# 1.1 NOx Concentrations at Organic Farms

1.1.1 As has been explained in Chapter 44, there is no requirement in the DMRB to assess impacts of air quality on farming activities. Furthermore, the organic or biodynamic status of farmland is not jeopardised by the presence of a road (refer to Chapter 37: Land Use). It is recognised that land-owners might be concerned about the potential for traffic-related air pollution to affect farmland. Since there is no set methodology for assessing the potential for such impacts, the pragmatic approach has been taken of treating all organic farmland within the Fastlink corridor as if it were a SSSI, SAC, SPA or Ramsar Site. This provides a working method for assessing air quality impacts on particularly sensitive vegetation. It is, however, recognised that the pollutants that might be relevant to these habitats might be different from those that are relevant for organic farming. The effects of nitrogen enrichment to farmland have thus not been assessed; since they are not considered to be relevant in this context. The assessment focuses on NOx concentrations. NOx is generally used as the key indicator of traffic pollution. Thus assessing NOx impacts provides a clear indication of traffic pollution levels in general.

1.1.2 NOx concentrations for the base year (2005) and the year of opening, both with and without the proposed scheme, were calculated using unadjusted background concentration maps (Defra and the DAs 2006a) and using the DMRB Screening Model which is recommended in IAN 61/05. For the purposes of the IAN 61/05 method, the DMRB model is sufficiently robust, and it is not necessary to use the AAQuIRE model. Concentrations are predicted at the edge of each site that is closest to the proposed scheme and then along a 50m transect of increasing distances from the centre of the road.

1.1.3 Within the Fastlink corridor there is an organic farm at Lembas and a biodynamic farm at Burnorrachie, as shown on Figures 44.1a-b. The site at Lembas is more than 200m from the centre of the Fastlink and thus does not require assessment under the DMRB method. It is clear, however, that if this site was explicitly assessed, predicted concentrations would be smaller than those at 200m from the road within the Burnorrachie site. Thus, assessing levels at Burnorrachie provides a worst-case assessment for both farms. NOx concentrations are presented in Table 1. They show that the proposed scheme would cause a very large increase in NOx concentrations at the roadside edge of the site, but that concentrations would remain exceptionally low and well below the critical level at only 8 µg/m$^3$. 150m or more from the centre of the proposed scheme, with-scheme concentrations in 2011 will be smaller than those experienced during 2005.

**Table 1 – Predicted NOx Concentrations at Burnorachie Farmland**

| Site | Road | Distance from Road Centre (m) | Annual Mean NOx (µg/m$^3$) | | |
|---|---|---|---|---|---|
| | | | 2005 | 2011 Without Scheme | 2011 With Scheme |
| **Burnorrachie** | **AWPR** | 65 | 4 | 3 | 8 |
| | | 100 | 4 | 3 | 5 |
| | | 150 | 4 | 3 | 4 |
| | | 200 | 4 | 3 | 3 |
| **Critical Level** | | | **30** | **30** | **30** |