background concentrations

Defra has made estimates of background pollution concentrations on a 1 km^2 grid for the UK for seven of the main pollutants, including NO_2, PM_{10} and $PM_{2.5}$, using data for a base year of 2018, making projections for years from 2018 to 2030 inclusive[19].

Table 5.3 shows the estimated values of the pollutants for the current year, for the cell in which the Proposed Development site falls in. Background concentrations at the Proposed Development site are significantly below their relevant AQO. These background concentrations are likely to be representative of the concentrations at the Proposed Development site given the distance from any important local road source.

Table 5.3 Defra mapped background annual mean pollutant concentrations (μgm^{-3})

Cell 600500, 160500	**2021**
Nitrogen Dioxide, NO_2	10.7
Nitrogen Oxides, NO_X	14.2
Particulate Matter, PM_{10}	15.4
Particulate Matter, $PM_{2.5}$	9.7

[19] http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html

4. Standard mitigation measures

Advice on the content of this air quality assessment was requested from Mid Kent Environmental Health Service[2] on behalf of SBC, who confirmed that due to the size of the Proposed Development a Simple Assessment was considered sufficient as well as the inclusion of the following standard mitigation measures:

- EV infrastructure should be included as a standard mitigation in line with SBC Parking Standards SPD[3]:
  - Dwellings with On-Plot Parking - 1 Active Charging Point per dwelling;
  - Dwellings with unallocated communal parking - 10% Active Charging Spaces with all other spaces to be provided as Passive Charging Spaces; and
  - Visitor Parking - A minimum of two visitor spaces or 10% of the total visitor provision (whichever is greatest) should be provided with passive charging provisions suitable for future conversion.
- All gas-fired boilers to meet a minimum standard of <40mgNO_X/kWh in line with SBC Air Quality and Planning Technical Guidance[4].

5. Conclusion

This air quality assessment has been prepared by Wood Group UK Ltd (Wood), for Shepherd Neame Ltd, as part of a planning application for the Queen Court Farm Proposed Development in Ospringe. A Simple Assessment including a review of the current local air quality levels was undertaken.

The Proposed Development is situated approximately 260m to the south of the A2. Due to this distance, pollutant concentrations at the Development site are expected to comply with the relevant AQOs.

Mid Kent Environmental Health Service[2] was consulted on behalf of SBC prior to delivering this assessment and recommended the following standard mitigation measures to be implemented at the Proposed Development:

- EV infrastructure should be included as a standard mitigation in line with SBC Parking Standards SPD[3]:
  - Dwellings with On-Plot Parking - 1 Active Charging Point per dwelling;
  - Dwellings with unallocated communal parking - 10% Active Charging Spaces with all other spaces to be provided as Passive Charging Spaces; and
  - Visitor Parking - A minimum of two visitor spaces or 10% of the total visitor provision (whichever is greatest) should be provided with passive charging provisions suitable for future conversion.
- All gas-fired boilers to meet a minimum standard of <40mgNO_X/kWh in line with SBC Air Quality and Planning Technical Guidance[4].

The air quality assessment shows that air quality should not be considered as a constraint to the proposed development of the site as pollutant concentrations are expected to comply with the relevant Air Quality Objectives (AQOs).