6 AIR QUALITY

6.1 Introduction

6.1.1 This chapter of the Environmental Statement (ES) addresses the likely significant effects of the proposed development (as described within Chapter 3 of this ES) on air quality during the construction and operational phases. Cumulative effects associated with the operation of the consented AESC Plant 2 site, which is currently under construction, are also considered within the assessment.

6.1.2 The assessment includes consideration of impacts on air quality from the proposed development in terms of:

- An air quality screening assessment, which considers the potential disamenity dust effects and fine particulate matter arising during the construction phase of the development.
- Emissions to air from the battery manufacturing process stack exhausts at the AESC Plant 3 site (including a cumulative assessment of emissions from the consented AESC Plant 2 site) using the AERMOD detailed modelling software.
- Emissions to air from the associated vehicle movements generated by the AESC Plant 3 development using the ADMS-Roads detailed modelling software (which includes vehicle movements associated with the consented AESC Plant 2 as part of the committed development data).

6.2 Consultation and scope of the assessment

6.2.1 Informal consultation with Sunderland City Council (SCC) suggested that an air quality assessment should be included within the EIA for the proposed development and that it should include modelling of stack emissions connected to the industrial processes. Sensitive receptors to be affected by the construction activities are outlined in Table 6.4:, and are the same as those for AESC Plant 2 (application reference 21/01764/HE4) and for IAMP ONE, with the exception of North Moor Farm which has been excluded from the current assessment.

6.2.2 The air quality effects of the operational phase were assessed as part of the wider IAMP One consent, although this did not consider any emissions to air from the proposed battery manufacturing processes. The air quality effects of the operational phase stack emissions were considered as part of the 2020 AESC Plant 2 consent and subsequent AESC Plant 2 Section 73 addendum (application reference 23/01542/VA4).

6.2.3 North Moor Farm is situated within the AESC Plant 3 site. These buildings are currently vacant. At the time of the air quality assessment for the AESC Plant 2 application (June 2021), these buildings were not owned by AESC and were included in the assessment as a possible sensitive receptor. At the time of preparing this assessment, the buildings at North Moor Farm were being used as a site compound by Morgan Sindall in connection with the diversion of the powerlines. It is understood that Morgan Sindall will vacate the site in late 2023. It is the intention that the buildings will then be demolished, with demolition to be completed in April 2024. A planning application for these works was being prepared at the time of preparing this chapter and the buildings will have been demolished before the proposed development of AESC Plant 3 commences. For these reasons, North Moor Farm has not been considered as a sensitive receptor within this assessment.

6.3 Methodology

Legislation, policy context & literature review

Relevant Air Quality Legislation & Guidance

6.3.1 The air quality assessment has been undertaken in accordance with the following legislation, policy and guidance:

- The Environment Act 1995, as amended 2021.
- Department of Environment, Food and Rural Affairs, The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, July 2007.
- The Air Quality Standards Regulations 2010.
- Department for Environment, Food and Rural Affairs, Local Air Quality Management Technical Guidance LAQM.TG(22), August 2022.
- Ministry of Housing, Communities and Local Government, National Planning Policy Framework, December 2023.
- Department for Communities and Local Government, Planning Practice Guidance: Air Quality, November 2019.
- Institute of Air Quality Management, Guidance on the Assessment of Dust from Demolition and Construction v2.2, January 2024.
- Environmental Protection UK and Institute of Air Quality Management, Land-Use Planning and Development Control: Planning for Air Quality v1.2, January 2017.
- Sunderland City Council, Core Strategy and Development Plan 2015-2033, January

2020.

- Institute of Air Quality Management, A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites v1.1, May 2020.,
- Environment Agency, Air Emissions Risk Assessment for Your Environmental Permit, August 2016 (updated March 2023).
- Environment Agency, Technical Guidance on Detailed Modelling Approach for an Appropriate Assessment for Emissions to Air, March 2014.
- Conservation Agencies' Guidance on Evaluating Model Impacts Against Critical Loads.

6.3.2 Further details of these documents are included in Appendix 6.1 of this ES.

Consultation Undertaken to Date

6.3.3 Table 6.1 provides a summary of the consultation activities undertaken in relation to the preparation of this chapter. The proposed methodology for the construction dust and road traffic assessment was sent to Ian Rutherford, Senior Environmental Health Officer (EHO) at SCC on 15th September 2023. Joanne Dodson, Senior EHO at SCC, responded on 19th September 2023, stating that she has no further comments to make regarding the methodology. A summary of this consultation is provided in Table 6.1.

Table 6.1: Summary of Consultation Undertaken to Date

Organisation	Proposed Method	Response
SCC- Ian Rutherford and Joanne Dodson	Construction phase assessment to consider dust and fine particulate matter (PM_{10}): Qualitative assessment in accordance with Institute of Air Quality Management (IAQM) guidance.	No objection to methodology.
	Road traffic assessment to consider nitrogen dioxide (NO_2) and fine particulate matter (PM_{10} and $PM_{2.5}$) in the construction and operational phases: • Detailed assessment using the ADMS-Roads atmospheric dispersion model, in accordance with Environmental Protection UK (EPUK)/IAQM guidance, and with all predicted concentrations compared to air quality objectives/limit values; • 2022 meteorological data from the Newcastle meteorological recording station; • Background concentrations from 2018 -based DEFRA default maps; • Assessment undertaken using EFT v11.0 emission factors; and • Sensitivity analysis to be undertaken.	No objection to methodology.

Dust and Fine Particulate Matter - Construction Phase Impacts

6.3.4 To assess the impacts associated with dust and fine particulate matter releases during the construction phase of the 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 6.2 of this ES.

6.3.5 In accordance with the IAQM guidance, human receptors within 250m of the site should be considered within the construction phase dust assessment. There are no existing residential human sensitive receptors within 250 m of the site. The nearest residential receptors to the site are Hylton Bridge Farm and Hylton Grove Farm, which are located approximately 310m and 780m from the site, respectively. The IAMP ONE site lies adjacent to the western AESC Plant 3 site boundary. As this is a place of work, human receptors at this location have been considered within the construction phase dust assessment, in accordance with the IAQM guidance.

6.3.6 The Ecological and Landscape Management Area (ELMA), which borders to the land to the north of AESC Plant 2 and which is in part being built on as part of the proposed the AESC Plant 3 development, is not currently an ecological designation and would, therefore, typically be assigned a low sensitivity in accordance with the IAQM Construction Guidance criteria. However, in recognition of the ELMA (and Green Belt) status of this land, a medium sensitivity is assigned for the purposes of this assessment.

6.3.7 A summary of the closest sensitive receptors in relation to where construction phase activities will take place is detailed in Table 6.2, below. However, it should be noted that the assessment includes consideration of all sensitive receptors within 250m of where these activities occur, in accordance with IAQM guidance.

Table 6.2: Closest Existing Sensitive Receptors to Construction Phase Activities

Receptor	Direction from the Site	Approximate distance to the closest on-site operation (m)*
ELMA	North and west	Adjacent to site boundary
IAMP ONE	West/South west	Adjacent to western AESC Plant 3 site boundary at closest point
AESC Plant 2	West	Adjacent to AESC Plant 3 boundary
Faltec Europe	West	Approximately 100m from AESC Plant 3 boundary

**Construction vehicles are expected to travel onto the A1290, toward the A19(T) and along the A184. There is one sensitive receptor located on this route, within 50 m of the roadside at a distance of up to 250 m from the construction site entrance.*

6.3.8 The criteria used to assess the construction impacts of the proposed development and

[1] IAQM Guidance on the Assessment of Dust from Demolition and Construction v2.1 (August 2023).

the associated significance of effects at existing sensitive receptors (ESR) are included in Appendix 6.2 of this ES.

Road Traffic Emissions

Construction Phase and Operational Phase Impacts

6.3.9 To assess the impacts associated with road traffic emissions during the construction and operational phases of the proposed development, detailed air dispersion modelling has been undertaken. The impacts have been assessed in accordance with guidance from the IAQM and EPUK.

6.3.10 The air dispersion modelling has been undertaken to consider the air quality effects associated with road traffic emissions at representative existing receptor locations. All predicted pollutant concentrations and deposition have been compared to the relevant air quality objectives, as detailed in the Air Quality (Standards) Regulations 2010. The air quality modelling has been carried out to predict pollutant concentrations due to road traffic emissions in the construction and operational phases for the following five scenarios:

- **Scenario 1**: 2022 Base Year, the most recent year for which traffic flow information, local monitored pollution data and meteorological data is available.
- **Scenario 2**: 2024 Construction Year, including committed developments but without any construction vehicle movements.
- **Scenario 3**: 2024 Construction Year, including committed developments and with construction vehicle movements.
- **Scenario 4:** 2027 Opening Year, including committed developments but without the proposed development in place.
- **Scenario 5:** 2027 Opening Year, including committed developments and with the proposed development in place.

6.3.11 Systra Ltd (appointed Transport Consultant for the scheme) has confirmed that the Construction and Opening Year scenarios, above, include committed developments that include traffic movements associated with AESC Plant 2. A full list of the committed developments included is provided within Appendix 6.3 of this ES.

6.3.12 A number of representative existing sensitive receptors (identified as ESR 1 to ESR 14) have been selected for consideration in the road traffic air quality assessment. These

have been chosen based upon their sensitivity and their proximity to roads that will be affected by construction and operation-generated traffic. Details of these receptors considered are provided in Table 6.3, below, and their locations are shown on Figure 6.1.

