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Preliminary Environmental Information Report Volume I, Chapter 15: Other Matters

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Table of Contents

15	Other Matters	5
15.1	Introduction	5
15.2	Air Quality.....	6
15.3	Glint and Glare	28
15.4	Major Accidents and Disasters.....	36
15.5	Waste.....	41

List of Tables

Table 15-1	Annual Mean NO ₂ Concentrations at IoACC Monitoring Locations	7
Table 15-2	Annual Mean PM ₁₀ and PM _{2.5} Concentrations at IoACC Monitoring Locations	9
Table 15-3	Range of Background Pollutant Concentrations used in the Assessment	10
Table 15-4	Summary of Project Defined Dust Emission Extents	14
Table 15-5	Indicative criteria for requiring an air quality assessment	17
Table 15-6	ADMS-Roads Model Inputs	17
Table 15-7	Air Quality Standards and Objectives (Wales).....	18
Table 15-8	Consultation with IoACC	20
Table 15-9	Determination of Sensitivity in the Area	25
Table 15-10	Summary Dust Risk Table to Define Site Specific Risk	26
Table 15-11	Waste arisings during construction	46

Appendices

Appendix 15-1	Construction Phase Dust Assessment
Appendix 15-2	Traffic Data Utilised in the Air Quality Assessment
Appendix 15-3	Meteorological Data Wind Roses
Appendix 15-4	Construction Road Traffic Emissions Receptor Locations
Appendix 15-5	Model Verification
Appendix 15-6	Baseline Modelled Concentrations at Existing Receptor Locations
Appendix 15-7	Policy and Legislation
Appendix 15-8	Glint and Glare Study

15 Other Matters

15.1 Introduction

- 15.1.1 The purpose of this chapter is to collate the assessment of other environmental topics that do not warrant individual chapters, either due to the brevity of the assessment, or lack of Likely Significant Effects associated with the Project.
- 15.1.2 This chapter assesses the potential likely significant environmental effects of the Project on the following topics:
- Air Quality
 - Glint and Glare
 - Major Accidents and Disasters
 - Waste
- 15.1.3 It was agreed with the Planning Inspectorate (PINS) in the Scoping Opinion (Appendix 2-2) that standalone chapters covering these topics are not required and that they could be covered within this Other Matters Chapter.
- 15.1.4 This chapter is supported by the following technical appendices provided in Volume 2 of this PEIR:
- Appendix 15-1 Construction Phase Dust Assessment (Air Quality);
 - Appendix 15-2 Traffic Data Utilised in the Air Quality Assessment (Air Quality);
 - Appendix 15-3 Meteorological Data Wind Roses (Air Quality);
 - Appendix 15-4 Construction Road Traffic Emissions Receptor Locations (Air Quality);
 - Appendix 15-5 Model Verification (Air Quality);
 - Appendix 15-6 Baseline Modelled Concentrations at Existing Receptor Locations (Air Quality);
 - Appendix 15-7 Policy and Legislation (Air Quality); and
 - Appendix 15-8 Glint and Glare Study (Glint and Glare).

15.2 Air Quality

Introduction

- 15.2.1 This section assesses the potential likely significant environmental effects of the Project of the Project on air quality (including dust) during the Construction and Decommissioning Phases. Where necessary, appropriate Mitigation measures have been recommended to avoid or reduce adverse effects.

Baseline Conditions

Study Area

- 15.2.2 The Study Area for considering baseline conditions for the purpose of the PEIR is influenced by the construction routing indicated in Chapter 9: Transport. Air quality monitoring locations and existing Receptor locations were considered along these routes in the air quality assessment.

Local Air Quality Management

- 15.2.3 There are no existing Air Quality Management Areas (AQMA) declared by IoACC in its administrative area. The closest AQMA is located approximately 87km east in Liverpool and was declared for the potential exceedance of the current annual mean nitrogen dioxide (NO₂) air quality objective of 40µg.m⁻³ (microgram per cubic metre) for Wales.

Local Air Quality Monitoring

Nitrogen Dioxide

- 15.2.4 IoACC undertakes monitoring of NO₂ within its administrative area through a network of passive diffusion tubes. At the time of assessment 2020 and 2021 monitoring data were available and therefore were included in the review. The IAQM released a position statement in August 2021 with regard to 2020 and 2021 monitoring datasets. Due to the influence of the COVID-19 pandemic lockdown restrictions, 2020 and 2021 monitoring data are not considered representative of normal conditions. 2022 data were available and included in the review. As the IAQM has not released a position statement in relation to 2022 monitoring data, 2022 was considered representative of normal conditions.

15.2.5 Annual mean NO₂ monitoring results obtained from the 2023 North Wales Combined Authority Air Quality Annual Status Report between 2015 and 2022 are detailed in Table 15-1 and illustrated in Figure 15-5.1.

Table 15-1 Annual Mean NO₂ Concentrations at IoACC Monitoring Locations

ID	X, Y	Site Monitoring Type	2015	2016	2017	2018	2019	2020	2021	2022
IACC-018	252569, 372057	Kerbside	38.1	39.7	37.8	35.3	32.8	-	-	-
IACC- 046	253265, 372372	Roadside	-	-	44.8	37.9	46.4 *	-	-	-
IACC-049	229513, 379321	Roadside	-	11.3	14.0	13.1	14.5 *	-	-	-
IACC-50	231593, 382274	Roadside	-	15.3	8.3	8.8	8.9*	-	-	-
IACC-051	231555, 387112	Roadside	-	9.9	8.0	7.9	7.7*	-	-	-
IACC-053	235575, 392545	Roadside	-	7.0	8.6	8.7	8.2*	-	-	-
IACC-054	236752, 393090	Roadside	-	10.2	7.6	8.2	9.5*	-	-	-
IACC-055	236908, 393378	Roadside	-	9.0	4.7	5.7	5.1*	-	-	-
IACC-081	224942, 382866	Roadside	-	-	-	19.7 (1)	18.7	14. 8	14.2	14.1
IACC-082	252360, 378402	Roadside	-	-	-	18.6 (1)	18.1	13. 6	16.2	15.4
IACC-083	253057, 372313	Roadside	-	-	-	-	10.8	7.9	8.5	8.0
IACC-084	226681, 381486	Roadside	-	-	-	-	7.8*	6.4	6.3	6.5

N.B. – denotes data not available, (1) denotes data capture less than 75% for the year, * denotes less than 3 months of data capture and therefore concentration presented is the mean for the period of monitoring rather than the whole year.

- 15.2.6 As shown in Table 15-1, the majority of passive diffusion tube locations within the Study Area ceased monitoring in 2019 with only four locations (IACC-081, IACC-082, IACC-083 and IACC-084) monitoring between 2019 and 2022. Annual mean NO₂ concentrations are below the current air quality objective of 40µg.m⁻³ for Wales at all monitoring locations within the Study Area between 2015 and 2022. Diffusion tube IACC-046 monitored concentrations above the current air quality objective in both 2017 and 2019; however, monitoring data at this location in 2019 is not valid as there is less than three months of data capture and therefore could not be annualised in accordance with LAQM.TG22. Prior to 2019, annual mean concentrations at this location had decreased between 2017 and 2018.
- 15.2.7 Concentrations across all monitoring locations were relatively consistent between 2015 and 2022 at the majority of monitoring locations; however, significant decreases were identified between 2016 and 2017 at IACC-50, IACC-54, and IACC-55. Where monitoring data was available beyond 2019, a decrease in emissions between 2019 and 2021 was identified; likely a result of Government imposed lockdown restrictions during the COVID-19 pandemic.
- 15.2.8 Where monitoring data for 2022 were available at IACC-81, IACC-082, IACC-083 and IACC-084, annual mean NO₂ concentrations were well below the current relevant air quality objective.
- 15.2.9 Diffusion tubes IACC-049, IACC-050, IACC-053, IACC-054, IACC-081 and IACC-084 are located to the west of the Project and IACC-082 is located to the east of the Project. However, on further review of the location of IACC-082, this diffusion tube is located adjacent to a petrol station and as such, NO₂ concentrations at this location are likely to be influenced by queuing traffic and idling vehicles and therefore was not considered to be representative of traffic conditions in the Study Area. As such, verification was not undertaken utilising this monitoring location.
- 15.2.10 As detailed in the paragraph above, diffusion tubes considered to be representative of conditions within the Study Area were utilised in the model verification process. Two verification models were produced to consider the difference in availability of monitoring data in 2019 and 2022, the most recent representative monitoring years due to the influence of the COVID-19 pandemic,

and how this may affect model verification. Scenario 1: 2019 Verification Year includes monitoring locations within the Study Area where 2019 monitoring data were available (IACC-049, IACC-050, IACC-053, IACC-054, IACC-081 and IACC-084). Scenario 2: 2022 Verification Year includes monitoring locations within the Study Area where 2022 monitoring data were available (IACC-081 and IACC-084). Further details of the verification process are provided in Appendix 15-5.

