

## 6 Air Quality

### 6.1 Introduction

This chapter of the ES provides an assessment of the likely significant effects from the Proposed Development on air quality. The assessment is based on the characteristics of the Site and surrounding area and the key parameters of the Proposed Development detailed in **Chapter 2 – Site and Surrounding Area** and **Chapter 3 – The Proposed Development** respectively.

This chapter has been prepared by SLR Consulting, in line with best practice. A statement outlining the relevant expertise and qualifications of competent experts appointed to prepare this EIA Report is provided in **Appendix 1.1**.

The aims of this chapter are to consider the potential effects, including cumulative effects, of the Proposed Development on air quality during the construction works associated with the proposed upgrades to Kilfinnan Road.

This chapter describes the scope, relevant legislation, assessment methodology, and the baseline conditions existing at the Site and its surroundings. It considers any potential significant environmental effects the Proposed Development would have on this baseline environment; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been employed.

This chapter is supported by the following figures:

- Figure 6.1: Site Setting & Dust Sensitive Receptors;
- Figure 6.2: Construction Phase Dust Assessment;
- Figure 6.3: Construction Phase Traffic Routing; and,
- Appendix 7.1 – Construction Dust Methodology

### 6.2 Policy Context, Legislation, Guidance and Standards

#### Legislation

The overarching legislative framework applicable to this EIA for the Proposed Development is outlined in Chapter 4 – Legislative and Policy Context. Legislation directly relevant to this assessment is presented below.

#### **Air Quality Strategy**

The UK Government and the Devolved Administrations are required under the Environment Act 1995 to produce a national air quality strategy to improve air quality. The latest Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland was published in 2007 (Defra, 2007).

The AQS provides the over-arching strategic framework for air quality management in the UK and contains non-statutory national air quality Objectives established by the UK Government and Devolved Administrations for the protection of public health and the environment.

The AQS Objectives of relevance to human receptors in this assessment are provided in Table 6.1

Table 6.1: Relevant Ambient AQS Objectives

Pollutant	Objective	Concentration Measured As
Nitrogen Dioxide (NO <sub>2</sub> )	40	Annual Mean
	200	1-hour Mean (not to be exceeded on more than 18 occasions per annum)
	18	Annual Mean

Pollutant	Objective	Concentration Measured As
Particulate Matter (PM <sub>10</sub> )	50	24-hour Mean (not to be exceeded on more than 7 occasions per annum)
Particulate Matter (PM <sub>2.5</sub> )	10	Annual Mean

The above AQS Objectives apply at locations outside buildings or other natural or man-made structures above or below ground, where members of the public are regularly present and might reasonably be expected to be exposed to pollutant concentrations over the relevant averaging period – herein referred to as relevant exposure. Table 6.2 provides an indication of those locations.

Table 6.2: Human Health Relevant Exposure

Objective Averaging Period	Relevant Locations	Objectives Should Apply At	Objectives Should Not Apply At
Annual Mean	Where individuals are exposed for a cumulative period of 6-months in a year	Building facades of residential properties, schools, hospitals etc.	Facades of offices, Hotels, Gardens of residences, kerbside sites
24-hour mean	Where individuals may be exposed for eight hours or more in a day	As above together with hotels and gardens of residential properties	Kerbside sites where public exposure is expected to be short-term
1-hour mean	Where individuals might reasonably be expected to spend one hour or longer	As above together with kerbside sites of regular access, car parks, bus stations etc.	Kerbside sites where public would not be expected to have regular access

### **Local Air Quality Management**

As reinforced within the AQS, Part IV of the Environment Act 1995 includes a statutory duty for local authorities to undergo a process of Local Air Quality Management ('LAQM'). This requires local authorities to review and assess air quality within their areas to determine the likeliness of compliance, regularly and systematically.

Where any of the prescribed AQS objectives are not likely to be achieved, the authority must designate an Air Quality Management Area ('AQMA'). For each AQMA, the local authority is required to prepare an Air Quality Action Plan ('AQAP'), which details measures the authority intends to introduce to deliver improvements in local air quality in pursuit of the objective.

The Department for Environment, Food and Rural Affairs ('DEFRA') and the Devolved Administrations, which includes the Scottish Government, have published technical guidance for use by local authorities in their review and assessment work.

### **Ecological Habitats**

Ecological habitats vary in terms of their sensitivity, perceived ecological value, geographic importance, and level of protection. Within the UK, there are three types of nature conservation designations: international, national and local designations, with a greater level of protection afforded to the former, relative to the latter.

The EU Habitats Directive (The Council of European Communities, 1992) requires member states to introduce a range of measures for the protection of habitats and species. This requirement was transposed into UK legislation via statutory instruments including The Conservation (Natural Habitats, &c.) Regulations 1994 (the 'Habitats Regulations'). These regulations remain operable despite the UK's withdrawal from the EU.

The Habitats Regulations require that projects can only be permitted to proceed having ascertained that there will be no adverse effect on the integrity of the designated site. It requires an assessment to determine if significant effects are likely, followed by an 'appropriate assessment' by the competent authority, if necessary.