Table 6.3 Existing Sensitive Receptors for the Construction and Operational Phase Road Traffic Assessment

Receptor	Address	Location		Receptor Type
		X	Y	
ESR 1	Newcastle Road	432544	561130	Residential
ESR 2	Newcastle Road	432677	561067	Residential
ESR 3	A184	434488	560913	Residential
ESR 4	Downhill Lane	434735	560438	Residential
ESR 5	Private Road adjacent to A19	433943	560100	Residential
ESR 6	Boston Crescent	434421	559600	Residential
ESR 7	Baltimore Avenue	434540	559360	Residential
ESR 8	Ferryboat Lane	434690	558817	Residential
ESR 9	Ferryboat Lane	434776	558347	Residential
ESR 10	Ferryboat Lane	434796	558041	Residential
ESR 11	Cornwallis	431366	558256	Residential
ESR 12	Sulgrave Road	431864	558151	Residential
ESR 13	Sulgrave Road	431927	557843	Residential
ESR 14	Cherwell	431932	557644	Residential

Process Stack Emissions

Operational Phase Impacts

6.3.13 Emission to air resulting from the proposed AESC Plant 3 battery manufacturing processes has been undertaken to consider the potential for air quality impacts as a result of emissions to air. The assessment includes inter-cumulative (i.e. in-combination) effects of the proposed (AESC Plant 3) development and the AESC Plant 2 development.

6.3.14 Potential emissions to atmosphere have been modelled using AERMOD (Lakes Environmental model version 11.2[2]). This is a proprietary quantitative atmospheric dispersion model that is based upon the Gaussian theory of plume dispersion. The dispersion modelling has been carried out in accordance with guidance from the IAQM[3] and the Environment Agency (EA) guidance on undertaking risk assessments

[2] At the time of the assessment, the potential emissions to atmosphere were modelled using AERMOD (Lakes Environmental model) Version 11.2. Whilst Version 12 was subsequently released in November 2023, the use of Version 11.2 does not compromise the robustness of the assessment.
[3] Moorcroft and Barrowcliffe et al Land-Use Planning and Development Control: Planning for Air Quality (v1.2), January 2017.

for environmental permits[4]. The assessment of emissions to air from the AESC Plant 3 manufacturing processes has considered the following sources:

- 6 No. stacks associated with the boilers;
- 21 No. stacks associated with possible N-Methyl-2-Pyrrolidone (NMP) emissions;
- 10 No. stacks associated with possible Ethyl Carbonate (EC) emissions; and
- 5 No. stacks associated with possible Diethyl Carbonate Solvent Vapour (DEC) emissions.

6.3.15 The emission rate data used in the air dispersion model has been provided in good faith, based on assumptions about the proposed battery manufacturing process or from scaled-up data collected from the nearby existing plant. Whilst conservative emission concentrations have been used to provide an overly robust assessment, actual concentrations once process optimisation has been completed are expected to be significantly lower than those modelled in this assessment.

6.3.16 Further details of the sources considered in the air quality assessment and the modelling methodology, are provided in Appendix 6.3 of this ES. Details of the existing sensitive human receptors considered in the assessment of emissions to air are included in Table 6.4:, below, and shown in Figure 6.2.

Table 6.4: Closest Existing Sensitive Human Receptors to Proposed Development – Process Stack Emissions Assessment

Receptor	Location		Direction from the Site	Approximate Distance to Site (m)
	X	Y		
ESR 1	433347	559511	North	310
ESR 2	433325	559682	North	780
ESR 3	433964	559014	East	570
ESR 4	434421	559600	North East	1,250
ESR 5	434628	559171	East North East	1,240
ESR 6	434701	558784	East	1,235
ESR 7	432334	557787	South West	1,120
ESR 8	431864	558150	West South West	1,305
ESR 9	431633	558997	West North West	1,450
ESR 10	431811	559418	North West	1,415
ESR 11	432337	559965	North North West	1,410

6.3.17 In addition, the EA guidance on undertaking risk assessments for environmental permits advises that the following screening distances apply to statutory designated habitat sites (referred to in the guidance as 'protected conservation areas') (see Figure

[4] Environment Agency, Air emissions risk assessment for your environmental permit, March 2023 [Accessed at: https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit].

8.2):

- 10 km from a site (or 15 km for Part A(1) processes): Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites; and
- 2 km from a site: Sites of Special Scientific Interest (SSSI) and local nature sites (including Ancient Woodland, Local Wildlife Sites (LWS), National Nature Reserves (NNR) and Local Nature Reserves (LNR)).

6.3.18 These screening distances are reiterated in the IAQM guidance on assessing air quality impacts on designated habitat sites[5].

6.3.19 The following four statutory habitat sites have been identified within these distances (15 km has been assumed as a worst-case approach):

- Barmston Pond LNR, located approximately 1.2 km to the south south west at the closest point;
- Hylton Dene LNR, located approximately 1.5 km to the east south east at the closest point. The Hylton Dene LWS and Tilesheds LWS are also located within the boundary of this LNR;
- Durham Coast SAC, located approximately 7.6 km to the east north east at the closest point; and
- Northumbria Coast Ramsar site/SPA, located approximately 7.3 km to the east at the closest point.

6.3.20 In addition to the statutory sites listed above, it has been possible to identify two further existing LWSs and three candidate LWSs located within a 2 km radius of the site. These are:

- Severn Houses LWS, located approximately 880 m to the south west;
- High Wood LWS, located approximately 1.7km to the south;
- River Don candidate LWS, located approximately 580 m to the north;
- Usworth Burn (River Don South) candidate LWS, located approximately 520 m to the north; and
- Elliscope Farm East/Hylton Bridge candidate LWS, located approximately 620 m to the north.

[5] IAQM, A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites v1.1, May 2020.

6.3.21 Details of the existing sensitive ecological receptor points considered in the assessment of emissions to air are included in Table 6.5, below.

Table 6.5: Closest Existing Sensitive Ecological Receptors to Proposed Development

Designated Site	Receptor Point	Location	
		X	Y
Barmston Pond LNR	ECO 1	432898	557317
	ECO 2	432826	557377
	ECO 3	432757	557436
	ECO 4	432502	557295
	ECO 5	432526	556917
Hylton Dene LNR (including Hylton Dene and Tilesheds LWSs)	ECO 6	434998	558111
	ECO 7	434977	558286
	ECO 8	434991	558395
	ECO 9	435179	558458
	ECO 10	435395	558651
Northumbria Coast Ramsar site/SPA	ECO 11	442469	550558
Northumbria Coast Ramsar site/SPA and Durham Coast SAC	ECO 12	442020	551558
	ECO 13	441510	553317
	ECO 14	441266	554722
Northumbria Coast Ramsar site/SPA	ECO 15	440691	559575
	ECO 16	440654	559929
Northumbria Coast Ramsar site/SPA and Durham Coast SAC	ECO 17	440766	561003
	ECO 18	440853	561335
	ECO 19	441075	561641
	ECO 20	441256	562268
	ECO 21	441306	562877
Durham Coast SAC	ECO 22	441068	563824
	ECO 23	439916	564875
	ECO 24	438341	566409
Northumbria Coast Ramsar site/SPA	ECO 25	437290	567782
	ECO 26	436692	568865
	ECO 27	435756	572415

6.3.22 The existing and candidate LWSs have not been considered as specific receptor points in the assessment, but they are located within the area covered by the Uniform Cartesian Grid that is included in the dispersion model. The High Wood LWS is not located within the grid area and, therefore, the highest results from the nearby Barmston Ponds LNR have been used as a robust approach.

Significance Criteria: Dust and Fine Particulate Matter - Construction Phase

6.3.23 The construction phase assessment for ESRs takes into account the significance criteria used in the IAQM guidance. 'Step 4' of the guidance is used to determine whether significant effects are likely to arise from the construction phase with

mitigation measures in place. Full details of the significance criteria used within the construction phase assessment are included in Appendix 6.2 of this ES.

Significance Criteria: Road Traffic Emissions – Construction Phase and Operational Phase

6.3.24 The operational phase assessment for ESRs considers the significance criteria detailed in the EPUK and IAQM guidance. The impact of a development is assessed at specific receptors and takes into account the long-term average concentrations in relation to the relevant Air Quality Assessment Level (AQAL) (i.e. the objectives / limit values outlined in Appendix 6.3) and the change in concentrations with the proposed development in place. The impact descriptors for individual ESRs are detailed in Table 6.6, below.

Table 6.6: Impact Descriptors for Individual Receptors

Long Term Average Concentration at Receptor in Assessment Year*	Percentage 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

**Percentage pollutant concentrations have been rounded to whole numbers, to make it easier to assess the impact. Changes of 0% (i.e., less than 0.5% or 0.2µg/m^3) should be described as Negligible.*

6.3.25 Effects on air quality, whether adverse or beneficial, will have an effect on human health that can be judged as either 'Significant' or 'Not Significant'. In this assessment, a substantial or moderate impact on air quality will be considered a Significant effect and a minor (slight) or negligible[6] impact on air quality will be considered a Not Significant effect. However, the guidance makes it clear that the assessment of significance of the overall effect should be based on professional judgement, as is the case in this assessment. Once the effect of the proposed development has been assessed for the individual impacts, the overall significance is determined using professional judgement. This considers a number of factors, such as the:

- Existing and future air quality in the absence of the proposed development.
- Extent of the current and future population exposure to the impacts.

[6] Owing to the robust nature of the air quality assessment, negligible is not the same as nil.

