

13. AIR QUALITY

13.1 Introduction

13.1.1 Potential effects on air quality are addressed in the categories:

- The potential for dust as a result of construction activities.
- The matter of carbon loss, consequent upon tree felling in the construction phase.
- Emissions to air from vehicles in the operational phase, for which a qualitative risk assessment will concentrate on the effects of extraction at locations agreed with the Environmental Protection Officer.

13.1.2 The site itself would not be a direct source of air pollution. There would be no authorised processes, as defined under the Integrated Pollution Prevention and Control (IPPC) regime, located at the development.

13.2 Methodology

13.2.1 The UK National Air Quality Strategy (NAQS) was published in March 1997 fulfilling the requirement under the Environment Act 1995 for a national air quality strategy setting out policies for the management of ambient air quality. The Strategy set objectives for eight pollutants, which may potentially occur in the UK at levels that give cause for concern. These pollutants are: nitrogen dioxide, sulphur dioxide, carbon monoxide, lead, fine particulates (PM₁₀), benzene, 1,3-butadiene and ozone.

13.2.2 The Strategy was reviewed and a Review Report and Consultation Document was published by the Department of the Environment, Transport and the Regions in 1999. A revised version (The Air Quality Strategy (AQS) 2000), which supersedes the 1997 Strategy was published in January 2000. The AQS 2000 strengthened the objectives for a number of pollutants, with the exception of that for particulates, which was replaced with the less stringent EU limit value.

13.2.3 The objectives for the eight pollutants in the Strategy provided the basis of the implementation of Part IV of the Environment Act 1995. The Air Quality Strategy Objectives for each pollutant, except ozone, had been given statutory status in the Air Quality (England) Regulations, 2000. These objectives were amended by the Air Quality (England) (Amendment) Regulations 2002 ('the Regulations').

13.2.4 The Strategy's objectives for particles (PM₁₀), benzene and carbon monoxide were reviewed in September 2001, in particular to take account of the latest health evidence and advice on the impact of particles on people's health. Following the review, the UK Government and devolved administrations, published a consultation

paper on proposals for air quality objectives for particles, benzene, carbon monoxide and polyaromatic hydrocarbons. In August 2002 the Government approved the revisions and additions to the AQS (2000).

- 13.2.5 In 2003, an Addendum to the Air Quality Strategy 2000 was published. This Addendum incorporated the tighter air quality objectives for particles, benzene and carbon monoxide into the Air Quality Strategy. It further introduced an objective for polycyclic aromatic hydrocarbons (PAHs) in England, Scotland and Wales. The tighter objectives for particles and benzene supplemented the objectives in the Air Quality Strategy; the new objective for carbon monoxide replaces the objective in the Strategy; the objective for PAHs is included in the strategy for the first time. At this time the new air quality objectives for particulates were only provisional with no obligation to review and assess against them.
- 13.2.6 The most recent guidance is contained in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland (July 2007). The majority of the objectives specified in the previous Air Quality Strategy (as amended) were retained, with the notable exception outside of Scotland of the Indicative 2010 objectives for PM₁₀, which were replaced by an exposure reduction approach for PM_{2.5}.
- 13.2.7 The Local Air Quality Management (LAQM) legislation in the Environment Act 1995 requires local authorities to conduct periodic reviews and assessments of air quality. The first round of review and assessment has now been completed. This followed a phased approach. All authorities were required to undertake the first stage and in areas identified in the first stage as having the potential to experience elevated levels of pollutants, an authority was required to undertake a more detailed second stage review. Where it was predicted that one or more of the air quality objectives would be unlikely to be met by the end of 2005, local authorities were required to proceed to the third stage and if necessary, declare Air Quality Management Areas and make action plans for improvements in air quality in pursuit of the national air quality objectives.
- 13.2.8 Following the first round of review and assessment, in September 2001, DEFRA and the Devolved Administrations commissioned a detailed evaluation of the first round of air quality review and assessments undertaken by local authorities under Part IV of the Environment Act 1995. The evaluation report was published in March 2002 and one of the key recommendations was that the second round of air quality review and assessments should be carried out in two steps. Details of the two steps are provided in Policy Guidance document LAQM.PG(03) and Addendum LAQM.PGA(05).
- 13.2.9 Sunderland City Council has completed the review and assessment process and has so far not declared the need for an Air Quality Management Area (AQMA) at or in the

vicinity of the proposed site. AQMAs have not been declared anywhere within Sunderland City Council's jurisdiction.