Particulate Matter

15.2.11 IoACC monitored particulate matter (PM₁₀ and PM_{2.5}) concentrations within its administrative area using automatic monitoring stations between 2015 and 2021. Monitoring at automatic monitoring stations however ceased in 2022 as no exceedances of the annual mean objectives were recorded during the 10 years of operation and no statutory nuisance of dust was proven to occur. Therefore, PM₁₀ and PM_{2.5} concentrations up to 2021 only are provided in Table 15-2 below.

Table 15-2 Annual Mean PM₁₀ and PM_{2.5} Concentrations at IoACC Monitoring Locations

ID	X, Y	Site Type	Pollutant	2015	2016	2017	2018	2019	2020	2021
CM1	239692, 379774	Rural	PM ₁₀	17.2	18.8	13.2	13.0	17.0	25.9 (1)	16.3
			PM _{2.5}	6.1	8.6	8.4	9.0	9.0	11.7	6.2
CM2	248566, 381325	Rural	PM ₁₀	13.1	8.1	11.0	10.1	14.0	19.0	15.8
			PM _{2.5}	4.0	6.4	6.8	6.0	6.0	8.0	7.0
CM3	234355, 393310	Rural	PM ₁₀	34.8	14.9	13.3	14.1	13.6 (1)	-	-
			PM _{2.5}	7.4	8.5	8.8	8.9	7.1 (1)	-	-
CM4	253457, 374348	Rural	PM ₁₀	-	-	8.1	8.5	13.0	17.0	10.3
			PM _{2.5}	-	5.4	6.7 (1)	6.5	7.0	7.0	5.7

N.B. (1) denotes data capture less than 75% for the year, - denotes data not available.

- 15.2.12 As shown in Table 15-2, PM₁₀ and PM_{2.5} annual mean concentrations were below the current relevant air quality objectives for Wales, of 40µg.m⁻³ for PM₁₀ and 25µg.m⁻³ for PM_{2.5}, between 2015 and 2021.
- 15.2.13 An overall downward trend was evident in PM₁₀ concentrations between 2015 and 2018; however, increases in annual mean PM₁₀ concentrations were identified at all monitoring locations between 2018 and 2020. For PM_{2.5}, annual mean concentrations fluctuated between 2015 and 2019, with concentrations increasing in 2020.
- 15.2.14 None of the PM₁₀ and PM_{2.5} monitoring locations are within the Study Area and therefore were not utilised in either of the verification year scenarios.

Background Concentrations

- 15.2.15 No background air quality monitoring of NO₂, PM₁₀ or PM_{2.5} concentrations is undertaken by IoACC. Background pollutant concentrations were therefore obtained from the latest Defra background maps, which are provided for the UK as a 1km x 1km grid network. The latest maps are based on 2018 monitoring and meteorological data with future years forecast by Defra up to 2030. Background concentrations of NO₂, PM₁₀ and PM_{2.5} were obtained for the grid squares covering the Study Area for the years of assessment (2019, 2022 and 2024). The range of background pollutant concentrations, from the lowest to the highest concentration of all grid squares, for NO₂, PM₁₀ and PM_{2.5} are provided in Table 15-3 below. Full details of the background concentrations utilised in the assessment are provided in Appendix 15-6.

Table 15-3 Range of Background Pollutant Concentrations used in the Assessment

Pollutant	Background Concentration Range (µg.m ⁻³)		
	2019	2022	2024
NO ₂	3.4 – 7.2	3.1 – 6.1	2.9 – 6.1
PM ₁₀	8.4 – 11.3	8.0 – 10.9	7.8 – 10.6
PM _{2.5}	5.4 – 7.3	5.1 – 7.0	4.9 – 7.0

15.2.16 As shown in Table 15-3, NO₂, PM₁₀ and PM_{2.5} background concentrations are below the current relevant air quality objectives for Wales across the Study Area. On review of the Defra background maps, PM₁₀ background concentrations are higher than NO₂ background concentrations due to higher secondary sources of particulate matter.

Current Baseline

15.2.17 Pollutant concentrations were predicted at the identified existing sensitive human Receptor locations, as illustrated in Figures 15.4.1 to 15.4.4 using the dispersion model ADMS-Roads for each of the potential four construction routes as detailed in paragraphs 9.4.11 and 9.4.15 of Chapter 9: Transport. The predicted pollutant concentrations for individual Receptors along each of the potential main construction routes for Scenario 3: 2024 Base Year are provided in Appendix 15-6.

15.2.18 The predicted concentrations of NO₂, PM₁₀ and PM_{2.5} were well below the current relevant annual mean air quality objectives for Wales at all existing Receptor locations considered along each of the four construction routes the current base year of 2024.

15.2.19 Furthermore, predicted annual mean NO₂ concentrations are well below 60µg.m⁻³ and therefore in accordance with LAQM.TG22, it may be assumed that exceedances of the 1-hour mean is unlikely. Similarly, the calculation detailed in Table 15-6 was used to determine potential exceedances of the 24-hour PM₁₀ short term objective; no exceedances were predicted.

Assessment Methodology

Assessment Scope

Scoped In

15.2.20 The following aspects are scoped into the assessment for the Construction and Decommissioning Phases:

- Construction phase road traffic emissions; and
- Fugitive dust emissions during the Construction Phase.

15.2.21 Construction is considered to represent a worst-case scenario so decommissioning is not assessed separately to construction.

Scoped Out

15.2.22 The following aspects are scoped out of the assessment (in agreement with PINS as per the Scoping Opinion provided in Appendix 2-2):

- Non-Road Mobile Machinery (NRMM) emissions during the Construction Phase;
- Shipping emissions associated with construction materials;
- Operation phase road traffic emissions; and
- On-site Operational Phase emissions.

Legislation, Policy and Guidance

15.2.23 The assessment methodology is based on the following relevant legislation, policy and guidance:

- European Parliament, EU 2008 ambient Air Quality Directive (2008)
- HMSO, Air Quality (Wales) Regulations (2000);
- HMSO, Environment Act (1995);
- HMSO, Environment Act (2021);
- HMSO, Air Quality (Wales) (Amendment) Regulations (2002);
- HMSO, Air Quality Standards (Wales) Regulations (2010);
- Department for Environment, Air Quality Strategy (1997);
- Llywodraeth Cynulliad Cymru Welsh Assembly Government, Air Quality Strategy (2007);
- Llywodraeth Cymru Welsh Government, The Clean Air Plan for Wales (2020);
- Department for the Environment, Food and Rural Affairs, The Environment (Miscellaneous Amendments) (EU Exit) Regulations (2020);
- Llywodraeth Cymru Welsh Government, Planning Policy Wales (2021);
- Well-being of Future Generations (Wales) Act (2015); and
- Future Wales: The National Plan (2040).
- Llywodraeth Cymru Welsh Government, Local Air Quality Management, Technical Guidance (2022);
- Institute of Air Quality Management (2024) Assessment of Dust from Demolition and Construction; and

- Institute of Air Quality Management and Environmental Protection UK (2017) Land-Use Planning and Development Control: Planning for Air Quality.

15.2.24 Further details on legislation and policy utilised in the air quality assessment are provided in Appendix 15-7.

Construction Phase Dust Emissions

15.2.25 A qualitative Construction Phase dust assessment was undertaken in accordance with the IAQM guidance to determine the risk of dust emissions associated with earthworks, construction and trackout activities (trackout is defined as dirt, mud or other debris tracked out onto a paved public roadway by a vehicle leaving a construction site.) The full assessment methodology is provided in Appendix 15-1, however a summary of the assessment steps is detailed below:

- Step 1 – screen the requirement for a more detailed assessment. No assessment is required if there are no Receptors within a certain distance of the works.
- Step 2 – assess the risk of dust impacts separately for each of the four activities considered (demolition, earthworks, construction and trackout).
 - Step 2A – determine the potential dust emission magnitude for each of the four activities;
 - Step 2B – determine the sensitivity of the area;
 - Step 2C – determine the risk of dust impacts by combining the findings of steps 2A and 2B.
- Step 3 – determine the site-specific Mitigation for each of the four activities; and
- Step 4 – examine the residual effects and determine significance.

15.2.26 The Study Area utilised for the Construction Phase dust assessment was taken from IAQM guidance, which defines the Study Area as areas within 250m of the PEIR Boundary for human Receptors, within 50m for ecological Receptors or within 50m of roads up to 250m from the site access / egress points for both human and ecological Receptors. Figure 15-1 details the Construction Phase

distance buffers which are measured at 20m, 50m, 100m and 250m from the PEIR boundary.

- 15.2.27 The criteria used to determine extent of impact is set out in Table 15-4. Further details on the dust emission extent criteria thresholds are provided in Appendix 15-1.

