LAND SOUTH OF GLAN USK PRIMARY SCHOOL, HERBERT ROAD NEWPORT

ENVIRONMENTAL STATEMENT

VOLUME 2
CHAPTER 14: AIR QUALITY

14. AIR QUALITY

INTRODUCTION

14.1 This Chapter, which has been prepared by Waterman Infrastructure and Environment Ltd. (WIE), presents an assessment of the likely significant effects of the complete and operational Development on air quality at existing sensitive receptors. It considers the effects of dust from demolition and construction activities, as well as the effect of emissions from road traffic associated with the completed Development.

14.2 This Chapter describes the methods used to assess these effects and the baseline conditions currently existing at the Site and in the surrounding area. It then describes the likely significant effects of the Development arising from demolition and construction activities, and the operation of the Development, the mitigation measures required to prevent, reduce or offset these effects if necessary, and the residual effects. This Chapter is supported by Appendix 14.1: Detailed Air Quality Assessment Methodology.

LEGISLATIVE AND PLANNING POLICY CONTEXT

European Legislation

14.3 Air pollutants at high concentrations can give rise to adverse effects on the health of humans and ecosystems. European Union (EU) legislation on air quality forms the basis for national UK legislation and policy on air quality.

14.4 The European Union Framework Directive 2008/50/EC[1] on ambient air quality assessment and management came into force in May 2008 and had to be implemented by Member States, including the UK, by June 2010. The Directive aims to protect human health and the environment by avoiding, reducing or preventing harmful concentrations of air pollutants

National Legislation

Air Quality Standards Regulations

14.5 The Air Quality Standards Regulations[2] implement Limit Values prescribed by the Directive 2008/50/EC. The limit values are legally binding and the Secretary of State, on behalf of the UK Government, is responsible for their implementation.

The UK Air Quality Strategy

14.6 The Environment Act 1995 required the preparation of a national air quality strategy setting health–based air quality objectives for specified pollutants and outlining measures to be taken by Local Authorities (LAs) in relation to meeting these (the Local Air Quality Management (LAQM) system).

14.7 The UK Air Quality Strategy (AQS), adopted in 1997, was subsequently reviewed and revised in 2000 as the Air Quality Strategy for England, Scotland, Wales and Northern Ireland. An

amendment to the Strategy was published in 2003.

14.8 The current UK Air Quality Strategy (AQS), which was published in July 2007[3] sets out new objectives for local authorities in undertaking their LAQM duties. The 2007 UK AQS introduced a national level policy framework for exposure reduction for fine particulate matter. Objectives in the UK AQS are in some cases more onerous than the Limit Values set out within the relevant EU Directives and the Air Quality Standards Regulations 2010. In addition, objectives have been established for a wider range of pollutants.

14.9 Currently it is a Local Authority's responsibility to determine the effect of a development against the UK AQS objectives, as such the UK AQS objectives of air pollutants relevant to this assessment are summarised in Table 14.1.

Table 14-1: National Air Quality Strategy Objectives for the Purposes of Local Air Quality Management

Pollutant	Standard		Objective Date
	Concentrations	Measured as	
Nitrogen dioxide (NO_2)	200µg/m^3	1 hour mean not to be exceeded more than 18 times per year	31/12/2005
	40µg/m^3	Annual mean	31/12/2005
Particulate Matter (PM_{10})	50µg/m^3	24–hour mean not to be exceeded more than 35 times per year	31/12/2004
	40µg/m^3	Annual mean	31/12/2004
Particulate Matter ($PM_{2.5}$)	Target of 15% reduction in concentrations at urban background locations	Annual mean	Between 2010 and 2020
	25 µg/m^3	Annual mean	01/01/2020

14.10 There are currently no statutory UK standards in relation to deposited dust and its propensity to cause nuisance. A deposition rate of 200mg/m^2/day (averaged over a month) is sometimes used as a threshold value for potentially significant nuisance effects[4].

The Environment Act 1995, 1995

14.11 Under Part IV of the Environment Act 1995[5], local authorities are required to review and assess air quality in their area by way of a staged process. Should this process suggest that any of the AQS objectives (as defined in Table 14.9) will not be met by the target dates, the local authority must consider the declaration of an Air Quality Management Area (AQMA) and the subsequent preparation of an Air Quality Action Plan (AQAP) to improve the air quality in that area in pursuit of the objectives.

National Planning Policy

Planning Policy Wales (Edition 9, November 2016)

14.12 Planning Policy Wales (PPW)[6] sets out the land use planning policies of Welsh Government. In regards to air quality, PPW states:

"The potential for pollution affecting the use of land will be a material consideration in deciding whether to grant planning permission. Material considerations in determining applications for potentially polluting development are likely to include:

- ***location, taking into account such considerations as the reasons for selecting the chosen site itself;***
- ***impact on health and amenity;***
- ***the risk and impact of potential pollution from the development, insofar as this might have an effect on the use of other land and the surrounding environment (the environmental regulatory regime may well have an interest in these issues, particularly if the development would impact on an Air Quality Management Area or a SAC);***
- ***prevention of nuisance;***
- ***impact on the road and other transport networks, and in particular on traffic generation; and***
- ***the need, where relevant, and feasibility of restoring the land (and water resources) to standards sufficient for an appropriate after use. (Powers under the Pollution Prevention and Control Act 1999 require an operator to return a site to a satisfactory state on surrender of an Integrated Pollution Prevention and Control Permit)."***

Welsh Assembly Government (now Welsh Government), People, Places, Futures: The Wales Spatial Plan, 2008 Update

14.13 The Wales Spatial Plan (WSP) was originally adopted in 2004 and provides a framework for development and investment in the region over the next 20 years. An update report was produced in 2008[7]. Whilst there are no specific policies relating to air quality, the WSP 2008 Update notes that:

"Spatial Plan Area Groups can take a number of actions which will help us all tackle climate change, but also promote a healthy and enjoyable environment in which to live and work, including by:…improving air quality, for example through an integrated approach to traffic management".

Local Planning Policy

Newport Local Development Plan – 2011 to 2026 Adopted Plan (Published January 2015)

14.14 The Local Development Plan[8] contains a number of policies that relate to air quality. These include policy GP7 which provides specific guidance on development proposals

14.15 Policy GP7 'Environmental Protection and Public Health' states that

"Development will not be permitted which would cause or result in unacceptable harm to health because of land contamination, dust, instability or subsidence, air, heat, noise or light pollution, flooding, water pollution, or any other identified risk to environment, local amenity or public health and safety."

Guidance

Improving Air Quality in the UK: Tackling nitrogen dioxide in our towns and cities UK Overview Document, 2016

14.16 Defra adopted the 'Improving Air Quality in the UK: Tackling nitrogen dioxide in our towns and cities UK Overview Document' in January 2016[9] which sets out the plan to improve air quality in the UK by reducing NO_2 emissions in towns and cities as part of the UK's commitment for cleaner air. The air quality improvement plan sets out targeted local, regional and national measures in order to meet the UK's legal obligations to achieve the NO_2 limit values set out in the EU Framework Directive 2008/50/EC.