European Sites of international significance protected under the Habitat Regulations (or 'European Sites' include Special Areas of Conservation (SAC) and Special Protection Areas (SPA). Collectively these sites were previously termed the Natura 2000 network, and now generally referred to as called the national site network.

Other sites of international significance are Ramsar sites, which are wetlands protected under the 1971 Ramsar Convention<sup>1</sup>. Many of these sites in the UK were initially selected on the basis of their importance to waterbirds and are therefore also classified as SPAs.

The Nature Conservation (Scotland) Act 2004 provides protection to Sites of Special Scientific Interest (SSSI) to ensure that developments are not likely to cause damage.

Ecological designations are provided environmental protection with respect to air quality, through the application of standards known as Critical Levels for airborne concentrations and Critical Loads for deposition to land from air.

The Critical Levels and Loads of relevance to NOx emissions are provided below.

### Critical Levels

Critical Levels are a quantitative estimate of exposure to one or more airborne pollutants in gaseous form, below which significant harmful effects on sensitive elements of the environment do not occur, according to present knowledge. Critical Levels for the protection of vegetation and ecosystems are specified within relevant UK air quality legislation.

**Table 6.3** provides details of the Critical Levels of relevance to NOx emissions.

Table 6.3: Ecological Protection: Relevant Critical Levels

Pollutant	Concentration (µg/m <sup>3</sup> )	Averaging Period	Habitat
NOx	30	Annual mean	All ecosystems
	200 (a, (b))	Daily mean	All ecosystems
Table Notes: (a) Non statutory (b) Where O <sub>3</sub> and SO <sub>2</sub> are not elevated above their Critical Level (common across the UK) a value of 200µg/m <sup>3</sup> is recommended for assessments (IAQM, 2020).			

The recorded maximum sulphur dioxide concentration and AOT40 ozone concentration (for 2021 and as a 5-year average, respectively) are below the relevant limits and are therefore not considered 'high' in the area of the Site. This therefore indicates that application of the 200 µg/m<sup>3</sup> 24-hour critical level is appropriate for sensitive ecological receptors in this area.

### Critical Loads

Critical Loads are a quantitative estimate of exposure to deposition of one or more pollutants, below which significant harmful effects on sensitive elements of the environment do not occur, according to present knowledge.

Critical Loads for eutrophication are habitat / species specific (derived from a range of experimental studies), whereas Critical Loads for acidification are dependent on soil chemistry, as well as habitat type.

### Policy

The planning policy framework applicable to this EIA for the Proposed Development is outlined in **Chapter 4 – Legislative and Policy Context**.

National Planning Framework 4 (NPF4) is the national spatial strategy for Scotland. It sets out the spatial principles, regional priorities, national developments and national planning policy. NPF4 replaces NPF3 and Scottish Planning Policy. Relevant policies from NPF4 include:

<sup>1</sup> Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat

Policy 23(d): Development proposals that are likely to have significant adverse effects on air quality will not be supported. Development proposals will consider opportunities to improve air quality and reduce exposure to poor air quality. An air quality assessment may be required where the nature of the proposal or the air quality in the location suggest significant effects are likely.

In addition to National Planning Framework 4, the statutory Development Plan applicable to the Site presently comprises:

- Highland-wide Local Development Plan (adopted April 2012); and,
- West Highlands and Islands Local Development Plan (adopted September 2019).

Planning policy considerations from the Highland-wide Local Development Plan of specific relevance to this assessment are identified below:

- Policy 28 Sustainable Design: The Council will support developments which promote and enhance the social, economic and environmental wellbeing of the people of Highland. Proposed developments will be assessed on the extent to which they:
  - Impacts on individual and community residential amenity;
  - Impact on [air quality], including pollution and discharges within designated areas;
- Policy 72 Pollution: Proposals that may result in significant pollution such as [...] air will only be approved where a detailed assessment report on the levels, character and transmission and receiving environment of the potential pollution is provided by the Applicant to show how the pollution can be appropriately avoided and if necessary, mitigated. Where the Council applies conditions to any permission to deal with pollution matters, these may include subsequent independent monitoring of pollution levels.
- Policy 73 Air Quality: Development proposals which, individually or cumulatively, may adversely affect the air quality in an area to a level which could cause harm to human health and wellbeing or the natural environment must be accompanied by appropriate provisions, such as an Air Quality Assessment, (deemed satisfactory to the Local Authority and SEPA as appropriate) which demonstrate how such impacts will be mitigated.

## Guidance and Relevant Technical Standards

The following guidance and technical standards have informed this assessment:

- Scottish Government / Defra Technical Guidance on Local Air Quality Management (LAQM.TG (22));
- Guidance on the Assessment of Dust from Demolition and Construction (Institute of Air Quality Management (IAQM) (IAQM, 2023);
- Land-Use Planning and Development Control: Planning for Air Quality (IAQM and Environmental Protection UK (EPUK), 2017);
- A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites (IAQM, 2020); and,
- Design Manual for Roads and Bridges (DMRB) LA 105 (Highways England et al., 2019).