- Influence and validity of any assumptions adopted when undertaking the prediction of impacts.

6.3.26 Impacts on air quality, whether adverse or beneficial, will have an effect that can be judged as either Significant or Not Significant. Full details of the significance criteria used within the operational phase assessment are included in Appendix 6.3 of this ES.

Significance Criteria: Process Emissions – Operational Phase

6.3.27 The relevant air quality objectives and limit values applicable to the assessment of air quality effects at (human) ESRs are set out in Table 6.7 below.

6.3.28 The battery manufacturing processes taking place at the site will make use of three different types of solvent, namely N-Methyl-2-Pyrrolidone (NMP), Ethyl Carbonate (EC) and Diethyl Carbonate (DEC). These solvents have been considered as total Volatile Organic Compounds (VOCs), with predicted concentrations compared against the air quality objective for Benzene (C_6H_6).

Table 6.7: Air Quality Objectives and Limit Values Relevant to the Assessment*

Pollutant	Objective/Limit Value	Averaging Period	Obligation
Nitrogen Dioxide (NO_2)	200µg/m^3, not to be exceeded more than 18 times a year	1-hour mean	All local authorities
	40µg/m^3	Annual mean	All local authorities
Particulate Matter (PM_{10})	50µg/m^3, not to be exceeded more than 35 times a year	24-hour mean	England, Wales and Northern Ireland
	40µg/m^3	Annual mean	England, Wales and Northern Ireland
Particulate Matter ($PM_{2.5}$)	Limit Value of 25µg/m^3	Annual mean	England, Wales and Northern Ireland
Carbon Monoxide (CO)	10mg/m^3	Maximum daily running 8-hour mean	England, Wales and Northern Ireland
Benzene (C_6H_6)	5µg/m^3	Annual mean	England and Wales
**In accordance with the Air Quality Standards Regulations 2010*			

6.3.29 Modelled airborne pollutant concentrations and deposition rates at locations within relevant statutory designated habitat sites have been assessed against critical levels and critical loads respectively. The relevant critical levels used in the assessment of air quality effects associated with airborne pollutant concentrations at existing sensitive ecological receptor points are included within Table 6.8, below.

Table 6.8: Critical Levels Relevant to the Assessment

Pollutant	Objective/Limit Value	Averaging Period	Obligation
Nitrogen Oxide (as NO_2)	75µg/m^3	24-hour mean	All local authorities
	30µg/m^3	Annual mean	All local authorities

6.3.30 Nitrogen Dioxide (NO_2) is a nitrogen-containing pollutant and its deposition to ground

can promote eutrophication and acidification, both of which can cause substantial alterations in soil chemistry (including nutrient status) and plant community composition. Critical loads define the maximum amount of an atmospheric pollutant that can be deposited onto soils, waters or vegetation without causing adverse harmful effects in the long-term. Site-relevant critical loads for nutrient nitrogen and acid deposition have been obtained for the SPAs and SACs from the Air Pollution Information System (APIS) online resource[7].

6.3.31 As specific values are not provided for LNRs and LWSs, the APIS 'Search by Location' tool has been used to derive critical loads for the location of each LNR and LWS considered. The lowest value has been used for each LNR and LWS to provide a conservative assessment. Further details of the critical loads used in the assessment are provided in Table 6.9, below.

Table 6.9: Critical Loads Relevant to the Assessment

Designated Site	Sensitive Feature	Relevant Nitrogen Critical Load (kgN/ha/yr) / Habitat	Nitrogen-Derived Acid Deposition Critical Load (kEq/ha/year)
Barmston Pond LNR	Broadleaved, Mixed and Yew Woodland	10	CLminN: 0.357 CLmaxN: 2.733
Hylton Dene LNR	Broadleaved, Mixed and Yew Woodland	10	CLminN: 0.357 CLmaxN: 2.73
Durham Coast SAC	Vegetated sea cliffs of the Atlantic and Baltic Coasts	No comparable habitat with established critical load available	Not sensitive
Northumbria Coast Ramsar site SPA	Sternea paradisea / Sterna albifrons (little tern)	5	MinCLminN: 0.856 MinCLmaxN: 4.856
High Wood LWS	Broadleaved, Mixed and Yew Woodland	10	CLminN: 0.357 CLmaxN: 2.734
Severn Houses LWS	Coniferous Woodland	5	CLminN: 0.357 CLmaxN: 2.733
Elliscope Farm East / Hylton Bridge candidate LWS	Broadleaved, Mixed and Yew Woodland	10	CLminN: 0.357 CLmaxN: 2.729

6.3.32 As there are no established critical loads for the sensitive feature within Durham Coast SAC and no features sensitive to acid deposition, this designated site has not been considered further within the assessment.

6.3.33 The EA guidance states that emissions can be screened out for Ramsar sites, SPAs,

[7] [Accessed at: http://www.apis.ac.uk/] .

SACs and SSSIs where the following criteria apply:

- The short-term Process Contribution (PC) is less than 10% of the short-term environmental standard for protected conservation areas; and
- The long-term PC is less than 1% of the long-term environmental standard for protected conservation areas.

6.3.34 Where these requirements are not met, the Predicted Environmental Concentration (PEC) should be calculated for long-term concentrations only and should be compared against the above criteria. If the long-term PC is greater than 1%, but the PEC is less than 70% of the long-term environmental standard, the emissions are considered not significant.

6.3.35 For local nature sites (e.g. LNRs and LWSs), emissions can be screened out where both of the following criteria apply:

- The short-term PC is less than 100% of the short-term environmental standard.
- The long-term PC is less than 100% of the long-term environmental standard.

6.3.36 Should these criteria be exceeded, however, it does not necessarily follow that there will be a significant ecological effect. Rather, it indicates the 'potential' for such an effect to occur.

6.4 Baseline situation

Sunderland City Council & local pollution review

6.4.1 The proposed development is located on land to the north of the A1290, north of the existing Nissan manufacturing plant, surrounded by arable farming land and the under-development AESC Plant 2 site. There are no significant sources of pollution near the site (the A19(T) is located approximately 1.4 km to the east). There are no Air Quality Management Areas (AQMA) in proximity to the proposed development and there are no air quality monitoring locations operated by SCC in the vicinity of the site.

6.4.2 No air quality monitoring was undertaken as part of the AESC Plant 1 submission, but for the preparation of the Preliminary Environmental Information Report (PEIR) that was prepared to accompany the IAMP TWO DCO[8] application, air quality monitoring

[8] Whilst IAMP TWO was to be delivered by a DCO application, the DCO application was withdrawn and planning consent for the 'Early Infrastructure and Northern Employment Area' application (21/02807/HE4 and STC/1172/21/FUL) was approved in August 2023.

was undertaken by the Applicant. A 9-month monitoring study was completed at 9 locations in the local area (near and around the A1290 and A19) and the data has been annualised.

6.4.3 Of most relevance to this assessment are diffusion tubes 1 and 2, which are located at the A1290 (at West Moor Farm and near Downhill Lane) and is the closest monitoring location to the site. Annualised 2018 NO_2 concentrations were 22.10µg/m^3 and 20.80µg/m^3, respectively. Since this monitoring was completed, developments have come forward within IAMP ONE, such as the construction of International Drive and the A19/Downhill Lane improvement works. Whilst these developments may have increased vehicle movements in the local area, given the low NO_2 concentrations recorded in 2018, it is not considered likely that these will result in NO_2 concentrations approaching or exceeding the annual mean objective. NB - West Moor Farm has been demolished and is therefore no longer a residential receptor.

Road Traffic Emissions – Construction Phase and Operational Phase

Background air pollutant concentrations

6.4.4 The road traffic emissions assessment needs to take into account background concentrations upon which emissions from the proposed development are superimposed. As there are currently no representative NO_2, PM_{10} or $PM_{2.5}$ monitoring locations in the vicinity of the proposed development site, background concentrations have been obtained from the 2018-based Defra default concentration maps for the appropriate grid squares[9]. The background pollutant concentrations used in the road traffic assessment are detailed in Table 6.10, below.

Table 6.10: Background Pollutant Concentrations Used in the Road Traffic Air Quality Assessment

Receptor	Annual Mean Concentrations (µg/m^3)			
	NOx	NO_2	PM_{10}	$PM_{2.5}$
2022 Base Year				
ESR 1 – ESR 2	15.59	11.73	11.78	6.72
ESR 3 – ESR 4	15.66	11.77	11.97	6.81
ESR 5	12.35	9.44	12.71	7.18
ESR 6 – ESR 7	15.22	11.40	12.66	7.49
ESR 8 – ESR 10	30.67	20.56	12.73	7.78
ESR 11 – ESR 12	18.11	13.34	10.41	6.51
ESR 13 – ESR 14	19.57	14.31	10.62	6.72
2024 Construction Year				

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

Table 6.10: Background Pollutant Concentrations Used in the Road Traffic Air Quality Assessment				
Receptor	**Annual Mean Concentrations (µg/m³)**			
	NOx	**NO_2**	**PM_{10}**	**$PM_{2.5}$**
ESR 1 – ESR 2	14.30	10.83	11.58	6.57
ESR 3 – ESR 4	14.41	10.90	11.77	6.65
ESR 5	11.60	8.90	12.52	7.02
ESR 6 – ESR 7	14.33	10.79	12.47	7.33
ESR 8 – ESR 10	29.28	19.78	12.53	7.62
ESR 11 – ESR 12	16.93	12.54	10.21	6.35
ESR 13 – ESR 14	18.15	13.36	10.41	6.56
2027 Opening Year				
ESR 1 – ESR 2	12.87	9.82	11.47	6.47
ESR 3 – ESR 4	13.04	9.93	11.66	6.56
ESR 5	10.85	8.36	12.40	6.93
ESR 6 – ESR 7	13.46	10.17	12.35	7.24
ESR 8 – ESR 10	28.03	19.06	12.42	7.53
ESR 11 – ESR 12	15.70	11.70	10.10	6.26
ESR 13 – ESR 14	16.63	12.34	10.29	6.46

Modelled Baseline Concentrations at Existing Sensitive Receptors

6.4.5 The baseline assessment (i.e. scenarios 1, 2 and 4) was undertaken for the ESRs considered in accordance with Defra guidance (i.e. using EFT v11.0[10]). The unadjusted NO_2, PM_{10} and $PM_{2.5}$ concentrations are detailed in Table 6.11.