14.17 There are no specific measures within the document for NCC.

14.18 A recent High Court ruling (November, 2016) in relation to the ClientEarth case[10] regarding the UK's continued breach of legal air quality limits, has resulted in the Government being ordered by the High Court to revise the air quality improvement plan to meet compliance for NO_2 in the UK. Details of the draft plan, which is currently under consultation is detailed below.

Improving Air Quality in the UK: Tackling nitrogen dioxide in our towns and cities. Draft UK Air Quality Plan for Tackling Nitrogen Dioxide (Consultation Document).

14.19 As above the UK Government was required by the High Court to release a new Air Quality Plan to meet the NO_2 Limit Value in the shortest timescale as possible. This document was released on the 5th May 2017[11] and is currently under consultation.

14.20 The revised plan focuses on reducing concentrations of NO_x and NO_2 around road vehicle emissions within the shortest possible time. With the principal aims to:

> *a. reduce emissions of NOx from the current road vehicle fleet in problem locations now; and*
> *b. accelerate road vehicle fleet turnover to cleaner vehicles to ensure that the problem remains addressed and does not move to other locations.*

14.21 The other aims include reducing background concentrations of NO_x from:

- Other forms of transport such as rail, aviation and shipping;
- Industry and non-road mobile machinery; and
- Buildings, both commercial and domestic, and other stationary sources.

14.22 The Consultation Document, provided additional measures to reduce NO_x and NO_2 concentrations in the UK, further than the measures detailed in the adopted 2016 Plan. Such measures include:

- Mandate local authorities to implement Clean Air Zones within the shortest possible time;
- Consultation on proposal for a Clean Air Zone Framework for Wales;
- Consultation on a draft National Low Emission Framework for Scotland;
- Commitment to establishing a Low Emission Zone for Scotland by 2018;

- Tackling air pollution on the English Road network;
- New real driving emissions requirement to address real world NOx emissions;
- Additional funding to accelerate uptake of hydrogen vehicles and infrastructure;
- Additional funding to accelerate the uptake of electric taxis;
- Further investment in retrofitting alongside additional support of low emission buses and taxis;
- Regulatory changes to support the take up of alternatively fuelled light commercial vehicles;
- Exploring the appropriate tax treatment for diesel vehicles;
- Call for evidence on updating the existing HGV Road User Levy;
- Call for evidence on use of red diesel;
- Ensure wider environmental performance is apparent to consumers when purchasing cars;
- Updating Government procurement policy;
- New emissions standards for non-road mobile machinery;
- New measures to tackle NOx emissions from Medium Combustion Plants; and
- New measures to tackle NOx emissions from generators.

14.23 The above draft measures do not provide any actions which are relevant to the operation or design of the Development.

Environmental Protection UK & Institute of Air Quality Management Guidance; Land-Use Planning & Development Control: Planning for Air Quality, 2017

14.24 Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) guidance provide guidance for air quality considerations within local development control processes; promoting a consistent approach to the treatment of air quality issues.

14.25 The EPUK and IAQM guidance explains how development proposals could adopt good design principals to reduce emissions and contribute to better air quality. The guidance also provides a method for screening the need for an air quality assessment and a consistent approach for describing the effects at individual receptors.

14.26 The EPUK and IAQM Guidance advises that:

> ***"In arriving at a decision about a specific proposed development the local planning authority is required to achieve a balance between economic, social and environmental considerations. For this reason, appropriate consideration of issues such as air quality, noise and visual amenity is necessary. In terms of air quality, particular attention should be paid to:***
>
> - ***Compliance with national air quality objectives and of EU Limit Values;***
> - ***Whether the development will materially affect any air quality action plan or strategy;***
> - ***The overall degradation (or improvement) in local air quality; or***
> - ***Whether the development will introduce new public exposure into an area of existing poor air quality."***

Institute of Air Quality Management: Guidance on the Assessment of dust from demolition and construction, 2014

14.27 The IAQM construction dust guidance[12] provides guidance to consultants and EHOs on how to assess air quality effects from construction related activities. The guidance provides a risk based approach based on the potential dust emission magnitude of the site (small, medium or large) and the sensitivity of the area to dust effects. The importance of professional judgement is noted throughout the guidance. The guidance recommends that once the risk class of the site has identified, the appropriate level of mitigation measures are implemented to ensure that the construction activities have no significant impacts.

ASSESSMENT METHODOLOGY

14.28 This section of this Chapter outlines the methodology used to assess the likely significant air quality effects arising from the demolition and construction works and the completed and operational Development.

14.29 This air quality assessment has been undertaken using a variety of information and procedures as follows:

- Consultation with the Environmental Health Officer (EHO) at Newport City Council (NCC) to confirm the methodology used within the assessment (see Appendix 14.1);
- a review of NCC's Air Quality Updating and Screening Assessment and Progress Reports published as part of the Local Air Quality Management (LAQM) regime to determine baseline conditions around the Site;
- a review of the local area to identify sensitive receptor locations that could be affected by changes in air quality that may result from the Development;
- a review and use of relevant traffic flow data from the Applicant's transport consultant (Asbri Transport);
- the application of atmospheric dispersion modelling of pollutant emissions using the ADMS-Roads model[13] to predict the likely existing pollutant concentrations at the Site and the impact of the completed and operational Development on local air quality because of changes in traffic emissions associated with traffic generated. The latest nitrogen dioxide (NO_2) from nitrogen oxide (NOx) Calculator Version 5.1, June 2016) available from the LAQM Support website[14] has been applied to derive the road-related NO_2 concentrations from the modelled NOx concentrations;
- a comparison of the predicted air pollutant concentrations with monitored concentrations from seven NO_2 diffusion tubes operated by NCC included within the ADMS-Roads modelled road network. Calculation of an adjustment factor of modelled results where necessary (model verification details are provided in Appendix 14.1);
- determination of the likely significant effects of construction works and activities, and consideration of the environmental management controls likely to be employed during the works;
- determination of the likely significant effects of the operational phase of the Development on air quality, based on the application of the Environmental Protection UK (EPUK) & Institute of Air Quality Management (IAQM)[15] guidance significance criteria to modelled results; and
- identification of mitigation measures, where appropriate.

14.30 The UK AQS identifies the pollutants associated with road traffic emissions and local air quality as:

- nitrogen oxides (NO_x);

- particulate matter (as PM_{10} (particles with a diameter up to 10µm) and $PM_{2.5}$ (particles with a diameter up to 2.5µm));
- carbon monoxide (CO);
- 1, 3-butadiene (C_4H_6); and
- benzene (C_6H_6).

14.31 Emissions of total NO_x from motor vehicle exhausts comprise nitric oxide (NO) and NO_2. NO oxidises in the atmosphere to form NO_2. The most significant pollutants associated with road traffic emissions, in relation to human health, are NO_2 and PM_{10}. This assessment therefore focuses on NO_2 and particulate matter (PM_{10} and $PM_{2.5}$).

