

(1-3, 7, 9, 11), mitigation has been proposed that would avoid those effects. Moderate-slight, and not significant residual effects have been predicted for three sites (5, 16-17) and slight, and, not significant residual effects for four sites (6, 8, 10, 22). The residual effect on any previously undiscovered and unconfirmed archaeological remains that may be discovered is most likely also to be moderate-slight and not significant.

**7.7.31** For predicted effects on setting, no mitigation has been proposed and predicted residual effects remain as assessed previously and not significant.

## **Summary**

**7.7.32** Initially permanent and irreversible, adverse, direct construction impacts are predicted on 13 cultural heritage sites and features (1-3, 5-11, 16-17, 22): in one case (2) the effect was predicted to be significant.

**7.7.33** No impact is predicted on seven sites (12-15, 19-21), which are located outside areas proposed for land use change as part of the An Camas Mòr development. Impacts on three sites (4, 18, 23) cannot be assessed, since it cannot be established whether associated remains of archaeological significance are present within the land proposed for development.

**7.7.34** Taking into account mitigation, moderate-slight and not significant residual effects are predicted on three sites (5, 16-17) and slight and not significant residual effects are predicted for four sites (6, 8, 10, 22). No significant direct physical effect are predicted.

**7.7.35** Of the 32 receptors present within the ZTV and four other receptors outside the proposed development area that were assessed, in no case is the presence of An Camas Mòr predicted to have a significant effect on its setting: all effects are predicted to be slight or negligible and not significant.

## **7.8 EFFECT ON AIR QUALITY**

### **Introduction**

**7.8.1** This summary provides an air quality assessment of the proposed An Camas Mòr development. The proposed development has the potential to affect air quality by causing dust emissions during the construction phase and by changing traffic flows on the local road network during the construction and operation phases.

**7.8.2** The assessment includes the following key elements:

- Identification of relevant air quality legislation and policy;
- Assessment of existing air quality issues in the local area;
- Explanation of the air quality assessment methodologies;

- Qualitative assessment of dust effects and traffic emissions during the construction phase;
- Quantitative screening assessment of air quality effects from emissions associated with changes in traffic flows on the local road network during the operation phase;
- Identification of suitable mitigation measures; and
- Identification of the residual air quality effects.

## Scope

**7.8.3** The potential effects on air quality associated with the proposed development are assessed through construction in addition to operational emissions. The objectives of the assessment were to:

- Determine the potential air quality effects caused and received by the proposed development;
- Develop, as necessary, mitigation and control measures to minimise significant adverse effects;
- Highlight any residual effects that cannot be mitigated

## Possible Effects and Inter-relationships

**7.8.4** The possible effects on air quality relate to increased levels of pollution due to the construction period and increased traffic levels in the operational period. Table 7.11 lists the various effects and Inter-relationships with the EIA Assessment Topics. Possible effects have been identified on Human Health and on Ecology and Nature Conservation.

## Influence of Periods A to D

**7.8.5** The following scenarios have been considered:

- Baseline 2008 – The current situation;
- Scenario 2 – 2016 (end of Period B) without the proposed development;
- Scenario 3 – 2016 (end of Period B) with the proposed development;
- Scenario 4 – 2028 (end Period D) without the proposed development; and

- Scenario 5 - 2028 (end Period D) with the proposed development.

**7.8.6** Occupation of the site, and subsequent development related traffic on the local road network, will steadily increase between 2011 (Period A) to 2028 (Period D)(Volume 2 Chapter 9 Section 6 Table 6.7). Background pollutant concentrations are predicted to decrease between 2008 and 2028 across the UK.

**7.8.7** The year 2016) has been assessed as this represents the earliest year in which a substantial part of the development will be completed (end of Period B). The New Substation B970 Route will not be in use in 2016. The year 2028 (end of Period D) has been assessed as this represents the first year that the site will be fully occupied and the New Substation B970 Route will be in use. The years 2016 and 2028 represent those with the greatest potential for negative air quality impacts from road traffic emissions.