Table 15-4 Summary of Project Defined Dust Emission Extents

Activity	Project Defined Dust Emission Extent	IAQM Dust Emission Extent Criteria
Earthworks	Large	Earthworks are required to provide foundations to the proposed infrastructure and to allow for cable routes to be lay. The area where earthworks are required is greater than 110,000m ² .
Construction	Small	Due to the nature of the Project, limited construction is required on site and therefore the total volume of structures is anticipated to be less than 12,000m ³ within the PEIR Boundary. Furthermore, construction material will mostly comprise metal which has low potential for dust release.
Trackout	Large	The number of outward HDV movements are expected to peak at 30 outward movements per day. However, the soil type across the Project is predominantly clay which when dry can become dusty. Furthermore, the unpaved road length within individual Parcels of land is more than 100m.

Baseline Quantitative Air Quality Assessment

- 15.2.28 The assessment was undertaken in accordance with LAQM.TG22 and the IAQM and EPUK guidance.
- 15.2.29 The air dispersion model ADMS-Roads, version 5.1.0.3 was utilised in the assessment to predict concentrations of nitrogen oxides (NOx) and particulate matter (PM₁₀ and PM_{2.5}) at existing Receptors along the construction routes to the

PEIR Boundary. The following two routes have been identified to access the Project from the Strategic Road Network (SRN):

- Route 1: Northern Route: Access to / from the north, via Britannia Bridge - A5025 - B5111 - Unclassified Road towards Penbol - Rhosgoch; and
- Route 2: Southern Route: Access to / from the south, via Britannia Bridge - A55 - Junction 6 of the A5 - Holyhead Road - B4422 - B5109 - Lon Sardis - NCR5.

15.2.30 In addition, the following routes have been identified for Abnormal Indivisible Loads (AIL), both of which originate from Holyhead Port;

- AIL Northern Route: via the A55 – A5153 – A5025 – Pig Y Rhos; and
- AIL Southern Route: via the A55 – Junction 5 – B5112 – B5111.

15.2.31 Further details of the potential construction routes are detailed in **Chapter 9: Transport and Access**. The construction routes modelled are illustrated in Figure 15-2.

Assessment Scenarios and Traffic Data

15.2.32 The following scenarios were considered in the air dispersion modelling:

- Scenario 1: 2019 Verification Year;
- Scenario 2: 2022 Verification Year; and
- Scenario 3: 2024 Base Year.

15.2.33 Two verification years were modelled to consider the different availability of monitoring data in the two most recent years of representative monitoring data. In 2019, monitoring data was available at six passive diffusion tube monitoring locations in the Study Area and in 2022, monitoring data was available at two passive diffusion tube monitoring locations. 2020 and 2021 monitoring data are not considered to be representative of “normal” conditions due to the influence of Government imposed lockdowns during the COVID-19 pandemic and therefore monitoring data during these two years were not considered for use in the verification process.

15.2.34 Furthermore, a separate verification process was undertaken for Route 1 utilising a diffusion tube located along this route. However, following a review of the

location of this diffusion tube, adjacent to a petrol station, where queuing traffic and idling vehicles are likely to influence NO₂ concentrations, a single verification factor was applied across the Study Area. Further details of the verification process are provided in paragraph 15.1.31 below.

- 15.2.35 The baseline air quality assessment Study Area was defined by the road network modelled as part of the transport assessment. The traffic data and road links within the study are presented in Appendix 15-2.
- 15.2.36 Consideration was given to the speeds at which vehicles are likely to travel within the Study Area. Free flowing traffic conditions were modelled at speed limits, taking into account driving conditions in the Study Area. Queuing sections, including road links approaching junctions, roundabouts and traffic lights, were modelled in accordance with Defra guidance.

Screening Criteria

- 15.2.37 The Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) guidance¹ is used to determine the need for quantitative air quality modelling of road traffic emissions.
- 15.2.38 The screening criteria presented below is amended from Table 6.2 of the EPUK / IAQM guidance¹. Only the screening criteria relevant to changes in transport (including both traffic and the transport network) are outlined.

¹ Environmental Protection United Kingdom and Institute of Air Quality Management (2017). Land-Use Planning & Development Control: Planning for Air Quality v1.2. Available at: <https://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf> (Accessed: 13/01/2023).

Table 15-5 Indicative criteria for requiring an air quality assessment

The development will:	Indicative criteria to proceed to a detailed air quality assessment:
Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant Receptors.	A change of LDV flow of: <ul style="list-style-type: none"> • >100 Annual Average Daily Traffic (AADT) within or adjacent to an AQMA; and • >500 AADT elsewhere.
Cause a significant change in HDV flows on local roads with relevant Receptors.	A change of HDV flow of: <ul style="list-style-type: none"> • >25 AADT within or adjacent to an AQMA; and • >100 AADT elsewhere.

ADMS-Roads Model Inputs

15.2.39 The model inputs utilised in the baseline assessment, as agreed with IoACC, are detailed in Table 15-6.

Table 15-6 ADMS-Roads Model Inputs

Parameter	Input
Emission factors	Emission factors were utilised from the Defra Emission Factor Toolkit (EFT), version 12.0 for the years of assessment (2019, 2022 and 2024).
Conversion of oxides of nitrogen	Concentrations of NO _x were predicted using the ADMS-Roads dispersion model. These concentrations were converted to nitrogen dioxide (NO ₂) using the Defra NO _x to NO ₂ calculator, version 8.1.
Meteorological data	Hourly sequential meteorological data for the verification years of assessment (2019 and 2022) were obtained for the Mona recording station. This recording station is considered to be the most representative of the DCO extents due to its location inland. The wind roses for 2019 and 2022 are provided in Appendix 15-3.
Surface roughness and Monin-Obukhov length (MO) – Site	A surface roughness of 0.2m and an MO length of 2m were utilised in the air dispersion model to represent conditions at the PEIR Boundary and within the Study Area. These parameters are representative of low lying agricultural land in a stable rural area and were agreed with IoACC during consultation.

Parameter	Input
Surface roughness and Monin-Obukhov length (MO) – Meteorological Station	A surface roughness of 0.011m and an MO length of 13.4m were utilised in the air dispersion model and obtained from the meteorological data file.
Background pollutant concentrations	Background concentrations of NO ₂ , PM ₁₀ and PM _{2.5} for the Study Area were obtained from the pollutant concentration maps provided by Defra as a 1km x 1km grid of the UK, for the years of assessment (2019, 2022 and 2024).

Existing Sensitive Receptors

15.2.40 Existing Receptor locations were identified within 200m of affected roads for each of the four construction routes detailed in paragraphs 15.2.29 and 15.2.30, with consideration given to those closest to the road and at junctions, where the greatest change in pollutant concentrations is likely to occur. The locations of the Receptor locations considered along the four construction routes are illustrated in Figures 15-4.1 to 15-4.4. Concentrations of NO₂, PM₁₀ and PM_{2.5} were predicted at the identified existing Receptor locations for the assessment scenarios detailed in paragraph 15.2.32. Receptor heights were modelled at 1.5m for residential properties to represent average breathing height at ground floor. For primary schools, Receptors were modelled at a height of 0.8m to represent the lower breathing height of children. Full details of the Receptor locations modelled are provided in Appendix 15-4 and Figures 15-4.1 to 15-4.4.

Assessment Criteria

15.2.41 Predicted pollutant concentrations will be compared to the current relevant air quality objectives for Wales and the significance of the effect determined with regard to IAQM and EPUK guidance. The current relevant air quality standards and objectives are detailed in Table 15-7.

Table 15-7 Air Quality Standards and Objectives (Wales)

Pollutant	Averaging Period	Air Quality Objective (µg.m ⁻³)	Date to Achieve by
NO ₂	Annual Mean	40	31 December 2005
	1-hour mean not to be exceeded more	200	31 December 2005

Pollutant	Averaging Period	Air Quality Objective ($\mu\text{g}\cdot\text{m}^{-3}$)	Date to Achieve by
	than 18 times per year		
PM ₁₀	Annual Mean	40	31 December 2004
	24-hour mean not to be exceeded more than 35 times per year	50	31 December 2004
PM _{2.5}	Annual mean	25	1 January 2015

Consultation

15.2.42 Consultation was undertaken loACC including with the Public Protection department as detailed in Table 15-8 below.

