



# Woodside, Kenilworth Air Quality Assessment

For Vistry Homes

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# Document control sheet

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## 1. Introduction

Hydrock have been commissioned by Vistry Homes (the Client) to prepare an Air Quality Assessment (AQA) in support of a full planning application for the redevelopment of the land parcel previously occupied by the former Woodside Conference Centre (the Site) in Kenilworth, Warwickshire. The Proposed Development comprises 55 residential dwellings. The Site is centred on the National Grid Reference (NGR); x430773, y271940 and is shown below in Figure 1.



Figure 1: Site Location

The Site is situated to the easterly edge of Kenilworth town in the West Midlands. Warwick District Council (WDC) are the local planning authority (LPA). The Site is located off Glasshouse Lane and was previously



occupied by the former Woodside Conference Centre. It is understood that Woodside Conference Centre was operational until early 2021, when it went into administration<sup>1</sup>.

## 1.1 Proposed Development

The Client seeks full planning approval for:

- » A total of 55 dwellings consisting of:
  - » 46 open market dwellings; and
  - » 9 affordable dwellings (16%).

A total of 48 dwellings are to be provided with vehicular access taken from the internal spine road of the adjacent consented residential development (see planning context below), and 7 dwellings are to be accessed via Glasshouse Lane private road.

The Illustrative Masterplan (drawing number BVA04 – PL002B) is shown below in Figure 2:



Figure 2: Illustrative Masterplan (drawing number BVA04 – PL002)

<sup>1</sup> <https://www.businessinnovationmag.co.uk/vistry-buys-former-kenilworth-conference-centre/>

## 1.2 Planning Context

The Site is located within close proximity to an approved strategic housing development known as 'Land On The East Side Of, Glasshouse Lane, Kenilworth'. The approved strategic development has been subject to a number of planning applications which are relevant to consider. A summary of the key applications has been set out below:

### *W/18/1635 – Outline Planning Permission*

In August 2018, an outline planning application was submitted to WDC seeking permission for:

*Demolition of existing farmhouse and agricultural buildings and outline planning application for residential development of up to 620 dwellings (Use Class C3), new primary school (Use Class F.1) including means of access into site (not internal roads), parking and associated works, with all other matters (relating to appearance, landscaping, scale and layout) reserved*

The outline submission was accompanied by a number of iterations of an AQA prepared by RSK, all of which are available on the WDC planning portal. The AQA iterations are summarised below.

- » RSK Report Number 442738.AQ.01 (06)<sup>2</sup>
  - » This is the original AQA, prepared by RSK in August 2018. It is understood that the methodology for the AQA was agreed with the Environmental Health Officer (EHO) at WDC.
  - » The report provides a detailed impact assessment including dispersion modelling at off-site receptor locations. It states that the traffic data used in the modelling were based on 700 homes to ensure a robust analysis of potential local and wider impacts on highway network capacity and safety.
  - » The assessment concludes a potential substantial adverse impact in the worst-case sensitivity scenarios, but ultimately concludes that *"The development is not anticipated to have a significant adverse effect on local air quality,"*
  - » In addition, the assessment considered the potential exposure at the Site, and concludes that *"ambient air quality at and around the proposed development site is expected to comply with the AQs assessed, ambient air quality with the development in place is expected to have an insignificant effect on future site users"*.
- » RSK Report Number 442738.AQ.01 (08)<sup>3</sup>
  - » This report provides an update to the original AQA, where the main changes identified are the inclusion of results from an RSK Diffusion Tube monitoring survey of ambient NO<sub>2</sub>, as well as updates to the modelling assumptions and scenarios and inclusion of a damage cost calculation.
  - » With regard to the introduction of new exposure, the report states that *"ambient air quality with the development in place is expected to have an insignificant effect on future site users."*
  - » With regard to the potential impact, the report concludes that *"the impacts of the development on ambient annual mean NO<sub>2</sub> concentrations are predicted to range between negligible and substantial adverse once fully complete and operational... With an appropriate selection of mitigation measures implemented at the proposed development site, the impacts of the proposed development on local air quality are likely to have been minimised"*
- » RSK Report Number 442738.AQ.01 (09)<sup>4</sup>

<sup>2</sup> W\_18\_1635-AIR\_QUALITY\_ASSESSMENT-1155918. Dated August 2018. Prepared by RSK.

<sup>3</sup> W\_18\_1635-AIR\_QUALITY\_ASSESSMENT-1208764. Dated March 2019. Prepared by RSK.

<sup>4</sup> W\_18\_1635-Air\_Quality\_Assessment-1561143. Dated May 2019. Prepared by RSK.

- » This report is the final iteration of the AQA submitted to support the outline application, and is therefore considered to be 'the most recent AQA'.
- » No significant changes in methodology and approach between this version and the previous version have been identified, however the AQA responds to a number of technical queries provided by WDC. The report concludes that *"The development was not considered as having the potential to introduce receptors into an area where air quality may be poor (due to the presence of the A46 nearby) and as having an insignificant effect on local air quality."*

Outline permission was granted by WDC, subject to a number of conditions which primarily related to mitigation measures. Therefore, the most recent AQA detailed above is considered to be a suitable evidence base for baseline reporting purposes.

#### *W/21/1811 – Reserved Matters Approval*

In September 2021 a reserved matters (RM) application was submitted to WDC for layout, scale appearance, materials and landscaping for 620 dwellings in pursuance of outline planning permission W/18/1635.

- » The RM application was accompanied by a Low Emission Strategy prepared by Air & Acoustics Consultants Ltd (AAC) in December 2022<sup>5</sup>.
- » AAC subsequently provided a technical note in January 2023<sup>6</sup> providing a response and clarifications to WDC EHO comments.
- » In both instances the focus was on securing appropriate mitigation for the scheme, aligned to WDC's requirements for Type 1, 2 and 3 mitigation.

Reserved Matters approval was granted by WDC in January 2023.

### 1.3 Purpose of Air Quality Assessment

The remainder of this AQA provides a summary of relevant legislation, policy, guidance and a proportionate assessment of the likely baseline conditions at the Site, and potential impacts during the construction and operational phases of the Proposed Development in order to evaluate the likely significance of subsequent effects with respect to air quality.

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<sup>5</sup> W\_18\_1635-Low\_Emission\_Strategy-1621295. Dated December 2022. Prepared by AAC.

<sup>6</sup> W\_18\_1635-AIR\_QUALITY\_TECHNICAL\_NOTE-1536681. Dated January 2023. Prepared by AAC.



## 2. Relevant Legislation

### 2.1 Air Quality Regulations and Objectives

There are two sets of air quality legislation which include ambient air quality thresholds for the protection of public health that apply in England, these include legally binding limit values originally set by the European Union (EU) Directive 2008/50/EC<sup>7</sup> on ambient air quality and cleaner air for Europe; and regulations implementing national air quality objectives as set out in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland (AQS)<sup>8</sup> which local authorities are required to work towards achieving.

The EU (Withdrawal Agreement) Act 2020 sets out arrangement for implementing air quality limit values that are included in the EU Directive on ambient air quality and cleaner air for Europe (2008/50/EC) included in the following:

- » Air Quality Regulations (SI 2010 No.1001)<sup>9</sup> and amended (SI 2016 No.1184)<sup>10</sup> ;
- » The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 (SI 2019 74)<sup>11</sup> ;
- » The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (SI 2020 1313)<sup>12</sup> amend the Air Quality Regulations (SI 2010 No.1001) to account for EU withdrawal; and
- » The AQS objectives are implemented in the Air Quality (England) Regulations 2000 (SI 2000/928)<sup>13</sup> and Air Quality (England) (Amendment) Regulations 2002 (SI 2002/3043)<sup>14</sup>.

The Air Quality Strategy 2007 Volume 18 sets out the government's policies and framework for improving air quality in the UK with the aim of meeting the requirements of above legislation The Air Quality Strategy also outlines the Limit Values, Target Values, Standards, Objectives, Critical Levels and Exposure Reduction Targets for the protection of human health and the environment (collectively termed Air Quality Assessment Levels (AQALs) throughout this report). The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023<sup>15</sup> also brought forward a new target level for PM<sub>2.5</sub>. Those relevant to this assessment is provided below, in Table 1:

Table 1: National Air Quality Objectives

Pollutant	Averaging Period	AQALs	
NO <sub>2</sub>	1 Hour Mean	200 µg/m <sup>3</sup>	Not to be exceeded more than 18 times in a year.