13.2.10 The Air Quality Strategy 2007 objectives for the protection of human health are summarised in Table 13.1.

Table 13.1 National air quality objectives			
Pollutant	Objective	Concentration measured as	Date to be achieved by and maintained thereafter
Particles (PM ₁₀)	50µgm ⁻³ not to be exceeded more than 35 times a year	24 hour mean	31 December 2004
	40µgm ⁻³	Annual mean	31 December 2004
Particles (PM _{2.5})	25µgm ⁻³	Annual mean	2020
Nitrogen dioxide	200µgm ⁻³ not to be exceeded more than 18 times a year	1 hour mean	31 December 2005
	40µgm ⁻³	Annual Mean	31 December 2005
Ozone	100µgm ⁻³ not to be exceeded more than 10 times a year	8-hour mean	31 December 2005
Sulphur dioxide	266µgm ⁻³ not to be exceeded more than 35 times a year	15 minute mean	31 December 2005
	350µgm ⁻³ not to be exceeded more than 24 times a year	1 hour mean	31 December 2004
	125µgm ⁻³ not to be exceeded more than 3 times a year	24 hour mean	31 December 2004
Polycyclic aromatic hydrocarbons	0.25ngm ⁻³ as B[a]P	Annual average	31 December 2010
Benzene	16.25µgm ⁻³	Running annual mean	31 December 2003
	5µgm ⁻³	Annual average	31 December 2010
1,3-butadiene	2.25µgm ⁻³	Running annual mean	31 December 2003
Carbon monoxide	10mgm ⁻³	Maximum daily running 8-hour mean	31 December 2003
Lead	0.5µgm ⁻³	Annual mean	31 December 2004
	0.25µgm ⁻³	Annual mean	31 December 2008

13.3 Baseline conditions

13.3.1 The annual average background concentrations for the development area are reproduced from the Netcen database website in Table 13.2

Table 13.2			
Background air quality data taken from NETCEN mapped grid squares			
Assessment Year	Annual Mean NO_x (as NO₂) µgm⁻³	Annual Mean NO₂ µgm⁻³	Annual Mean PM₁₀ µgm⁻³
2004	26.1	19.1	17.4
2005	25.3	18.8	17.3
2010	20.5	16.8	16.1
Air Quality Objective	AQO Not Assigned	40	40 20 (to be achieved by 31 December 2010)
Data presented as mean data taken from Grid Squares: 421500, 506500			

13.4 Potential impacts

Construction impacts

- 13.4.1 Condition 12 requires a construction method statement to be submitted to prevent, amongst other matters, nuisance from dust from construction activities. This condition has now been discharged. It is therefore considered that there would be no significant adverse impacts.

Carbon loss

- 13.4.2 Change in the percentage of Carbon dioxide in the atmosphere is a global issue. Felling of trees would release a small amount of carbon dioxide into the atmosphere. However, the applicant proposes to plant an equivalent area of new trees in a nearby location in the Doxford Park area in Sunderland. Therefore there would be no net loss of carbon dioxide storage as a result of the development.

Effects of vehicles

- 13.4.3 An assessment of the direct changes in air quality has not been made because the data summarised in Table 13.2 demonstrates that air quality in the area around the site is good and the Local Authority has not declared an Air Quality Management Area, demonstrating that there are no significant air quality issues.
- 13.4.4 DEFRA's Technical Guidance LAQM. TG(03) states that outside of major conurbations, exceedances of air quality objectives are more likely where exposure occurs within 5m of the kerb, including roads with modest traffic flow, around 10,000-20,000 vehicles per day, in narrow congested town centre streets. There are no such properties adjoining the identified roads, which are free flowing with vehicle flow substantially less than those identified with poor air quality.

13.4.5 LAQM TG(03) identifies minor roads and rural roads as not requiring specific air quality assessment as such roads “usually carry comparatively small amounts of traffic that are not such as to give rise to the possibility of an exceedance of Air Quality Objectives in their own right”. LAQM TG(03) recognises that high NO₂ and PM₁₀ concentrations can also occur “where traffic flows are not high (less than 20,000 vehicles per day) but there is an unusually high proportion of buses and/or HGVs.” Unusually high proportions are identified as 25% and 20% respectively. Given this association and the road traffic flow on the local road network, it is unlikely that the traffic flow associated with the operation of the development would be associated with any quantifiable air quality impact.

13.5 Mitigation measures

13.5.1 Tree planting has been proposed as part of the development. The details are in section 3 of this ES. Carbon dioxide storage would therefore be maintained at existing levels by planting of an equivalent area of new trees to those lost as a result of the development. Therefore no further mitigation for this effect is required.

13.5.2 The matter of Carbon dioxide from the Biffa landfill site at Houghton le Spring was raised by TWAG at the scoping meeting. There is, however, no obligation for this development to mitigate any air quality effects caused by the landfill, which is not connected with it. In addition the landfill site has planning permission and is permitted under PPC regulations administered by the Environment Agency.

13.6 Residual impacts

13.6.1 There would be no residual impacts.

13.7 Conclusions

13.7.1 The effects upon air quality of the proposed development have been assessed and it has been concluded that there would be no significant adverse effects either during the construction or the operational phase.