## 6.3 Scope of Assessment & Consultation

The assessment 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 from relevant consultees.

## Issues Scoped In / Out of the Assessment

The principal aspects considered within this assessment are:

- Dust generation during the Construction Stage of Kilfinnan Road; and,
- Off-site vehicle emissions during the Construction Stage of Kilfinnan Road.

Aspects that have been scoped out of the assessment are the following, as discussed below.

- Emissions from Non-Road Mobile Machinery (NRMM) during the construction stage;
- Off-site vehicle emissions during the Operational Stage 1 (2-way road for construction of Coire Glas scheme) and Stage 2 (1-way public road and access to Coire Glas for operations); and,
- Off-site dust emissions during the Operational Stage 1 and Stage 2.

According to the IAQM Guidance (IAQM, 2023), experience of assessing exhaust emissions from NRMM suggests that they are unlikely to make a significant impact on local air quality. According to LAQM.TG (22) guidance, experience of assessing the exhaust emissions from on-site plant (NRMM) and site traffic suggests that, with suitable controls and site management, they are unlikely to make a significant impact on local air quality.

In accordance with the aforementioned Defra and IAQM guidance, impacts associated with construction phase generated NRMM emissions are not likely to be significant and have been scoped out of the assessment.

Following construction of the Proposed Development, there would be no vehicle movements or dust generating activities above the consented baseline. During the operational stages of the Proposed Development, vehicle movements along Kilfinnan Road would be associated with the construction of the consented Coire Glas scheme during Stage 1 and operation of the Coire Glas scheme along with public movements during Stage 2.

The effects from dust and vehicle emissions associated with the operational phase are therefore considered unlikely to affect air quality and have been scoped out of the assessment.

## Scoping Consultation Responses

An EIA Scoping Request for the Proposed Development was submitted in November 2022 and the response was issued in January 2023 (reference: 22/05277/SCOP).

It is noted that whilst air quality is not addressed specifically within the Scoping Report, it states the following in relation to air quality: *“Having considered the contents of the rest of the Scoping Report, it is considered that the proposed scope of assessment is appropriate to the scale and location of the development when considering the embedded mitigation”*.

The Scoping Report raised the requirement of a Construction Traffic Management Plan (CTMP), to include aspects relating to mitigation of impact. Mitigation recommendations applicable to controlling and mitigating dust impacts on the local road network have been included within the assessment.

The Scoping Report and Scoping Opinion can be found at [Appendix 1.3 and 1.4](#). This chapter is therefore based upon the Scoping Opinion adopted by the planning authority and is intended to include the information required for reaching a reasoned conclusion on the significant effects of the proposed development on air quality, pursuant to regulation 5(3) of the EIA Regulations.

## 6.4 Assessment Methodology

### Baseline Review

A review of relevant information, guidance and planning policy relating to the Proposed Development was undertaken to characterise the baseline of the Site and surrounding area in relation to air quality, including:

- Scottish Government’s Background Mapped Concentration Estimates (2018 reference year);

- DEFRA Background Mapped Concentration Estimates (2018 reference year);
- Monitors associated with the Automatic Urban and Rural Network ('AURN');
- Air Pollution Information System ('APIS'); and,
- The Highland Council ('THC') LAQM Air Quality Annual Progress Reports (2019 to 2022).

## Construction Phase Dust Assessment

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

The study area has been defined on the following:

- Human receptors within 250m of the Site boundary, and within 50m of routes used by construction vehicles, up to 250m from the Site access; and,
- Ecological receptors within 50m of the Site boundary and within 50m of routes used by construction vehicles, up to 250m from the Site access.

The likely unmitigated dust emission magnitude associated with construction-related 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.

The IAQM construction dust assessment methodology provides a framework to establish the unmitigated risk of construction dust impacts associated with a development at both human and ecological receptors.

This risk is based on a relationship between the anticipated dust emission magnitude and the sensitivity of the surrounding area. These have been defined with use of criteria provided within the IAQM construction guidance.

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 EIA regulations.

Full details of the assessment methodology are provided within [Appendix 7.1](#).

## Construction Phase Road Traffic Screening Assessment

The assessment of additional road vehicle movements generated during the construction phase on sensitive receptor locations has been undertaken with reference to established screening criteria. The screening criteria utilised is dependent on the application (i.e. there are different criteria for human and ecological receptors). Human and ecological receptors within 200m of roads which are expected to experience increases in traffic volume as a result of the proposed construction activities have been assessed, where necessary. If an ecological and / or human receptor is located >200m from an affected road link, further consideration is not required.

The 200m distance screening threshold is supported in various guidance documents (IAQM, 2020 and Highways England et al., 2019) and is therefore considered appropriate.

These are discussed further below.