7 Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe Available at: <https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32008L0050>

8 Defra. "The Air Quality Strategy for England, Scotland, Wales and Northern Ireland". Available at: <https://www.gov.uk/government/publications/2010-to-2015-government-policy-environmental-quality/2010-to-2015-government-policy-environmental-quality#appendix-5-international-european-and-national-standards-for-air-quality>

9 The National Archives. "The Air Quality Standards Regulations 2010". Available at: <http://www.legislation.gov.uk/uksi/2010/1001/contents/made>

10 The National Archives (2016). "The Air Quality Standards (Amendment) Regulations 2016". Available at: <https://www.legislation.gov.uk/uksi/2016/1184/contents/made>

11 The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 (legislation.gov.uk). Available at: <https://www.legislation.gov.uk/uksi/2019/74/contents/made>

12 The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (legislation.gov.uk). Available at: <https://www.legislation.gov.uk/uksi/2020/1313/contents/made>

13 The National Archives. "The Air Quality (England) Regulations 2000". Available at: <http://www.legislation.gov.uk/uksi/2000/928/contents/made>

14 The National Archives. "The Air Quality (England) (Amended) Regulations 2002". Available at: <http://www.legislation.gov.uk/uksi/2002/3043/contents>

<sup>15</sup> <https://www.legislation.gov.uk/uksi/2023/96/contents/made>

Pollutant	Averaging Period	AQALs	
PM <sub>10</sub>	Annual Mean	40 µg/m <sup>3</sup>	Not to be exceeded more than 35 times in a year.
	24 Hour Mean	50 µg/m <sup>3</sup>	
	Annual Mean	40 µg/m <sup>3</sup>	
PM <sub>2.5</sub>	Annual Mean	20 µg/m <sup>3</sup>	To be met across England by 2040  35% reduction in population exposure by 2040 (compared to a base year of 2018).
	Annual Mean (target)	10µg/m <sup>3</sup>	
	-	Population Exposure Reduction Target ('exposure target')	

Defra's Local Air Quality Management Technical Guidance 2022 (LAQM.TG(22))<sup>16</sup> provides guidance on where the above AQAL's should apply. This is summarised below, in Table 2.

Table 2: Summary of where AQALs should apply

Averaging Period	Objectives should apply at:	Objectives should generally NOT apply at:
<b>Annual Mean</b>	All locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, care homes etc.	Building facades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to other locations at the building façade) or any other location where public exposure is expected to be short term.
<b>24 Hour Mean and 8 Hour Mean</b>	All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties	Kerbside sites (as opposed to other locations at the building façade) or any other location where public exposure is expected to be short term.
<b>1 Hour Mean</b>	All locations where the annual Mean and: 24 and 8-hour mean objectives apply. Kerbside site (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and	Kerbside sites where the public would not be expected to have regular access.

<sup>16</sup> Defra, "LAQM Technical Guidance (TG22)" (Department for Food, Environment and Rural Affairs (Defra), August 2022), <https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf>

Averaging Period	Objectives should apply at:	Objectives should generally NOT apply at:
	<p>railways stations etc. which are not fully enclosed, where members of the public might be expected to spend one hour or more.</p> <p>Any outdoor locations where members of the public might reasonably expect to spend one hour or longer.</p>	
<b>15 Minute Mean</b>	All locations where member of the public might reasonably be exposed for a period of 15 minutes	

## 2.2 Local Air Quality Management

Obligations under the Environment Act 2021<sup>17</sup> (which provides an amendment to the Environment Act 1995<sup>18</sup>) requires local authorities to review and assess air quality in their administrative boundaries. Where AQALs are predicted to be exceeded, the local authority must declare an Air Quality Management Area (AQMA) at sensitive receptor locations and formulate an Air Quality Action Plan (AQAP) to reduce pollution concentrations to values below AQALs.

WDC have adopted the Air Quality Action Plan: Warwick District Council<sup>19</sup> which contain actions aimed at reducing the concentrations of pollutants to achieve the AQALs. Such actions include:

- » Promote Smarter Travel Choices;
- » Actively promote low emission vehicles and supporting infrastructure;
- » Use the procurement system to ensure that air quality is a consideration within contracts for WDC;
- » Use the planning system to ensure that air quality is fully considered for new development;
- » Use traffic management to reduce emissions in locations with AQMAs;
- » Work with Public Health colleagues to inform the public about health impacts of Air Pollution and how they can change behaviour to reduce emissions and reduce exposure; and
- » Continue to monitor and assess air quality in line with Government guidance on Local Air Quality Management.

The AQMAs declared by WDC which the above AQAP measures relate to are discussed further in Section 4.

<sup>17</sup> <https://bills.parliament.uk/bills/2593/publications>

<sup>18</sup> Environment Agency, "Environment Act 1995" (The Environment Agency, 2002), <http://www.legislation.gov.uk/ukpga/1995/25/contents>.

<sup>19</sup> Warwick District Council, "Air Quality Action Plan: Warwick District Council", June 2015

## 2.3 National Planning Policy Framework

The National Planning Policy Framework (NPPF)<sup>20</sup> sets out the Government's planning policy for England. It requires planning decisions for any new development to prevent new and existing development from contributing to, or being put at risk from, unacceptable levels of air pollution (paragraph 174). It also states that planning decisions should sustain and contribute towards compliance with relevant limit values or national objectives for air pollutants, taking into account the presence of AQMAs and Clean Air Zones (CAZ)s (paragraph 186), and the cumulative impacts from other sites (paragraph 185).

Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. Furthermore, planning decisions should ensure that any new development in AQMAs and CAZs is consistent with the local air quality action plan.

Also, to help reduce congestion and emissions, to improve air quality and public health, significant development should be focused on locations which are / can be made sustainable through limiting the need to travel (paragraph 105).

## 2.4 Planning Practice Guidance

Reference ID 32 (Air Quality) of the National Planning Practice Guidance (NPPG)<sup>21</sup>, which was updated in November 2019, provides guiding principles on how planning can take account of the impact of new development on air quality. The NPPG summarises the importance of air quality in planning and the key legislation relating to it.

## 2.5 Local Planning Policy

WDC adopted the Warwick District Local Plan 2011-2029<sup>22</sup> in September 2017. The local plan contains the policies to guide local development in the district. The policies considered relevant to air quality are summarised below.

Policy TR2 Traffic Generation states:

*"All large-scale developments (both residential and non-residential) that result in the generation of significant traffic movements should be supported by a Transport Assessment, and where necessary a Travel Plan, to demonstrate the practical and effective measures to be taken to avoid the adverse impacts of traffic.*

*Any development that results in significant negative impacts on the health and wellbeing of people in the area as a result of pollution, noise or vibration caused by traffic generation will not be permitted unless effective mitigation can be achieved.*

*Any development that results in significant negative impacts on air quality within identified Air Quality Management Areas or on the health and wellbeing of people in the area as a result of pollution should be supported by an air quality assessment and, where necessary, a mitigation plan to demonstrate practical and effective measures to be taken to avoid the adverse impacts.*

*A Transport Statement may be required for development that has relatively small transport implications in line with the Guidance on Transport Assessments.*

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<sup>20</sup> Ministry of Housing, Communities and Local Government, "National Planning Policy Framework," July 2021, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1004408/NPPF\\_JULY\\_2021.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1004408/NPPF_JULY_2021.pdf).

<sup>21</sup> Ministry of Housing, Communities & Local Government, "Reference ID (32) Air Quality" (Ministry of Housing, Communities & Local Government, 2019), <https://www.gov.uk/guidance/air-quality--3>.

<sup>22</sup> Warwick District Council, "Warwick District Local Plan 2011-2029", September 2017.

*All measures required in the policy should take full account of the cumulative impact of all development proposed in this Plan (and any other known developments) on traffic generation and air quality."*

Policy KP13, regarding general design principles, also states that:

*"Development proposals should achieve a standard of design that is appropriate to the local area and demonstrable regard for... "potential impacts from noise, light or air contamination."*



### 3. Methodology

#### 3.1 Guidance

WDC have adopted the Air Quality and Planning Supplementary Planning Guidance (SPG)<sup>23</sup>. This contains guidance on the classification, assessment & mitigation requirements for new development proposals, which has been considered in preparing this AQA.

In addition, the following guidance has been reviewed / followed / referred to:

- » Defra's LAQM.TG (22)<sup>16</sup>;
- » EPUK & IAQM Land-use Planning & Development Control: Planning for Air Quality<sup>24</sup>, and
- » The IAQM's guidance on assessing impacts from construction<sup>25</sup>.

#### 3.2 Baseline Air Quality

The baseline air quality conditions in the vicinity of the Site have been established through the compilation and review of the following data sources. The baseline assessment can be found in Section 4.

- » Data from the National Atmospheric Emissions Inventory (NAEI)<sup>26</sup>, Environment Agency (EA)<sup>27</sup> and Defra's Pollutant Release and Transfer Register (PRTR) data<sup>28</sup>;
- » Defra's modelled background concentrations of AQS pollutants (UK-AIR)<sup>29</sup>. These estimates are produced using detailed modelling tools and are available as concentrations at central 1km<sup>2</sup> National Grid square locations across the UK. Mapped background concentrations have been obtained based upon the 2018 base year Defra update (August 2020 publication);
- » WDC's latest available air quality monitoring data, derived from the latest available air quality annual status report published in July 2022 with most recent data from 2021<sup>30</sup>, and
- » NO<sub>2</sub> monitoring data obtained from the planning portal pursuant to W/18/1635<sup>4</sup>.

#### 3.3 Construction Phase Assessment

##### 3.3.1 Dust Risk Assessment

A construction dust risk assessment is provided in Section 5 and has been undertaken in line with IAQM guidance. This considers the risk of impacts during the construction phase in terms of nuisance dust, human health (PM<sub>10</sub> exposure) and ecological impacts.

With regard to ecological receptors, risk assessment should be taken where high-sensitivity receptors are located within 50m of a Site boundary, or within 50m of any routes used by construction vehicles on the public highway, up to 500m from the Site entrance.

