Lime Down
Solar Park

Environmental Statement

Volume 1, Chapter 15: Air Quality (Clean)

May 2026

Revision 3

Planning Inspectorate Reference: EN010168

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APFP Regulation 5(2)(a)

Schedule of Changes

Revision	Section Reference	Description of Changes	Reason for Revision
2	Table 15-9	Updated traffic flows presented in Table 15-9 to align with updated traffic data for road links 11 to 13 presented in ES Volume 3, Appendix 13-1: Transport Assessment at Deadline 1.	Updated for Deadline 1 of Examination to align with updated traffic data for road links 11 to 13 presented in ES Volume 3, Appendix 13-1: Transport Assessment at Deadline 1.
3	Table 15-13	Updated Maximum Hourly Mean Concentration numbers presented in Table 15-13 as a result of Applicant due diligence.	Updated for Deadline 2 as a result of Applicant due diligence.

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15 Air Quality

15.1 Introduction

15.1.1 This chapter of the Environmental Statement (ES) presents the findings of the Environmental Impact Assessment (EIA), focusing on an assessment of the likely significant effects on air quality as a result of the Scheme. For more details about the Scheme, refer to **ES Volume 1, Chapter 3: The Scheme [EN010168/APP/6.1]**.

15.1.2 This chapter identifies and proposes measures to address the potential impacts and likely significant effects on air quality, during the construction, operation and maintenance, and decommissioning phases of the Scheme.

15.1.3 The following air quality effects are considered within this chapter:

- Dust generated during the construction, operation and maintenance and decommissioning phases;
- Vehicle emissions during the construction, operation and maintenance and decommissioning phases;
- Emissions from Non-Road Mobile Machinery (NRMM) (onsite plant) during the construction, operation and maintenance and decommissioning phases;
- Back-up generator emissions during the operation and maintenance phase; and
- Emissions generated in the event of a Battery Energy Storage System (BESS) fire during the operation and maintenance phase.

15.1.4 This chapter should be read in conjunction with the following chapters in **ES Volume 1 [EN010168/APP/6.1]:**

- **Chapter 9: Ecology and Biodiversity**;
- **Chapter 13: Transport and Access**; and
- **Chapter 21: Cumulative and In-Combination Effects**.

15.1.5 This chapter is supported by the following figures in **ES Volume 2 [EN010168/APP/6.2]**:

- **Figure 15-1: Construction Dust Emissions Study Area**;
- **Figure 15-2: Construction Vehicle Emissions Assessment Road Network**;

- **Figure 15-3: Non-Road Mobile Machinery (NRMM) Emissions Study Area**;
- **Figure 15-4: Back-Up Generator Emissions Study Area;**
- **Figure 15-5: BESS Fire Emissions Study Area, Receptors and Modelled BESS Locations**; and
- **Figure 15-6: Air Quality Baseline**.

15.1.6 This chapter is supported by the following appendices in **ES Volume 3 [EN010168/APP/6.3]**:

- **Appendix 15-1: Construction Dust Methodology and Assessment**; and
- **Appendix 15-2: BESS Fire Emissions Modelling Methodology and Assessment**.

15.2 Consultation

15.2.1 A request for an EIA Scoping Opinion was sought from the Secretary of State through the Planning Inspectorate in July 2024. The issues raised in the Scoping Opinion are summarised and responded to within **ES Volume 3, Appendix 1-2: Scoping Opinion Responses [EN010168/APP/6.3],** which demonstrates how the matters raised in the Scoping Opinion are addressed in this ES. Matters where the scope of the assessment has been raised by the Planning Inspectorate are summarised in **Table 15-1** below.

Table 15-1: Planning Inspectorate Scoping Opinion Responses

ID	Summary of Matter	Response
3.12.1	The Scoping Report proposes to scope out an assessment of dust emissions during the construction phase on the basis that a construction dust risk assessment will be undertaken to determine the risk of dust impacts to human and ecological receptors and identify appropriate mitigation measures that would be incorporated into the CEMP. Paragraph 17.6.1 of the Scoping Report proposes to scope out an assessment of dust emissions during the decommissioning phase on the basis that mitigation measures incorporated into the CEMP to manage fugitive dust emissions	A construction dust assessment has been undertaken for the Scheme for the construction phase, as outlined in Sections 15.6, 15.8 and 15.10, and mitigation measures have been proposed where required to ensure the effects are not significant (Section 15.9). These measures have been incorporated into the **Outline Construction Environmental Management Plan (CEMP) [EN010168/APP/7.12]**. The potential effects on air quality associated with the decommissioning phase are considered to be similar or less than those risks identified during the construction phase. As such, the assessment undertaken for

ID	Summary of Matter	Response
	during construction will also be adopted for the decommissioning phase. Limited information has been provided in the Scoping Report regarding the likely significant effects associated with dust emissions during construction and decommissioning and on this basis the Inspectorate does not agree to scope this matter out at this stage. The ES should include an assessment of dust emissions arising from activities during construction and decommissioning which are likely to result in significant effects or otherwise present a justification in the ES as to why significant effects are not likely to occur. It should be clear how all mitigation measures would be delivered and secured, through cross reference to the outline CEMP and DCO.	construction dust for the construction phase is considered applicable in relation to decommissioning.
3.12.2	The Scoping Report proposes to scope out an assessment of emissions from non-road mobile machinery during the construction phase on the basis that while there may be an increase in emissions from NRMM impacts are likely to be minimal and temporary in nature and controlled through a CEMP. Limited information has been provided in the Scoping Report regarding the likely use of NRMM. Specifically, no information has been provided as to the type, number, location or operational hours of such machinery and likely emissions, other than references to the minimal and temporary nature of NRMM use. On this basis the Inspectorate is unable to scope this matter out of further assessment. The ES should include an assessment of NRMM emissions during construction which are likely to result in significant effects or otherwise present a justification in the ES as to why significant effects are not likely to occur.	NRMM effects have been considered in this chapter, based on professional judgement and guidance (Sections 15.6, 15.8 and 15.10), and mitigation measures have been proposed where required to ensure the effects are not significant (Section 15.9). These measures have been incorporated into the **Outline CEMP [EN010168/APP/7.12]** submitted as part of the DCO Application.

ID	Summary of Matter	Response
3.12.3	Table 21.1 of the Scoping Report proposes to scope out an assessment of traffic emissions during the construction phase. This appears to contradict paragraph 17.5.5 which states that "*the number of vehicles associated with the construction phase is not yet confirmed and detailed assessment of construction vehicle emissions will be scoped in until traffic flows are available to consider if the traffic flows have the potential to significantly alter congestion*", meaning the Applicant's proposed approach is unclear. In the absence of information on the likely number and type of vehicles required for construction, the Inspectorate does not agree to scope this matter out at this stage. The ES should include an assessment of road traffic emissions during construction which are likely to result in significant effects or otherwise present a justification in the ES as to why significant effects are not likely to occur. Paragraph 17.5.7 of the Scoping Report proposes to scope out an assessment of traffic emissions during operation on the basis that minimal road traffic movements (4 per month) would occur, and air quality impacts will be negligible. On this basis, the Inspectorate is content that this matter can be scoped out of further assessment. However, the ES should confirm the operational vehicle types and numbers (with reference to thresholds within guidance) to justify this position. Paragraph 17.5.2 of the Scoping Report proposes to scope out an assessment of traffic emissions during decommissioning on the basis that effects are likely to be short term and similar to construction phase impacts. In the absence of evidence demonstrating that decommissioning activities would not result in road	Vehicle emission effects for each phase have been considered in the ES, as presented in Sections 15.6, 15.8 and 15.10, and mitigation measures have been proposed where required to ensure the effects are not significant (Section 15.9).

ID	Summary of Matter	Response
	traffic emission effects greater than construction, the Inspectorate is not in a position to agree to scope this matter out. The ES should include an assessment of road traffic emissions during decommissioning which are likely to result in significant effects or otherwise present a justification in the ES as to why significant effects are not likely to occur. The Project Description chapter of the ES should clearly set out the likely number and type of vehicles required for construction, operation and decommissioning.	
3.12.4	Paragraph 17.4.3 of the Scoping Report proposes to characterise baseline ambient air quality by way of a desk study. Paragraph 17.4.6 states that the closest monitoring site is located approximately 8 km south of the application site. The Applicant should ensure that the baseline can be adequately characterised through a desk study and effort should be made to reach agreement with relevant consultation bodies, including the local authorities, as to whether any additional survey or monitoring work is required.	The baseline conditions have been identified based on desktop studies, and in line with good practice guidance (Section 15.7). Additional surveys or monitoring work were not required to inform the baseline. The proposed approach has been agreed with Wiltshire Council.
3.12.5	The Scoping Report states that the Study Area for the Proposed Development includes an area "*up to 250 m from the Sites, Cable Route Search Corridor, and Land at Melksham Substation presented in Figure 3.1*". The ES should include an explanation of the Study Areas used to identify potential for significant air quality effects on human and ecological receptors. This should be supported by appropriate figures. The assessment methodology and selection of Study Areas should be discussed and agreed with relevant consultation bodies.	The Study Areas are detailed in Section 15.5 and have been defined following the relevant best practice guidance. The Study Areas are presented in: • **ES Volume 2, Figure 15-1: Construction Dust Emissions Study Area [EN010168/APP/6.2];** • **Figure 15-3: Non-Road Mobile Machinery (NRMM) Emissions Study Area [EN010168/APP/6.2];** • **Figure 15-4: Back-Up Generator Emissions Study Area [EN010168/APP/6.2];** • **Figure 15-5: BESS Fire Emissions Study Area, Receptors and Modelled BESS Locations [EN010168/APP/6.2].**

ID	Summary of Matter	Response
		The guidance and methodology used to define the assessment Study Areas for the ES have been agreed with Wilshire County Council Environmental Health Officers (EHOs) as detailed in **Table 15-2.**

15.2.2 Engagement has been undertaken with Wiltshire Council. The matters raised are summarised in **Table 15-2** below.

Table 15-2: Summary of Engagement Undertaken

Consultee and Date	Issue/Topic	Response
Wiltshire Council - 19 November 2024	The proposed scope of the Air Quality ES was discussed, including the guidance, Study Areas and methodology used to assess air quality effects from construction dust, Non-Road Mobile Machinery, road vehicles and a potential fire to the BESS. The EHO stated that Wiltshire Council had their own supplementary planning guidance with regards to the assessment of air quality effects of development and requested that the air quality effects of the Scheme were assessed in line with this guidance. The guidance is primarily based around ensuring that air quality effects of development are appropriately mitigated. The EHO also requested that further liaison is undertaken with them once the ES assessment is completed to review the potential effects and any required mitigation measures in line with the supplementary planning guidance.	The ES has considered the most recently available supplementary planning guidance as detailed in Section 15.6. Further engagement has been undertaken following the completion of the assessment, as detailed below.
Wiltshire Council – 9 April 2025	The proposed methodology was discussed, including the guidance, Study Area and methodology used to assess air quality effects from construction dust, Non-Road Mobile Machinery, road vehicles and a potential BESS fire. The EHO stated that Wiltshire Council is in the process of updating their supplementary planning guidance,	The ES has considered the most recently available supplementary planning guidance as detailed in Section 15.6. The construction vehicle routes do not pass through any AQMAs, as demonstrated in **ES Volume 2**, **Figure 15-2:**

Consultee and Date	Issue/Topic	Response
	and the ES will need to consider the updated guidance, particular in relation to vehicle emissions. The EHO queried the construction traffic route and requested that no vehicles associated with the Scheme go through the Air Quality Management Areas (AQMAs), in particular, Bradford Avon AQMA.	**Construction Vehicle Emissions Assessment Road Network [EN010168/APP/6.2].**
Wiltshire Council – 23 May 2025	Assessment summary provided and an updated version of the supplementary planning guidance was requested. However, it was confirmed that the updated version will not be published before finalisation of the ES. No issues have been raised regarding the assessment conclusions.	The ES has considered the most recently available supplementary planning guidance as detailed in Section 15.6.
Wiltshire Council – 8 July 2025	Details of back-up generators provided. No comments received.	Back-up generator emission effects have been considered in the ES, as presented in Sections 15.6, 15.8 and 15.10, and mitigation measures have been proposed where required to ensure the effects are not significant (Section 15.9).

15.2.3 Statutory consultation was held between 29 January 2025 and 19 March 2025. A full list of consultation responses in relation to air quality are presented in the **Consultation Report [EN010168/APP/5.1]** submitted as part of the Application.

15.2.4 A further round of targeted consultation was undertaken between 3 June 2025 and 11 July 2025 following changes to the development boundary area of the Scheme presented in the PEIR and at Stage Two Statutory Consultation. Further detail regarding the targeted consultation is provided in **ES Volume 1, Chapter 1: Introduction [EN010168/APP/6.1]**.

15.3 Legislation, Planning Policy and Guidance

15.3.1 A summary of applicable legislation, planning policy and other guidance documents relating to air quality pertinent to the Scheme is provided below.

15.3.2 Full details of the legislation, policy, and guidance of relevance to the assessment of air quality is provided in full in **ES Volume 1, Chapter 5: Energy Need Legislative Context and Energy Policy [EN010168/APP/6.1]**.