### **Human Receptors Screening Criteria**

The screening criteria for an 'affected road' link relevant to this assessment is as follows (specific to a development located outside of an AQMA):

- A change of traffic flows of light duty vehicle (LDV) flows of more than 500 annual average daily traffic (AADT); or,
- A change of traffic flows of heavy-duty vehicle (HDV) flows of more than 100 AADT

Traffic data for the purposes of this assessment is consistent with the analysis undertaken and presented as part of Chapter 9: Traffic and Transport.

### **Ecological Receptors Screening Criteria**

The assessment procedure outlined within the IAQM guidance document (IAQM, 2020) has been used in relation to the assessment of sensitive ecological receptors and off-site road traffic. This initially comprises a screening assessment to indicate whether:

- Any sensitive qualifying features are located within 200m of a road link projected to experience developmental-generated vehicle movements; and,
- Construction activities are likely to generate either >1,000 (and/or >200 HDV) AADT movements on a road link within 200m of the ecological receptor.

For the purposes of assessing impacts on sensitive qualifying internationally designated ecological sites (e.g. Special Area of Conservation, Special Protection Area and Ramsar), screening will be undertaken in-combination with other projects and plans within 200m of an affected road link. This is reflective of the level of protection afforded to these sites.

The outcomes of the above will determine whether impacts associated with the Proposed Development could result in a likely significant effect on the assessed ecological feature.

## **Assessment Criteria & Assignment of Significance**

Whilst Appendix 4.1 (Assessment Methods) provides an indicative EIA assessment matrix, it also identifies that assessment methodologies will reflect the prevailing technical area guidance and specific requirements of receptor groups. As such the following sections provide a description of the assessment criteria and assessment methodologies used to assess air quality, which are derived from best practice guidance documents.

### **Construction Phase Dust Assessment**

Following determination of construction phase dust risks, proportionate mitigation is recommended, with the aim of rendering residual effects as not significant in terms of the EIA regulations.

The IAQM construction guidance does not provide a framework to determine the significance of unmitigated effects. Significance is only assigned to the effect after considering the construction activity with mitigation to prevent significant effects on receptors through the use of effective mitigation.

Full details of the assessment methodology are provided within **Appendix 7.1** Construction Dust Assessment Methodology.

### **Construction Phase Road Traffic Screening Assessment**

If the traffic flows 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. Where the screening criteria are exceeded (and relevant human receptors are located <200 m), detailed dispersion modelling is required to further define significance. #

## **6.5 Baseline Conditions**

### **Local Authority Review and Assessment**

THC, in fulfilment of statutory LAQM requirements, has conducted an ongoing exercise to review and assess air quality within their administrative area. The latest publicly available LAQM report at the time of writing is the 2022 Annual Status Report (ASR).

The nearest AQMA is located >50km north of the Proposed Development (Inverness City Centre AQMA). As such, with respect to air quality and human health, the surrounding locale is not believed to be sensitive.

## Review of Air Quality Monitoring

THC operate three automatic monitors within their administrative area, all of which are located in Inverness approximately 35km from the Site. In addition, from review the UK Automatic Urban and Rural Network (AURN), there are no AURN automatic monitors located within 50km of the Site.

Passive diffusion tube monitoring is currently undertaken by THC at numerous locations throughout the Council’s area as part of their commitment to LAQM. The diffusion tubes are located in areas which are deemed to require further assessment of NO<sub>2</sub> concentrations.

At the time of assessment, the closest diffusion tubes are located in Inverness. Due to the distance between the Site and the monitoring locations, similar pollutant concentrations are not anticipated and therefore these monitoring locations have not been considered within the context of this assessment.

## Mapped Background Concentrations

The Scottish Government provides Scotland-specific air pollutant maps of annual mean background NO<sub>x</sub>, NO<sub>2</sub> and PM<sub>10</sub> concentration, using a methodology tailored to represent air pollutant concentrations in Scotland, using Scotland-specific meteorology and measurements from Scottish air quality monitoring sites to calibrate and verify the model. The available projections from 2018 are based on assumptions that were applicable prior to the Covid-19 pandemic.

Background concentrations of PM<sub>2.5</sub> are not provided by the Scottish Government and have therefore been taken from the Defra nationwide model which also uses a reference year of 2018.

Annual mean background concentrations have been obtained, based on the 1km grid squares which cover the Site and the study area. The maximum predicted mapped background concentrations across the study area for the following milestone years are presented in Table 6.4.

- 2023: Base / current year; and,
- 2025: Commencement of construction phase.

Table 6.4: Maximum Defra Mapped Background Concentrations

Year	Annual Mean Background Concentration (µg/m <sup>3</sup> )			
	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	NO <sub>x</sub>
2023	5.26	3.24	1.38	1.89
2025	5.18	3.17	1.25	1.72

All of the mapped background concentrations presented are well below the respective annual mean Air Quality Objectives (AQOs).

## Evolution of Baseline

Baseline air quality conditions are not expected to evolve significantly during the interim period, prior to construction commencing. The Proposed Development would be one of the initial activities undertaken as part of the consented Coire Glas scheme which is programmed to commence in 2025.