The Multi Agency Geographic Information for the Countryside (MAGIC)<sup>31</sup>, which incorporates Natural England's interactive maps, has been reviewed to identify whether any statutory ecological sensitive

23 Warwick District Council, "Air Quality and Planning Supplementary Planning Guidance", January 2019

24 EPUK & IAQM, "Land-Use Planning & Development Control: Planning for Air Quality" (Institute for Air Quality Management (IAQM), January 2017), <http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf>.

25 IAQM, "Guidance on the Assessment of Dust from Demolition and Construction" (Institute of Air Quality Management (IAQM)), February 2014), <http://www.iaqm.co.uk/text/guidance/construction-dust-2014.pdf>.

26 National Atmospheric Emissions Inventory, UK Emissions Interactive Map (beis.gov.uk).

27 <https://data.gov.uk/dataset/cfd94301-a2f2-48a2-9915-e477ca6d8b7e/pollution-inventory>

28 UK Pollutant Release and Transfer Register (PRTR) <https://prtr.defra.gov.uk/map-search>

29 UK-AIR, "Background Mapping Data for Local Authorities - 2018," n.d., <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>.

30 Warwick District Council, 2022 Air Quality Annual Status Report (ASR), In fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management, July, 2022

31 <https://magic.defra.gov.uk/MagicMap.aspx>

receptors present in the area. Glasshouse Wood Ancient Woodland has been identified within the 100m of the Site. However, as the Ancient Woodland is not within 50m, no further assessment of dust soiling impacts is required, in accordance with IAQM guidance.

With regard to human receptors, sensitive receptors were identified within 350m of the site boundary. Based on the IAQM guidance residential dwellings, museums, car parks and car show room are indicative examples of high sensitivity receptors in relation to both dust soiling and health effects of PM<sub>10</sub>. Indicative examples of medium sensitivity receptors include places of work, such as offices.

The IAQM guidance states that the potential dust emission magnitude from Demolition, Earthworks, Construction and Trackout should all be assessed individually. In addition, the sensitivity of the area to adverse dust impacts should also be defined.

The overall significance of the risk of adverse impacts during the construction phase can then be defined using the 'risk of impacts matrix' for each stage of the construction phase described above.

### 3.3.2 Construction Traffic Emissions

The IAQM guidance states that from experience of assessing exhaust emissions from site traffic, it is unlikely that any significant adverse impacts on local air quality would be caused and in the vast majority of cases, quantitative assessment is not needed. As such, short term effects of construction traffic emissions have not been assessed.

## 3.4 Operational Phase Assessment

### 3.4.1 WDC Criteria

The WDC SPG<sup>23</sup> states that:

*"The assessment of air quality for relevant planning applications should follow a three-stage process:*

- 1. Determining the classification of the development proposal;*
- 2. Assessing and quantifying the impact on local air quality;*
- 3. Determining the level of a mitigation required by the proposal to make the scheme acceptable."*

It provides the following Development Type Classification criteria:

SCHEME TYPE	MINOR	MEDIUM	MAJOR
Threshold	Below threshold criteria for a Transport Assessment <sup>8</sup> or Travel Plan	Meets threshold criteria for a Transport Assessment or Travel Plan	Medium type developments which also trigger any of the following criteria: i) Where development is within or adjacent <sup>9</sup> to an AQMA or CAZ ii) Where development requires an EIA <sup>10</sup> and air quality is to be considered iii) Where any of the criteria in Table 2 are triggered
Assessment	Exposure Assessment where applicable (see 5.2)	Exposure Assessment where applicable (see 5.2)	Air Quality Assessment required including an evaluation of changes in emissions <sup>11</sup> Exposure Assessment where applicable (see 5.2)
Mitigation	Type 1	Types 1 and 2	Types 1,2 and 3

Figure 3: WDC Air quality classification of developments

- Proposals in areas where sustained compliance with EU Limit Values may be at risk<sup>12</sup>
- Any development proposing a net increase of 100 or more parking spaces
- Any development that could increase the existing traffic flows on roads of > 10,000 AADT by 5% or more
- Any development that causes a change in LDV (cars and small vans) flows of:
  - more than 100 AADT within or adjacent to an AQMA, CAZ or exceedance area
  - more than 500 AADT elsewhere
- Any developments that could increase traffic flows by 5% or more in road canyons<sup>13</sup> (or creates a canyon) with > 5,000 AADT
- Any development that causes a change in HDV flows (lorries, large vans and buses) of:
  - more than 25 AADT within or adjacent to an AQMA, CAZ or exceedance area
  - more than 100 AADT elsewhere
- Proposals that could introduce or significantly alter congestion (DfT Congestion) and includes the introduction of substantial road infrastructure changes
- Proposals that reduce average speeds by more than 10 km per hour
- Proposals that include additional HGV movements by more than 10% of total trips
- The construction, widening or repositioning of a road in the vicinity of sensitive receptors<sup>14</sup>
- Where a centralised combustion unit of thermal input >300kWh is proposed
- All biomass boiler and other large novel fuel appliance applications
- All stand-by/short-term power generation units regulated by the Environment Agency

Figure 4: WDC Additional Trigger Criteria for Major Developments

When accounting for previous operation of the Woodside Conference Centre, the Transport Statement (prepared by the transport consultants, Hydrock), states that overall, across the daily profile the proposed residential development would result in a reduction of 62 vehicle movements from the road network (further details provided in Section 6.1).

Hydrock's transport team have confirmed that, even when accounting for just the gross trips associated with the Proposed Development (i.e., not accounting for the net reduction associated with the former use of Woodside Conference Centre), <100 AADT additional trips are expected to route through the nearby AQMAs (further details are provided in Section 6.1).

Therefore, based on the WDC SPG criteria listed above, the Proposed Development parameters are judged to fall with the **Medium** threshold criteria, and no detailed air quality impact assessment has been undertaken, as none of the additional Major criteria are triggered.

Full details of the net change in vehicle traffic associated with the Proposed Development are provided in Section 6.1.

### 3.4.2 Exposure Assessment

A qualitative exposure assessment has been undertaken which draws upon the findings of the baseline review in Section 4. In addition, the exposure assessment includes a review local traffic conditions and considers proximity to the closest roads sources to support the conclusions reached. The exposure assessment is provided in Section 6.2.

## 3.5 Emissions Mitigation Assessment

Although the WDC SPG criteria justifies the classification of the Proposed Development as **Medium**, it is acknowledged that trips associated with the Woodside Conference Centre have not been operational on the network since its closure in 2021.

Therefore, it is considered reasonably conservative to undertake an emissions mitigation assessment (with damage cost calculations) based on the gross trips associated with the Proposed Development (i.e., not accounting for the net reduction), to ensure that proportionate mitigation measures are included.

Increases in pollutant emissions ( $\text{NO}_x$  and  $\text{PM}_{2.5}$ ) caused by the Proposed Development over a 5-year appraisal period are estimated using development traffic data and EFT v.11. The latest version of Defra's Air Quality Appraisal: Damage Costs Toolkit<sup>32</sup> (last updated February 2023) has been used to apply the 'damage costs', which are a set of impact values, defined per tonne of emission by pollutant, to the emissions associated with the Proposed Development. The result is an indicative value to be spent on mitigation measures to reduce incremental worsening in local ambient air quality from new development.

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<sup>32</sup> <https://www.gov.uk/government/publications/assess-the-impact-of-air-quality/air-quality-appraisal-damage-cost-guidance#:~:text=Damage%20costs%20are%20a%20set,small%20changes%20in%20pollutant%20emissions>.



## 4. Baseline Air Quality Conditions

This section provides a review of baseline air quality conditions at the Site and surrounding locale. For assessment purposes, the client confirmed that 2025 is reasonably assumed to be the first year of occupation. It is still considered best-practice to consider 2019 as the last pre-Covid atypical baseline year.

### 4.1 Local Air Quality Management

WDC have declared several AQMAs in the district due to elevated annual average concentrations of NO<sub>2</sub>. The two closest AQMAs to the Site are the Warwick Road (Kenilworth) AQMA and the New Street (Kenilworth) AQMA, which are approximately 1.7km and 2.1km to the west of the Site, respectively. The AQMA boundaries are shown below:

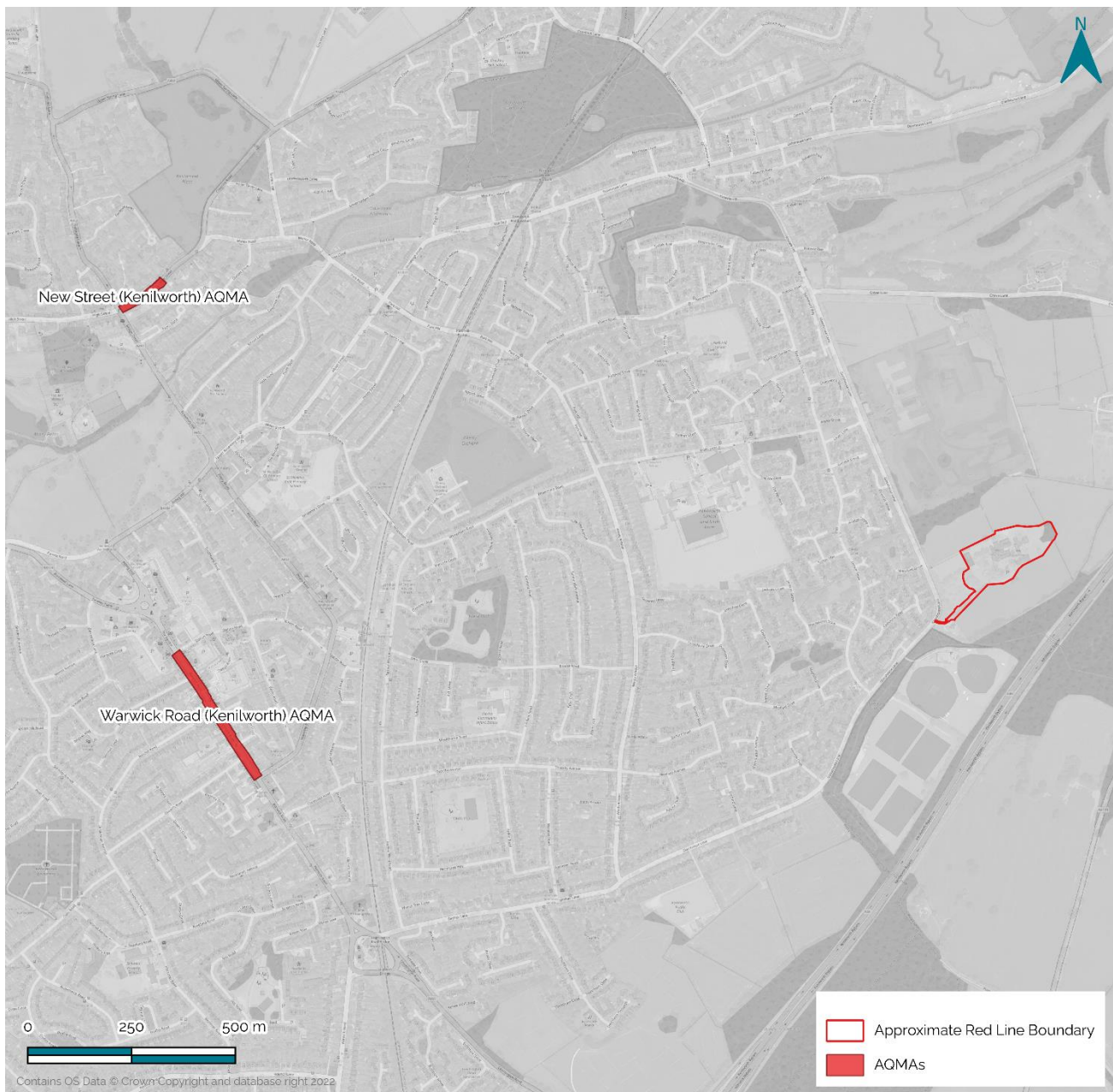


Figure 5: Air Quality Management Areas



## 4.2 Local Emission Sources

### 4.2.1 Road

The main source of air pollution in the Site locale is considered to be emissions from vehicles using the local road network, predominantly the A46 to the south of the Site, and to a lesser extent Glasshouse Lane to the west. Traffic flow information for these roads is provided in Section 6.3 of this report.

### 4.2.2 Industrial

A review of the NAEI<sup>26</sup>, EA<sup>27</sup> and Defra's PRTR<sup>28</sup> data indicates that there are no major industrial pollution sources in the immediate vicinity of the Site that will influence local air quality.

## 4.3 Defra Mapped Concentrations

### 4.3.1 Background Concentrations

Mapped background concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> were downloaded for the grid square containing the Site. Background pollutant concentrations for 2019 (base year), 2023 (the current year), 2025 (the earliest year of occupation of the Proposed Development) are displayed in Table 3.

Table 3: Defra Mapped Background Concentrations

Grid Square (x,y)	Pollutant	AQAL (µg/m <sup>3</sup> )	Annual Mean Concentration (µg/m <sup>3</sup> )		
			2019	2023	2025
430500,271500	NO <sub>2</sub>	40	15.1	12.6	11.5
	PM <sub>10</sub>	40	15.0	14.3	13.9
	PM <sub>2.5</sub>	20	9.7	9.1	8.9

The data show that annual mean background concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> at the grid square within which the Site is located are below the AQALs in all years.

Concentrations of all pollutants are predicted to decline incrementally each year. These reductions are principally due to the forecast effect of the roll out of cleaner vehicles and strategies to reduce emissions across all sectors.

## 4.4 Air Quality Monitoring Data

### 4.4.1 Automatic (Continuous) Monitoring

WDC undertook automatic (continuous) air quality monitoring at one Site in 2021, located in Warwick town centre. In addition, the UK Automatic Urban and Rural Network (AURN) is a national network of air quality monitoring stations operated on behalf of the Defra. 2 AURN stations monitor air quality in WDC's boundary, both in Leamington Spa.

As no automatic (continuous) air quality monitoring stations are located within Kenilworth, no representative data are available for review.

#### 4.4.2 Passive NO<sub>2</sub> Monitoring

#### 4.4.3 WDC Diffusion Tube Network

Passive NO<sub>2</sub> diffusion tube monitoring is currently undertaken by WDC at numerous locations throughout the Kenilworth area as part of their commitment to LAQM. The closest tubes to the Site are shown in Figure 6 and the annual mean NO<sub>2</sub> concentrations monitored at these locations are presented in Table 4.

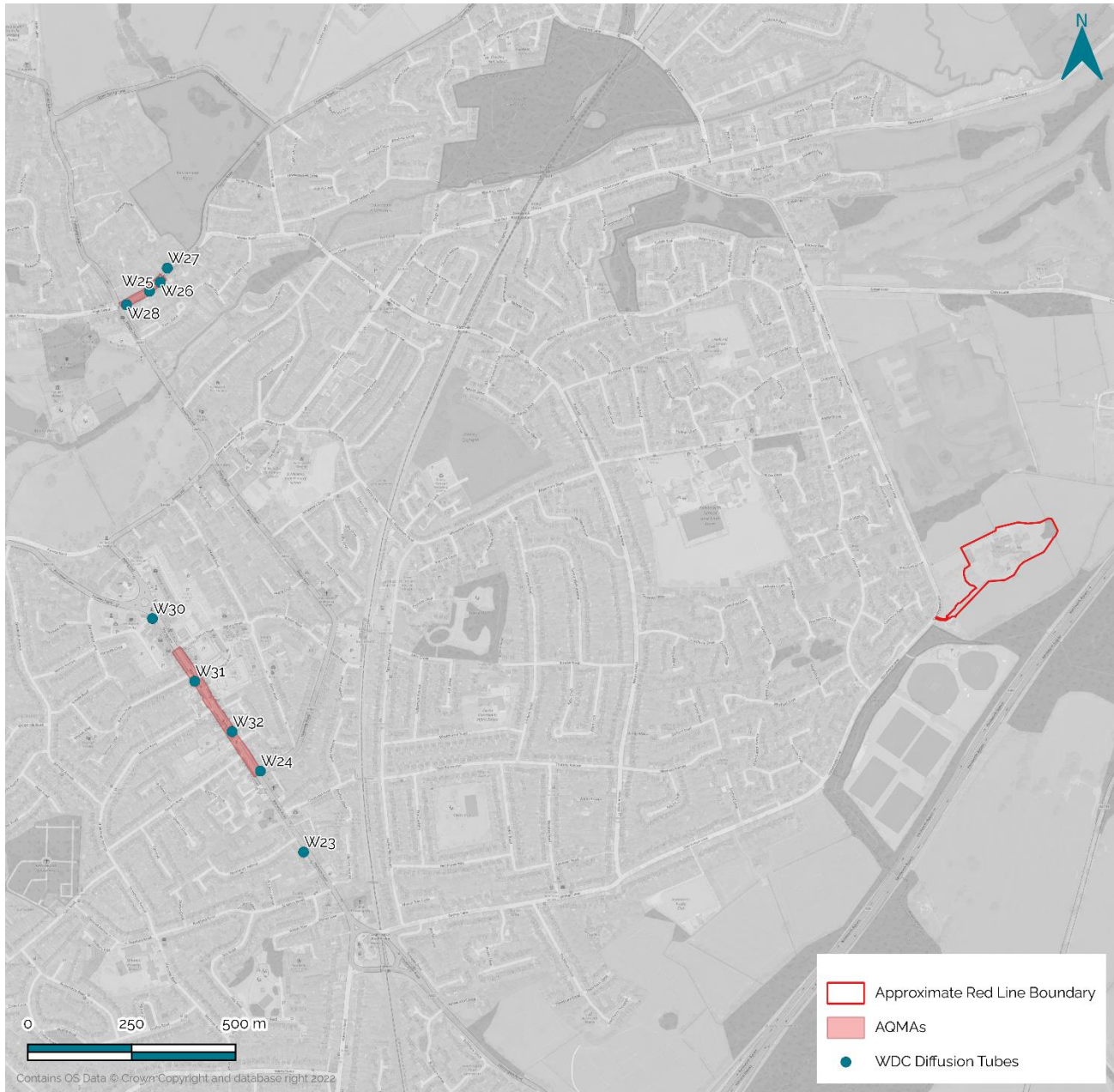


Figure 6: WDC Diffusion Tubes

Table 4: WDC NO<sub>2</sub> Monitoring Concentrations

Site ID	Site Name	Site Type	X (m)	Y (m)	In AQMA?	Distance from Site (km)	Annual Mean NO <sub>2</sub> Concentration (µg/m <sup>3</sup> )			
							2018	2019	2020	2021
W23	Moorlands Road Jcn	Roadside	429078	271207	N	1.7	27.2	25.6	18.1	19.7
W24	Waverley Road	Roadside	428974	271402	Y	1.7	25.3	22.8	19.6	19.2
W32	Warwick Road	Roadside	428906	271497	Y	1.8	32.4	28.8	23.1	21.6
W31	Barrow Road	Kerbside	428816	271618	Y	1.8	32.0	28.4	22.5	20.0
W30	The Square	Roadside	428714	271769	N	1.9	22.6	20.9	16.2	15.3
W26	New Street No 2	Roadside	428733	272578	Y	2.1	23.6	21.4	18.1	16.4
W25	New Street No 1	Roadside	428707	272556	Y	2.1	22.8	25.4	19.6	21.7
W28	Fieldgate Lane Jcn	Roadside	428652	272524	Y	2.1	31.8	29.3	22.9	23.8
W27	New Street No 3	Kerbside	428750	272612	N	2.1	21.0	18.1	15.4	14.3