Table 15-8 Consultation with IoACC

Date	Key Contact	Scope	Date of Response	Response
17/10/2023	Principal Pollution Control Officer	The Applicant requested 2022 air quality monitoring data for IoACC's administrative area	18/10/2023	IoACC provided link to the Welsh Government Air Quality website and advised that PM ₁₀ monitors are no longer in operation
14/12/2023	Energy Island Programme Delivery Officer	<p>The Applicant provided an initial scope of works for undertaking the PEIR works including details of:</p> <ul style="list-style-type: none"> • The qualitative Construction Phase fugitive dust emissions assessment; • The qualitative or quantitative Construction Phase road traffic emissions assessment; and • The qualitative Operational Phase road traffic emissions screening assessment. 	-	-
06/02/2024	Energy Island Programme Delivery Officer and Principal Pollution Control Officer	<p>The Applicant provided further details of assessment works including the proposed model inputs for undertaking baseline air quality modelling.</p> <p>It was advised that following a site visit, that only one monitoring location was identified across the Study Area and 2022 air quality monitoring data was also requested as this data was not available on the Welsh Government website link previously provided by IoACC.</p>	08/02/2024	<p>IoACC provided the 2023 North Wales Air Quality Annual Status Report for use in the baseline assessment.</p> <p>The response did not include any comments on the model inputs provided.</p>

Date	Key Contact	Scope	Date of Response	Response
29/02/2024	Principal Pollution Control Officer	A follow up email regarding agreement of the model inputs was sent by the Applicant.	29/02/2024	IoACC agreed with the proposed methodology and model inputs for the project.
06/03/2024	Principal Pollution Control Officer	The proposed methodology regarding the assessment of the Decommissioning Phase of the project was sent by the Applicant. This stated that any impacts associated with decommissioning will be equal to or less than those which will be assessed as part of the Construction Phase as background pollutant concentrations and emission rates are expected to decrease in the future. Furthermore, as the decommissioning will be undertaken in phases, impacts will be short term and will be mitigated against in the same way as construction, through recommendations detailed in the IAQM guidance for input into a CEMP	07/03/2024	IoACC agreed with the approach to decommissioning and confirmed that a separate decommissioning dust assessment is not required.

15.2.43 Following the comments from PINS and consultation with IoACC, this chapter includes the following assessments based on the information available at the time:

- Baseline air quality review of air quality monitoring data available within IoACC's administrative area;
- Baseline quantitative road traffic emissions assessment to predict concentrations of nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}) at existing sensitive Receptor locations within the Study Area in the current year of 2024; and
- Qualitative Construction Phase dust assessment of fugitive dust emissions impacts on sensitive Receptor locations within the vicinity of the PEIR Boundary.

Assumptions and Limitations

15.2.44 The following assumptions and limitations are relevant to the air quality assessment:

- One 24 month construction programme commencing in 2027 is assumed as the worst case scenario as this would generate the highest peak of construction road traffic.
- There are uncertainties associated with both measured and predicted pollutant concentrations. The model (ADMS-Roads) used in this assessment relies on input data, which are also subject to uncertainty. The model itself simplifies complex physical systems into a range of algorithms. In addition, local micro-climatic conditions may affect the concentrations of pollutants that the ADMS-Roads model will not take into account.
- The assessment is based on traffic data provided by Velocity, the Transport Consultants for the Project. As such any assumptions made by the Transport Consultants will also influence the air quality assessment. To reduce the uncertainty associated with predicted concentrations, model verification was carried out following guidance set out in LAQM.TG22. As the models were verified using local monitoring data and adjusted

accordingly, there can be reasonable confidence in the predicted concentrations.

Embedded Mitigation

- 15.2.45 An outline Construction Transport Management Plan (oCTMP) and an outline Construction Environmental Management Plan (oCEMP) will be prepared in support of the DCO Application. The Mitigation measures outlined in Appendix 15-1 will be used to inform the oCTMP and the oCEMP.
- 15.2.46 The oCEMP will set the requirement for a Dust Management Plan (DMP) to be prepared as part of the CEMP (based on the oCEMP) and approved by IoACC prior to the construction of the Project. The DMP would contain dust emission control measures applied during construction. Example measures include, but are not limited to, the following:
- Sheet vehicles carrying dusty substrates;
 - Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on un-surfaced haul roads and work areas;
 - Use enclosed chutes, conveyors and covered skips, where practicable;
 - Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate; and
 - Ensure equipment is readily available onsite to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Potential Effects

Construction Phase Dust Emissions

- 15.2.47 The Construction Phase of the Project will involve a number of activities which have the potential to impact pollutant concentrations relevant to the current air quality objectives for Wales. Therefore there is potential for adverse effects on human and ecological Receptors.
- 15.2.48 Steps 1 to 4 of the IAQM guidance were followed in undertaking the Construction Phase dust assessment. Full details of the assessment undertaken are provided

in Appendix 15-1 with a summary of the findings of Steps 2a, 2b and 2c of the assessment provided below.

Step 2A: Define the Potential Dust Emission Magnitude

- 15.2.49 The dust emission magnitudes for the construction activities were defined using the criteria detailed in the IAQM guidance as detailed in Appendix 15-1 and summarised in Table 15-4.

Step 2B: Define the Sensitivity of the Area

- 15.2.50 The assessment requires the determination of the sensitivity of the area for the purposes of dust soiling, human health and ecological impacts. The sensitivity of the Study Area takes into account the specific Receptors in the Study Area, the proximity and number of those Receptors, the local background concentration of PM₁₀ and site-specific factors. Figure 15-1 was utilised to determine the number of Receptors located within the distance bands provided in the IAQM guidance for determining Receptor sensitivity.
- 15.2.51 According to IAQM guidance, the main potential impacts on ecological Receptors resulting from dust emissions are direct physical effects in the form of “*reduced photosynthesis, respiration and transpiration through smothering*”. Other impacts, such as chemical changes to soil “*are likely to occur only as a result of long-term demolition and construction works*”. Unless species particularly sensitive to these effects are present, ecological Receptors are likely to be less sensitive than human Receptors.
- 15.2.52 There are a number of ecological designations within close proximity to the PEIR Boundary of varying national and local importance, as identified in Chapter 7 Ecology, however there are no ecological designations within the PEIR Boundary itself. The closest ecological Receptor is the Llyn Alaw Site of Special Scientific Interest (SSSI) which is located immediately south of the central Parcel. The Llyn Alaw SSSI is designated for ornithological features and there is potential for dust to impact water features and plant life which may in turn affect the wildfowl within the SSSI. As such, to provide a robust assessment, the highest sensitivity was applied when considering the Llyn Alaw SSSI within the defined construction dust buffers.

15.2.53 A summary of the sensitivity of the area to Construction Phase dust, human health and ecological effects is provided in Table 15-9.

Table 15-9 Determination of Sensitivity in the Area

Potential Impact	Justification	Sensitivity		
		Earthworks	Construction	Track out
Dust Soiling	There are between 10 and 100 highly sensitive residential dwellings within 20m of the PEIR Boundary.	High	High	Low
Human Health	There are between 10 and 100 highly sensitive residential dwellings within 20m of the PEIR boundary. Furthermore, annual mean background PM ₁₀ concentrations are below 24µg/m ⁻³ across the Study Area.	Low	Low	Low
Ecological	The Llyn Alaw SSSI is located within 20m of the PEIR boundary which has robustly been considered to be of high sensitivity.	High	High	Low

Step 2C: Define the Risk of Impacts

15.2.54 The dust emission magnitude determined in Step 2A is then combined with the sensitivity of the area determined in Step 2B to define the risk of dust impacts with no Mitigation applied. The results of this assessment are detailed in Table 15-10.

Table 15-10 Summary Dust Risk Table to Define Site Specific Risk

Activity	Step 2A: Dust Emission Magnitude	Step 2B: Sensitivity of the Area	Step 2C: Risk of Dust Impacts
<i>Dust Soiling Effects on People and Property</i>			
Earthworks	Large	High	High Risk
Construction	Small	High	Low Risk
Trackout	Large	Low	Low Risk
<i>Human Health Impacts</i>			
Earthworks	Large	Low	Low Risk
Construction	Small	Low	Negligible Risk
Trackout	Large	Low	Low Risk
<i>Ecological Effects</i>			
Earthworks	Large	High	High Risk
Construction	Small	High	Low Risk
Trackout	Large	Low	Low Risk

Step 3: Site Specific Mitigation

- 15.2.55 The risk of dust impacts, defined in Step 2C of the assessment, is used to determine the Mitigation measures required to minimise the emission of dust during Construction Phase activities. The IAQM guidance provides details of highly recommended and desirable Mitigation measures which are commensurate with the risk of dust impacts defined in Step 2C for construction, earthworks and trackout activities. Where the Mitigation measures are general in nature, the highest risk category was applied in accordance with the guidance. The highest risk category identified was ‘High Risk’ and the recommended Mitigation taken from the IAQM guidance provided in Appendix 15-1.
- 15.2.56 These Mitigation measures will be implemented and secured through the oCEMP. It was agreed with IoACC during consultation that a separate decommissioning

phase dust assessment is not required as it is not anticipated that effects will be any greater than those likely to occur during the Construction Phase. Mitigation measures detailed in the oCEMP are therefore also applicable during the Decommissioning Phase.

Step 4: Determine Significant Effects

- 15.2.57 In accordance with IAQM guidance, with the implementation of the Mitigation measures detailed in Step 3, the potential effects from the Construction Phase are considered to be 'not significant'.

Construction and Decommissioning Phase Road Traffic Emissions

- 15.2.58 Traffic generated by the Project during the Construction and Decommissioning Phases has the potential to give rise to additional emissions of NO₂, PM₁₀ and PM_{2.5}. The increase in emissions may result in elevated pollutant concentrations at existing sensitive human and ecological Receptor locations, where relevant, within the vicinity of the Study Area.

