

IP5 BUILDING, NEWPORT AIR QUALITY ASSESSMENT

MAY 2026

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Contact Details

Contact	Address	Email	Telephone
Dr Austin Cogan Cogan Environmental Consulting Limited	Orchard House, Knapp Road, Thornbury, South Gloucestershire, United Kingdom, BS35 2HQ	austin@cogan-ec.com	07881824629

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Executive Summary

The air quality impacts of the proposed development at the IP5 Building in Newport have been assessed.

The construction works have limited potential to create dust. However, following good practice, a package of mitigation measures will be applied to minimise dust emissions.

Consideration has been given to the potential air quality impacts of the Proposed Development upon the local area, during both the construction and operational phases (including potential emissions from generators). All impacts have been determined to be insignificant following relevant guidance. The effects will therefore be ‘not significant’.

Cumulative impacts with other local developments have also been considered. It has been determined that the cumulative impacts will be ‘not significant’. To help minimise potential risks, NWSSP is willing to collaborate with other generator users in the immediate area to seek to co-ordinate test run times.

The design of the proposed development includes a number of features to help minimise air pollution, including limited vehicle trips, good initial dispersion conditions, being situated away from sensitive locations of exposure, and inclusion of biodiversity enhancements.

Overall, the air quality effects of the proposed development are judged to be ‘not significant’. It will be compliant with policies, strategies and legislation, and a suitable development for the application site in terms of air quality.

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1 Introduction

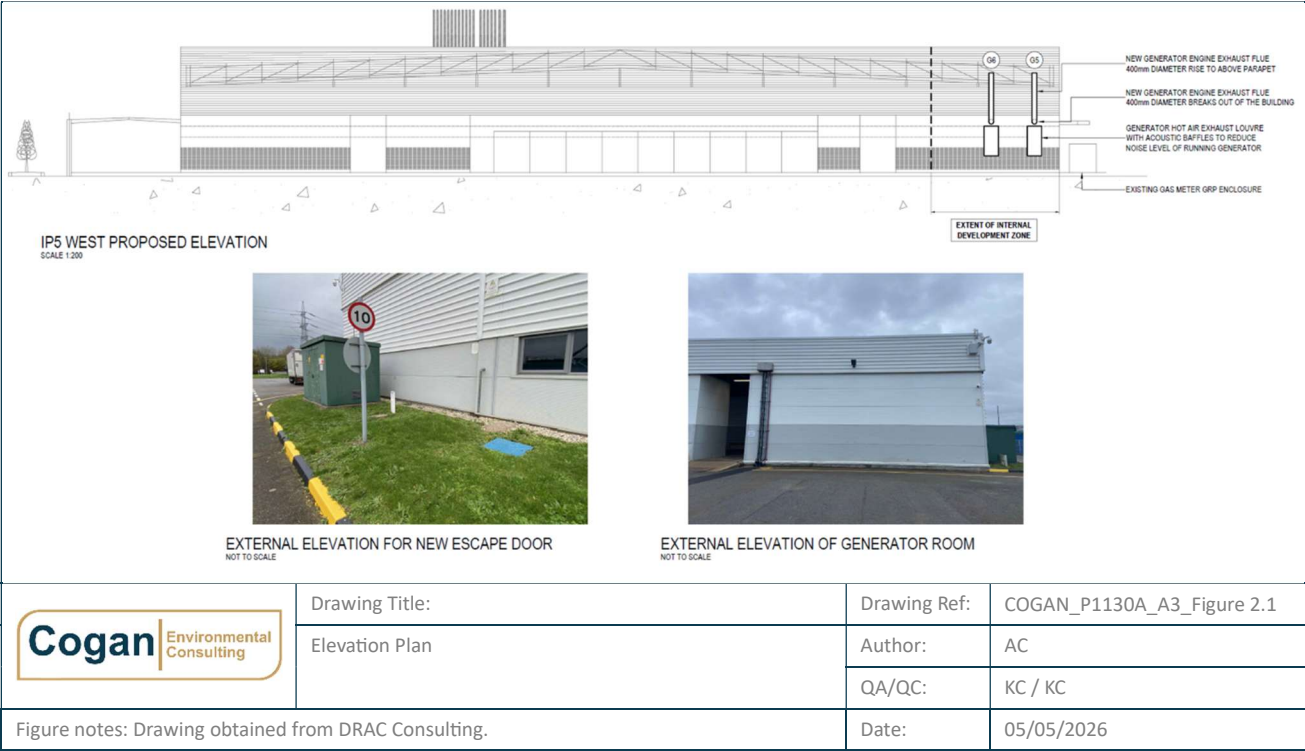
- 1.1 Cogan Environmental Consulting Limited has been commissioned to produce an air quality assessment for the planning application at IP5, Celtic Way, Newport, NP10 8DE (herein called the ‘Proposed Development’). The Proposed Development comprises the installation of external building flues and associated works.

2 Application

Description

- 2.1 Consent was granted in October 2023 and November 2024 to change the use of part of the IP5 building from B8 use to B1 laboratory testing with external structures (application references 22/0456 and 24/0611).
- 2.2 The proposal involves installing two internal backup generators within the industrial unit to provide power supply to the laboratory unit. This department will prepare and supply of critical patient-centred medicines to local hospitals, including the preparation of injectable systemic anti-cancer therapy, preparation of parenteral (intravenous) nutrition, and radio-pharmaceuticals used in diagnosis and treatment of cancers. The generators will ensure the stored medication can be produced and maintained at their required temperature in the uncommon event of a power outage. This is a highly significant installation as any interruption to the unit could affect production, samples and increase downtime for patients. This installation will mitigate the risk of any disruption and ensure laboratory operations remain resilient in the face of unexpected power failures.
- 2.3 The proposal intends to install the internal generators towards the south-western part of the IP-5 building, adjoining the existing loading bay area to the left. The required works include the following:
- Install 2 generator hot air exhaust louvres, which include acoustic baffles to reduce the noise levels of the running generator; and
 - New generator engine exhaust flues (400mm in diameter) which rise above the parapet, with the other end breaking out of the building.
- 2.4 The Proposed Development elevation plan is shown in Figure 2.1.

Figure 2.1: Elevation Plan



Location

- 2.5 The application site is located within Imperial Park which comprises offices, modern production units, large manufacturing and warehousing operations. The site is comprised of unit IP5 which includes a large warehouse style building with parking located to the east. The site sits approximately 4.9 km to the southwest of Newport City Centre and 12 km to the northeast of Cardiff City Centre. Imperial Park is closely located to the M4 and is approximately 1.6 km to the southwest of junction 28.
- 2.6 The site includes a car parking area to the east of the building alongside delivery space located to the west. The surrounding units are all industrial/commercial in nature, with a number of different occupiers operating from the remaining units. The site is accessed via Celtic Way for both vehicles and pedestrians. From Celtic Way access onto an internal highway is achieved that runs to the area of parking alongside to loading/unloading areas.
- 2.7 The location of the application site is shown in Figure 2.2.

Figure 2.2: Site Location Plan

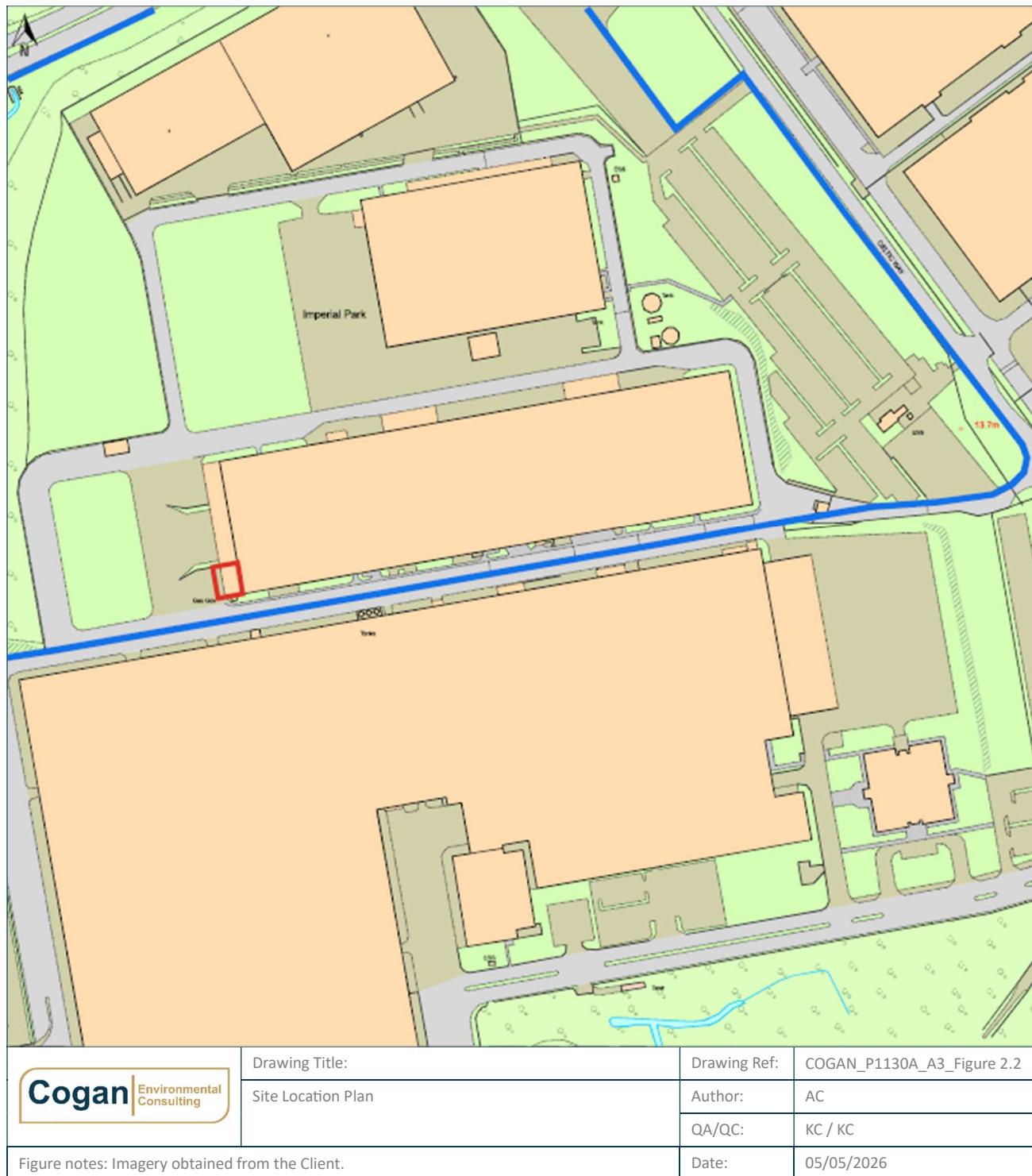


Table 3.1: Key Relevant Legislation

Scale	Legislation
National	- The Environment (Air Quality and Soundscapes) (Wales) Act 2024 - Environment Act 2021 - Air Quality Standards Regulations 2010 - The Environment (miscellaneous Amendments) (EU Exist) Regulations 2020 - Environment (Wales) Act 2016 - Planning (Wales) Act 2015 - Well-being of Future Generations (Wales) Act 2015 - Air Quality (Wales) Regulations 2000 - Air Quality (Wales) (Amendment) Regulations 2002 - The Environment Act 1995 - Environmental Protection Act 1990 - The Town and Country Planning Act 1990

Table 3.2: Key Relevant Policies and Strategies

Scale	Policy/Strategy
National	- Planning Policy Wales – Edition 12 - TAN 11: Air Quality, Noise and Soundscape: draft - Future Wales: The National Plan 2040 - Clean Air Plan for Wales: Healthy Air, Healthy Wales - Prosperity for all: the national strategy 2017 - Clean Air Strategy 2019 - A Green future: our 25-year plan to improve the environment 2018 - Clean Growth Strategy 2018 - Road to Zero 2018 - Transport Decarbonisation Plan 2021 - The Ten Point Plan for a Green Industrial Revolution 2020
Regional	- Future Wales: The National Plan 2040 (The South East) - Air Quality in Wales 2024/2025
Local	- Newport Local Development Plan 2011-26 - Development Management Air Quality Supplementary Planning Guidance - Air Quality Action Plan 2024-2029 - Newport Local Development Plan Draft vision, Issues and Objectives

Table 3.3: Key Relevant Guidance

Scale	Guidance
National	- Defra LAQM Technical Guidance 2022 (TG22) - Local Air Quality Management in Wales Policy Guidance PG(W)(17) - EPUK/IAQM Land-Use Planning and Development Control: Planning for Air Quality 2017 - IAQM Assessment of dust from demolition and construction 2024 v2.2 - IAQM A guide to the assessment of air quality impacts on designated nature conservation sites 2020

3 Legislation, Policy and Guidance

- 3.1 All relevant legislation, policies, strategies and guidance have been reviewed and their information used in the production of this assessment. The key sources of information relevant to this assessment are set out below; the full details of which can be found in Technical Appendix - Annex 3: Legislation, Policy, and Guidance.

4 Assessment Scope

- 4.1 Based on requirements set out in relevant guidance, policies, legislation, professional judgement, the scope of assessment includes the following elements:
- A review of baseline conditions
 - An assessment of construction related impacts:
 - Construction dust
 - Non-Road Mobile Machinery (NRMM) emissions
 - Construction vehicle emissions
 - An assessment of operational related impacts:
 - Operational vehicle emissions
 - Emergency generator emissions
 - Cumulative impacts
- 4.2 The assessment describes the existing and future air quality in the local area, taking account of the impacts associated with the Proposed Development.
- 4.3 The key pollutant emissions associated with the Proposed Development, particularly from the operation of compression ignition engines running on diesel fuel, are nitrogen dioxide (NO₂), nitrogen oxides (NO_x) (which react in the atmosphere to produce NO₂), particulate matter of less than 10 and 2.5 micrometres in diameter (PM₁₀ and PM_{2.5}), sulphur dioxide (SO₂) and carbon monoxide (CO) emissions. Other pollutants are generated in negligible levels when operating on diesel.
- 4.4 For SO₂, it has been assumed that the engine will be fuelled with ultra-low sulphur diesel, which is commonly available, is required to be used under Legislation, and has negligible levels of sulphur.
- 4.5 For CO, the AQOs are significantly less stringent than other pollutants (such as NO₂) and highly unlikely to be exceeded. The engines will also produce less CO than NO₂. It is therefore judged that the effects of CO will be not significant where the impacts of NO₂ are negligible, which is the case for this assessment.
- 4.6 This assessment therefore focuses on emissions of NO_x (as NO₂), NO₂, PM₁₀ and PM_{2.5} emissions as these are the principal pollutants of concern.

- 4.7 Note, the assessment addresses air quality at locations of human health exposure (i.e. the quality of the air) which can be linked to health effects. However, it is not an assessment of the effect on human health from poor air quality or deposition to ground.
- 4.8 The local area also includes sensitive ecological exposure, which are likely to be sensitive to changes in air quality. Consideration has been given to nitrogen oxides (NO_x), nitrogen nutrient deposition and acid deposition, as these are the principal concerns for ecological exposure from the emission sources considered. The assessment addresses air quality at locations of ecological exposure (i.e. the quality of the air) which can be linked to ecological effects. However, it is not an assessment of the effect on ecological habitats from poor air quality or deposition to ground.

5 Assessment Approach

- 5.1 The approach to each assessment element is explained in the relevant annex of the Technical Appendix. The methodologies used follow those set out in relevant guidance (see Table 3.3) and utilise professional judgement. The professional competence of the author is set out in Technical Appendix - Annex 2: Professional Competence.
- 5.2 The findings of the assessment in relation to human health are considered in relation to two separate types of criteria, covered by different legislation, policy, and guidance. These include Air Quality Objectives (AQOs) and Limit Values (LVs). Further details are provided in Technical Appendix - Annex 4: Assessment Criteria.
- 5.3 In respect of PM_{2.5}, Welsh Government is currently in the process of setting a new air quality target (Environment (Air Quality and Soundscapes) (Wales) Act 2024), which will be based on independent expert advice and the updated World Health Organization (WHO) air quality guidelines¹. Therefore, consideration has been given to the pending new air quality target which may come into force prior to the Proposed Development being consented. For context, the WHO guidelines for annual mean PM_{2.5} include Interim Targets (ITs) of 10, 15, 25 and 35 µg/m³, and an Air Quality Guideline (AQG) Level of 5 µg/m³. The UK Government has recently legislated for England an Interim Target (IT) of 12 µg/m³ to be achieved by 2028 and an Annual Mean Concentration Target (AMCT) of 10 µg/m³ to be achieved by 2040. The UK Government has also introduced an IT of 10 µg/m³ to be achieved by 2030. The findings of the assessment have therefore also been considered in relation to these thresholds.

6 Review of Baseline Conditions

Human Health

- 6.1 The Proposed Development is located within Imperial Park, which does not include any relevant exposure for the purposes of this assessment.

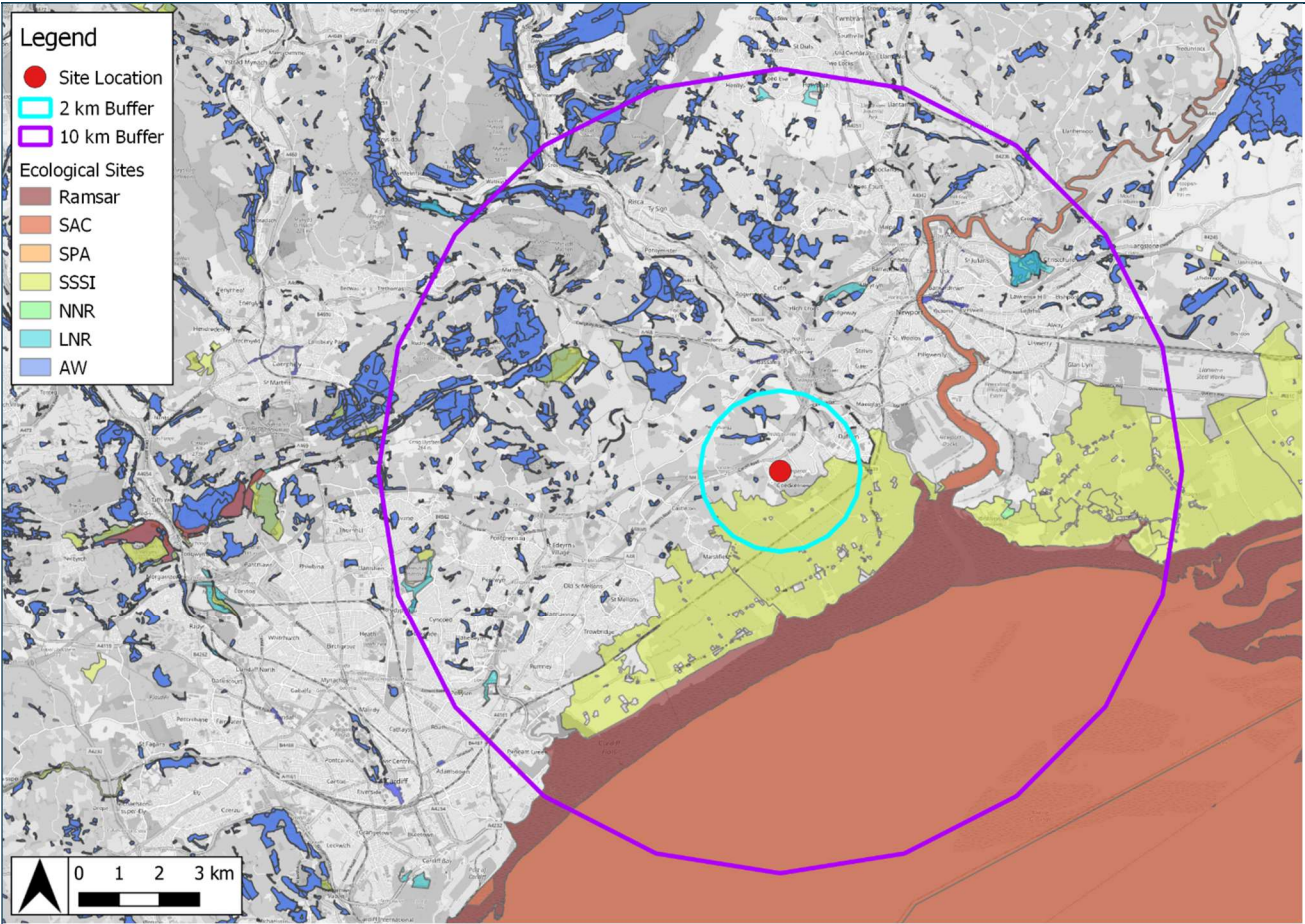
¹ WHO (2021). WHO global air quality guidelines: particulate matter (PM_{2.5} and PM₁₀), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide, ISBN: 9789240034228.

- 6.2 In the wider area, there are sensitive locations for human health exposure (i.e. residential properties) situated approximately 315 m west of the application site, 450 m north, 720 m northeast, 950 m east, 1.2 km southeast, and 630 m southwest.
- 6.3 The Proposed Development is not located within any air quality zones. The nearest Air Quality Management Area (AQMA) is located approximately 2.8 km north of the application site.

Ecological Habitats

- 6.4 Within 10 km of the Proposed Development there are two international statutory sites for nature conservation; the Severn Estuary (Wales) Ramsar/SPA/SAC and River Usk SAC. Within 2 km, there is one national statutory site for nature conservation; the Gwent Levels - St. Brides. Within 2 km, there are also multiple non-statutory sites for nature conservation, including Restored Ancient Woodland Sites (RAWS) and Ancient Semi Natural Woodland (ASNW). The locations of the ecological sites are shown in Figure 6.1.

Figure 6.1: Locations of Relevant Ecological Sites



CoganEnvironmental Consulting	Drawing Title:	Drawing Ref:	COGAN_P1130A_A3_Figure 6.1
	Locations of Relevant Ecological Sites	Author:	AC
		QA/QC:	KC / KC
	Figure notes: Imagery Map data © OpenStreetMap Contributors.	Date:	05/05/2026

7 Assessment of Impacts

Construction Dust

- 7.1 During the construction phase dust effects may occur due to onsite works. This may cause dust soiling nuisance and health effects associated with elevated PM₁₀ (fine dust) concentrations.
- 7.2 The risk of dust effects has been assessed following guidance from the Institute of Air Quality Management (IAQM)³³. The assessment along with details of the methodology are provided in Technical Appendix – Annex 5: Construction Dust Impacts.

