

CONTENTS

**INTRODUCTION ..... 1**

Background.....1

Scope of Work / EIA Scoping.....1

Consultations / Consultees .....2

Contributors / Author(s) .....5

Limitations / Difficulties Encountered .....5

**REGULATORY BACKGROUND ..... 6**

Legislation.....6

Planning Policy and Development Control.....7

Guidelines .....9

**RECEIVING ENVIRONMENT ..... 9**

Study Area .....9

Baseline Study Methodology .....10

Sources of Information .....11

Field Survey / Monitoring / Inspection Works .....11

Sensitive Receptors.....11

**IMPACT ASSESSMENT ..... 12**

Evaluation Methodology.....12

Construction Stage Impacts .....15

Operational Stage Impacts.....16

Post – Operational Stage Impacts.....16

Unplanned Events (i.e. Accidents) .....17

Cumulative / Synergistic Impacts.....18

Transboundary Impacts (If any) .....18

Interaction with Other Impacts .....18

**MITIGATION MEASURES ..... 19**

Construction Stage .....19

Operational Stage .....20

Post – Operational Stage .....20



<b>RESIDUAL IMPACT ASSESSMENT .....</b>	<b>20</b>
Construction Stage .....	20
Operational Stage .....	20
Post – Operational Stage .....	20
<b>MONITORING .....</b>	<b>21</b>
Construction Stage .....	21
Operational Stage .....	21
<b>REFERENCES .....</b>	<b>22</b>
<b>FIGURES .....</b>	<b>23</b>
<b>APPENDIX .....</b>	<b>31</b>

## TABLES

Table 8-1 Summary of Consultation Relating to Air Quality.....	3
Table 8-2 Air Quality Project Team – Summary of Competence.....	5
Table 8-3 Impact Descriptor Matrix for Receptors: Long Term AQALs (EPUK and IAQM, 2017).....	13
Table 8-4 Impact Descriptor Matrix for Receptors: Short Term AQALs (EPUK and IAQM, 2017).....	14
Table 8-5 Vegetation and Ecosystems Assessment Screening (EA and Defra, 2023) .....	14

## FIGURES

Figure 8-1: Ambient Monitoring Survey Locations.....	24
Figure 8-2: Dispersion Model Setup .....	25
Figure 8-3: Discrete Human Receptors.....	26
Figure 8-4: Relevant Ecological Designations.....	27
Figure 8-5: Surrounding Topography.....	28
Figure 8-6: Irish EPA Zones .....	29
Figure 8-7: Construction Dust Buffers .....	30

APPENDIX

Appendix 8.1 Baseline Monitoring Survey ..... 31

Appendix 8.2 Biomass Dispersion Modelling Assessment ..... 31

Appendix 8.3 Construction Dust Assessment..... 31

## INTRODUCTION

### Background

- 8.1 This Chapter of the EIAR assesses the effects of the Proposed Development on Air Quality. The assessment of effects has been made on the basis of the Proposed Development which is fully described in **Chapter 2: Project Description**.
- 8.2 The Chapter describes the relevant legislation, assessment methodology and the baseline conditions currently existing at the application site and its surroundings. It then details the assessment undertaken to determine the potential effects of both the construction, operation and decommissioning of the Proposed Development on the baseline Air Quality. It outlines the embedded good practice measures which have been incorporated into the design, and the methods that would be used during the construction, operation and decommissioning of the Proposed Development to prevent or reduce identified effects and risks.
- 8.3 Further mitigation methods to avoid, prevent or reduce and, if possible, offset likely significant adverse effects are proposed, where appropriate, and residual effects assessed.
- 8.4 This Chapter uses data and information presented in the following:
- Appendix 8.1 Baseline Monitoring Survey;
  - Appendix 8.2 Biomass Dispersion Modelling Assessment; and
  - Appendix 8.3 Construction Dust Assessment.
- 8.5 Additionally, a series of figures have been prepared to complement the assessment (Figure 8.1-8.7).

### Scope of Work / EIA Scoping

- 8.6 The scope of work is principally based on information and findings presented in **Chapter 2: Project Description** and **Chapter 14: Traffic**.
- 8.7 The scope has been informed by both national and local planning policy and guidance, established best practice and experience, as well as via the consultation process with relevant consultees. The assessment scope is consistent with the approach proposed within the **Preliminary Scoping Report (see Appendix 1.1)**, taking into account consultation comments received to date, where relevant.
- 8.8 The objective of the assessment is to consider the potential air quality effects arising from the construction, operation and decommissioning of the Proposed Development on the surrounding environment.
- 8.9 The Proposed Development will replace the existing aging thermal energy systems serving Production Lines 1 and 2, and associated infrastructure. This will include the retirement of two biomass boilers (18MW each) and a 6MW natural gas-fired thermal fluid heater (TFH). The new thermal energy system will use biomass, and have a rated thermal input capacity of up to 60MW serving Production Line 1 and 30 MW for Production Line 2. The thermal energy systems serving Production Lines 1 and 2 will be replaced in a long-term phased manner (i.e. Line 1 and Line 2 separately).

- 8.10 The Proposed Development represents a continuation of operational activities and will not result in an increase in the production of medium-density fibreboard (MDF). However, the Proposed Development will result in an increase in biomass fuels used as part of the combustion process. This increase is to account for the retirement of the natural gas fired TFH serving Production Line 1, and the substitution of wetter fuels for dryer fuels. Of the 186,000 tonnes of proposed fuel intake, 76,000 will comprise Medite residues (sourced on site) and 110,000 tonnes will comprise biomass wood imported by road, as an approximation. Accounting for the existing fuel intake, the net increase corresponds to 76,000 tonnes.
- 8.11 For further information, see **Chapter 2: Project Description**.
- 8.12 Based on the above, the scope of the assessment comprises:
- a review of baseline conditions at the application site;
  - construction phase assessment:
    - qualitative assessment of fugitive dust emissions arising from anticipated construction activities; and
    - consideration of road traffic trips generated by construction activities.
  - operational phase assessment:
    - quantitative assessment of combustion emissions to air resulting from the replacement of two biomass boiler lines (Line 1 and Line 2); and
    - screening assessment of road traffic trips generated by operational activities.
  - qualitative assessment of decommissioning impacts, where possible / known;
  - assessment of cumulative impacts, in consideration of relevant project and plans;
  - consideration of inter-related impacts between environmental topic areas;
  - assessment of transboundary impacts;
  - identification of appropriate mitigation measures and associated monitoring requirements – based on the outcomes of the assessments undertaken; and
  - assessment of residual impacts, where mitigation is recommended.

## Consultations / Consultees

- 8.13 **Error! Reference source not found.** provides a summary of consultation comments received to date relating to Air Quality, and associated responses.

**Table 8-1**  
**Summary of Consultation Relating to Air Quality**

Consultee	Issue Raised	How/ Where Addressed
<p>Environmental Health Department – St Canices Hospital, Scoping Opinion, July 2022</p>	<p>The EIA should establish baseline air quality at the nearest sensitive receptors by means of background air quality monitoring. Air quality monitoring should be undertaken prior and throughout the operation of the site using the Bergerhoff Method as specified in the German TA Luft Air Quality Standards.</p> <p>Total dust deposition should not exceed 350mg/m<sup>2</sup>/day when averaged over a thirty day period.</p>	<p>Baseline conditions at human receptor locations have been characterised with use of publicly available data. Furthermore, to complement existing monitoring sources and provide an indication of localised baseline pollutant conditions at sensitive locations, an ambient monitoring survey has been undertaken – in accordance with best practice methods and guidance. The outputs have been used to characterise baseline pollutant conditions of relevance to the dispersion modelling assessment. See <b>Appendix 8.1 Baseline Monitoring Survey</b> for further information.</p> <p>Dust deposition has not been monitored or assessed, and was not proposed to be assessed within the <b>Preliminary Scoping Report</b>.</p> <p>The Proposed Development will include infrastructure for the storage, transportation and processing of additional biomass fuels, located within Development Area 1. Infrastructure will include an enclosed new fuel reception and storage plant and covered conveying infrastructure to transport fuel to the energy plants. This may result in the generation of fugitive dust emissions during operation. Development Area 2 and 3 relate to the upgradation of Production Lines 1 and 2, respectively; principally the replacement of the thermal energy systems and associated infrastructure. Activities in Development Area 2 and 3 are not likely to result in new dust emissions.</p> <p>All potential diffuse dust sources associated with the transport, handling and storage of wood materials will be controlled with use of Best Available Techniques (BAT), as prescribed within the Wood-Based Panels BAT Conclusions (BATc) (specifically BAT 23) (European Parliament and</p>