## Consultations

**7.8.8** Baseline air quality data for the study area was obtained from a range sources including:

- Highland Council Authority Review and Assessments (Agreement of assessment approach and monitoring of data);
- Monitoring data; and
- UK Air Quality Archive.

## The Study Area

**7.8.9** Potential effects from construction activities that generate dust are generally limited to within 200 metres of a construction site boundary, depending on the extent of prevailing wind, rainfall, the presence of natural screening by, for example, vegetation or existing physical screening such as boundary walls on a site and other mitigation measures. Receptors closer to construction activities could experience significantly greater exposure and nuisance as a result of dust emissions if effects are not suitably mitigated. Effects of traffic on air quality are generally limited to 200 metres from the centre of the road. Therefore, both the construction and operation phase assessments have focussed on a study area which is within 200 metres of the proposed site, and roads with potentially significant changes in traffic flows as a result of the development.

## Baseline Conditions

**7.8.10** In order to undertake an assessment of the air quality effects of the proposed development, it is important to understand the existing air quality of the locality.

**7.8.11** Information for the baseline assessment was obtained from the following sources:

- Local Authority Review and Assessment;
- Monitoring Data;
- Scottish Air Quality website; and
- UK Air Quality Archive (AQA) Data.

**7.8.12** The data presented indicates that there are no significant existing air quality issues affecting the site of the proposed development. Ambient concentrations are below the air quality objectives for NO<sub>2</sub> and PM<sub>10</sub> in busy roadside locations in an urban area. The findings of the local authority's R&A work and available monitoring data confirm that the concentrations of pollutants in the study area are likely to be well below the relevant air quality objectives. The proposed development is located in a rural area, and therefore existing air quality concentrations for the selected pollutants are expected to be far lower than those measured at Telford Street air quality monitoring station in Inverness. The background concentrations provided by the AQA have been used to support the assessment.

## **Designations**

**7.8.13** Following a review of the traffic data provided and the location of Designated Sites within the study area, the Craigellachie Forest NNR and the River Spey SAC have been identified as requiring assessment.

## **Key Considerations**

**7.8.14** The key considerations, in relation to air quality are:

- Impact of dust during construction;
- Impact on human health during operation;
- Impact on sensitive ecological site during operation; and
- Emissions from domestic solid fuel generation systems.

**7.8.15** The possible impacts, which form the key considerations for assessment, are based are:

- Dust nuisance and loss of amenity during construction;
- Increased concentrations of NO<sub>2</sub> and PM<sub>10</sub>; and
- Increased concentrations of NO<sub>x</sub> and nitrogen deposition.

## Assessment Methodology

**7.8.16** The air quality assessment involved the following key elements:

- Consideration of Highland Council's review and assessment documents to determine the location and nature of any Air Quality Management Areas (AQMA) or other local air quality issues that could affect, or be affected by the proposed development;
- identification of areas that are likely to be sensitive to changes in air quality resulting from the operation and/or construction of the scheme;
- semi-quantitative assessment of the effects of the construction phase in terms of local air quality by reference to published data on the dust raising potential of specific construction activities and the relationship between the duration of activities and the distance between those construction activities and sensitive receptors;
- quantitative assessment of the impact on local air quality from traffic with and without the proposed development based on traffic data and utilising the Design Manual for Roads and Bridges (DMRB) screening tool; and
- the output of the DMRB screening tool would determine whether air quality is a significant issue in the planning process.

## Effects

### ***Construction Phase Impacts***

**7.8.17** A range of construction activities would take place during the An Camas Mòr development. The development is proposed to be undertaken in four consecutive phases, each of which would completely develop an area of the site to meet the requirements of residential living, including housing, all roads and services, open space, landscaping and local business, with the entire site being fully developed by 2027. Each phase would take between three and ten years.

**7.8.18** A number of site compounds would be required for main road building/improvements; internal road building and building construction. There are to be two or three main site compounds established at any one time. They would provide staff welfare facilities, car park areas, storage areas for plant and equipment.

**7.8.19** Activities during the construction phase would be controlled through a Construction Environmental Management Plan (CEMP) to be produced at a later stage. The CEMP would provide specific detail of the type and location of construction activities and particularly of site specific controls for environmental

protection and pollution prevention and would be updated as the development progresses.