There will not be any demolition or earthworks, and construction vehicles will travel over the existing hard-surfaced roads meaning there will not be any dust or dirt tracked out onto local roads.

- 7.3 For construction, the assessment has identified a Negligible Risk of dust soiling and human health effects. There are no ecological sites nearby and hence there will not be any ecological effects.
- 7.4 A construction phasing and logistics method statement was developed for the consented application 24/0390 and it is recommended that relevant measures set out in the method statement are implemented for this application.
- 7.5 It is expected that any residual effects will be ‘not significant’.
- 7.6 It should be recognised that, the local community may experience occasional, short-term annoyance (for instance under adverse weather conditions). The scale of this would not normally be considered sufficient to change the conclusion that the effects will be ‘not significant’.

NRMM emissions

- 7.7 Consideration has also been given to the potential impacts of emissions from Non-Road Mobile Machinery (NRMM) used during the construction phase. Guidance from the IAQM³³ states that:

“experience from assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) [...] suggests that they are unlikely to make a significant impact on local air quality and in the vast majority of cases they will not need to be quantitatively assessed”.

- 7.8 Given baseline air quality in the local area is below regulated thresholds and the size and nature of the Proposed Development, the impacts are considered to likely be negligible and hence ‘not significant’.

Construction Vehicle Emissions

- 7.9 The impacts of emissions from construction vehicles upon air quality in the local area have been considered.

Human Health Impacts

- 7.10 The assessment of impacts upon human health has been carried out in accordance with guidance jointly produced by Environmental Protection UK (EPUK) and the IAQM³². Details of the approach are set out in Technical Appendix - Annex 6: Impact Assessment Methodology.

Stage 1

- 7.11 The Proposed Development includes a site area of less than 1 ha, floorspace of less than 1,000 m² and a centralised combustion process. This exceeds the screening threshold and thus Stage 2 requires consideration.

Stage 2

- 7.12 The application site is located outside an Air Quality Management Area (AQMA). Outside an AQMA, the screening criteria set out in the EPUK and IAQM guidance is a change of Light Duty Vehicle (LDV) flow of more than 500 AADT or a change of Heavy Duty Vehicle (HDV) flow of 100 AADT.
- 7.13 The exact number of vehicle movements generated during the construction phase is unknown at this stage, however given the nature of the works it is expected to be very limited and well below the screening criteria. The impacts are thus considered to be negligible and hence 'not significant'.

Ecological Impacts

- 7.14 The assessment follows the approach set out in IAQM guidance³⁴, which takes account of the methodology described in The Design Manual for Roads and Bridges (DMRB), advice from Natural England, Defra/Environment Agency guidance, and the 2017 Wealdon judgement. The assessment involves a staged approach. Details of the approach are set out in Technical Appendix - Annex 6: Impact Assessment Methodology.
- 7.15 The impacts of emissions from construction vehicles upon air quality at ecological habitats in the local area has been considered. Following the assessment screening steps, it can be stated that during construction, traffic generated by the Proposed Development is unlikely to lead to changes on roads within 200 m of any sites for nature conservation. Therefore, the impacts are considered to likely be negligible and hence effects 'not significant' when considering the Proposed Development alone.

Operational Vehicle Emissions

- 7.16 The impacts of emissions from operational vehicles upon air quality in the local area have been considered.

Human Health Impacts

- 7.17 The assessment of impacts upon human health has been carried out in accordance with guidance jointly produced by Environmental Protection UK (EPUK) and the IAQM³². Details of the approach are set out in Technical Appendix - Annex 6: Impact Assessment Methodology.

Stage 1

- 7.18 The Proposed Development includes a site area of less than 1 ha, floorspace of less than 1,000 m² and a centralised combustion process. This exceeds the screening threshold and thus Stage 2 requires consideration.

Stage 2

- 7.19 The application site is located outside an Air Quality Management Area (AQMA). Outside an AQMA, the screening criteria set out in the EPUK and IAQM guidance is a change of Light Duty Vehicle (LDV) flow of more than 500 AADT or a change of Heavy Duty Vehicle (HDV) flow of 100 AADT.
- 7.20 The exact number of vehicle movements generated during the operational phase is unknown at this stage. However, movements are only expected to occur for routine maintenance testing, which is proposed once per month, likely resulting in circa two LDV movements per month. The number of average daily vehicle movements is therefore expected to be well below the screening criteria of 500 AADT. The impacts are thus considered to be negligible and hence 'not significant'.

Ecological Impacts

- 7.21 The assessment follows the approach set out in IAQM guidance³⁴, which takes account of the methodology described in The Design Manual for Roads and Bridges (DMRB), advice from Natural England, Defra/Environment Agency guidance, and the 2017 Wealdon judgement. The assessment involves a staged approach. Details of the approach are set out in Technical Appendix - Annex 6: Impact Assessment Methodology.
- 7.22 The impacts of emissions from construction vehicles upon air quality at ecological habitats in the local area has been considered. Following the assessment screening steps, it can be stated that during construction, traffic generated by the Proposed Development is unlikely to lead to changes on roads within 200 m of any sites for nature conservation. Therefore, the impacts are considered to likely be negligible and hence effects 'not significant' when considering the Proposed Development alone.

Operational Generator Emissions

- 7.23 The impacts of emissions from the operation of the Proposed Development's emergency generators upon air quality in the local area has been considered. The assessment has been carried out in accordance with the EPUK and IAQM guidance^{32,33}. Details of the approach are set out in Technical Appendix - Annex 6: Impact Assessment Methodology and Technical Appendix - Annex 7: Dispersion Modelling Approach.
- 7.24 As the generators are for emergency use, they will require engine testing to ensure correct operation which will be undertaken on a periodic basis. Two scenarios have been considered: maintenance testing and a power failure. Maintenance testing is the predictable, managed testing and maintenance activity for the generators. The scenarios assessed are:

- Maintenance testing, assuming monthly maintenance tests lasting 1 hour, a 4 hour annual maintenance load test (3 hours at 100% load and 1 hour at 110% load) and a site black-out test simulation (a 1-hour annual mains power failure); and
- Power failure (emergency scenario), comprising maintenance testing plus a mains power failure scenario (assumed to last 24-hours).

7.25 For each scenario, five meteorological years (2021-2025) have been modelled to take account of yearly variability in weather conditions, and three modelling setups have been modelled (with all relevant buildings, just the IP5 building, and without any buildings) to take account of uncertainties in building downwash effects. Taking a conservative approach, the maximum predicted impacts from all scenarios, years and model setups modelled have been used.

Screening Impacts

7.26 Initially, consideration has been given to whether any emissions from the generators are predicted to add more than 0.5% of the annual mean regulated thresholds for human health, more than 1% of the annual mean regulated thresholds for ecological habitats, or more than 10% of the short-term regulated thresholds (human health and ecological habitats). Where the predicted concentrations/depositions exceed these screening criteria, further assessment is required. Conversely, where the predicted concentrations/depositions fall below these screening criteria, the impacts will be insignificant and no further assessment is required.

7.27 Table 7.1 presents the maximum predicted concentrations/depositions from the generators anywhere in the modelled domain (irrespective of whether there is relevant sensitive exposure present).

7.28 This demonstrates that impacts screen out as insignificant for:

- Short-term (24-hour mean) PM₁₀ impacts upon human health;
- Long-term (annual mean) PM₁₀ impacts upon human health; and
- Long-term (annual mean) PM_{2.5} impacts upon human health in relation to the AQO, LV and 2028 IT.

7.29 For all other pollutants/criteria further assessment is required in order to determine whether the impacts of these will be significant or not. This is provided below.

Table 7.1: Maximum Predicted Concentrations/Depositions Anywhere

Pollutant	Time Period	Criteria Type	Regulated Threshold	Screening Threshold (%)	Predicted Concentration / Deposition	Comment
Nitrogen dioxide (NO ₂)	1-hour Mean	AQO / LV	200 µg/m ³	20 µg/m ³ (10%)	1649 µg/m ³	Exceeds – further assessment needed
	Annual Mean	AQO / LV	40 µg/m ³	0.2 µg/m ³ (0.5%)	1.603 µg/m ³	Exceeds – further assessment needed
Particulate Matter (PM ₁₀)	24-hour Mean	AQO / LV	50 µg/m ³	5 µg/m ³ (10%)	N/A	Fewer than 35 operational days, impossible to breach regulated threshold – screened out as insignificant
	Annual Mean	AQO / LV	40 µg/m ³	0.2 µg/m ³ (0.5%)	0.057 µg/m ³	Less than 0.5% - screens out as insignificant
Particulate Matter (PM _{2.5})	Annual Mean	AQO ^a / LV	20 µg/m ³	0.1 µg/m ³ (0.5%)	0.057 µg/m ³	Less than 0.5% - screens out as insignificant
		2028 IT ^d	12 µg/m ³	0.06 µg/m ³ (0.5%)		Less than 0.5% - screens out as insignificant
		2030 IT / AMCT ^d	10 µg/m ³	0.05 µg/m ³ (0.5%)		Exceeds – further assessment needed
Nitrogen Oxides (NO _x) expressed as NO ₂	24-hour Mean	CLe	200 µg/m ³ ^b	20 µg/m ³ (10%)	3872 µg/m ³	Exceeds – further assessment needed
	Annual Mean	AQO / LV / CLe	30 µg/m ³	0.3 µg/m ³ (1%)	3.698 µg/m ³	Exceeds – further assessment needed
Nitrogen Nutrient Deposition	Annual Mean	CLo	5 kgN/ha/yr ^c	0.05 kgN/ha/yr (1%)	Forest: 0.4615 kgN/ha/yr Grass: 0.2308 kgN/ha/yr	Exceeds – further assessment needed
Acid Deposition	Annual Mean	CLo	0.142 keq/ha/yr ^c	0.00142 keq/ha/yr (1%)	Forest: 0.0330 keq/ha/yr Grass: 0.0165 keq/ha/yr	Exceeds – further assessment needed

Table notes:

a. Not in Regulations and there is no legal requirement for local authorities to meet it.

b. The WHO define CLe for short-term NO_x as being dependent on O₃ and SO₂, and that “Experimental evidence exists that the CLe [critical level] decreases from around 200 µg/m³ to 75 µg/m³ when in combination with O₃ or SO₂ at or above their critical levels. In the knowledge that short-term episodes of elevated NO_x concentrations are generally combined with elevated concentrations of O₃ or SO₂, 75 µg/m³ is proposed for the 24 h mean”.

c. Typical worst-case Critical Loads for the UK have been assumed for all ecological sites.

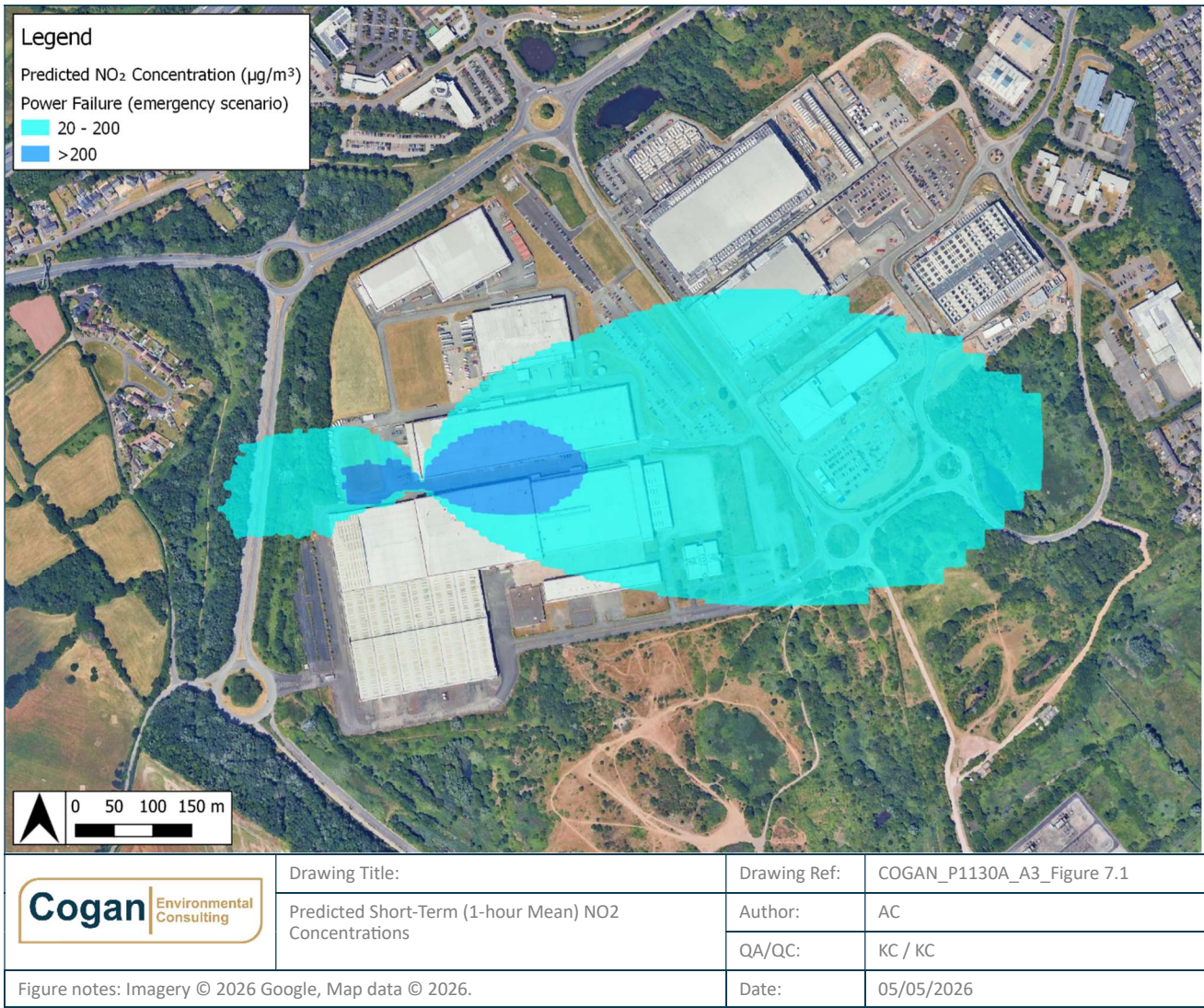
d. Not required by Welsh Regulations but used as indicative criteria.

Further Assessment

1-hour Mean NO₂

7.30 Figure 7.1 shows the concentration contour which defines the area within which emissions from the generators are predicted to add more than 20 µg/m³ (10% of the AQO) to short-term 1-hour mean NO₂ concentrations. It also shows the concentration contour which defines the area within which emissions from the generators are predicted to add more than 200 µg/m³ (100% of the AQO) to short-term 1-hour mean NO₂ concentrations. Contours are only presented for the power failure (emergency scenario).

Figure 7.1: Predicted Short-Term (1-hour Mean) NO₂ Concentrations

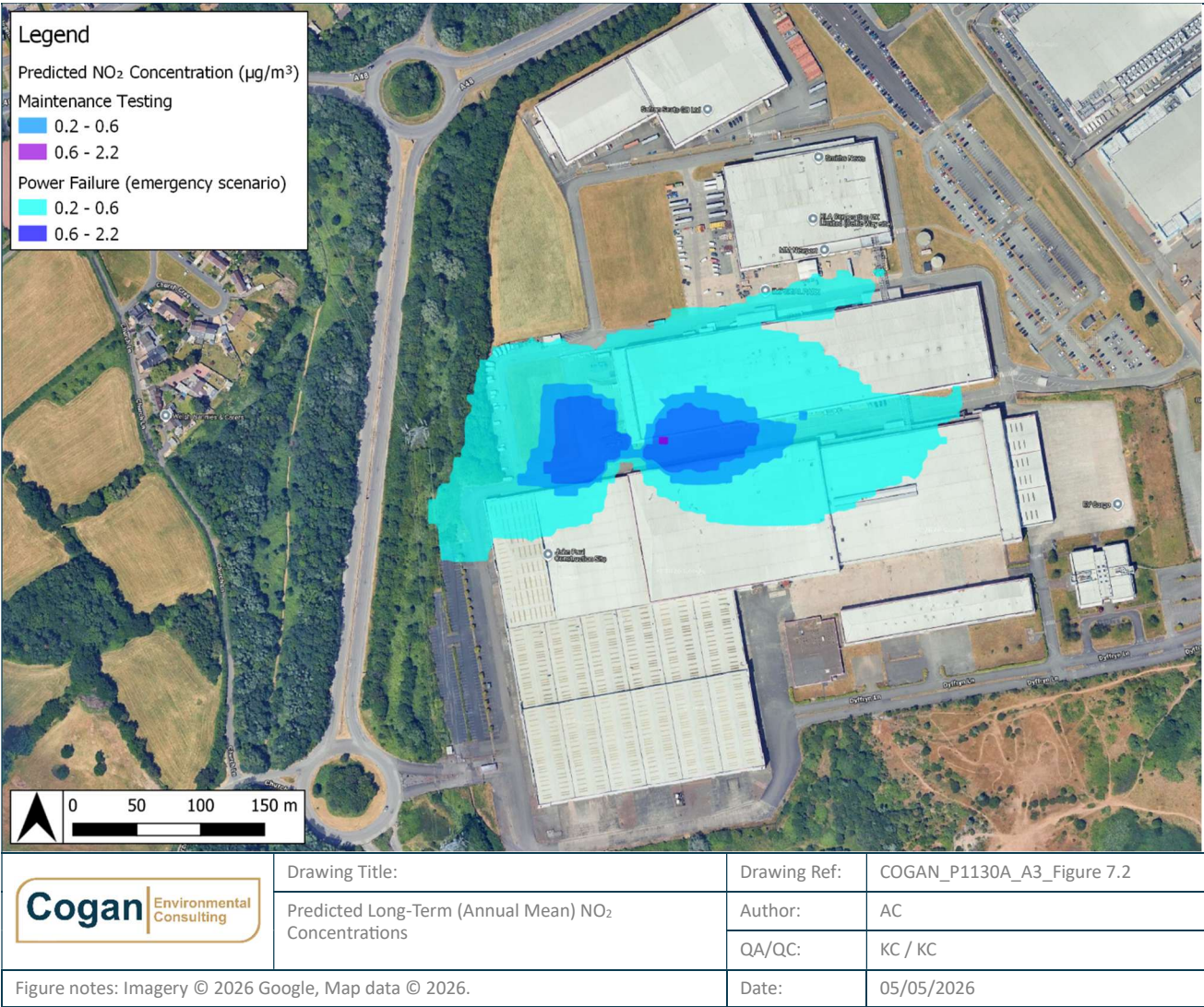


- 7.31 For the maintenance testing scenario, there will be fewer than 18 operational days, meaning that in this scenario it is impossible to breach the AQO and LV. The impacts are therefore insignificant.
- 7.32 Defra guidance states that the short-term (1-hour mean) AQO only applies at locations where members of the public (as distinct from people in their workplaces) might be regularly exposed for periods of an hour or more.
- 7.33 There are no locations of exposure within the contours which may be exposed to short-term emissions.
- 7.34 The impacts may therefore be considered ‘not significant’.

Long-term (Annual Mean) NO₂

- 7.35 Figure 7.2 shows concentration contours which define the area within which emissions from the generators are predicted to add more than 0.2 µg/m³ (0.5% of the AQO) and 0.6 µg/m³ (1.5% of the AQO).
- 7.36 Defra guidance states annual mean concentrations only apply at locations where members of the public might be regularly exposed for long periods of time.
- 7.37 There are no locations of exposure within the contours which may be exposed to long-term emissions.
- 7.38 The impacts may therefore be considered ‘not significant’.

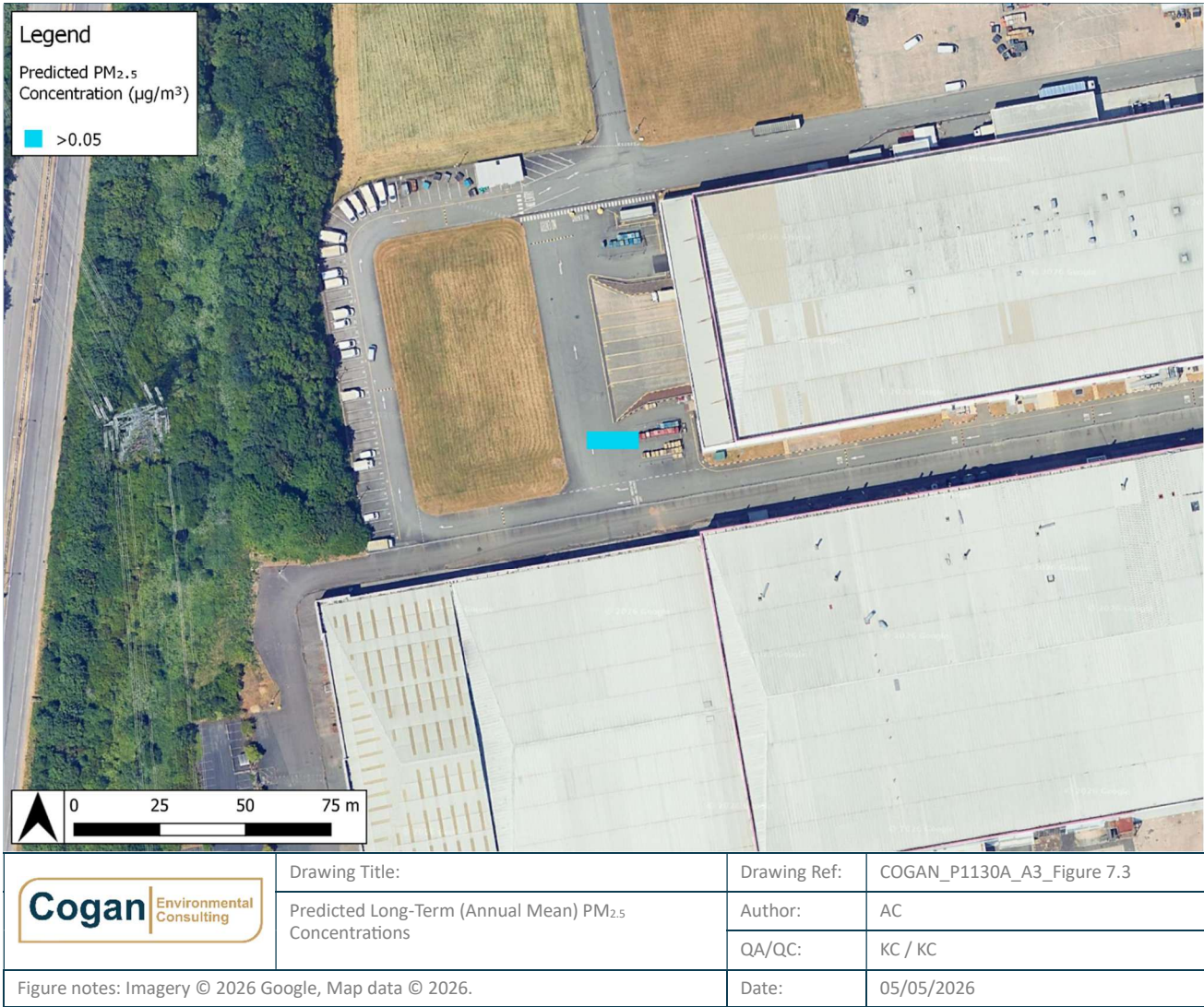
Figure 7.2: Predicted Long-Term (Annual Mean) NO₂ Concentrations



Long-term (Annual Mean) PM_{2.5}

- 7.39 Figure 7.3 shows concentration contour which defines the area within which emissions from the generators are predicted to add more than 0.05 µg/m³ (0.5% of the 2030 IT / AMCT). The contour is only presented for the power failure (emergency scenario).
- 7.40 For the maintenance testing scenario, the maximum predicted concentration is 0.0238 µg/m³, which is below 0.05 µg/m³ (0.5% of the 2030 IT / AMCT). The impacts for the maintenance testing scenario are therefore insignificant.
- 7.41 Defra guidance states annual mean concentrations only apply at locations where members of the public might be regularly exposed for long periods of time.
- 7.42 There are no locations of exposure within the contour which may be exposed to long-term emissions.
- 7.43 The impacts may therefore be considered 'not significant'.