Consultee	Issue Raised	How/ Where Addressed
		<p>the Council of the European Union, 2015). This includes the following:</p> <ul style="list-style-type: none"> <li>• the fuel reception units, storage plant and conveyors will be covered; and</li> <li>• dust prone material will be stored in enclosed spaces. This includes three proposed silos (chip, dust and edge trim silos). These emission points will utilise filters.</li> </ul> <p>All fuels will therefore be covered during storage, processing and transportation to control fugitive dust emission arising during operation. These controls measures are listed in the Wood-Based Panels BATc (BAT 23) (European Parliament and the Council of the European Union, 2015) as techniques recommended to be adopted (alone or in-combination with others) to reduce diffuse dust emissions to air from the transport, handling, and storage of wood materials. These measures will be embedded within the site’s Environmental Management System (EMS). Furthermore, the current IED licence stipulates no emissions including dust from activities shall result in the degradation of the environment beyond the installation boundary. Additionally, the Proposed Development represents a continuation of operational activities and will not result in an increase in the production of MDF. Based on these points, the dust emission magnitude is considered to be small.</p> <p>The nearest sensitive human receptor is located &gt;350m from the boundary of Development Area 1. Furthermore, Development Area 1 is currently used for storage of exposed materials in open stockpiles and comprises an existing dust emission point (Edge Trim silo – Air Emission A2-20) (proposed to be removed). The sensitivity of the area is therefore low.</p> <p>In consideration of the above, dust impacts are not considered to be significant and have not been considered further.</p>

## Contributors / Author(s)

- 8.14 This Chapter of the EIAR has been prepared by ‘competent experts’ as required by the 2014 EIA Directive (Directive 2014/52/EU) (The European Parliament and the Council of the European Union, 2014). The Air Quality project team is identified in **Table 8-2**.

**Table 8-2**  
**Air Quality Project Team – Summary of Competence**

Specialist Assessor	Qualifications	Years’ of Experience
Ben Turner Associate Consultant	BSc (Hons), MIAQM, MIES	6
Morgan Fitzpatrick Technical Discipline Manager	MSc, BSc (Hons), MIAQM, MIES	18

## Limitations / Difficulties Encountered

- 8.15 This Chapter has been prepared in accordance with relevant policy and guidance, established best practice and professional judgment.
- 8.16 Where required, the Air Quality Chapter has been undertaken with use of conservative assumptions, to provide certainty with respect to the assessment outcomes. Furthermore, a number of mitigation measures identified to avoid, prevent or reduce and, if possible, offset likely significant adverse effects have been embedded into the project design. This ensures that, where considered, the resultant effects established are secured by design.
- 8.17 International guidance documents have been used in lieu of domestic guidance. These international documents relate to established best practice for the assessment of air quality, accepted for use within Ireland, so are considered appropriate.
- 8.18 Details of limitations / difficulties encountered for each assessment are discussed below.

### *Construction Dust Assessment*

- 8.19 The construction dust assessment comprises a desk based exercise to identify the proportionate level of mitigation required for the various activities anticipated to be undertaken during the construction phase. The full extent of construction activities may not be known at this stage.
- 8.20 In recognition of this, a worst-case approach has been assumed with reference to design information presented in **Chapter 2: Project Description**. For instance, all proposed construction activities supporting the replacement of both lines have been assessed cumulatively i.e. assuming they occur concurrently. In reality, these construction activities will occur over a ten-year period. Furthermore, the planning application boundary has been used for the purposes of defining potential dust sources – to ensure the maximum spatial extent of works and interactions with sensitive receptors are understood. This approach will increase the opportunity for greater derived sensitivities and dust emission magnitudes. As such, there is the potential for the assessment to exaggerate the potential impacts, which could result in a higher level of mitigation being recommended than would realistically be required.
- 8.21 Resultant effects ultimately depend on the effective application of identified mitigation. Therefore, there can be uncertainty on how representative the assessment procedure and associated post-mitigated outcomes would be if appropriate mitigation is not secured. To secure



the anticipated resultant effects, these measures will be integrated into a Construction Environmental Management Plan (CEMP), which will be adhered to during all phases of construction.

- 8.22 Furthermore, it is acknowledged that it is not possible to guarantee that the recommended dust controls will be effective all of the time (i.e. during adverse weather conditions or if there is an interruption to the water supply used). However, as per the Institute of Air Quality Management (IAQM) assessment guidance (IAQM, 2023), the likely scale of such atypical circumstances would not normally be considered sufficient to materially change the conclusion that with mitigation the residual effects will be not significant.

### *Road Traffic Assessment*

- 8.23 The road traffic assessment is based on analysis presented within **Chapter 14: Traffic**. The transport assessment has adopted a number of conservative assumptions to derive a worst-case scenario – and increase the confidence of the assessment outcomes.
- 8.24 See **Chapter 14: Traffic** for further information.

### *Biomass Dispersion Modelling Assessment*

- 8.25 With regard to the biomass emissions modelling assessment, details of the associated limitations and how they have been conservatively addressed are provided in **Appendix 8.2: Biomass Dispersion Modelling Assessment**.

## REGULATORY BACKGROUND

### Legislation

#### *Air Quality Standards Regulations*

- 8.26 The Ambient Air Quality Standards Regulations 2022 (AQSR) (Government of Ireland, 2023) transpose the EU Ambient Air Quality Directive (as amended) (2008/50/EC) (The European Parliament and the Council of the European Union, 2008) within Irish legislation. The AQSR includes Limit Values for the protection of human health and the environment – which are legally binding.
- 8.27 Compliance with the AQSR is regulated at a national level by the Environmental Protection Agency (EPA) (based upon four zones - defined for air quality management and assessment purposes). Assessment outcomes are provided to the European Commission on an annual basis.
- 8.28 Relevant AQSR Limit Values have been considered in the dispersion modelling assessment (referred to as Air Quality Assessment Levels (AQALs) hereafter). See **Appendix 8.2: Biomass Dispersion Modelling Assessment**.

### *Protection of Nature Conservation Sites*

- 8.29 Ecological habitats vary in terms of their sensitivity, perceived ecological value, geographic importance, and level of protection. Within Ireland, there are three types of protected nature conservation designations.
- Natural Heritage Areas (NHA);
  - Special Areas of Conservation (SAC); and
  - Special Protection Areas (SPA).
- 8.30 These sites are all provided environmental protection from developments, including from atmospheric emissions, by legislation:
- Wildlife (Amendment Act) 2000 (Government of Ireland, 2000);
  - European Communications (Birds and Natural Habitats) (Amended) Regulations 2011 - 2021; and
  - EU Birds Directive (2009/147/EC) (European Parliament and the Council of the European Union, 2009).

### *Regulation of Industrial Emissions*

- 8.31 Industrial emissions are regulated by the EPA under the Industrial Emissions Directive (IED) (2010/75/EU) (European Parliament and the Council of the European Union, 2010). The IED became operable within Ireland in 2011.
- 8.32 The IED is aimed at reducing emissions from industrial production processes. Industrial facilities are issued licenses (Industrial Emissions Licence) by the EPA which specify agreed operating conditions and emission limit concentrations the plant will adhere to and not exceed. Existing emission sources are regulated by the EPA under IED Licence P0027-04.
- 8.33 The IED requires all installations to use the BAT where possible, and that the BATc documents produced by the European Commission are the reference for relevant BAT. The BATc documents are based on exchange of information with experts from Member States, industry and environmental organisations. These publications set out BAT-associated emission levels (BAT-AELs) which new facilities are expected to meet, based upon the application of relevant BAT. The BAT-AELs will become enforceable through regulation, i.e. inclusion within the IED Licences.
- 8.34 The Production of Wood-based Panels BAT Reference Document (BREF) and associated BATc document (European Parliament and the Council of the European Union, 2015) are considered relevant for the new biomass fired thermal energy system. The Wood-based Panels BREF and BATc accounts for process-integrated on-site combustion plants and is consistent with the approach underpinning the existing Licence decision by the EPA.
- 8.35 The emission limit values (ELVs) associated with the new process are lower than the maximum prescribed BAT-AELs. Further information is contained within **Appendix 8.2: Biomass Dispersion Modelling Assessment**.

## **Planning Policy and Development Control**

- 8.36 The policies presented herein have been considered within this assessment.