Table 6.11: Predicted Unadjusted NO_2, PM_{10} and $PM_{2.5}$ Concentrations at Existing Sensitive Receptors for Scenarios 1, 2 and 4									
Receptor	**Calculated Annual Mean Concentrations (µg/m³)**								
	Scenario 1: 2022 Base Year			**Scenario 2: 2024 Construction Year, Without Construction**			**Scenario 4: 2027 Opening Year, Without Development**		
	NO_2*	**PM_{10}**	**$PM_{2.5}$**	**NO_2***	**PM_{10}**	**$PM_{2.5}$**	**NO_2***	**PM_{10}**	**$PM_{2.5}$**
ESR 1	17.19	12.89	7.35	15.72	12.79	7.24	13.24	12.66	7.13
ESR 2	14.66	12.37	7.06	13.47	12.23	6.93	11.66	12.11	6.83
ESR 3	15.52	12.95	7.36	14.34	12.86	7.26	12.38	12.73	7.15
ESR 4	13.43	12.37	7.04	12.48	12.24	6.92	11.05	12.12	6.82
ESR 5	11.48	13.13	7.42	10.81	13.01	7.30	9.68	12.88	7.20
ESR 6	15.68	13.59	8.01	14.89	13.61	7.97	13.04	13.48	7.86
ESR 7	15.29	13.50	7.96	14.34	13.44	7.87	12.66	13.31	7.77
ESR 8	25.35	13.76	8.36	24.07	13.70	8.27	22.03	13.58	8.16
ESR 9	24.62	13.60	8.27	23.41	13.52	8.17	21.58	13.39	8.06
ESR 10	24.21	13.51	8.22	23.04	13.41	8.11	21.31	13.29	8.01
ESR 11	14.17	10.62	6.63	13.31	10.45	6.48	12.25	10.33	6.39
ESR 12	13.79	10.52	6.57	12.99	10.35	6.43	12.02	10.23	6.33
ESR 13	15.24	10.84	6.84	14.28	10.68	6.70	12.99	10.55	6.61

[10] At the time of the assessment, Emission Factor Toolkit V11 was used. Whilst Version 12 was subsequently released in November 2023, the use of Version 11 does not compromise the robustness of the assessment.

Table 6.11: Predicted Unadjusted NO_2, PM_{10} and $PM_{2.5}$ Concentrations at Existing Sensitive Receptors for Scenarios 1, 2 and 4									
Receptor	Calculated Annual Mean Concentrations (µg/m³)								
	Scenario 1: 2022 Base Year			Scenario 2: 2024 Construction Year, Without Construction			Scenario 4: 2027 Opening Year, Without Development		
	NO_2*	PM_{10}	$PM_{2.5}$	NO_2*	PM_{10}	$PM_{2.5}$	NO_2*	PM_{10}	$PM_{2.5}$
ESR 14	16.13	10.98	6.93	15.44	10.91	6.84	13.83	10.78	6.74
NO_2 concentrations obtained by inputting predicted NO_x concentrations into the NO_x to NO_2 calculator[11] in accordance with LAQM.TG(22)									

6.4.6 The results show that all predicted NO_2, PM_{10} and $PM_{2.5}$ concentrations are below the relevant objectives and limit values.

Process Stack Emissions – Operational Phase

Background air pollutant concentrations

6.4.7 The process emissions assessment needs to take into account background concentrations upon which emissions from the proposed development are superimposed. As there are currently no representative NO_2, PM_{10} or $PM_{2.5}$ monitoring locations in the vicinity of the proposed development site, background concentrations have been obtained from the 2018-based Defra default concentration maps for the appropriate grid squares.

6.4.8 In addition, background CO and C_6H_6 concentrations have been obtained from the 2001-based Defra default concentration maps for the appropriate grid squares[12]. These have been adjusted to 2023 using the associated adjustment factors provided by Defra in the Background Concentration Maps User Guide[13]. The background pollutant concentrations used in the process stack emissions assessment of air quality impacts at existing sensitive human receptors are detailed in Table 6., below.

Table 6.12: Background Pollutant Concentrations used in the Air Quality Assessment						
Receptor	2023 Annual Mean Concentrations (µg/m³)					
	Oxides of Nitrogen (NO_x)	Nitrogen Dioxide (NO_2)	Fine Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)	Carbon Monoxide (CO)	Benzene (C_6H_6)
ESR 1	14.37	10.85	11.79	6.68	0.093	0.48
ESR 2	14.37	10.85	11.79	6.68	0.093	0.48
ESR 3	14.37	10.85	11.79	6.68	0.093	0.48
ESR 4	19.56	14.34	12.57	7.41	0.091	0.43
ESR 5	19.56	14.34	12.57	7.41	0.091	0.43
ESR 6	33.75	22.33	12.63	7.70	0.092	0.43
ESR 7	17.68	13.04	12.47	6.93	0.094	0.44

[11] Defra Local Air Quality Management webpages (http://laqm.defra.gov.uk/tools-monitoring-data/no-calculator.html).
[12] Available at: https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2001.
[13] Available at: https://laqm.defra.gov.uk/documents/2018-based-background-maps-user-guide-v1.0.pdf.

Table 6.12: Background Pollutant Concentrations used in the Air Quality Assessment						
Receptor	2023 Annual Mean Concentrations (µg/m³)					
	Oxides of Nitrogen (NO_x)	Nitrogen Dioxide (NO_2)	Fine Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)	Carbon Monoxide (CO)	Benzene (C_6H_6)
ESR 8	17.56	12.97	10.31	6.43	0.093	0.48
ESR 9	17.56	12.97	10.31	6.43	0.093	0.48
ESR 10	14.02	10.61	11.30	6.54	0.092	0.47
ESR 11	13.32	10.13	12.24	6.72	0.092	0.47

6.4.9 Background pollutant concentrations at and in the vicinity of the proposed development are well below the relevant air quality objectives / limit values.

6.4.10 Current pollutant concentrations and deposition rates at the considered designated habitat sites have been taken from the APIS resource and are shown in Table 6., below.

Table 6.13: Current Air Pollutant Conditions at the Considered Designated Habitat Sites			
Designated Site	Nitrogen Deposition (kg N/ha/yr)	Acid Deposition (Nitrogen, keq/ha/yr)	NO_x Concentration (µg/m³)
Barmston Pond LNR	24.64	1.76	21.73
Hylton Dene LNR	25.62	1.83	23.01
Northumbria Coast Ramsar site SPA	7.1	0.51	6.32
High Wood LWS	24.64	1.76	18.84
Severn Houses LWS	24.64	1.76	21.73
Elliscope Farm East / Hylton Bridge candidate LWS	24.64	1.76	17.52

6.5 Assessment of effects

Dust and Fine Particulate Matter - Construction Phase

Step 1 – Requirement for Detailed Construction Phase Assessment

6.5.1 There are sensitive receptors located within 250 m of the future construction activities; thus the requirement for a detailed construction phase risk assessment is met.

6.5.2 At the time of the assessment, the demolition of North Moor Farm had not yet taken place, but it was known that this land is under IAMP LLP ownership (and vacant) and that there was no risk that the site will be placed into residential use again. As such, North Moor Farm was not included in the assessment. A separate planning application has been prepared and submitted for its demolition and the demolition work is due to be completed in April 2024.

Step 2 – Impact Assessment

6.5.3 In accordance with the IAQM guidance, the main activities to be considered during the construction phase of the proposed development are earthworks, construction and trackout. There are no demolition activities associated with the proposed development.

6.5.4 Earthworks covers the processes of soil-stripping, ground-levelling, excavation and landscaping. Earthworks also encompasses any material handling activities that may be required either during the working of the surfaces or by unloading / loading activities. Construction activities will focus on the construction of proposed buildings, access roads and car parking areas. This includes the foundation design and casting concrete. Trackout 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

6.5.5 Step 2A of the assessment defines the potential dust emission magnitude from earthworks, construction and trackout in the absence of site-specific mitigation. Examples of the criteria for the dust emission classes are detailed in Appendix 6.2. The results of this step are detailed in Table 6.14.

Step 2B

6.5.6 Step 2B of the construction phase dust assessment defines the sensitivity of the area, taking into account the significance criteria detailed in Appendix 6.2, for earthworks, construction and trackout. The sensitivity of the area to each activity is assessed for potential dust soiling, human health effects and ecological effects.

6.5.7 For earthworks and construction, there are currently between 1 and 10 receptors within 250 m of where these activities may take place, which is assumed to be the site boundary for the purposes of this assessment. The ELMA is estimated to be located within 20 m of an earthwork activity, but up to 50 m from a construction-specific activity.

