11 AIR QUALITY

11.1 Introduction

11.1.1 This Chapter, prepared by Wardell Armstrong LLP, reports the likely significant effects of the Proposed Development in terms of Air Quality in the context of the Site and surrounding area. In particular it considers the likely significant effects of dust and particulate matter generation during the construction phase, and the impact of emissions from development-generated traffic in the operational phase on sensitive receptor locations within the area around the Proposed Development.

11.1.2 Sensitive locations are those where the public may be exposed to pollutants generated by the construction or operation of the Proposed Development. These include locations sensitive to an increase in dust deposition as a result of on-site construction activities or exposure to gaseous pollutants from exhaust emissions from construction traffic and traffic associated with the Proposed Development.

11.1.3 The Proposed Development will generate additional traffic and will cause a redistribution of existing traffic on the local road network. There is the potential for adverse effects on local air quality to occur at existing properties located close to roads where traffic flows are predicted to increase as a result of the operation of the Proposed Development.

11.1.4 This Chapter (and its associated appendices) is not intended to be read as a standalone assessment and reference should be made to the front end of this ES (Chapters 1 – 6), as well as the final chapters, 'Summary of Residual and Cumulative Effects' and 'Conclusions' (Chapters 21 - 22).

11.2 Legislation, Policy and Guidance

11.2.1 The relevant legislation, policy and guidance are listed below, with details provided in Appendix 11.1.

Legislative Framework

11.2.2 The applicable legislative framework is summarised as follows:

- The Environment Act 1995;
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007;
- Directive 2008/50/EC of the European Parliament and of the Council of 21st May 2008 on Ambient Air Quality and Cleaner Air for Europe; and

- Air Quality (Standards) Regulations, 2010.

Planning Policy

11.2.3 Planning policies in relation to air quality should be in compliance with EU limit values or national objectives for air pollutants, taking into account the presence of Air Quality Management Areas (AQMAs) and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in an AQMA is consistent with the local air quality action plan. Local authorities, therefore, need to set out their policies to achieve good air quality, both within AQMAs and more widely across their districts, and periodically to review them to keep them relevant and up to date.

11.2.4 Planning Policy Wales: Edition 11 (PPW11) (2021) sets out the land use planning policies of the Welsh Government. Section 6.7 of PPW11 deals with Air Quality (and Soundscape), the requirements of which in relation to air quality are detailed in Appendix 11.1.

11.2.5 The local policy applicable to the Proposed Development site is the *Cardiff Local Development Plan 2006 – 2026*, which was adopted in January 2016. Air quality is addressed in the Local Development Plan (LDP) under *Policy EN13: Air, Noise, Light Pollution and Land Contamination* and relevant sections are presented in Appendix 11.1. A new Local Development Plan, the *Replacement Local Development Plan 2021 to 2036* is now under preparation with the aim of adopting the new plan in 2024.

Guidance

11.2.6 The applicable guidance is summarised as follows:

- Planning Practice Guidance: Air Quality, 2019;
- Institute of Air Quality Management (IAQM), Guidance on the Assessment of Dust from Demolition and Construction, 2014;
- Environmental Protection UK (EPUK) and IAQM, Land-Use Planning and Development Control: Planning for Air Quality, 2017;
- Design Manual for Roads and Bridges (DMRB), 2007; and
- Department for Environment, Food and Rural Affairs (Defra), Local Air Quality Management Technical Guidance (LAQM.TG(16)), 2016.

11.3 Assessment Methodology and Significance Criteria

Scope of the Assessment

11.3.1 The Scoping Report (Appendix 5.1) included a description of the scope of works to be considered in the air quality assessment, which comprise the following:

- A qualitative assessment in order to consider the potential effects associated with dust and particulates during the construction phase of the Proposed Development; and
- air dispersion modelling in order to assess the potential effects associated with the operation of the Proposed Development, concentrating on the potential impact of road vehicle emissions on ambient air quality.

Effects Not Considered within the Scope

11.3.2 There are no designated statutory habitat sites located within 50 metres (m) of the Site boundary and/or within 50m of the route used by construction vehicles on the public highway, and/or up to 500m from the Site entrance. Therefore, it is not necessary to consider such sites in the construction dust assessment.

11.3.3 There are no plans for on-site combustion sources for heating plant or power generation; therefore on-site emission sources have been scoped out of the assessment.

Extent of the Study Area

11.3.4 For the construction phase assessment, existing sensitive human receptors located within 350m of the Site boundary and/or within 50m of the route that construction vehicles will take (within up to 500m from the Site entrance) have been identified.