### National Policy

- 8.37 The National Planning Framework (NPF) (Government of Ireland, 2020) provides the strategic planning and development of Ireland to 2040. It combines with the National Development Plan 2021-2030 to form Project Ireland 2040 – which aims at improving Ireland for its residents.
- 8.38 The following policy within the NPF relates to air quality:

**“National Policy Objective 64**

*Improve air quality and help prevent people being exposed to unacceptable levels of pollution in our urban and rural areas through integrated land use and spatial planning that supports public transport, walking and cycling as more favourable modes of transport to the private car, the promotion of energy efficient buildings and homes, heating systems with zero local emissions, green infrastructure planning and innovative design solutions.”*

### Local Policy

#### Tipperary County Development Plan 2022 – 2028

- 8.39 The TCC Tipperary County Development Plan 2022 – 2028 (Tipperary County Council, 2022) sets out the framework to direct and guide development in Tipperary through to 2028 by setting out national and regional policies and guidelines. The following policies within the Development Plan (within Volume One: Written Statement) relate to air quality:

**“Policy 11 - 1**

*In assessing proposals for new development to balance the need for new development with the protection and enhancement of the natural environment and human health. In line with the provisions of Article 6(3) and Article 6(4) of the Habitats Directive, no plans, programmes, etc. or projects giving rise to significant cumulative, direct, indirect or secondary impacts on European sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc. or projects). [...] Except as provided for in Article 6(4) of the Habitats Directive, viz. There must be: a) no alternative solution available, b) imperative reasons of overriding public interest for the project to proceed; and c) Adequate compensatory measures in place.*

**Policy 11 - 2**

*Ensure the protection, integrity and conservation of European Sites and Annex I and II species listed in EU Directives. Where it is determined that a development may individually, or cumulatively, impact on the integrity of European sites, the Council will require planning applications to be accompanied by a NIS in accordance with the Habitats Directive and transposing Regulations, ‘Appropriate Assessment of Plans and Projects, Guidelines for Planning Authorities’, (DEHLG 2009) or any amendment thereof and relevant Environmental Protection Agency (EPA) and European Commission guidance documents.*

**Policy 11 - 3**

*Ensure the conservation and protection of existing, and proposed NHAs, and to ensure that proposed developments within or in close proximity to an existing or proposed NHA would not have a significant adverse impact on the status of the site as described.”*

## Draft Clonmel Local Area Plan 2024-2030

- 8.40 TCC is preparing new Local Area Plan (LAP) for Clonmel which will set out the overarching land use strategy to protect the environment. A Draft Clonmel and Environs LAP 2024-2030 has been issued (Tipperary County Council, 2023).
- 8.41 The LAP acknowledges the important of minimising private vehicular movements as a key strategy to both address and improve air pollution, thereby reducing overall exposure.

## Guidelines

- 8.42 The air quality assessment has been informed by established best practice principles contained within the following technical guidance documents:
- Department for Environment, Food and Rural Affairs (Defra) and Devolved Administrations: 'LAQM Technical Guidance 22' (LAQM.TG(22)) (Defra, 2022);
  - EA and Defra: 'Air Emissions Risk Assessment for your Environmental Permit' (AERA) (2023);
  - EPA Office of Environmental Enforcement (OEE): 'Air Dispersion Modelling from Industrial Installations Guidance Note' (AG4) (EPA, 2020a);
  - Environmental Protection UK (EPUK) and IAQM: 'Land-Use Planning and Development Control: Planning for Air Quality' (EPUK & IAQM, 2017);
  - Highways England, Transport Scotland, Welsh Government and Department for Infrastructure: 'Design Manual for Roads and Bridges (DMRB) LA 105'. (Highways England et al., 2019);
  - IAQM: 'Guidance on the Assessment of Dust from Demolition and Construction' (2023); and
  - National Roads Authority (NRA): 'Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes' (NRA, 2011).
- 8.43 International guidance documents have been used in lieu of domestic guidance. These international documents relate to established best practice for the assessment of air quality, accepted for use within Ireland.

## RECEIVING ENVIRONMENT

### Study Area

#### *Construction Dust Assessment*

- 8.44 The spatial extent of the study area for the construction dust assessment has been defined using the following threshold distances outlined in IAQM construction dust guidance (IAQM, 2023):
- human receptors within 250m of the site boundary and within 50m of routes used by construction vehicles up to 250m from the site entrance; and
  - ecological receptors within 50m of the site boundary and within 50m of routes used by construction vehicles up to 250m from the site entrance.

### Road Traffic Assessment

- 8.45 The spatial extent of the study area for the road traffic assessment has been initially defined using a series of established screening criteria to determine the extent of the affected road network (see paragraph 8.69 - 8.72). The criteria applied as part of this assessment relates to increases in development-generated traffic.
- 8.46 Traffic data used for the purposes of this screening exercise has been informed by analysis undertaken and presented as part of **Chapter 14: Traffic**.

### Biomass Emissions Dispersion Modelling Assessment

- 8.47 Sensitive human and ecological receptors have been considered within the biomass dispersion modelling assessment.
- 8.48 Detail is provided in **Appendix 8.2: Biomass Dispersion Modelling Assessment**.

### Human Receptors

- 8.49 The modelling has been undertaken using a nested receptor grid for receptors outside of the site boundary (i.e. receptor grids plotted at a series of defined spatial densities with distance from the site) (titled gridded receptors). This method allows the maximum ground level concentration outside the site boundary to be assessed.
- 8.50 Discrete receptor locations, representative of worst case exposure relative to the application site, have also been considered within the biomass dispersion modelling exercise.

### Ecological Receptors

- 8.51 The UK EA's AERA guidance (EA and Defra, 2023) has been used to inform the extent of ecological designations considered within the biomass dispersion modelling assessment. This comprises:
- international designated sites within 10km of the application site; and
  - national and local designated sites within 2km of the application site.

### Baseline Study Methodology

- 8.52 Guidance provided within AG4 (EPA, 2020a) has been used to characterise baseline conditions. This has comprised the use of the latest representative data collected from the EPA monitoring network (where available). The EPA monitoring network is a validated source of data.
- 8.53 To complement existing monitoring sources, and provide an indication of localised baseline pollutant conditions at sensitive locations, an ambient monitoring survey (2022) has been undertaken – in accordance with best practice methods and guidance.
- 8.54 Data has been ratified in accordance with AG4 (EPA, 2020a) to maximise accuracy. Full details are provided in **Appendix 8.1: Baseline Monitoring Survey**.
- 8.55 Baseline air quality data collected during 2020 and 2021 (i.e. during the COVID-19 pandemic) has not been used. Pollutant concentrations monitored in this period are expected to be atypical, and not representative of the local environment, as will be influenced to some extent by national and regional lockdowns introduced as a result of the COVID-19 pandemic.

## Sources of Information

- 8.56 The baseline environment has been characterised with use of the following data sources:
- EPA monitoring within Zone D (2017-2019);
  - Project specific ambient monitoring survey (**Appendix 8.1: Baseline Monitoring Survey**);
  - National Parks and Wildlife Service: Protected Sites online reference;
  - EPA Critical Loads and Soil-Vegetation Modelling Research Report (EPA, 2020b); and
  - Coordination Centre for Effects National Institute of Public Health and the Environment: Calculation and Mapping of Critical Thresholds in Europe (National Institute of Public Health and the Environment, 1999).
- 8.57 Full details are provided within **Appendix 8.2 Biomass Emissions Dispersion Modelling Assessment**.

## Field Survey / Monitoring / Inspection Works

- 8.58 Baseline conditions at human receptor locations have been characterised with use the latest representative data collected from the EPA monitoring network (were available).
- 8.59 Furthermore, to complement existing monitoring sources and provide an indication of localised baseline pollutant conditions at sensitive locations, an ambient monitoring survey has been undertaken – in accordance with best practice methods and guidance. The outputs have been used to characterise baseline pollutant conditions of relevance to the dispersion modelling assessment. See **Appendix 8.1 Baseline Monitoring Survey** for further information.

## Sensitive Receptors

- 8.60 The extent of sensitive receptors has been defined for each assessment, respectively. Both human and ecological receptors have been considered, in accordance with applied assessment guidance.
- 8.61 Further details are provided within:
- **Appendix 8.2 Biomass Emissions Dispersion Modelling Assessment**; and
  - **Appendix 8.3 Construction Dust Assessment**.

## IMPACT ASSESSMENT

### Evaluation Methodology

8.62 The following sections provide a description of the assessment criteria and methodologies used to assess air quality, which are derived from best practice guidance documents, outlined above.

#### *Construction Dust Assessment*

8.63 The assessment of dust generated by potential construction activities on nearby sensitive human and ecological receptors has been undertaken in accordance with the UK's IAQM construction guidance (IAQM, 2023).

8.64 The likely unmitigated dust emission magnitude associated with four major activities (demolition, earthworks, construction and trackout) is used in conjunction with the sensitivity of the surrounding area to determine the risk of impact for each activity. These sensitivities are:

- annoyance due to dust soiling;
- the risk of health effects due to an increase in exposure to PM<sub>10</sub>, and
- harm to ecological receptors.

8.65 The risk of impact is then used to determine proportionate mitigation requirements, whereby through effective application, residual effects are considered to be not significant in terms of the EIAR Directive.

8.66 Significance is only assigned to the effect after considering the construction activity with mitigation. This is because for construction activities, the aim is to prevent significant effects on receptors through the use of effective mitigation.

8.67 The IAQM construction guidance (IAQM, 2023) therefore does not provide a framework to determine the significance of unmitigated effects, as is not considered appropriate nor relevant in this context. For these reasons, the significance of the unmitigated effect of construction dust cannot be defined.