Figure 7.3: Predicted Long-Term (Annual Mean) PM_{2.5} Concentrations



Short-term (24-hour Mean) NO_x

- 7.44 Figure 7.4 shows concentration contours which define the area within which emissions from the generators are predicted to add more than 10% (7.5 and 20 µg/m³) and 100% (75 and 200 µg/m³). The concentrations presented are the 100th percentile of 24-hour mean NO_x concentrations.
- 7.45 Since the 100th percentile is used, the results are the same for both the maintenance testing and power failure scenarios (because the operational days from both scenarios could occur on the day with the maximum prediction).
- 7.46 The WHO define CLE for short-term NO_x as being dependent on O₃ and SO₂, and that "Experimental evidence exists that the CLE [critical level] decreases from around 200 µg/m³ to 75 µg/m³ when in combination with O₃ or SO₂ at or above their critical levels. In the knowledge that short-term episodes of elevated NO_x concentrations are generally combined with elevated concentrations of O₃ or SO₂, 75 µg/m³ is proposed for the 24 h mean". Thus, where O₃ and SO₂ are not elevated above their CLE, a value of 200 µg/m³ is recommended

for assessments, which is the case for this assessment (see Technical Appendix - Annex 8: Ozone and Sulphur Baseline Conditions for details).

- 7.47 There is one non-statutory site for nature conservation within the 20 µg/m³ contour, an unnamed Ancient Semi Natural Woodland (ASNW) (ID 15233, 590 m west of site).
- 7.48 NRW guidance sets out screening criteria, stating the impacts upon non-statutory site for nature conservation will be insignificant where the short-term process contribution is less than 100% of the short-term assessment criteria. As the predicted concentration at the ASNW is less than 200 µg/m³ (100% of the AQO), the impacts may therefore be considered ‘not significant’.
- 7.49 There is also one national statutory site for nature conservation within the 20 µg/m³ contour, the Gwent Levels - St. Brides SSSI.
- 7.50 NRW guidance sets out screening criteria, stating the impacts upon statutory site for nature conservation will be insignificant where the short-term process contribution is less than 10% of the short-term assessment criteria. The maximum predicted concentration at the SSSI is 46.6 µg/m³, greater than the screening criteria if 20 µg/m³ (10% of the AQO).
- 7.51 To determine whether the impacts are significant, further consideration has been given to total concentrations (predicted environmental concentrations, PECs), which comprise the predicted concentration from the Proposed Development plus the existing baseline concentration.
- 7.52 Baseline annual mean NOx concentrations have been obtained from the APIS website². These are three-year average (2020-2022) concentrations. For the area of the SSSI at risk of impacts, the annual mean baseline concentrations are reported as 11.0 - 15 µg/m³ (see Figure 7.5). Following NRW guidance, baseline short-term NOx concentrations may be considered twice baseline annual mean NOx concentrations. Hence, the baseline short-term NOx concentrations are 22.0 - 30.0 µg/m³.
- 7.53 When the predicted concentrations from the Proposed Development are added to the baseline short-term NOx concentrations, the PECs will be 42.7 – 69.6 µg/m³. The predicted PECs at the SSSI are therefore all below the AQO (200 µg/m³). The impacts may therefore be considered ‘not significant’.

Figure 7.4: Predicted Short-Term (24-hour Mean) NOx Concentrations

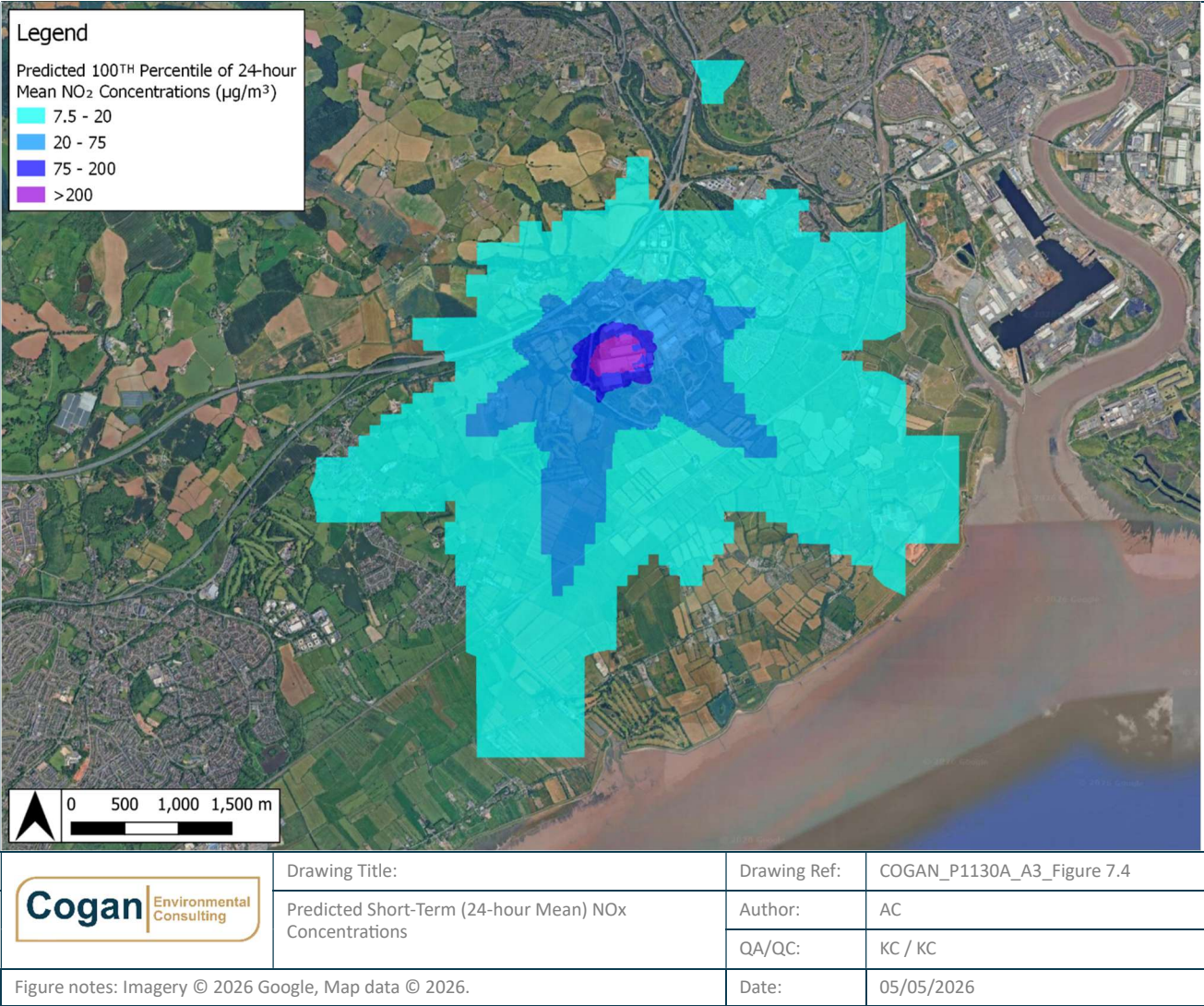
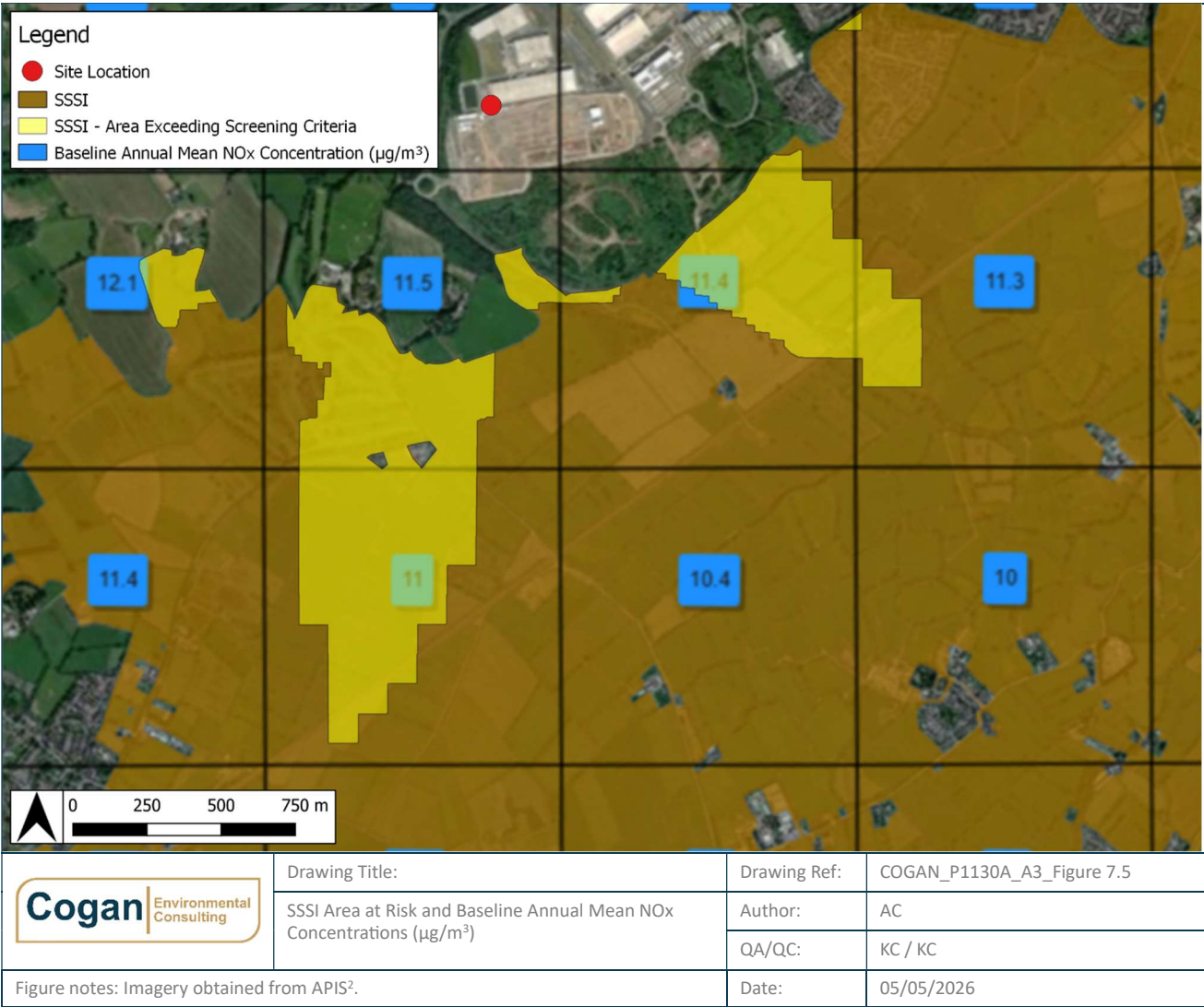


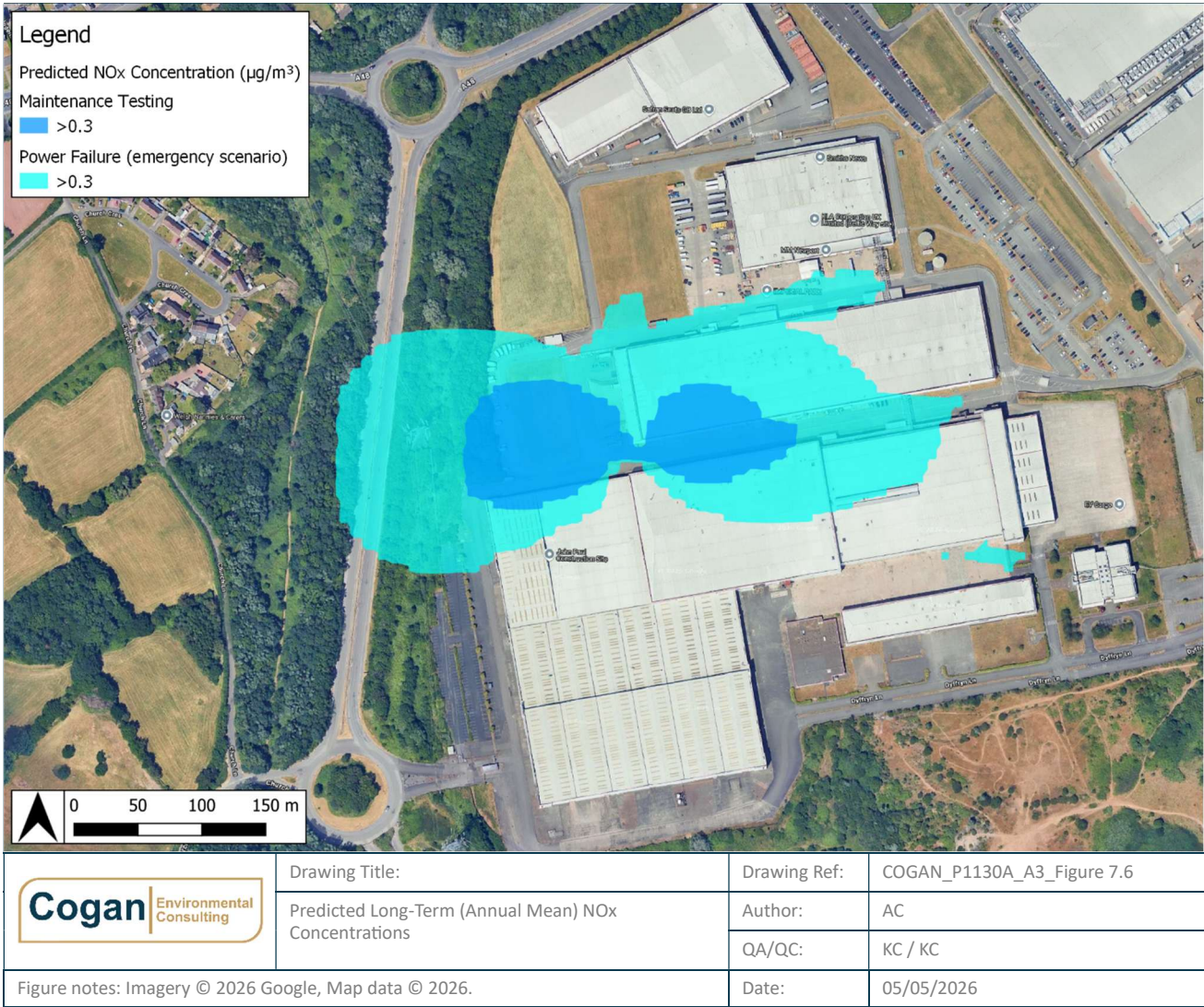
Figure 7.5: SSSI Area at Risk and Baseline Annual Mean NOx Concentrations (µg/m³)



Long-term (Annual Mean) NOx

- 7.54
- Figure 7.6 shows concentration contours which define the area within which emissions from the generators are predicted to add more than 0.3 µg/m³ (1% of the AQO).
- 7.55
- There are no statutory or non-statutory sites for nature conservation within the contours.
- 7.56
- The impacts may therefore be considered ‘not significant’.

Figure 7.6: Predicted Long-Term (Annual Mean) NOx Concentrations



Long-term (Annual Mean) Nitrogen Nutrient Deposition

- 7.57
- Figure 7.7 shows concentration contours which define the area within which emissions from the generators are predicted to add more than 0.05 kgN/ha/yr (1% of the most stringent CLo for relevant ecological sites²).
- 7.58
- There are no statutory or non-statutory sites for nature conservation within the contours.
- 7.59
- The impacts may therefore be considered ‘not significant’.

² As identified on the APIS website. Accessed 30/04/2026. Available at: <https://www.apis.ac.uk/app>

Figure 7.7: Predicted Long-Term (Annual Mean) Nitrogen Nutrient Deposition

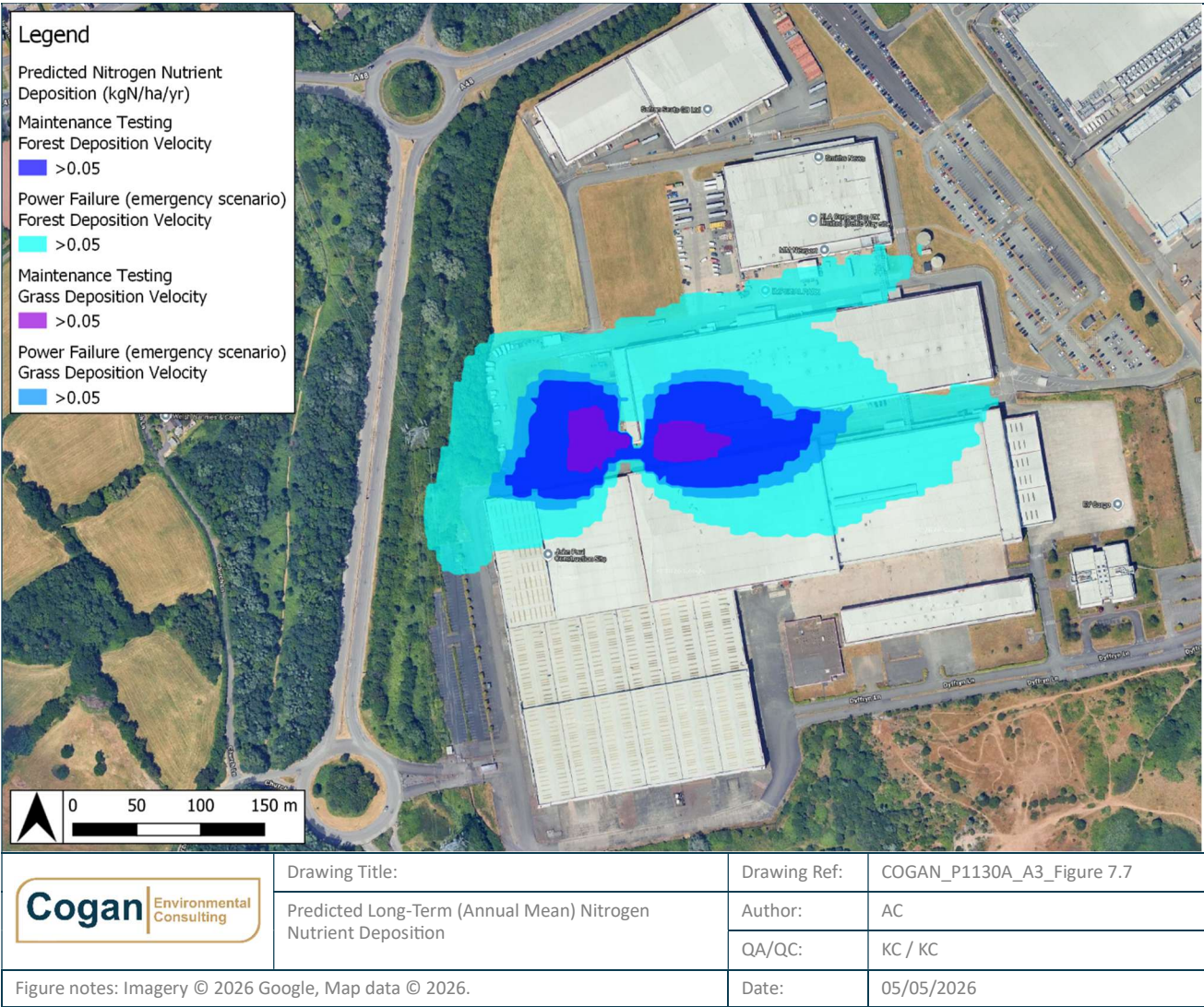
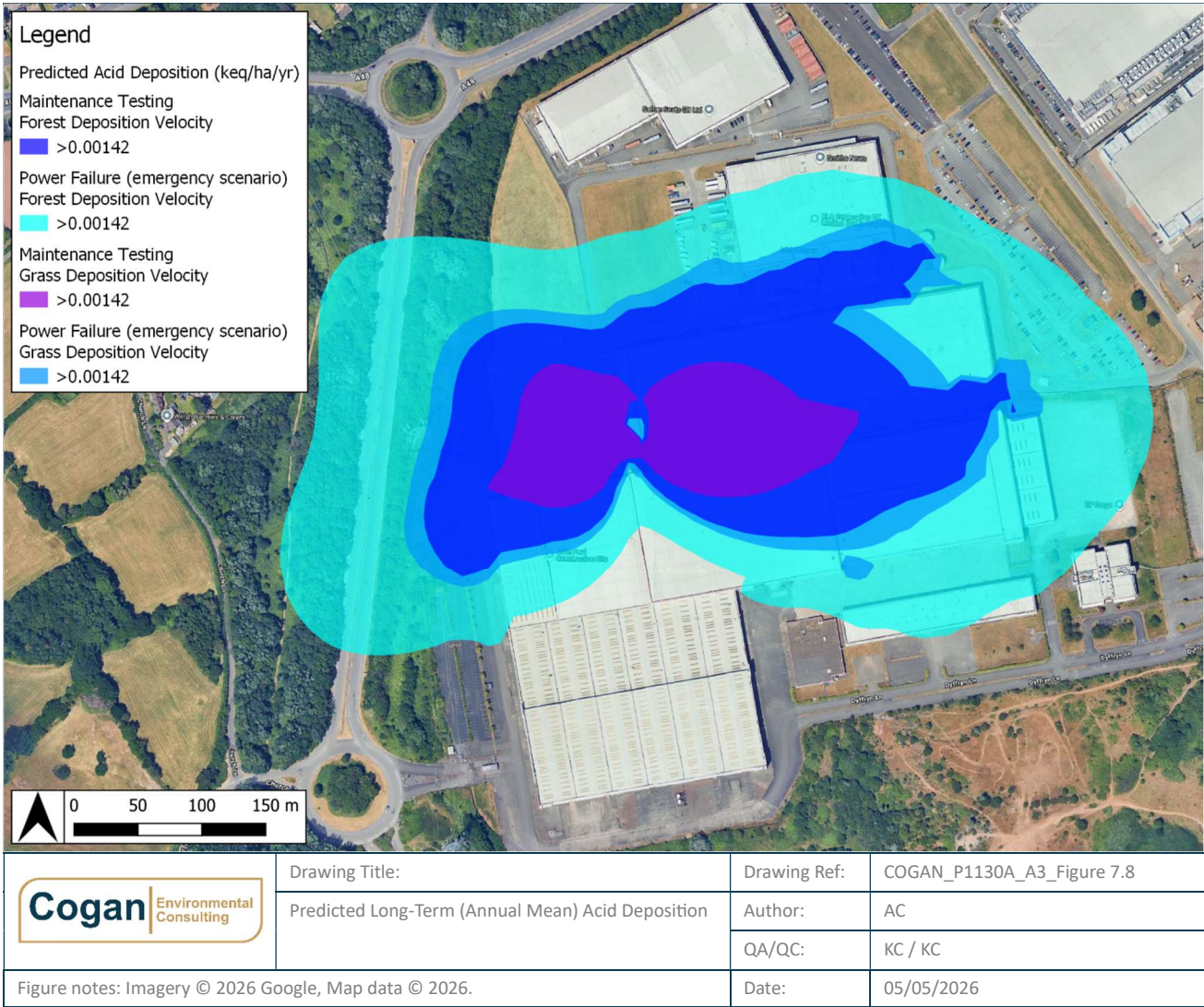


Figure 7.8: Predicted Long-Term (Annual Mean) Acid Deposition



Long-term (Annual Mean) Acid Deposition

- 7.60
- Figure 7.8 shows concentration contours which define the area within which emissions from the generators are predicted to add more than 0.00142 keq/ha/yr (1% of the most stringent CLo for relevant ecological sites²).
- 7.61
- There are no statutory or non-statutory sites for nature conservation within the contours.
- 7.62
- The impacts may therefore be considered ‘not significant’.