6.5.8 For trackout, there is one sensitive receptor located within 50 m of where trackout may occur for a distance of up to 250 m from the site entrance (assuming construction vehicles exit onto the A1290 and travel to the A19).

Step 2C

6.5.9 Step 2C of the construction phase dust assessment defines the risk of impacts from each activity, by combining the dust emission magnitude 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 Appendix 6.2 and the results of this step are detailed in Table 6.14.

Summary of Step 2

6.5.10 Table 6. details the results of Step 2 of the construction phase assessment for the sensitive receptors identified.

Table 6.14: Construction Phase Dust Assessment

	Activity			
	Demolition	**Earthworks**	**Construction**	**Trackout**
Step 2A				
Dust Emission Magnitude	N/A	Large[a]	Large[b]	Large[c]
Step 2B				
Sensitivity of Closest Human Receptors	N/A	Medium	Medium	Medium
Sensitivity of Closest Ecological Receptors (ELMA)	N/A	Medium	Medium	Medium
Sensitivity of Area to Ecological Impacts	N/A	Medium	Low	Low
Sensitivity of Area to Dust Soiling Effects	N/A	Low	Low	Low
Sensitivity of Area to Human Health Effects	N/A	Low[d]	Low[d]	Low[d]
Step 2C				
Dust Risk: Dust Soiling	N/A	Low Risk	Low Risk	Low Risk
Dust Risk: Human Health	N/A	Low Risk	Low Risk	Low Risk
Dust Risk: Ecological	N/A	Medium Risk	Low Risk	Low Risk

a. Total site area estimated to be more than 110,000m^2.
b. Total building volume estimated to be more than75,000m^3, with potentially dusty construction materials involved.
c. Number of construction phase vehicles estimated to be more than 50 movements per day (the IAMP ONE Phase One submission estimates up to 84 movements per day).
d. Background annual mean PM_{10} concentration is taken from the LAQM Defra default concentration maps, for the appropriate grid square for 2023.

Road Traffic Emissions – Construction Phase and Operational Phase

Construction Phase Vehicle Emissions

6.5.11 The impact assessment has been carried out for the representative ESRs considered (i.e. ESR 1 to ESR 14) using EFT v11.0. In accordance with national guidance, a sensitivity analysis whereby 2022 background pollutant concentrations and vehicle emission factors have been applied to the 2024 Construction Year, has also been undertaken (the results of which are included in Appendix 6.5). This applies to NO_2 concentrations, only.

6.5.12 Table 6.15 details the predicted NO_2 concentrations for the 2024 Construction Year, for both the 'Without Construction' and 'With Construction' scenarios, in accordance

with Defra guidance (i.e. using EFT v11.0). The impact has been assessed in accordance with the descriptors included in Appendix 6.3.

Table 6.15: Predicted Unadjusted NO_2 Concentrations at ESRs for Scenarios 2 and 3 – Using the Emission Factor Toolkit v11.0

Receptor	Calculated Annual Mean NO_2 Concentrations (µg/m³)[a]				
	Without Construction	With Construction		Concentration Change as Percentage of AQAL	Impact[b]
		Concentration	Percentage in Relation to AQAL		
ESR 1	15.72	15.73	<75%	<0.5%	**Negligible**
ESR 2	13.47	13.48	<75%	<0.5%	**Negligible**
ESR 3	14.34	14.33	<75%	<0.5%	**Negligible**
ESR 4	12.48	12.48	<75%	<0.5%	**Negligible**
ESR 5	10.81	10.81	<75%	<0.5%	**Negligible**
ESR 6	14.89	14.91	<75%	<0.5%	**Negligible**
ESR 7	14.34	14.35	<75%	<0.5%	**Negligible**
ESR 8	24.07	24.08	<75%	<0.5%	**Negligible**
ESR 9	23.41	23.42	<75%	<0.5%	**Negligible**
ESR 10	23.04	23.04	<75%	<0.5%	**Negligible**
ESR 11	13.31	13.31	<75%	<0.5%	**Negligible**
ESR 12	12.99	12.99	<75%	<0.5%	**Negligible**
ESR 13	14.28	14.28	<75%	<0.5%	**Negligible**
ESR 14	15.44	15.45	<75%	<0.5%	**Negligible**

a. NO_2 concentrations obtained by inputting predicted NO_x concentrations into the NO_x to NO_2 calculator, in accordance with LAQM.TG(22).
b. Assessed using the Impact Descriptors from the EPUK and IAQM guidance, included in Appendix 6.3. Changes of less than 0.5% should be described as negligible.

6.5.13 Table 6.16 details the PM_{10} concentrations for the 2024 Construction Year, for both the 'Without Construction and 'With Construction' scenarios. The impact has been assessed in accordance with the descriptors included in Appendix 6.3.

Table 6.16: Predicted Unadjusted PM_{10} Concentrations at ESRs for Scenarios 2 and 3 – Using the Emission Factor Toolkit v11.0

Receptor	Calculated Annual Mean PM_{10} Concentrations (µg/m³)[a]				
	Without Construction	With Construction		Concentration Change as Percentage of AQAL	Impact[a]
		Concentration	Percentage in Relation to AQAL		
ESR 1	12.79	12.81	<75%	<0.5%	**Negligible**
ESR 2	12.23	12.24	<75%	<0.5%	**Negligible**
ESR 3	12.86	12.85	<75%	<0.5%	**Negligible**
ESR 4	12.24	12.25	<75%	<0.5%	**Negligible**
ESR 5	13.01	13.01	<75%	<0.5%	**Negligible**
ESR 6	13.61	13.62	<75%	<0.5%	**Negligible**
ESR 7	13.44	13.44	<75%	<0.5%	**Negligible**
ESR 8	13.70	13.71	<75%	<0.5%	**Negligible**
ESR 9	13.52	13.52	<75%	<0.5%	**Negligible**

Table 6.16: Predicted Unadjusted PM_{10} Concentrations at ESRs for Scenarios 2 and 3 – Using the Emission Factor Toolkit v11.0					
Receptor	Calculated Annual Mean PM_{10} Concentrations (µg/m³)[a]				
	Without Construction	With Construction		Concentration Change as Percentage of AQAL	Impact[a]
		Concentration	Percentage in Relation to AQAL		
ESR 10	13.41	13.42	<75%	<0.5%	**Negligible**
ESR 11	10.45	10.45	<75%	<0.5%	**Negligible**
ESR 12	10.35	10.35	<75%	<0.5%	**Negligible**
ESR 13	10.68	10.68	<75%	<0.5%	**Negligible**
ESR 14	10.91	10.91	<75%	<0.5%	**Negligible**
a. Assessed using the Impact Descriptors from the EPUK and IAQM guidance, included in Appendix 6.3. Changes of less than 0.5% should be described as negligible.					

6.5.14 Table 6.17 details the $PM_{2.5}$ concentrations for the 2024 Construction Year, for both the 'With Construction' and 'Without Construction' scenarios; the impact has been assessed in accordance with the descriptors included in Appendix 6.3 of this ES.

Table 6.17: Predicted Unadjusted $PM_{2.5}$ Concentrations at ESRs for Scenarios 2 and 3 – Using the Emission Factor Toolkit v11.0					
Receptor	Calculated Annual Mean $PM_{2.5}$ Concentrations (µg/m³)[a]				
	Without Construction	With Construction		Concentration Change as Percentage of AQAL	Impact[a]
		Concentration	Percentage in Relation to AQAL		
ESR 1	7.24	7.25	<75%	<0.5%	**Negligible**
ESR 2	6.93	6.93	<75%	<0.5%	**Negligible**
ESR 3	7.26	7.25	<75%	<0.5%	**Negligible**
ESR 4	6.92	6.92	<75%	<0.5%	**Negligible**
ESR 5	7.30	7.30	<75%	<0.5%	**Negligible**
ESR 6	7.97	7.97	<75%	<0.5%	**Negligible**
ESR 7	7.87	7.87	<75%	<0.5%	**Negligible**
ESR 8	8.27	8.27	<75%	<0.5%	**Negligible**
ESR 9	8.17	8.17	<75%	<0.5%	**Negligible**
ESR 10	8.11	8.11	<75%	<0.5%	**Negligible**
ESR 11	6.48	6.48	<75%	<0.5%	**Negligible**
ESR 12	6.43	6.43	<75%	<0.5%	**Negligible**
ESR 13	6.70	6.70	<75%	<0.5%	**Negligible**
ESR 14	6.84	6.84	<75%	<0.5%	**Negligible**
a. Assessed using the Impact Descriptors from the EPUK and IAQM guidance, included in Appendix 6.3. Changes of less than 0.5% should be described as negligible					

6.5.15 In all scenarios considered, the results of the assessment show that all predicted NO_2, PM_{10} and $PM_{2.5}$ concentrations are below the relevant objectives and limit values in the 2024 Construction Year. All impacts of construction related traffic movements are negligible, in accordance with IAQM guidance.

Operational Phase Vehicle Emissions

6.5.16 The impact assessment has been carried out for the representative ESRs considered (i.e. ESR 1 to ESR 14) using EFT v11.0. In accordance with national guidance, a sensitivity analysis has also been undertaken, whereby 2022 background pollutant concentrations and vehicle emission factors have been applied to the 2027 Opening/Future Year (results included in Appendix 6.5). This applies to NO_2 concentrations, only.