8.68 For further information, see the IAQM guidance (IAQM, 2023).

#### *Road Traffic Assessment*

8.69 Road traffic flows generated by the Proposed Development have been assessed with criteria prescribed within LA 105 (Highways England et al., 2019). A previous iteration of this document is referenced within the NRA's air quality guidance document (NRA, 2011).

8.70 LA 105 (Highways England et al., 2019) provides a series of screening criteria to determine whether road traffic impacts on air quality can be scoped out or require detailed assessment. Following a review of design interactions described in **Chapter 2: Project Description**, the screening criteria relevant to this assessment is as follows:

- a change of vehicle flow of 1,000 annual average daily traffic (AADT) or more; or
- a change of heavy duty vehicle (HDV) flow of 200 AADT or more.

8.71 Traffic data used for the purposes of this screening exercise has been informed by analysis undertaken and presented as part of **Chapter 14: Traffic**.

8.72 If road traffic flows generated by the Proposed Development are not found to exceed any of the screening criteria presented, then effects are considered to be insignificant and can be screened out of further consideration.

*Biomass Emissions Dispersion Modelling Assessment*

8.73 Potential air quality impacts arising from the replacement of the thermal energy systems serving Line 1 and Line 2 have been quantified with use of dispersion modelling. The United States (US) American Meteorological Society and Environmental Protection Agency Regulatory Model (AERMOD v10.2) dispersion model has been used, consistent with advice provided within AG4 (EPA, 2020a).

8.74 To represent the long-term phased replacement of the energy systems serving Lines 1 and 2, the following scenarios have been considered within the dispersion modelling exercise:

- Scenario 0: Existing Baseline (existing Line 1 and 2);
- Scenario 1: Phase 1 - Production Line 1 Energy System Replacement (with existing Line 2); and
- Scenario 2: Phase 2 - Production Line 1 Energy System Replacement and Production Line 2 Energy System Replacement.

8.75 The extent and configuration of buildings and emission release characteristics within the application site will change as a result of the phased replacement of the energy systems serving Production Lines 1 and 2. These changes have been reflected, as appropriate, within each modelled scenario.

8.76 Impacts upon surrounding sensitive receptors, including both human and ecological designations, were assessed for an array of pollutants generated by the two biomass boiler lines (Line 1 and Line 2) and corresponding regulatory framework.

8.77 In relation to human receptors, the significance criteria provided within the EPUK / IAQM guidance document (EPUK and IAQM, 2017) has been applied. This document provides guidance for the consideration of air quality within the land-use planning and development control processes – so is considered appropriate for the purposes of an EIAR.

8.78 Whilst considering long-term AQALs, the significance criteria outlined Table 8-3 has been used. Impacts are defined based upon the mutual consideration of the following modelled outputs relative to the respective AQALs:

- process contribution (PC) – the change in pollutant conditions; and
- predicted environmental concentration (PEC) – the total predicted concentration.

**Table 8-3**  
**Impact Descriptor Matrix for Receptors: Long Term AQALs (EPUK and IAQM, 2017)**

Resultant PEC as a % of the AQAL	PC as % of the AQAL			
	1% <sup>(A)</sup>	2-5%	6-10%	>10%
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial

<sup>(A)</sup> Changes <0.5% will be described as Negligible.



- 8.79 A change in concentration less than 0.5% of the long-term AQAL can be described as negligible, irrespective of baseline conditions. This benchmark has initially been used to screen long term PCs from the replacement of Lines 1 and 2, to determine whether further assessment is required. Further assessment has comprised the consideration of the resultant PEC, relative to the AQAL, for each relevant scenario.
- 8.80 Whilst considering short-term AQALs, the significance criteria outlined in Table 8-4 have been used. These criteria relate explicitly to the PC as a % of the corresponding AQAL, without considering background concentrations. Impacts can be classed as negligible and thus insignificant if the short term PC is less than 11% of the AQAL. The PEC has been calculated for each relevant scenario where the short term PC is greater than 11% of the AQAL.

**Table 8-4**  
**Impact Descriptor Matrix for Receptors: Short Term AQALs (EPUK and IAQM, 2017)**

Short Term PC % of AQAL	Magnitude	Impact
<11	Negligible	Negligible
11-20	Small	Slight
20-50	Medium	Moderate
>51	Large	Substantial

- 8.81 The EA and Defra AERA guidance (EA and Defra, 2023) has been used to determine potential impacts on protected ecological sites, in relation to relevant Critical Loads and Critical Levels. Whilst the guidance relates to UK designation types, the underlying principles have been applied and are considered appropriate for use.

**Table 8-5**  
**Vegetation and Ecosystems Assessment Screening (EA and Defra, 2023)**

Ecological Designation	Impact	PC % of Critical Load / Level	Short Term	Long Term
European and National Sites	Short Term Impact	<10	-	Insignificant
		>10	<100	Insignificant
		>10	>100	Not Insignificant
	Long Term Impact	<1	-	Insignificant
		>1	<100	Insignificant
		>1	>100	Not Insignificant
Local Sites	All Impacts	<100	-	Insignificant
		>100	-	Not Insignificant

- 8.82 If PCs / PECs are below the relevant thresholds, impacts can be classed as insignificant, and no further assessment is required. For impacts that cannot be classified as insignificant, further assessment has been undertaken.
- 8.83 Full details of the methodology are provided in **Appendix 8.2 Biomass Combustion Emissions Modelling Assessment**.

## Construction Stage Impacts

### *Direct Impacts*

#### Construction Dust Assessment

- 8.84 Full details of the construction dust assessment undertaken are detailed in **Appendix 8.3 Construction Dust Assessment**. A summary is provided below.
- 8.85 The outcomes of the construction dust assessment indicate that the application site is found to be at worst:
- low risk in relation to dust soiling effects on people and property;
  - low risk in relation human health impacts; and
  - medium risk in relation to ecological impacts.
- 8.86 Potential dust effects during the construction phase are considered to be temporary in nature, with no long-term deterioration of conditions. Furthermore, effects may only arise at particular times (i.e. certain activities and / or meteorological conditions).
- 8.87 Nonetheless, the outcomes indicate a series of best practice dust control measures are required to be implemented throughout the construction phase to ensure that potential dust impacts are reduced and, where possible, completely removed.
- 8.88 These measures are based upon IAQM guidance (IAQM, 2023), proportionate to the scale of risks identified. A list of these measures is provided in **Appendix 8.3 Construction Dust Assessment**.
- 8.89 Following the effective implementation of these measures, effects are concluded to be not significant in terms of the EIAR Directive, as per the IAQM guidance (IAQM, 2023).
- 8.90 These measures will be integrated into a CEMP, which will be adhered to during all phases of construction. A CEMP is listed as an inherent design mitigation measure, securing their effective implementation.

#### Road Traffic Assessment

- 8.91 The extent of vehicle numbers generated by construction activities are not presently confirmed. However, a Construction Traffic Management Plan (CTMP) will be submitted to, and agreed with TCC prior to the commencement of the Proposed Development.
- 8.92 Based upon initial worst-case calculations presented within **Chapter 14: Traffic**, during peak construction, a maximum of 160 cars per day are expected to be generated. These peak construction traffic vehicle flows are lower than the LA 105 screening criteria (Highways England et al., 2019).
- 8.93 Effects are considered to be insignificant, and no further assessment is required. Furthermore, given the nature of the construction works, effects are considered to be temporary in nature, with no long-term deterioration of conditions.
- 8.94 Upon finalisation of the CTMP, the assessment will be reviewed to determine if the outcomes are still relevant or if an update is required.

*Indirect Impacts*

8.95 There are no indirect impacts.

**Operational Stage Impacts**

*Direct Impacts*

**Road Traffic Assessment**

8.96 Based upon the worst-case scenario used as part of the traffic assessment (**Chapter 14: Traffic**), at maximum operational capacity, the Proposed Development is expected to generate an additional 36 two-way HGV movements. These HGVs relate to the delivery of additional biomass fuels.

8.97 Operational road traffic vehicle flows screen well below the LA 105 screening criteria (Highways England et al., 2019). Therefore, effects are considered to be insignificant, and no further assessment is required.

**Biomass Emissions Dispersion Modelling Assessment**

8.98 Full details of the biomass emissions dispersion modelling assessment undertaken are detailed in **Appendix 8.2 Biomass Dispersion Modelling Assessment**. A summary of impacts associated with modelled increases in air pollutant levels on human health and protected ecological designations provided below.