Construction

Dust Emissions

14.32 The assessment of the effects of the construction activities in relation to dust has been based on the guidance published by the Institute of Air Quality Management (IAQM) (2014)[16] and the following:

- consideration of planned construction activities and their phasing; and
- a review of the sensitive uses in the area immediately surrounding the Site in relation to their distance from the Site.

14.33 The IAQM guidance identifies receptors sensitive to emissions and nuisance dust from construction activities are existing and proposed receptors within 350m of the boundary of the Site, and within 50m of construction routes. The location of individual sensitive receptors assessed are detailed in Table 14.2 of this Chapter. For clarification, Figure 14.2 shows the area surrounding the Site, where sensitive receptors could be affected, considering the IAQM guidance. The IAQM guidance does not present a method for assessing the individual sensitivity of receptors for the construction phase. Details of the sensitivity of an area are described in Appendix 14.1.

14.34 Following the IAQM guidance, construction activities can be divided into the following four distinct activities:

- demolition – any activity involved in the removal of an existing building;
- earthworks – the excavation, haulage, tipping and stockpiling of material, but may also involve levelling the site and landscaping;
- construction – any activity involved with the provision of a new structure; and
- trackout – the movement of vehicles from unpaved ground on a site, where they can accumulate mud and dirt, onto the public road network where dust might be deposited.

14.35 The IAQM guidance considers three separate dust effects, with the proximity of sensitive receptors being taken into consideration for:

- annoyance due to dust soiling;

- potential effects on human health due to significant increase in exposure to PM_{10}; and
- harm to ecological receptors.

14.36 A summary of the four-step process which has been undertaken for the dust assessment of construction activities as set out in the IAQM guidance is presented in Table 14.2.

Table 14-2: Summary of the IAQM Guidance for Undertaking a Construction Dust Assessment

Step		Description
1	Screen the Need for a Detailed Assessment	Simple distance based criteria are used to determine the requirement for a detailed dust assessment. An assessment will normally be required where there are 'human receptors' within 350m of the boundary of the site and / or within 50m of the route(s) used by construction vehicles on public highway, up to 500m from the site entrance or 'ecological receptors' within 50m of the boundary of the site and/or within 50m of the route(s) used by construction vehicles on public highway, up to 500m from the site entrance.
2	Assess the Risk of Dust Effects	The risk of dust arising in sufficient quantities to cause annoyance and/or health or ecological effects should be determined using three risk categories: low, medium and high based on the following factors: • the scale and nature of the works, which determines the risk of dust arising (i.e. the magnitude of potential dust emissions) classed as small, medium or large; and • the sensitivity of the area to dust effects, considered separately for ecological and human receptors (i.e. the potential for effects) defined as low, medium or high.
3	Site Specific Mitigation	Determine the site specific measures to be adopted at the site based on the risk categories determined in Step 2 for the four activities. For the cases where the risk is 'negligible' no mitigation measures beyond those required by legislation are required. Where a local authority has issued guidance on measures to be adopted these should be taken into account.
4	Determine Significant Effects	Following Steps 2 and 3, the significance of the potential dust effects should be determined, using professional judgement, taking into account the factors that define the sensitivity of the surrounding area and the overall pattern of potential risks.

Construction Vehicle Exhaust Emissions

14.37 The IAQM guidance on assessing construction impacts states that:

> ***"Experience of assessing the exhaust emissions from on-site plant and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed".***

14.38 Given the duration of the construction phase (complete and operational by 2023), and the anticipated number of Heavy Good Vehicles (between 10 and 50 one way movements per day), in accordance with the IAQM guidance, it is considered that a quantitative assessment of the exhaust emissions from construction traffic is not required, and a qualitative assessment is appropriate.

Construction Plant Emissions

14.39 In accordance with IAQM's construction dust guidance which states emissions from on-site plant are unlikely to have a significant impact on local air quality, it is considered that a quantitative assessment of the exhaust emissions from construction plant is not required, and a qualitative assessment is appropriate.

Operational Development

ADMS Model

14.40 The likely effects on local air quality from traffic movements generated from the completed and operational Development have been assessed using the atmospheric dispersion model ADMS-Roads. Appendix 14.1 presents the details of the dispersion modelling.

14.41 For the purposes of modelling, traffic data for the relevant local road network, has been provided by the Applicant's transport consultant. Further details are provided in Appendix 14.1. The baseline year of 2016 has been assessed (which is the latest year of NCC monitoring data) together with the 'without Development' and 'with Development' scenarios for the year 2023, the anticipated year of completion of the Development.

14.42 The ADMS-Roads dispersion model predicts how emissions from roads combine with local background pollution levels, taking account of meteorological conditions, to affect local air quality. The model has been run for the completion year, using background data and vehicle emission rates for 2023 as inputs. For NO_2 sensitivity assessment (referred to below), background data and vehicle emission rates for 2016 have been used, which would be higher than the 2023 data. Pollutant concentrations have been modelled at locations representative of nearby sensitive receptors.

14.43 Full details of the dispersion modelling study, including the road traffic data used in the assessment, are presented within Appendix 14.1.

Nitrogen Dioxide Sensitivity Analysis

14.44 Analyses of historical monitoring data by Defra[17] have identified a disparity between actual measured NO_x and NO_2 concentrations and the expected decline associated with emission forecasts which form the basis of air quality modelling as described above. The precise reason for the disparity is not fully understood but is thought to be related to the on-road performance of certain vehicles compared to calculations based on Euro emission standards which inform emission forecasts.

14.45 A note on Projecting NO_2 Concentrations[18] published by Defra provides alternative approaches that can be followed in air quality assessments, in relation to the modelling of future NO_2 concentrations, considering that future NO_x/NO_2 road-traffic emissions and background concentrations may not reduce as previously expected. This includes the use of revised background pollution maps, alternative projection factors and revised vehicle emission factors. However, the Defra note does not form part of statutory guidance and no prescriptive method is recommended for use in an air quality assessment.

14.46 This air quality assessment has been based on current guidance, i.e. using existing forecast

emission rates and background concentrations to the completion year of 2023, which assumes a progressive reduction compared to the baseline year 2016. However, in addition, a sensitivity analysis has been undertaken based on no future NO_x and NO_2 reductions by 2023 (i.e. considering the likely significant effect of the Development against the baseline 2016 conditions, assuming no reduction in background concentrations or road-traffic emissions rates between 2016 and 2023). The sensitivity approach presented in this air quality assessment is now typically agreed and accepted by local authorities as being robust, and provides a clear method to account for the uncertainty in future NO_X and NO_2 concentrations in air quality assessments. The results of this sensitivity analysis, which represent a more conservative assessment scenario, are presented in Appendix 14.1.

Background Pollutant Concentrations

14.47 To estimate the total concentrations due to the contribution of any other nearby sources of pollution, background pollutant concentrations need to be added to the modelled concentrations. Full details of the background pollution data used within the air quality assessment are included in Appendix 14.1.