Significance

- 7.63
- Based upon the results, the air quality effects on locations of both human health exposure and ecological exposure without additional mitigation are judged to be ‘not significant’.
- 7.64
- It should also be acknowledged that the results are based upon the generators being operational for up to 1 hour during the monthly maintenance tests, however it is expected that the generators would only operate for approximately 20 minutes in practice. The results are therefore considered to be overstated.

Cumulative Impacts

- 7.65
- Consideration has been given to potential cumulative impacts of the Proposed Development with other plans and projects in the local area, as well as existing properties.
- 7.66
- The impacts have been assessed in accordance with relevant guidance, including the EPUK and IAQM guidance³² which states:

“In many cases, the impact of the development being assessed will have a cumulative effect with other planned developments, which may or may not have planning permission. Where these developments have been granted planning consent and are therefore ‘committed’ developments, their impacts should be assessed cumulatively with those of the application site. The contribution of these committed developments should be accounted for in the ‘future baseline’, provided that their contributions can be quantified”.

7.67 Relevant potential and approved local cumulative developments have been identified through the planning - map search webpage of Newport Council’s website. Even if these developments do not commence, consideration has been given to the possibility of the presence of cumulative developments.

Table 7.2: Cumulative Developments in the Local Area

Cumulative Scheme	Description	Assessment of Potential Impacts
24/0006 Quinn Radiators Celtic Way Celtic Lakes Newport NP10 8FS	DEMOLITION OF REMAINDER OF EXISTING PRINCIPAL BUILDING AND REMAINING STRUCTURES AND CONSTRUCTION OF NEW DATACENTRE (USE CLASS B8) ACROSS TWO MAIN BUILDINGS PLUS ANCILLARY STRUCTURES ANDS OTHER ASSOCIATED WORKS Decision: Granted with Conditions	The air quality assessment proposed for this scheme demonstrated there may be some locations affected by emissions, but no regulations would be breached. An air quality management plan (AQMP) was required by condition to evidence ongoing compliance.
21/0988 Plot 1 And Plot 5 Imperial Way Celtic Way Newport NP10 8BE	CONSTRUCTION OF A THREE STOREY MANUFACTURING AND RESEARCH AND DEVELOPMENT FACILITY AND ADMINISTRATION OFFICE, EXTERNAL PLANT, STORAGE AND GAS STORAGE COMPOUND, CAR PARKING, SUSTAINABLE DRAINAGE, HARD AND SOFT LANDSCAPING, ATTENUATION BASIN AND ASSOCIATED WORKS. Decision: Granted with Conditions	The air quality assessment proposed for this scheme demonstrated the effects would be not significant.

7.68 In addition, comments were received from Steve Manning (Senior Scientific Officer at Newport City Council) on the 14th January 2026, who highlighted that *“Generators in this locality pose a particular risk to air quality given their proliferation”*. This is understood to refer to the above schemes as well as other existing businesses within Imperial Park, namely the Vantage Data Centers buildings.

7.69 The potential cumulative risk for the Proposed Development is short-term NOx impacts upon the Gwent Levels - St. Brides SSSI, for which an area of potential impacts has been identified but the impacts determined to be not significant on the basis that total concentrations (Proposed Development contribution plus baseline) fall below the CL_e. Should any cumulative schemes cause the baseline NOx concentrations to be significantly higher, then there may be a risk that the Proposed Development could lead to an exceedance of the CL_e. To help minimise potential risks, NWSSP is willing to collaborate with other generator users in the immediate area to seek to co-ordinate test run times.

7.70 No other pollutant/criteria for the Proposed Development is at risk due to cumulative schemes, since all other impacts screen out as insignificant.

7.71 IAQM guidance³³ states that, with appropriate mitigation measures in place, any residual construction dust effects from an individual scheme will be ‘not significant’. The guidance also suggests that cumulative construction dust effects are only likely to occur where schemes are within 500 m of each other and dusty activities would have to take place near to the same receptors in order for cumulative effects to occur. Since all cumulative developments should be implementing appropriate measures to minimise dust effects, cumulative impacts from construction works will be ‘not significant’.

7.72 Cumulative schemes may also lead to changes in traffic along local roads, however given the very limited number of vehicle movements generated by the Proposed Development, the presence of any cumulative traffic will not alter the effects from being ‘not significant’.

8 Mitigation Measures

Embedded Mitigation

8.1 The EPUK and IAQM guidance³² is clear that it is important that developments should incorporate good design and best practice measures to ensure any impacts are minimised as far as practicable, even where the pollutant are predicted below the AQOs/LVs. The Proposed Development includes the following good design and best practice measures by design and location:

- The Proposed Development is located within the existing Imperial Park, situated away from locations of sensitive exposure.
- The Proposed Development will involve limited vehicle movements, helping to minimise vehicular trips.
- The emissions from the generators will be released above parapet level, providing good initial dispersion conditions.
- The Proposed Development will include biodiversity enhancements; wildflower seeds will be planted on the grass patches along the southern elevations of the IP5 building. The mixture will include a rich variety of plants with high nectar to attract bees and other pollinators.

Further Mitigation

During Construction

8.2 During the construction phase a package of mitigation measures will be implemented to minimise dust effects. Details of the mitigation measures are set out in Technical Appendix – Annex 5: Construction Dust Impacts.

During Operation

8.3 During the operational phase, the effects of the Proposed Development upon the local area will be ‘not significant’ and no further mitigation measures are considered necessary.

- 8.4 Measures to reduce pollutant emissions are principally being delivered in the longer term by the introduction of more stringent emissions standards, largely via UK law. Furthermore, the government, and local authority are working on improving air quality under the relevant air quality strategies and the LAQM regime.

9 Conclusion

- 9.1 The air quality impacts of the Proposed Development at the IP5 Building, Newport have been assessed.
- 9.2 The construction works have limited potential to create dust. However, following good practice, a package of mitigation measures will be applied to minimise dust emissions.
- 9.3 Consideration has been given to the potential air quality impacts of the Proposed Development upon the local area, during both the construction and operational phases. All impacts have been determined to be insignificant following relevant guidance. The effects will therefore be ‘not significant’.
- 9.4 Cumulative impacts with other local developments have also been considered. It has been determined that the cumulative impacts will be ‘not significant’. To help minimise potential risks, NWSSP is willing to collaborate with other generator users in the immediate area to seek to co-ordinate test run times.
- 9.5 Overall, the air quality effects of the Proposed Development are judged to be ‘not significant’.

10 Technical Appendix

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Annex 1: Glossary

Table 10.1: Glossary of terms used in the assessment

Term	Meaning
AADT	Annual Average Daily Traffic
AMCT	Annual Mean Concentration Target
AQG	Air Quality Guideline
AQMA	Air Quality Management Area
AQO	Air Quality Objective
AQS	Air Quality Standard
AW	Ancient Woodland
CLe	Critical Level
CLo	Critical Load
CWS	County Wildlife Site
Defra	Department for Environment, Food & Rural Affairs
EPUK	Environmental Protection UK
HDV	Heavy Duty Vehicle
IAQM	Institute of Air Quality Management
IT	Interim Target
LAQM	Local Air Quality Management
LDV	Light Duty Vehicle
LNR	Local Nature Reserve
NNR	National Nature Reserve
NRMM	Non-Road Mobile Machinery
NRW	Natural Resources Wales
NO ₂	Nitrogen dioxide
NO _x	Nitrogen oxides
PM	Particulate Matter (dust)
PM _{2.5}	PM with a diameter of less than 2.5 micrometres
PM ₁₀	PM with a diameter of less than 10 micrometres
PPW	Planning Policy Wales
Ramsar site	A Ramsar site is a wetland that has been designated as internationally important under the Ramsar Convention on Wetlands.
SAC	Special Area for Conservation
SINC	Site of Importance for Nature Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TAN	Technical Advice Note
WHO	World Health Organization

Annex 2: Professional Competence



Dr Austin Cogan

MPhys (Hons) PhD CEnv MIAQM MEnvSc ASAg

Director & Practice Manager

07881824629

austin@cogan-ec.com

Austin is Director and Practice Manager at Cogan Environmental Consulting Limited. He is a Chartered Environmentalist with over 17 years' experience in environmental sciences, covering indoor and outdoor air quality, odour, dust, bioaerosols, greenhouse gases and climate change. He was a committee member of The Council of Property Search Organisations and has developed a number of guidance documents in the industry.

Last year, he was a reviewer of the International Handbook on the Assessment of Odour Exposure by using Dispersion Modelling. This year, he is currently co-chair of the Institute of Air Quality Management's odour working group, developing updated odour guidance for planning in the UK.

Throughout his career, he has been involved in over 1,000 projects across the UK and abroad, focusing on supporting planning applications and environmental permit applications. His expertise covers a diverse range of sectors, including residential, student, commercial, retail, leisure, community, education, healthcare, distribution, and hospitality developments, industrial, waste, agricultural, power generation, and utility projects, and defence, aviation, and infrastructure schemes. These have included technical reviews for both indoor and outdoor air quality assessments, and climate change assessments for aviation, as well as the provision of expert witness services for air quality and odour.

He has a long history of supporting local authorities with local air quality concerns, including Clean Air Zones, Local Plans, Air Quality Management Areas, Air Quality Action Plans, and feasibility studies involving microsimulation modelling. Austin has also been involved in multiple projects for JNCC, EA, GLA, National Highways and NGOs, undertaking research and development activities. He is an experienced business manager, having managed multiple high-profile projects as well as operating multiple environmental businesses, where he previously led the development of licensed meteorological data which is widely used by the industry.

Austin is also an international expert in the field of climate change, having monitored greenhouse gases globally. He pioneered research in satellite observations and instrument design at the UK's Space Research Centre, where he was involved in software and algorithm development, instrumentation design, data analysis and collaboration with many international bodies, including NASA, JAXA, CNES and ESA. He has produced numerous scientific papers and presented at conferences both nationally and internationally.



Katya Cogan

MBChB BSc (Hons) AMIAQM AMEnvSc

Senior Consultant

07938761385

katya@cogan-ec.com

Katya is a Senior Consultant at Cogan Environmental Consulting Limited. She has over 6 years' experience in environmental sciences, covering indoor and outdoor air quality, odour, dust, bioaerosols, greenhouse gases and climate change. She completed BSc Medical Biochemistry at the University of Leicester and continued her studies at the University of Warwick to complete a MBChB Medicine, working as a Doctor in the Southwest Deanery afterwards. Her focus has subsequently involved sales and business development, and most recently environmental sciences.

Throughout her career, she has been involved in a diverse range of projects for planning applications, environmental permit applications, including management, and nuisance assessments, as well as monitoring for COSHH, indoor air quality support for BREEAM, WELL, DREAM, HQM and several research projects. Her experience covers residential, student, commercial, retail, leisure, community, education, healthcare, distribution, and hospitality developments, industrial, waste, agricultural, mineral, power generation, and utility projects, and defence and infrastructure schemes.

She has supported multiple local authorities with LAQM duties, including Local Plans, Air Quality Management Areas, Air Quality Action Plans, and Annual Status Reports. Katya has also been involved in multiple projects for JNCC, EA, and NGOs, undertaking research and development activities. She is an experienced sales and business development manager, having taken on several commercial management roles including indoor air quality business development, the sale of monitoring and diagnostic instruments as well as meteorological data.

Annex 3: Legislation, Policy, and Guidance

10.1 The national, regional, and local policies, strategies, legislation and guidance relevant to this assessment are set out in the tables below.

Legislation

Table 10.2: Relevant Legislation

Legislation	Relevant Information
The Environment (Air Quality and Soundscapes) (Wales) 2024 ³	The Environment (Air Quality and Soundscapes) (Wales) 2024 became law on 14 th Feb 2024.
Environment Act 2021 ⁴	This Act required the Secretary of State to set a long-term target (defined as no less than 15 years after the date on which the target was set) to reduce people's exposure to PM _{2.5} . It also enables the Secretary of State to set other air quality targets, including for other air pollutants. The targets have since been set out in The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023.
Air Quality Standards Regulations 2010 ⁵ and The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 ⁶	In additional to the AQOs set within the Air Quality Strategy, the European Union (EU) has set limit and target values for the protection of human health and critical levels for the protection of ecosystems. These were transposed into the Air Quality Standards Regulations 2010. The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 reduced the EU annual mean limit value for particulate matter (PM _{2.5}) from 25 to 20 µg/m ³ . Like the AQOs, the limit values, target values and critical levels are set for individual pollutants and are made up of a concentration value, an averaging time over which it is to be measured, the number of exceedances allowed per year (if any) and a date by which it must be achieved. Some pollutants have more than one value covering different dates or averaging times. While the AQOs are policy targets, the government has the duty to ensure compliance with the legally binding limit values which is a national obligation rather than a local one.
Environment (Wales) Act 2016 ⁷	The Environment (Wales) Act 2016 sets out the sustainable management of natural resources in Wales, including a management framework that is based on evidence published in The State of Natural Resources Report (Natural Resources Wales, 2016) and delivered through the Natural Resources Policy (Welsh Government, 2017). The Natural Resources Policy sets out the challenges and opportunities for managing Wales's natural resources sustainably, including reducing air pollution levels. This states that a mix of actions will be needed to address pollution from traffic and other sources and will require taking practical steps to improve air quality across Wales, not just in the most polluted hotspots.
Planning (Wales) Act 2015 ⁸	The Planning (Wales) Act 2015 puts in place legislation for the planning provision in Wales, in particular for sustainable developments.
Well-being of Future Generations (Wales) Act 2015 ⁹	The Well-being of Future Generations (Wales) Act 2015 places seven well-being goals into law, requires public bodies to apply the sustainable development principle in a number of ways. This has led to the establishment of average population exposure to nitrogen dioxide being one of the Welsh Government's national indicators used to measures progress towards well-being goals. Consequently, regulations made under the WFG Act require public services boards to consider air quality when carrying out their statutory assessments of local well-being under the Act.

³ Welsh Parliament (2024). Available at: [https://business.senedd.wales/mglssueHistoryHome.aspx?lId=40984#:~:text=BillStageAct-,The%20Environment%20\(Air%20Quality%20and%20Soundscapes\)%20\(Wales\)%20Act,of%20Public%20Bills%20and%20Acts.&text=The%20following%20table%20sets%20out,Bill's%20passage%20through%20the%20Senedd.](https://business.senedd.wales/mglssueHistoryHome.aspx?lId=40984#:~:text=BillStageAct-,The%20Environment%20(Air%20Quality%20and%20Soundscapes)%20(Wales)%20Act,of%20Public%20Bills%20and%20Acts.&text=The%20following%20table%20sets%20out,Bill's%20passage%20through%20the%20Senedd.)

⁴ HMSO (2021). Environment Act, HMSO.

⁵ HMSO (2010) The Air Quality Standards Regulations, ENVIRONMENTAL PROTECTION, 2010, No. 1001, STATUTORY INSTRUMENTS.

⁶ HMSO (2020) The Environment (miscellaneous Amendments) (EU Exit) Regulations 2020 (Vol, Statutory Instrument No 1312).

⁷ Welsh Government (2016). Environment (Wales) Act.

Air Quality (Wales) Regulations 2000 ¹⁰ and the Air Quality (Wales) (Amendment) Regulations 2002 ¹¹	The air quality objectives (AQOs) for use by local authorities when considering human health and ecosystems were incorporated into legislation by the Air Quality (Wales) Regulations 2000, and the Air Quality (Wales) (Amendment) Regulations 2002.
The Environment Act 1995 ¹²	Part IV of The Environment Act requires the Government to produce an Air Quality Strategy. This must include standards and objectives for the protection of human health and ecosystems. It also sets out the requirements of the Local Air Quality Management (LAQM) regime. LAQM requires every authority to carry out regular reviews and assessments of air quality in its area to identify whether the air quality objectives (AQOs) have been, or will be, achieved at relevant locations, by the applicable date. If this is not the case, the authority must declare an Air Quality Management Area (AQMA) and prepare an action plan which identifies appropriate measures to be introduced in pursuit of the objectives. The AQOs are policy targets often expressed as a maximum ambient concentration, for a specific averaging period, not to be exceeded, either without exception or with a permitted number of exceedances, within a specified timescale. For ecosystems the air quality standards are based on critical levels and critical loads derived for different habitats. Exceedance of these values are used as an indication of the risk to the ecosystem. Critical loads are values of pollutants deposited onto a habitat below which significant effects do not occur. Critical levels are the concentrations of pollutants above which direct adverse effects on vegetation or ecosystems may occur.
Environmental Protection Act 1990 ¹³	Part III of The Environmental Protection Act 1990 sets out what constitutes a statutory nuisance and local authority duties to investigate complaints and require remedial measures. It states: <i>"...the following matters constitute "statutory nuisances..."</i> <i>(a) smoke emitted from premises so as to be prejudicial to health or a nuisance;</i> <i>(b) fumes or gases emitted from premises so as to be prejudicial to health or a nuisance;</i> <i>(c) any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance..."</i>
The Town and Country Planning Act 1990	The Town and Country Planning Act 1990 sets out the regulatory framework for land use planning within which local authorities need to operate and additionally Planning Policy Statement 23, (PPS23) Planning and Pollution Control advises local authorities that they should take account of the impacts that a new development will have on the quality of air.

National Policy and Strategy

Table 10.3: Relevant National Policies and Strategies

Policy/Strategy	Relevant Information
Planning Policy Wales – Edition 12 (Feb 2024) ¹⁴	Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales. PPW, the TANs, Mineral TANs (MTANs) and policy clarification letters comprise national planning policy. When referring to air quality, it states that: <i>"..In proposing new development, planning authorities and developers must, therefore:</i> <i>• address any implication arising as a result of its association with, or location within, air quality management areas, noise action planning priority areas or areas where there are sensitive receptors;</i> <i>• not create areas of poor air quality or inappropriate soundscape; and</i> <i>seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes..."</i>

⁸ Welsh Government (2015). The Planning (Wales) Act 2015.

⁹ Welsh Government (2015). Well-being of Future Generations (Wales) Act.

¹⁰ HMSO (2000). The Air Quality (Wales) Regulations, 2000, Statutory Instrument 928. HMSO.

¹¹ HMSO (2002). The Air Quality (Wales) (Amendment) Regulations, 2002, Statutory Instrument 3043. HMSO.

¹² HMSO (1995). The Environment Act 1995.

¹³ HMSO (1990). Environmental Protection Action 1990.