6.5.17 Table 6.18 details the predicted NO_2 concentrations for the 2027 Construction Year, for both the 'With Development' and 'Without Development' scenarios, in accordance with Defra guidance (i.e. using EFT v11.0). The impact has been assessed in accordance with the descriptors included in Appendix 6.3 of this ES.

Table 6.18: Predicted Unadjusted NO_2 Concentrations at ESRs for Scenarios 4 and 5 – Using the Emission Factor Toolkit v11.0

Receptor	Calculated Annual Mean NO_2 Concentrations (µg/m³)[a]				
	Without Development	With Development		Concentration Change as Percentage of AQAL	Impact[b]
		Concentration	Percentage in Relation to AQAL		
ESR 1	13.24	13.26	<75%	<0.5%	**Negligible**
ESR 2	11.66	11.67	<75%	<0.5%	**Negligible**
ESR 3	12.38	12.41	<75%	<0.5%	**Negligible**
ESR 4	11.05	11.08	<75%	<0.5%	**Negligible**
ESR 5	9.68	9.70	<75%	<0.5%	**Negligible**
ESR 6	13.04	13.08	<75%	<0.5%	**Negligible**
ESR 7	12.66	12.68	<75%	<0.5%	**Negligible**
ESR 8	22.03	22.06	<75%	<0.5%	**Negligible**
ESR 9	21.58	21.60	<75%	<0.5%	**Negligible**
ESR 10	21.31	21.33	<75%	<0.5%	**Negligible**
ESR 11	12.25	12.25	<75%	<0.5%	**Negligible**
ESR 12	12.02	12.02	<75%	<0.5%	**Negligible**
ESR 13	12.99	12.99	<75%	<0.5%	**Negligible**
ESR 14	13.83	13.84	<75%	<0.5%	**Negligible**

a. NO_2 concentrations obtained by inputting predicted NO_x concentrations into the NO_x to NO_2 calculator, in accordance with LAQM.TG(22)
b. Assessed using the Impact Descriptors from the EPUK and IAQM guidance, included in Appendix 6.3. Changes of less than 0.5% should be described as negligible

6.5.18 Table 6.19 details the PM_{10} concentrations for the 2027 Opening / Future Year for both the 'With Development' and 'Without Development' scenarios. The impact has been assessed in accordance with the descriptors included in Appendix 6.3 of this ES.

Table 6.19: Predicted Unadjusted PM_{10} Concentrations at ESRs for Scenarios 4 and 5 – Using the Emission Factor Toolkit v11.0					
Receptor	Calculated Annual Mean PM_{10} Concentrations (µg/m³)[a]				
	Without Development	With Development		Concentration Change as Percentage of AQAL	Impact[a]
		Concentration	Percentage in Relation to AQAL		
ESR 1	12.66	12.67	<75%	<0.5%	**Negligible**
ESR 2	12.11	12.11	<75%	<0.5%	**Negligible**
ESR 3	12.73	12.74	<75%	<0.5%	**Negligible**
ESR 4	12.12	12.13	<75%	<0.5%	**Negligible**
ESR 5	12.88	12.89	<75%	<0.5%	**Negligible**
ESR 6	13.48	13.50	<75%	<0.5%	**Negligible**
ESR 7	13.31	13.32	<75%	<0.5%	**Negligible**
ESR 8	13.58	13.59	<75%	<0.5%	**Negligible**
ESR 9	13.39	13.40	<75%	<0.5%	**Negligible**
ESR 10	13.29	13.30	<75%	<0.5%	**Negligible**
ESR 11	10.33	10.33	<75%	<0.5%	**Negligible**
ESR 12	10.23	10.23	<75%	<0.5%	**Negligible**
ESR 13	10.55	10.55	<75%	<0.5%	**Negligible**
ESR 14	10.78	10.79	<75%	<0.5%	**Negligible**
a. Assessed using the Impact Descriptors from the EPUK and IAQM guidance, included in Appendix 6.3. Changes of less than 0.5% should be described as negligible					

6.5.19 Table 6.20 details the $PM_{2.5}$ concentrations for the 2027 Opening / Future Year, for both the 'With Development' and 'Without Development' scenarios. The impact has been assessed in accordance with the descriptors included in Appendix 6.3 of this ES.

Table 6.20: Predicted Unadjusted $PM_{2.5}$ Concentrations at ESRs for Scenarios 4 and 5 – Using the Emission Factor Toolkit v11.0					
Receptor	Calculated Annual Mean $PM_{2.5}$ Concentrations (µg/m³)[a]				
	Without Development	With Development		Concentration Change as Percentage of AQAL	Impact[a]
		Concentration	Percentage in Relation to AQAL		
ESR 1	7.13	7.14	<75%	<0.5%	**Negligible**
ESR 2	6.83	6.83	<75%	<0.5%	**Negligible**
ESR 3	7.15	7.16	<75%	<0.5%	**Negligible**
ESR 4	6.82	6.83	<75%	<0.5%	**Negligible**
ESR 5	7.20	7.20	<75%	<0.5%	**Negligible**
ESR 6	7.86	7.87	<75%	<0.5%	**Negligible**
ESR 7	7.77	7.77	<75%	<0.5%	**Negligible**
ESR 8	8.16	8.17	<75%	<0.5%	**Negligible**
ESR 9	8.06	8.07	<75%	<0.5%	**Negligible**
ESR 10	8.01	8.01	<75%	<0.5%	**Negligible**
ESR 11	6.39	6.39	<75%	<0.5%	**Negligible**
ESR 12	6.33	6.33	<75%	<0.5%	**Negligible**
ESR 13	6.61	6.61	<75%	<0.5%	**Negligible**

Table 6.20: Predicted Unadjusted $PM_{2.5}$ Concentrations at ESRs for Scenarios 4 and 5 – Using the Emission Factor Toolkit v11.0					
Receptor	Calculated Annual Mean $PM_{2.5}$ Concentrations (µg/m³)[a]				
	Without Development	With Development		Concentration Change as Percentage of AQAL	Impact[a]
		Concentration	Percentage in Relation to AQAL		
ESR 14	6.74	6.74	<75%	<0.5%	**Negligible**
a. Assessed using the Impact Descriptors from the EPUK and IAQM guidance, included in Appendix 6.3. Changes of less than 0.5% should be described as negligible					

6.5.20 In all scenarios considered, the results of the assessment show that all predicted NO_2, PM_{10} and $PM_{2.5}$ concentrations are below the relevant objectives and limit values in the 2027 Opening / Future Year. All impacts of development related traffic movements are 'negligible' in accordance with IAQM guidance.

Road Traffic Emissions - Assessment of Significance

6.5.21 The significance of the overall effects of the construction and operation of the proposed development has been assessed in accordance with the EPUK and IAQM guidance. The results of a no improvement sensitivity analysis are provided in Appendix 6.5 to account for any potential uncertainty in air quality reporting. The assessment is based on professional judgement and takes into account a number of factors, including:

- Baseline pollutant concentrations in 2022, 2024 and 2027 are below the relevant annual mean objectives and limit values at all existing receptors considered.
- The assessment predicts a negligible impact on concentrations of NO_2, PM_{10} and $PM_{2.5}$ at all ESRs considered, during the proposed development Construction Year and Opening Year.
- The sensitivity analysis (included in Appendix 6.5) predicts a negligible impact on concentrations of NO_2 at all ESRs considered during the proposed development Construction Year and Opening Year.

6.5.22 Based on the above factors, it is considered that the effect of the proposed development on air quality for human receptors is 'Not Significant' in accordance with the EPUK and IAQM guidance.

Process Emissions

Existing Sensitive Human Receptors

6.5.23 NO_x and CO concentrations as a result of the operation of the steam-generating boilers

have been modelled at a number of existing human and ecological sensitive receptors / receptor points (where applicable). In addition, NMP, Ethyl Carbonate (EC) and Diethyl Carbonate (DEC) concentrations as a result of the operation of the electrode manufacturing and electrolyte coating processes have also been modelled at a number of existing human sensitive receptors.

6.5.24 The predicted NO_x concentrations have been converted to NO_2 concentrations in-line with EA recommendations. The background concentrations of NO_2 that are detailed in Table 6.7 have been used to determine the PEC at each human receptor for each year of meteorological data. The PC and PEC as a percentage of the relevant air quality objective have then been determined for each receptor for each year of meteorological data. The highest NO_2 concentrations / percentages for the existing sensitive human receptors predicted to experience to highest PCs are summarised in Table 6., below.

Table 6.21: Maximum Modelled NO_2 Concentrations for Existing Sensitive Human Receptors

Pollutant	AQO	ESR	PC	PEC	PC/AQO	PEC/AQO	Significance
NO_2 Annual Mean	40µg/m³	ESR 1 (Hylton Bridge Farm) and ESR 6 (Ferryboat Lane)	1.65µg/m³	22.86µg/m³	4.11%	57.16%	Negligible
NO_2 1-hour Mean (99.8th Percentile)	200µg/m³, not to be exceeded more than 18 times a year	ESR 1 (Hylton Bridge Farm) and ESR 6 (Ferryboat Lane)	21.31µg/m³	52.911µg/m³	10.65%	26.46%	Negligible

6.5.25 The background concentrations of CO that are detailed in Table 6.7 have been used to determine the PEC at each human receptor for each year of meteorological data. The PC and PEC as a percentage of the relevant air quality objective have then been determined for each receptor for each year of meteorological data. The highest CO concentrations / percentages for the existing sensitive human receptors predicted to experience to highest PCs are summarised in Table 6.2, below.