Model Verification

14.48 Model verification is the process of comparing monitored and modelled pollutant concentrations and, if necessary, adjusting the modelled results to reflect actual measured concentrations, to improve the accuracy of the modelling results. The model has been verified by comparing the predicted annual mean NO_2 concentrations for the baseline 2016, with the 2016 results from the seven nearest NCC diffusion tubes to the Site and within the modelled road network. Modelled concentrations have then been adjusted accordingly. The verification and adjustment process is described in detail in Appendix 14.1.

Potentially Sensitive Receptors

14.49 The approach adopted by the UK AQS is to focus on areas at locations at, and close to, ground level where members of the public (in a non-workplace area) are likely to be exposed over the averaging time of the objective in question (i.e. over 1-hour, 24-hour or annual periods). Objective exceedences principally relate to annual mean NO_2 and PM_{10}, and 24-hour mean PM_{10} concentrations, so that associated potentially sensitive locations relate mainly to residential properties and other sensitive locations (such as schools) where the public may be exposed for prolonged periods.

14.50 Table 14.3 presents existing sensitive receptors selected due to their proximity to the road network likely to be affected by the Development. The location of the selected receptors assessed are presented in Figure 14.1. Following consultation with NCC (see Appendix 14.1) it was agreed that exposure of future occupants and users of the Development was not significant and therefore is not considered further within this assessment.

Table 14-3: Selected Receptor Locations

ID	Receptor Location	Receptor Type	OS Grid Reference		Height Above Ground (m)
R1	155A Caerleon Road*	Residential	332044	189067	3
R2	138 Caerleon Road	Residential	332069	189064	0

R3	10 Turner Street	Residential	331635	188837	0
R4	6b Turner Street	Residential	331686	188825	0
R5	6 Turner Street	Residential	331694	188800	0
R6	5 Trostrey Street	Residential	331792	188833	0
R7	65 Caerleon Road	Residential	331810	188753	0
R8	32 Caerleon Road	Residential	331840	188750	0
R9	45 Caerleon Road	Residential	331753	188624	0
R10	6 Caerleon Road	Residential	331698	188581	0
R11	19 Caerleon Road^	Residential	331558	188549	0
R12	2 East Usk Road	Residential	331500	188551	0
R13	5B East Usk Road	Residential	331460	188623	0
R14	Ivy Bush Inn, 65 Clarence Place^	Residential	331456	188507	3
R15	52 Clarence Place^	Residential	331517	188486	3
R16	St Vincent Court, Corporation Road	Residential	331543	188455	0
R17	10 Chepstow Road^	Residential	331577	188480	0
R18	31 Chepstow Road^	Residential	331682	188496	0

Note: * Receptor located within the Caerleon Road
^ Receptor located within the Chepstow Road AQMA

Likely Significant Effects

Construction

Nuisance Dust

14.51 The significance of effects of construction activities on air quality have been assessed based on professional judgement and with reference to the criteria set out in the IAQM guidance. Appropriate site specific mitigation measures that would need to be implemented to minimise any adverse effect have also been considered. Details of the assessor's experience and competence to undertake the dust assessment is provided in Appendix 14.1.

14.52 The assessment of the risk of dust effects arising from each of the construction activities, as identified by the IAQM guidance, is based on the magnitude of potential dust emission and the sensitivity of the area. The risk category matrix for each of the construction activity types, taken from the IAQM guidance, are presented in Table 14.4 to Table 14.7. Examples of the magnitude of potential dust emissions for each construction activity and factors defining the sensitivity of an area are provided in Appendix 14.1.

Table 14-4: Risk Category from Demolition Activities

Sensitivity of Area	**Dust Emission Magnitude**		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 14-5: Risk Category from Construction Activities

Sensitivity of Area	**Dust Emission Magnitude**		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk

Low	Low Risk	Low Risk	Negligible

Table 14-6: Risk Category from Earthworks Activities

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 14-7: Risk Category from Trackout Activities

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

14.53 The risk category determined for each of the construction activity types is used to define the appropriate and Site specific mitigation measures that should be applied. The IAQM guidance recommends that significance is only assigned to the effect after considering mitigation because it assumes that all actions to avoid or reduce the environmental effects are an inherent part of the proposed Development, and that, in the case of demolition / construction, mitigation measures (secured through planning conditions, legal requirements or required by regulations) would ensure that likely significant adverse residual effects will not occur.

14.54 However, to maintain consistency with the structure of this EIA and ES, as outlined in Chapter 2: EIA Methodology, pre-mitigation significance criteria as outlined in Table 14.8 have been applied which are based on professional judgement.

Table 14-8: Pre-Mitigation Criteria for Construction

Significance Criteria	Definition
Adverse effect of substantial significance	Receptor is less than 10m from a major active construction or demolition site.
Adverse effect of moderate significance	Receptor is 10m to 100m from a major active construction or demolition site, or up to 10m from a minor active construction or demolition site.
Adverse effect of minor significance	Receptor is between 100m and 200m from a major active construction or demolition site or 10m to 100m from a minor active construction site or demolition site.
Negligible	Receptor is over 100m from any minor active construction or demolition site or over 200m from any major active construction or demolition site.

14.55 IAQM outlines that experience of implementing mitigation measures for construction activities demonstrates that total mitigation is normally possible such that residual effects would not be 'significant' (i.e. negligible). Therefore, it follows that, within this assessment, no post-mitigation matrix of significance criteria is provided for the likely residual effects of the demolition and construction work.

Construction Vehicle Exhaust Emissions

14.56 The significance of effects from construction vehicle exhaust emissions on air quality has been based on professional judgement.

Construction Plant Emissions

14.57 The significance of the effects from construction plant on air quality has also been based on professional judgement.

Operational Development

14.58 The EPUK / IAQM guidance[19] provides an approach to assigning the magnitude of changes as a result of a development as a proportion of a relevant assessment level, followed by examining this change in the context of the new total concentration and its relationship with the assessment criterion to provide a description of the impact at selected receptor locations.

14.59 Table 14.9 presents the IAQM framework for describing the impacts (the change in concentration of an air pollutant) at individual receptors. The term Air Quality Assessment Level (AQAL) is used to include air quality objectives or limit values, where these exist.

Table 14-9: Pre-Mitigation Criteria for Construction

Long term average Concentration at receptor in assessment year	**% Change in concentration relative to Air Quality Assessment Level (AQAL)**			
	1	**2-5**	**6-10**	**>10**
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

Note: AQAL may be an air quality objective, EU limit value, or an Environment Agency 'Environmental Assessment Level (EAL)'
The table is intended to be used by rounding the change in percentage pollutant concentration to whole numbers. Changes of 0% (i.e. less than 0.5%) are described as Negligible.
The table is only to be used with annual mean concentrations

14.60 The approach set out in the EPUK / IAQM guidance provides a method for describing the impact magnitude at individual receptors only. The guidance outlines that this change may have an effect on the receptor depending on the severity if the impact and other factors that may need to be considered. The assessment framework for describing impacts can be used as a starting point to make a judgement on significance of effect. However, whilst there may be 'slight', 'moderate' or 'substantial' impacts described at one or more receptors, the overall effect may not necessarily be judged as being significant in some circumstances. To be consistent with the terminology of the ES, where the effect is judged to be not significant the term 'negligible' has been used.