8.99 Predicted air quality impacts for each potential scenario (replacement of Line 1 and 2) have been assessed:

- Phase 1: Replacement of Line 1 only:
  - short and long term impacts associated with increases in air pollutant levels in relation to human health can be described as negligible; and
  - short and long term impacts associated with increases in air pollutant levels in relation to protected ecological designations can be described as insignificant.
- Phase 2: Replacement of Line 1 and 2:
  - short and long term impacts associated with increases in air pollutant levels in relation to human health can be described as negligible; and
  - short and long term impacts associated with increases in air pollutant levels in relation to protected ecological designations can be described as insignificant.

8.100 Based on the above outcomes, effects associated with the phased replacement of two biomass boiler lines (Line 1 and Line 2) are therefore considered to be ‘not significant’.

*Indirect Impacts*

8.101 There are no indirect impacts.

**Post – Operational Stage Impacts**

8.102 There are no post-operational stage impacts that require assessment at this stage.

- 8.103 Details surrounding the decommissioning phase are yet to be fully clarified. In addition, it is also recognised that policy, legislation and local sensitivities evolve, which will limit the relevance of undertaking an assessment at this stage.
- 8.104 Despite this, decommissioning impacts are not anticipated to be greater than the construction phase impacts, given forecast improvements to air quality. This in response to the introduction of policy and legislation, and availability of cleaner technologies / fuels.
- 8.105 The outcomes of the construction phase assessment indicate that all impacts assessed are not significant, following the consideration of inherent mitigation. This includes implementation of best practice dust control measures (via a CEMP). Further assessment in relation to the decommissioning phase is therefore not required – and effects are believed to be ‘not significant’.
- 8.106 Nonetheless, the decommissioning methodology would be finalised at a more appropriate time, and agreed with statutory consultees to be in line with current guidance, policy and legislation. Decommissioning works would be undertaken in accordance with best practice measures.
- 8.107 Upon finalisation of the decommissioning strategy, the assessment will be reviewed to determine if the outcomes are still relevant or if an update is required.

### Unplanned Events (i.e. Accidents)

- 8.108 All on-site accidents and emergencies will be controlled and recorded in accordance with the site’s EMS (ISO 14001:2015). All unplanned events will be investigation and remedial action will be taken.
- 8.109 During the construction phase, accidents may cause a temporary release of dust / PM<sub>10</sub> emissions. However, given the atypical nature of these events – emission releases are considered to be infrequent and temporary which would not lead to a discernible deterioration of conditions. All accidents will be dealt with in a prompt manner to remediate any potential dust / PM<sub>10</sub> sources, in accordance with the relevant procedures (as prescribed within the site’s CEMP).
- 8.110 The CEMP will provide emergency procedures including an emergency control and action plan, related corrective measures, adequate equipment and training program for personnel to deal with case-specific emergency situations on site.
- 8.111 Road traffic vehicle movements generated by construction and operational activities are below the relevant screening thresholds endorsed within LA 105 (Highways England et al., 2019). Therefore, effects are considered to be insignificant, and no further assessment is necessary. This includes the condition of accidents on the road traffic network. Accidents on the road traffic network are not expected to alter the assessment outcomes or cause any discernible deterioration of conditions.
- 8.112 During the operational phase, accidents may contribute to temporary elevated releases of process emissions. However, process emissions generated by operational activities will be continuously monitored in accordance with the site’s IED Licence. BAT will be used to control emissions. All accidents will be dealt with in a prompt manner in accordance with the relevant established procedures (including EMS) to remediate impacts. For instance, in the event of plant failure, boiler flue gases will be redirected to 38m high start-up stacks dedicated to each energy plant. Additionally, operational activities will cease and will not resume until a thorough investigation is completed and normal operating conditions are fully restored. Therefore, elevated emission releases are considered to be infrequent and temporary which would not lead to a discernible deterioration of conditions.

- 8.113 Based on the above points, there are not considered to be any significant air quality impacts associated with accidents and / disasters.

## Cumulative / Synergistic Impacts

### *Construction Dust Assessment*

- 8.114 Cumulative dust effects arising from construction activities could be experienced where construction activities from more than one scheme overlaps at an affected receptor, dependent on the impact (e.g. dust soiling, human health and ecological). However, all schemes which are considered to pose a risk of cumulative effects will have had to undertake a construction dust assessment separately relating to their own site activities and associated risks, with the recommendation of best practice mitigation to remedy residual effects not significant. These measures would be integrated into a CEMP or similar, to be adhered to during construction, as part of their own environmental responsibilities and commitment.
- 8.115 In accordance with IAQM guidance (IAQM, 2023), following the implementation of the recommended mitigation, effects will be not significant. As such, it is not anticipated that there would be significant cumulative effects associated with construction phase dust / PM<sub>10</sub> emissions.

### *Road Traffic Assessment*

- 8.116 Screening of road traffic vehicle movements generated by the Project has been undertaken in isolation, as per relevant guidance. No further assessment in relation to cumulative effects is therefore required.

### *Biomass Emissions Dispersion Assessment*

- 8.117 The assessment procedure has been conducted in accordance with best practice guidance documents. Cumulative effects have been considered where necessary and endorsed by assessment guidance.
- 8.118 Relevant existing emission points across the wider Medite site (i.e. those that emit the same pollutants as the biomass plant) have been included in the dispersion modelling assessment, to facilitate a cumulative assessment. Furthermore, the modelling exercise has incorporated local baseline datasets (where available) to ensure other relevant local emission sources are accounted for. As such, the dispersion modelling exercise is inherently cumulative in nature.
- 8.119 Where quantified, the cumulative effects are considered to be not significant.

## Transboundary Impacts (if any)

- 8.120 As per established practice, there are no transboundary impacts associated with Air Quality. Impacts will be localised and not experienced across international boundaries.

## Interaction with Other Impacts

- 8.121 The road traffic assessment is based on analysis presented within Chapter 14: Traffic. Furthermore, the outcomes of the air quality assessment relating to protected ecological designations is discussed in **Chapter 5: Biodiversity**.

- 8.122 It is acknowledged that noise, visual and air quality effects could overlap at a sensitive human receptor location. Furthermore, ecological designations could experience noise and air quality effects, in-combination.
- 8.123 However, given that all air quality effects established as part of this assessment are considered to be not significant in terms of the EIA Directive, the likelihood of a cumulative intra-project effect occurring as a result of air quality is considered to be low. No further assessment is therefore required.
- 8.124 It is acknowledged that the implications of climate change could influence future air quality. However, these implications are not likely to occur in the short-term – as climate change relates to the gradual long-term persistent change in weather patterns.
- 8.125 It is commonly agreed that air quality is expected to improve in the future; this in response to the introduction of policy and legislation, and availability of cleaner technologies / fuels. The assessment, therefore, focuses on the near-term (year of opening) as part of establishing a worst-case assessment scenario. The agreed consensus is that air quality conditions thereon in (i.e. throughout the operational lifespan of the Project) will improve and not exceed the worst case criteria assessed. For these reasons, it is not standard practice to consider implications associated with climate change explicitly within air quality assessments.
- 8.126 Notwithstanding the above, climate change may directly contribute to elevated concentrations particularly during the summer in urban areas – as a result of increased temperatures causing static atmospheric conditions (temperature inversions), limiting the dispersion of pollutants. Conversely, climate change may directly benefit air quality during the winter, as a result of elevated wind speeds benefiting advection and dispersion of pollutants. Indirectly, climate change may also reduce anthropogenic emission sources, following the exploration of net-zero pathways (the Climate Action and Low Carbon Development Act 2015 and the Climate Action and Low Carbon Development (Amendment) Act 2021), changes in behaviour and replacement of fossil fuels. Thus, the impacts of climate change on air quality are complex and conflicting. However, overall - it is judged that any potential negative effects associated with climate change will be offset by indirect improvements to air quality brought about by decarbonisation – and air quality specific improvements. No further assessment is required – and the outcomes of the air quality assessment remain valid (i.e. not significant).
- 8.127 Consideration of greenhouse gas emissions and their effect on climate change as a result of the Project is provided in **Chapter 9: Climate**.

## MITIGATION MEASURES

### Construction Stage

- 8.128 The outcomes of the construction dust assessment indicate a series of best practice dust control measures are required to be implemented.
- 8.129 Following the implementation of mitigation measures detailed in **Appendix 8.3 Construction Dust Assessment**, effects associated with construction dust are not significant in terms of the EIAR regulations. These measures will be included within a CEMP securing their implementation. A

CEMP is listed as an inherent design mitigation measure. No further additional mitigation measures are considered to be required.

- 8.130 Effects associated with all other construction activities are not significant. No other mitigation is required to be implemented during the construction phase.

## Operational Stage

- 8.131 Effects associated with all operational activities are not significant. Mitigation measures are not necessary.