Table 6.2: Maximum Modelled CO Concentrations for Existing Sensitive Human Receptors

Pollutant	AQO	ESR	PC	PEC	PC/AQO	PEC/AQO	Significance
CO Maximum Daily Running 8-hour Mean	10mg/m³	ESR 1 (Hylton Bridge Farm)	0.0066mg/m³	0.1924mg/m³	0.0662%	1.92%	Negligible

6.5.26 The background concentrations of C_6H_6 that are detailed in Table 6.7 have been used to determine the PEC at each human receptor for each year of meteorological data. The PC and PEC as a percentage of the relevant air quality objective have then been determined for each receptor for each year of meteorological data. The highest C_6H_6 concentrations / percentages, for the existing sensitive human receptors predicted to experience to highest PCs are summarised in Table 6.33, below.

Table 6.33: Maximum Modelled NMP and Ethyl Carbonate (as C_6H_6) Concentrations for Existing Sensitive Human Receptors							
Pollutant	**AQO**	**ESR**	**PC**	**PEC**	**PC/AQO**	**PEC/AQO**	**Significance**
NMP (as C_6H_6) Annual Mean	5µg/m³	ESR 1 (Hylton Bridge Farm)	0.2810µg/m³	0.76µg/m³	5.62%	15.13%	Slight Adverse
Ethyl Carbonate (as C_6H_6) Annual Mean	5µg/m³	ESR 1 (Hylton Bridge Farm)	0.41µg/m³	0.89µg/m³	8.22%	17.73%	Slight Adverse
Diethyl Carbonate (as C_6H_6) Annual Mean	5µg/m³	ESR 3 (Washington Road)	0.30 µg/m³	0.78 µg/m³	6.04%	15.55%	Slight Adverse

6.5.27 The results confirm that the maximum modelled PCs and PECs do not exceed the relevant air quality objectives for any of the existing sensitive human receptors considered in the assessment (i.e. ESR 1 to ESR 11). In addition, the potential air quality effect at the existing sensitive human receptors has been assessed in accordance with the impact descriptors within the IAQM Air Quality and Planning guidance (as included in Tables 6.1/2 in Appendix 6.1). This allows the significance of the impact to be determined. Taking into account the PC (and for long-term emissions, the PEC), the overall air quality impact is classed as a Negligible or Slight Adverse, in accordance with the IAQM guidance, resulting in an overall effect that is **Not Significant**. The modelled pollutant concentrations for the considered receptors, along with the Cartesian grid point(s) experiencing the maximum modelled concentrations, are detailed in Appendix 6.4 of this ES.

Existing sensitive ecological receptor points

6.5.28 In-line with the EA guidance, the short-term and long-term PCs have been compared against the relevant critical levels. The PC values, as a percentage of the relevant critical level, have been determined for each receptor point considered, for each year of meteorological data. Short-term and long-term PCs have been predicted at the existing sensitive ecological receptor points. The highest NO_2 concentrations / percentages are summarised in Table 6., below.

Table 6.4: Maximum Modelled NO_2 Concentrations for Existing Sensitive Ecological Receptor Points				
Pollutant	**Critical Level**	**Habitat Site**	**PC**	**PC as % of Critical Level**
NO_2 Annual Mean	30µg/m³	Barmston Pond LNR	0.20µg/m³	0.68%
		Hylton Dene LNR	0.35µg/m³	1.17%
		Northumbria Coast Ramsar site and SPA	0.06µg/m³	0.21%
		High Wood LWS	0.20µg/m³	0.68%
		Severn Houses LWS	0.23µg/m³	0.77%
		Elliscope Farm East / Hylton Bridge candidate LWS	0.90µg/m³	3.02%

Table 6.4: Maximum Modelled NO_2 Concentrations for Existing Sensitive Ecological Receptor Points				
Pollutant	**Critical Level**	**Habitat Site**	**PC**	**PC as % of Critical Level**
NO_2 24-hour Mean[a]	75µg/m³	Barmston Pond LNR	4.27µg/m³	5.69%
		Hylton Dene LNR	4.32µg/m³	5.77%
		Northumbria Coast Ramsar site and SPA	0.65µg/m³	0.87%
		High Wood LWS	4.27µg/m³	5.69%
		Severn Houses LWS	6.92µg/m³	9.23%
		Elliscope Farm East/Hylton Bridge candidate Local Wildlife Site (LWS)	11.99µg/m³	15.99%
[a] Worst-case conversion from NO_x to NO_2 applied (100%) to provide a conservative approach				

6.5.29 The results confirm that the maximum modelled PCs do not exceed 100% of the short-term or long-term critical levels for the protection of vegetation for any of the modelled receptor points within the nearby LNRs or (candidate) LWSs. In addition, the results confirm that the maximum modelled PCs do not exceed 10% of the short-term nor 1% of the long-term critical levels, for the protection of vegetation, for any of the modelled receptor points within the Northumbria Coast Ramsar site and SPA. It is, therefore, not necessary to proceed to a comparison of PECs against the critical levels as NO_2 emissions are considered to be Not Significant at the designated habitat sites considered (in accordance with EA guidance). The maximum modelled nutrient nitrogen and acid deposition rates, due to emissions from the battery manufacturing processes, are detailed in Table 6.5, below.

Table 6.5: Maximum Modelled Deposition Rates for Nutrient Nitrogen and Acid at Existing Sensitive Ecological Receptor Points		
Designated Habitat Site	**Highest Modelled Nutrient Nitrogen Deposition Rate PC (kgN/ha/yr)**	**Highest Modelled Acid Deposition Rate PC (kEq/ha/yr)**
Barmston Pond LNR	0.059	0.004
Hylton Dene LNR	0.101	0.007
Northumbria Coast Ramsar site and SPA	0.009	0.0006
High Wood LWS	0.059	0.004
Severn Houses LWS	0.067	0.005
Elliscope Farm East / Hylton Bridge candidate LWS	0.261	0.019

6.5.30 The process contribution to nutrient nitrogen deposition has been assessed as a percentage of the critical load. Nitrogen-derived acid deposition has been assessed in accordance with guidance published by APIS[14]. The guidance provided with this tool

[14] Available on the APIS website [http://www.apis.ac.uk/clf-guidancel].

enables a calculation to be made of the contribution to acid deposition as a percentage of the relevant critical load value. This guidance advises:

"Where PEC is greater than CLminN (the majority of cases), the combined inputs of sulphur and nitrogen need to be considered. In such cases, the total acidity input should be calculated as a proportion of the CLmaxN.

Where PEC N Deposition > CLminN.

*PC as %CL function = ((PC of S+N deposition)/CLmaxN)*100"*

6.5.31 For this assessment, the PEC was greater than CLminN in every case and consequently the above calculation was used to calculate the PC as a percentage of the critical load function. The results are presented in Table 6.6, below.

Table 6.6: Assessment of Maximum Modelled Deposition Rates, for Nutrient Nitrogen and Acid, Against Critical Loads

Designated Habitat Site	Nutrient Nitrogen Deposition		Acid Deposition	
	Critical Load (kgN/ha/yr)	Highest Modelled PC as % of Critical Load	Critical Load – MinCLmaxN (kEq/ha/yr)[a]	Highest Modelled PC as % of Critical Load
Barmston Pond LNR	10	0.59%	2.733	0.15%
Hylton Dene LNR	10	1.01%	2.73	0.26%
Northumbria Coast Ramsar site and SPA	5	0.18%	4.856	0.01%
High Wood LWS	10	0.59%	2.733	0.15%
Severn Houses LWS	5	1.33%	2.733	0.17%
Elliscope Farm East/Hylton Bridge candidate LWS	10	2.61%	2.729	0.68%

[a] *Lowest critical load applied*

6.5.32 The results confirm that the maximum modelled PCs, for both nutrient nitrogen and acid deposition, do not exceed 100% of the long-term critical loads for the protection of vegetation for any of the modelled receptor points within the nearby LNRs or (candidate) LWSs. In addition, the results confirm that the maximum modelled PCs do not exceed 1% of the long-term critical loads, for the protection of vegetation, for any of the modelled receptor points within the Northumbria Coast Ramsar site and SPA. It is, therefore, not necessary to proceed to a comparison of PECs against the critical loads as NO_2 emissions are considered to be Not Significant at the designated habitat sites considered (in accordance with EA guidance).

6.5.33 The maximum modelled NO_2 concentrations / deposition rates, expressed as a proportion of the relevant critical levels and critical loads respectively, for the

considered existing sensitive ecological receptor points are detailed in Appendix 6.4.

6.6 Mitigation measures

Construction phase dust

Step 3 – Mitigation

6.6.1 During the construction phase, the implementation of effective mitigation measures (which can be secured by planning condition) will substantially reduce the potential for nuisance dust and fine particulate matter to be generated. Step 2C of the construction phase dust assessment has identified that the risk of dust soiling, human health and ecological effects is not negligible for all the activities and therefore site-specific mitigation will need to be implemented to ensure dust effects from these activities will be Not Significant.

6.6.2 Best practice dust control measures are recommended and are set out in more detail in a Dust Management Plan (DMP), prepared as part of the Construction Environmental Management Plan (CEMP) for the site, in advance of development commencing. Examples of typical dust controls, included in the DMP, are:

- Regular grading and maintenance of haul roads, if used within the site.
- Speed restrictions on vehicles within the site.
- Recording of all dust complaints and prompt action to address these, keeping a detailed written log of received information and complaints, and actions taken to resolve the situation.
- Provision of training to the onsite personnel on dust mitigation.
- Laden lorries to be covered before leaving the site;
- Provision of water bowsers to spray haul roads and stockpiles with water to suppress dust emissions, as necessary.
- Minimising of stockpiling heights, thereby reducing wind whipping and lofting.