11.3.5 For the operational phase assessment, traffic data has been reviewed against EPUK/IAQM criteria in order to determine the extent of the road network to be included within the air quality study area. Environmentally Sensitive Receptor (ESR) locations have been identified within 200m of the roads that will be affected by development generated vehicles.

11.3.6 These criteria and distances are taken from the relevant guidance detailed in Appendix 11.2 and have been applied using the methodologies also detailed in Appendix 11.2.

Consultation Undertaken to Date

11.3.7 Table 11.1 provides a summary of the consultation activities undertaken in support of the preparation of this Chapter.

Table 11.1: Summary of Consultation Undertaken to Date			
Organisation	**Individual(s)**	**Meeting Date and other forms of Consultation**	**Summary of Outcome of Discussion**
Cardiff Council	Craig Evans	Teams meeting on 1st July 2021	Discussed and agreed outline of air quality methodology

Assessment Methodology

11.3.8 The method of baseline data collection and assessment has been agreed with Cardiff Council and is in accordance with current guidance and industry best practice. Full details are provided in Appendix 11.2.

Construction Phase Impacts

11.3.9 In order to assess the impacts associated with dust and PM_{10} releases during the construction phase of the Proposed Development, an assessment has been undertaken in accordance with guidance from the Institute of Air Quality Management (IAQM)[1]. Further details of the construction assessment methodology are provided in Appendix 11.2.

11.3.10 The closest sensitive human receptor locations to where construction phase activities will take place are detailed in Table 11.2.

Table 11.2: Existing Dust Sensitive Receptors – Human Receptors		
Receptor	**Direction from the Site**	**Approximate Distance from the Site Boundary**
Existing residential properties along Schooner Way/Schooner Drive/Halliard Court	North	10m at closest point
Existing residential properties along Galleon Way	East	<20m at closest point
Wales Millennium Centre	South	50m at closest point
Existing commercial premises and car parking along	South	50m at closest point

[1] Institute of Air Quality Management, Guidance on the Assessment of Dust from Demolition and Construction, February 2014

Table 11.2: Existing Dust Sensitive Receptors – Human Receptors		
Receptor	**Direction from the Site**	**Approximate Distance from the Site Boundary**
Pierhead Street/Caspian Way		
Existing residential properties along Galleon Way	East	<20m at closest point

11.3.11 The criteria used to assess the impact of the Proposed Development, and the associated significance of effects at existing sensitive receptor locations, are included in Appendix 11.2.

Operational Phase Impacts

11.3.12 To assess the impacts associated with road traffic emissions during the operational phase assessment, detailed air dispersion modelling has been undertaken. The impacts have been assessed in accordance with guidance from Environmental Protection UK (EPUK) and the IAQM[2].

11.3.13 The air dispersion model ADMS-Roads (CERC, Version 5) has been used to assess the baseline air quality at ESR and Proposed Sensitive Receptor (PSR) locations. The air dispersion model has been used to predict NO_2, PM_{10} and $PM_{2.5}$ concentrations, as these are the pollutants considered most likely to exceed the objectives and limit values. Further details of the modelling and assessment methodology, including model verification, are provided in Appendix 11.2.

11.3.14 Air dispersion modelling has been carried out to estimate pollutant concentrations, due to road traffic emissions, for two assessment scenarios as follows:

- **Scenario 1:** 2019 Verification and Base Year, the most recent year for which traffic flow information, local monitored pollution data and meteorological data is available; and
- **Scenario 2:** 2021 Baseline.

It should be noted that as traffic modelling and traffic data processing is still ongoing, it has not been possible within the timescale of the Pre Application Consultation submission to assess the Opening Year and Future Year scenarios, with and without development as would be normal practice. Only baseline data for ESRs and indicative

[2] Moorcroft and Barrowcliffe et al, Land-Use Planning and Development Control: Planning for Air Quality (v1.2), January 2017

baseline concentrations for the locations of PSRs are available at this point; the impact assessment for ESRs in the Opening and Future Years and final data for PSRs are under preparation and will be included as soon as possible.

11.3.15 Eleven representative ESR locations (identified as ESR 1 to ESR 11) have been considered in the air quality assessment. These are residential in nature and have been selected as they are locations at which the annual mean Air Quality Objectives (AQOs) apply. Details of the receptors considered are provided in Table 11.3 and their locations and study area are illustrated in Figure 11.1 (Appendix 11.4).