- 15.2.59 However, the traffic data presented in Appendix 9-5 shows that during the Construction Phase, there are no road links where an increase in LDV and HGV flows would exceed the thresholds of an increase in 500 LDV and/or 100 HGV movements (see Table 15-5). As such, a detailed quantitative assessment is not required as per the EPUK / IAQM screening criteria. As such, no significant adverse effects are anticipated.

- 15.2.60 The effect of the Decommissioning Phase is anticipated to be equivalent to or less than the Construction Phase and therefore it is considered that the Construction Phase presents a robust, worst-case assessment

Additional Mitigation

- 15.2.61 No additional Mitigation beyond the embedded Mitigation set out above is proposed at this stage.

Residual Effects

- 15.2.62 In the absence of any additional Mitigation, the residual effects are anticipated to be the same as the potential effects presented above.

15.3 Glint and Glare

Introduction

15.3.1 Solar panels are designed to absorb as much light as possible and not to reflect it. However, glint and glare can be produced as a reflection of the sun from the surface of the PV panel. Glint and glare can be defined by the following:

- Glint – ‘A momentary flash of bright light’
- Glare – ‘A continuous source of bright light’

15.3.2 Glare is significantly less intense in comparison to glint and is a continuous source of bright light. It is not a direct reflection of the sun, but a reflection of the sky around the sun.

15.3.3 This section of the Other Matters Chapter presents the key findings of the Glint and Glare technical report (see Appendix 15-8) which assesses the potential for Likely Significant Effects on residential, road and aviation Receptors during the Operational Phase of the Project. PRow users will be considered in the ES when the design of the development is further developed.

Assessment Methodology

Assessment Scope

Scoped In

15.3.4 The following Receptors are proposed to be scoped into the Glint and Glare Assessment during the operation phase:

- Residential Receptors within 1km of the Solar PV Site;
- Road Receptors within 1km of the Solar PV Site; and
- Aviation Receptors within 30km of the Solar PV Site.

15.3.5 Due the way in which light is reflected, the glint and glare impacts significantly decrease the further away from the source a Receptor is positioned. It is considered that impacts beyond the distances stated for each Receptor would be not significant and are not considered further. The Glint and Glare technical report (Appendix 15-8) provides a figure showing the location of Receptors.

15.3.6 The potential impacts on PRow users will be considered in the ES.

Scoped Out

15.3.7 The Construction and Decommissioning Phases are scoped out of the assessment as impacts relating to glint and glare will only occur during operation as the impacts relate to the Solar PV Site.

15.3.8 Rail Receptors are scoped out of the assessment as there are no Rail Receptors within 1km of the Solar PV Site.

15.3.9 Bridleway Receptors are scoped out of the assessment as there are no Bridleway Receptors within 1km of the Solar PV Site.

Legislation, Policy and Guidance

15.3.10 The following policy and guidance have been used to form the assessment methodology:

- Future Wales – The National Plan 2040;
- Planning Policy Wales (PPW): Edition 11;
- National Planning Practice Guidance – Renewable and Low Carbon Energy;
- National Policy Statement for Renewable Energy Infrastructure, November 2023;
- Planning Guidance for the Development of Large-Scale Ground Mounted Solar PV Systems;
- Interim Civil Aviation Authority (CAA) guidance – Solar Photovoltaic Systems;
- CAA – CAP738: Safeguarding Aerodromes 3rd Edition;
- US Federal Aviation Authority (FAA) Administration Policy; and
- FAA Policy: Review of Solar Energy Systems Projects on Federally Obligated Airports.

15.3.11 Further detail and explanation of the above legislation, policy and guidance has been provided in the Glint and Glare technical report (see Appendix 15-8).

Study Area

15.3.12 The assessment methodology is a multi-step process to determine which Receptors have the potential to experience the effects of glint and glare.

Receptors are located within a defined Study Area (depending on if ground-based or aviation) of the Solar PV Site. This is defined as:

- Ground-based Receptors, including residential, road, railway and PRow, within 1km of the Solar PV Site; and
- Aviation Receptors within 30km, with detailed assessment for large international aerodromes within 20km, military aerodromes within 10km and 5km for small aerodromes.

- 15.3.13 A 1km Study Area for ground-based Receptors is considered to be appropriate as this contains a variety of ground-based Receptors in all directions from the Solar PV Site.
- 15.3.14 The different Study Areas for aviation Receptors are based on the safeguarding buffer zones for different type of aerodrome. A list of aerodromes within the distances stated has been provided in the Glint and Glare technical report (see Appendix 15-8).
- 15.3.15 Where there are several residential Receptors within close proximity to each other, a representative dwelling or dwellings is/are chosen for full assessment as the impacts will not vary to any significant degree. Where small groups of Receptors have been evident, the Receptors on either end of the group have been assessed in detail.
- 15.3.16 These Study Areas outlined above are based on professional judgement and best practice which are widely accepted across the UK and Ireland. Furthermore, these Study Areas have been accepted during examination at multiple NSIPs (Longfield and Gate Burton). Should there be any significant impacts found at the edge of the Study Areas, then the Study Areas will be extended out further to assess further Receptors.
- 15.3.17 The ZTV has not been used to inform this assessment as it is not appropriate for the identification of Glint and Glare impacts. Glint and Glare impacts disperse faster and become less significant at further distances.

Technical Modelling

- 15.3.18 The model is based on the Sandia Laboratories Solar Glare Hazard Analysis Tool (SGHAT). This tool is specifically mentioned in the FAA guidance as the software that should be used in this type of assessment.
- 15.3.19 The SGHAT model takes into account the following:
- Path of the sun throughout the year
 - Configuration and technology type for the solar panels
 - Observer locations
 - Terrain elevation
- 15.3.20 The output of the modelling will quantify the dates and times that reflections could be experienced at the modelled Receptor locations, along with the solar panel areas that would cause these reflections.
- 15.3.21 The modelling is based on worst-case principles, not considering obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, vegetation, hills, buildings, etc, and assuming clear skies at all times, therefore not accounting for meteorological effects such as cloud cover, fog, or any other weather event which may screen the sun. The model therefore provides a conservative approach to the worst-case scenario for the impacts.

Impact Classification

- 15.3.22 Although there is no specific guidance set out to identify the magnitude of impact from solar reflections, the following criteria is set out for Residential Receptors and is based on best practice:
- High – Solar reflection impacts of over 30 hours per year or over 30 minutes per day;
 - Medium – Solar reflection impacts above 20 hours but below 30 hours per year or above 20 minutes but below 30 minutes per day;
 - Low – Solar reflection impacts up to and including 20 hours per year or up to 20 minutes per day; and

- None – Effects not geometrically possible or no visibility of reflective surfaces likely due to high levels of intervening screening.

15.3.23 The following criteria applies to Road, Rail, and PRow Receptors:

- High - Solar reflections impacts with yellow glare (potential for after-image);
- Low - Solar reflections impacts with only green glare (low potential for after-image); and
- None - Effects not geometrically possible or no visibility of reflective surfaces likely due to high levels of intervening screening or being outside drivers' field of view.

15.3.24 The following criteria applies to Aviation Receptors:

- High - Solar reflections impacts with yellow glare on approach paths / any glare impacts upon Air Traffic Control Towers (ATCT) (potential for after-image);
- Low - Solar reflections impacts with only green glare on approach paths (low potential for after-image); and
- None - Effects not geometrically possible or no visibility of reflective surfaces likely due to high levels of intervening screening (ATCT only) or being outside pilots' field of view.

15.3.25 As already mentioned, the model does not take account of any potential obstructions between the Solar PV Site and the assessed Receptors. Therefore, upon completion of the modelling a visibility assessment is undertaken to determine if each of the Receptors have a clear sight of the Solar PV Site where the glare is occurring from. Following this visibility assessment, the real-world impacts can be determined to decide if any Mitigation is required or if the embedded Mitigation in the local area is sufficient. The visibility assessment will consider the visibility of solar panels that cause glare towards the Receptor. If not visible from the Receptor, then no reflection can occur.

Identification of Mitigation Measures

- 15.3.26 A site visit will be undertaken to better understand the screening afforded by existing vegetation/topography which will inform the need for further screening to mitigate effects where required. The outcome of the site visit will be reported in the ES.
- 15.3.27 Where Receptors are identified in the visibility assessment to experience glare from the solar panels, Mitigation will be secured in the DCO Application. Typically, this is in the form of additional planting or buffers, and is proposed in collaboration with the planting specifications informed by the Landscape and Visual Impact Assessment.

Assumptions and Limitations

- 15.3.28 Below is a list of assumptions and limitations of the model and methods used within this report:
- The model does not consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, vegetation, hills, buildings, etc (that is, it calculates a “bare-earth” scenario);
 - The model does not rigorously represent the detailed geometry of the Project design; detailed features such as gaps between modules, variable height of the PV Array, and support structures may impact actual glare results;
 - Due to variations in atmospheric composition, temperature, pressure and conditions, observed values may vary slightly from calculated positions; and
 - The model assumes clear skies at all times and does not account for meteorological effects such as cloud cover, fog, or any other weather event which may screen the sun.
- 15.3.29 Due to these assumptions and limitations the model overestimates the number of minutes of glint and glare which are possible at each Receptor and presents the worst-case scenario. Where glint and glare are predicted a visibility assessment is carried out to determine a more accurate, real-world prediction of the impacts.