The data in Table 4 shows there have been no exceedances of the NO<sub>2</sub> annual mean AQAL at any diffusion tube location in Kenilworth in recent years. It is also noted that most diffusion tubes are located within AQMAs where air quality would reasonably be expected to be worse. The data show that the highest annual mean NO<sub>2</sub> concentration in 2019 was 26.8% below the AQAL and therefore not at risk of exceedance.

With regard to trends in Kenilworth, the latest WDC ASR states that:

*"Compliance has been achieved for four consecutive years in the Warwick Coventry Road, Warwick Road (Kenilworth), and New Street Kenilworth AQMAs (Air Quality Management Areas). Concentrations in these AQMAs have been observed to be decreasing since the last reported exceedances in 2017, however as 2021 is potentially an atypical year, the Council wishes to keep these designations in place until the long-term impacts on COVID-19 can be accurately assessed, to ensure that compliance will be maintained in future years."*

All WDC monitoring locations in Kenilworth are in Roadside or Kerbside locations, with most located within an AQMA. Therefore, monitored concentrations are not considered representative of ambient NO<sub>2</sub> concentrations which would reasonably be expected at the Site, which is in a more background location (further discussion is provided in Section 6 – exposure test).

#### 4.4.4 RSK Diffusion Tube Study

RSK undertook an NO<sub>2</sub> diffusion tube survey between July 2017 – January 2018. The corresponding data were reported in the most recent AQA<sup>4</sup> pursuant to W/18/1635. It is considered an appropriate dataset to form part of the baseline evidence on the grounds that it was accepted by WDC. *Hydrock accept no responsibility for data accuracy.*

The monitoring locations from the RSK survey are shown below. Coordinates reported in the most recent AQA prepared by RSK<sup>4</sup> were plotted in GIS:

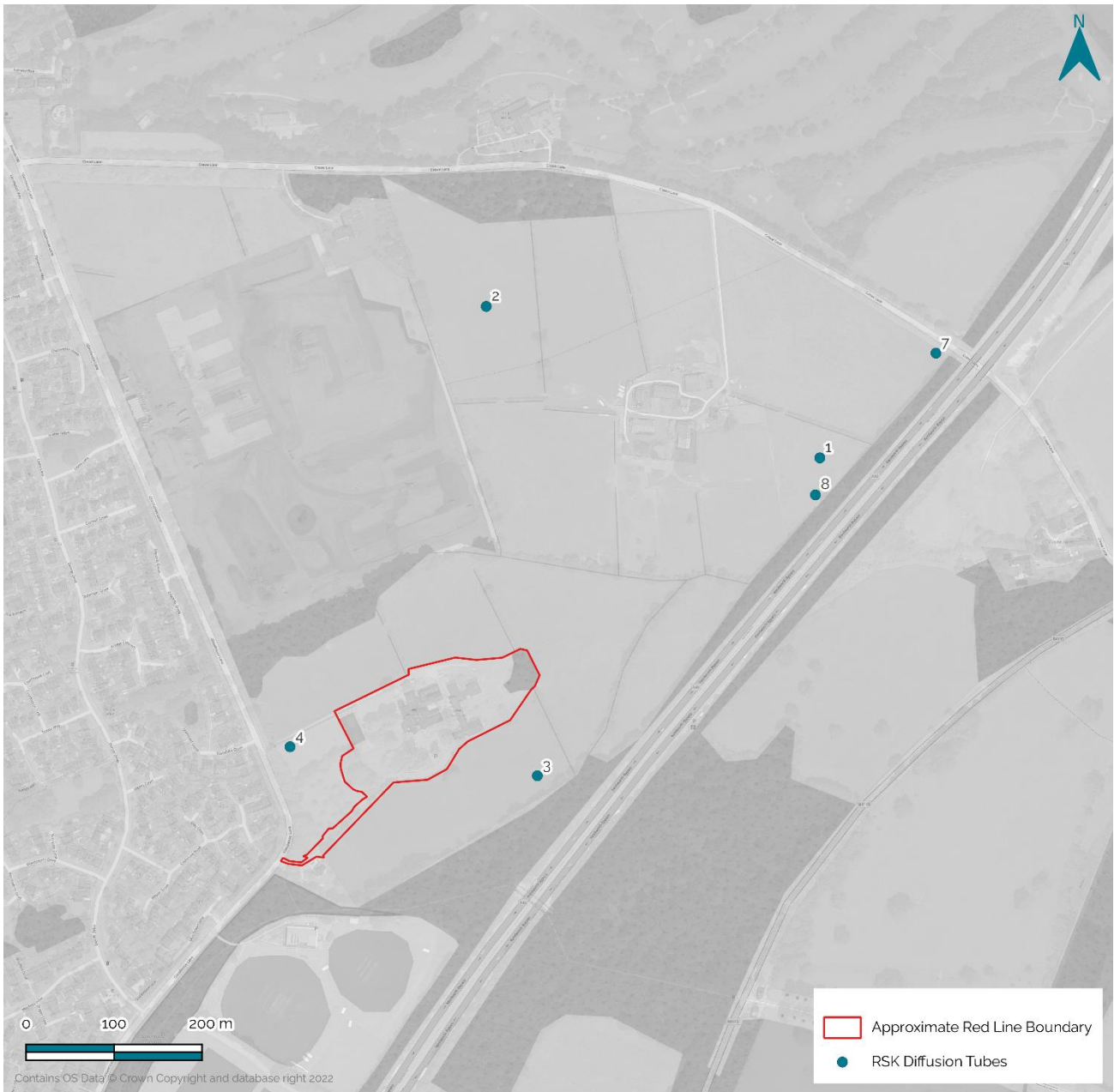


Figure 7: RSK Diffusion Tubes

From the above, it can be seen that RSK diffusion tubes 3 and 4 can be considered reasonably representative of baseline conditions at the Site. In addition, RSK diffusion tube 8 represents the worst-case location with regard to exposure to emissions from the A46. Therefore, data for these three tubes are summarised below. *It is noted that for each tube, data were reported by RSK in three formats (annualised, local bias-adjusted, and national bias-adjusted). As a worst-case, only the annualised and pre bias-adjusted data are reported in this AQA, to avoid the risk of human error transposition.*

Table 5: RSK NO<sub>2</sub> Monitoring Concentrations

Site ID	X (m)	Y (m)	Annual Mean NO <sub>2</sub> Concentration (µg/m <sup>3</sup> )
			2017*
3	430891	271866	17.9
4	430610	271899	15.2
8	431207	272185	18.1

*\*Based on the dates of the RSK survey, annualised data are considered to be representative of a 2017 baseline. Data are as reported before application of bias adjustment factors.*

The data in Table 5 show no exceedances of the annual mean AQAL were monitored by RSK in proximity to the Site. Based on the date of RSK's survey, data are considered to be representative of a 2017 baseline. However, comparison between the data for diffusion tubes 3 and 4 with the UK-AIR background data in Table 3 shows good agreement (concentrations within 0.1 µg/m<sup>3</sup> in the case of diffusion tube 4).



## 5. Construction Phase Assessment

### 5.1 Overview

The construction phase of the Proposed Development will involve a number of activities that will release polluting emissions to air. Predominantly, these will be emissions of dust. As such, a qualitative construction dust risk assessment has been carried out in accordance with IAQM guidance. Where detailed information was unknown, the potential dust emission magnitude has been estimated based on professional judgement and conservative assumptions.

The risk of impacts and the significance of each stage of the construction phase is classified as Negligible, Low, Medium or High, determined against a matrix which considers the distance from source, receptor sensitivity, background pollution concentrations and the potential dust emission magnitude of the works.

### 5.2 Potential Dust Emission Magnitude

#### 5.2.1 Demolition

The existing buildings and structures associated with the former Woodside Conference Centre will be demolished as part of the works. The total volume of buildings to be demolished is estimated to be in the range of 20,000-50,000m<sup>3</sup>, comprising materials such as brick and concrete. Demolition activities will predominantly take place <10m above ground level.