Air quality is expected to improve in future years or at least remain comparable to those presented, through a change in vehicle fleet and more stringent emission standards, as well as the recent enforcement of local and national policy and initiatives.

## 6.6 Embedded Mitigation

Construction phase mitigation measures that have been incorporated into the scheme design and are of relevance to Air Quality are listed below:

- Wheel wash located appropriately to prevent material being tracked onto public roads;
- Part of Kilfinnan Road closed for public access whilst upgrading works undertaken (temporary diversion road provided);
- Construction sequencing allows for works to be undertaken in discrete sections, minimising the potential for dust impacts;
- Existing road surface is hard paved;
- Excavated material would either be used onsite or as part of the spoil management programme for the consented Coire Glas scheme; and,
- Material cut from road construction would be used as general fill, minimising the requirement to import additional fill.

## 6.7 Assessment of Likely Effects

### Construction Phase Dust Assessment

The area of the Proposed Development is 43.15 ha.

There are both human and ecological receptors within the relevant screening distances outlined in **Section 6.4**. Therefore, an assessment of construction dust on both human and ecological receptors has been undertaken.

Whilst the construction works would be undertaken in a series of discrete sections, for the purpose of the dust assessment the application site has been assessed as one single dust source. This represents a conservative approach.

#### **Potential Dust Emission Magnitude**

There would be minimal demolition activities required as part of the construction works, with total volumes being less than 75,000m<sup>3</sup> and below 6m above ground. The dust emission magnitude for demolition is considered to be Small.

Construction work would be limited to the construction of 2 minor bridging structures and the upgrading of the road surface. Construction materials for the bridging structures will be largely pre-cast, including pre-cast bridge beams, culverts, drainage pipes and ducting for utilities all with low potential for dust release.

Temporary compound buildings for use as site accommodation and establishment areas will be bought onto site pre-fabricated and therefore do not introduce any sources of dust during their placement. The construction of the upgraded road surface will require the use of a mobile concrete batching plant on Site operated under an Environmental Permit.

The overall dust emission magnitude for construction is therefore considered to be Medium.

The maximum area whereby earthworks are required at any one time would be less than 110,000m<sup>2</sup>. The aggregated total of material movement within the Site has the potential to require more than 10 heavy earthwork vehicles potentially active at any one time. To reduce importation of materials a crusher and screener will be on site to allow for the re-purpose of cut material.

With reference to the IAQM methodology, the dust emission magnitude for earthworks is considered to be Large.

Unpaved road lengths prior to the Site exit have the potential to be greater than 100m, particularly when areas in proximity to the A82 junction are being upgraded. Therefore, the dust emission magnitude for trackout is considered to be Large.

Table 6.5: Summary of Residual Dust Magnitude

Activity	Dust Emission Magnitude
Demolition	Small
Earthworks	Large
Construction	Medium
Trackout	Large

### **Sensitivity of the Area**

#### **Human Receptors**

Overall, there are anticipated to be >10 existing residential properties (highly sensitive receptors) within 20m of any working area.

There are >10 high sensitivity receptors located within 50m from road links within 500 m of the construction access point (commensurate of a large site).

The sensitivity of the area with respect to dust soiling impacts on people and property is high.

The sensitivity of the area with regards to human health impacts from PM<sub>10</sub> concentrations is defined using the relevant matrix. To characterise sensitivity, consideration of annual mean background PM<sub>10</sub> concentration is required.

The maximum 2023 mapped background PM<sub>10</sub> concentration (as presented in **Section 6.5**) is estimated to be 5.26 µg/m<sup>3</sup> (i.e. falls into the <14 µg/m<sup>3</sup> class). The sensitivity of the area with respect to human health impacts in relation to earthworks, construction and trackout is therefore considered to be low.

#### **Ecological Receptors**

With respect to ecological designations, areas of the South Laggan Fen SSSI and areas of Ancient Woodland are found within 20m of the Site and potential trackout routes.

For the purposes of defining a risk of dust impact, it has been conservatively assumed that the statutory ecological designations contain dust sensitive features. On this basis, the SSSI is deemed to be a medium sensitivity receptor, and the ancient woodland a low sensitivity receptor in relation to sensitivity to dust deposition.

The sensitivity of the area with respect to ecological impacts in relation to demolition, earthworks, construction and trackout activities is therefore considered to be Medium.

A summary of the sensitivity of the surrounding area is detailed in Table 6.6.

Table 6.6: Sensitivity of the Area

Potential Impact	Sensitivity of Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	High
Human Health	Low	Low	Low	Low
Ecological	Medium	Medium	Medium	Medium

### **Risk of Impacts**

The outcome of the assessment of the potential magnitude of dust emissions, and the sensitivity of the area are combined in **Table 6.7** below to determine the risk of impact.

The defined level of risk is then used to inform the selection of appropriate mitigation.

The IAQM construction dust assessment methodology does not include the consideration of embedded mitigation measures when determining the potential risk of dust impacts.