Consultation

- 15.3.30 Consultation on the scope of the glint and glare assessment has been undertaken with PINS through the submission of the EIA Scoping Report and subsequent Scoping Opinion, which confirmed acceptance of the scope of glint and glare (Appendix 2-1 and 2-2).
- 15.3.31 Consultation will be undertaken with the relevant consultees, such as airfields and IoACC on the preliminary results of the Glint and Glare Assessment.

Baseline Conditions

- 15.3.32 There are a number of isolated dwellings and roads in the immediate area of the Solar PV Site. Larger settlements are located further afield from the Solar PV Site.
- 15.3.33 Within the ground-based Study Areas of the Solar PV Site, there are 461 residential Receptors and 328 road Receptors within the 1km Study Area. There are several PRow footpaths within the Solar PV Site and the 1km Study Area. No rail Receptors are located within the 1km Study Area.
- 15.3.34 Six aerodromes are located within the 30km Study Area:
- RAF Mona;
 - Skerries Helipad;
 - RAF Valley;
 - Ysbyty Gwynedd Hospital Helipad;
 - RAF Llandwrog; and
 - Caernarfon.
- 15.3.35 The Glint and Glare technical report (see Appendix 15-8) includes a Receptor map showing the locations of Receptors relative to the Solar PV Site.

Embedded Mitigation

- 15.3.36 Planting/infilling of native hedgerows to a height of at least 3m will be embedded into the design of the Project through the Green Infrastructure Strategy Plan that will be prepared in support of the DCO Application and secured through the DCO; screening in the form of a fence may be required whilst planting matures to mitigate glint and glare impacts. The siting of this will be developed in collaboration with the landscape and ecology disciplines. During operation the

hedgerows will be maintained at the appropriate height in accordance with the oLEMP.

- 15.3.37 The following minimum offsets from glint and glare Receptors are provided for the design of the Project:
- Residential Properties – 15m;
 - Public Right of Ways – 15m; and
 - Roads – 6m.

Preliminary Assessment of Likely Significant Effects

- 15.3.38 The reflective characteristics of modern PV panels are similar to commonly encountered sources within an outdoor environment including still water, greenhouses and windows on buildings.
- 15.3.39 Solar reflections are possible at 346 of the 419 residential Receptors assessed within the 1km Study Area. The initial bald-earth scenario (modelled without obstacles such as trees, vegetation, hills etc.) identified potential impacts as **High** at 170 Receptors, **Medium** at 40 Receptors, **Low** at 136 Receptors and **None** at 73 Receptors. Upon reviewing the actual visibility of the Receptors, impacts remain **High** at 11 Receptors, reduce to **Low** at 53 Receptors and **None** at 355 Receptors. Taking the embedded Mitigation into account, impacts reduce to **Low** at 53 Receptors and **None** at 366 Receptors. Therefore, overall impacts on all residential Receptors are **Low**. As such, no significant adverse effects on residential Receptors are anticipated. These results, including the locations of impacts, are presented in the Glint and Glare technical report (see Appendix 15-8).
- 15.3.40 Public roads within the vicinity of the Solar PV Site are generally well screened with intermittent/partial views into the Solar PV Site, particularly among those roads that border the Solar PV Site. Solar reflections are possible at 284 of the 326 road Receptors assessed within the 1km Study Area. The initial bald-earth scenario identified potential impacts as **High** at 250 Receptors, **Low** at 34 Receptors and **None** at the remaining 42 Receptors. Upon reviewing the actual visibility of the Receptors, impacts remain **High** at 62 Receptors and reduced to **None** at all remaining Receptors. Taking the embedded Mitigation into account,

impacts reduce to **None** at all remaining Receptors. Therefore, overall impacts on residential Receptors are **None**. As such, no significant adverse effects on road Receptors are anticipated.

15.3.41 There are a number of aviation Receptors located within 30km of the Solar PV Site; RAF Mona (4.1km south), RAF Valley (13.1km southwest), Holyhead Helipad (12.8km southwest), The Skerries Helipad (12.1km west), Ysbyty Gwynedd Helipad (15.8km southeast) and Caernarfon (21.5km south).

15.3.42 Only RAF Mona requires a detailed assessment as it is within 10km of the Solar PV Site, as is presented in the Glint and Glare technical report (see Appendix 15-8). Two runway approach paths and one ATCT were assessed in detail at RAF Mona. **No impacts were predicted to occur**. Overall aviation impacts are **None** and therefore no significant adverse effects are anticipated.

Additional Mitigation

15.3.43 No additional Mitigation beyond the embedded Mitigation is proposed at this stage.

Residual Effects

15.3.44 In the absence of any additional Mitigation, the residual effects are the same as the potential effects presented above.

15.4 Major Accidents and Disasters

Introduction

15.4.1 This section of the chapter considers the potential Likely Significant Effects generated by the Project during construction, operation and decommissioning in relation to Major Accidents and Disasters.

Assessment Methodology

Assessment Scope

15.4.2 It has been agreed with the Planning Inspectorate in the Scoping Opinion (see Appendix 2-2) that, due to the limited potential for Likely Significant Effects or due to their assessment in other sections of this PEIR, the following topics do not require consideration within this section:

- Transport Accidents (see Chapter 9: Transport);

- Flooding (see Chapter 13 Water Resources);
- Pipelines and COMAH Sites (scoped out); and
- Electromagnetic Fields (scoped out).

15.4.3 The scope of the Major Accidents and Disasters considered within the ES is limited to potential fire hazards relating to the BESS, as agreed with the Planning Inspectorate through the Scoping Opinion (see Appendix 2-1).

Policy and Legislative Context

15.4.4 The following policy and legislation has informed the assessment:

- National Policy Statement EN-1
- Planning (Hazardous Substances) Regulations 2015
- National Planning Policy Framework, 2023
- The Regulatory Reform (Fire Safety) Order 2005

Overview

15.4.5 In accordance with Schedule 4 of the EIA Regulations, the risks of major accidents and/or disasters that are relevant to the Project have been described in this chapter.

15.4.6 The EIA Regulations do not include the definition of major accidents and/or disasters. For the purposes of the assessment, the following three definitions and accidents and disasters have been used:

- The Control of Major Accidents Hazard (COMAH) Regulations, 2015, defines a major accident as “an occurrence such as a major emission, fire, or explosion resulting from uncontrolled development, leading to serious danger to human health or the environment (whether immediate or delayed) inside or outside the establishment, an involving one or more dangerous substances”.
- The International Federation of Red Cross & Red Crescent Societies Disaster and Crises Management Guidance provides a useful definition for disaster, which is “a sudden calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community’s or

society's ability to cope using its own resources. Though often caused by nature, disasters can have human origins.”

- The Oxford English Dictionary defines an accident as “an unfortunate incident that happens unexpectedly and unintentionally, typically resulting in damage or injury.”

15.4.7 In assessing the impact of on identified sensitive Receptors as a result of fires as a result of the BESS, a qualitative approach has been adopted, based on professional judgement. The likelihood, duration, and severity of the effect, in combination with the sensitivity of the potentially affected Receptors, have been considered.

15.4.8 The assessment methodology follows the Institute of Environmental Management and Assessment (IEMA) guidance document ‘Major Accidents and Disasters in EIA’.

Identifying Risks for Major Accidents and/or Disasters

15.4.9 To help identify major accidents and/or disasters which are relevant to the Project, the following guidance documents have been referred to:

- Cabinet Office National Risk register of Civil Emergencies (Ref 15-28);
and
- HM Government: Emergency Response and Recovery (Ref 15-29).

Significance of Effect

15.4.10 As per the Major Accidents and Disasters Primer published by IEMA in 2022 (Ref 15-31), a significant effect has been defined as an effect which has the potential to cause temporary or permanent destruction of an environmental Receptor which cannot be restored through minor clean-up and restoration. A significant effect would also have long-lasting damage that has a reasonable likelihood of occurring.

Study Area

15.4.11 Two potential locations for the siting of the BESS are proposed, one within the Former Oil Depot in Maen Hir North and one in Maen Hir Central. The Study Area will be developed in consultation with the North Wales Fire and Rescue Service.

based on the detailed siting of the BESS as the design of the Project progresses further.

Assumptions and Limitations

- 15.4.12 There is no discernible difference in fire risk between the two potential construction phasing scenarios.
- 15.4.13 The assessment is high level at this stage and will be further developed in the ES once the final location and design of the BESS is selected and the oBSSMP is prepared.

Baseline Conditions

- 15.4.14 There are two dwellings approximately 150m from the Former Oil Depot (one of the two potential locations where the BESS is proposed). The two residential properties located closest to the area where the second option for the BESS are approximately 75m to the southeast, and 180m to the east respectively.
- 15.4.15 The land surrounding the Solar PV Site and particularly the locations proposed for the BESS are predominantly agricultural with an associated low fire risk.
- 15.4.16 The entire area within which the Solar PV Site is located is served by North Wales Fire and Rescue Service.