Table 11.3: Existing Sensitive Receptor Locations

Receptor	Address	Grid Reference		Inside AQMA	Receptor Type
		Easting	Northing		
ESR 1	Existing residential property on Hemingway Road	319127	174936	No	Residential
ESR 2	Existing residential property on Bute Place	319176	174605	No	Residential
ESR 3	Existing residential property on Bute Place	319158	174631	No	Residential
ESR 4	Existing residential property on James Street	319050	174600	No	Residential
ESR 5	Existing residential property on Lloyd George Avenue	318760	175742	No	Residential
ESR 6	Existing residential property on Lloyd George Avenue	318728	175808	No	Residential
ESR 7	Existing residential property on Lloyd George Avenue	318735	175832	No	Residential
ESR 8	Existing residential property on Tyndall Street	319106	175975	No	Residential
ESR 9	Existing residential property on Tyndall Street	319118	176007	No	Residential
ESR 10	Existing residential property on Schooner Way	319191	175195	No	Residential
ESR 11	Existing residential property on Beaufort Court	319058	175889	No	Residential

11.3.16 Nine proposed receptor locations have been assessed and are identified as PSR 1 – PSR 9. These are taken to represent residential locations across the Proposed

Development Site. Details of the receptors considered are provided in Table 11.4 and their locations and study area are illustrated on Figure 11.1 (Appendix 11.4).

Table 11.4: Proposed Sensitive Receptor Locations

Receptor	Grid Reference		Inside AQMA	Receptor Type
	Easting	Northing		
PSR 1	319228	175180	No	Residential
PSR 2	319240	175131	No	Residential
PSR 3	319270	175065	No	Residential
PSR 4	319291	175023	No	Residential
PSR 5	319382	175108	No	Residential
PSR 6	319360	175155	No	Residential
PSR 7	319202	175168	No	Hotel
PSR 8	319328	175006	No	Residential
PSR 9	319392	174869	No	Residential

Significance Criteria

11.3.17 Effects that are deemed to be significant for the purposes of this assessment are those that are described as being of a 'moderate' or 'substantial' adverse or beneficial level, or a 'slight' adverse level that is above a relevant air quality objective or target level, or results in a new breach of such an objective or target level.

11.3.18 The construction phase assessment for ESRs takes into account the significance criteria used in the IAQM guidance and the operational phase assessment for ESRs takes into account the significance criteria detailed in the EPUK/IAQM guidance (see Appendix 11.2 for more detail).

11.4 Baseline Conditions

11.4.1 The air quality assessment needs to take into account background concentrations upon which the local, traffic derived pollution is superimposed. The data may be derived through long-term ambient measurements at background sites, remote from immediate sources of air pollution or, alternatively, from the default concentration maps that have been provided for use by Defra with the LAQM.TG(16) guidance.

11.4.2 As there are currently no representative NO_2, PM_{10} or $PM_{2.5}$ monitoring locations in the vicinity of the Site, background concentrations have been obtained from the 2018-based Defra default concentration maps, for the appropriate grid squares[3].

11.4.3 The background pollutant concentrations used in this assessment are detailed in Table 11.5.

Table 11.5: Background Pollutant Concentrations Used in the Air Quality Assessment*

Receptor	NO_X*	NO_2*	PM_{10}*	$PM_{2.5}$*
2019 Annual Mean Concentrations (µg/m³)				
ESR 1 – 4; PSR 9 (319500, 174500)	26.68	18.73	14.06	8.59
ESR 5 – 7 (318500, 175500)	29.11	20.09	14.39	9.27
ESR 8; ESR 10 – 11; PSR 1 – 8 (319500, 175500)	32.04	21.69	14.37	9.27
ESR 9 (319500, 176500)	29.56	20.44	15.03	9.93
2021 Annual Mean Concentrations (µg/m³)				
ESR 1 – 4; PSR 9 (319500, 174500)	24.17	17.20	13.67	8.29
ESR 5 – 7 (318500, 175500)	26.25	18.41	13.95	8.95
ESR 8; ESR 10 – 11; PSR 1 – 8 (319500, 175500)	29.69	20.35	14.04	9.04
ESR 9 (319500, 176500)	26.86	18.84	14.59	9.62
**Obtained from the Defra 2018-based background maps for the appropriate grid square*				

Sensitive Receptors

11.4.4 The baseline assessment (i.e. Scenarios 1 and 2) has been carried out for the ESR locations considered. The adjusted NO_2 and unadjusted PM_{10} and $PM_{2.5}$ concentrations are detailed in Table 11.6 and Appendix 11.3.