¹⁴ Welsh Government (2024). Planning Policy Wales, Edition 12, Feb 2024

TAN 11: Air Quality, Noise and Soundscape: draft 2022 ¹⁵	Tan 11: Air Quality, Noise and Soundscape: draft policy, is a technical advisory note meant for use in conjunction with Planning Policy Wales. It sets out general expectations and requirements for developers, designers, consultants and planning authorities regarding airborne pollution. It provides advice on how the planning system can be used to minimise impact of noise without placing unreasonable restrictions on development. It outlines some of the main considerations which local planning authorities should take into account in drawing up development plan policies and when determining planning applications for development which will either generate air pollution or be exposed to existing air pollution sources.
Future Wales: The National Plan 2040 ¹⁶	This policy was created in 2021 and emphasises the importance of the importance of access to clean natural resources for a prosperous Wales. It also emphasises the importance of strategic and spatial planning to create a positive impact on public health, air quality and well-being. - Policy 10 – International Connectivity: <i>“Taking an integrated approach is also key to ensuring new development provides the critical mass of people needed to help fund and sustain infrastructure and services, as well as ensuring average levels of airborne pollution continue to be reduced”.</i> - Policy 11 – National Connectivity: <i>“Strategic Road Network – Invest in road improvements to reduce journey times, deliver a safer and more resilient road network, and improve air and noise quality”.</i> - Policy 12 – Regional Connectivity: <i>“The Welsh Government will support and invest in improving regional connectivity. In urban areas, to support sustainable growth and regeneration, our priorities are improving and integrating active travel and public transport. In rural areas our priorities are supporting the uptake of ultra-low emission vehicles and diversifying and sustaining local bus services. The Welsh Government will work with Transport for Wales, local authorities, operators and partners to deliver the following measures to improve regional connectivity:</i> <i>Active Travel – Prioritising walking and cycling for all local travel. We will support the implementation of the Active Travel Act to create comprehensive networks of local walking and cycling routes that connect places that people need to get to for everyday purposes.</i> <i>Bus – Improve the legislative framework for how local bus services are planned and delivered. We will invest in the development of integrated regional and local bus networks to increase modal share of bus travel and improve access by bus to a wider range of trip destinations.</i> <i>Metros – Develop the South East Metro, South West Metro and North Wales Metro. We will create new integrated transport systems that provide faster, more frequent and joined-up services using trains, buses and light rail.</i> <i>Ultra-Low Emission Vehicles – Support the roll-out of suitable fuelling infrastructure to facilitate the adoption of ultra-low emission vehicles, particularly in rural areas.</i> <i>Planning authorities must plan the growth and regeneration of the National and Regional Growth Areas to maximise opportunities arising from the investment in public transport, including identifying opportunities for higher density, mixed-use and car-free development around metro stations.</i> <i>Active travel must be an essential and integral component of all new developments, large and small. Planning authorities must integrate site allocations, new development and infrastructure with active travel networks and, where appropriate, ensure new development contributes towards their expansion and improvement.</i> <i>Planning authorities must act to reduce levels of car parking in urban areas, including supporting car-free developments in accessible locations and developments with car parking spaces that allow them to be converted to other uses over time. Where car parking is provided for new non-residential development, planning authorities should seek a minimum of 10% of car parking spaces to have electric vehicle charging points.”</i> - Policy 18 – Renewable and Low Carbon Energy Developments of National Significance:

¹⁵ Welsh Government (2022) TAN 11: Air Quality, Noise and Soundscape Draft Policy

¹⁶ Welsh Government (2021) Future Wales: The National Plan 2040

¹⁷ Welsh Government (2020). The Clean Air Plan for Wales: Health Air, Healthy Wales

¹⁸ Welsh Government (2017). Prosperity for all: the national strategy, Welsh Government.

¹⁹ Defra and Devolved Administrations (2019). Clean Air Strategy 2019. Available at: <https://assets.publishing.service.gov.uk/media/5c3b9debe5274a70c19d905c/clean-air-strategy-2019.pdf>

	“.. 7. there are no unacceptable adverse impacts by way of shadow flicker, noise, reflected light, air quality or electromagnetic disturbance...”
Clean Air Plan for Wales – Healthy Air, Healthy Wales 2020 ¹⁷ – The Clean Air Plan for Wales	This policy explains how air quality policy aligns with wider Welsh Government policy and the priorities and principles applied in delivering the plan.
Prosperity for all: the National Strategy 2017 ¹⁸	In 2017 the Welsh Government published ‘Prosperity for All: the national strategy’ which sets out a cross-government commitment to reducing emissions and delivering vital improvements in air quality through planning, infrastructure, regulation, and health communication measures.
Clean Air Strategy 2019 ¹⁹	The strategy focuses on reducing emissions of nitrogen oxides (NOx), ammonia (NH₃), particulate matter (PM), non-methane volatile organic compounds (NMVOCs) and sulphur dioxide (SO₂). For particulate matter the emission reduction targets are 30% by 2020, and by 46% by 2030 and for NOx 55% by 2020 and 73% by 2030 all from a 2005 baseline. This strategy sets out the aim for new enforcement powers at a national and local level, across all sectors of society and sets out the comprehensive action that is required from government and society to meet these targets. The strategy includes actions to reduce emissions from transport (including road, maritime, rail, aviation and NRRM, homes, farming and industry. “New legislation will create a stronger and more coherent framework for action to tackle air pollution. This will be underpinned by new England-wide powers to control major sources of air pollution, in line with the risk they pose to public health and the environment, plus new local powers to take action in areas with an air pollution problem”.
A Green future: our 25 year plan to improve the environment ²⁰	This 25-year environmental plan sets out the government’s long-term plans to improve the environment within a generation. This includes the first goal ‘Clean air’ where the government states: <i>“we will achieve clean air by:</i> <i>Meeting legally binding targets to reduce emissions of five damaging air pollutants.</i> <i>This should halve the effects of air pollution on health by 2030.</i> <i>Ending the sale of new conventional petrol and diesel cars and vans by 2040.</i> <i>Maintaining the continuous improvement in industrial emissions by building on existing good practice and the successful regulatory framework”.</i>
Clean Growth Strategy ²¹	This strategy focuses on reducing the UK’s carbon footprint, but also contains several policies and proposals that will also improve relate to air quality, including: - End the sale of new conventional petrol and diesel cars and vans by 2040 (subsequently brought forward to 2030) - Spend £1 billion supporting the take-up of ultra-low emission vehicles, - Develop the electric vehicle charging network - Accelerate the uptake of low emission taxis and buses - Work with industry to accelerate the transition to zero emission vehicles - Announce plans for the public sector to lead the way in transitioning to zero emissions vehicles - Invest £1.2 billion to make cycling and walking the natural choice for shorter journeys - Work to enable cost-effective options for shifting more freight from road to rail, including using low emission rail freight for deliveries into urban areas, with zero emission last mile deliveries - Delivering trials of Heavy Goods Vehicle (HGV) platoons, which could deliver significant fuel and emissions savings.
Road to Zero ²²	This paper outlines how the government will support the transition to zero tailpipe emission road transport and reduce tailpipe emissions from conventional vehicles during the transition. This paper confirms the Government’s pledge to end the sale of new conventional petrol and diesel cars and vans by

²⁰ HM Government (2018). A Green Future: Our 25 Year Plan to Improve the Environment. Available at: <https://assets.publishing.service.gov.uk/media/5ab3a67840f0b65bb584297e/25-year-environment-plan.pdf>

²¹ HM Government (2018). The Clean Growth Strategy. Leading the way to a low carbon future. Available at: <https://assets.publishing.service.gov.uk/media/5ad5f11ded915d32a3a70c03/clean-growth-strategy-correction-april-2018.pdf>

²² HM Government (2018). The Road to Zero, Next steps towards cleaner road transport and delivering our Industrial Strategy. Available at: <https://assets.publishing.service.gov.uk/media/5b968e3ee5274a13859deed2/road-to-zero.pdf>

	2040 (subsequently brought forward to 2030), and states that the Government expects the majority of new cars and vans sold to be 100% zero tailpipe emission and all new cars and vans to have significant zero tailpipe emission capability by 2040, and that by 2050 almost every car and van should have zero tailpipe emissions. It states that the Government wants to see at least 50%, and as many as 70%, of new car sales, and up to 40% of new van sales, being ultra-low emission by 2030. It sets out a number of measures by which Government will support this transition, but is clear that Government expects this transition to be industry and consumer led. If these ambitions are realised then road traffic-related NOx emissions can be expected to reduce significantly over the coming decades.
Transport Decarbonisation Plan ²³	More recently, the Department for Transport (DfT) published a Transport Decarbonisation Plan (2021), which states: <i>“new diesel and petrol cars and vans would no longer be sold from 2030, and that all new cars and vans must be fully zero emission at the tailpipe from 2035”</i> This brings the dates significantly forward from the DfT Policy Paper.
The Ten Point Plan for a Green Industrial Revolution ²⁴	This sets out how the UK intends to achieve its vision for a cleaner, healthier, net zero carbon future. The focus is on the following ten points: - Point 1 Advancing Offshore Wind - Point 2 Driving the Growth of Low Carbon Hydrogen - Point 3 Delivering New and Advanced Nuclear Power - Point 4 Accelerating the Shift to Zero Emission Vehicles - Point 5 Green Public Transport, Cycling and Walking - Point 6 Jet Zero and Green Ships - Point 7 Greener Buildings - Point 8 Investing in Carbon Capture, Usage and Storage - Point 9 Protecting Our Natural Environment - Point 10 Green Finance and Innovation

Regional Policy and Strategy

Table 10.4: Relevant Regional Policies and Strategies

Policy/Strategy	Relevant Information
Future Wales: The National Plan 2040 ¹⁶ (The South East)	<i>This policy emphasises the importance of the importance of access to clean natural resources for a prosperous Wales. It also emphasises the importance of strategic and spatial planning in this region to create a positive impact on publica health, air quality and well-being.</i>
Air Quality in Wales 2024/2025 ²⁵	This annual report states that overall across Wales, air pollution levels are reducing. It also details the work being done across all the regions to tackle air quality.

Local Policy and Strategy

Table 10.5: Relevant Local Policies and Strategies

Policy/Strategy	Relevant Information
Newport Local Development Plan 2011-26 ²⁶	The adopted local development plan sets out the policy and spatial requirements for Newport. It includes a number of objectives and policies that refer to air quality, which are given below. <u>Objective 9 – Health and Well-being</u> <i>“To provide an environment that is safe and encourages healthy lifestyle choices and promotes well-being.</i> <i>Many of the factors that contribute to health and well-being have some basis in the planning system, which can therefore contribute to their achievement. These include locating development near safe, accessible and sustainable travel routes; attention to air quality issues; designing out crime; and enhancing access to green spaces and the wider natural environment.”</i> <u>SP14 Transport Proposals</u> <i>“TRANSPORT PROPOSALS WILL BE SUPPORTED WHERE THEY:</i> ... <i>ix) RESULT IN OTHER ENVIRONMENTAL IMPROVEMENTS, INCLUDING AIR QUALITY, NOISE REDUCTION, SUSTAINABLE DRAINAGE AND ENHANCED BIODIVERSITY.”</i> <u>GP2 General Development Principles – General Amenity</u> <i>“DEVELOPMENT WILL BE PERMITTED WHERE, AS APPLICABLE:</i> <i>i) THERE WILL NOT BE A SIGNIFICANT ADVERSE EFFECT ON LOCAL AMENITY, INCLUDING IN TERMS OF NOISE, DISTURBANCE, PRIVACY, OVERBEARING, LIGHT, ODOURS AND AIR QUALITY;”</i> <u>GP7 General Development Principles – Environmental Protection and Public Health</u> <i>“DEVELOPMENT WILL NOT BE PERMITTED WHICH WOULD CAUSE OR RESULT IN UNACCEPTABLE HARM TO HEALTH BECAUSE OF LAND CONTAMINATION, DUST, INSTABILITY OR SUBSIDENCE, AIR, HEAT, NOISE OR LIGHT POLLUTION, FLOODING, WATER POLLUTION, OR ANY OTHER IDENTIFIED RISK TO ENVIRONMENT, LOCAL AMENITY OR PUBLIC HEALTH AND SAFETY.”</i>
Development Management Air Quality Supplementary Planning Guidance ²⁷	The Supplementary Planning Guidance was produced to help ensure consistency in the way in which air quality is dealt with through the planning system. It sets out the circumstances when an assessment for air quality purposes is required and clarifies the appropriate minimum amount of information required for the air quality assessment. Mitigation measures and offsetting of impacts through compensation are also provided.
Air Quality Action Plan 2024-2029 ²⁸	This Air Quality Action Plan (AQAP) has been produced as part of Newport City Councils’ statutory duties required by the Local Air Quality Management framework. It outlines the actions the Council will endeavour to take to improve ongoing air quality in Newport between 2024 and 2029.
Newport Local Development Plan Draft vision, Issues and Objectives ²⁹	Newport City Council is preparing a Replacement Local Development Plan to cover the period 2021-2036 and when adopted this will replace the current Local Development Plan. The Council have produced a draft vision document setting out the Council’s aspirations for Newport over the new plan period. This highlights air quality as one of the key issues to address.

²³ DfT (2021). Decarbonising Transport. A Better, Greener Britain. Available at: <https://assets.publishing.service.gov.uk/media/610d63ffe90e0706d92fa282/decarbonising-transport-a-better-greener-britain.pdf>

²⁴ HM Government (2020). The Ten Point Plan for a Green Industrial Revolution. Available at: https://assets.publishing.service.gov.uk/media/5fb5513de90e0720978b1a6f/10_POINT_PLAN_BOOKLET.pdf

²⁵ Welsh Government (2025). Air Quality in Wales 2024/2025.

²⁶ Newport City Council (2015). Newport Local Development Plan 2011-26, Adopted Plan, January 2015.

²⁷ Newport City Council (2018). Development Management Air Quality Supplementary Planning Guidance.

²⁸ Newport City Council (2024). Newport City Council Air Quality Action Plan 2024-2029.

²⁹ Newport City Council (2022). Newport Local Development Plan Draft vision, Issues and Objectives, January 2022.

National Guidance

Table 10.6: Relevant National Guidance

Guidance	Relevant Information
Defra (2022) LAQM Technical Guidance ³⁰	Defra and the devolved administrations have published a guidance document on Local Air Quality Management (LAQM) - Local Air Quality Management Technical Guidance (LAQM.TG22) (Defra, 2021). This document is designed to support local authorities in carrying out their duties under the Environment Act 1995 and subsequent regulations. LAQM is the statutory process by which local authorities monitor, assess, and take action to improve local air quality. The Technical Guidance provides tools, approaches and technical information related to air quality.
Local Air Quality Management in Wales Policy Guidance PG(W)(17) ³¹	Welsh Government have produced policy guidance, the Local Air Quality Management in Wales Policy Guidance PG(W)(17) to support Welsh local authorities in carrying out their duties under the Environment Act 1995 and connected regulations. It sets out the policy implementation of the Local Air Quality Management (LAQM) framework in Wales.
EPUK and IAQM (2017) Guidance on Land-Use Planning & Development Control: Planning For Air Quality ³²	Environmental Protection UK (EPUK) in partnership with The Institute of Air Quality Management (IAQM) have produced guidance (EPUK/IAQM, 2017) on Land-Use Planning & Development Control: Planning For Air Quality. EPUK and IAQM have produced this guidance to ensure that air quality is adequately considered in the land-use planning and development control processes. It provides a means of reaching sound decisions, having regard to the air quality implications of development proposals and provides guidance on how air quality considerations of individual schemes may be considered within the development control process, by suggesting a framework for the assessment of the impacts of developments on local air quality.
IAQM (2024) Assessment of dust from demolition and construction 2024 v2.2 ³³	The IAQM produced guidance on the assessment of dust from demolition and construction (2024). This document provides a risk-based methodology for assessing construction impacts, including demolition and earthworks where appropriate. The guidance has been used throughout this assessment, which should be read in conjunction with the guidance document.
IAQM A guide to the assessment of air quality impacts on designated nature conservation sites ³⁴	The Institute of Air Quality Management (IAQM) published guidance setting out ‘a guide to the assessment of air quality impacts on designated nature conservation sites’. It includes a staged assessment approach and explains aspects that should be considered as part of an assessment of impacts of a development upon designated ecological habitats. This includes consideration of impacts of a development alone and in-combination with other projects and plans.

³⁰ Defra and the Devolved Administrations (2022). Local Air Quality Management Technical Guidance (TG22).

³¹ Welsh Government (2017). Local Air Quality Management in Wales Policy Guidance PG(W)(17), Part IV of the Environment Act 1995.

³² EPUK/IAQM. (2017). Land-Use Planning & Development Control: Planning For Air Quality.

³³ IAQM (2024). Guidance on the assessment of dust from demolition and construction 2024.

³⁴ IAQM (2020). A guide to the assessment of air quality impacts on designated nature conservation sites, Version 1.1.

Annex 4: Assessment Criteria

- 10.2 The findings of the assessment in relation to human health are considered in relation to four separate types of criteria, covered by different legislation, policy, and guidance. These include Air Quality Objectives (AQOs) and Limit Values (LVs). Consideration is also given to England's Interim Target (ITs) and an Annual Mean Concentration Target (AMCT) for context. These thresholds are set out in Table 10.7.

Table 10.7: Regulated Thresholds for Human Health

Pollutant	Time Period	Criteria Type	Concentration (number of exceedances allowed per year)	Date to be achieved from and maintained after
Nitrogen dioxide (NO ₂)	1-hour Mean	AQO	200 µg/m ³ (18 times a year)	31 st Dec 2005
		LV	200 µg/m ³ (18 times a year)	1 st Jan 2010
	Annual Mean	AQO	40 µg/m ³	31 st Dec 2005
		LV	40 µg/m ³	1 st Jan 2010
Particulate Matter (PM ₁₀)	24-hour Mean	AQO	50 µg/m ³ (35 times a year)	31 st Dec 2004
		LV	50 µg/m ³ (35 times a year)	31 st Dec 2004
	Annual Mean	AQO	40 µg/m ³	31 st Dec 2004
		LV	40 µg/m ³	31 st Dec 2004
Particulate Matter (PM _{2.5})	Annual Mean	AQO ^a	20 µg/m ³	2020
		LV	20 µg/m ³	2020
		IT ^a	12 µg/m ³	31 st Jan 2028
		IT ^a	10 µg/m ³	Dec 2030
		AMCT ^a	10 µg/m ³	31 st Dec 2040
Table notes:				
^a Not in Regulations and there is no legal requirement for local authorities to meet it.				

- 10.3 While other pollutants are also regulated (including ozone, sulphur dioxide, polycyclic aromatic hydrocarbons, benzene, 1,3-butadiene, carbon monoxide, and lead), there Council have not identified any significant risks of these within the local area.
- 10.4 Where relevant, consideration has also been given to potential health effects below regulated thresholds. The World Health Organization (WHO) has published air quality guidelines³⁵ setting out the risks of these pollutants and health-based recommendations for air quality management. This includes Air Quality Guideline (AQG) levels to minimise health effects of the pollutants as well as Interim Targets (ITs) to assist with progressing towards the AQGs. These are set out in Table 10.8.

Table 10.8: WHO Guidelines – Non-Regulated Thresholds for Human Health

Pollutant	Time Period	Interim Target (µg/m ³)				AQG Level (µg/m ³)
		1	2	3	4	
Nitrogen dioxide (NO ₂)	1-hour Mean	-	-	-	-	200
	24-hour Mean	120	50	-	-	25
	Annual Mean	40	30	20	-	10
Particulate Matter (PM ₁₀)	24-hour Mean	150	100	75	50	45
	Annual Mean	70	50	30	20	10
Particulate Matter (PM _{2.5})	24-hour Mean	75	50	37.5	25	15
	Annual Mean	35	25	15	10	5

- 10.5 The WHO guidelines are not in UK Regulations and there is no legal requirement for local authorities to meet them. Nevertheless, the UK Health Security Agency believe reductions of these pollutants below regulated levels is likely to bring health benefits. Comparison with the AQGs and ITs is considered a useful way to help understand potential health risks of air quality.
- 10.6 The findings of the assessment in relation to ecological habitats are considered in relation to four separate types of criteria, covered by different legislation, policy, and guidance. These include Air Quality Objectives (AQOs), Limit Values (LVs), Critical Levels (CLe), and Critical Loads (CLo). These regulated thresholds are set out in Table 10.9 and within the assessment where relevant.

Table 10.9: Regulated Thresholds for Ecological Habitats

Pollutant	Time Period	Criteria Type	Concentration (number of exceedances allowed per year)	Date to be achieved from and maintained after
Nitrogen Oxides (NO _x) expressed as NO ₂	24-hour Mean	CLe	75 µg/m ³ or 200 µg/m ³ ^a	-
	Annual Mean	CLe	30 µg/m ³	-
		AQO	30 µg/m ³	31 st Dec 2000
		LV	30 µg/m ³	19 th Jul 2001
Sulphur Dioxide (SO ₂) ^b	Annual Mean	CLe	10 µg/m ³ or 20 µg/m ³ ^c	-
		AQO	10 µg/m ³ or 20 µg/m ³ ^c	31 st Dec 2000
		LV	10 µg/m ³ or 20 µg/m ³ ^c	19 th Jul 2001
	Winter Average	AQO	20 µg/m ³	31 st Dec 2000
		LV	20 µg/m ³	19 th Jul 2001
Ozone (O ₃) ^d	Average over 5 years	AQO	18,000 µg/m ³ ^e	1 st Jan 2010
		LV	18,000 µg/m ³ ^e	1 st Jan 2010
Ammonia (NH ₃)	Annual Mean	CLe	1 µg/m ³ or 3 µg/m ³ ^f	-
Table notes: ^a The WHO define CLe for short-term NO _x as being dependent on O ₃ and SO ₂ , and that "Experimental evidence exists that the CLe [critical level] decreases from around 200 µg/m ³ to 75 µg/m ³ when in combination with O ₃ or SO ₂ at or above their critical levels. In the knowledge that short-				

³⁵ World Health Organisation. (2021). World Health Organization, 2021, WHO Global Air Quality guidelines: particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide. Retrieved from <https://apps.who.int/iris/handle/10665/345329>

term episodes of elevated NOx concentrations are generally combined with elevated concentrations of O₃ or SO₂, 75 µg/m³ is proposed for the 24 h mean". Thus, where O₃ and SO₂ are not elevated above their CLe, a value of 200 µg/m³ is recommended for assessments.

b. It has been assumed that the engine will be fuelled with ultra-low sulphur diesel, which is commonly available, is required to be used under Legislation, and has negligible levels of sulphur. The assessment of effects from SO₂ is therefore beyond the necessity of this assessment.

c. 10 µg/m³ not to be exceeded where lichens or bryophytes are present, 20 µg/m³ where they're not present.

d. Ground-level O₃ is a secondary pollutant formed from complex interactions between NOx, non-methane volatile organic compounds and sunlight. O₃ may travel long distances from original sources of its precursors. It is thus not possible to quantify impacts upon O₃ formation without running a chemical transport model, which is beyond the scope and necessity of this assessment.

e. Target value of 18,000 µg/m³ based on AOT40 to be calculated from 1 hour values from May to July, and to be achieved, so far as possible, by 2010.

f. 1 µg/m³ not to be exceeded where lichens or bryophytes (including mosses, liverworts and hornworts) are present, 3 µg/m³ where they're not present.