Table 6.7: Dust Impact Risk

Impact Risk	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	High Risk	Medium Risk	High Risk
Human Health	Negligible	Low Risk	Low Risk	Low Risk
Ecological	Low Risk	Medium Risk	Medium Risk	Medium Risk

Following the construction dust assessment, construction works are found to be (worst case potential):

- High risk in relation to dust soiling impacts on people and property;
- Low risk in relation to human health impacts; and,
- Medium risk in relation to ecological impacts.

Potential dust effects during the construction phase are considered to be temporary and short-term (approximately 18 months) and may only arise at particular times (i.e. certain activities and/or meteorological conditions).

Nonetheless, commensurate with the above assessment of dust risk, mitigation measures, as identified by the IAQM guidance are required to ensure that any potential impacts arising from any construction works are minimised and, where possible, completely removed.

The specific mitigation measures proposed are presented in [Section 6.8](#).

## Construction Phase Traffic Assessment

Potential road traffic impacts on both human and ecological receptors are initially screened based on trip generation on the local road networks. Traffic data has been provided by SSE to identify whether any of the local roads are 'affected' which is presented in Chapter 9. Traffic flows are presented here as AADT, calculated from the total movements predicted over the 18-month construction period.

The predicted total traffic movements off-site during the construction phase of the Proposed Development is as follows:

- 52 HDV movements per day, as AADT; and,
- 51 LDV movements per day, as AADT.

Distribution of HDV movements onto the A82 are calculated to be 8 AADT movements northbound and 44 AADT movements southbound.

### Human Receptors

The trip generation from the construction phase does not exceed the applied EPUK & IAQM screening criteria. Furthermore, construction works are expected to have a duration of 18 months, and as such any consequential impacts onto local road traffic flows are believed to be temporary, with no long-term deterioration of conditions.

As such, road traffic impacts associated with construction activities on air quality can be considered as having an insignificant / neutral effect on human health. Effects are concluded to be not significant in terms of the EIA Regulations. No further assessment is therefore required.

### Ecological Receptors

As presented in [Volume 2 Figure 6.3](#), South Laggan Fen SSSI and a number of areas of Ancient Woodlands are within 200m of the roads likely to be used by construction vehicles.

No international ecological designations are found within 200m of the roads. Therefore, screening of road traffic flows can be undertaken without consideration of in-combination impacts.

The 24-hour AADT road traffic flows generated during the construction phase are well below the screening criteria of 1,000 AADT (and/ or 200 HDVs).

Furthermore, these flows refer to the maximum trips reported across any one link. Beyond this, vehicles will distribute across the local highways network, such that flows on other roads, including those within 200 m of the above designations will be lower.

Construction works are expected to have a duration of 18 months, and as such any consequential impacts onto local road traffic flows are believed to be temporary, with no long-term deterioration of conditions.

Road traffic impacts associated with construction activities on air quality can be considered as having an insignificant/ neutral effect on ecological designations. Effects are concluded to be not significant in terms of the EIA Regulations. No further assessment is therefore required.

## 6.8 Further Mitigation and Enhancement

A Construction Environmental Management Plan (CEMP) would be prepared by the appointed Principal Contractor. The CEMP would apply to all construction activities required as part of the Proposed Development. In particular, the CEMP would specify conditions to limit fugitive dust emissions. The final site-specific CEMP would be submitted to The Highland Council, once planning permission had been obtained.

### Construction Phase Dust

IAQM guidance outlines several site-specific mitigation measures based on the assessed site risk, as displayed in Table 6.8.

Table 6.8: Construction Phase: Recommended Dust Mitigation Measures

Site Application	Mitigation Measures
Communications	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
	Display the name and contact details of person(s) accountable for air quality and dust issues on the Site boundary. This may be the environment manager/engineer or the Site manager.
	Display the head or regional office contact information.
	Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the Site.
Earthworks	Use sprayed water to minimise dust from exposed areas/ temporary soil stockpiles.
	Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
	Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
	Only remove the cover in small areas during work and not all at once.
Monitoring	Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of site boundary, with cleaning to be provided if necessary.
	Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.
	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.

Site Application	Mitigation Measures
Operating Vehicle / Machinery and Sustainable Travel	Ensure all vehicles switch off engines when stationary - no idling vehicles.
	Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
	Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
	Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
Operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
	Ensure an adequate water supply on the Site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
	Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
Preparing and Maintaining the Site	Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
	Fully enclose site or specific operations where there is a high potential for dust production and the Site is active for an extensive period.
	Avoid site runoff of water or mud.
	Remove materials that have the potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
Site Management	Cover, seed or fence long term stockpiles to prevent wind whipping.
	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
	Make the complaints log available to the local authority when asked.
	Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook.
Trackout	Hold regular liaison meetings with other high risk construction sites within 500m of the Site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport deliveries which might be using the same strategic road network routes.
	Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the Site. This may require the sweeper being continuously in use.
	Avoid dry sweeping of large areas.
	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
	Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the Site where reasonably practicable).
Waste Management	Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the Site exit, wherever site size and layout permits.
Demolition	Avoid bonfires and burning of waste materials.
	Soft strip inside buildings before demolition
	Ensure water suppression is used during demolition operations
	Bag and remove any biological debris or damp down such material before demolition
Construction	Avoid explosive blasting techniques
	Avoid scabbling (roughening of concrete surfaces) if possible. Ensure sand and other aggregates are stored in banded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