Consultation

- 15.4.17 National Grid Electricity Transmission (due to potential close proximity of the proposed NGET Substation), Natural Resources Wales, Isle of Anglesey County Council, the Health and Safety Executive and North Wales Fire and Rescue Service will be consulted on the preparation of the outline Battery Storage Safety Management Plan (oBSSMP).

Embedded Mitigation

Construction and Decommissioning

- 15.4.18 The Construction and Decommissioning Phases would be undertaken in accordance with the relevant fire regulations.

Operation

- 15.4.19 Both of the proposed locations for the BESS have sufficient space and connectivity to the local road network to accommodate two points of access for fire fighting services.
- 15.4.20 The Operational Phase of the Project would involve routine maintenance and servicing of equipment to ensure the safe operation of equipment. Fire equipment and notices will also be provided onsite for the availability of personnel and would be regularly inspected and serviced in accordance with Regulatory Reform (Fire Safety) Order 2005. The oOEMP secures the preparation of an Emergency Response Plan as part of the OEMP.
- 15.4.21 The oBSSMP will be prepared and submitted as part of the DCO Application, which will detail the fire hazard Mitigation relating to the BESS. As a minimum it is anticipated that the BESS supplier and operator will provide a layered protection approach from cell to container to remote monitoring. The envisaged safety control measures and design features under consideration, and those that will be flowed to the prospective suppliers, include:
- Appropriate battery chemistry selection - balancing energy density requirements against available volume and operating parameters.
 - Cell module level control – consideration of the use of battery technology incorporating Current Interrupt Devices (CID) and Positive Thermal Coefficient (PTC) protection, enabling the cell to disconnect from the battery in the event of cell failure.
 - Implementation in the design of an approved Battery Management System (BMS) and a layered protection system in accordance with UL1973 guidelines.
 - Safety certification and qualification to UL9540A or equivalent.
 - The ability for 24/7 Remote Monitoring and Control and automated shut-down.
 - Off-gas detection to allow for preventative interaction.

Preliminary Assessment of Likely Significant Effects

- 15.4.22 The BESS proposed as part of the Project has potential fire risk associated with the battery components likely to be included (such as lithium ion). However, there has been only one documented incident of a BESS fire in the UK, when a battery system containers at a BESS site in Liverpool caught fire in September 2020 (Ref 15-30) The risks associated with the BESS would be appropriately managed and mitigated through the oBSSMP, which will be prepared in line with all relevant legislation and regulations, to ensure that there are no Likely Significant Effects on nearby Receptors.
- 15.4.23 It is considered there is not a reasonable likelihood of long-lasting damage to occur to any of the identified sensitive Receptors as result of fires related to the BESS. The oBSSMP is considered sufficient to avoid the spread of fire from the Solar PV Site to surrounding Receptors. However, there is potential for smoke plumes to disperse to the nearby dwellings. Further assessment informed by modelling (if required) of the area selected for the BESS in the final design of the Project will be undertaken in support of the ES.

Additional Mitigation

- 15.4.24 No additional Mitigation beyond the embedded Mitigation is proposed at this stage.

Residual Effects

- 15.4.25 In absence of any additional Mitigation, the residual effects are the same as the potential effects presented above.

15.5 Waste

Introduction

- 15.5.1 This section assesses the Likely Significant Effects of the Project on waste streams through consumption, generation and disposal during the Construction, Operational and Decommissioning Phases.

Legislation, Policy and Guidance

Legislation

- 15.5.2 The Waste Framework Directive 2008/98/EC provides a framework for the management of waste. The revised Directive (2018) introduced new provisions in order to boost waste prevention and recycling as part of the Waste Hierarchy.
- 15.5.3 The Waste (England and Wales) Regulations 2011 (as amended) transposed the Waste Framework Directive 2008/98/EC into domestic law in England and Wales and require waste prevention programmes and waste management plans that apply the Waste Hierarchy. The main principles of the Waste Hierarchy are summarised in Figure 15-1. The Waste Hierarchy will be adopted throughout the Construction, Operation and Decommissioning Phases of the Project.

Figure 15-1 The Waste Hierarchy



- 15.5.4 The requirement originally under Section 34 of the Environmental Protection Act 1990 and in the Waste (England and Wales) Regulations 2011 (Amended 2014) places a duty on producers and holders of waste to:
- a. Prevent illegal disposal, treatment or storage of waste;
 - a. Handle their waste safely;
 - b. Know whether the waste is hazardous or non-hazardous;
 - c. Store waste securely in a manner that prevents release of the waste;
 - d. Provide an accurate written description of the waste in order to facilitate the compliance of others with the Duty and avoidance of the offences under Section

33 of the Environmental Protection Act 1990: via a compulsory system of Controlled Waste Transfer Notes (WTNs) which controls the transfer of waste between parties; and

e. Ensure anyone dealing with their waste has the necessary authorisation.

15.5.5 The Hazardous Waste Regulations (England and Wales) 2005 (amended in 2016) places a requirement on the producer of the waste to:

a. Classify the waste;

b. Separate hazardous waste from other general waste streams;

c. Use authorised businesses to collect, recycle or dispose of your waste; and

d. Complete relevant hazardous waste consignment note.

15.5.6 Under the Control of Pollution Act 1974 (as amended), it is a criminal offence for anyone not registered as a carrier, to transport Controlled Waste.

National Policy

15.5.7 Paragraph 5.15.7 of the National Policy Statements (EN-1) states: *“Where possible, applicants are encouraged to source materials from recycled or reused sources and use low carbon materials, sustainable sources and local suppliers. Construction best practices should be used to ensure that material is reused or recycled onsite where possible”*. This is considered in the ‘*Embedded Mitigation*’ section and will be further addressed in the oCRMP submitted with the DCO Application. Details of waste management will also provided in the oCEMP.

15.5.8 From January 2014, anyone undertaking the following activities as part of their business must register as a waste carrier, broker or dealer to:

a. Transport their own waste;

b. Transport or dispose of waste for someone else;

c. Buy or sell waste; or

d. Act as a waste broker (arrange for someone to handle other people’s waste).

Local Policy

- 15.5.9 The Anglesey and Gwynedd Joint Local Development Plan 2011-2026 (July 2017) and the Isle of Anglesey Resources and Recycling Management Plan 2023-2028 (draft recommended for adoption) set out the key principles to guide the future form of waste management development in the County. They also set out the local and strategic policies, within the National Waste Strategy Towards Zero Waste – One Wales: One Planet overarching framework, to ensure waste management and minerals supply are appropriately managed.

Assumptions and Limitations

- 15.5.10 The assessment has assumed that the types of waste produced by the Project during the Construction, Operation and Decommissioning Phases are as detailed in this chapter. The management plans to be finalised and implemented post-consent of the DCO to manage waste during all phases of the Project will include measures sufficient to appropriately manage all waste residues and will be adequately implemented and carried out by competent and appropriately trained persons, as relevant.
- 15.5.11 It has been assumed that there will be one 24 month construction programme commencing in 2027 as the worst case scenario as this would generate the highest volume of waste within the construction programme.

Baseline

- 15.5.12 In 2010 the Welsh Government set reduction and recycling targets for industrial and commercial. By 2024/25 the target is for 70% of commercial and industrial waste to be recycled. The influence that the Welsh Government has over commercial and industrial waste is much less than for local authority collected waste. The 2016 Waste Planning Monitoring Report: North Wales assessed that landfill projections significantly overestimated the rate at which landfill void in the region would be used up, concluding that there was no further need for landfill capacity in the North Wales region.

Embedded Mitigation

- 15.5.13 The nature of the waste to be produced during construction, operation and decommissioning will mean it will be managed by appropriately permitted carriers

and facilities in line with the appropriate environmental permits and requirements. The Applicant is committed to recycling all PV panels during all phases of development and intends to use PV recycling facilities that are approved by the Solar Energy Industries Association (SEIA). The waste carriers and (as necessary) landfill sites used will be determined by the contractor prior to construction and decommissioning, in accordance with the commitments made by the Applicant, which will be detailed in the outline Construction Environmental Management Plan (oCEMP), outline Operational Environmental Management Plan (oOEMP), and outline Decommissioning Environmental Management Plan (oDEMP).

- 15.5.14 Once appointed, details of the waste carriers and contractors for the Project will be included in the outline Construction Resource Management Plan (oCRMP) including copies of appropriate licences, submitted with the DCO Application. Waste carrier licences will be reviewed prior to works commencing. The final CRMP will be prepared post-DCO consent and submitted to the Local Planning Authority for approval prior to the start of construction.
- 15.5.15 A CRMP and Decommissioning Resource Management Plan (DRMP) (as secured by the oCEMP and oDEMP) will be prepared for the Construction and Decommissioning Phases. These include measures to control and manage waste onsite.
- 15.5.16 All waste transported off-site will be delivered to the appropriately licenced receivers of such materials. Operators receiving any waste materials resulting from the Project will be subject to their own consenting procedures.
- 15.5.17 Prior to construction, opportunities to minimise waste produced through the Construction Phase as far as practicable will be explored. Possibilities to re-use or recycle materials will be explored before resorting to landfill options.
- 15.5.18 Solid waste materials generated during construction will be segregated and stored onsite in appropriately sized containers prior to transport to an approved, licensed third party recycling and landfill facilities. The HGV movements associated with the removal of waste from the PEIR Boundary have been considered in **Chapter 9: Transport and Access** of the PEIR.