Annex 5: Construction Dust Impacts

Assessment Methodology

10.7 The assessment follows the qualitative risk assessment approach set out in IAQM guidance³³. The approach follows a series of steps which are explained below.

Step 1

10.8 Initial distance-based screening is carried out to determine whether there is any risk of dust effects. The screening criteria are:

- a human receptor within:
 - 250 m of the boundary of the site; or
 - 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).
- an ecological receptor within:
 - 50 m of the boundary of the site; or
 - 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).

10.9 Where there are no receptors within the screening distances, the effects can be discounted. Where receptors are identified, the assessment proceeds to Step 2.

Step 2

10.10 Step 2 of the IAQM approach is to assess the risk of dust effects for four categories; demolition, earthworks, construction and trackout.

10.11 The guidance sets out indicative criteria for dust emission magnitude classifications of Small, Medium, and Large. The classification depends on a variety of considerations, including the scale of dust generating activities, the dustiness of materials and soil, the duration of works (including phasing), and professional judgement.

10.12 The magnitude of dust effects is then combined with the sensitivity of the local area to any dust effects (i.e. the sensitivity and number of human and ecological receptors) to determine the risk of dust effects without any mitigation.

10.13 The sensitivities of receptors should be classified as low, medium or high sensitivity in terms of dust soiling and human health/ecological effects, and take account of a number of factors including the uses of properties, the proximity and number of receptor, baseline dust (PM₁₀) concentrations, and other site-specific factors (such as barriers shielding receptors from dust).

10.14 The IAQM guidance provides examples of high, medium and low sensitivity receptors. Residential properties are considered high sensitivity receptors to dust soiling and human health effects. Commercial properties are generally considered medium sensitivity to human health effects, and those reliant on appearance are considered high sensitivity receptors to dust soiling and others are considered medium sensitivity to dust soiling. Industrial facilities are considered low sensitivity receptors. For ecological effects, in general, international statutory nature conservation sites are considered high sensitivity, national statutory nature conservation sites are considered medium sensitivity, and non-statutory nature conservation sites are considered low sensitivity.

Step 3

10.15 Based upon the risk of dust effects identified in Step 2, appropriate site-specific mitigation measures are then identified.

Step 4

10.16 With the identified mitigation measures implemented, consideration is then given to residual effects. Sufficient mitigation measures should be identified in Step 3 to ensure residual effects are not significant.

Impact Assessment

Step 1

10.17 Following the IAQM qualitative risk assessment approach, sensitive human and ecological receptors in the local area have been reviewed in relation to the distances set out in the guidance.

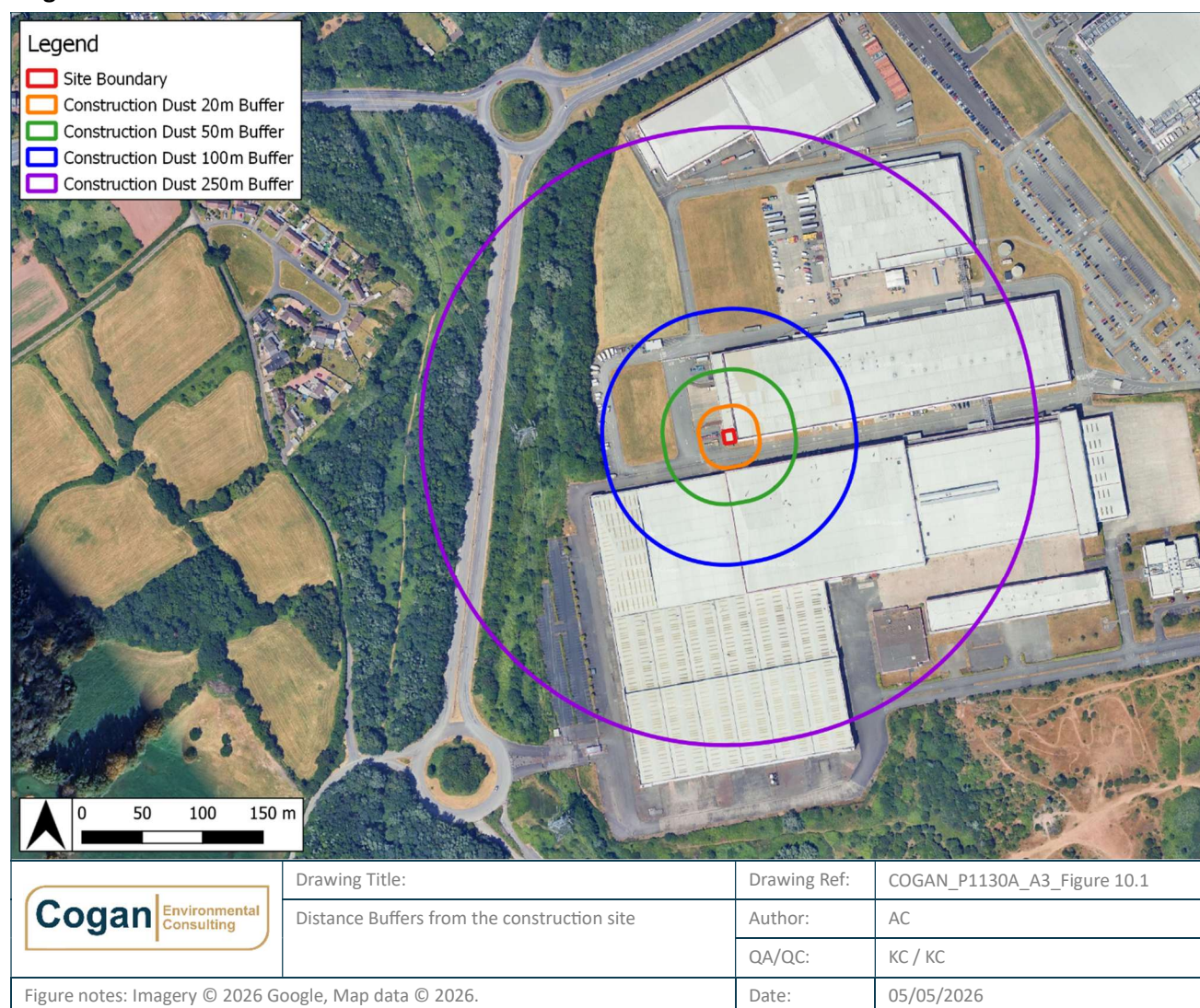
10.18 For onsite works, the distances are 20 m, 50 m, 100 m and 250 m. These are shown in Figure 10.1. The review has identified:

- there are human receptors within the distances; and
- there are no ecological receptors within 50 m of onsite works.

10.19 Construction vehicles will travel over the existing hard-surfaced roads; there will therefore not be any dust or dirt tracked out onto local roads.

10.20 Hence, further assessment is required for human health receptors for onsite works. No further assessment of ecological receptors will be made.

Figure 10.1: Distance Buffers from the construction site



Step 2

Dust Emission Magnitudes

Demolition

10.21 There will not be any demolition.

Earthworks

10.22 There will not be any earthworks.

Construction

10.23 The Proposed Development will involve the installation of external building flues and associated works. These are likely to be almost entirely made of metal and generate little (if any) dust. Based on the criteria set out in the IAQM guidance, the dust emission magnitude for construction is considered Small.

Trackout

During the construction phase, some vehicles, particularly Heavy Goods Vehicles (HGVs) will access the site to deliver and remove materials. These vehicles will travel over the existing hard-surfaced roads. There will therefore not be any dust or dirt tracked out onto local roads.

Summary of Dust Emission Magnitudes

10.24 The dust emission magnitudes for the Proposed Development are summarised in Table 10.10.

Table 10.10: Summary of dust emission magnitudes

Activity	Dust Emission Magnitude
Demolition	N/A
Earthworks	N/A
Construction	Small
Trackout	N/A

Sensitivity of the Local Area

10.25 Figure 10.1 shows the distances over which receptors need to be considered and demonstrate that:

- For onsite works:
 - There is one high sensitivity use (car park) within 100 m of the application site. Following the IAQM guidance, the sensitivity of the area to dust soiling effects from onsite works will be Low.
 - Baseline annual mean PM₁₀ concentrations in the local area are estimated to be below 24 µg/m³. Following the IAQM guidance, the sensitivity of the area to human health effects from onsite works will be Low, since there are no high sensitivity uses within 250 m of the application site but there are several places of work (medium sensitivity uses).

10.26 The sensitivity of the local area is summarised in Table 10.11.

Table 10.11: Summary of sensitivities of the local area

Effect Stage	Activity			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	N/A	N/A	Low	N/A
Human Health	N/A	N/A	Low	N/A
Ecological	N/A	N/A	N/A	N/A

Risk of Dust Effects

10.27 Using the risk matrices set out in the IAQM guidance, the dust emission magnitudes in Table 10.10 have been combined with the sensitivities in Table 10.11 to derive the risks of dust effects, without mitigation. These are presented in Table 10.12.

Table 10.12: Risk of dust effects

Effect Stage	Activity			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	N/A	N/A	Negligible Risk	N/A
Human Health	N/A	N/A	Negligible Risk	N/A
Ecological	N/A	N/A	N/A	N/A

Step 3

- 10.28
Measures to mitigate emissions will be required during the construction phase of the Proposed Development in order to minimise dust effect upon nearby sensitive receptors.
- 10.29
Typically, appropriate measures would be identified based upon the risks identified in Step 2 (Table 10.12). Appropriate mitigation measures have been identified based on the IAQM guidance. However, as there will be Negligible Risks no measures are required when following the guidance.
- 10.30
A construction phasing and logistics method statement was developed for the consented application 24/0390 and it is recommended that relevant measures set out in the method statement are implemented for this application.

Step 4

- 10.31
The residual effects are judged to be ‘not significant’. The local community may experience occasional, short-term annoyance (for instance under adverse weather conditions). The scale of this would not normally be considered sufficient to change the conclusion that the effects will be ‘not significant’.

Annex 6: Impact Assessment Methodology

- 10.32 The Proposed Development will lead to changes in road traffic flows along local roads, the emissions from which may impact upon local air quality.

Impact Assessment Methodology – Human Health

- 10.33 The assessment follows appropriate methodologies from the EPUK/IAQM³² and Defra³⁰. The approach used is described below.

Stage 1

- 10.34 The approach first considers the size and parking provision of a development; if the development is residential and is for fewer than ten residential units or covers less than 0.5 ha, or is non-residential and will provide less than 1,000 m² of floor space or cover a site area of less than 1 ha, and will provide ten or fewer parking spaces, then there is no need to progress to a Stage 2 and the impacts of the development on the local area can be screened out and considered ‘not significant’.

Stage 2

- 10.35 The second stage then compares the changes in combustion plant emissions that a development will lead to against specified screening criteria. Where these criteria are exceeded, a detailed assessment is required, although the guidance advises that “the criteria provided are precautionary and should be treated as indicative”, and “it may be appropriate to amend them on the basis of professional judgement”.
- 10.36 The criteria relating to road traffic are:
- A change of LDV flows of:
 - more than 100 AADT within or adjacent to an AQMA
 - more than 500 AADT elsewhere.
 - A change of HDV flows of:
 - more than 25 AADT within or adjacent to an AQMA
 - more than 100 AADT elsewhere.
 - Where roads are realigned near to sensitive receptors and the change in alignment is 5 m or more and the road is within an AQMA. Applies to junctions that cause traffic to significantly change vehicle acceleration/deceleration, e.g. traffic lights, or roundabouts.
 - Where bus flows will change by:
 - more than 25 AADT within or adjacent to an AQMA
 - more than 100 AADT elsewhere.

Simple or Detailed Assessments

- 10.37 Where an air quality assessment is identified as being required, then this may take the form of either a Simple Assessment or a Detailed Assessment (i.e. utilising detailed dispersion models), however, it should be noted that exceeding a screening criterion in Table 6.2 of the guidance does not automatically lead to the requirement for a Detailed Assessment and the use of professional judgement and sufficient evidence can be considered appropriate at times (Simple Assessment).

Describing Impacts

Long-term (Annual Mean) Impacts on Air Quality at Locations of Human Health Exposure

- 10.38 The impact at each receptor is described separately for each pollutant of concern, using the matrix set out in Table 10.13. This combines the net change (due to the Proposed Development) as a percentage of the assessment criteria (such as an AQO) with the total concentration level (including the addition of the net change), to obtain an impact descriptor.

Table 10.13: Annual Mean Impact Descriptors for Individual Receptors

Annual Mean Concentration (µg/m ³)	Change in Concentration relative to the Assessment Criteria (µg/m ³)			
	1%	2-5%	6-10%	>10%
75% or less of the Assessment Criteria	Negligible	Negligible	Slight	Moderate
76-94% of the Assessment Criteria	Negligible	Slight	Moderate	Moderate
95-102% of the Assessment Criteria	Slight	Moderate	Moderate	Substantial
103-109% of the Assessment Criteria	Moderate	Moderate	Substantial	Substantial
110% or more of the Assessment Criteria	Moderate	Substantial	Substantial	Substantial

Short-term (24-hour, 8-hour, 1-hour and 15-minute mean) Impacts on Human Health

- 10.39 The short-term 1-hour mean NO₂ and 24-hour mean PM₁₀ AQOs are assessed in relation to the risk of a breach in number of period (1-hour or 24-hour) exceedances.
- 10.40 Previous research carried out on behalf of Defra and the Devolved Administrations³⁰ identified that exceedances of the 1-hour mean NO₂ AQO are unlikely to occur where the annual mean is below 60 µg/m³. Similarly, exceedances of the 24-hour mean PM₁₀ AQO are unlikely to occur where the annual mean is below 32 µg/m³. Where annual mean concentrations are below these levels the short-term impacts are considered negligible.

Significance

- 10.41 The assessment of significance is based on professional judgement, with the overall air quality effect of the development described as either ‘significant’ or ‘not significant’.
- 10.42 In drawing the determination of significance, the following factors have been taken account of:
- Where the impacts are Negligible the overall significance is judged to be ‘not significant’.

- Where a Simple or Detailed assessment is carried out, in drawing the determination of significance, the following factors should be taken account of:
- Whether the impacts could be screened out in stage 1 or stage 2 screening.
- What the predicted impacts at receptors are and the number of receptors affected.
- How many pollutants are causing impacts and whether both long-term and short-term impacts are predicted to occur.
- Whether any exceedances of assessment thresholds will be created.
- Whether any existing exceedances of assessment thresholds are worsened.
- Whether compliance with the LVs will be altered.
- To what extent the modelling assumptions and uncertainties may pose a risk to significance.
- Whether the potential for cumulative impacts has been accounted for and if not, whether this would alter the significance.
- Whether there is anything else that is important to take account of when considering the significance.

Impact Assessment Methodology - Ecology

- 10.43 The assessment follows the approach set out in IAQM guidance³⁴, which takes account of the methodology described in The Design Manual for Roads and Bridges (DMRB), advice from Natural England, Defra/Environment Agency guidance, and the 2017 Wealdon judgement. The assessment involves uses a staged approach.

Stage 1: Scoping

- 10.44 Initially a scoping assessment is carried out. This includes consultation with relevant bodies where possible, consideration of baseline conditions and relevant ecological habitats, and comparison against the following screening criteria steps:
- 1) Whether roads within 200 m of relevant national network sites are affected by changes in traffic due to a development.
 - 2) Whether there are any qualifying features within the identified sites.
 - 3) For the identified features, whether traffic on roads within 200 m will experience a change of an AADT flow of 1,000 or more, or a HDV AADT flow of 200 or more. This should take account of both the development alone and in-combination with other projects and plans.
- 10.45 Note, the Habitats Regulations place a duty on authorities to assess the effect of new projects and plans both alone and in-combination with other projects and plans. The guidance states *“It should, however, be noted*

that where the impacts are due to road traffic emissions, the cumulative impact may not be explicitly identified”.

- 10.46 Where the screening criteria are not exceeded, it may be concluded that the effects will be ‘not significant’.

Stage 2: Quantification

- 10.47 If the Stage 1 screening criteria are exceeded, then the process contributions (PC) (i.e. net change) resulting from a development should be quantified.

Stage 3: Screening

- 10.48 Once the PCs from a development are quantified, these should be compared to the regulated criteria (see Technical Appendix - Annex 4: Assessment Criteria), noting that the IAQM guidance makes the following statements:

- *“A database of site-specific critical loads for nitrogen and acid deposition rates is available on the APIS website”.*
- *“APIS does not cover all habitat types. In these cases, for an assessment to be undertaken advice from a suitably qualified ecologist is required”.*
- *“The calculated maximum PC as a percentage of the relevant critical load/level is used to determine whether the impacts will have an insignificant effect or, conversely, may be large enough to warrant further evaluation by an ecologist”.*
- *“In the case of Environment Agency permitting, an increment of 1% (or less) of the relevant long term critical level or critical load alone is considered inconsequential. A change of such magnitude, i.e. two orders below the criterion for harm to occur, is challenging to measure (even by the most precise air quality instrument) and difficult to distinguish from natural fluctuations in measured data (due to other variables such as variations in emissions and weather). For this reason, and others, it has been used as a precautionary screening criterion”.*
- *“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”.*
- *“Crucially, the 1% screening criterion is not a threshold of harm and exceeding this threshold does not, of itself, imply damage to a habitat”.*

Screening out PCs

- 10.49 For international and national statutory nature conservation sites, the guidance advises that to screen out the need for further assessment, a PC for any substance emitted from a development must meet both of the following criteria:

- the short-term PC is less than 10% of the short-term assessment criteria; and
- the long-term PC is less than 1% of the long-term assessment criteria.

10.50 For non-statutory nature conservation sites, the guidance advises that to screen out the need for further assessment, a PC for any substance emitted from a development must meet both of the following criteria:

- the short-term PC is less than 100% of the short-term assessment criteria; and
- the long-term PC is less than 100% of the long-term assessment criteria.

10.51 Where PCs are screened out, the impacts may be considered insignificant.

Further Assessment

10.52 Where PCs are not screened out, further assessment is required. This would normally include determination of the Predicted Environmental Concentration (PEC) for each substance where relevant. The PEC is the total concentration, i.e. PC plus baseline concentration (including any cumulative contributions where relevant). At this point, an ecological assessment typically undertaken by an ecologist would be required to determine whether the impacts are likely to result in a significant effect on the habitat or not.

Annex 7: Dispersion Modelling Approach

10.53 To carry out the assessment detailed atmospheric dispersion modelling has been completed. Details of the modelling methodology are set out below.

Overview

10.54 Atmospheric dispersion modelling has been conducted following guidance from Defra and the Devolved Administrations³⁰.

Scenarios Modelled

10.55 The modelling scenarios for this assessment have been reviewed and the following scenarios have appropriately been considered and modelled:

- Maintenance testing; and
- Power failure (emergency scenario).

10.56 Each of these scenarios have been modelled with:

- Five meteorological years (2021-2025); and
- With and without building downwash effects.

10.57 To provide a robust conservative assessment, the maximum predicted concentrations from the scenarios have been used when determining the impacts of the Proposed Development.

Model

10.58 Concentration contributions associated with road traffic have been predicted using the ADMS atmospheric dispersion model (v6). ADMS-Roads was developed and validated by Cambridge Environmental Research consultants (CERC). The model is used extensively throughout the UK for regulatory compliance purposes and Local Air Quality Management and is accepted as an appropriate tool by local authorities and national regulators. The model requires a range of input parameters which are discussed below.

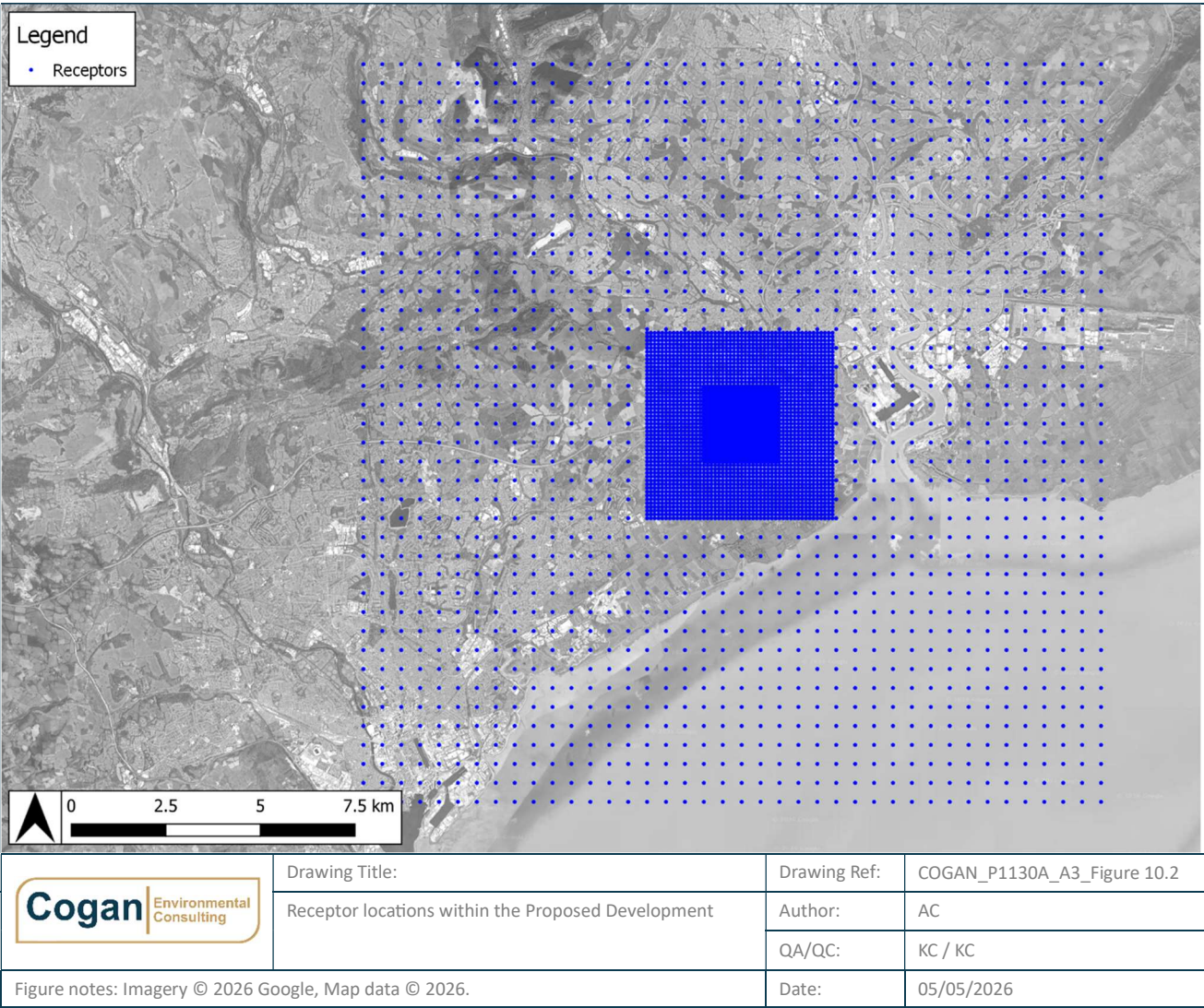
Receptors

10.59 Concentrations have been predicted across a nested cartesian grid, with receptors every:

- 10 m x 10 m within 500 m of the Proposed Development;
- 25 m x 25 m within 1000 m of the Proposed Development;
- 100 m x 100 m within 2500 m of the Proposed Development; and
- 500 m x 500 m within 10000 m of the Proposed Development.