14.61 Following the approach to assessing significance outlined in the EPUK / IAQM Guidance, the significance of likely residual effects of the completed Development on air quality has been established through professional judgement and the consideration of the following factors:

- the geographical extent (local, district or regional) of effects;
- their duration (temporary or long term);
- their reversibility (reversible or permanent);

- the magnitude of changes in pollution concentrations;
- the exceedance of standards (e.g. AQS objectives); and
- changes in pollutant exposure.

BASELINE CONDITIONS

Newport Review and Assessment Process

14.62 NCC has declared nine AQMAs within Newport. These AQMAs are identified as follows:

- Caerleon Road;
- Glasllwch;
- High St, Caerleon;
- Malpas Road;
- Royal Oak Hill;
- Shaftesbury / Crindau;
- St Julians;
- Malpas Road; and
- Chepstow Road.

14.63 The closest AQMA to the development is on Caerleon Road approximately 300m southeast of the site boundary. The AQMA is located on the lower part of Caerleon Road, just north of the signal junction with Durham Road / Duckpool Road. Receptor R1 represents the impact of the Development on the Caerleon Road AQMA.

14.64 At the request of NCC, this air quality assessment also assesses the impact of the development on roads within the Chepstow Road AQMA. This AQMA incorporates the roads of Caerleon Road west of the junction with Church Road, Clarence place to the east of the river bridge, and Chepstow Road up until the junction with Eveswell Street. Receptors R11, R14, R15, R17 and R18 represent the impact of the Development on the Chepstow Road AQMA.

Local Monitoring

14.65 NCC currently monitors air quality at two locations using automatic monitors and at 53 locations using NO_2 diffusion tubes. The nearest NCC roadside automatic monitoring location to the Site is located adjacent to the M4, approximately 1km to the north (OS Grid Reference 332685, 189613). Table 14.10 below presents data from the M4 automatic monitor.

Table 14-10: NCC M4 Monitored Concentrations

Pollutant	Averaging Period	AQS Objective	Year			
			2013	2014	2015	2016
NO_2	Annual Mean (µg/m^3)	40µg/m^3	59.0	56.0	54.0	49.0
	Hourly (No. of Hours)	200µg/m^3 not to be exceeded more than 18 times a year	12	0	2	4

Note: Data Source 2016 Air Quality Progress Report and www.welshairquality.co.uk

14.66 The monitoring results in Table 14.10 indicate that the annual mean NO_2 objective of 40µg/m^3 was exceeded at the automatic monitor between 2013 and 2016. However, there have been no

exceedences of the 1-hour mean NO_2 objective or the PM_{10} AQS objectives. Concentrations also show a year on year reduction between 2013 and 2016.

14.67 NO_2 diffusion tube monitors are located at numerous urban roadside and urban background locations throughout NCC. Table 14.11 presents the most recent monitoring data for the roadside diffusion tube locations within 1km of the Site.

Table 14-11: NCC Diffusion Tube Monitored Concentrations at the nearest monitors to the Site

Location	Approx. Distance to the Site (km)	Site Classification	2013	2014	2015	2016
NCC28B 155 Caerleon Road	0.5	Roadside	**42.1**	37.9	38.9	**42.4**
NCC11A 169 Caerleon Road	0.5	Roadside	37.5	33.3	33.6	35.8
NCC25B Denbigh Road ((No 41) M4 slip road)	0.6	Roadside	32.1	29.4	26.6	27.7
NCC16A 40 Denbigh Road	0.6	Roadside	**40.5**	36.7	36.0	35.1
NCC24B 21 Caerleon Road (Swift LGV)	0.9	Roadside	**44.3**	38.8	38.4	No data
NCC14A 48 Malpas Road	0.9	Façade	**45.0**	**41.6**	**40.5**	**41.9**
NCC50 9 Caerleon Road	0.9	Roadside	**42.4**	36.7	39.1	**44.7**

Note: Data Source 2016 Air Quality Progress Report, www.welshairquality.co.uk and supplied by NCC

14.68 The NO_2 diffusion tube results summarised in Table 14.11 indicate that the annual mean objective was exceeded in all years at all but the Malpas Road site and in 2016 at the tubes located at 9 Caerleon Road and 155 Caerleon Road sites.

ASSESSMENT OF POTENTIAL IMPACTS

Construction

Nuisance Dust

14.69 Construction activities in relation to the Development have the potential to affect local air quality through demolition, earthworks, construction and trackout activities. A description of these activities is presented earlier in this chapter. The Site is currently undeveloped and therefore there would be no demolition as part of the construction phase and so has not been considered further.

14.70 The Site is in a residential area, with the nearest residential properties located along the southern boundary of the Site. The boundary of Usk School is located immediately north of the development, and the actual school buildings are 15m from the Site boundary. Additionally, there are several industrial units to the south of the development, with the closest units located adjacent to the site boundary. The construction phase assessment bands are shown on Figure 14.2.

14.71 The River Usk / Afon Wysg SSSI and SAC is located adjacent to the western boundary of the Site. The SAC has not been designated for acid heathlands.

14.73 Based on the criteria set out in Table A1 to Table A5 of Appendix 14.1 and the methodology described above, the sensitivity of the area surrounding the Site is presented in Table 14.12.

Table 14-12: Summary of the Sensitivity of the Area

Potential Impact	Sensitivity of the Surrounding Area		
	Earthworks	Construction	Trackout
Dust Soiling	High	High	High
Human Health	High	High	High
Ecological	Medium	Medium	Medium

Earthworks

14.74 The size of the Site is approximately 58,830m^2. Based on this, and considering the criteria in Table A1.1 in Appendix 14.1, the potential dust emissions during earthworks activities would be of **large** magnitude.

Construction

14.75 Considering number of houses to be constructed and the criteria in Table A1.1 in Appendix 14.1, the potential dust emissions during construction activities would be of **large** magnitude

Trackout

14.76 It is considered that number of Heavy Duty Vehicles (HDVs) would between 10 and 50 outward HDV trips in any one day. Considering the criteria in Table A1 in Appendix 14.1, the potential for dust emissions due to trackout activities would be of **medium** magnitude

14.77 The dust risk categories, based on the potential magnitude of dust emissions and the sensitivity of the area to dust, are presented in Table 14.13.

Table 14-13: Summary of the Risk of Dust Effects

Potential Impact	Risk		
	Earthworks	Construction	Trackout
Dust Soiling	High Risk	High Risk	Medium Risk
Human Health	High Risk	High Risk	Medium Risk
Ecological	Medium Risk	Medium Risk	Low Risk

14.78 As outlined in Table 14.13, the Site is a **high risk** site. Therefore, Site specific mitigation measures would be required to ensure that there are no adverse effects from demolition and construction. However, based on the criteria in Table 14.7, in the absence of mitigation, the worst-case nuisance dust from the demolition and construction works would give rise to:

- short-term, local effects of substantial adverse significance at receptors within 10m from the Site boundary;
- short-term, local effects of moderate adverse significance at receptors within 10m - 100m of the Site boundary;
- short-term, local effects of minor adverse significance at receptors within 100m - 200m of the Site boundary; and
- negligible effects at receptors over 200m from the Site boundary.