Legislation and Regulations

The Air Quality (Standards) Regulations 2010

15.3.3 Prior to the UK's withdrawal from the European Union (EU), the EU Directive on ambient air quality (2008/50/EC) (Ref 15-1) set out a range of mandatory Limit Values (LVs) for different pollutants including nitrogen dioxide (NO_2) and particulate matter less than 10 microns in diameter (PM_{10}), the key traffic related pollutants. The directive set LVs or Target Values for the concentrations of specific air pollutants and provided a new regulatory framework for particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). The Air Quality (Standards) Regulations 2010 (Ref 15-2) transposed into English law the requirements of Directive 2008/50/EC (Ref 15-1) on ambient air quality.

15.3.4 Pursuant to the EU (Withdrawal) Act 2018 (Ref 15-3), law derived from the EU has been converted into domestic law following the UK's withdrawal from the EU. The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 (Ref 15-4) made amendments to the Air Quality Standards Regulations 2010 (Ref 15-2) to transpose provisions of the EU Ambient Air Quality Directive (2008/50/EC) (Ref 15-1) into UK law.

15.3.5 The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (Ref 15-5) amended the $PM_{2.5}$ LV from 25 µg/m³ (within the Air Quality Standards Regulations 2010) to 20 µg/m³ in line with the requirement of the EU Directive (2008/50/EC) (Ref 15-1) during the transition of the UK's withdrawal from the European Union.

Air Quality (England) Regulations 2000

15.3.6 The Air Quality (England) Regulations 2000 (Ref 15-6) and the Air Quality (England) (Amendment) Regulations 2002 (Ref 15-7) set national air quality objective levels for local authorities to meet in England. The Air Quality Strategy (AQS) objectives for pollutants considered within this assessment are presented in **Table 15-3.**

Table 15-3: Air Quality Objectives

Pollutant	Concentration (µg/m³)	Averaging Period
NO_2	40	Annual mean
	200	1-hour mean; not to be

Pollutant	Concentration (µg/m³)	Averaging Period
		exceeded more than 18 times a year
PM_{10}	40	Annual mean
	50	24-hour mean; not to be exceeded more than 35 times a year
$PM_{2.5}$	25* (LV is 20)	Annual mean
NOx	30**	Annual mean

** It should be noted that $PM_{2.5}$ was included in the Air Quality Strategy but not in the regulations as a legal requirement to be achieved by local authorities. The LV is 2 0 µg/m³ - this has been used in the assessment as it is lower and therefore worst case.*

*** This is a critical level for the protection of vegetation and ecosystems, rather than an air quality objective for human health*

15.3.7 Reporting against compliance with LVs is undertaken by the Department for Environment, Food and Rural Affairs (Defra) and reported at a zonal/agglomeration level. Zones/agglomerations only comply when everywhere in the zone is below the LV and this is the basis of Defra's reporting, which is designed to determine what the maximum concentration is within the zone and hence determine the date the zone will comply with the LV. AQS objectives are assessed at a much more local level where an AQMA can be designated as a result of exceedance at individual properties.

15.3.8 The Air Quality Objectives only apply where members of the public are likely to be regularly present for the averaging time of the objective (i.e. where people will be exposed to pollutants). As detailed in Local Air Quality Management (LAQM) Technical Guidance (TG) 2022 (LAQM.TG(22)) (Ref 15-8), the annual mean objectives apply to all locations where members of the public might be regularly exposed; these include building façades of residential properties, schools, hospitals, care homes. The 24-hour mean objective applies to all locations where the annual mean objective would apply, together with hotels and gardens of residential properties. The one hour mean objective also applies at these locations as well as at any outdoor location where a member of the public might reasonably be expected to stay for one hour or more, such as shopping streets, parks and sports grounds, as well as bus stations and railway stations that are not fully enclosed.

15.3.9 Local authorities have no legal requirement to comply with AQS objectives. They are however required to demonstrate best efforts to work towards achieving AQS objectives and a framework has been developed (Ref 15-9) to enable local authorities to deliver and contribute to long-term air quality goals.

The Environment Act 1995

15.3.10 Part IV of the Environment Act 1995 (Ref 15-10) required the UK Government to produce a national AQS which contains standards, objectives and measures for improving ambient air quality. The AQS (Ref 15-9) sets out objectives that are maximum ambient concentrations that are not to be exceeded either without exception or with a permitted number of exceedances over a specified timescale.

15.3.11 It is a requirement of the Environment Act (1995) (Ref 15-10) that local authorities review current and future air quality within their area of jurisdiction under the system of LAQM. Where a local authority's review and assessment of local air quality indicates that AQS objectives are not expected to be achieved, local authorities are required to designate an AQMA. An Air Quality Action Plan (AQAP) must then be formulated, outlining a plan of action to meet AQS objectives in the AQMA.

The Environment Act 2021

15.3.12 The Environment Act 2021 (Ref 15-11) has two main functions:

- To give a legal framework for environmental governance in the UK; and
- To bring in measures for the improvement of the environment in relation to waste, resource efficiency, air quality, water, nature and biodiversity, and conservation.

15.3.13 The majority of the Act does not make any immediate changes for organisations other than regulators. Legislative requirements relevant to air quality include the requirement for the Secretary of State to set targets for $PM_{2.5}$.

The Environmental Targets (Fine Particulate Matter) England Regulations 2023

15.3.14 The Environmental Targets (Fine Particulate Matter) England Regulations 2023 (Ref 15-12) sets out the following targets for $PM_{2.5}$:

- Annual Mean Concentration Target ('concentration target') – a target of 10µg/m³ to be met across England by 2040; and
- Population Exposure Reduction Target ('exposure reduction target') – a 35% reduction in population exposure by 2040 (compared to a base year of 2018).

15.3.15 Defra is in the process of producing planning guidance on how developers and local planning authorities should take the targets into consideration in the

planning process. The interim guidance (Ref 15-13) advises applicants to provide evidence in their planning applications that they have identified key sources of air pollution within their schemes and taken appropriate action to minimise emissions of $PM_{2.5}$ as far as is reasonably practicable.

Environmental Protection Act 1990

15.3.16 Activities that generate dust of a sufficient scale and frequency, may become a statutory nuisance. The relevant legislation dealing with statutory nuisance is given in Part III of the Environmental Protection Act 1990 (Ref 15-14). A statutory nuisance in relation to dust and deposits is defined under Section 79(1) of the act as follows:

"(d) Any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance.

(e) any accumulation or deposit which is prejudicial to heath or a nuisance."

15.3.17 Under the provisions of the Act, where a local authority is satisfied that a Statutory Nuisance exists, it is under a mandatory duty to serve an Abatement Notice requiring abatement or cessation of one or more activities deemed to be causing the nuisance. In the absence of any kind of standard, identification of a nuisance is dependent on the professional judgment of the local authority as to whether Best Practical Means (BPM) are being employed to control emissions. Where BPM is evident or can be clearly demonstrated then a particular activity cannot be deemed to be causing a Statutory Nuisance.

The Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations 2018

15.3.18 The Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations 2018 (Ref 15-15) set out gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for NRMM.

National Planning Policy

15.3.19 The National Policy Statements (NPSs) that are relevant to the Scheme are:

- Overarching National Policy Statement for Energy (EN-1) (January 2024) (Ref 15-16);
- National Policy Statement for Renewable Energy Infrastructure (EN-3) (January 2024) (Ref 15-17); and

- National Policy Statement for Electricity Networks Infrastructure (EN-5) (January 2024) (Ref 15-18).

15.3.20 The NPSs listed above came into effect on 17 January 2024. These NPSs set out the Government's energy policy for the delivery of nationally significant energy infrastructure, the need for new energy infrastructure, and guidance for the determination of an application for a Development Consent Order (DCO).

15.3.21 The relevant NPS requirements, together with an indication of where in the ES the information is provided to address these requirements, are provided in **ES Volume 3, Appendix 5-1: National Policy Statement Requirements [EN010168/APP/6.3].**

15.3.22 The National Planning Policy Framework (NPPF) (December 2024) (Ref 15-19) sets out the Government's planning policies for England and how these are expected to be applied. The NPPF has a strong emphasis on sustainable development, with a presumption in favour of such development. The NPPF has the potential to be considered important and relevant to the Secretary of State's (SoS) consideration of the Scheme. **Table 15-4** below provides details of the elements of the NPPF that are relevant to this chapter, and how and where they are covered in the ES.

Table 15-4: NPPF Requirements Relevant to Air Quality

NPPF Section	Where this is covered in the ES
Paragraph 187 *"Planning policies and decisions should contribute to and enhance the natural and local environment by:* *…preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans."*	An assessment of air quality impacts and effects of the Scheme has been undertaken and is presented in Sections 15.8 and 15.10. Mitigation measures have been proposed where required and are summarised in Section 15.9 of this chapter to ensure the effects on the local environment are not significant.
Paragraph 199 *"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the*	Mitigation measures have been proposed where required and are summarised in Section 15.9 of this chapter. The closest AQMA to the Scheme is AQMA 4 Bradford-on-Avon which is located over 8 km southwest of the Scheme.

NPPF Section	Where this is covered in the ES
presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan."	

15.3.23 The air quality section of the National Planning Practice Guidance (NPPG) (Ref 15-20), last updated in November 2019, includes guidance relating to: planning and air quality; the role of Local Plans with regard to air quality; when air quality is likely to be relevant to a planning decision; what should be included within an air quality assessment and how effects on air quality can be mitigated. The assessment follows the guidance which contains recommendations when undertaking an air quality assessment for the purpose of applying NPPF policy.

Local Planning Policy

15.3.24 Local planning policies that are relevant to the Scheme and air quality are:

- Wiltshire Council's Core Strategy (2015) (Ref 15-21);
  - Core Policy 55;
- Wiltshire Air Quality Strategy (2019) (Ref 15-22);
- Air Quality Action Plan for Wiltshire (2024) (Ref 15-23); and
- Wiltshire Air Quality Supplementary Planning Document (SPD) (2023) (Ref 15-24).

Other Guidance

15.3.25 The air quality assessment has been carried out in general accordance with the following good practice guidance documents.

Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction Version 2.2 (2024) (Ref 15-25)

15.3.26 This guidance (referred hereafter as the IAQM construction dust guidance) contains advice on how to classify the risk of dust impacts arising from construction activities such as earthworks and demolition, and outlines mitigation measures which would be appropriate for each activity according to the risk category.

IAQM and Environmental Protection UK (EPUK) Land-use Planning and Development Control: Planning for Air Quality Version 1.2 (2017) (Ref 15-26)

15.3.27 This guidance (referred hereafter as the IAQM and EPUK development control guidance) provides advice on how air quality should be considered in the land-use planning and development control process. The guidance includes good practice advice on the approach to air quality assessments for development.

DEFRA $PM_{2.5}$ Targets: Interim Planning Guidance (2024) (Ref 15-13)

15.3.28 This interim planning guidance has been developed to allow consideration of the Environment Targets (Fine Particulate Matter) (England) Regulations 2022 when making planning applications and planning decisions.

DEFRA Local Air Quality Management Technical Guidance (TG22) (2022) (Ref 15-8)

15.3.29 This guidance is designed to support local authorities in carrying out their LAQM duties under the Environment Act 1995 as amended by the Environment Act 2021. LAQM is the statutory process by which local authorities monitor, assess and take action to improve local air quality. The technical guidance is also used frequently to support air quality assessments for development.

National Highways Design Manual for Roads and Bridges (DMRB) LA105 Version 0.1.0 (2024) (Ref 15-27)

15.3.30 This guidance is used for National Highways' schemes and provides advice on the assessment of vehicle emissions.

Environment Agency Air Emissions Risk Assessment for your Environmental Permit guidance (2025) (Ref 15-29)

15.3.31 This guidance provides advice on assessing releases to air. Whilst this guidance is used for dispersion modelling for environmental permitting purposes, it includes useful general guidance on undertaking detailed modelling of emissions to air.