Table 11.6: Predicted Adjusted NO_2 and Unadjusted PM_{10} and $PM_{2.5}$ Concentrations at Existing Sensitive Receptors for Scenarios 1 and 2

Receptor	Calculated Annual Mean Concentrations (µg/m³)					
	Scenario 1: 2019 Base Year			Scenario 2: 2021 Baseline		
	NO_2	PM_{10}	$PM_{2.5}$	NO_2	PM_{10}	$PM_{2.5}$
ESR 1	30.14	14.46	8.83	26.76	14.07	8.52
ESR 2	27.45	14.37	8.77	24.54	13.98	8.47
ESR 3	32.70	14.56	8.89	28.98	14.17	8.58
ESR 4	31.59	14.59	8.90	28.15	14.20	8.59
ESR 5	22.92	14.50	9.33	20.79	14.06	9.01

[3] Accessed through the Defra Local Air Quality Management webpages (http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html)

Table 11.6: Predicted Adjusted NO_2 and Unadjusted PM_{10} and $PM_{2.5}$ Concentrations at Existing Sensitive Receptors for Scenarios 1 and 2

Receptor	Calculated Annual Mean Concentrations (µg/m³)					
	Scenario 1: 2019 Base Year			Scenario 2: 2021 Baseline		
	NO_2	PM_{10}	$PM_{2.5}$	NO_2	PM_{10}	$PM_{2.5}$
ESR 6	28.28	14.67	9.43	25.28	14.23	9.11
ESR 7	33.01	14.85	9.54	29.49	14.41	9.21
ESR 8	40.60	15.11	9.71	36.76	14.78	9.47
ESR 9	34.30	15.57	10.25	30.87	15.13	9.93
ESR 10	32.20	14.75	9.50	29.28	14.42	9.26
ESR 11	35.20	14.87	9.57	31.93	14.54	9.33

NO_2 concentrations obtained by inputting predicted NO_x concentrations into the NO_x to NO_2 calculator[4] in accordance with LAQM.TG(16)
Underlined values represent an exceedance of the AQO.

11.4.5 The results show that all predicted NO_2, PM_{10} and $PM_{2.5}$ concentrations are below the relevant objectives and limit values, with the exception of an exceedance for NO_2 at ESR 8 in the 2019 Base Year. The exceedance is no longer expected to be present in the 2021 Opening/Future Year.

Limitations

11.4.6 A quantitative assessment of the effect of emissions of construction phase vehicles upon air quality at ESR locations has not been undertaken, as there is not sufficient information regarding numbers and routing. It is anticipated, however, that HGV numbers will be considerably lower during construction than during operation of the Proposed Development. As such the impact of construction phase vehicles is considered to be less than the operational phase of development.

11.5 Assessment of Effects

Design Solutions and Assumptions

Construction Phase

11.5.1 In accordance with the methodology detailed in the IAQM guidance, the construction phase assessment assumes that no mitigation measures are applied, except those required by legislation. Further site-specific measures (e.g. best practice Dust

[4] Defra Local Air Quality Management webpages (http://laqm.defra.gov.uk/tools-monitoring-data/no-calculator.html)

Mitigation Plan) are recommended where the risk of dust impacts is not classed as negligible.

Operational Phase

11.5.2 The assessment of operational phase road traffic emissions assumes that no mitigation is applied. Mitigation measures are recommended based upon the significance of the effect.

Assessment of Effects

Construction Phase Assessment – Dust and Fine Particulate Matter Emissions

11.5.3 The main activities involved with the construction phase of works are as follows:

- **Demolition** of existing buildings within the Proposed Development area.
- **Earthworks** that may be required prior to the construction phase of works. The main sources of dust can include:
  - Cleaning the Site;
  - Stripping and stockpiling of topsoil and subsoil;
  - Ground excavation;
  - Bringing in, tipping and spreading materials on Site;
  - Stockpiling materials;
  - Levelling ground;
  - Trenching;
  - Road construction; and
  - Vehicle movements on Site roads.
- **Construction** that will involve the construction of individual building access roads, car parking areas and the buildings themselves; and
- **Trackout** which is defined as the transport of dust and dirt by vehicles, travelling from a construction site on to the public road network. This may occur through the spillage of dusty materials onto road surfaces or through the transportation of dirt by vehicles that have travelled over muddy ground on the Site. This dust and dirt can then be deposited and re-suspended by other vehicles.