### ***Identification of Dust Raising Activities***

- 7.8.20** Detailed construction information is not available at this stage and therefore this assessment has been based on the broad construction information currently available. Construction activities which have the potential to cause dust emissions are detailed in the Technical Appendix (Volume 2, Chapter 9).

### ***Identification of Sensitive Receptors***

- 7.8.21** Eight residential receptors are located to the North West of the proposed development and along the new B970. The River Spey SSSI/SAC is also located within the 200 metre boundary to the North West of the proposed development. Within the 200 metre boundary includes the Rothiemurchus Fishery, farmland, offices and outdoor storage facilities. The proposed development would also be introducing new receptors including residential areas and schools to the area during the construction phase. These new receptors would be of medium sensitivity but would be included within the CEMP. Therefore overall receptor sensitivities are considered to be of medium sensitivity.

### ***Effects on Human Health***

- 7.8.22** Background concentrations of NO<sub>2</sub> and PM<sub>10</sub> within the proposed development are predicted to be well below the relevant air quality objectives in 2028 which is the year of completion. The air quality at the proposed on site receptors (receptor numbers, 27, 28 and 29) is anticipated to remain well below the objectives. Therefore, in accordance with the significance criteria adopted for the assessment, the air quality impact associated with the introduction of new on site receptors is concluded to be 'negligible'.

### ***Effects on Sensitive Ecological Sites - Atmospheric NOx Concentrations***

- 7.8.23** The results show that increases in NO<sub>x</sub> concentrations as a result of the proposed development occur at locations closest to the affected roads at the River Spey and Craigellachie Forest Designated Sites. However concentrations decrease further from the affected roads as pollutants disperse. Receptors 30, 31 and 33 experience increases in annual mean NO<sub>x</sub> concentrations above 2 µg.m<sup>-3</sup>, however, as total concentrations of NO<sub>x</sub> are well below 30 µg.m<sup>-3</sup> these increases are not considered to be significant and effects are therefore negligible (for further information on receptors see Volume 2 Chapter 9 Section 6).

## Nitrogen Deposition

**7.8.24** The project ecologists have advised that there are four outline habitat classifications within Craigellachie Forest and one habitat classification within the River Spey, as defined by APIS.

**7.8.25** As all increases in Nitrogen deposition as a result of the proposed development are small relative to the critical loads, and no exceedences are predicted to be caused, overall effects are concluded to be negligible.

## Significance of Effects at Assessment Periods

**7.8.26** The Proposed development would occur from the year of approval to 2027. For the purposes of environmental assessment, this has been separated into four separate 'Periods', as shown in Table 7.9.

**Table 7.9: Assessment Periods**

Period	Years	Total Number of Residential Units (a)
A	to 2011	120
B	2011 to 2016	310
C	2016 to 2018	200
D	2018 to 2027	870

**Notes: (a) Approximate No. of Units constructed in each period**

**7.8.27** The development would affect traffic flows on the local road network as well as alter the layout of access roads near to the development site itself. The potential effects of these changes on local air quality at sensitive receptors have been assessed using the Highway's Agency's Design Manual for Roads and Bridges (DMRB) screening tool (version 1.03C) [Ref 30]. This method calculates pollutant concentrations at user defined locations using background concentrations and traffic flow data. This approach has been agreed in consultation with THC.

**7.8.28** The following scenarios have been assessed:

- Baseline 2008 – The current situation;
- Scenario 2 - 2028 without the Proposed development; and
- Scenario 3 - 2028 with the Proposed development.

**7.8.29** The year 2028 has been assessed as this represents the first year that the site would be fully occupied. Occupation of the site, and subsequent traffic on the local road network, would steadily increase between Period A to 2028. Background pollutant concentrations are predicted to decrease between 2008 and 2028 across the UK.