15.4 Assessment Assumptions and Limitations

15.4.1 The air quality assessment has considered the following assumptions:

- It is assumed that all construction activities other than construction traffic will take place within the Order Limits;
- There is limited real world data collated on fires associated with solar schemes, and the data that does exist is mainly derived from a limited number of testing studies. Recent publications, alongside professional judgement have been used to derive appropriate input data (as detailed in **Section 1.2, ES Volume 3, Appendix 15-2: BESS Fire Emissions Modelling Methodology and Assessment [EN010168/APP/6.3]**);
- Likely effects on air quality associated with dust generated during the decommissioning phase have been assumed to be similar to those risks identified during the construction phase;
- Dust generating activities have been assumed to occur across the full area within the Order Limits. This is a worst-case assumption included to cover all likely effects;
- The traffic data used in the assessment relies on the same assumptions as those outlined in **ES Volume 1, Chapter 13 Transport and Access [EN010168/APP/6.1]**;
- It is assumed for the purpose of the assessment that NRMM will be used throughout the Sites and Cable Route Corridor;
- For the purpose of the BESS fire emissions modelling, it has been assumed that one BESS container is 2438 mm in height, 6058 mm wide and 2591 mm long;
- There are several battery storage technologies available to the Applicant. For the purposes of the Lime Down DCO Application, a generic 5 MWh BESS comprising six battery racks has been assumed. The exact technology and system chemistry type is still to be determined; however, it will be a lithium-ion battery cell type. As stated previously, there is limited

emissions data available for BESS fires. The modelling was based on a test fire which was conducted using LFP lithium iron phosphate battery modules; each module comprised 52 cells whereas a 5 MWh BESS could contain double this number of cells in each battery module (there would be six racks containing 48 modules rather than ten racks containing 80 modules). As such, a sensitivity test has been undertaken to address this uncertainty. It should be noted that, as stated in the **Outline BSMP [EN010168/APP/7.21]**, detailed modelling of a potential BESS fire would be undertaken at the detailed design stage and used to inform the Emergency Response Plan, therefore any changes to the design would be modelled at the detailed design stage;

- The term 'BESS container' has been used in this report for consistency with the rest of the DCO Application. However, it should be noted that the **Outline BSMP [EN010168/APP/7.21]** refers to these elements as 'BESS enclosure' to highlight considerations around battery safety and to acknowledge that modern BESS designs often extend beyond the traditional ISO container formats (e.g. 20ft, 40ft, or 53ft);
- Modelling accounts for a steady burn as a result of deflagration of one BESS container. The BESS facility will be designed with multiple layers of protection to mitigate and minimise the probability of a fire or thermal runaway incident as outlined in the **Outline BSMP [EN010168/APP/7.21]**. It is therefore assumed that the fire would be limited to one BESS container;
- It is assumed that one BESS container is assumed to be 2438 mm in height, 6058 mm wide and 2591 mm long for the purpose of modelling the BESS fire emissions. The maximum height would be 3.2 m, however, the lowest potential height has been used as a worst case;
- It is assumed that Prismatic Lithium Iron Phosphate (LFP) batteries would be used. This is considered to be a reasonable worst case for the purposes of the assessment in terms of BESS toxic gas emission potential;
- Batteries are sealed by design so it is assumed that they do not vent when in normal use and have no free electrolyte;
- It is assumed that the batteries will be controlled by charging management systems that will detect if a cell or battery is not operating correctly;
- There are no large buildings located on site in close proximity to the BESS cabinets that would affect dispersion;
- There is limited real world data collated on fires associated with solar schemes. No suitable emissions data was found for particulates. As such,

the assessment assumed that a battery unit fire in the BESS is equivalent to a diesel fire for production of PM as recommended by the Applicant's Battery Safety and Testing Consultant and as done for previous assessments such as the Axminster Energy Hub Plume Assessment Study prepared by DNV for Clearstone Energy (Ref 15-28). Additionally, emissions data was available for NO. As a worst case, it has been assumed that all modelled NO was NO_2 for comparison against the air quality thresholds;

- A nominal value of 1 m/s has been used for the velocity to activate the plume rise module;
- There is no AEGL for particulates. As such, the Health and Safety Executive (HSE) Workplace Exposure Limit (WEL) (Ref 15-38) has been used which is 4 mg/m^3 for respirable dust. Whilst this is over an 8-hour reference period, it is considered appropriate for use in the assessment in lieu of any other limits;
- AEGLs for 10 minute and 30-minute exposure periods were not included in the assessment, as the dispersion model uses hourly meteorological data, which means that the shortest time period that concentrations can be predicted over is one hour. Depending on the pollutant, the 10 minute and 30 minute AEGL has an equivalent or higher threshold concentration than the corresponding 1 hour AEGL, and so comparison of hourly model outputs against 1 hour AEGL values is considered more worst-case than comparison against 10 minute and 30 minute AEGLs;
- Assumptions regarding pollutant background concentrations have been made as detailed in **ES Volume 3, Appendix 15-2: BESS Fire Emissions Modelling Methodology and Assessment [EN010168/APP/6.3]**; and
- In accordance with the Environment Agency guidance (Ref 15-29), it has been assumed that the short-term background concentration of a substance is twice its long-term concentration. As such, annual mean background concentrations were doubled to approximate the 1-hour background concentration.

15.5 Study Area

Construction Dust Emissions

15.5.1 In accordance with the IAQM construction dust guidance (Ref 15-25), the Study Area for construction phase dust is:

- 250 m from the Order Limits for human receptors (based on the worst-case assumption that construction activities would occur at the Order Limits) and up to 50 m for ecological receptors; and
- 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrances (trackout dust Study Area).

15.5.2 The construction dust emissions Study Area is presented in **ES Volume 2, Figure 15-1: Construction Dust Emissions Study Area [EN010168/APP/6.2]**.

Vehicle Emissions

15.5.3 The road network considered in the construction vehicle emissions assessment is presented in **ES Volume 2, Figure 15-2: Construction Vehicle Emissions Assessment Road Network [EN010168/APP/6.2]**. In accordance with the DMRB LA105 guidance (Ref 15-27), the Study Area for vehicle emissions comprises an area within 200 m of the Affected Road Network (ARN). For this assessment, the ARN is defined as any roads which exceed any of the IAQM and EPUK development control guidance (Ref 15-26) traffic screening criteria. The screening criteria provide the thresholds above which an assessment may be necessary. There are thresholds for the daily flows of Light Duty Vehicles (LDVs) and Heavy-Duty Vehicles (3.5t) (HDVs), which vary depending on whether an AQMA is present or not. Where the criteria are met, an assessment is generally considered necessary to determine the concentrations of pollutants in ambient air at human or ecological receptors adjacent to the roads that meet the criteria. The IAQM and EPUK screening criteria are as follows:

- A change in LDV flows of more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an AQMA, or more than 500 AADT elsewhere;
- A change in HDV flows of more than 25 AADT within or adjacent to an AQMA, or more than 100 AADT elsewhere;
- Where a road is realigned by 5 m or more and is within an AQMA; and
- Where a junction is added or removed close to existing receptors.

15.5.4 As detailed in the following sections, none of the IAQM and EPUK development control guidance (Ref 15-26) traffic screening criteria have been met for the construction, operation and maintenance or decommissioning phase. As such, there is no ARN for vehicle emissions.

NRMM Emissions

15.5.5 No specific guidance exists on the definition for a Study Area for NRMM point sources due to the large variation in the extent of potential impact from different

types of sources. For the purposes of this assessment, a Study Area of 200 m of the Order Limits is considered appropriate, based on professional judgement and the type of NRMM likely to be used and is consistent with the assessment of the approach taken on other projects such as Green Hill Solar Farm (Ref 15-30). This assumes that NRMM would be used anywhere within the Order Limits as a worst-case scenario. In reality, this is unlikely to be the case and NRMM is most likely to be used where construction works are being undertaken. The NRMM emissions Study Area is presented in **ES Volume 2**, **Figure 15-3: NRMM Emissions Study Area [EN010168/APP/6.2].**

Substation Back-Up Generator Emissions

15.5.6 As with NRMM, no specific guidance exists on the definition for a study area for generators. For the purposes of this assessment a study area of up to 200 m radius from the Substations' compounds is considered appropriate based on professional judgement. Beyond this distance it is judged that the effect of any emissions on local air quality would have no potential to be significant. The Back-Up Generator Emissions Study Area is presented in **ES Volume 2, Figure 15-4: Back-Up Generator Emissions Study Area [EN010168/APP/6.2]**.

BESS Fire Emissions

15.5.7 There is no guidance that exists on the assessment of emissions from BESS fires. For the purposes of this assessment, a Study Area of 1 km from the BESS Area (at Lime Down D) has been used, based on professional experience of assessing emissions from similar schemes, and based on air quality assessments undertaken for fires at similar BESS sites such as Green Hill Solar Farm (Ref 15-30). The BESS fire emissions Study Area is presented in **ES Volume 2, Figure 15-5: BESS Fire Emissions Study Area, Receptors and Modelled BESS Locations [EN010168/APP/6.2]**.

15.6 Assessment Methodology

15.6.1 This section sets out the scope and methodology for the assessment of the impacts of the Scheme on air quality.

Sources of Information

15.6.2 In the preparation of this chapter, the following sources of published information have been used:

- Defra UK Air website (Ref 15-31) – to establish predicted background concentrations;

- The air quality section of the Wiltshire Council website (Ref 15-32) and 2024 Air Quality ASR (Ref 15-33) to determine existing AQMAs and local air quality monitoring results; and
- MAGIC website (Ref 15-34) – to identify ecological sites within the air quality Study Areas.

15.6.3 There is sufficient baseline data to inform the assessment, therefore no Scheme specific air quality monitoring has been undertaken.

Impact Assessment Methodology

15.6.4 The assessment considers air quality effects due to construction vehicle, dust, and NRMM emissions during the construction and decommissioning phases of the Scheme. It also considers the operation and maintenance phase of the Scheme, which may affect air quality due to vehicle emissions. Unplanned emissions from an accidental BESS fire during the operation and maintenance phase of the Scheme have also been considered.

15.6.5 This section sets out the methodology used for assessing the effects on air quality for those aspects scoped into the assessment.

Construction Dust Emissions

15.6.6 During the construction phase, there is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed in accordance with the methodology outlined in the IAQM construction dust guidance (Ref 15-25) as required by the Wiltshire Air Quality SPD (2023) (Ref 15-24). The methodology is summarised in the following paragraphs and detailed assessment steps are presented in **ES Volume 3, Appendix 15-1: Construction Dust Methodology and Assessment [EN010168/APP/6.3].**

15.6.7 There is also the potential for fugitive dust emissions during the operation and maintenance phase. The assessment undertaken for construction dust and its outcome are considered applicable in relation to the operation and maintenance phase and a separate assessment for fugitive dust emissions for this phase has not been undertaken. This is considered to be worst case, as the potential effects on air quality associated with this phase are likely to be less than those risks identified during the construction phase.

15.6.8 There is also the potential for fugitive dust emissions during the decommissioning phase. Following review of the decommissioning activities, the potential effects on air quality associated with this phase are considered to be similar to those risks identified during the construction phase. As such, the assessment undertaken for construction dust and its outcome are considered

applicable in relation to decommissioning phase and a separate assessment for fugitive dust emissions for this phase has not been undertaken.

Sensitivity of air quality receptors

15.6.9 The sensitivity of the area to dust impacts can be defined as low, medium or high sensitivity, in accordance with the IAQM construction dust guidance (Ref 15-25). This terminology is consistent with that in the IAQM construction dust guidance (Ref 15-25) and has therefore been used in the assessment, rather than that set out in **ES Volume1, Chapter 6: EIA Methodology [EN010168/APP/6.1].**

15.6.10 The influencing factors to define receptor sensitivity to dust impacts are as follows:

- High – where human receptors are expected to be present continuously for extended periods of time and where a high level of amenity is expected e.g. residential properties, hospitals, schools and care homes. Internationally or nationally designated ecological sites where the designated features may be affected by dust soiling, or where there is a particular dust sensitive species;
- Medium – where human receptors wouldn't reasonably be expected to be present continuously or regularly for extended periods and where a reasonable level of amenity is expected which could be diminished by dust soiling e.g. parks and places of work. Nationally designated ecological sites where features may be affected by dust deposition; and
- Low – where enjoyment of amenity would not reasonably be expected and exposure would be for limited periods e.g. footpaths, shopping streets and car parks. Locally designated ecological sites where the features may be affected by dust.

15.6.11 The IAQM construction dust guidance (Ref 15-25) defines a human receptor as *"any location where a person or property may experience the adverse effects of airborne dust or dust soiling, or exposure to PM over a time period relevant to the air quality objectives, as defined in the Government's technical guidance for Local Air Quality Management (Ref 15-8). In terms of annoyance effects, this will most commonly relate to dwellings, but may also refer to other premises such as buildings housing cultural heritage collections (e.g. museums and galleries), vehicle showrooms, food manufacturers, electronics manufacturers, amenity areas and horticultural operations (e.g. salad or soft-fruit production)".*

15.6.12 An ecological receptor is defined as *"any sensitive habitat affected by dust soiling. This includes the direct impacts on vegetation or aquatic ecosystems of dust deposition, and the indirect impacts on fauna (e.g. on foraging habitats)".*

Magnitude of dust effects

15.6.13 The scale and nature of the works determines the magnitude of dust arising as small, medium or large. This terminology is consistent with that in the IAQM construction dust guidance (Ref 15-25) and has therefore been used in the assessment, rather than that set out in **ES Volume 1, Chapter 6: EIA Methodology [EN010168/APP/6.1].**

15.6.14 The relevant criteria to define the potential magnitude of dust emission includes the following factors:

- Small – demolition volume under 12,000 m^3, demolition activities less than 6 m above ground level, total site area less than 18,000 m^2, soil type with large grain size, construction material with low potential for dust release, less than 20 outward HDV trips per day, unpaved road length less than 50 m etc;
- Medium – demolition volume 12,000 m^3 – 75,000 m^3, demolition activities 6 m – 12 m above ground level, total site area 18,000 m^2 – 110,000 m^2, moderately dusty soil type, potentially dusty construction material, 20 to 50 outward HDV trips per day, unpaved road length 50 – 100 m etc; and
- Large – demolition volume greater than 75,000 m^3, on-site crushing and screening, demolition activities greater than 12 m above ground level, total site area greater than 110,000 m^2, more than 10 heavy earth moving vehicles active at any one time, on-site concrete batching, sandblasting, more than 50 outward HDV trips per day, unpaved road length greater than 100 m etc.