Construction Vehicle Exhaust Emissions

14.79 Construction related vehicles entering and egressing the Site from / to the local road network would have the potential to increase local air pollutant concentrations, particularly in respect of NO_2 and particulate matter (both PM_{10} and $PM_{2.5}$).

14.80 It is considered that the number of construction HDVs trips would be between 10 and 50 outward HDV trips in any one day. Considering the estimated construction traffic movements, and background pollutant concentrations around the Site, it is considered that the likely effect of construction vehicles entering and egressing the Site to air quality would be **negligible** during the construction period.

Construction Plant Emissions

14.81 Any emissions from plant operating on the Site would be very small in comparison to the emissions from traffic movements on the roads adjacent to the Site. It is therefore considered that even in the absence of mitigation, their likely effect on local air quality would be **negligible**.

Operational Development

Operational Traffic

14.82 Effects on local air quality associated with the completed and operational Development would likely result from changes to traffic flows associated with the Development. The results of the ADMS-Roads air quality modelling of operational traffic (based on current guidance, i.e. with reduced emission rates and background concentration to the completion year of 2023 are presented in Table 14.14 and Table 14.15. Full details are provided within Appendix 14.1.

Nitrogen Dioxide

Table 14-14: Results of the ADMS NO_2 Modelling at Existing Sensitive Receptors

		2016 Baseline	2023 Without Development	2023 With Development	2023 Change
R1	155A Caerleon Road*	29.0	19.8	20.0	0.2
R2	138 Caerleon Road	32.0	21.5	21.8	0.3
R3	10 Turner Street	26.0	19.5	20.1	0.6
R4	6b Turner Street	26.6	19.9	20.6	0.7
R5	6 Turner Street	26.6	19.9	20.5	0.6
R6	5 Trostrey Street	26.5	19.7	19.9	0.2
R7	65 Caerleon Road	34.1	24.2	24.8	0.6
R8	32 Caerleon Road	37.6	26.1	26.5	0.4
R9	45 Caerleon Road	37.7	26.4	26.9	0.5
R10	6 Caerleon Road	36.9	25.9	26.3	0.4
R11	19 Caerleon Road^	38.0	26.3	26.7	0.4
R12	2 East Usk Road	30.8	22.2	22.3	0.1
R13	5B East Usk Road	26.9	20.0	20.1	0.1
R14	Ivy Bush Inn, 65 Clarence Place^	38.7	26.6	26.9	0.3
R15	52 Clarence Place^	36.1	25.1	25.3	0.2
R16	St Vincent Court, Corporation Road	31.3	22.5	22.5	0.0
R17	10 Chepstow Road^	35.0	24.5	24.6	0.1
R18	31 Chepstow Road^	31.5	22.6	22.7	0.1

Note: For accuracy, the changes arising from the Proposed Development have been calculated using the exact output from the ADMS-Road model rather than the rounded numbers within Table 14.14.

* Receptor located within the Caerleon Road AQMA

^ Receptor located within the Chepstow Road AQMA

14.83 The results in Table 14.14 indicate that for 2016 the annual mean objective is met at all the receptor locations. The highest concentration is predicted at Receptor 14 (38.7µg/m^3). As

discussed in Appendix 14.1, the 1-hour mean AQS objective for NO_2 is unlikely to be exceeded at a roadside location where the annual mean NO_2 concentration is less than 60µg/m^3. As shown in Table 14.14 the predicted annual mean NO_2 concentrations in 2016 are below 60µg/m^3 at all receptor locations. Accordingly, the 1-hour mean objective is likely to be met at these locations.

14.84 In 2023, both 'without' and 'with' the Proposed Development, concentrations are predicted to meet the annual mean objective value at all receptor locations. Therefore, the 1-hour mean objective is also predicted to be met at all existing receptor locations.

14.85 Using the impact descriptors outlined in Table 14.7, the Proposed Development is predicted to result in a 'negligible' impact at all the receptors. It is also considered that the Proposed Development would also have a 'negligible' impact on hourly NO_2 concentrations. Using professional judgement, based on the severity of the impact and the concentrations predicted at the sensitive receptors it is considered that the effect of the Proposed Development on local NO_2 concentrations would be negligible.

Particulate Matter (PM_{10} and $PM_{2.5}$)

Table 14-15: Results of the ADMS PM10 and PM2.5 Modelling at Sensitive Receptors

ID	Annual Mean PM_{10} (µg/m^3)				PM_{10} – Number of Days >50µg/m^3				$PM_{2.5}$ Annual Mean (µg/m^3)			
	2016 Baseline	2023 Without	2023 With	2023 Change	2016 Baseline	2023 Without	2023 With	2023 Change	2016 Baseline	2023 Without	2023 With	2023 Change
R1*	18.1	17.3	17.3	0.0	1	1	1	0	12.5	11.7	11.7	0.0
R2	18.5	17.7	17.8	0.1	2	1	1	0	12.8	11.9	11.9	0.0
R3	16.3	15.5	15.7	0.2	0	0	0	0	11.6	10.8	10.9	0.1
R4	16.4	15.6	15.8	0.2	0	0	0	0	11.6	10.8	11.0	0.2
R5	16.4	15.6	15.8	0.2	0	0	0	0	11.6	10.8	10.9	0.1
R6	16.3	15.5	15.5	0.0	0	0	0	0	11.6	10.8	10.8	0.0
R7	17.6	16.7	16.9	0.2	1	1	1	0	12.4	11.5	11.6	0.1
R8	18.1	17.2	17.3	0.1	1	1	1	0	12.7	11.7	11.8	0.1
R9	18.4	17.6	17.7	0.1	2	1	1	0	12.9	11.9	12.0	0.1
R10	18.2	17.4	17.5	0.1	2	1	1	0	12.8	11.8	11.9	0.1
R11^	18.1	17.2	17.3	0.1	1	1	1	0	12.7	11.8	11.8	0.0
R12	17.0	16.2	16.2	0.0	1	0	0	0	12.0	11.2	11.2	0.0
R13	16.4	15.6	15.6	0.0	0	0	0	0	11.6	10.9	10.9	0.0
R14^	18.2	17.3	17.3	0.0	2	1	1	0	12.7	11.8	11.8	0.0
R15^	17.8	16.9	16.9	0.0	1	1	1	0	12.5	11.6	11.6	0.0
R16	17.0	16.2	16.2	0.0	1	0	0	0	12.0	11.2	11.2	0.0
R17^	17.6	16.8	16.8	0.0	1	1	1	0	12.4	11.5	11.5	0.0
R18^	17.2	16.4	16.4	0.0	1	0	0	0	12.1	11.3	11.3	0.0

Note: For accuracy, the changes arising from the Proposed Development have been calculated using the exact output from the ADMS-Road model rather than the rounded numbers within Table 14.15.