## Post – Operational Stage

- 8.132 Details surrounding the decommissioning phase are yet to be fully clarified. Despite this, decommissioning impacts are not anticipated to be greater than the construction phase impacts, given forecast improvements to air quality.
- 8.133 Based on the information available, effects associated with the decommissioning phase are believed to be ‘not significant’, following the application of best practice measures. This may include measures to control potential dust emissions, such as those outlined in **Appendix 8.3: Construction Dust Assessment**. It is likely these will be included within the decommissioning strategy and considered embedded mitigation. No further mitigation is required to be implemented, based on the information available.
- 8.134 Upon finalisation of the decommissioning strategy, the assessment will be reviewed to determine if the outcomes are still relevant or if an update is required. This will be agreed with statutory consultees.

## RESIDUAL IMPACT ASSESSMENT

### Construction Stage

- 8.135 Effects are not significant in terms of the EIAR regulations, whilst considering inherent mitigation. This includes the preparation of a CEMP to control dust emissions. No additional mitigation is required and therefore investigation of residual effects is not necessary.

### Operational Stage

- 8.136 Based on the outcomes of the assessment, mitigation measures are not necessary. Therefore investigation of residual effects is not necessary.

### Post – Operational Stage

- 8.137 Based upon the application of best practice measures, such as those outlined in **Appendix 8.3: Construction Dust Assessment**, residual effects are considered ‘not significant’. It is likely these measures will be included within the decommissioning strategy and considered embedded mitigation.

- 8.138 Nonetheless, the decommissioning methodology would be finalised at a more appropriate time, and agreed with statutory consultees. The assessment will be reviewed to determine if the outcomes are still relevant or if an update is required.

## MONITORING

### Construction Stage

- 8.139 In accordance with the outcomes of the construction dust assessment, monitoring is required to be undertaken throughout the construction phase to monitor the efficacy of the applied dust controls. This includes the following commitments:
- undertake regular site inspections to monitor compliance with the CEMP, record inspection results, and make an inspection log available to the local authority when asked; and
  - increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- 8.140 For further details see **Appendix 8.3 Construction Dust Assessment**. These measures will be included within a CEMP securing their implementation. A CEMP is listed as an inherent design mitigation measure.
- 8.141 No other monitoring is required.

### Operational Stage

- 8.142 Air emissions points will be regulated by the EPA, in accordance with the site's IED Licence. This may include a requirement for monitoring, which will align with BAT. This will be clarified with the EPA via the IED Licensing application process.
- 8.143 With respect to the emission points associated with the new wood biomass fired thermal energy system, the monitoring requirements will be based upon the principles contained within the Production of Wood-based Panels BREF and associated BATc document (European Parliament and the Council of the European Union, 2015).
- 8.144 No other monitoring is required.