Based on the above, the potential dust emission magnitude for Demolition is considered to be **'Medium'**.

#### 5.2.2 Earthworks

Earthworks will primarily involve excavating material, haulage, tipping and stockpiling. This may also involve levelling the site and landscaping. The total area of the Site is within the IAQM's 'Large' criteria (>10,000m<sup>2</sup>). The underlying soil texture is loamy and clayey (slightly acid loamy and clayey soils with impeded drainage)<sup>33</sup> which has a high potential for dust release due to the smaller particle size.

Based on the above, the potential dust emission magnitude for Earthworks is considered to be **'Large'**.

#### 5.2.3 Construction

The key issues when determining the potential dust emission magnitude during the construction phase include the size of the building(s)/infrastructure, method of construction, construction materials, and duration of build. The total volume of buildings to be constructed has been estimated based on the approximate area of the red line boundary and the illustrative masterplan (see Figure 2) for the Proposed Development.

The total volume of buildings to be constructed is estimated to exceed 100,000m<sup>3</sup>, with construction materials comprising masonry, stone, concrete and glass. It has been assumed that concrete batching and sandblasting will not be undertaken onsite.

Based on the above, the potential dust emission magnitude for Construction is considered to be **'Large'**.

#### 5.2.4 Trackout

The risk of impacts occurring during Trackout is predominantly dependent on the number of vehicles accessing the Site on a daily basis. However, vehicle size, speed and the duration of activities are also factors which are used to determine the risk of impacts.

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<sup>33</sup> Cranfield University, "Cranfield Soil and Agrifood Institute," n.d., <http://www.landis.org.uk/soilscapes/>.

It is expected that there would be less than 10 outward movements of HDVs from the Site each day, including within peak construction. No unpaved surfaces over 50m are expected as site traffic would be routed along the existing road network.

Based on the above, the potential dust emission magnitude during Trackout is considered to be 'Small'.

### 5.2.5 Summary

Table 6 below shows a summary of the potential dust emission magnitudes from each activity.

Table 6: Potential Dust Emission Magnitude Summary

Activity	Potential Dust Emission Magnitude
Demolition	Medium
Earthworks	Large
Construction	Large
Trackout	Small

## 5.3 Sensitivity of Area

### 5.3.1 Prevailing Wind Direction

The long-term prevailing wind direction for the closest regionally representative meteorological measurement station to the Site, at Church Lawford, is shown below for 2018 to 2022.

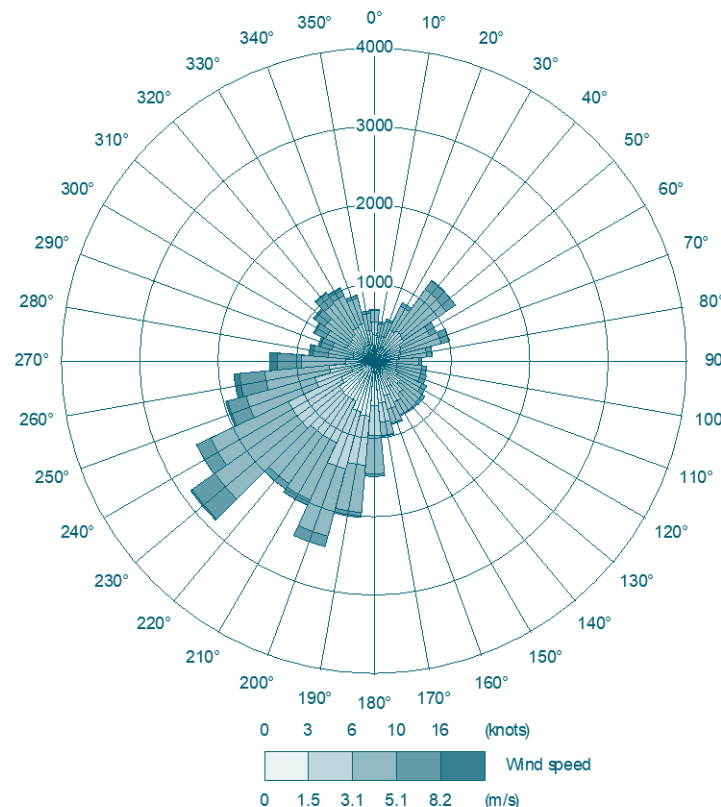


Figure 8: Wind Rose Church Lawford (2018 - 2022)

The wind rose shows that the prevailing winds are from the south-west. As such, receptors downwind (i.e., in a north-east direction from the Site) could be more at risk of more frequent exposure to construction phase emissions than those located upwind.

### 5.3.2 High Sensitivity Receptors

Figure 9 shows the construction phase distance buffers (20m, 50m, 100m and 350m) around the Site boundary, as well as identified human receptor locations and their sensitivities within these buffers.

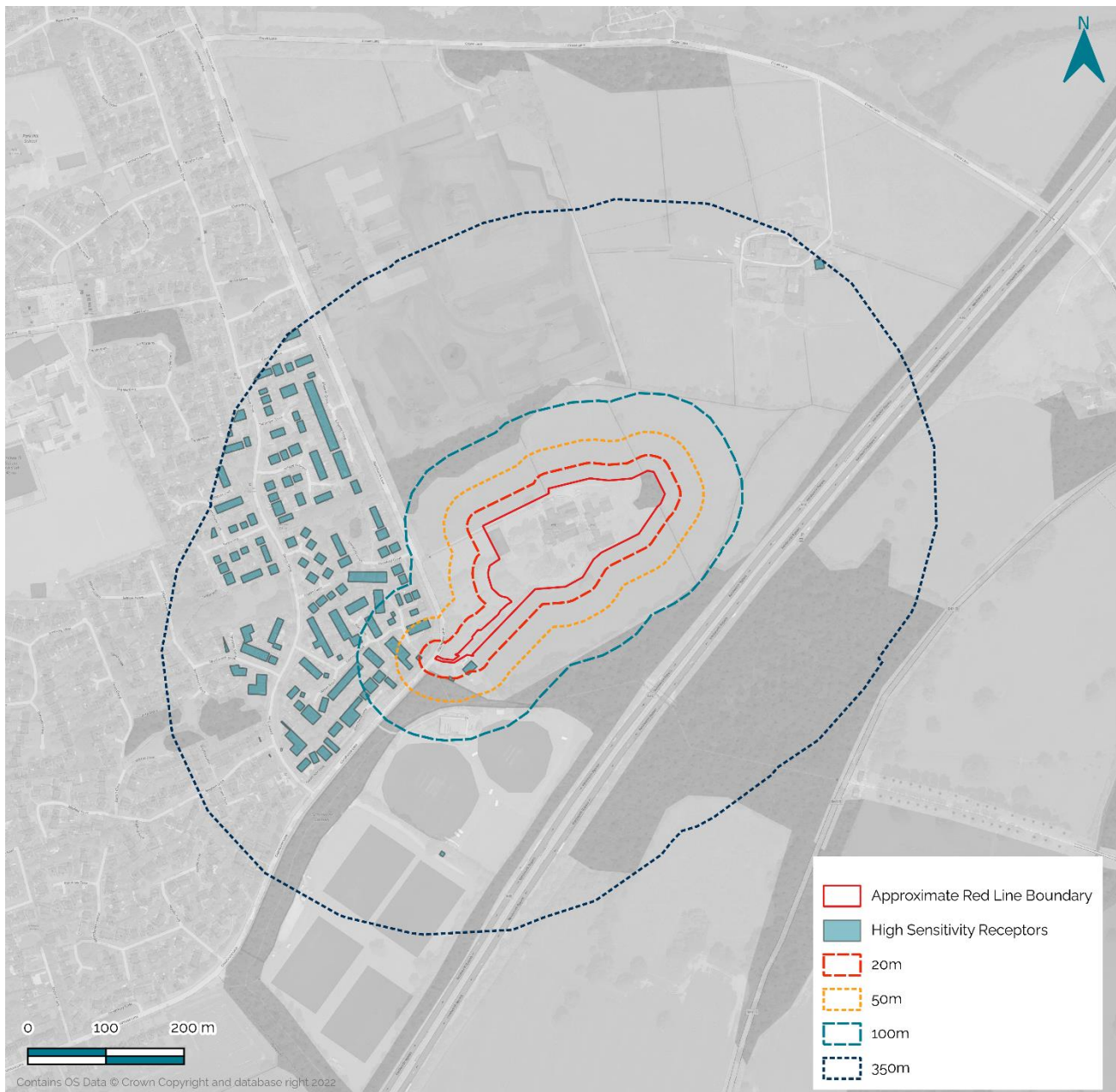


Figure 9: Construction Phase Receptors

#### 5.3.2.1 Dust Soiling Sensitivity

Figure 9 illustrates there are >1 but <10 existing high sensitivity human receptors within 20m (up to 50m) of the Site boundary. As such, the overall sensitivity of the surrounding area to nuisance dust soiling effects during Demolition, Earthworks and Construction, according to IAQM guidance, is defined as **'Medium'**.

With regard to Trackout, the sensitivity for Small sites (based on the potential dust emission magnitude of Trackout, not on Site area) is assessed where receptors are located within 50m from Trackout routes up to 50m from the Site. Should site traffic use Glasshouse Lane, there are a number of high-sensitivity receptors within 50m of the routes. As such, to adopt a conservative approach the sensitivity to dust soiling impacts from Trackout is defined as '**Medium**'.