Step 2A

11.5.4 Step 2A of the construction phase dust assessment has defined the potential dust emission magnitude from demolition, earthworks, construction and trackout in the absence of site-specific mitigation. Examples of the criteria for the dust emission classes are detailed in the IAQM guidance.

Step 2B

11.5.5 Step 2B of the construction phase dust assessment has defined the sensitivity of the area, taking into account the significance criteria detailed in Tables 11.3 to 11.7 in Appendix 11.2, for demolition, earthworks, construction and trackout. The sensitivity of the area to each activity is assessed for potential dust soiling, human health and ecological impacts.

11.5.6 For demolition, earthworks and construction, there are currently between 10 and 100 receptors (residential) within 20m of where these activities may take place, which is assumed to be the red-line boundary for the purposes of this assessment.

11.5.7 The routing of construction vehicles is unknown at this stage. Therefore, for the purposes of this assessment, worst case routing scenarios have been assumed for assessment of potential trackout impacts at nearby receptors. As a result, for trackout, there are more than 100 receptors (residential and commercial) within 50m of where trackout may occur for a distance of up to 500m from the Site entrance.

Step 2C

11.5.8 Step 2C of the construction phase dust assessment has defined the risk of impacts from each activity. The dust emission magnitude is combined with the sensitivity of the surrounding area. The risk of dust impacts from each activity, with no mitigation in place has been assessed in accordance with the criteria detailed in Tables 11.8 to 11.10 within Appendix 11.2.

Summary

11.5.9 Table 11.7 details the results of Step 2 of the construction phase assessment for human receptors.

Table 11.7: Construction Phase Dust Assessment for Human Receptors				
	Activity			
	Demolition	**Earthworks**	**Construction**	**Trackout**
Step 2A				
Dust Emission Magnitude	Large[a]	Large[b]	Large[c]	Large[d]
Step 2B				
Sensitivity of Closest Receptors	High	High	High	High
Sensitivity of Area to Dust Soiling Effects	High	High	High	High
Sensitivity of Area to Human Health Effects	Low[e]	Low[e]	Low[e]	Low[e]
Step 2C				
Dust Risk: Dust Soiling	High Risk	High Risk	High Risk	High Risk
Dust Risk: Human Health	Medium Risk	Low Risk	Low Risk	Low Risk

a. Total building volume to be demolished estimated to be greater than 100,000m^3
b. Total site area estimated to be more than 10,000m^2
c. Total building volume estimated to be more than 100,000m^3, with potentially dusty construction materials.
d. Number of construction phase vehicles estimated to be greater than 50 movements per day.
e. Background annual mean PM_{10} concentration is taken from the LAQM Defra default concentration maps, for the appropriate grid square for 2019.

Operational Phase Assessment

Existing Sensitive Human Receptors

As traffic data for the Opening and Future Years, and for the 'With Development' scenarios is still under preparation, only baseline data is available for ESR locations, as presented in Section 11.4. The impact assessment will therefore be completed as data is made available.

Proposed Sensitive Receptors

11.5.10 Air pollutant concentrations have also been modelled at the 9 proposed sensitive receptor locations, for the 2021 Baseline, as detailed in Table 11.8. The NO_2, PM_{10} and $PM_{2.5}$ concentrations are included in Appendix 11.3. It should be noted that as only baseline traffic data for 2021 is available, the data below should be treated as indicative for the locations assessed. Owing to the overall net reduction in trip generation forecast, and the proposed closures of Schooner Way and Hemingway Road as through routes, it is likely that on-site concentrations will be slightly lower

than those presented; however, this will be confirmed by modelling when the appropriate traffic data is available.

Table 11.8: Predicted NO_2, PM_{10} and $PM_{2.5}$ Concentrations (Adjusted) at Proposed Sensitive Receptor Locations for 2021 Baseline

Proposed Receptor Location	Calculated Annual Mean Concentrations (µg/m³)		
	NO_2*	PM_{10}	$PM_{2.5}$
PSR 1	25.92	14.28	9.18
PSR 2	24.34	14.22	9.15
PSR 3	24.85	14.24	9.16
PSR 4	30.05	14.46	9.28
PSR 5	24.62	14.25	9.16
PSR 6	23.80	14.21	9.14
PSR 7	29.77	14.44	9.27
PSR 8	38.42	14.83	9.50
PSR 9	25.34	14.12	8.54

** NO_2 concentrations obtained by inputting predicted NO_x concentrations into the NO_x to NO_2 calculator in accordance with LAQM.TG(16)*

11.5.11 All predicted pollutant concentrations are below the relevant objectives/limit values, at all proposed sensitive receptors considered.