- 7.8.30** Quantitative assessment of operational years before 2028 is not possible at this time as traffic data are currently unavailable for intervening years. However, by assessing 2028, qualitative discussion has been made of likely air quality impacts in intervening years.
- 7.8.31** Traffic data for the assessment scenarios have been provided by the project traffic consultant. Traffic speeds near to main junctions have been assumed to be 20 kilometres per hour in accordance with government guidance.

## Mitigation

- 7.8.32** Mitigation measures provided consistent with current best practice for construction sites and suitable for incorporation into the Construction Environmental Management Plan (CEMP) have been identified and committed to. These measures relate to site planning, construction traffic and site activities (volume 2 Chapter 9 Section 6 Sub-section 6.7). No mitigation measures are proposed for operation as impacts are concluded to be negligible, that is, not significant.

## Significance of Residual Effects

- 7.8.33** For the construction phase, the implementation of the mitigation measures are anticipated to reduce the risk dust effects to a low level. On this basis, and that construction activities would occur for a limited period, residual effects are concluded to be negligible.
- 7.8.34** For the operational phase, no significant residual effects are anticipated as impacts are concluded to be negligible.

## Summary

- 7.8.35** THC's local air quality assessments monitoring have not highlighted any areas of elevated NO<sub>2</sub> and PM<sub>10</sub> concentrations in Aviemore, therefore there are no AQMAs within THC.
- 7.8.36** The potential for construction dust nuisance has been considered through a qualitative impact assessment. Due to the nature of the works, and location of sensitive receptors, it is anticipated that the construction phase represents a 'moderate' risk of causing significant dust effects if mitigation measures are not applied. Therefore, best practise mitigation measures have been committed to prevent or reduce the risk and effects would not be significant.
- 7.8.37** A DMRB assessment has been undertaken to ascertain the pollutant concentrations at existing sensitive receptors surrounding the affected roads and at new receptors introduced as part of the proposed development.
- 7.8.38** Annual mean NO<sub>2</sub> and PM<sub>10</sub> concentrations are predicted to the 'well below' the air quality objectives in 2008, 2016 and 2028 with or without the proposed development. All predicted increases in annual mean NO<sub>2</sub> and PM<sub>10</sub>

concentrations are considered to be 'extremely small' or 'very small' in magnitude and of 'negligible' significance overall when considered in the context of the air quality objectives with the exception of receptor number 11 (B970 West of existing Dell Road) in 2028, where predicted increase in annual mean NO<sub>2</sub> concentrations are considered 'slight adverse' and therefore not a significant effect.

**7.8.39** It has been determined that the proposed development leads to small increases in NO<sub>x</sub> concentrations in areas of the North Rothiemurchus Pine Woods SSSI, River Spey SAC and Craigellachie Forest SSSI which are closest to affected roads. The concentrations are below the NO<sub>x</sub> limit value of 30µg.m<sup>-3</sup> and therefore are concluded to be 'negligible' and therefore not a significant effect.

**7.8.40** With regards to nitrogen deposition, as all increases in nitrogen deposition as a result of the proposed development are small relative to the critical loads, and no exceedences are predicted to be caused, overall effects are concluded to be 'negligible' and therefore not a significant effect.

**7.8.41** With regard to sensitive ecological sites it can be concluded that annual NO<sub>x</sub> concentrations would not be significant.

## **7.9 EFFECT OF NOISE AND VIBRATION**

### **Introduction**

**7.9.1** This chapter presents the findings of the noise and vibration assessment of the proposed An Camas Mòr development.

### **Scope**

**7.9.2** The potential noise and vibration effects associated with the proposed development are assessed here. This includes an assessment of construction and operational emissions, both upon existing noise sensitive locations and areas of the proposed development that may be sensitive to noise. The decommissioning phase of the proposed development is expected to last for a shorter period than that of construction and is also anticipated to result in lower noise levels due to the reduced need for intensive on-site activity. Construction noise levels are therefore considered to represent a worst-case scenario and decommissioning noise has not been assessed as a result. The objectives of the assessment were to:

- Determine the potential noise and vibration effects caused and received by the proposed development;
- Develop, as necessary, mitigation and control measures to minimise adverse effects;
- Highlight any residual effects that cannot be mitigated; and