* Receptor located within the Caerleon Road AQMA
^ Receptor located within the Chepstow Road AQMA

14.86 As shown in Table 14.15, the annual mean concentrations of PM_{10} are predicted to be well below the objective of 40µg/m^3 in 2016 and in 2023 both 'without' and 'with' the Proposed Development at all receptor locations considered. The maximum predicted concentration in all scenarios tested is 18.5µg/m^3 at Receptor 2 in 2016. Using the impact descriptors outlined in Table 14.7, the Proposed Development is predicted to result in a 'negligible' impact at all existing receptors.

14.87 The results in Table 14.15 indicate that in 2016 and in 2023 both 'without' and 'with' the Proposed Development, all existing receptor locations are predicted to be below the 24-hour mean PM_{10} objective value of 35 days exceeding 50µg/m^3. The maximum predicted concentration in all scenarios tested is 2 days at Receptors 2, 9, 10, and 14 in 2016.

14.88 The results in Table 14.15 indicate that in 2016 and in 2023 both 'without' and 'with' the Proposed Development, all existing receptor locations are predicted to be below the annual mean $PM_{2.5}$ objective value of 25µg/m^3. The maximum predicted concentration in all scenarios is 12.9µg/m^3 at Receptor 9 in 2016.

14.89 Using the impact descriptors outlined in Table 14.7, the Proposed Development is predicted to result in a 'negligible' impact at all existing receptors.

14.90 Using professional judgement, based on the severity of the impact and the concentrations predicted at the sensitive receptors it is considered that the effect of the Proposed Development on local PM_{10} and $PM_{2.5}$ concentrations would be negligible.

Nitrogen Dioxide Sensitivity Analysis

Table 14-16: Results of the ADMS NO_2 Modelling Assuming No Improvement in NO_x and NO_2

		2023 Without Development	2023 With Development	2023 Change	Impact Descriptor
R1	155A Caerleon Road*	29.6	29.9	0.3	Negligible
R2	138 Caerleon Road	32.8	33.2	0.4	Negligible
R3	10 Turner Street	26.1	27.1	1.0	Negligible
R4	6b Turner Street	26.8	28.0	1.2	Negligible
R5	6 Turner Street	26.8	27.9	1.1	Negligible
R6	5 Trostrey Street	26.8	27.0	0.2	Negligible
R7	65 Caerleon Road	35.0	35.9	0.9	Slight
R8	32 Caerleon Road	38.7	39.4	0.7	Slight
R9	45 Caerleon Road	38.9	39.6	0.7	Moderate
R10	6 Caerleon Road	38.0	38.7	0.7	Slight
R11	19 Caerleon Road^	39.2	39.8	0.6	Slight
R12	2 East Usk Road	31.4	31.6	0.2	Negligible
R13	5B East Usk Road	27.2	27.2	0.0	Negligible
R14	Ivy Bush Inn, 65 Clarence Place^	39.9	40.3	0.4	Slight
R15	52 Clarence Place^	37.2	37.4	0.2	Negligible
R16	St Vincent Court, Corporation Road	32.0	32.1	0.1	Negligible
R17	10 Chepstow Road^	36.0	36.1	0.1	Negligible
R18	31 Chepstow Road^	32.2	32.3	0.1	Negligible

Note: For accuracy, the changes arising from the Proposed Development have been calculated using the exact output from the ADMS-Road model rather than the rounded numbers within Table 14.16.

* Receptor located within the Caerleon Road AQMA
^ Receptor located within the Chepstow Road AQMA

14.91 The results in Table 14.15 show that the annual mean concentrations of NO_2 are predicted to be below the objective value of 40µg/m^3 'without' the Proposed Development at all receptor locations, and 'with' the Proposed Development at all but one receptor location (Receptor 14) when assuming no improvements to NOx and NO_2.

14.92 The predicted annual mean NO_2 concentrations are below 60µg/m^3 at all receptor locations both 'without' and 'with' the Proposed Development when assuming no improvement to NO_x and NO_2, and as such, the 1-hour mean objective is likely to be met at these locations.

14.93 Using the impact descriptors outlined in Table 14.7, the Proposed Development is predicted to result in 'negligible' impact at twelve receptor locations, a 'slight adverse' impact at five receptor locations and a 'moderate adverse' impact at the remaining receptor location.

14.94 Using professional judgement, based on the severity of the effect and the concentrations predicted at the sensitive receptors (all but one location predicted to be below the annual mean objective and all below the 1- hour mean objective), the effect of the Proposed Development on NO_2 concentrations, when assuming no improvements to NOx and NO_2, would be negligible.

MITIGATION MEASURES

Construction

Nuisance Dust

14.95 The Site is a high-risk site in relation to nuisance dust (referred to earlier in this Chapter), and therefore a range of environmental management controls would be developed with reference to the IAQM guidance for high-risk sites. The management controls would be set out in the Construction Environmental Management Plan (CEMP) and prevent the release of dust entering the atmosphere and / or being deposited on nearby receptors. The management controls would include:

- appropriate site management including implementation of a stakeholder communications plan, a dust management plan, and regular site inspections to monitor dust control procedures
- provision of appropriate hoarding and / or fencing to reduce dust dispersion and restrict public access;
- avoid site runoff of water and mud;
- maintenance of Site fencing, barriers and scaffolding clean using wet methods;
- removal of materials that have potential to produce dust, where possible
- avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment, where possible;
- fitting equipment (particularly cutting, grinding or sawing) with dust control measures such as water sprays, wherever possible;
- enclosing chutes, conveyors and covered skips;
- restricting drop heights onto lorries and other equipment;
- no fires would be allowed on the Site;
- control of cutting or grinding of materials on the Site and avoidance of scabbling;
- ensuring sand and other aggregates are stored in bunded areas and are not allowed to

dry out, unless required for a particular process and other control measures are in place;
- ensuring that a road sweeper is available to clean mud and other debris from hard-standing, roads and footpaths;
- ensuring vehicles entering and leaving the sites are securely covered; and
- using a wheel wash system (with rumble grids).

Construction Vehicle Exhaust Emissions

14.96 All construction traffic logistics would be agreed with NCC. Consideration would also be given where practicable, to the avoidance or limited use of roads during peak hours.

Construction Plant Emissions

14.97 Even in the absence of mitigation, the likely effect of any emissions from plant operation on the Site is negligible and therefore no further mitigation measures are considered necessary.

Operational Development

14.98 As discussed in chapter 11, if a Travel Plan is implemented then this should reduce the impact of the Proposed Development still further.

RESIDUAL EFFECTS

Construction

Nuisance Dust

14.99 Such measures are routinely and successfully applied to construction projects throughout the UK, and are proven to reduce significantly the potential for adverse nuisance dust effects associated with the various stages of the construction work. Therefore, it is considered that residual effects due to fugitive emissions would be negligible.

Construction Vehicle Exhaust Emissions

14.100 It is anticipated that the likely residual impact of construction vehicles entering and egressing the Site to air quality would be negligible. Based on professional judgement, considered the current traffic movements surrounding the Site; the existing background concentrations in the local area; that a worst-case assessment has been undertaken based on the peak construction period; and that construction phase would be short-term and temporary the overall effect would remain negligible.