### 5.3.2.2 Human Health Sensitivity

Defra mapped background predictions (Table 3) show that annual mean concentrations of PM<sub>10</sub> are not likely to exceed 24µg/m<sup>3</sup> in the vicinity of the Site<sup>34</sup>, based on a 2019 baseline. According to IAQM guidance, where PM<sub>10</sub> concentrations are <24µg/m<sup>3</sup> and there are less than 100 high sensitivity receptors within 20m of construction works, the overall sensitivity of the surrounding area to human health impacts is defined as '**Low**' for Demolition, Earthworks, Construction and Trackout.

### 5.3.3 Summary of Area Sensitivity

The sensitivity of the surrounding area for the potential impacts discussed above is summarised in Table 7 below.

Table 7: Sensitivity of Local Area

Potential Impact	Sensitivity of Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Medium	Medium
Human Health	Low	Low	Low	Low

## 5.4 Risk of Impacts

Using the methodology prescribed in the IAQM guidance, the overall risk of impacts can be defined by combining the sensitivity of the area with the potential dust emission magnitude of each stage of the construction phase as described above.

Table 8 provides a summary of the construction dust risk assessment. Overall, the development is considered to be **Medium Risk** for nuisance dust soiling effects and **Low Risk** for PM<sub>10</sub> health effects in the absence of mitigation.

Table 8: Risk of Adverse Impacts During Construction Phase

Potential Impact	Risk of Impacts			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	Medium Risk	Medium Risk	Negligible Risk
Human Health	Low Risk	Low Risk	Low Risk	Negligible Risk

<sup>34</sup> the concentration at which exceedance of the 24-hour AQAL is likely

## 6. Operational Phase Assessment

### 6.1 Impact Assessment

#### 6.1.1 Vehicle Trip Generation

The appointed transport consultants (Hydrock) provided the following data to support the assessment classification process required by the WDC SPG:

Table 9 – AADT Trip Generation data

Woodside Conference Centre	Proposed Development	Net Change
308	246	-62

With regard to vehicle trips associated with Woodside Conference Centre, it is understood that these trips were operational on the network until as recently as 2021. Analysis indicates that the total AADT flows associated with its operation within a 24-hr period would generate 308 vehicle movements. These trips were operational in the 2019 base year assessed in Section 4. Therefore, it is considered appropriate to consider the net change against this baseline.

Based on the existing agreed trip rates supporting the wider outline approval adjacent to the Site, the Proposed Development is forecast to generate a total AADT of 246 vehicle movements. The net change in traffic comparison between previous use of the Site and the Proposed Development is -62 vehicles AADT, which represents a reduction in flows on the road network.

With regard to the Warwick Road, Kenilworth AQMA, Hydrock, has undertaken a high-level review of development traffic without a net change reduction applied based on the agreed distribution model on the local road network. This assumes the 246 trips are new trips, without any net changes applied, as a worst-case. AADT flows generated by the Proposed Development routing along the Birches Lane/Glasshouse Lane arm of the A452 Warwick Road gyratory indicates a total of 54 vehicle movements. This level of traffic does not exceed 100 AADT assessment criteria adjacent to or within an AQMA.

Context should also be given to the outline approval, which whilst obtaining permission for the delivery of 620 dwellings was supported by a Transport Assessment (Aug 2018), which undertook junction capacity and S-Paramics modelling based on a scheme of 700 dwellings. The TA (Aug 2018) includes development traffic distribution in agreement with the Local and Strategic Highway Authorities.

Based on the above, detailed assessment of air quality impacts at specific receptor locations from road traffic sources has not been undertaken, as it is reasonable to conclude that operational phase air quality impacts will be Negligible. Based on the distribution from the Site, no roads will receive a gross increase in AADT above the WDC SPG assessment criteria for a Major development, even before applying the net change analysis.

#### 6.1.2 Cumulative Impacts

The operational phase air quality impacts from the Proposed Development are expected to be Negligible for reasons discussed. However, a proportionate scheme of mitigation measures will be provided based on the emissions calculations undertaken using the gross increase in trips (i.e., not accounting for the net change – see Section 7). This approach will ensure any impacts associated with the Proposed Development are adequately reduced.

With regard to the combined impacts of both the Proposed Development with other recently approved developments, the conclusions of the most recent AQA pursuant to W/18/1635<sup>4</sup> should be taken into consideration, whereby an insignificant effect on local air quality was concluded (noting that the assessment considered all developments allocated within the WDC Local Plan). In addition, a range of mitigation



measures were secured in the Low Emission Strategy submitted pursuant to W/21/1811<sup>5</sup> to ensure potential impacts are further reduced.

Based on the above, the cumulative impact of the Proposed Development in combination with the WDC Local Plan is qualitatively concluded to be Negligible.

## 6.2 Exposure Assessment

### 6.2.1 Exposure Classification Criteria

LAQM.TG(22) guidance (Tables 7.7 and 7.8) set out the classification of monitoring locations and where these are in relation to sources of pollution. The guidance states that an "Urban background" location is, as follows:

*"An urban location distanced from sources and therefore broadly representative of city-wide background conditions, e.g. urban residential areas."*

There is a known relationship between NO<sub>2</sub> concentrations and distance to source, whereby concentrations reduce ('fall-off') as distances increase. Defra's AEA 'Diffusion Tube for Ambient NO<sub>2</sub> Monitoring: Practical Guidance'<sup>35</sup> provides further detailed definitions which help to classify urban background sites. Specifically, Section 3.2.2 states that, where a site meets the following criteria, they can be reasonably defined being in an urban background location, away from direct adverse impacts associated with emissions from road sources:

- » 50m from any major source of NO<sub>2</sub> (e.g., multi-storey car parks);
- » 30m from any 'very busy' road (>30,000 vehicles per day);
- » 20m from a 'busy' road (10,000 – 30,000 vehicles per day);
- » 10m from any 'main' road; and
- » 5m from locations where vehicles may stop with their engines idling.

### 6.2.2 Traffic Data Review

Traffic data for the A46 (DfT count point ID 16468<sup>36</sup>) and Glasshouse Lane (DfT count point ID 804494<sup>37</sup>) which abut the Site to the south and west respectively shows that:

- » Traffic flows on the A46 have consistently ranged from 60,000-85,000 AADT (since manual counts began (2001-2021) and therefore, the A46 is considered to be a major source of NO<sub>2</sub>. Exposure within 50m cannot be considered Urban Background;
- » Traffic flows on Glasshouse lane have consistently ranged from 3,000-4,000 AADT (since manual counts began (2018-2021)) and therefore, Glasshouse lane is considered to be a 'main' road. Exposure within 10m cannot be considered Urban Background.

The Site is located >130m from the A46 and >70m from Glasshouse Lane (as measured in GIS from the closest point of the approximate red line boundary to the respective kerb, not from relevant exposure, as a worst-case). On this basis, the Site is considered to be Urban Background relative to its proximity to these main sources of air pollution in the locale.

### 6.2.3 Summary of Baseline Data

No monitored exceedances of the annual mean AQAL have been identified, drawing upon the findings of both WDCs LAQM monitoring network and RSK's diffusion tube survey undertaken in close proximity to the

<sup>35</sup> AEA Energy and Environment, "Diffusion Tubes for Ambient NO<sub>2</sub> Monitoring: Practical Guidance," 2008, [https://laqm.defra.gov.uk/documents/0802141004\\_NO2\\_WG\\_PracticalGuidance\\_Issue1a.pdf](https://laqm.defra.gov.uk/documents/0802141004_NO2_WG_PracticalGuidance_Issue1a.pdf).

<sup>36</sup> <https://roadtraffic.dft.gov.uk/manualcountpoints/16468>

<sup>37</sup> <https://roadtraffic.dft.gov.uk/manualcountpoints/804494>

Site. The most representative monitoring data are comparable to the modelled UK-AIR background concentrations predicted for the Site, supporting the Urban Background exposure classification stated in Section 6.2.2 above.

#### *6.2.4 Exposure Test*

From the evidence presented in this Section, it is concluded that the risk of exceedance of the relevant AQALs at the Site is low, and future residents of the Proposed Development will not be introduced into an area of existing poor air quality.

## 7. Emissions Mitigation Assessment

### 7.1 Damage Cost Calculation

As previously mentioned, it is considered reasonably conservative to undertake an emissions mitigation assessment (with damage cost calculations) based on the gross trips associated with the Proposed Development (i.e., not accounting for the net reduction), to ensure that proportionate mitigation measures are included.

The calculation used in this assessment is summarised in the below general formula:

$$EFT\ output \times Damage\ costs \times 5\ years = 5\ year\ health\ exposure\ cost\ value\ (in\ £)$$

It is noted that emissions were calculated by assuming a reduction in emissions, in line with the EFT, for each year in the appraisal. This was accounted for as an input into Defra's EFT. Table 10, below, shows the inputs used for the damage cost calculation:

Table 10 – Damage Cost Inputs

Input	Value	Unit	Source / Explanation
Trip Length	10	km	EPUK & IAQM guidance
Traffic Flow	246	AADT	Gross trip generation for the Proposed Development (not accounting for the net reduction)
EFT Road Type	Urban (Not London)	-	-
Appraisal Years	2025 - 2029 (5 years)	-	Reductions in line with EFT as forecast by Defra.
Average Speed	30	kph	WDC SPG

Using the above inputs, road traffic emissions associated with the Proposed Development are calculated for the years 2025 to 2029, which are the five years following the opening year of the Proposed Development. The emissions per annum are shown below in Table 11.