10.60 The receptors have all been modelled at a height of 1.5 m, representing locations of exposure at ground floor level. The receptor locations are shown in Figure 10.2.

Figure 10.2: Receptor locations within the Proposed Development



Combustion Plant Equipment

10.61 The Proposed Development is proposed to be provided with emergency backup power through the use of onsite generators. This will be achieved through the use of two generators operating at up to 100% engine load.

10.62 The generator specified for the Proposed Development by the Client is the Rehlko Industrial Generator Set – D830. Details of the generator are provided below. This generator will be diesel fuelled.

Technical Specifications



Industrial Generator Set - D830



Ratings Range

		400/230 V - 50 Hz
Standby	kW	660
	kVA	825
Prime	kW	600
	kVA	750



Benefits and features

Rehiko premium quality

- Design offices using the latest technical innovations
- Modern fully certified factories
- A cutting edge laboratory
- The generating set, its components and a wide range of options have been fully developed, prototype tested, factory built, and production tested

Rehiko premium performances

- Optimized and certified sound levels
- Reliable power, even in extreme conditions
- Optimized fuel consumption
- Compact footprint
- Best quality of electricity, high starting and loading capacity, according to ISO8528-5
- Robust base frames and high-quality enclosures
- Protection of installations and people
- Approved in line with the most stringent standards

Engines

- Premium level engines, in-house or from strong partners
- High power density, small footprint
- Low temperature starting capability
- Long maintenance interval

Alternator

- Provide industry leading motor starting capability
- Made in Europe
- Built with a class H insulation and IP23

Cooling

- A compact and complete solution using a mechanically driven radiator fan
- Designed or optimized by Rehiko
- High temperature and altitude product capacity available

Base frame and enclosure

- High quality steel with enhanced corrosion resistance
- Highly durable QUALICOAT-certified epoxy paint
- Minimum 1000 hours of resistance to salt spray in accordance with ISO12944
- Ergonomic access to allow easy maintenance and connection of the generator
- Robust design optimized for transportation

Generator sets ratings

	Hz	Standby rating			Prime rating	
		kWe	kVA	Amps	kWe	kVA
400/230	50	660	825	1191	600	750
380/220	50	660	825	1253	600	750
200/115	50	660	825	2382	600	750
240 TRI	50	660	825	1985	600	750
230 TRI	50	660	825	2071	600	750
415/240	50	660	825	1148	600	750

General Specifications

Manufacturer	Rehiko
Engine ref.	DP222LC
Alternator choices	KH03546T
Performance class	G3
Voltage (V)	400/230 380/220 200/115 240 TRI 230 TRI 415/240
Controllers	APM303 APM403 Terminal block M80
Consumption @ 100% load ESP (L/h)*	172
Consumption @ 100% load PRP (L/h)*	160
Emission level	Fuel consumption optimization

Type of Cooling	Radiator
Factory installed enclosures	M240 M240-DW

* Volumetric Fuel consumption is up to 4% higher when using HVO than Diesel Fuel



Industrial Generator Set - D830

Engine Specifications

Engine brand	Hyundai
Engine ref.	DP222LC*
Air inlet system	Turbo
Cylinder configuration	12 - V
Displacement (l)	21.93
Bore (mm) x Stroke (mm)	128 x 142
Compression ratio	15 : 1
Speed 50Hz (RPM)	1500
Maximum stand-by power at rated RPM (kW)	723
Governor type	Electronic
Frequency regulation, steady state (%)	+/- 0.25%

Lubrication System

Oil Filter Quantity and type****	
Charge Air coolant	Air/Air

****Rehiko recommends the use of genuine oil and filters.

Fuel System

Maximum fuel pump flow (l/h)	540
Max head on fuel return line (m fuel)	1
Fuel	Diesel Fuel

* Engine reference may be partially modified depending on genset application, options selected by the customer and lead time required.

Consumption with cooling system

Fuel consumption @ ESP Max Power (l/h)	172,8
Fuel consumption @ PRP Max Power (l/h)	161
Fuel consumption @ 75% of PRP Power (l/h)	119,1
Fuel consumption @ 50% of PRP Power (l/h)	79,3

Cooling system

Radiator & Engine capacity (l)	114
Fan power 50Hz (kW)	24
Fan air flow w/o restriction (m3/s)	17
Available restriction on air flow (mm H2O)	30
Type of coolant	Glycol-Ethylene
Radiated heat to ambient (kW)	65
Heat rejection to coolant HT (kW)	306
Coolant capacity HT, engine only (l)	23
Max coolant temperature, Shutdown (°C)	103
Thermostat begin of opening HT (°C)	71
Thermostat end of opening HT (°C)	85

**Industrial Generator Set - D830**

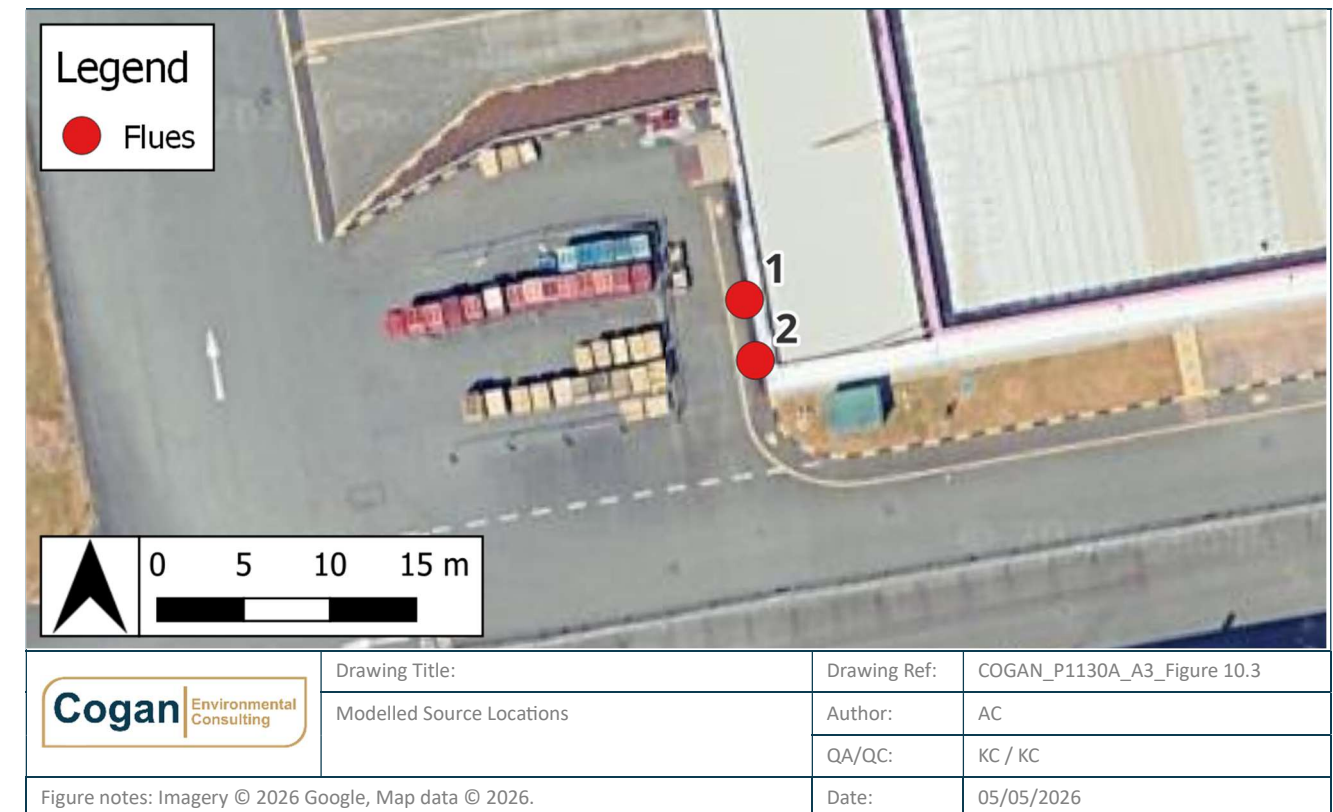
Exhaust system		Alternator Specifications	
Heat rejection to exhaust (kW)	639	Number of pole	4
Exhaust gas temperature @ ESP (°C)	502	Technology	Brushless
Exhaust gas flow @ ESP (l/s)	1800	AVR Regulation	Yes
Electrical system		Insulation class	H
Battery voltage (V)	24	Indication of protection	IP23
Air Intake system		Number of bearing	1
Combustion air flow (l/s)	750	Number of wires	12
Radiated heat to ambient (kW)	65	Coupling	Direct
		Overspeed (rpm)	2250
		Voltage regulation at established rating (+/- %)	0,5
		Unbalanced load acceptance ratio (%)	8

Alternator standard features

- All models are brushless, rotating-field alternators
 - NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting
 - The AVR voltage regulator provides superior short circuit capability
 - Self-ventilated and drip proof construction
 - Superior voltage waveform
- Note: See Alternator Data Sheets for alternator application data and ratings, efficiency curves, voltage dip with motor starting curves, and short circuit decrement curves.*

Sources

- 10.63 The model allows for sources to be modelled in a variety of ways. The potential approaches have been reviewed, and it was considered the most appropriate approach was to model the combustion plant equipment as point sources, since the emissions are proposed to be released vertically via cylindrical stacks. There will be two stacks, one for each generator. The stack locations are shown in Figure 10.3.

Figure 10.3: Modelled Source Locations**Combustion Parameters**

- 10.64 A number of parameters defining the release conditions of emissions from the combustion plant equipment have been included in the modelling. These have been derived from information set out in the equipment technical specifications, assuming 100% load and the complete stoichiometric combustion of fuel.
- 10.65 The assumed fuel composition is presented in Table 10.14 and is based on the composition (molar fractions) of a realistic diesel fuel sample (gas chromatography data).

Table 10.14: Assumed Fuel Composition

Compound	Label	Diesel Composition
Octane	C8H18	0.80%
Nonane	C9H20	6.27%
Decane	C10H22	15.00%
Undercane	C11H24	10.93%
Dodecane	C12H26	67.00%

- 10.66 The derived combustion parameters used in the modelling and associated parameters are set out in Table 10.15.

Table 10.15: Derived Combustion Parameters – Each Generator

Parameter	Actual Conditions	Normalised Conditions
Input		
Net Input Power (kW)	1776	
Gross Input Power (kW)	1911	
Gross Fuel Consumption (L/hr)	172.8	
Gross Fuel Consumption (kg/hr)	144.7	
Combustion Air In (L/s)	750	
Combustion Air In (m³/hr)	2700	
Combustion Air In (kg/hr)	3196	
Excess Air (%)	108.2	
Exhaust Conditions		
Diameter (m)	0.40	0.40
Velocity (m/s)	16.30	16.30
Temperature (°C)	502	0
Volume Flow Rate (m³/s)	2.048	0.324
Molar Flow Rate (mol/s)	32.20	16.27
Mass Flow Rate (kg/hr)	3340.5	1627.4
Oxygen Content (%)	6%	0%
Water Content (%)	10%	0%

Emissions

- 10.67 The release emissions from the combustion plant equipment have been included in the modelling. These have been provided by the manufacturer specifically for the generators included in the Proposed Development. The manufacturer has specifically provide the emission rates via email, for which the correspondence is provided below:

From Kevin Ashton <k.ashton@rehlko.com>
Date Wed 22/04/2026 09:44
To Austin Cogan <Austin@cogan-ec.com>
Cc [REDACTED]

1 attachment (706 KB)
D0830-02-EN.pdf

Good morning, Austin

Thank you for your email. I have commented below in **GREEN** and have attached the model data sheet and the following Emissions information, albeit very limited from the factory I'm afraid. Hope this assists.

Emissions

Emission PM 50Hz (g/kW.h)	0,0820
---------------------------	--------

From Kevin Ashton <k.ashton@rehlko.com>
Date Wed 22/04/2026 16:47
To Austin Cogan <Austin@cogan-ec.com>
Cc [REDACTED]

Good afternoon, Austin

The 1676 mg/Nm3 figure provided is a calculated figure issued by the Factory and should be the value followed.

- 10.68 The derived emission rates used in the modelling and associated emission parameters are set out in Table 10.16. The generators will be operated at 100% load (except for 1 hour during the annual load test where it will be increased to 110%).

Table 10.16: Derived Emissions – Each Generator

Parameter	NOx	PM
Emission Rate (mg/Nm³ at 15% O₂)	1676	25.6
Emission Rate (g/kWh)	5.301	0.082
Emission Rate (mg/kWh)	5301	82
Emission Rate (mg/Nm³ at 5% O₂)	6611	102
Emission Rate (g/HP-h)	3.953	0.061
Emission Rate (g/s) @100% load	2.81454092	0.04353577
Emission Rate (g/s) @110% load	3.09599501	0.04788934

Buildings

10.69 To take account of potential higher concentrations in the lee of large structures (known as the building downwash effect), buildings have been included in the modelling following guidance from the NRW. The modelled buildings are shown in Figure 10.4.

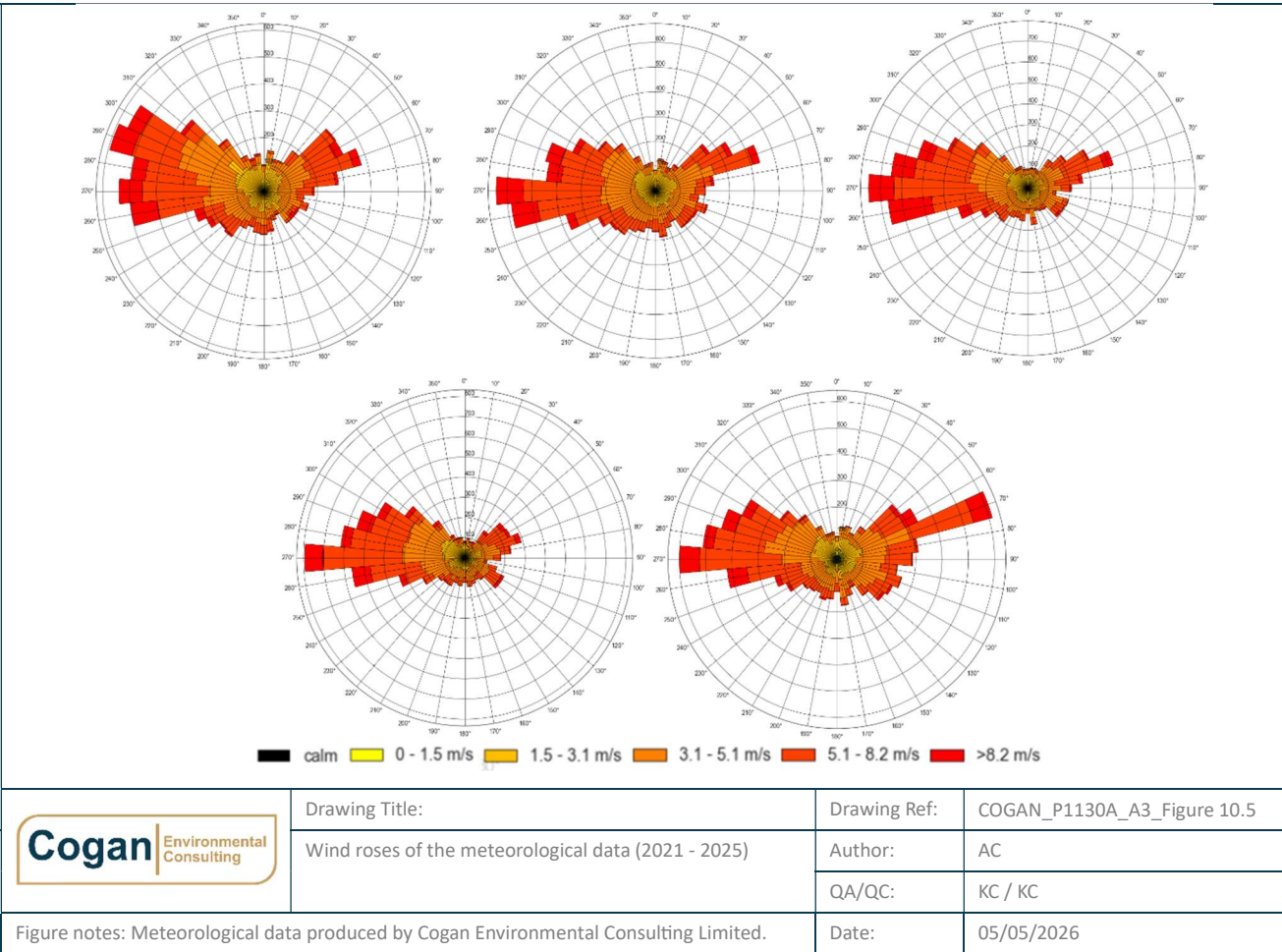
Figure 10.4: Modelled Buildings



Meteorology

- 10.70 The dispersion model includes a meteorological pre-processor developed by the UK Met Office to calculate values of meteorological parameters in the boundary-layer. The pre-processor requires a set of meteorological parameters on an hour-by-hour basis: wind speed, wind direction, temperature, and cloud cover.
- 10.71 Meteorological data from the Cardiff Airport Meteorological Station was used within the model. This station is considered to provide representative data for the local area.

Figure 10.5: Wind roses of the meteorological data (2021 - 2025)



Surface Characteristics

10.72 The dispersion model’s meteorological pre-processor also requires values to be set for a number of surface characteristics, for both the meteorological station and the dispersion site (the Proposed Development). Details of the values used in the modelling are provided in Table 10.17. These have been calculated using a 10 m x 10 m resolution based on good practice methodologies set out in guidance^{36,37}.

Table 10.17: Meteorological parameter values used in the modelling

Parameter	Meteorological Site	Dispersion Site
Latitude (°)	N/A	51.55
Surface roughness (m)	0.38204	0.55187
Surface albedo	0.23811	0.25517
Minimum Monin-Obukhov length (m)	13.97049	13.30504
Priestley-Taylor parameter	1	1

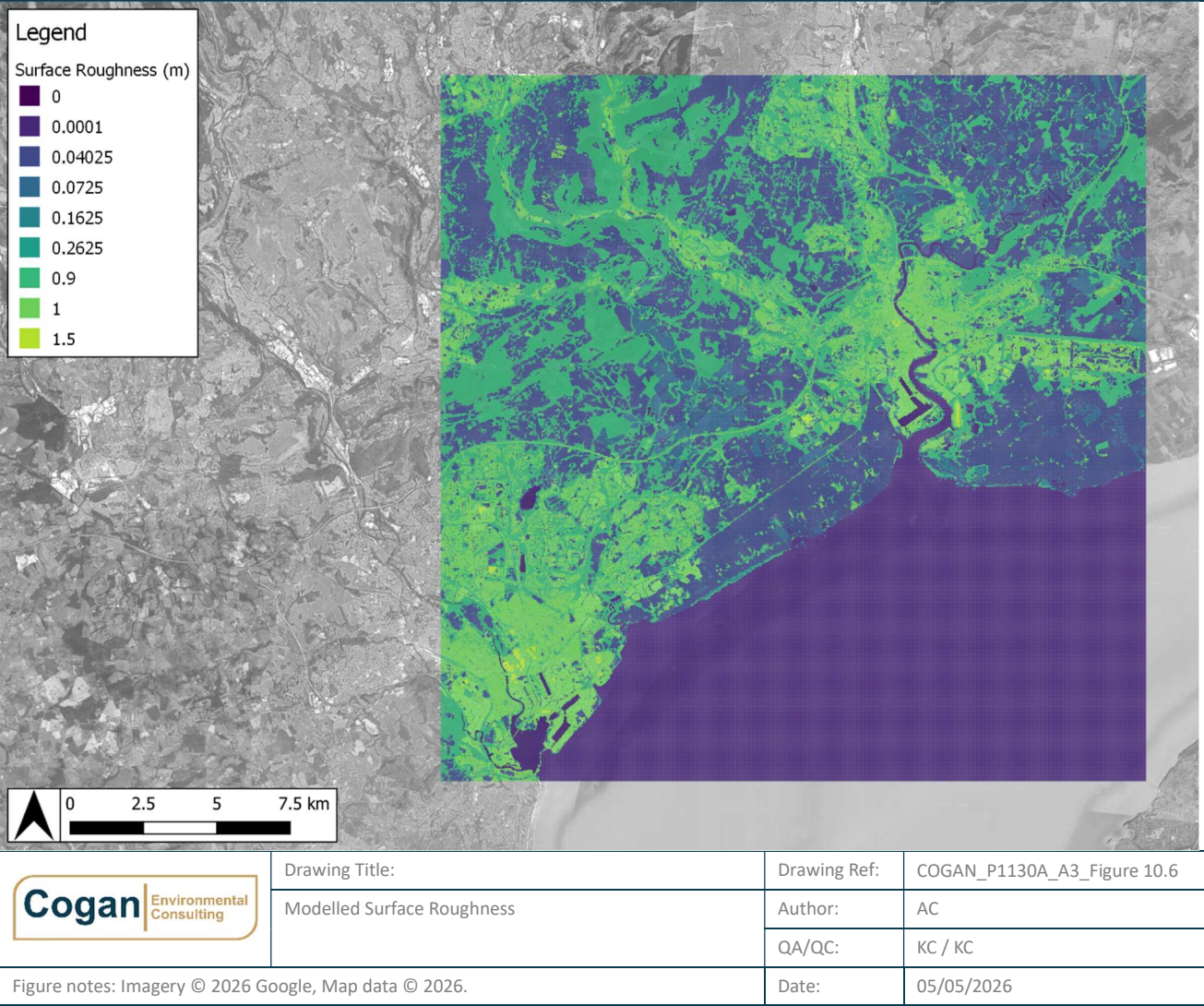
³⁶ USEPA (2023). User’s Guide for the AERMOD Meteorological Preprocessor (AERMET), EPA-454/B-23-005.