- 15.5.19 Re-usable waste includes soil excavated for trenches, roads, Construction Compounds and foundations. These will be re-used on-site where practicable. Toxic and/or hazardous waste must be treated by an authorised operator. Transportation of hazardous waste will also require an authorised carrier. Materials are to be dealt with in accordance with the aforementioned environmental management plans.
- 15.5.20 During decommissioning all PV Arrays including Modules, Mounting Structures, Inverters and Transformers, the BESS and Project Substation would be removed. All infrastructure to be removed will be recycled in accordance with good practice following the waste hierarchy, with materials being reused or recycled whenever practicable. All waste will be disposed of in accordance with the legislation at the time of decommissioning.
- 15.5.21 The underground cabling within the Cable Route Corridor is anticipated to be decommissioned in situ. The Applicant will submit an Outline Decommissioning Environmental Management Plan (oDEMP) with the DCO Application setting out measures to be undertaken during the Decommissioning Phase. The final DEMP will be prepared post-DCO consent and submitted to the Local Planning Authority for approval. The Applicant will be legally bound to delivery commitments in this plan as well as other control plans.
- 15.5.22 Recycling of and management of waste during the Decommissioning Phase will be dealt with as part of the DRMP.

Potential Effects

Construction Phase

- 15.5.23 Given the nature of the Project, as a Solar PV development with very little residual waste associated with routine operations, significant quantities of waste are not anticipated. The types of waste streams and vehicles associated with the removal of waste material during construction is summarised in Table 15-11.

Table 15-11 Waste arisings during construction

Waste	Destination
Metals (aluminium, iron and steel)	Recycling or recovery of metals and metal components

Waste	Destination
Mixed construction / demolition wastes that do not contain hazardous substances	Recycling plant / Landfill for Construction and Decommissioning Waste
Cables that do not contain hydrocarbons, coal tar or other hazardous substances	Recycling plant
Plastic	Recycling plant
Paper and cardboard containers	Recycling plant
Wood	Recycling plant
Absorbents, cleaning cloths	Authorised recycling plant or authorised landfill for hazardous waste
Aerosol sprays	Authorised recycling plant or authorised landfill for hazardous waste
Land and stones containing hazardous substances	Authorised recycling plant or authorised landfill for hazardous waste
Empty containers of contaminated metal or plastics	Authorised recycling plant or authorised landfill for hazardous waste
Used oils	Authorised recycling plant or authorised landfill for hazardous waste
Oil filters	Authorised recycling plant or authorised landfill for hazardous waste

15.5.24 The anticipated volumes of waste generated during the Construction Phase of the Project will be set out in the ES, once the design of the Project is fully developed. With embedded Mitigation in place and the appropriate control measures followed, no significant effects associated with this waste are anticipated, but this will be fully assessed once waste quantities are known in the ES.

Operation

15.5.25 During the Operational Phase of the Project there will be between 10-12 permanent staff for routine inspection and maintenance activities. Waste arisings from routine inspection and maintenance activities are expected to be minimal, but will be quantified in the ES, and would include:

- a. Welfare facility waste;
- b. Equipment needing replacing;
- c. Waste metals; and
- d. General waste (paper, cardboard, wood, etc.).

15.5.26 During the Operational Phase of the Project, waste arisings are expected to be minimal and, as they would be considered to be commercial waste, this will be managed by appropriately permitted carriers and facilities in line with the appropriate environmental permits and requirements. As such, no significant adverse effects are anticipated.

15.5.27 During the Operational Phase of the Project, various solar infrastructure and BESS components may require replacement based on their design life. For the purposes of assessing operation, the anticipated lifespan of key project components has been used, as presented in Table 5-1 of **Chapter 5: Project Description**, in which the lifespan of key components ranges from 15-40 years and will therefore require replacement during the Operational Phase.

15.5.28 It is expected that during the Operational Phase of the Project, onsite activities would include routine servicing, maintenance and replacement of solar equipment and BESS components as and when required, as well as management of vegetation. Any solar equipment and BESS components that require to be replaced during the operational period will be disposed of following the waste hierarchy, with materials being reused or recycled wherever possible. Any electrical waste will be disposed in accordance with the Waste from Electrical and Electronic Equipment (WEEE) regulations, minimising the environmental impact of the replacement of any elements of the Project. Quantities of waste arisings from solar equipment and BESS component replacement will be detailed in the ES, and fully assessed to determine the significance of effect.

Decommissioning

15.5.29 All the solar infrastructure including PV Modules, Mounting Structures, Inverters, Transformers, Switchgears, fencing, BESS, and Ancillary Infrastructure and the Project Substation would be removed and recycled or disposed of in accordance

with good practice following the waste hierarchy, with materials being reused or recycled wherever possible. All waste will be disposed of in accordance with the legislation at the time of decommissioning.

- 15.5.30 With the embedded Mitigation in place, the effects relating to waste generated during decommissioning are set out within the oDEMP and are anticipated to be not significant but will be fully assessed in the ES once quantities of waste are known.

References

- Ref 15-1 Institute of Air Quality Management (2021) Position Statement: Dealing with Uncertainty in Vehicle NOx Emissions within Air Quality Assessments, Version 1.1
- Ref 15-2 Llywodraeth Cynulliad Cymru Welsh Government (2022) Local Air Quality Management Technical Guidance (LAQM.TG22)
- Ref 15-3 Institute of Air Quality Management (2024) Assessment of dust from demolition and construction
- Ref 15-4 Institute of Air Quality Management and Environmental Protection UK (2017) Land-Use Planning and Development Control: Planning for Air Quality
- Ref 15-5 Institute of Air Quality Management (2020) A guide to the assessment of air quality impacts on designated nature conservation sites
- Ref 15-6 National Planning Practice Guidance – Renewable and Low Carbon Energy
- Ref 15-7 Interim Civil Aviation Authority (CAA) guidance – Solar Photovoltaic Systems
- Ref 15-8 CAA – CAP738: Safeguarding Aerodromes 3rd Edition
- Ref 15-9 US Federal Aviation Authority (FAA) Administration Policy
- Ref 15-10 FAA Policy: Review of Solar Energy Systems Projects on Federally Obligated Airports
- Ref 15-11 Overview of Rail Safety and Standards Board Guidance (RSSB)
- Ref 15-12 BRE (2014). Planning guidance for the development of large-scale ground mounted solar PV systems
- Ref 15-13 The Control of Major Accidents Hazard (COMAH) Regulations, 2015
- Ref 15-14 Cabinet Office National Risk register of Civil Emergencies
- Ref 15-15 HM Government: Emergency Response and Recovery

- Ref 15-16 Department for Environment, Food and Rural Affairs (Defra), Welsh Government, Environment Agency and Natural Resource Wales (2021). Legal Definition of Waste.
- Ref 15-17 European Parliament (2008). Waste Framework Directive 2008/98/EC
- Ref 15-18 European Parliament (2018). Revised Waste Framework Directive 2008/98/EC
- Ref 15-19 UK Government (2011). The Waste (England and Wales) Regulations 2011 (as amended).
- Ref 15-20 UK Government (1990). Environmental Protection Act 1990.
- Ref 15-21 UK Government (2016). The Hazardous Waste Regulations (England and Wales) 2005 (amended in 2016).
- Ref 15-22 UK Government (1974). Under the Control of Pollution Act 1974 (as amended).
- Ref 15-23 UK Government (2014). The Waste (England and Wales) (Amendment) Regulations 2014.
- Ref 15-24 Isle of Anglesey County Council (2017) Anglesey and Gwynedd Joint Local Development Plan 2011-2026
- Ref 15-25 Isle of Anglesey County Council (2023) The Isle of Anglesey Resources and Recycling Strategic Plan 2023-2028
- Ref 15-26 Welsh Assembly Government (2010) Towards Zero Waste – Once Wales: One Planet; The Overarching Waste Strategy Document for Wales
- Ref 15-27 Flintshire County Council (2016) Interim Progress Report: Waste Planning Monitoring North Wales
- Ref 15-28 Cabinet Office (2017) National Risk Register of Civil Emergencies
- Ref 15-29 HM Government (2013) Emergency Response and Recovery: Non statutory guidance accompanying the Civil Contingencies Act 2004
- Ref 15-30 House of Commons Library (2024) Research Briefing: Battery energy storage systems (BESS)
- Ref 15-31 IEMA (2020) Major Accidents and Disasters in EIA: A Primer