Site Application	Mitigation Measures
	Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overflowing during delivery.
NRMM	Plan site layout (layout of the works taking place on site) so that machinery and dust causing activities are located away from receptors, as far as is possible. Ensure the vehicle fleet for construction activities are of low emission category where possible. Ensure all vehicles switch off engines when stationary - no idling vehicles. Avoid the use of diesel- or petrol-powered generators where possible and use mains electricity or battery powered equipment where practicable. Produce a construction logistics plan to manage the sustainable delivery of goods and materials. Impose and signpost a maximum-speed-limit of 15 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased providing the recommended dust control measures are in place)

## 6.9 Residual Effects

Providing effective mitigation measures are implemented, as outlined in **Table 6.8**, residual effects are considered to be not significant.

In addition, road traffic emissions associated with construction activities are considered to have an insignificant effect on both ecological and human.

As such, residual effects from the construction phase of the Proposed Development are concluded to be not significant.

## 6.10 Monitoring

In the absence of any likely significant adverse effects, monitoring is not required.

## 6.11 Cumulative Effects

The potential for cumulative dust effects arising from construction activities could be experienced where construction activities from separate development projects are in close proximity and likely to occur at the same time, for example:

- Multiple construction sites contributing to the risk of track out onto the same section of a public highway; or,
- Receptors located within 200m of multiple development sites.

The only scheme to which this may be applicable is the consented Coire Glas scheme. During the 18-month period of the Proposed Development, it is likely that site enabling works associated with the Coire Glas scheme would be undertaken. This would involve the establishment of site compounds, construction of access tracks, site mobilisation and clearance etc.

Activities associated with the Site enabling activities of the Coire Glas scheme that are within 200m of identified receptors for the Proposed Development are limited to the upgrading of existing access tracks.

Coire Glas undertook a separate construction dust assessment ([https://www.coireglas.com/s/vol\\_2\\_-\\_ch\\_18\\_-\\_air\\_quality-1463310.pdf](https://www.coireglas.com/s/vol_2_-_ch_18_-_air_quality-1463310.pdf)) relating to the Site activities and associated risks. A series of dust mitigation measures was recommended and included within the CEMP for Coire Glas as part of their own environmental responsibilities and commitment:

including measures such as:

- Discrete areas of track upgraded at any one time;
- Daily visual monitoring of dust emissions;

- Speed limits of 20 mph;
- Water bowser for use on unpaved roads; and,
- Use of wheel wash.

Based on the above, the potential for an increase in dust risk from the Coire Glas enabling works above what has been assessed within this chapter is considered to be negligible. As a precautionary approach however, it is recommended that activities associated with the Coire Glas scheme, and the Proposed Development do not simultaneously occur within 200m of the receptors identified in Figure 6.2 without appropriate mitigation.

Vehicles associated with the Coire Glas scheme would access the relevant area using Kilfinnan Road, thereby contributing to the risk of trackout onto the same section of the A82. It is noted that the construction dust assessment for the Proposed Development has utilised the highest emission source magnitude for trackout; ensuring that the maximum level of dust control has been recommended for implementation. Alongside the dust controls in place for the Coire Glas scheme, there is considered to be minimal risk of cumulative impact above what has been assessed within this chapter.

IAQM guidance (IAQM, 2023) states that, with 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 emissions.

Whilst all other assessment considerations have been screened out in isolation, as per guidance, reference is provided below with regard to the cumulative trip generation on Kilfinnan Road and the A82 with reference to vehicle emissions.

The site enabling activities associated with the Coire Glas scheme would generate 53 HDVs and 6 LDVs (as AADT) on Kilfinnan Road, reducing further as they distribute onto to the A82. The combined trip generation from the consented Coire Glas scheme and the Proposed Development for the 18-month period remains below the screening criteria and is therefore considered to remain to have an insignificant / neutral effect on human health and ecological receptors.

## 6.12 Summary

Consideration has been given to potential worst-case effects arising from the Proposed Development based upon available information. Worst-case parameters have been adopted to provide a robust assessment.

The assessment has determined that, following the implementation of recommended mitigation measures, effects on human and ecological receptors are not considered to be significant.

A summary of the above assessment outcomes is provided in Table 6.9.