Significance of effects

15.6.15 The IAQM construction dust guidance (Ref 15-25) categorises the unmitigated risk of dust impacts on human health and amenity (rather than ascribe a significance of effect) as a means of identifying the level of dust emissions mitigation required to ensure that residual effects are 'not significant'. The risk of dust impact categories are presented in **Tables 6 to 8** of **ES Volume 3**, **Appendix 15-1: Construction Dust Methodology and Assessment [EN010168/APP/6.3]**. A higher dust risk rating requires more stringent mitigation measures in order to limit residual effects.

Vehicle Emissions

15.6.16 The assessment of the effects of vehicle emissions from traffic related to the Scheme is based on the IAQM and EPUK development control guidance (Ref 15-26). As detailed in Paragraph 15.5.3, the guidance provides screening criteria indicating the thresholds above which an assessment may be

necessary. Where the criteria are met, an assessment is generally considered necessary to determine the concentrations of pollutants in ambient air at human or ecological receptors adjacent to the roads that meet the criteria. Should the criteria not be met, vehicle emissions are considered to be not significant, and no further assessment is usually required.

Sensitivity of Receptors

15.6.17 Should screening of the relevant data indicate that any of the IAQM and EPUK development control screening criteria (Ref 15-26) for the daily flows of light duty vehicles and heavy-duty vehicles are met, detailed dispersion modelling is undertaken using Atmospheric Dispersion Modelling Software (ADMS) to predict the changes in pollutant concentrations at worst case receptor locations within 200 m of affected vehicle routes.

15.6.18 The guidance LAQM (TG22) (Ref 15-8) defines a sensitive receptor as a location representative of human (or ecological) exposure to a pollutant, over a time period relevant to the objective that is being assessed against, where the AQS objectives are considered to apply, as detailed in **Table 15-5**.

Table 15-5: Examples of Locations Where AQS Objectives Apply

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

	Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.	

Magnitude of Impacts

15.6.19 The magnitude of air quality impacts is calculated based on IAQM development control guidance (Ref 15-26) according to the percentage change in concentration between the 'without Scheme' and 'with Scheme' scenarios relative to the relevant AQS objectives (**Table 15-3**). When this magnitude of change is used together with the total concentration predicted at each receptor (in relation to the AQS objective) it allows the calculation of an impact descriptor (negligible, slight, moderate or substantial) as shown in **Table 15-6.**

Table 15-6: IAQM Impact Descriptors for Individual Receptors

Long Term Average Concentration at Receptor in Assessment Year	**% Change in Concentration Relative to Air Quality Assessment Level (AQAL)**			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76 – 94% of AQAL	Negligible	Slight	Moderate	Moderate
95 – 102% of AQAL	Slight	Moderate	Moderate	Substantial
103 – 109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

Assessment of Significance

15.6.20 The IAQM development control guidance (Ref 15-26) notes that the impact descriptors in Error! Reference source not found.**Table 15-6** are for individual r

eceptors only and the overall significance of effect should be determined using professional judgement, taking into the degree of impact and factors such as:

- The existing and future air quality in the absence of the Scheme;
- The extent of current and future populations exposure to the impact; and
- The influence and validity of any assumptions adopted when undertaking the prediction of impacts.

NRMM Emissions

15.6.21 The assessment of construction phase NRMM emissions is based on the IAQM and EPUK development control guidance (Ref 15-26), LAQM.TG(22) (Ref 15-8) and professional judgement.

15.6.22 There is also the potential for NRMM emissions during the operation and maintenance phase. The assessment undertaken for the construction phase and its outcome are considered applicable in relation to the operation and maintenance phase and a separate assessment for NRMM emissions for this phase has not been undertaken. This is considered to be worst case, as the potential effects on air quality associated with this phase are likely to be less than those risks identified during the construction phase.

15.6.23 There is also the potential for NRMM emissions during the decommissioning phase. Following review of the decommissioning activities, the potential effects on air quality associated with this phase are considered to be similar to those risks identified during the construction phase. As such, the assessment undertaken for NRMM emissions and its outcome are considered applicable in relation to decommissioning phase and a separate assessment for NRMM emissions for this phase has not been undertaken.

Sensitivity of Receptors

15.6.24 Air quality receptors have been identified as locations representative of exposure to the averaging periods of relevant air quality objectives. LAQM.TG(22) (Ref 15-8) defines a sensitive receptor as a location representative of human (or ecological) exposure to a pollutant, over a time period relevant to the objective that is being assessed against, where the AQS objectives are considered to apply, as detailed in **Table 15-5.**

Magnitude of Impacts

15.6.25 If required, detailed dispersion modelling is undertaken using ADMS to predict pollutant concentrations at worst case receptor locations. The magnitude of change is calculated and total concentrations compared against the relevant

AQS objectives (**Table 15-3**). Detailed modelling was not required and has not been undertaken for this assessment, as detailed in Section 15.10.

Assessment of Significance

15.6.26 The significance of NRMM emissions effects is assessed in accordance with the IAQM and EPUK development control guidance (Ref 15-26) where the overall significance of the Scheme in terms of NRMM emissions is then determined using professional judgement, taking into account factors such as the baseline and future air quality in the absence of the Scheme, the number of receptors affected (which is determined using the IAQM Impact Descriptors shown in **Table 15-6**) and the influence and validity of any assumptions adopted when undertaking the assessment.

15.6.27 Significance of effects for ecological receptors is assessed in accordance with the Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites (Ref 15-35). The guidance states that:

"*the 1% threshold has become widely used throughout the air quality assessment profession to define a reasonable quantum of long-term pollution which is not likely to be discernible from fluctuations in background/measurements*".

15.6.28 As such, for the purpose of this assessment, if the change in NOx as a result of emissions from the Proposed Project is less than 1% of the relevant critical load/level, then the effect of emissions is considered to be not significant. Where the 1% threshold is exceeded, this does not necessarily mean that a significant effect is caused. Rather, it indicates that further assessment work is required to evidence a conclusion as to whether the change in air quality is likely to have a significant effect on the ecological receptor.

Substation Back-Up Generator Emissions

15.6.29 Back-up diesel generator emissions have been assessed following the methodology outlined for the assessment of NRMM emissions. Whilst back-up generators are not considered to be NRMM, they both typically rely on internal combustion engines, often powered by diesel. As such, the use of the same methodology is considered appropriate.

BESS Fire Emissions

15.6.30 The BESS has the potential to cause air quality effects in the rare event of a fire incident. Concentrations of carbon monoxide (CO), formaldehyde, hydrogen chloride (HCl), hydrogen cyanide (HCN), hydrogen fluoride (HF), ammonia (NH_3), NO_2 and particulates as a result of a BESS fire have been modelled

using ADMS to determine the effects of BESS fire emissions on human health. Further details regarding the methodology are outlined in **ES Volume 3, Appendix 15-2: BESS Fire Emissions Modelling Methodology and Assessment [EN010168/APP/6.3]**. It should be noted that there is no guidance available for modelling of BESS fire emissions, therefore the assessment has been undertaken using professional judgement and the Environment Agency Air Emissions Risk Assessment for your Environmental Permit guidance (Ref 15-29), which includes useful general guidance on undertaking detailed modelling of emissions to air.

Sensitivity of Receptors

15.6.31 Air quality receptors have been identified as locations representative of exposure to the averaging periods of relevant air quality objectives. The duration of a BESS fire can vary considerably. The GridSolv Quantum Cube Bespoke Unit Testing Summary Report, prepared by Fire and Risk Alliance LLC for Wartsila North America, Inc. (Ref 15-36) carried out a test fire using the same batteries and battery set-up as the Scheme. The fire duration was 8hrs 52 mins (Ref 15-36). Given a potential BESS fire is likely to be a relatively short-term incident given the measures in place (as outlined in the **Outline BSMP [EN010168/APP/7.21])**, it is considered appropriate to compare predicted concentrations against Acute Exposure Guidance Levels (AEGLs), which have higher threshold concentrations than the national air quality objectives and are relevant to short term releases. AEGLs have a range of exposure periods ranging from 10 minutes to 8 hours and the AEGLs applicable to this assessment are presented in **Table 15-7**. A sensitive receptor for the BESS fire emissions assessment is therefore any location where a person might be exposed over the duration of the AEGL exposure periods. Concentrations have been modelled at discrete receptor locations. The receptor locations are presented in **ES Volume 2, Figure 15-5: BESS Fire Emissions Study Area, Receptors and Modelled BESS Locations [EN010168/APP/6.2].** It should be noted that only human receptors have been considered in the BESS fire emissions assessment, as there are no ecological receptors within the Study Area.

Magnitude of Impacts

15.6.32 Predicted concentrations have been compared with the AEGLs as detailed below. Given the short-term nature of the emissions, and that background concentrations are not available for some of the pollutants, it is not considered appropriate to determine a magnitude of impacts, rather whether the emissions are considered to be significant, or not by comparison with the AEGLs.

15.6.33 AEGLs are expressed as concentrations of a substance above which it is predicted that the general population could experience, including susceptible individuals:

- Level 1 - Notable discomfort, irritation, or certain asymptomatic non-sensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure;
- Level 2 - Irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape; and
- Level 3 - Life-threatening health effects or death (Ref 15-37).

15.6.34 The occurrence of adverse health effects is not likely to occur in the general public at concentrations below the AEGLs. The AEGLs applicable to this assessment are presented in **Table 15-7**.

15.6.35 It should be noted that there are also AEGLs for 10 minute and 30 minute exposure periods, however, the dispersion model uses hourly meteorological data, therefore the shortest time period that concentrations can be predicted over is one hour. Depending on the pollutant, the 10 minute and 30 minute AEGL has an equivalent or higher threshold concentration than the corresponding 1 hour AEGL, and so comparison of hourly model outputs against 1 hour AEGL values is considered more worst-case than comparison against 10 minute and 30 minute AEGLs.

15.6.36 There is no AEGL for particulates. As such, the Health and Safety Executive (HSE) Workplace Exposure Limit (WEL) has been used for dust which is 4 mg/m^3 for respirable dust. Whilst this is over an 8-hour reference period, it is considered appropriate for use in the assessment in lieu of any other limits (Ref 15-38).

15.6.37 In the absence of an AEGL 1 threshold for CO, CO concentrations have also been compared against the World Health Organisation (WHO) 1-hour CO guideline value of 35,000 $\mu g/m^3$ (Ref 15-39), which is a lower threshold concentration than AEGL 2 and 3. The WHO air quality guidelines are a set of evidence-based recommendations of limit values for specific air pollutants developed to help countries achieve air quality that protects public health.

Assessment of Significance

15.6.38 The significance of BESS fire emissions effects has been determined using professional judgement, taking into account the predicted concentrations in relation to the AEGLs/WEL.

Table 15-7: AEGLs for the Modelled Pollutants

Pollutant	1 Hour (ppm)			4 Hour (ppm)			8 Hour (ppm)		
	Level 1	Level 2	Level 3	Level 1	Level 2	Level 3	Level 1	Level 2	Level 3
CO	NR*	83	330	NR	33	150	NR	27	130
Formaldehyde	0.9	14	56	0.9	14	35	0.9	14	35
HCl	1.8	22	100	1.8	11	26	1.8	11	26
HCN	2	7.1	15	1.3	3.5	8.6	1	2.5	6.6
HF	1	24	44	1	12	22	1	12	22
NH_3	30	160	1,100	30	110	550	30	110	390
NO_2	0.5	12	20	0.5	8.2	14	0.5	6.7	11
Pollutant	**1 Hour (µg/m³)**			**4 Hour (µg/m³)**			**8 Hour (µg/m³)**		
	Level 1	**Level 2**	**Level 3**	**Level 1**	**Level 2**	**Level 3**	**Level 1**	**Level 2**	**Level 3**
CO	NR	95,085	378,049	NR	37,805	171,840	NR	30,931	148,928
Formaldehyde	1105	17,195	68,780	1105	17,195	42,988	1105	17,195	42,988
HCl	2684	32,807	149,121	2684	16,403	38,771	2684	16,403	38,771
HCN	2211	7849	16,583	1437	3869	9507	1106	2764	7296
HF	818	19,642	36,010	818	9821	18,005	818	9821	18,005
NH_3	20,896	111,444	766,176	20,896	76,618	383,088	20,896	76,618	271,644
NO_2	941	22,582	37,636	941	15,431	26,345	941	12,608	20,700

*NR = Not recommended due to insufficient data

15.7 Baseline Conditions

15.7.1 This section describes the existing and anticipated future baseline conditions for the air quality assessment.

Existing Baseline

15.7.2 Wiltshire Council has declared eight AQMAs for exceedances of the annual average NO_2 AQS objective (Ref 15-33). These are:

- AQMA 1 Salisbury City Centre – An area encompassing the city centre bounded by main ring roads to North, East and the River Avon to the East and South;
- AQMA 2 Salisbury London Road – Residential properties in the vicinity of St Mark's roundabout and following London Road as far as the railway tunnel;
- AQMA 3 Salisbury Wilton Road (extended) – Part of Devizes Road and Wilton Road as far as Skew Bridge;
- AQMA 4 Bradford on Avon – Main roads in the centre of the town;
- AQMA 5 Westbury – Main A350 through centre of the town;
- AQMA 6 Marlborough – The whole town as described by town council boundary;
- AQMA 7 Devizes – Main roads through the town; and
- AQMA 8 Calne – Main roads through the town.