³⁷ USEPA (2023). AERMOD Implementation Guide, EPA-454/B-23-009.

Surface Roughness

10.73 Changes in wind velocity and turbulence caused by the presence of surface obstructions has been accounted for within the modelling. A single surface roughness has been used in this instance, as verification sites and dispersion sites are far apart, with highly variable surface characteristics in between, including that of terrain. This has been calculated using a 10 m x 10 m resolution based on good practice methodologies set out in guidance^{36,37}.

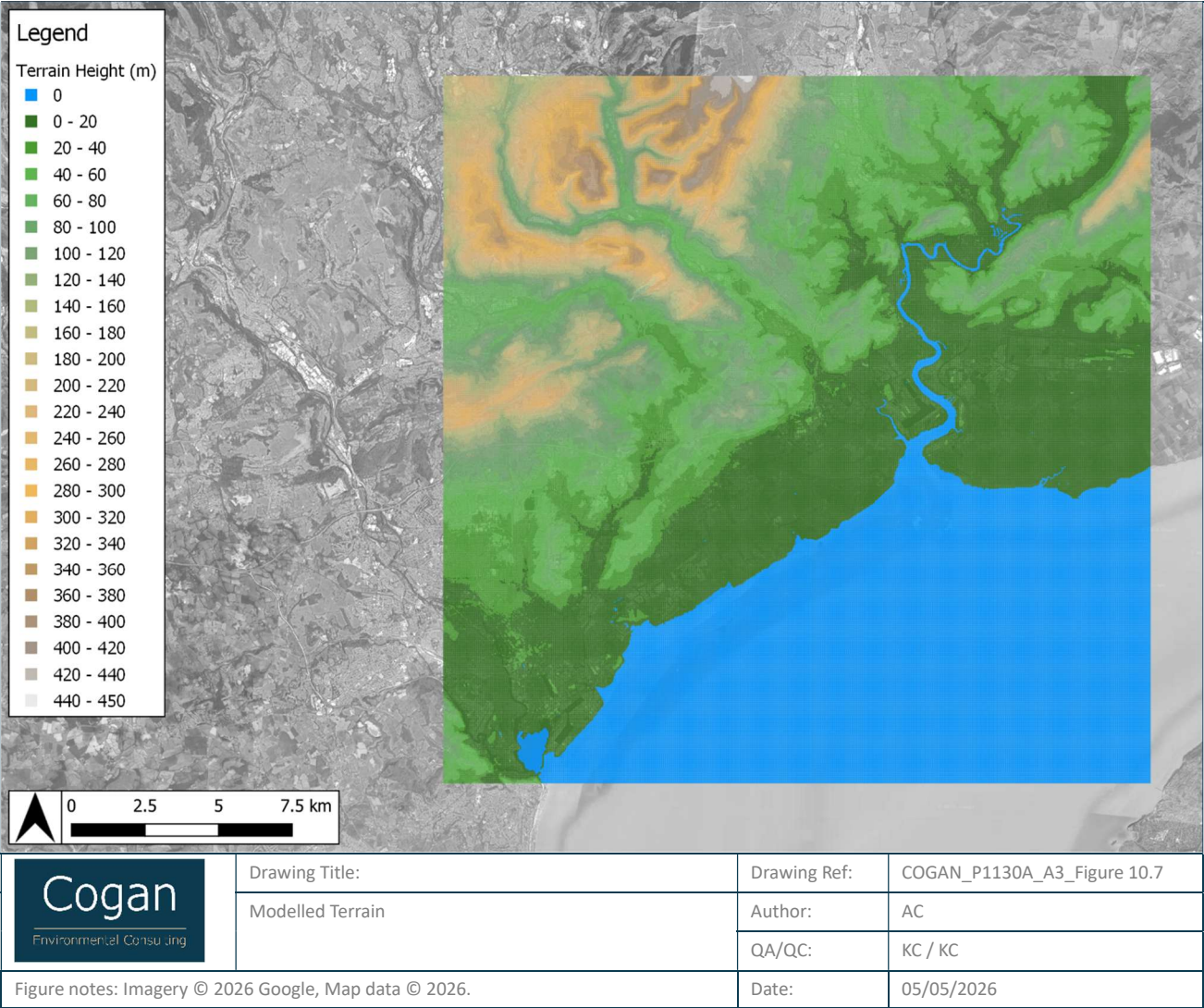
Figure 10.6: Modelled Surface Roughness



Terrain

10.74 Topographic effects have been accounted for in the modelling. Variation in terrain in the local area will influence atmospheric air flow and hence the dispersion of pollution. Terrain data has been calculated using data with a 30 m x 30 m resolution and is shown in Figure 10.7.

Figure 10.7: Modelled Terrain



Maintenance Testing

- 10.75 Maintenance testing will involve monthly tests of the generators individually to ensure they are in working order in case an emergency situation occurs. The testing schedule has been agreed with the Client and is presented in Table 10.18.
- 10.76 In addition to the testing schedule, a site black-out test simulation (a 1-hour annual mains power failure) has also been assumed and included within this scenario.

Table 10.18: Maintenance Testing Schedule

Month	Test	Run Time (including cooldown)	Generator Load Requirement
1	Monthly	1 hour	100% load
2	Monthly	1 hour	100% load
3	Monthly	1 hour	100% load
4	Monthly	1 hour	100% load
5	Monthly	1 hour	100% load
6	Monthly	1 hour	100% load
7	Monthly	1 hour	100% load
8	Monthly	1 hour	100% load
9	Monthly	1 hour	100% load
10	Monthly	1 hour	100% load
11	Monthly	1 hour	100% load
12	Monthly	1 hour	100% load
12	Annual Load Test	4 hours	3 hours at 100% load and 1 hour at 110% load
12	Annual Black-out Test	1 hour	100% load

Power Failure

- 10.77 Should an emergency situation occur, such as a national grid power failure for the site, then the emergency generators will become operational at full load (100% load for 2 generators) until the emergency situation is resolved. For the purposes of this assessment, it has been assumed that an operational period of 24 hours would provide a reasonable amount of time to cover typical power failures. The power failure scenario modelled comprises both this 24 hour period and the maintenance testing (as this would also take place).

Model Outputs

- 10.78 The model scenarios have been run to output short-term and long-term predicted process contributions of NO_x, PM₁₀, PM_{2.5}, and NO_x.
- 10.79 The long-term predicted process contributions have been outputted as annual mean concentrations based upon 1-hour periods for NO_x (for NO₂) and 24-hour periods for NO_x, PM₁₀ and PM_{2.5}.
- 10.80 The short-term predicted process contributions have been outputted as 1-hour mean concentrations for NO_x (based upon 1-hour periods), in relation to the 1-hour mean NO₂ regulated thresholds, and 24-hour mean concentrations for NO_x and PM₁₀ (based upon 24-hour periods), using short-term percentiles following the EA's hypergeometric distribution approach assuming a 1% risk of the AQOs being exceeded.
- 10.81 However, as the generators will not operate for more than 35 days (35 24-hour periods), no assessment of short-term PM₁₀ is required. For 24-hour mean NO_x, the maximum concentration is needed, which is the 100th percentile. Similarly, the generators will not operate for more than 18 hours (18 1-hour periods) in the

maintenance testing scenario, therefore no assessment of short-term NO₂ is required for the maintenance testing scenario.

Table 10.19: Modelled NO_x (for 1-hour mean NO₂) Short-Term Percentiles

Parameter		2 Generators
		Power Failure (Emergency) Scenario
A	Maximum hours of operation per annum	41
B	Short-term period	1
C	Number of periods per annum	8760
D	Number of possible operational periods per annum	41
E	Number of AQO value exceedances allowed prior to a breach of the AQO	18
F	Number of period concentrations from an entire annum that can exceed the AQO value for a <1% probability of an AQO breach to occur	2470
G	Percentile	71.80365

Table notes:
Each pollutant has a different AQO comprising a particular short-term period (B), and a value which is allowed to be exceeded a certain number of times per year (E). The short-term period (B) may occur a maximum number of possible times per year (C).
Assuming a maximum of A hours of operation per year, corresponding to D operational periods, if fewer than F periods of the year (C periods in total) exceed the AQO then there is a <1% chance that of the concentrations (of the D possible operational periods per year) more than E will exceed the AQO value.
The concentration of the <1% chance of an AQO breach can be outputted from the modelling using a percentile (G), which is calculated as (C-F)/C*100. The outputted percentile concentrations can then be used to identify areas where there is a 1% risk or more of a short-term AQO breach, by comparing the concentrations to the short-term AQO value.

Results Processing

- 10.82 For NO_x and NO₂ emissions released from the combustion plant, these will undergo chemical reactions in the atmosphere, including oxidation of NO_x to NO₂. This is complicated by interlinked chain reactions involving ozone and volatile organic compounds in the lower troposphere, and how this is accounted for can lead to significant variations in results. The EA's Air Quality Modelling and Assessment Unit have produced a pragmatic tiered approach to address this:
- For screening assessments:
 - 50% of short-term NO_x process contributions should be assumed as NO₂;
 - 100% of long-term NO_x process contributions should be assumed as NO₂;
 - For detailed assessments, assume a worst-case scenario of:
 - 35% of short-term NO_x process contributions should be assumed as NO₂;
 - 70% of long-term NO_x process contributions should be assumed as NO₂; and
 - Where justified, case-specific percentages below those presented above may be used.
- 10.83 This assessment has adopted the use of the worst-case scenario approach.

10.84 For PM₁₀ and PM_{2.5} emissions, chemical reactions in the atmosphere are limited and therefore not considered. 100% of the process contributions are therefore used.

10.85 Where total concentrations are considered, they have been calculated following the EA's approach:

- Total long-term mean concentration = long-term mean process contributions + long-term mean baseline concentration
- Total short-term mean concentration = short-term mean process contributions + (2 x long-term mean baseline concentration).

Deposition

10.86 Nitrogen nutrient depositions have been calculated using a forest deposition velocity (0.003 m/s), providing a conservative approach. As tall vegetation is present within all the relevant ecological sites, the forest deposition velocity has been applied. The deposition velocity, combined with the ratio of nitrogen in NO₂, have been used to convert the model output values (in µg/m³) to deposition values (kgN/ha/yr). Acid depositions have subsequently been calculated by dividing the nutrient deposition values by the atomic mass of nitrogen.

Model Performance

10.87 The dispersion model used in the assessment is dependent upon emission rates, flow rates, exhaust temperatures and other parameters for each source, all of which are variable in reality. There are then additional uncertainties, as models are required to simplify real-world conditions into a series of algorithms, although the model has been validated by the software developers (Cambridge Environmental Research Consultants Limited), it is not possible to verify the point-source model outputs.

Uncertainty and Limitations

10.88 The assessment involves a range of uncertainties, including the model inputs (such as combustion parameters, emission rates, meteorological conditions and surface characteristics), assumptions (such as the testing regime), the model (and its treatment of presenting real world conditions), and results processing (including baseline conditions and atmospheric chemistry). Although there is uncertainty inherently associated with air quality modelling, the predictions made by this assessment have been carried out in a robust manner to minimise uncertainties where possible.

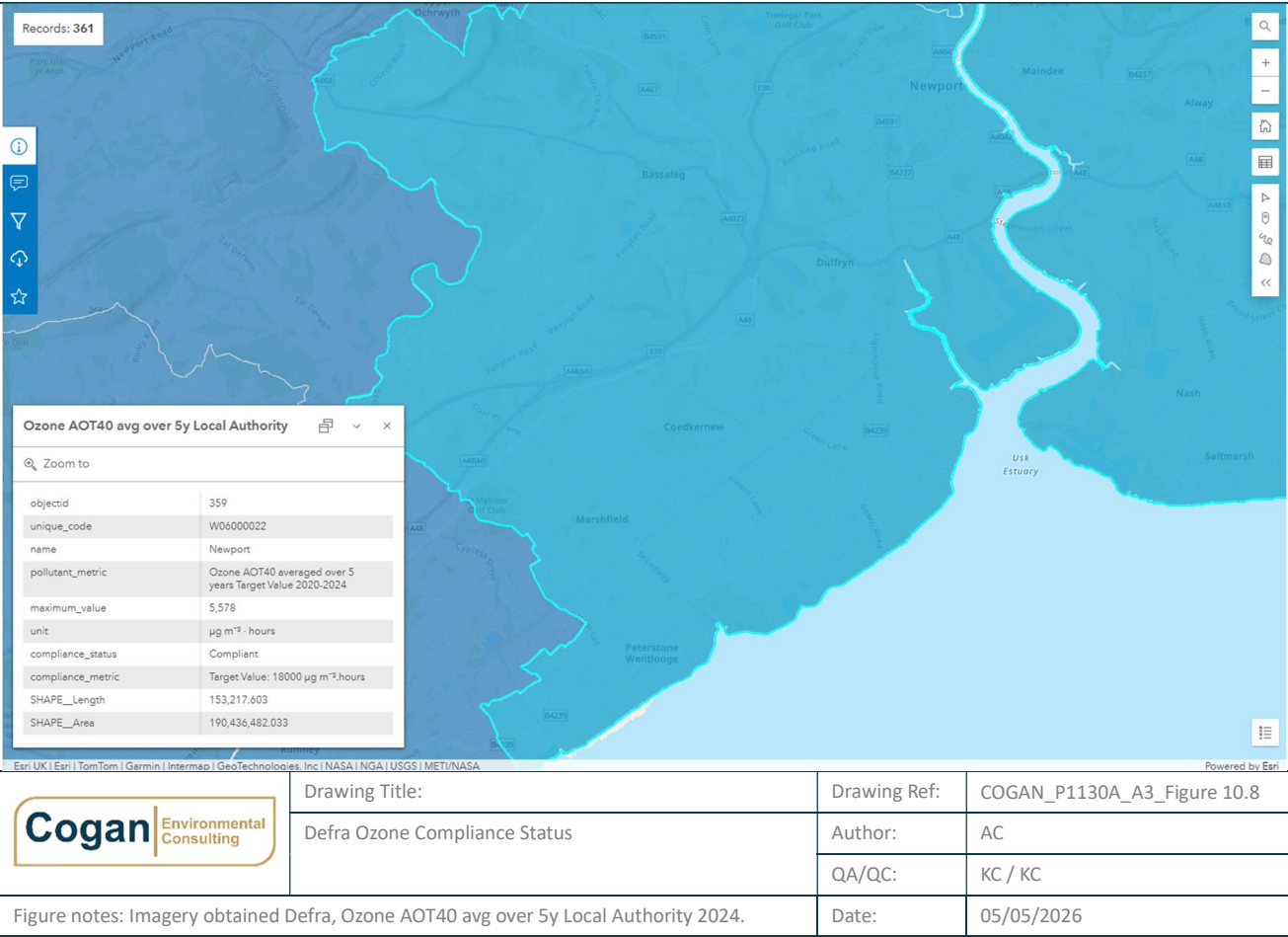
Annex 8: Ozone and Sulphur Baseline Conditions

10.89 Baseline ozone (O₃) and sulphur dioxide (SO₂) concentrations in the local area have been reviewed to determine whether these are elevated above their CLe in order to determine whether the CLe of 200 µg/m³ or 75 µg/m³ should be used for the assessment of NOx.

Ozone

10.90 Baseline O₃ conditions have been reviewed using Defra’s 2024 compliance status³⁸, which is determined using AURN monitoring and supplementary assessments (modelled background and roadside pollutant values from Defra’s Pollution Climate Mapping Model). Figure 10.8 shows the compliance status for Newport, which states the baseline O₃ concentration to be 5,578 µg/m³ (as an AOT40 averaged over 5 years, 2020-2024). This is well below the O₃ CLe of 18,000 µg/m³.

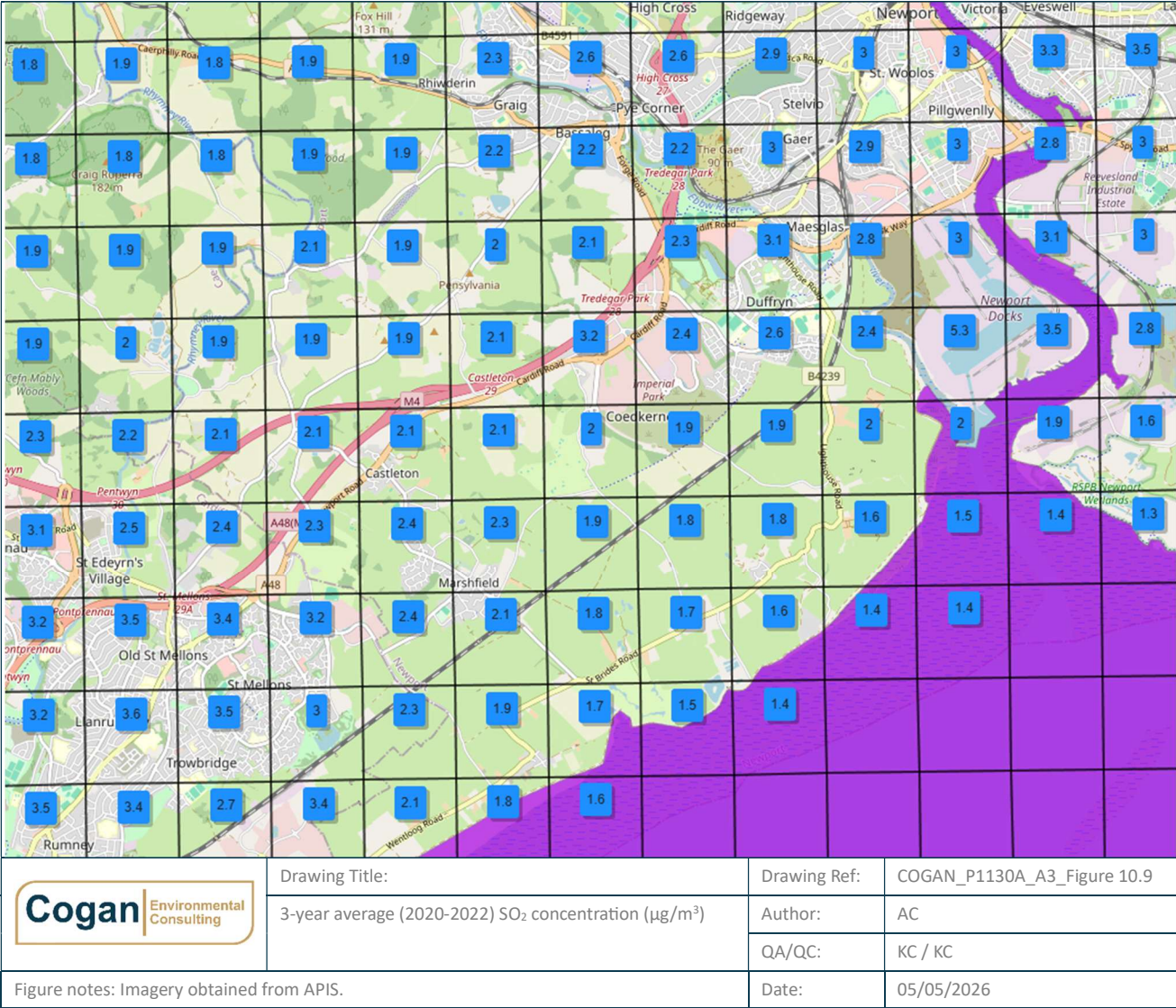
Figure 10.8: Defra Ozone Compliance Status



Sulphur Dioxide

- 10.91 Baseline SO₂ conditions have been reviewed using three-year average concentrations reported on the APIS website².
- 10.92 For the location of the ANSW (590 m west of the site), which covers two grid cells in Figure 10.9, the SO₂ concentration is reported as 2.0 - 3.2 µg/m³. This is below the SO₂ CLe of 10 µg/m³.

Figure 10.9: 3-year average (2020-2022) SO₂ concentration (µg/m³)



Summary

Baseline conditions of both O₃ and SO₂ are below their CLe; it is therefore concluded that the applicable CLe for NOx for this assessment is 200 µg/m³.

³⁸ Defra (2025). Defra, Ozone AOT40 avg over 5y Local Authority 2024. Accessed 01/05/2026. Available at: <https://compliance-data.defra.gov.uk/datasets/Defra::ozone-aot40-avg-over-5y-local-authority-2024/about>



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AIR QUALITY	ODOUR	CLIMATE
Air Quality Assessments for Planning and EIAs Feasibility Risk Assessments Air Quality Neutral Assessments Air Quality Positive Statements Air Quality Monitoring Surveys Planning Condition Support Ventilation Strategies Emission Mitigation Statements Damage Cost Assessments Air Quality Dust Management Plans (AQDMP) Dust Monitoring Expert Witness Services Technical Review Services LAQM Technical Support and Clean Air Zones Air Emissions Risk Assessments (Environmental Permitting) Infrastructure Assessments Indoor Air Quality Support (BREEAM, HQM, WELL, DREAM) COSHH Surveys (Air, Fumes, Dust, Bioaerosols)	Odour Assessments for Planning Nuisance Complaint Support Commercial Kitchen Risk Assessments Environmental Permitting Support Odour Management and Control Public Sector Services Expert Witness Services Technical Review Services Qualitative Desktop Assessments Field Odour Surveys (‘Sniff-Tests’) Odour Dispersion Modelling Odour Monitoring / Sampling Kitchen Risk Assessments Council, Regulator and Consultee Liaison Odour Abatement Advice Odour Management Plans	Greenhouse Gas Calculations and Assessments for Planning Greenhouse Gas ES Chapters Greenhouse Gas Monitoring Surveys H1 Calculations for Environmental Permitting UK ETS Advice Resilience and Adaptation ES Chapters Climate Management Plans Expert Witness Services Technical Review Services Net Zero Carbon Assessments for Planning Net Zero Plans for Planning Business Carbon Footprints Business Net Zero Assessments Business Net Zero Plans Business Climate Risk Assessments Business Climate Adaptation Plans
GENERAL ENVIRONMENTAL		
Construction Environmental Management Plans (CEMP) Environmental Permitting Applications and Management Meteorological Monitoring Surveys and Data Provision		

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