Table 6.9: Summary of Construction Phase Effects

Impact	Magnitude	Sensitivity of Receptors	Mitigation Measures	Residual Effect
Dust/ PM <sub>10</sub> generated from temporary construction activities.	High – Negligible	High – Low	Implementation of best-practice mitigation as specified in industry guidance via a CEMP	Not Significant
Temporary construction-generated road traffic volumes on human receptors.	Negligible (below screening criteria)	High	Not required.	Not Significant
Temporary construction-generated road traffic volumes	Negligible (below screening criteria)	Medium - Low	Not required.	Not Significant

Impact	Magnitude	Sensitivity of Receptors	Mitigation Measures	Residual Effect
on ecological receptors.				
Temporary construction plant (NRMM) emissions on human & ecological receptors.	Negligible	High - Low	Implementation of best-practice mitigation as specified in industry guidance via a CEMP	Not Significant

## References

Defra (2007). UK Air Quality Strategy.

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Defra (2020). Defra supplied background maps [Background Maps | LAQM \(defra.gov.uk\)](https://www.defra.gov.uk/air-quality/background-maps/)

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IAQM (2016). Guidance on the Assessment of Dust from Demolition and Construction.

IAQM (2020). A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites.

Scottish Government (2020) Supplied background maps [Data for Local Authority Review and Assessment purposes \(scottishairquality.scot\)](https://www.scottishairquality.scot/)

Stantec (2022) Kilfinnan Road EIA Scoping Report, October 2022

The Highland Council (2023) Scoping Response, Ref 22/05277/SCOP, Jan 2023.

The Highland Council (2022) Annual Status Report, Air Quality.

The Highland Council (2019) West Highlands and Islands Local Development Plan

The Highland Council (2012) Highland-wide Local Development Plan.

## Glossary of Terms

Term	Definition
Air Quality Strategy	The 2007 Air Quality Strategy for England, Scotland, Wales and Northern Ireland provides details of national air quality objectives for air pollutants.
Ancient Woodland	Typically, a woodland that has existed continuously since 1600 or before (this can include areas where trees have been cut down and/or replanted).
Critical Level	The concentration of an air pollutant above which adverse effects on ecosystems may occur based on present knowledge.
Critical Load	Deposition flux of an air pollutant below which significant harmful effects on sensitive ecosystems do not occur, based on present knowledge.
Effect	the consequent implication in environment terms
Embedded Mitigation	Measures which are designed to be an inherent part of the scheme
European sites	Sites designated for nature conservation under the Habitats Directive and Birds Directive, as defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017 and regulation 18 of the Conservation of Offshore Marine Habitats and Species Regulations 2017. These include candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and Special Protection Areas.
Further Mitigation	Measures which require further activity to be achieved, and do not form an inherent part of the scheme

Term	Definition
Habitats Regulations	The Conservation of Habitats and Species Regulations 2017.
Impact	in relation to the outcome of the project
Kilfinnan Road	The name of the Proposed Development
Local Nature Reserve	Statutory designation for places with wildlife or geological features that are of special interest locally.
Objective	An objective set by the UK Government's Expert Panel on Air Quality to be achieved either without exception or with a permitted number of exceedances within a specific timescale.
Proposed Development	The development for which planning consent is sought
Relevant Exposure	Locations where members of the public are regularly present and might reasonably be expected to be exposed to pollutant concentrations over the relevant averaging period.
Review and Assessment	A statutory duty for all local authorities to review local air quality and assess whether health-based air quality objectives will be achieved.
Site	The area within the consenting application boundary
Site of Special Scientific Interest	A geological or biological conservation designation denoting a nationally protected area in the UK.
Special Area of Conservation	Area of protected habitats and species as defined in the European Union's Habitats Directive (92/43/EEC).
Special Protection Area	A designated area for birds under the European Union Directive on the Conservation of Wild Birds (2009/147/EC).
Trackout	The transport of dust and dirt from the construction/ demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles leave the construction/demolition site with dusty materials, which may then spill onto the road, and/ or when heavy duty vehicles transfer dust and dirt onto the road having travelled over muddy ground on site.

Abbreviations and Acronyms Term	Definition
AADT	Annual Average Daily Traffic
AQMA	Air Quality Management Area
AQAP	Air Quality Action Plan
AQO	Air Quality Objective
AQS	Air Quality Strategy
AQSR	Air Quality Standards (Scotland) Regulations
ASR	Annual Status Report
AURN	Automatic Urban & Rural Network
AW	Ancient Woodland
CAS	Clean Air Strategy
CEMP	Construction Environmental Management Plan
CTMP	Construction Transport Management Plan
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges
EPUK	Environmental Protection UK

Abbreviations and Acronyms Term	Definition
ES	Environmental Statement
EU	European Union
HDV	Heavy-Duty Vehicle
HRA	Habitats Regulations Assessment
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
LAQM.TG (22)	LAQM Technical Guidance 22
LDP	Local Development Plan
LDV	Light Duty Vehicle
LNR	Local Nature Reserve
NO <sub>2</sub>	Nitrogen Dioxide
NRMM	Non-Road Mobile Machinery
PM <sub>10</sub>	Particulate Matter (≤10 µm in diameter)
PM <sub>2.5</sub>	Particulate Matter (≤2.5 µm in diameter)
SAC	Special Areas of Conservation
SPA	Special Protection Areas
SSSI	Sites of Special Scientific Interest
THC	The Highland Council