15.7.3 The closest AQMA to the Scheme is AQMA 4 Bradford-on-Avon which is located over 8 km southwest of the Scheme and is shown in **ES Volume 2, Figure 15-6: Air Quality Baseline [EN010168/APP/6.2].**

15.7.4 There are a number of air quality sensitive receptors in the vicinity of the Scheme. These include, inter alia, residential properties in Farleaze, Grittleton, Sevington, Chippenham, Corsham, Whitley, Gastard and schools in Shaw, Yatton Keynell and Hullavington. Some of these properties lie within one or more of the assessment Study Areas, as presented in **Figure 15-1: Construction Dust Emissions Study Area, Figure 15-3: Non-Road Mobile Machinery (NRMM) Emissions Study Area** and **Figure 15-5: BESS Fire Emissions Study Area, Receptors and Modelled BESS Locations.**

15.7.5 There are also ecological receptors in the vicinity of the Scheme. These include, inter alia, Surrendell Wood Ancient Woodland, Bincombe Wood Ancient Woodland, Harries Ground Rodbourne Site of Special Scientific Interest (SSSIs)

and North Bincombe Wood Ancient Woodland. Some of these properties lie within one or more of the assessment Study Areas, as presented in **Figure 15-1: Construction Dust Emissions Study Area, Figure 15-3: Non-Road Mobile Machinery (NRMM) Emissions Study Area** and **Figure 15-4: Back-Up Generator Emissions Study Area**.

15.7.6 Further information regarding ecological sites in the vicinity of the Scheme is presented in **ES Volume 1, Chapter 9: Ecology and Biodiversity [EN010168/APP/6.1].**

15.7.7 A review of background pollutant concentrations for the Scheme has been carried out using 2021 based Defra predicted annual average background maps provided in 1 km x 1 km grid squares (Ref 15-31). **Table 15-8** presents the average and highest predicted background NO_2, PM_{10}, $PM_{2.5}$ and NOx concentrations across the Scheme for 2025.

Table 15-8: Defra Annual Average Background Pollutant Concentrations

Pollutant	Average 2025 background map concentration (µg/m^3)	Maximum 2025 background map concentration (µg/m^3)
NO_2	4.5	5.6
PM_{10}	12.0	13.0
$PM_{2.5}$	6.3	6.7
NOx	5.6	7.1

15.7.8 The predicted background concentrations presented in **Table 15-8** are well below the relevant annual average AQS objectives/critical level for each pollutant. The 2025 background data is presented as this is worst-case given that the Defra concentrations predict a year-on-year decrease in background concentrations for all pollutants.

15.7.9 The most recently available ASR from Wiltshire Council is the 2024 Air Quality ASR (Ref 15-33) which details the local authority's monitoring results for 2023. The 2024 ASR shows that there were 64 NO_2 diffusion tube monitoring sites across Wiltshire and three automatic monitoring stations measuring NO_2 and PM_{10}. Monitoring sites in the vicinity of the Scheme are shown in **ES Volume 2, Figure 15-6: Air Quality Baseline [EN010168/APP/6.2].**

15.7.10 The closest monitoring site to the Scheme is diffusion tube ID 35 located on the A350 approximately 0.6 km southeast of the southern boundary of the Scheme. The 2023 annual average NO_2 concentration measured at this site was 22.2 µg/m^3 which is well below the AQS objective of 40 µg/m^3. Only one exceedance of the annual average AQS objective for NO_2 monitored by Wiltshire Council in 2023 (which was a marginal exceedance) was at site 25 located within

Bradford-on-Avon AQMA which is more than 8 km from the Scheme. No exceedances of the NO_2 1-hour AQS Objective of 200 µg/m^3 and no exceedances of particulate matter AQS objectives were monitored by Wiltshire Council over the period 2019 to 2023.

Future Baseline

15.7.11 This section considers those changes to the baseline conditions, as described above, that might occur in the absence of the Scheme and during the time period over which the Scheme would be in place. The future baseline scenarios are set out in **ES Volume 1, Chapter 6: EIA Methodology [EN010168/APP/6.1]**.

15.7.12 In the absence of the Scheme, it is anticipated there would be reductions in pollutant concentrations in the future. Background pollutant concentrations and emissions from modern vehicles (zero emission and Euro 6/VI engine emission standards) are expected to improve air quality over time, as older, more-polluting vehicles are replaced in the vehicle fleet. Decarbonisation of the vehicle fleet in response to Government policy such as the Transport Decarbonisation Plan (Ref 15-40), and the Net Zero Highways Plan (Ref 15-40) are expected to deliver future air quality improvements. Furthermore, Government actions, such as those included in the Clean Air Strategy 2019 (Ref 15-42) and the Air Quality Strategy: Framework for local authority delivery (Ref 15-43), are also expected to lead to improvements in air quality.

15.7.13 These future air quality improvements are expected to lead to lower NO_2, PM_{10} and $PM_{2.5}$ concentrations than reported for the existing baseline by the time construction begins on the Scheme and when the operation and maintenance phase commences.

15.8 Potential Impacts

15.8.1 Embedded mitigation measures being incorporated into the design and construction of the proposed Scheme are set out in Section 15.9 below. Prior to the implementation of any mitigation (embedded or additional), the Scheme has the potential to affect air quality during construction, operation and maintenance, and decommissioning, in the following ways:

- Generation of dust during construction and decommissioning phases;
- Change in pollutant concentrations associated with vehicle emissions during the construction, operation and maintenance, and decommissioning phases;
- Change in pollutant concentrations associated with NRMM (onsite plant) emissions during the construction and decommissioning phases;

- Change in pollutant concentrations associated with back-up generator emissions (if required) during the operation and maintenance phase; and
- Change in pollutant concentrations associated with emissions generated in the event of a BESS fire during the operation and maintenance phase.

15.9 Embedded Mitigation

15.9.1 The Scheme has been designed, as far as practicable, to avoid and reduce impacts and effects on air quality through the process of embedding measures into the design. In addition, how the Scheme is constructed, operated and maintained, and decommissioned would be controlled in order to manage and minimise potential environmental effects (required as a result of legislative requirements and/or standard sectoral practices).

15.9.2 The following embedded mitigation measures have been incorporated into the Scheme design.

Construction

- Commitments made within the **Outline Construction Environmental Management Plan (CEMP) [EN010168/APP/7.8].** The Outline CEMP will be submitted with the DCO application, with the Draft DCO including a requirement that a detailed CEMP be prepared substantially in accordance with the Outline CEMP. Air quality specific measures determined as part of this assessment that have been incorporated into the Outline CEMP include;
  - Mitigation measures as outlined in **Table 14** of **ES Volume 3, Appendix 15.1 Construction Dust Methodology and Assessment [EN010168/APP/6.3].** These include; no bonfires or burning of waste materials, use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site and implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable); and
  - Vehicle emissions control and operational standards for construction plant and vehicles which include; all plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so and avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
- Commitments made within the **Outline Construction Traffic Management Plan (CTMP) [EN010168/APP/7.22]** such as signs to direct construction

vehicles associated with the development will be installed along the construction traffic route and a visual inspection of vehicles will be undertaken before they depart the Site, to ensure that they are not carrying any residual debris onto the highway; and

- Measures included in the Outline Construction Worker Travel Plan (CWTP) which has been prepared as part of the **Outline CTMP [EN010168/APP/7.22]** such as the provision of shuttle buses to transport construction workers to and from the Order Limits and encouraging workers who drive to car share where practicable.

Operation and Maintenance

- Sensitive routeing and siting of infrastructure which have been considered throughout the design process;
- Measures included in the **Outline BSMP [EN010168/APP/7.21].** The Outline BSMP will be submitted with the DCO application, with the Draft DCO including a requirement that a detailed BSSMP be prepared substantially in accordance with the Outline BSMP. The measures specific to air quality are outlined in **ES Volume 3, Appendix 15.2 BESS Fire Emissions Modelling Methodology and Assessment [EN010168/APP/6.3]** and include;
  - Notification of potentially affected residents including advice on the health effects of smoke and ways to reduce exposure (e.g. close windows and stay indoors);
  - Notification of potentially affected members of the public to move to a cleaner air location;
  - Cancellation of outdoor events and potentially moving affected residents to a cleaner air location;
  - Should there be a BESS fire in close proximity to the road, the site operator to determine wind direction and seek to close the road if deemed necessary; and
  - Should there be a BESS fire in close proximity to the rail line, the site operator to determine the wind direction and notify Network Rail if deemed necessary.
- Commitments made within the **Outline Operational Environmental Management Plan (OEMP) [EN010168/APP/7.13].** The Outline OEMP will be submitted with the DCO application, with the **Draft DCO**

[EN010168/APP/3.1] including a requirement that a detailed OEMP be prepared substantially in accordance with the Outline OEMP. Air quality specific measures determined as part of this assessment that have been incorporated into the Outline OEMP are the same as those incorporated into the **Outline CEMP [EN010168/APP/7.12]** outlined above.

Decommissioning

- Commitments made within the **Outline Decommissioning Statement (DS) [EN010168/APP/7.14].** The Outline DS will be submitted with the DCO application, with the Draft DCO including a requirement that a detailed DS be prepared substantially in accordance with the Outline DS. Within the **Outline DS [EN010168/APP/7.14]**, it states that measures proposed for the construction phase in the **Outline CEMP [EN010168/APP/7.12]** will also be adopted for the decommissioning phase. All mitigation measures would be reviewed and updated prior to decommissioning.

15.10 Assessment of Likely Impacts and Effects

15.10.1 This section considers the potential impacts outlined in Section 15.8 and, taking into account the committed mitigation measures as detailed in Section 15.9, assesses the potential for the Scheme to generate effects using the methodology as detailed in Section 15.6.

Construction

Construction Dust

15.10.2 Construction dust generated from trackout (transportation of dust and dirt onto the public road network), earthworks and construction activities have the potential to adversely affect human health when airborne, and the potential to adversely affect people, property and sensitive ecological habitats through deposition and soiling.

15.10.3 The construction dust impact assessment for the Scheme, as outlined in **ES Volume 3, Appendix 15-1: Construction Dust Methodology and Assessment [EN010168/APP/6.3]** has identified high sensitivity human receptors within the Study Area, including residential properties in surrounding villages. A high sensitivity ecological receptor has also been identified (Harries Ground SSSI) within the Study Area.

15.10.4 The outcome of the dust risk assessment has identified that during the construction phase of the Scheme, the potential risk of dust soiling is high for earthworks, construction and trackout. The potential risk of human health

impacts is low for earthworks, construction and trackout. The potential risk of dust impacts on ecological sites is high for earthworks and construction. The assessment has therefore indicated that the maximum risk of dust effects is high, as a worst case.

15.10.5 In accordance with the IAQM construction dust guidance (Ref 15-25), the construction dust risk assessment is used to define appropriate measures relating to aspects such as site management, communication and monitoring to ensure that dust effects are mitigated such that air quality effects are not significant. These measures have been identified in **Table 14** of **ES Volume 3, Appendix 15.1: Construction Dust Methodology and Assessment [EN010168/APP/6.3]** and have been incorporated into the **Outline CEMP [EN010168/APP/7.12]** to be secured by a requirement in the DCO. With the application of these measures, air quality effects of construction dust emissions are considered to be not significant.

Construction Vehicle Emissions

15.10.6 Emissions from construction vehicles have the potential to affect air quality at human and ecological receptors located within 200 m of routes used by these vehicles. The construction programme for the Scheme is anticipated to last 24 months and start in 2027, at the earliest. The daily traffic flows for the worst-case construction year (2028) are presented in **Table 15-9**. The construction vehicle routes are presented in **ES Volume 2, Figure 15-2: Construction Vehicle Emissions Assessment Road Network [EN010168/APP/6.2]**.

Table 15-9: Predicted Daily Construction Traffic Flows for Peak Construction Year

Construction Route	LGV	HGV
Lime Down A, B and C		
M4 J18	218	50
A46	218	50
B4040	218	50
B4039	218	50
Unnamed Road west of Grittleton	218	50
Alderton Road	218	50
Fosse Way	218	50
Unnamed Road between Fosse Way and Sherston	46	16
Lime Down D and E		
M4 J17	240	98

Construction Route	LGV	HGV
A429	240	98
Lime Down D		
Unnamed Road east of Hullavington	120	56
Bradfield Cottages	120	56
Lime Down E		
A429 south of Corston	120	42
Cable Route		
The Street	56	16
Neeld CT	56	16
Unnamed Road	112	32
Unnamed Road	56	16
Cromhall Lane	56	16
Fowlsick Lane	28	8
B4039	28	8
A420	56	16
Sheldon Cor	84	24
Chippenham Lane	56	16
Unnamed Road	28	8
A4 Bath Road	168	48
Unnamed Road	56	16
Unnamed Road	56	16
Corsham Road	28	8
Coppershell	84	24
Silver Street	56	16
B3353 Goodes Hill	84	24
Westlands Lane (W)	56	16
Westlands Lane (E)	28	8
A365 Bath Road	140	40

15.10.7 There are no AQMAs within 200 m of roads affected by construction traffic and, therefore, construction vehicle movements have been compared against the 500 (for LDVs) and 100 (for HDVs) AADT traffic change criteria in EPUK/IAQM guidance (Ref 15-26) to determine if an air quality assessment is required.

15.10.8 The maximum combined 2-way change in LDV flows associated with the construction phase is expected to occur on the M4 at Junction 17 and the A429. The change in construction LDV flows is expected to be well below the 500 AADT change criteria across all roads.