Table 11 – Increase in Emissions (tonnes)

Pollutant	Development Emissions (tonnes/year)				
	2025	2026	2027	2028	2029
NO <sub>x</sub>	0.18032	0.16226	0.14531	0.13026	0.11738
PM <sub>2.5</sub>	0.01604	0.01594	0.01586	0.0158	0.01575

These emissions are then converted to the cost of damage to human health using the Air Quality Appraisal Damage Costs Toolkit. For this the price base year of 2023 (i.e., the year of appraisal) was used. The pollutant sector used was 'Road Transport Urban Medium'. The results of this are shown below in Table 12:

Table 12 – Calculated Damage Cost Outputs

Pollutant	Low Sensitivity Present Value	Central Present Value	High Sensitivity Present Value
NO <sub>x</sub>	£1,234.4	£6,715.7	£25,245.8
PM <sub>2.5</sub>	£2,018.3	£5,090.1	£14,572.3
<b>TOTAL</b>	£3,252.7	<b>£11,805.8</b>	£39,818.1

Based on the outputs in Table 12, the total central emissions 'damage costs' (sum of NO<sub>x</sub> and PM<sub>2.5</sub>) = **£11,805.8** which is the indicative value required to be spent on mitigation measures.

## 8. Mitigation Measures

### 8.1 Construction Phase

The qualitative construction dust risk assessment shows that the works are **Medium Risk** for adverse impacts during construction, in the absence of mitigation. The WDC SPG<sup>23</sup> states that Construction Environment Management Plans (CEMPs) are normally secured by a planning condition and will generally be applicable to Medium or above classified developments.

Therefore, to effectively reduce the risk of impacts to Negligible, appropriate mitigation measures should be adopted. The IAQM's highly recommended mitigation measures for Medium Risk sites are provided at Appendix A of this report. Implementing these measures should effectively reduce the risk of impacts to negligible during the construction phase.

Additional WDC Type 2 construction phase mitigation measures are also provided in Appendix A.

### 8.2 Operational Phase

The following mitigation measures are required by the WDC SPG based on the **Medium** development classification:

#### TYPE 1 MITIGATION

##### Plug-in Vehicle Re-Charging:

Residential:

1 charging point per unit (dwelling with dedicated parking) or 1 charging point per 10 spaces (unallocated parking) and ensure appropriate cabling is provided to enable increase in future provision

##### Green Infrastructure and planting

Where it can be shown that such infrastructure will reduce exposure from air pollution

Figure 10: WDC Type 1 Mitigation

Type 1 mitigation measures are considered to be embedded within the Proposed Development.

#### TYPE 2 MITIGATION

- Monitored Travel Plan, including mechanisms for discouraging high emission vehicle use and encouraging the uptake of low emission fuels and technologies<sup>20</sup>
- Measures to support public transport infrastructure and promote use
- Measures to support cycling and walking infrastructure
- Measures to support an Electric Vehicle Plan
- Designated parking spaces and differentiated parking charges for low emission vehicles
- Non-road mobile machinery (NRMM) controls (see Table 6)

Figure 11: WDC Type 2 Mitigation



## TYPE 3 MITIGATION

### Off-set mitigation to support:

- Implementation and operation of Clean Air Zones (CAZ), Low Emission Zones (LEZ) or Low Emission Strategies (LES)
- Growth in low and ultra-low emission public transport, including buses
- Electric Vehicle Plans
- On-street EV recharging
- Air Quality Monitoring programmes
- Car clubs (including electric) and car sharing schemes
- Cycling Hubs and corridors, including bike and e-bike hire schemes
- Plugged-in development and demonstration schemes e.g. new occupants given trial demonstration of plug-in vehicle
- Contributions to subsidised public transport for staff or residents
- Low emission waste collection services
- Contributions to renewable fuel and energy generation projects
- Infrastructure for low emission, alternative fuels e.g. refuse collection and community transport services

Figure 12: WDC Type 3 Mitigation

A scheme of Type 2 and 3 mitigation measures will be provided proportionate to the calculated value of the damage costs.

## 9. Discussion and Conclusion

Hydrock have been commissioned by Vistry Homes (the Client) to prepare an AQA in support of a full planning application for the redevelopment of the land parcel previously occupied by the former Woodside Conference Centre in Kenilworth, Warwickshire.

A qualitative construction dust risk assessment has been undertaken in line with IAQM guidance. Through good practice and implementation of appropriate mitigation measures outlined, it is expected that the release of dust would be effectively controlled and mitigated, with resulting effects considered to be 'not significant'. All dust impacts are considered to be temporary and short-term in nature.

By following development classification criteria provided in WDC's Air Quality SPG, the Proposed Development has been classified as a **Medium** development and the need for detailed dispersion modelling to assess the significance of potential impacts off-site has been scoped out of this assessment, as vehicle traffic movements associated with the Site are expected to result in a net reduction when compared to the previous use of Woodside Conference Centre. Based on the distribution from the Site, no roads will receive a gross increase in AADT above the WDC SPG assessment criteria for a Major development, even before applying the net change analysis. As such, it is not anticipated that any significant impacts on local air quality will occur and the Proposed Development is considered to be compliant with the NPPF and local Planning Policies.

A qualitative exposure assessment has been undertaken. The Site location is considered to be compliant with relevant AQALs and is therefore considered suitable for its proposed use, in planning terms.

Despite the **Medium** development classification, it was considered reasonably conservative to include an Emissions Mitigation Assessment (including damage costs), based on the gross trips associated with the Proposed Development, to ensure that appropriate and proportionate mitigation measures are provided. The total value required has been calculated as £11,805.8, which will be offset within the scheme through provision of Type 2 and 3 mitigation, as required by WDC.

From the evidence presented, and by following the guidance provided herein, the Proposed Development is expected to comply with all relevant air quality policy. As such, air quality should not pose any significant obstacles to the planning process.

## Appendix A Construction Dust Mitigation

In order to mitigate the worst-case dust impacts the following mitigation measures are highly recommended by the IAQM for Medium Risk construction sites.

### *Highly Recommended*

#### **Communications**

- » Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- » Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
- » Display the head or regional office contact information.
- » Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this Appendix. The DMP may include monitoring of dust deposition, dust flux, real-time PM<sub>10</sub> continuous monitoring and/or visual inspections.

#### **Site Management**

- » Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- » Make the complaints log available to the local authority when asked.
- » Record any exception incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book.

#### **Monitoring**

- » Carry out regular site inspections to monitor compliance with the Dust Management Plan, record inspection results, and make an inspection log available to the local authority when asked.
- » Increase the frequency of inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- » Agree dust deposition, dust flux, or real-time PM<sub>10</sub> continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it is a large site, before work on a phase commences

#### **Preparing and Maintaining the Site**

- » Plan site layout so that machinery and dust causing activities are located away from receptors, as far as possible.
- » Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- » Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- » Avoid site runoff of water or mud.
- » Keep site fencing, barriers and scaffolding clean using wet methods.
- » Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on site cover as described below.

- » Cover, seed or fence stockpiles to prevent wind whipping.
- » Operating Vehicle/Machinery and Sustainable Travel
- » Ensure all vehicles switch off engines when stationary – no idling vehicles.
- » Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- » Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.

### **Operations**

- » Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- » Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- » Use enclosed chutes and conveyors and covered skips.
- » Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on equipment wherever appropriate.
- » Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

### **Construction**

- » Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

### **Trackout**

- » Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
- » Avoid dry sweeping of large areas.
- » Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- » Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- » Record all inspections of haul routes and any subsequent action in a site log book.
- » Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- » Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior leaving the site where reasonably practicable).
- » Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- » Access gates to be located at least 10m from receptors where possible.

### Additional WDC Type 2 Mitigation – NRMM:

NRMM of net power between 37kW and 560kW will be required to meet the standards based upon the engine emissions standards in EU Directive 97/68/EC and its subsequent amendments. This will apply to both variable and constant speed engines for both NO<sub>x</sub> and PM.

These standards are:

(a) NRMM used on the site of any MEDIUM classified development will be required to meet Stage IIIA of the Directive as a minimum.

(b) NRMM used on any MAJOR classified development will be required to meet Stage IIIB of the Directive as a minimum.

From 1 September 2020 the following changes will apply:

· (a) NRMM used on any construction or demolition site within urban areas will be required to meet Stage IIIB of the Directive as a minimum.

· (b) NRMM used on any MEDIUM or MAJOR classified development will be required to meet Stage IV of the Directive as a minimum.

The requirements may be met using the following techniques;

(a) Reorganisation of NRMM fleet (b) Replacing equipment (with new or second-hand equipment which meets the policy) (c) Retrofit abatement technologies (d) Re-engining.

All eligible NRMM should meet the standards above unless it can be demonstrated that the machinery is not available or that a comprehensive retrofit to meet both PM and NO<sub>x</sub> emission standards is not feasible.

Figure 13: Type 2 NRMM Controls