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## FIGURES

Figure 8-1: Ambient Monitoring Survey Locations

Figure 8-2: Dispersion Model Setup

Figure 8-3: Discrete Human Receptors

Figure 8-4: Relevant Ecological Designations

Figure 8-5: Surrounding Topography

Figure 8-6: Irish EPA Zones

Figure 8-7: Construction Dust Buffers

Figure 8-1: Ambient Monitoring Survey Locations



Figure 8-2: Dispersion Model Setup

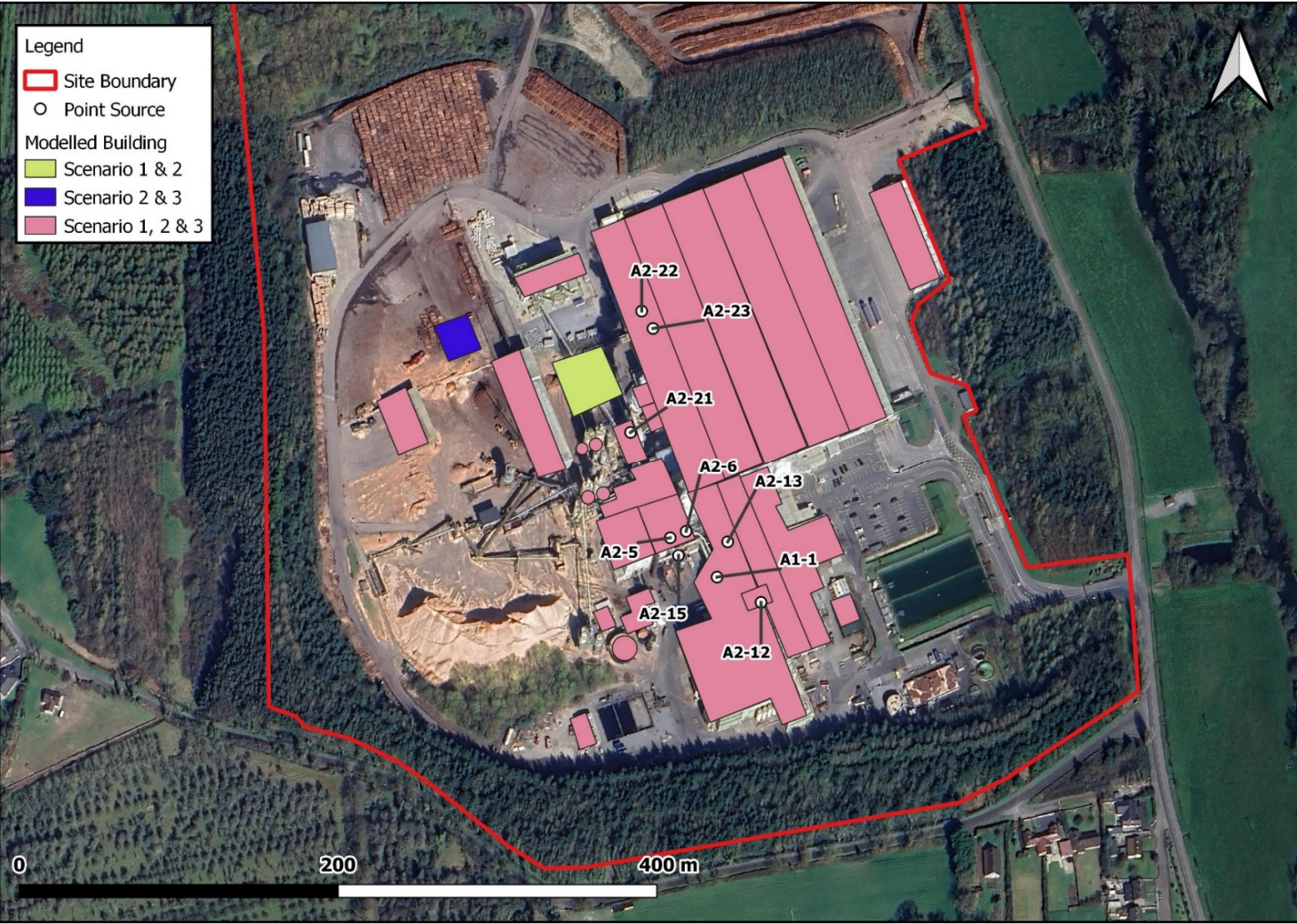


Figure 8-3: Discrete Human Receptors

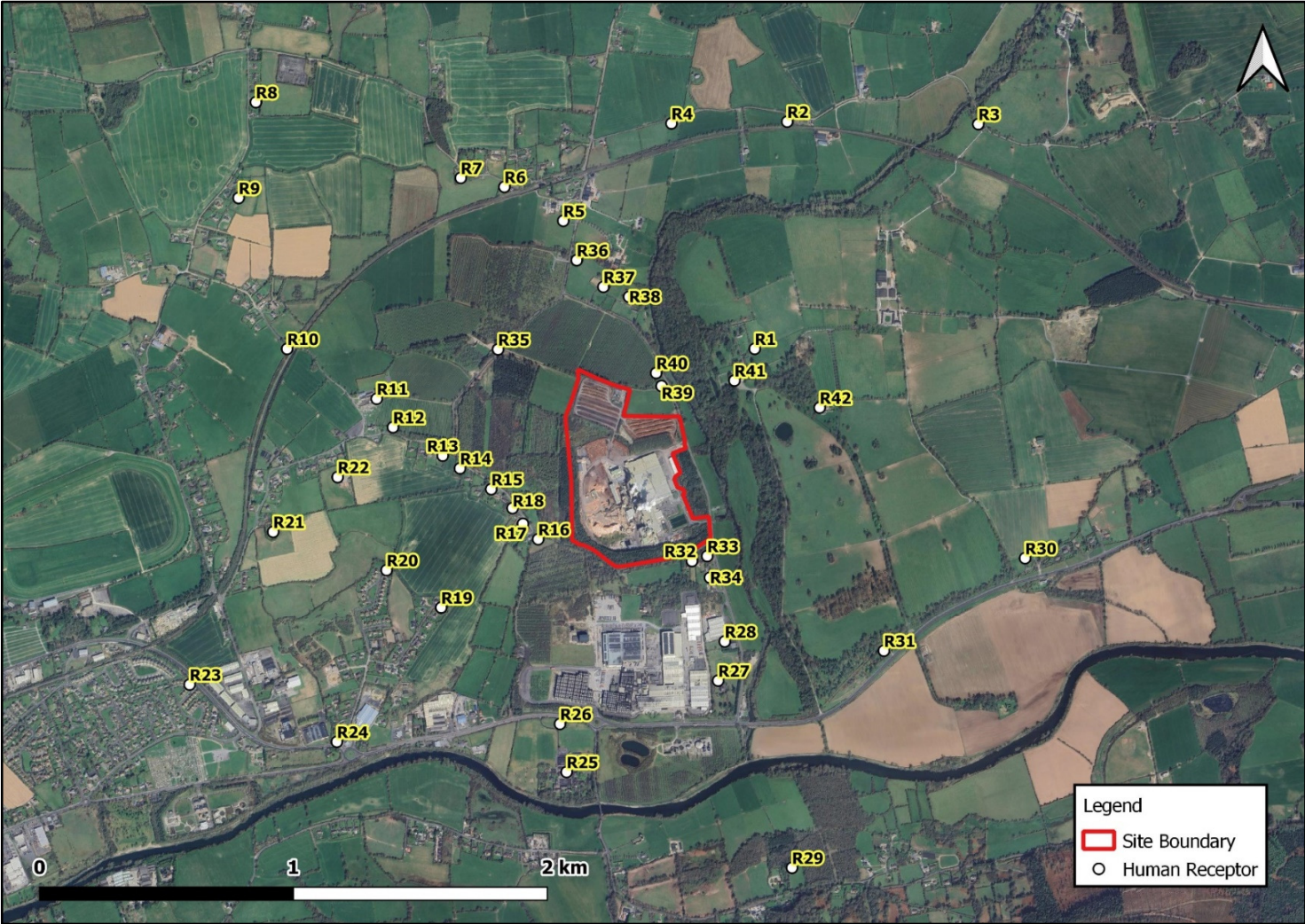