15.10.9 The maximum combined 2-way change in HDV flows associated with the construction phase is expected to occur on the M4 at Junction 17 and the A429, where an increase of 98 vehicles per day is anticipated during construction. The change in construction HDV flows is therefore expected to be below the 100 AADT change criteria across all roads.

15.10.10 Several control measures have been included in the **Outline CEMP [EN010168/APP/7.08]** including:

- Hold regular liaison meetings with other high risk construction sites within 500 m of the Order Limits, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes; and
- Vehicles will be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so. In addition, plant and vehicles will conform to relevant applicable standards for the vehicle type as follows:
  - Euro 4 (Oxides of Nitrogen (NOx)) for petrol cars, vans and minibuses;
  - Euro 6 (NOx and PM) for diesel cars, vans and minibuses; and
  - Euro VI (NOx and PM) for lorries, buses, coaches and Heavy Goods Vehicles (excluding specialist abnormal indivisible loads).

15.10.11 In addition, the following measures have been included in the **Outline CTMP [EN010168/APP/7.22]** including:

- A CWTP will be drafted and implemented, to encourage construction workers to travel to the Site via sustainable travel (such as car sharing or greener modes of travel), where practicable; and
- Signs to direct construction vehicles associated with the Scheme will be installed along the construction traffic route.

15.10.12 As the predicted construction traffic flows would be below the AADT traffic change criteria in the EPUK and IAQM development control guidance (Ref 15-

26), air quality effects of construction vehicle emissions are considered to be not significant.

NRMM Emissions

15.10.13 Temporary construction compounds would be established within the Solar PV Sites (refer to **ES Volume 2, Figure 3-2: Key Construction Phase Features [EN010168/APP/6.2]**). The temporary construction compounds would comprise:

- Temporary portacabins for construction operatives (the dimension of the portacabins would vary and the maximum size for individual units is expected to be 12 m by 3 m with a typical maximum height of 3 m);
- Perimeter security fencing with a typical maximum height of 3 m;
- Parking area for construction and workers vehicles;
- Secure compound for storage;
- Temporary hardstanding;
- Wheel washing facilities;
- Temporary gated compound;
- Storage bins for recyclables and other waste; and
- Lighting (as set out below).

15.10.14 Subject to being granted development consent and following a final investment decision, the earliest construction could start is in 2027. Construction of the Solar PV Sites and Cable Route Corridor is likely start in tandem. The installation of cable within the Cable Route Corridor would require up to approximately 18 months, and the construction of the Solar PV Sites would require an estimated 24 months. The potential construction durations across the different parts of the Scheme are presented in **Table 15-10**.

Table 15-10: Potential Construction Durations Across the Scheme

Aspect	Duration (Months)
Lime Down A	9
Lime Down B	9
Lime Down C	17
Lime Down D	21
Lime Down E	14

BESS	19
Cable Route Corridor	18

15.10.15 **Table 15-11** summarises the plant and machinery that is likely to be required during the construction phase. It should be noted that these would not all be in use for the duration of the construction phase; there would be a variation in construction works activities and locations across the Scheme.

Table 15-11: Plant and Machinery Likely to be Required During the Construction Phase

Plant / Equipment	
Tracked excavator	Cement mixer truck (discharging)
Wheeled loader	Dumper
Wheeled mobile telescopic crane	Wheeled backhoe loader
Dump truck (tipping fill)	Vibratory roller
Telescopic handler	Directional drill (generator)
Articulated dump truck	Water pump
Diesel generator	Drilling Rig
Piling Rig for Solar PV Ground Mounting	Cement mixer truck (discharging)

15.10.16 NRMM could be used throughout the Order Limits. However, the main activities during which NRMM would be used are as follows:

- Construction of BESS Area, Inverters and Transformers;
- Construction of Solar PV Panels which would likely include the use of push press piling rigs and excavators;
- Construction of the 400kV Substation;
- Construction of the 132kV Substations; and
- Trenching and installation of the Grid Connection Cables and Interconnecting Connection Cables, which would include the use of both above-ground means (i.e. excavators and dozers) and Horizontal Directional Drilling (HDD), if required.

15.10.17 Background pollutant concentrations are well below the respective air quality objectives for each pollutant, as presented in **Table 15-8**. Additionally, several control measures relating to NRMM emissions have been included in the **Outline CEMP [EN010168/APP/7.12]** including:

- Ensure all off-road vehicles comply with the requirements of the NRMM standards, where applicable. Use stage 4 NRMM as a minimum and stage 5 where practicable;
- Ensure all vehicles/machinery are switched off when stationary/not in use; and
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.

15.10.18 There are several human and ecological receptors within 200 m of the Order Limits. However, due to the temporary and transient nature of NRMM operation, low background concentrations and NRMM control measures, the use of construction NRMM is unlikely to result in significant effects on local air quality that would result in exceedances of the AQS objectives at receptors within 200 m of the Order Limits.

15.10.19 In addition, LAQM.TG(22) (Ref 15-8) states that "*experience of assessing the exhaust emissions from on-site plant (NRMM) and site traffic suggests that, with suitable controls and site management, they are unlikely to make a significant impact on local air quality*."

15.10.20 Therefore, it is considered that the effect of emissions from construction equipment and plant would be not significant.

Operation and Maintenance

Vehicle Emissions

15.10.21 The operation and maintenance phase is anticipated to commence in 2029 and the design life of the Scheme is anticipated to be 60 years. Activities during this period would comprise day to day activities, such as vegetation management, equipment maintenance and repair, and planned replacement of the Solar PV Panels and BESS containers.

15.10.22 During the day to day operation of the operation and maintenance phase, there are anticipated to be around five visits to each Solar PV Site per month for maintenance purposes, as detailed in **ES Volume 1, Chapter 13 Transport and Access [EN010168/APP/6.1]**. These would typically be made by light van or 4 x 4 type vehicles. Access to the Grid Connection Cables (within the Cable Route Corridor) may be required for maintenance, but this is only likely once or twice a year. As the predicted operational traffic flows would be well below the AADT traffic change criteria in the EPUK and IAQM development control guidance (Ref 15-26), air quality effects of operation and maintenance phase

vehicle emissions during day to day activities are considered to be not significant.

15.10.23 During the operation and maintenance phase, there will be an ongoing replacement of defective Solar PV Panels and breakages. As detailed in **ES Volume 1, Chapter 13 Transport and Access [EN010168/APP/6.1]**, this is expected to be on an ad-hoc basis and will result in a non-material level of HGV trips on a day-to-day basis. The planned replacement of all Solar PV Panels will occur once during the Scheme's lifespan. The Solar PV Panels are anticipated to be replaced on a field-by-field basis. Just the Solar PV Panels will need replacing, with no activity relating to the mounting structures. There will also be no activity in relation to other elements of the Solar PV Sites (other than BESS Containers), including, fencing, access tracks and landscaping. To further reduce the number of HGV trips, and where practicable, vehicles bringing new replacement Solar PV Panels to the Solar PV Sites will also transport out of the replaced Solar PV Panels.

15.10.24 As detailed in **ES Volume 1, Chapter 13 Transport and Access [EN010168/APP/6.1]**, it is expected that BESS Containers could be replaced up to five times during the operation and maintenance phase. The BESS Area is located in Lime Down D, and all vehicles will use the same access as per the construction phase. At each replacement there will be up to 270 BESS Containers that require replacing. There will be no activity relating to the supporting structures. Where practicable, vehicles bringing new replacement BESS Containers to the Order Limits will also transport out of the Order Limits the old replaced BESS Containers.

15.10.25 Therefore, during the planned replacement of BESS Containers, there will be significantly fewer HGV movements on the local highway network compared to the construction phase of the Scheme. As such, operational traffic flows resulting from replacement would be much lower than vehicle flows predicted for the construction phase and therefore be below the AADT traffic change criteria in the EPUK and IAQM development control guidance (Ref 15-26).

15.10.26 Several control measures have been included in the **Outline OEMP [EN010168/APP/7.13]** including:

- Hold regular liaison meetings with other high risk construction sites within 500 m of the Order Limits, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes; and

- Vehicles will be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so. In addition, plant and vehicles will conform to relevant applicable standards for the vehicle type as follows:
  - Euro 4 (Oxides of Nitrogen (NOx)) for petrol cars, vans and minibuses;
  - Euro 6 (NOx and PM) for diesel cars, vans and minibuses; and
  - Euro VI (NOx and PM) for lorries, buses, coaches and Heavy Goods Vehicles (excluding specialist abnormal indivisible loads).

15.10.27 Given predicted flows would be below the AADT traffic change criteria in the EPUK and IAQM development control guidance and the proposed mitigation measures, air quality effects of operation and maintenance phase vehicle emissions during equipment replacement are considered to be not significant.

Dust

15.10.28 During the operation and maintenance phase, other than the planned replacement of the Solar PV Panels and BESS containers, activity on the Solar PV Sites would be restricted principally to vegetation management, equipment maintenance and servicing, ad hoc replacement and renewal of any components that fail or reach the end of their lifespan, periodic fence inspection, vegetation management along accesses, permissive paths and landscape ecological mitigation maintenance, and monitoring to ensure the continued effective operation of the Scheme. The potential for dust emissions during this phase would be minimal. During the replacement activities, there is a larger potential for dust emissions to be generated, and likely effects on air quality associated with this phase are considered to be similar to those risks identified during the construction phase, as a worst case. As such, with the implementation of the relevant mitigation measures as outlined in the **Outline OEMP [EN010168/APP/7.13]**, the effect of dust emissions at the operation and maintenance phase is likely to be not significant.

NRMM Emissions

15.10.29 As stated previously, during the operation and maintenance phase, other than the planned replacement of the Solar PV Panels and BESS containers, activity on the Solar PV Sites would be minimal. As such, the use of NRMM would be minimal during this phase. During the replacement activities, there is a larger potential for NRMM emissions to be generated, and likely effects on air quality

associated with this phase are considered to be similar to those risks identified during the construction phase, as a worst case. On the basis of the planned activities, potential effects on air quality associated with this phase are likely to be less than those risks identified during the construction phase. As such, it is considered that the effect of NRMM emissions associated with the operation and maintenance phase would be not significant with the implementation of the relevant mitigation measures as outlined in the **Outline OEMP [EN010168/APP/7.13].**

Back-Up Generator Emissions

15.10.30 Where connections to the local grid network are not practicable the substations will be equipped with a back-up diesel generator with a power output of up to 500 kVA which will be used in the event of a grid connection failure (power outage). It will also maintain communication and protection systems to ensure a safe restart when power is restored. There are no human receptors within 200 m of any of the substations, as indicated in **ES Volume 2, Figure 15-4: Back-Up Generator Emissions Study Area [EN010168/APP/6.2]**. However, North Bincombe Wood Ancient Woodland and Rodbourne Plantation Local Wildlife Site are located within 200 m of the potential 132 kV Substation located at Lime Down E. Should a back-up generator be required at this location, its use would be limited to grid connection failures which are likely to be rare and routine maintenance.

15.10.31 Previous in-house modelling of generator emissions has been undertaken. A larger generator (1000 kVA diesel generator) was assessed by calculating emission rates derived from the Stage V emissions standards to predict the highest concentrations that could result from the operation of diesel generators during construction of the Proposed Project. Concentrations, including NOx, were predicted in ADMS-Urban (version 5.0) across a grid using emission rates and generator parameters as model inputs.

15.10.32 The modelling assumed continual operation and predicted the maximum annual NOx PC would be 5 µg/m³. The maximum concentration was predicted to occur approximately 40 m from the generator stack. The model was set up based on the assumption that the generator was running on full load for the whole year.

15.10.33 Based on a worst case assumption that the back-up generator runs for 1% of the time and emissions would be similar to the 1000 kVA generator, the maximum annual NOx Process Contribution (PC) is likely to be in the order of 0.05 µg/m³ from the generator, and therefore will be well below 1% of the critical level of 30 µg/m³ for the protection of vegetation and ecosystems at nature conservation sites. Additionally, background pollutant concentrations are well

below the respective air quality objectives and critical level for each pollutant, as presented in **Table 15-8**.

15.10.34 The following measure has been included in the **OEMP [EN010168/APP/7.13]** to ensure emissions from the back-up generators during the operation and maintenance phase are not significant:

- Ensure the generators adhere to Stage V emissions standards and seek alternatives where practicable, such as batteries or alternative fuel; and
- Should a diesel generator be used at the 132kV Substation located at Lime Down E, ensure it is placed as far from North Bincombe Wood Ancient Woodland and Rodbourne Plantation Local Wildlife Site as possible and that testing is kept to a minimum.

15.10.35 Taking into consideration the proposed measure and given the worst case predicted PC would be well below 1% of the NOx critical level and background concentrations are well below the respective air quality objectives and critical level, the effect of back-up generator emissions associated with the operational and maintenance phase is predicted to be not significant.