Operational phase

Road Traffic Emissions

6.6.3 In accordance with the EPUK and IAQM guidance, the changes in road traffic emissions resulting from the operation of the proposed development on human receptors is considered to be Not Significant and, therefore, no mitigation measures are required.

However, the implementation of a Travel Plan will assist in reducing any potential impact.

Process Stack emissions

6.6.4 The results of the assessment confirm that the maximum modelled PCs and PECs do not exceed the relevant air quality objectives for any of the existing sensitive human receptors. The potential air quality effect is also considered to be Not Significant in accordance with the IAQM Air Quality and Planning guidance.

6.6.5 The results of the assessment also confirm that the maximum modelled PCs do not exceed the relevant screening criteria, for either critical levels or critical loads, for any of the modelled existing sensitive ecological receptor points considered in the assessment. The emissions from the modelled source are, therefore, considered to be Not Significant at any designated habitat sites assessed.

6.6.6 On this basis, it is considered that there will be sufficient dispersion of all pollutants considered, meaning further mitigation will not be required. It should also be noted that the proposed development will operate under an Environmental Permit, which will be regulated by either the Local Authority or the EA (dependent on the final details of the proposed manufacturing processes).

6.7 Residual effects

6.7.1 Residual effects are those effects of the proposed development that remain after mitigation measures have been implemented. With the implementation of the measures set out in the DMP, residual effects are expected to be Negligible and **Not Significant** for both the construction and operational phases of the proposed development.

6.8 Cumulative effects

Construction phase

6.8.1 The identified committed developments requiring consideration for potential inter-cumulative effects will not cause adverse risks during their respective construction periods, should this coincide with that of the proposed development site (i.e. increased disamenity dust and fine particulate matter releases) due to the distances between these developments and the site. No consideration of potential inter-cumulative effects of construction is, therefore, required for these.

6.8.2 As mentioned in paragraph 6.1.2, the main assessment has considered the impacts on

air quality from both AESC Plants 2 and 3 and hence AESC Plant 2 does not need to be considered separately in a cumulative assessment.

6.8.3 Both AESC Plant 2 and the proposed development (i.e. AESC Plant 3) would be worked in accordance with an approved CEMP, which will outline an extensive list of mitigation ensuring that the potential for dust and fine particulate matter arising from construction activities will be minimal and will be controlled.

Operational phase

Road Traffic Emissions

6.8.4 The presented results incorporate committed developments within the Construction and Opening Year scenarios, such that the cumulative impact of the proposed development along with other developments has been assessed. The list of committed developments included within the traffic data are presented in Appendix 6.3 of this ES.

Process Stack Emissions

6.8.5 A review of nearby committed and proposed developments suggests that there are no known similar emission sources proposed in the local area other than the existing Nissan battery plant, which is part of the baseline. The most relevant developments for consideration of inter-cumulative effects are the AESC Plant 2 development and further light industrial, general industrial and storage distribution units proposed at Hillthorn Farm (located approximately 1.21 km to the south west of the site) and consented at Follingsby International Enterprise Park (located approximately 2.49 km to the north west). Full details of the nearby committed and proposed developments in the local area are provided in Table 2.5 of Chapter 2 of this ES.

6.8.6 Although these developments do include for light industrial, general industrial and distribution uses, they do not include for a manufacturing facility on the scale of that proposed for the AESC Plant 3 development. The use of NMP, Ethyl Carbonate and Diethyl Carbonate in particular is restricted to certain types of processes and would, therefore, be unlikely to be used in significant quantities elsewhere. Given the distances involved between these sites and the results of the air quality assessment, it is considered extremely unlikely that any significant cumulative air quality effects would arise.

6.9 Limitations of study

Construction phase

6.9.1 There are no known limitations of the operational phase assessment.

Operational phase

Road Traffic Emissions

6.9.2 Air quality assessments make use of official sources of information (i.e. vehicle emission factors and background concentrations) that have historically been considered to be overly optimistic. Monitoring data collected by the UK Government and local authorities over the past few years has shown that annual mean NO_2 concentrations remained higher than previously expected (especially in roadside locations). This is widely thought to be due to the lower-than-expected decline in NO_x emissions from diesel vehicles (even though new Euro standards have been introduced), coupled with an overall increase in the number of diesel vehicles on the road. The vehicle emission factors used in this assessment are from Defra's latest Emission Factor Toolkit (EFT v11.0), which was released in November 2021 and superseded the previous EFT v10.1 version.

6.9.3 A position statement was produced by the IAQM in 2018 that dealt specifically with the use of EFT v8 and the consideration of uncertainties in predicting future air quality. The statement concluded that the approaches for dealing with this uncertainty should be decided on a case-by-case basis but may include the use of a sensitivity test in which it is assumed that NO_x emissions will not reduce as quickly as within the EFT. A later study provided evidence that EFT v9.0 may be relied upon to predict the 'most likely' future emissions reductions, as long as model verification has been undertaken using monitored data from 2016 or later.

6.9.4 The IAQM has since withdrawn their 2018 position statement on the consideration of uncertainties in predicting future air quality. A growing body of evidence suggests that the latest COPERT vehicle emission factors used in EFT v9.0 (and later) reflect real-world NO_x emissions more accurately. As a result, the IAQM judges that "*an exclusively vehicle emissions-based sensitivity test is no longer necessary*". This is provided that the assessment has been verified using monitoring data from 2016 or later.

6.9.5 In accordance with Defra guidance, the air quality assessment has been carried out using EFT v11.0. It has not been possible to undertake model verification as there were no diffusion tube monitoring locations available present along the study network

included in the assessment. As such, an NO_2 sensitivity analysis was undertaken in which 2022 Base Year background pollutant concentrations and vehicle emission factors were applied to the 2024 Construction and 2027 Opening Year scenarios. It is considered that the results of the sensitivity test provide a conservative upper-bound to the assessment. The results of the NO_2 sensitivity analysis are presented in Appendix 6.5 of this ES.

Process Stack Emissions

6.9.6 The air quality assessment considers a robust approach in terms of the process emissions, both through the type and number of each source considered using conservative maximum recorded emission concentrations taken from existing AESC Plant 1 monitoring data. This has been carried out in collaboration with the client and the technology suppliers for each stage of the process. It is, however, likely that the final design will result in changes to the precise configuration of the emission sources, although these are not likely to result in increased emission rates.

6.9.7 Input information for the air dispersion model has been provided in good faith, based on assumptions about the proposed battery manufacturing process or from scaled-up data collected from the nearby existing plant. Conservative emission concentrations have been used to provide an robust assessment, but actual concentrations are expected to be substantially lower than those modelled. It is understood that further design work and process optimisation has not yet been completed to enhance VOC efficiency and it is likely that better capture / recycling processes will result in lower emissions than those that have been modelled. The air quality assessment also adopts a conservative approach to try to address the uncertainties involved with atmospheric dispersion modelling. This approach includes:

- Using a worst-case conversion for NO_x to NO_2 concentrations (i.e. a 50% conversion rate for short-term concentrations and a 100% conversion rate for long-term concentrations).
- Applying the air quality objectives for Benzene to the NMP, EC and DEC modelled concentrations, as there are no specific air quality objectives or Environmental Assessment Levels (EALs) for these solvents. This is considered overly robust as Benzene is one of the most toxic VOCs, in accordance with EA guidance; and
- Running the model separately for the most recent five years of meteorological data, with the highest results presented.

6.9.8 As a result of these conservative inputs, the model is considered more likely to provide an overestimation of the potential air quality effects associated with the sources at the proposed battery manufacturing plant than an underestimation.

6.9.9 As no detailed habitat information is available on the online MAGIC resource[15] for the River Don or Usworth Burn candidate LWSs, a full assessment of these cannot be included.

6.9.10 It has not been possible to obtain any detailed information about the habitats within the two candidate LWSs.

6.10 Summary and conclusions

6.10.1 An air quality assessment has been completed that considers the potential air quality effects of both the construction and operational phases of the proposed AESC Plant 3 development proposals.

6.10.2 A construction phase dust risk assessment has concluded that there is a risk of potential disamenity dust and fine particulate matter releases associated with the earthworks, construction and trackout activities during construction of the development. As such, mitigation measures to control and limit dust generation during construction would be outlined in a DMP within the CEMP which will ensure that the potential for dust and fine particulate matter arising from construction activities will be minimal and will be controlled.

6.10.3 A road traffic assessment has been carried out to assess the impacts of traffic movements in both the construction and operational phases of the proposed development. The assessments concluded that the impact at existing sensitive receptor locations would be **Not Significant**. However, the mitigation measures could further reduce any air quality impacts.

6.10.4 A detailed assessment has also been undertaken to consider the potential for air quality effects arising as a result of stack emissions from the battery manufacturing processes that will take place at the site. The assessment concludes that there will be a Negligible to Slight Adverse (**Not Significant**) effect for nearby existing sensitive human receptors, and a Negligible (**Not Significant**) effect for the closest existing sensitive ecological receptor points.

6.10.5 No significant inter-cumulative effects on air quality have been identified.

[15] Accessed at: https://magic.defra.gov.uk/MagicMap.aspx .