Construction Plant Emissions

14.101 Even in the absence of mitigation, the likely effect of any emissions from plant operation on the Site is negligible. This would therefore remain the likely residual effect.

Operational Development

14.102 If a travel plan is implemented it is predicted that the development will result in negligible residual effects on local air quality at all receptors.

Cumulative Impact

Construction

14.103 As noted within this Chapter, the main effects to air quality because of construction works would be in relation to dust nuisance. Based on professional judgement, owing to the typical dispersal and deposition rates of dust with distance from their source only those schemes within 350m of the Application Site boundary would have the potential to cause a cumulative effect.

14.104 If as per the Development, all other cumulative schemes would implement their own CEMPs to mitigate dust nuisance effects. It is considered that cumulative dust effects from the Development and the cumulative schemes would likely be of negligible significance.

14.105 Exhaust emissions from the combined construction traffic of the Development and the cumulative schemes could give rise to cumulative residual effects on local air quality. However, this would depend upon the extent to which the implementation of the Development and the cumulative schemes overlap. In the worst-case scenario, whereby the demolition and construction of the cumulative schemes overlap with the construction of the Development, and use the same, or nearby construction traffic routes. It is generally the case that demolition and construction traffic adds a very small proportion of additional traffic to the local highway network. The likely residual cumulative effect is therefore considered to be temporary, short-term, local, adverse and of minor significance. As noted earlier in this Chapter, it is assumed that appropriate traffic management measures would be implemented to reduce as much traffic disruption as is practically possible.

14.106 Exhaust emissions from plant operating on the site and cumulative scheme sites concurrently, it is considered that even in a combined situation, the likely residual cumulative effects would be of negligible significance in the context of the existing adjacent road traffic and exhaust emissions**.**

Traffic

14.107 The air quality assessment is closely linked to the Transport Assessment (TA) and the predicted changes in traffic flows. The traffic data used within the air quality assessment for the future year of 2023 includes traffic related to other relevant cumulative schemes in the surrounding area and therefore comprises a cumulative effect assessment in this regard.

14.108 For these reasons, is it considered that the likely cumulative residual effects of traffic emissions upon local air quality of the Development and the cumulative schemes are those predicted in this chapter, and are therefore of negligible significance.

SUMMARY

14.109 The main likely effects on local air quality during demolition and construction relates to dust. A range of measures to minimise or prevent dust would be implemented and it is considered

that following mitigation measures the effects from nuisance dust emissions would be negligible.

14.110 It is anticipated that with mitigation measures in place, the effect of construction vehicles entering and egressing the Site during the construction period would have a negligible effect, in the context of local background pollutant concentrations and existing local road traffic emissions. Emissions from construction plant are considered to be negligible.

14.111 Computer modelling has been carried out to predict the effect of future traffic-related exhaust emissions and the likely changes in local air quality following the completion of the Development. The effect of the Development on local air quality has been predicted at existing residential locations surrounding the Site.

14.112 Following completion of the Development, and considering the uncertainty in future NO_x and NO_2 reductions, the Development is predicted to have a negligible impact on NO_2, PM_{10} and $PM_{2.5}$ concentrations, at all existing and future receptors considered. The overall effect is negligible.

14.113 A summary of the potential effects, mitigation measures and residual effects are presented in Table 14.17.

Table 14-17: Table of Significance – Air Quality Assessment

Potential Effect	Nature of Effect (Permanent/ Temporary)	Significance (Major/ Moderate/ Minor) (Beneficial/ Adverse/ Negligible)	Mitigation/ Enhancement Measures	Geographical Importance*							Residual Effects (Major/ Moderate/ Minor) (Beneficial/ Adverse/ Negligible)
				I	UK	W	R	C	D	L	
Construction											
Dust emissions from demolition and construction activities	Temporary	**Minor adverse** to **Substantial adverse** for existing surrounding properties	Routine environmental management control measures to prevent and control dust, as part of CEMP							L	**Negligible**
Emissions from construction vehicles	Temporary	**Negligible**	Routine environmental management control measures							L	**Negligible**
Emissions from construction plant.	Temporary	**Negligible**	Routine environmental management control measures							L	**Negligible**
Operational Development											
Emissions from traffic associated with the completed Development	Permanent	**Negligible to Moderate Adverse** in terms of NO_2 concentrations and **Negligible** in terms of PM_{10} and $PM_{2.5}$ concentrations	Possible Implementation of Travel Plan							L	**Negligible**
Cumulative Effects											
Dust emissions from demolition and construction activities	Temporary	**Negligible**	Routine environmental management control measures to prevent and control dust, as part of CEMP							L	**Negligible**
Emissions from traffic associated with the development	Permanent	**Negligible**	Implementation of Travel Plans							L	**Negligible**

Emissions from construction vehicles

Emissions from construction plant.

1 Council Directive 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe.
2 Defra, (2010) The Air Quality Standards (England) Regulations.
3 Department of the Environment, Food and Rural Affairs (Defra), (2007). 'The Air Quality Strategy for England, Scotland, Wales & Northern Ireland'.
4 Bate, K.J. and Coppin, N.J. 1991, 'Dust impacts from mineral workings', Mine and Quarry, 20 (3), 1991, pp31 – 35.
5 Office of the Deputy Prime Minister (ODPM), 1995, 'The Environment Act' 1995.
6 Welsh Government, 2016, Planning Policy Wales, Edition 9
7 Welsh Assembly Government, 2008, People, Places, Futures The Wales Spatial Plan 2008 Update
8 Newport City Council, 2015, Local Development Plan 2011 – 26 Adopted Plan
9 Defra (2016), 'Improving Air Quality in the UK: Tackling nitrogen dioxide in our towns and cities UK Overview Document' (18 January 2016)
10 https://www.judiciary.gov.uk/judgments/clientearth-v-secretary-of-state-for-the-environment-food-and-rural-affairs/
11 Defra (2017) Improving Air Quality in the UK: Tackling nitrogen dioxide in our towns and cities. Draft UK Air Quality Plan for Tackling Nitrogen Dioxide (Consultation Document)
12 Institute of Air Quality Management (2014) 'Guidance on the Assessment of dust from demolition and construction.'
13 Cambridge Environmental Research Consultants Ltd, ADMS-Roads, 2014, Version 4.0.1.
14 AEA, NOX to NO2 Calculator, http://laqm1.defra.gov.uk/review/tools/monitoring/calculator.php Version 5.1, 3 June 2016
15 Environmental Protection UK & Institute of Air Quality Management (2017), 'Land-Use Planning & Development Control: Planning for Air Quality', EPUK & IAQM, London.
16 Institute of Air Quality Management, 2014, 'Guidance on the Assessment of dust from demolition and construction.
17 http://laqm.defra.gov.uk/faqs/faqs.html.
18 Defra, 2012, Local Air Quality Management: Note on Projecting NO2 Concentrations.
19 Environmental Protection UK & Institute of Air Quality Management (IAQM) (2017), 'Land-use Planning & Development Control: Planning for Air Quality.' January 2017. IAQM, London