Figure 8-4: Relevant Ecological Designations

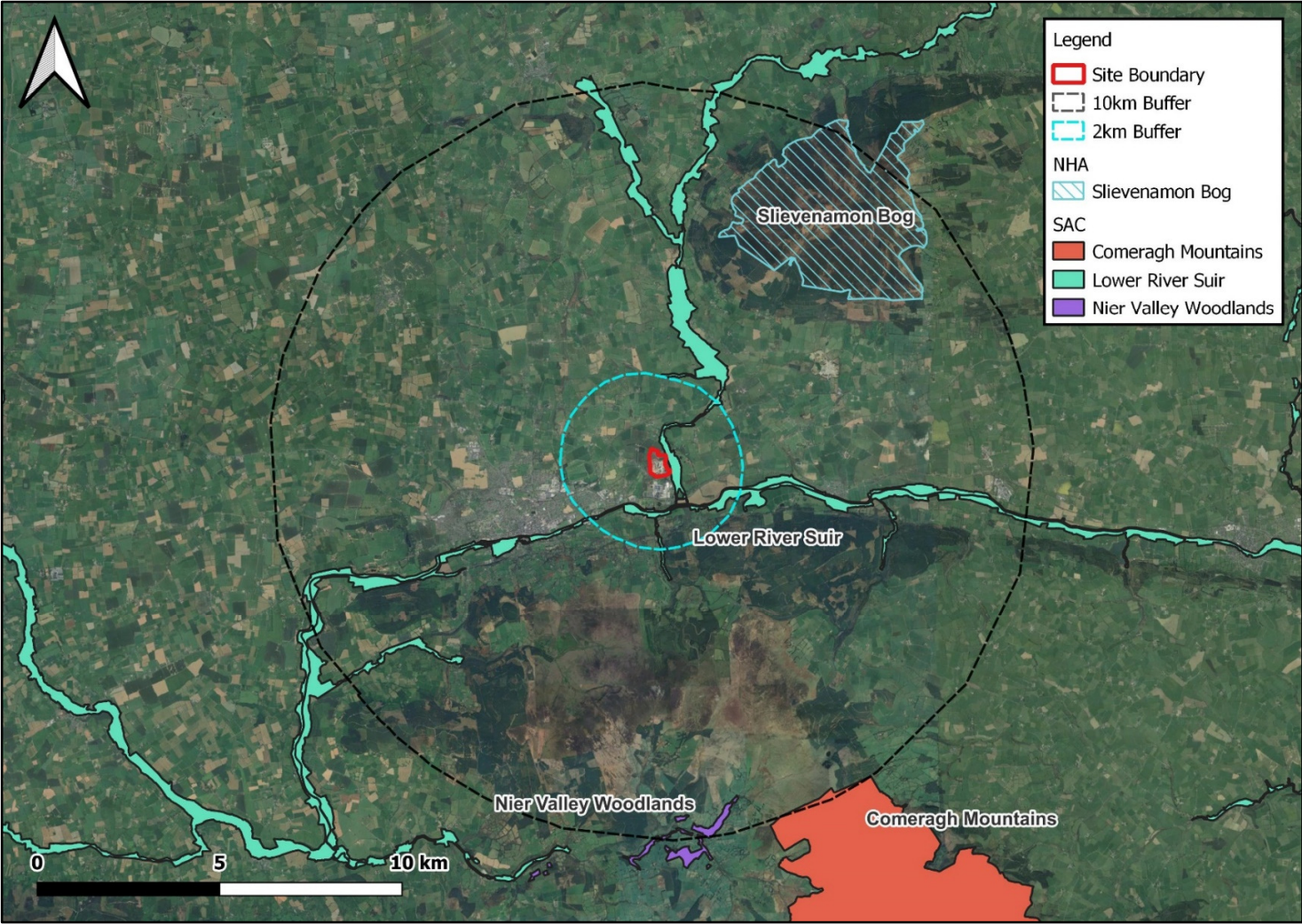


Figure 8-5: Surrounding Topography

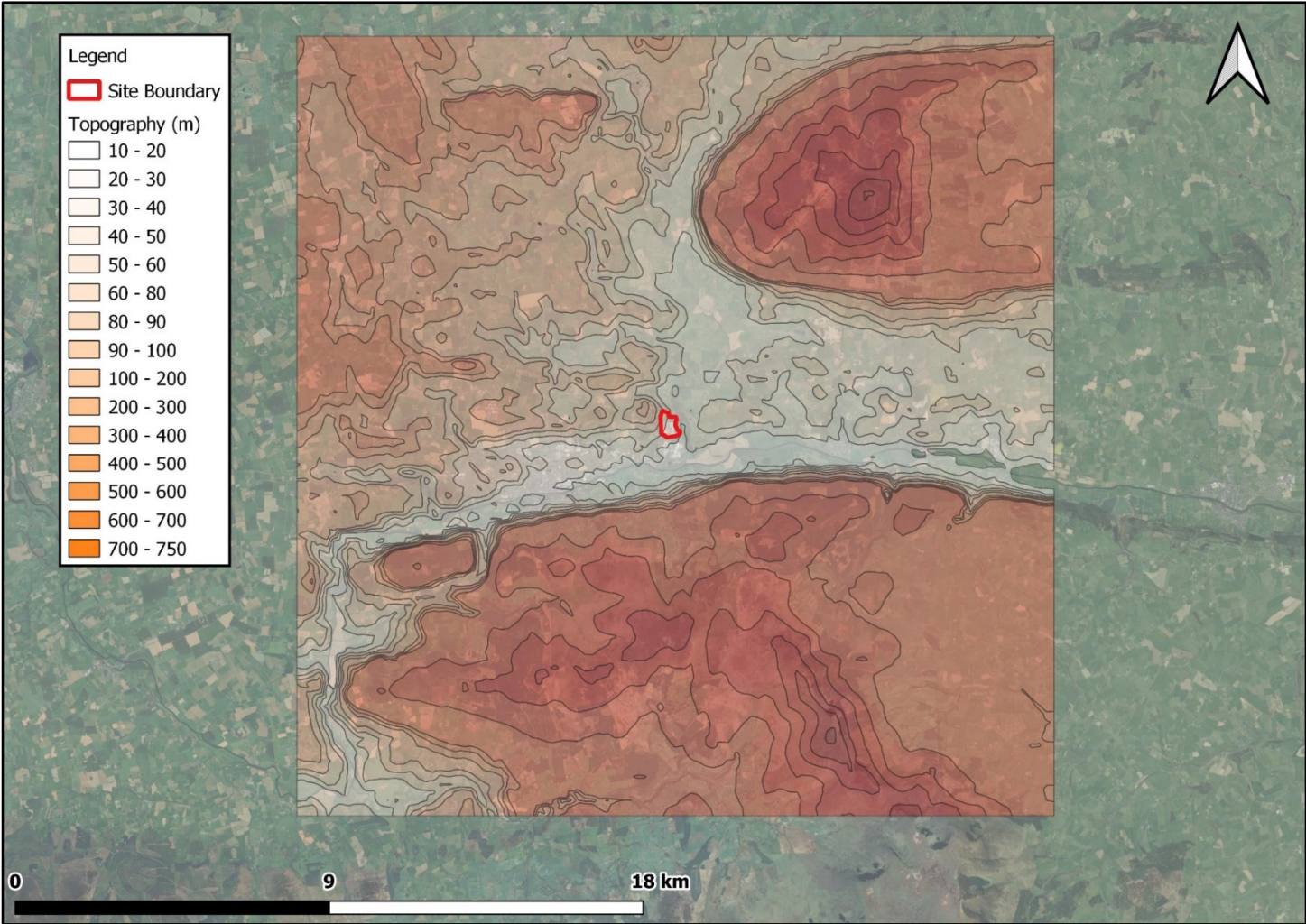


Figure 8-6: Irish EPA Zones

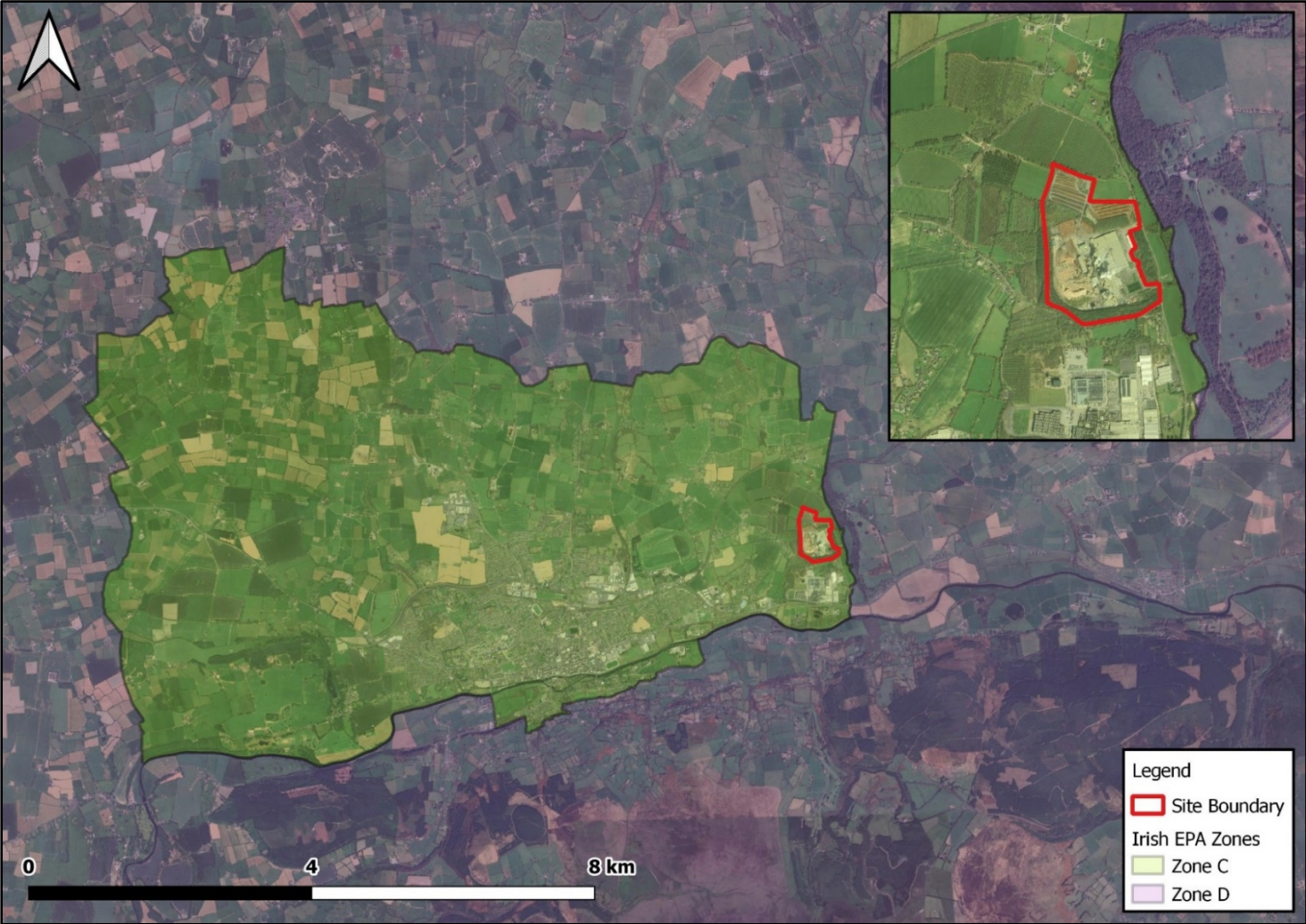
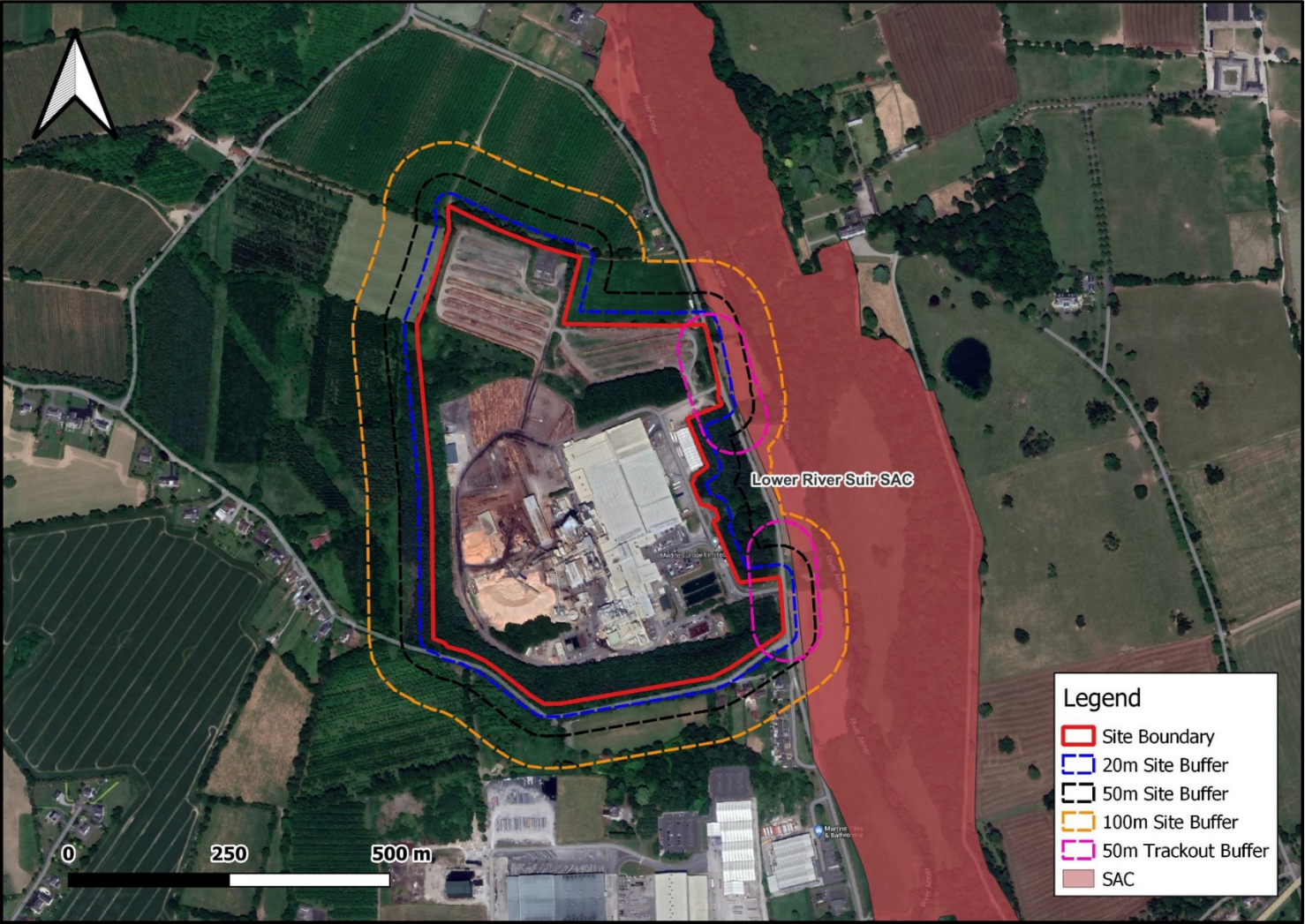




Figure 8-7: Construction Dust Buffers



## APPENDIX

Appendix 8.1 Baseline Monitoring Survey

Appendix 8.2 Biomass Dispersion Modelling Assessment

Appendix 8.3 Construction Dust Assessment

**(Refer to EIAR Volume 3 for Appendices)**