BESS Fire Emissions

15.10.36 Concentrations of CO, formaldehyde, HCl, HCN, HF, NH_3, NO_2 and particulates as a result of a BESS fire have been modelled using ADMS at worst case sensitive receptor locations, the location of which are presented in **ES Volume 2, Figure 15-5: BESS Fire Emissions Study Area, Receptors and Modelled BESS Locations [EN010168/APP/6.2]**. Worst case BESS fire locations (i.e. locations within the BESS Area closest to sensitive receptors) have been modelled as depicted in **ES Volume 2, Figure 15-5: BESS Fire Emissions Study Area, Receptors and Modelled BESS Locations [EN010168/APP/6.2]**. The maximum modelled one-hour mean concentration over the five modelled meteorological years for the worst case BESS fire location for each sensitive receptor are outlined in **ES Volume 3, Appendix 15-2: BESS Fire Emissions Modelling Methodology and Assessment [EN010168/APP/6.3]** and summarised in **Table 15-12**. It should be noted that the maximum one-hour mean concentrations have been compared against the 4 hour and 8 hour AEGLs, and this is considered to be a worst-case approach as it assumes that the maximum one-hour mean concentration would be sustained for the duration of those longer averaging periods.

Table 15-12: Maximum Modelled One-Hour Mean Concentrations

Receptor	Maximum Hourly Mean Concentration (µg/m^3)								BESS Location where Maximum Concentration was Modelled
	CO	Formaldehyde	HCl	HCN	HF	NH_3	NO_2	PM_{10}	
R1	590.0	16.1	28.8	10.1	79.3	2.8	12.3	42.1	BESS 5
R2	530.8	14.5	25.9	9.1	71.3	2.5	11.1	37.8	BESS 4
R3	500.2	13.6	24.4	8.6	67.2	2.4	10.4	35.7	BESS 2
R4	540.9	14.8	26.4	9.3	72.7	2.6	11.3	38.6	BESS 1
R5	492.5	13.4	24.0	8.5	66.2	2.3	10.3	35.1	BESS 2
R6	585.7	16.0	28.5	10.1	78.7	2.8	12.2	41.8	BESS 6
R7	539.4	14.7	26.3	9.3	72.5	2.5	11.2	38.5	BESS 6
R8	500.6	13.7	24.4	8.6	67.3	2.4	10.4	35.7	BESS 5
R9	486.2	13.3	23.7	8.4	65.3	2.3	10.1	34.7	BESS 6
R10	579.3	15.8	28.2	10.0	77.9	2.7	12.1	41.3	BESS 5
R11	524.1	14.3	25.5	9.0	70.4	2.5	10.9	37.4	BESS 1
R12	615.5	16.8	30.0	10.6	82.7	2.9	12.8	43.9	BESS 5
PROW1	899.6	24.5	43.8	15.5	120.9	4.2	18.7	64.1	BESS 4
PROW2	841.7	23.0	41.0	14.5	113.1	4.0	17.5	60.0	BESS 6

Receptor	Maximum Hourly Mean Concentration (µg/m^3)								BESS Location where Maximum Concentration was Modelled
	CO	Formaldehyde	HCl	HCN	HF	NH_3	NO_2	PM_{10}	
PROW3	883.4	24.1	43.1	15.2	118.7	4.2	18.4	63.0	BESS 4
PROW4	1311.4	35.8	63.9	22.5	176.2	6.2	27.3	93.5	BESS 3
PROW5	1210.6	33.0	59.0	20.8	162.7	5.7	25.2	86.3	BESS 3
PROW6	905.8	24.7	44.1	15.6	121.7	4.3	18.9	64.6	BESS 1
PROW7	631.4	17.2	30.8	10.9	84.9	3.0	13.1	45.0	BESS 5
PROW8	627.7	17.1	30.6	10.8	84.3	3.0	13.1	44.7	BESS 3
Max.	1311.4	35.8	63.9	22.5	176.2	6.2	27.3	93.5	BESS 3
AEGL 1 (1 hour)	35,000*	1105	2684	2211	818	20,896	941	4000**	-
AEGL 1 (4 hour)				1437					-
AEGL 1 (8 hour)				1106					-
Maximum as % AEGL 1 (1 hour)	3.7%*	3.2%	2.4%	1.0%	21.5%	0.0%	2.9%	2.3%**	-
Maximum as % AEGL 1 (4 hour)				1.6%					-
Maximum as % AEGL 1 (8 hour)				2.0%					-

*No AEGL 1 for CO so WHO 1-hour guideline used.

**No AEGL for PM_{10} so 8-hour HSE WEL used.

15.10.37 The modelled concentrations presented in **Table 15-12** are the maximum one-hour concentrations modelled over five years using worst case parameters for the BESS fire. The final column of the table indicates which BESS fire location resulted in the maximum pollutant concentrations at each receptor. The results indicate that the highest concentration was predicted at receptor PROW4 and resulted from a fire at the BESS 3 location. PROW4 is a receptor point corresponding with a public right of way, 356 m to the south west of BESS 3

15.10.38 The results in **Table 15-12** present the concentrations resulting from a BESS fire only. Background concentrations have been added to the concentrations, where available, and the total concentrations are presented in **Table 15-13.**

Table 15-13: Maximum Modelled One-Hour Mean Concentrations including Backgrounds

Receptor	Maximum Hourly Mean Concentration (µg/m^3)								BESS Location where Maximum Concentration was Modelled
	CO	Formaldehyde	HCl	HCN	HF	NH^3	NO_2	PM_{10}	
R1	1000.8	36.1	29.3	10.1	79.7	6.6	20.9	65.7	BESS 5
R2	938.2	34.5	26.4	9.1	71.8	6.1	19.1	59.9	BESS 4
R3	907.6	33.6	24.9	8.6	67.7	6.0	18.5	57.8	BESS 2
R4	948.4	34.8	26.9	9.3	73.2	6.2	19.3	60.7	BESS 1
R5	899.9	33.4	24.6	8.5	66.6	5.9	18.3	57.2	BESS 2
R6	993.5	36.0	29.1	10.1	79.2	6.5	20.4	65.8	BESS 6
R7	950.2	34.7	26.8	9.3	72.9	6.3	19.8	62.1	BESS 6
R8	911.5	33.7	25.0	8.6	67.7	6.1	19.0	59.3	BESS 5
R9	897.0	33.3	24.3	8.4	65.8	6.1	18.7	58.3	BESS 6
R10	990.2	35.8	28.8	10.0	78.3	6.5	20.6	64.9	BESS 5
R11	931.7	34.3	26.1	9.0	70.9	6.0	19.0	61.8	BESS 1
R12	1023.3	36.8	30.6	10.6	83.2	6.6	21.0	68.7	BESS 5
PROW1	1307.3	44.5	44.4	15.5	121.3	8.0	26.9	88.2	BESS 4
PROW2	1249.5	43.0	41.6	14.5	113.6	7.7	25.7	84.1	BESS 6

Receptor	Maximum Hourly Mean Concentration (µg/m³)								BESS Location where Maximum Concentration was Modelled
	CO	Formaldehyde	HCl	HCN	HF	NH^3	NO_2	PM_{10}	
PROW3	1291.1	44.1	43.6	15.2	119.2	7.9	26.6	87.1	BESS 4
PROW4	1719.2	55.8	64.5	22.5	176.7	9.8	35.5	118.3	BESS 3
PROW5	1618.4	53.0	59.6	20.8	163.1	9.4	33.4	111.1	BESS 3
PROW6	1313.4	44.7	44.7	15.6	122.2	7.9	27.0	88.2	BESS 1
PROW7	1042.2	37.2	31.3	10.9	85.3	6.8	21.7	68.6	BESS 5
PROW8	1035.4	37.1	31.2	10.8	84.8	6.6	21.3	69.6	BESS 3
Max.	1719.2	55.8	64.5	22.5	176.7	9.8	35.5	118.8	BESS 3
AEGL 1 (1 hour)	35000*	1105	2684	2211	818	20896	941	4000**	-
AEGL 1 (4 hour)				1437					-
AEGL 1 (8 hour)				1106					-
Maximum as % AEGL 1 (1 hour)	4.9%	5.0%	2.4%	1.0%	21.6%	0.0%	3.8%	3.0%	-
Maximum as % AEGL 1 (4 hour)				1.6%					-
Maximum as % AEGL 1 (8 hour)				2.0%					-

*No AEGL 1 for CO so WHO 1-hour guideline used.

**No AEGL for PM_{10} so 8-hour HSE WEL used.

***Background concentrations not available for HCN

15.10.39 As indicated in **Table 15-13**, the predicted maximum one-hour PM_{10} concentrations were all well below the eight-hour WEL (4000 µg/m^3) and the predicted maximum one-hour CO concentrations were well below the one-hour WHO guideline value (35,000 µg/m^3). All other maximum one-hour concentrations were well below AEGL level 1 (notable discomfort, irritation, or certain asymptomatic non-sensory effects) for 1 hour, 4 hour and 8-hour exposure periods.

15.10.40 As stated previously, there is limited emissions data available for BESS fires. The modelling was based on a test fire which was conducted using LFP lithium iron phosphate battery modules; each module comprised 52 cells whereas a 5 MWh BESS could contain double this number of cells in each battery module (there would be six racks containing 48 modules rather than ten racks containing 80 modules), therefore a sensitivity test has been undertaken. As indicated in **Table 15-13,** the predicted maximum one-hour mean PM_{10} concentrations were all well below the 8 hour WEL (4000 µg/m^3) and the predicted maximum one-hour mean CO concentrations were well below the 1 hour WHO guideline value (35,000 µg/m^3). All other maximum one-hour mean concentrations were well below AEGL level 1 (notable discomfort, irritation, or certain asymptomatic non-sensory effects) for 1 hour, 4 hour and 8 hour exposure periods. Should the emission rates, and therefore the resultant concentrations double, all pollutant concentrations would still be well below the respective safety levels.

15.10.41 Several measures included in the **Outline BSMP [EN010168/APP/7.21]** include measures to limit human exposure to air pollution in the event of a fire such as:

- Notification of potentially affected residents including advice on the health effects of smoke and ways to reduce exposure (e.g. close windows and stay indoors);
- Notification of potentially affected members of the public to move to a cleaner air location;
- Cancellation of outdoor events and potentially moving affected residents to a cleaner air location;
- Should there be a BESS fire in close proximity to the road, the site operator to determine the wind direction and seek to close the road if deemed necessary; and

- Should there be a BESS fire in close proximity to the rail line, the site operator to determine the wind direction and notify Network Rail if deemed necessary.

15.10.42 Taking into account the modelled results, the measures outlined in the **Outline BSMP [EN010168/APP/7.21]**, and given the modelling was undertaken using worst case parameters, the effect of BESS fire emissions during the operation and maintenance phase is predicted to be not significant, in the unlikely event that a BESS fire occurs.

Decommissioning

Dust

15.10.43 The operational life of the Scheme will be no more than 60 years and decommissioning is estimated to be no earlier than 2089.

15.10.44 There is the potential for fugitive dust emissions to be generated during the decommissioning phase. Likely effects on air quality associated with the decommissioning phase are considered to be similar to those risks identified during the construction phase. As such, with the implementation of the relevant mitigation measures outlined within the **Outline DS [EN010168/APP/7.14]**, the effect of dust emissions at the decommissioning phase is likely to be not significant.

Vehicle Emissions

15.10.45 There is the potential for vehicle emissions during the decommissioning phase. Upon decommissioning, there are not expected to be more HGV, LGV or worker arrivals and departures associated with the Scheme than during the construction phase as detailed in **ES Volume 1, Chapter 13 Transport and Access [EN010168/APP/6.1]**. It is therefore reasonable to assume that the effects of vehicle emissions during the decommissioning phase will be the same as, or less than, the construction phase. As such, it is considered that the effect of vehicle emissions associated with the decommissioning phase would be not significant with the implementation of measures outlined within the **Outline DS [EN010168/APP/7.14]**.

15.10.46 As detailed in **ES Volume 1, Chapter 13 Transport and Access [EN010168/APP/6.1]**

NRMM Emissions

15.10.47 There is the potential for NRMM emissions during the decommissioning phase. The likely effects on air quality associated with the

decommissioning phase are considered to be similar to effects identified for the construction phase. As such, it is considered that the effect of NRMM emissions associated with the decommissioning phase would be not significant with the implementation of measures outlined within the **Outline DS [EN010168/APP/7.14]**.

15.11 Additional Mitigation

15.11.1 As no potential significant effects have been identified in this air quality assessment, no additional mitigation is proposed.

15.12 Residual Effects and Conclusions

15.12.1 As there are no likely significant effects identified, and no need for additional mitigation measures, the residual effects are the same as those reported in Section 15.10 above.

15.13 Cumulative Effects Assessment

Inter-Project Cumulative Effects

15.13.1 This section presents an assessment of cumulative effects between the Scheme and other proposed and committed plans and projects.

15.13.2 This assessment has been made with reference to the methodology and guidance set out in **ES Volume 1, Chapter 6: EIA Methodology [EN010168/APP/6.1]** and shortlist of cumulative plans and projects identified in **ES Volume 3, Appendix 21-1: Long List of In-Combination Effects and Cumulative Developments [EN010168/APP/6.3]**.

15.13.3 For individual receptors, this cumulative effect assessment identifies where the assessed effects of the Scheme could interact with effects arising from other plans and/or projects on a spatial and/or temporal basis.

15.13.4 Plans and projects identified from **ES Volume 3, Appendix 21-1: Long List of In-Combination Effects and Cumulative Developments [EN010168/APP/6.3]** which have the potential to result in cumulative effects on air quality are set out in

15.13.5 **Table 15-14**. The remaining schemes are not considered to have cumulative effects on air quality.