11.6 Mitigation

Construction Phase Assessment – Dust and Fine Particulate Matter Emissions

Step 3

11.6.1 During the construction phase, the implementation of effective mitigation measures will substantially reduce the potential for nuisance dust and particulate matter to be generated.

11.6.2 The construction phase assessment identified that:

- The risk of dust soiling effects is classed as high for demolition, earthworks, construction and trackout; and
- The risk of human health effects is classed as medium for demolition, and low for earthworks, construction and trackout.

11.6.3 This assumes that no mitigation measures are applied, except those required by legislation. Site-specific mitigation measures do not need to be recommended if the risk category is 'negligible'.

11.6.4 The risk of dust soiling and human health effects are not negligible for all activities. Therefore, site-specific mitigation will be implemented to ensure dust effects from these activities will be 'not significant'.

11.6.5 It is proposed that a best practice Dust Mitigation Plan would be written and implemented for the Site. This can be secured via planning condition. This would set out the practical measures to be incorporated as part of a best working practice scheme. This would take into account the recommendations included within the IAQM guidance, which may include but are not limited to the following:

- Revegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;
- 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;
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery;
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever possible;
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the Site where reasonably practicable);
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of Site. This may require the sweeper being continuously in use; and
- Ensure vehicles entering and leaving the Site are covered to prevent escape of materials during transport.

11.6.6 Any dust and air quality complaints should be recorded and appropriate measures be taken to identify causes and reduce emissions in a timely manner. Exceptional incidents that cause dust and/or emissions, and the action taken to resolve the situation, should be recorded in a log book and made available to Cardiff Council on request.

11.6.7 It is recognised that the final design solutions will be developed with the input of the Contractor to maximise construction efficiencies, to use modern construction techniques and sustainable materials, and to incorporate the particular skills and experience offered by the successful contractor.

Step 4

11.6.8 Step 4 of the construction phase dust assessment has been undertaken to determine the significance of the dust effects arising from demolition, earthworks, construction and trackout associated with the Proposed Development.

11.6.9 The implementation of effective mitigation measures during the construction phase, such as those detailed in Step 3, will substantially reduce the potential for nuisance dust and particulate matter to be generated and any residual impact should be 'not significant'.

Operational Phase Assessment – Road Traffic Emissions

11.6.10 The significance of the overall effects of the Proposed Development has been assessed for baseline conditions only at this time. This assessment is based on professional judgement and takes into account a number of factors, including:

- Baseline pollutant concentrations of NO_2, PM_{10} and $PM_{2.5}$ in 2019 and 2021 are below the relevant objectives and limit values at all existing receptors considered, with the exception of one exceedance for NO_2 at ESR 8 in 2019, which is predicted to be below the objective level by 2021; and
- Concentrations of NO_2, PM_{10} and $PM_{2.5}$ are predicted to be below the objective and target levels at assessed Proposed Sensitive Receptor Locations representing the planned residential and hotel uses within the site.

11.7 Residual Effects

11.7.1 It is considered that, with the application of mitigation measures during the construction phase as outlined in Section 11.6, the generation of nuisance dust and particulate matter will be greatly reduced, and any residual effect will be '**Not Significant**'.

11.7.2 As baseline traffic data only is available for the current assessment, the assessment of the residual effect of the Proposed Development on human receptors during the

operational phase is not possible. The assessment of operational phase residual effects will be completed when data is available.

11.8 Assessment of Cumulative Effects

11.8.1 As only baseline traffic data is available, it has not been possible at this stage to assess the cumulative effect of the Proposed Development in combination with other committed developments.

11.9 Conclusion

Construction Phase

11.9.1 During the construction phase, site-specific mitigation (e.g. best practice Dust Mitigation Plan) would be implemented at the Site. With this in place, the residual effect on receptor locations is considered to be direct, temporary, medium-term and **Not Significant.**

Operational Phase

11.9.2 As traffic data for the Opening and Future Years, and for the 'With Development' scenarios is still under preparation, the full impact assessment will therefore be completed as data is made available. However, best practice mitigation measures such as low-NO_x boilers for heating in residential properties and a Travel Plan to minimise car travel and encourage active travel modes could be implemented to further reduce any impact of the Proposed Development**.** It has been confirmed that electric vehicle charging points will be implemented in the Proposed Development.