Table 15-14:Plans and Projects Relevant to the Air Quality Cumulative Assessment

ID	Planning Reference	Description	Distance from the Scheme	Potential Cumulative Effects
3	PL/2024/00865	Residential development for 45 dwellings.	1.1 km	Vehicles associated with the development may share the same routes as vehicles associated with the Scheme. However, it is unlikely to generate a significant number of vehicle trips on the vehicle routes associated with the Scheme and the air quality effects of the Scheme are predicted to be not significant. As such, significant cumulative effects are unlikely.
5	PL/2021/10696	Proposed erection of a GP surgery, car park and associated works.	1 km	Vehicles associated with the development may share the same routes as vehicles associated with the Scheme. However, it is unlikely to generate a significant number of vehicle trips on the vehicle routes associated with the Scheme and the air quality effects of the Scheme are predicted to be not significant. As such, significant cumulative effects are unlikely.
58	20/10972/OUT	Outline Planning Application for up to 71 Dwellings, Community Car Park, Land Reserved for Future Expansion of Hullavington CofE Primary School	0.1 km	There is the potential for cumulative effects as a result of construction, should the construction phases overlap as the development is within the construction dust and NRMM emissions study areas of the Scheme. However, as the air quality effects of the Scheme are predicted to be not significant, it is not considered likely a significant cumulative effect could result. Furthermore, the development will be bound by its own CEMP to minimise impacts. Vehicle numbers associated with the development have been factored into the future baseline. Therefore, there would be no cumulative effects in terms of vehicle emissions.
96	18/08271/OUT	Outline planning application for up to 44,150 sq.m. (GIA) of development including research and development/office	1 km	Vehicle numbers associated with the development have been factored into the future baseline. Therefore there would be no cumulative effects in terms of vehicle emissions.

ID	Planning Reference	Description	Distance from the Scheme	Potential Cumulative Effects
		floorspace, an energy centre, a logistics/storage building and new access arrangements, comprising a re-aligned section of C1 road and new roundabout.		
123	PL/2024/01560	Laying a section of underground cable linking an approved solar farm to the approved cable route within National Grid's land title.	0 km	There is the potential for cumulative effects as a result of construction, should the construction phases overlap with the Scheme's as the development is within the construction dust and NRMM emissions study areas of the Scheme, and construction vehicles could share the same routes as the Scheme. However, as the air quality effects of the Scheme are predicted to be not significant, it is not considered likely a significant cumulative effect could result. Furthermore, the development will be bound by its own CEMP to minimise impacts.
129	PL/2022/09253	Installation of underground cable.	0 km	There is the potential for cumulative effects as a result of construction, should the construction phases overlap with the Scheme's as the development is within the construction dust and NRMM emissions study areas of the Scheme, and construction vehicles could share the same routes as the Scheme. However, as the air quality effects of the Scheme are predicted to be not significant, it is not considered likely a significant cumulative effect could result. Furthermore, the development will be bound by its own CEMP to minimise impacts.
207	19/10628/FUL	Construction of a 10 MW Battery Storage Facility, the formation of a new access, alteration of an existing building,	0.3 km	The Scheme's BESS area is over 7 km from the development, therefore cumulative effects as a result of BESS fire emissions have not been identified. There is the potential for cumulative effects as a result of construction should the construction phases overlap with the Scheme's as the development's study area for construction dust and NRMM emissions may overlap with the Scheme's, and construction vehicles could share the same routes as

ID	Planning Reference	Description	Distance from the Scheme	Potential Cumulative Effects
		site clearance and other associated works.		the Scheme. However, low level of trips are predicted and it is unlikely to be constructed during the localised cable route corridor construction (each 5.5 km section built out within the 18 month construction period). Furthermore, the development will be bound by its own CEMP to minimise impacts. As the air quality effects of the Scheme are predicted to be not significant, it is not considered likely a significant cumulative effect could result.
208	PL/2021/07610	Development of a 20 MW battery storage facility.	0.3 km	The Scheme's BESS area is over 7 km from the development, therefore cumulative effects as a result of BESS fire emissions have not been identified. There is the potential for cumulative effects as a result of construction should the construction phases overlap with the Scheme's as the development's study area for construction dust and NRMM emissions may overlap with the Scheme's, and construction vehicle emissions could share the same routes as the Scheme. However, low level of trips are predicted and it is unlikely to be constructed during the localised cable route corridor construction (each 5.5 km section built out within the 18 month construction period). Furthermore, the development will be bound by its own CEMP to minimise impacts. As the air quality effects of the Scheme are predicted to be not significant, it is not considered likely a significant cumulative effect could result.
218	20/08618/FUL	Installation of a solar farm comprising ground mounted solar PV panels with a generating capacity of up to 49.9 MW for a temporary period of 40 years and a permanent grid connection hub.	6 km	The development's construction vehicles could share the same routes as the Scheme. However, the development's construction phase is between four to six months, with a peak period of six weeks. Construction of the development should commence within three years of approval, therefore it is unlikely that the peak construction phases of the Scheme and the development would overlap. Air quality effects of the Scheme are predicted to be not significant, it is therefore not considered likely a significant cumulative effect could result.
221	PL/2021/06100	The installation of a solar farm of up to 49.9 MW of generating	1.3 km	The Scheme's BESS area is over 4 km from the development, therefore cumulative effects as a result of BESS fire emissions have not been identified. The development's construction vehicles could share the same routes as the

ID	Planning Reference	Description	Distance from the Scheme	Potential Cumulative Effects
		capacity, comprising the installation of solar photovoltaic panels and associated infrastructure.		Scheme. However, construction of the development has already commenced, therefore it is unlikely that the construction phases of the Scheme and the development would overlap. Air quality effects of the Scheme are predicted to be not significant, it is therefore not considered likely a significant cumulative effect could result.
229	PL/2022/01695	EIA Screening Opinion for a proposed 20 MW Solar Farm development.	1.76 km	The Scheme's BESS area is over 4 km from the development, therefore cumulative effects as a result of BESS fire emissions have not been identified. The development's construction vehicles could share the same routes as the Scheme. Details of the development and phasing are not available. However, baseline air quality concentrations are low and air quality effects of the Scheme are predicted to be not significant, it is therefore not considered likely a significant cumulative effect could result.
231	20/03528/FUL	Installation of a renewable led energy scheme comprising ground mounted photovoltaic solar arrays and battery-based electricity storage containers.	9 km	The development's construction vehicles could share the same routes as the Scheme. Construction of the development should commence within three years of approval, therefore it is unlikely that the peak construction phases of the Scheme and the development would overlap. Air quality effects of the Scheme are predicted to be not significant, it is therefore not considered likely a significant cumulative effect could result.
234	20/05893/SCO	EIA screening/scoping opinion for installation of a solar farm with a 49.9 MW output for a temporary period of 40 years, including battery storage units,	6 km	The development's construction vehicles could share the same routes as the Scheme. Details of the development and phasing are not available. However, baseline air quality concentrations are low and air quality effects of the Scheme are predicted to be not significant, it is therefore not considered likely a significant cumulative effect could result.

ID	Planning Reference	Description	Distance from the Scheme	Potential Cumulative Effects
		associated infrastructure, permanent grid connection hub and environmental enhancements.		
244	20/06840/FUL	Construction of a solar farm and battery storage facility together with all associated works, equipment and necessary infrastructure.	1.1 km	The Scheme's BESS area is over 15 km from the development, therefore cumulative effects as a result of BESS fire emissions have not been identified.
260	CP35 - Methuen Park	Principal Employment Area (WCS) for B1, B2 and B8 Use - up to 26.5ha of new employment (spread across all 3 Principal Employment Areas in Chippenham).	0.4 km	There is the potential for cumulative effects as a result of construction dust should the construction phases overlap with the Scheme's as the development's study area for construction dust may overlap with the Scheme's. However, as the air quality effects of the Scheme are predicted to be not significant and baseline air quality concentrations are low, it is not considered likely a significant cumulative effect could result. Furthermore, the development will be bound by its own CEMP to minimise impacts.
310	PL/2024/10434	EIA Screening Opinion for proposed battery energy storage scheme of up to c. 50 MW.	0.2 km	The Scheme's BESS area is over 15 km from the development, therefore cumulative effects as a result of BESS fire emissions have not been identified. There is the potential for cumulative effects as a result of construction should the construction phases overlap with the Scheme's as the development's study area for construction dust and NRMM emissions may overlap with the Scheme's, and construction vehicles could share the same routes as the Scheme. However, low level of trips are predicted and it is unlikely to be constructed during the localised

ID	Planning Reference	Description	Distance from the Scheme	Potential Cumulative Effects
				cable route corridor construction (each 5.5 km section built out within the 18 month construction period). Furthermore, the development will be bound by its own CEMP to minimise impacts. As the air quality effects of the Scheme are predicted to be not significant, it is not considered likely a significant cumulative effect could result.
328	PL/2024/09725	Outline Planning application (with all matters except access reserved) for up to 22 dwellings, new access off Corsham Road, Public open space, drainage and associated works.	0.1 km	There is the potential for cumulative effects as a result of construction, should the construction phases overlap with the Scheme's as the development is within the construction dust and NRMM emissions study areas of the Scheme, and construction vehicles could share the same routes as the Scheme. Vehicle numbers associated with the development have been factored into the future baseline. Therefore there would be no cumulative effects in terms of vehicle emissions. Air quality effects of the Scheme are predicted to be not significant, it is not considered likely a significant cumulative effect could result. Furthermore, the development will be bound by its own CEMP to minimise impacts.
333	PL/2024/10089	EIA Screening Opinion in relation to the proposed development of “Battery Energy Storage Scheme.	1.3 km	The Scheme's BESS area is over 18 km from the development, therefore cumulative effects as a result of BESS fire emissions have not been identified. Construction vehicles could share the same routes as the Scheme. However, low level of trips are predicted and it is unlikely to be constructed during the localised cable route corridor construction (each 5.5 km section built out within the 18 month construction period). Furthermore, the development will be bound by its own CEMP to minimise impacts. As the air quality effects of the Scheme are predicted to be not significant, it is not considered likely a significant cumulative effect could result.
346	PL/2024/09410	Construction and operation of a solar farm together with all associated works,	0.1 km	The Scheme's BESS area is over 7 km from the development, therefore cumulative effects as a result of BESS fire emissions have not been identified. There is the potential for cumulative effects as a result of construction should the construction phases overlap with the Scheme's as the development's study area

ID	Planning Reference	Description	Distance from the Scheme	Potential Cumulative Effects
		equipment and necessary infrastructure.		for construction dust and NRMM emissions may overlap with the Scheme's, and construction vehicles could share the same routes as the Scheme. However, low level of trips are predicted and it is unlikely to be constructed during the localised cable route corridor construction (each 5.5 km section built out within the 18 month construction period). Furthermore, the development will be bound by its own CEMP to minimise impacts. As the air quality effects of the Scheme are predicted to be not significant, it is not considered likely a significant cumulative effect could result.
243	PL/2023/08481	Development of a solar farm of up to 40 MW ac of export capacity, comprising the installation of solar photovoltaic panels, associated infrastructure and associated works including grid connection.	0.1 km (from Cable Route Corridor)	The Scheme's BESS area is over 6 km from the development, therefore cumulative effects as a result of BESS fire emissions have not been identified. There is the potential for cumulative effects as a result of construction should the construction phases overlap with the Scheme's as the development's study area for construction dust and NRMM emissions may overlap with the Scheme's. However, baseline air quality concentrations are low. Furthermore, the development will be bound by its own CEMP to minimise impacts. As the air quality effects of the Scheme are predicted to be not significant, it is not considered likely a significant cumulative effect could result.
357	PL/2025/03530	Full planning application for the demolition of the remaining horticultural nurseries and erection of employment facilities, warehouse and light industrial facilities and a mobility hub, café, and accommodation.	210 m (interconnecting cable between Lime Down D and E)	There is the potential for cumulative effects as a result of construction should the construction phases overlap with the Scheme's as the development's study area for construction dust and NRMM emissions may overlap with the Scheme's. However, baseline air quality concentrations are low. Furthermore, the development will be bound by its own CEMP to minimise impacts. As the air quality effects of the Scheme are predicted to be not significant, it is not considered likely a significant cumulative effect could result.

ID	Planning Reference	Description	Distance from the Scheme	Potential Cumulative Effects
358	PL/2025/02785	EIA Screening Opinion for proposed Battery Energy Storage System.	1.2 km (cable route corridor)	The Scheme's BESS area is over 6 km from the development, therefore cumulative effects as a result of BESS fire emissions have not been identified.

15.13.6 As indicated in **Table 15-14**, in combination with the Scheme, no plans or projects identified in **ES Volume 3, Appendix 21-1: Long List of In-Combination Effects and Cumulative Developments [EN010168/APP/6.3]** are considered to impact on air quality receptors identified in this chapter. Other plans or projects are therefore not likely to contribute to the effects on air quality receptors identified in this chapter. No significant cumulative effects are identified.

In-Combination Cumulative Effects

15.13.7 In-combination cumulative effects are those where impacts from two or more environmental disciplines are considered likely to result in a new or different likely significant effect, or an effect of greater significance, than any one of the impacts on their own. The identified in-combination effects are set out within **ES Volume 1, Chapter 21 Cumulative and In-Combination Effects [EN010168/APP/6.1]**.

15.13.8 No in-combination effects alongside air quality have been identified as a result of the Scheme.

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