

Bexhill Hastings Link Road

Environmental Statement Addendum

Assessment of Air Quality Effects on Designated Sites

April 2008

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1 Introduction

This report provides an assessment of the potential air quality effects of the proposed Bexhill to Hastings link road on sensitive ecological sites. It represents an update of the original Environmental Statement (ES) in light of new guidance on assessment techniques and a request for information under Regulation 19 of The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.

2 Legislation and Policy Context

The Air Quality Standards Regulations came into force in February 2007 (superseding the Air Quality Limit Values Regulations 2003). The regulations implement the air quality limit values included in the various European Union (EU) air quality directives and refer to legally binding standards for air quality.

The Air Quality Standards Regulations relevant to the protection of vegetation specifically transpose the limit value contained within the First Daughter Directive 1999/30/E. These are presented in Table 2.1.

Table 2.1: Relevant Limit Values from the Air Quality Standards Regulations 2007

Objective	Averaging Period	Limit Value	Date
Annual limit value for the protection of vegetation	Calendar year	30 $\mu\text{g.m}^{-3}$ Nitrogen Oxides (NO_x)	31st December 2000

The First Daughter Directive contains guidance on the locations where the limit value applies and this has also been transposed into the Air Quality Standards Regulations.

The areas where the Air Quality Standards Regulations annual limit for the protection of vegetation applies are:

- More than 20 kilometres from an agglomeration (i.e. an area with a population of more than 250,000);
- more than 5 kilometres away from industrial sources regulated under Part A of the Environment Act 1990 (and/or Part A1 sites under the PPC regulations);
- more than 5 kilometres away from motorways; or
- more than 5 kilometres away from built up areas of more than 5,000 people [Ref 1]

Therefore, designated ecological sites within these areas do not have the benefit of protection from statutory air quality limit values. However, the UK Air Quality Strategy 2007 [Ref 2], which provides a statement of UK air quality policy intentions and targets, recognises that there are a number of international and national agreements which identify and seek to protect ecosystems of high conservation value.

These include Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) established under the EC Habitats and Birds Directive (jointly included in a European Union wide network of protected areas called Natura 2000 sites). The Directive, implemented through Conservation Regulations 1994, commits Member States to protecting SPAs and SACs and endeavouring to use their land use planning and development policies “with a view to improving the ecological coherence of Natura 2000 sites”. Further statutory protection is afforded in England and Wales to Ramsar Sites and Sites of Special Scientific Interest (SSSI) through the Wildlife & Countryside Act (WCA) 1981 and the Countryside and Rights of Way (CRoW) Act 2000 [Ref 2].

It is understood that it is the UK conservation agencies’ (Natural England, the Countryside Agency for Wales and Scottish Natural Heritage) policy to apply the Air Quality Regulations limit value to all sensitive ecological sites when considering the potential effects of oxides of nitrogen (NO_x) [Ref 3].

When determining potential air quality effects on sensitive ecological sites consideration should also be given to nitrogen deposition as a result of NO_x emissions. Currently, no statutory environmental quality standards exist in relation to these effects. However, UK best practice guidance does exist to allow the determination of potential effects from deposition suitable for the purposes of Environmental Impact Assessment.

3 Assessment Methodology

3.1 Overview

The Design Manual for Roads and Bridges (DMRB) guidance provides a methodology for assessing air quality effects on SACs, SPAs, SSSIs and Ramsar sites (hereafter referred to as ‘Designated Sites’). Recently, this guidance has been updated to provide a more detailed methodology for assessing the effects of nitrogen deposition.

This report provides an assessment of potential air quality effects on sensitive ecological sites in accordance with the key stages set out in DMRB.

It is considered that the potential effects of particulate deposition is suitably addressed within the ES, and subsequent mitigation measures are provided within the ES Addendum and are therefore not addressed further.

3.2 Dispersion Modelling

Detailed dispersion modelling was undertaken as part of the air quality assessment for the ES. Results presented in this report are based on the same modelling parameters and model set up as used within the ES. However, in order to determine NO_x and NO₂ concentrations at specific locations (as required by the DMRB methodology) additional receptors were modelled representing transects across the Designated Sites at increasing distances from the affected roads.

One transect was used to represent the Combe Haven SSSI and two transects were used to represent the Marline Valley Woods SSSI. Two transects were used to represent Marline Valley Woods as this site is affected by emissions from traffic flows on the new Link Road itself and by changes in traffic flows on the B2092 because it is close to both of these roads. Distances have been based on bandings used in the WebTag guidance [Ref 4], and include locations where both SSSIs are closest to the affected roads.

In the case of the Marline Valley Woods SSSI, which passes underneath the proposed link road, the closest point represents the edge of the underbridge at the same height as the road. Predicted NO_x and nitrogen deposition rates are therefore likely to be conservative (i.e. higher than actual) as the modelling assumes that the proposed link road is at the same height as the SSSI. In reality, at ground level the SSSI is approximately between 8 and 13 metres below the road. Therefore, as emissions from vehicles using the link road will disperse in the area between the link road and the SSSI, actual concentrations at the SSSI are likely to be lower than modelled results.

Table 3.1: Modelled Receptor Transects

SSSI	Affected Road	Distance to Road Centre (m)	NGR	
			X	Y
Combe Haven	Link Road	46 ⁽¹⁾	576191	110610
		70	576191	110586
		115	576191	110541
		175	576191	110481
Marline Valley Woods	Link Road	9 ⁽¹⁾	577414	111111
		70	577422	111172
		115	577428	111216
		175	577435	111276
Marline Valley Woods	B2092	12 ⁽¹⁾	577940	111790
		70	577896	111830
		115	577862	111860
		175	577818	111900

Note: ¹⁾Closest distance to road centre

In addition to the receptor transects, a 'grid' of receptors was modelled specifically in and around the Designated Sites in order to produce contour plots. Contour plots allow a visual representation of NO_x concentrations across the Designated Sites and therefore assist in the assessment.

All modelled road links and traffic data used for modelling as part of this assessment are the same as those used for the ES with the exception of an additional modelled link, the B2092, which was outside of the detailed assessment study area of the ES. This was because the detailed assessment focussed on sensitive human health receptors, although the road was included within the simple assessment. Traffic data for this road link was provided by the EIA team traffic consultants and is presented in Table 3.2. In addition, the alignment of the proposed link road in the model was adjusted to more accurately represent its location with respect to the Designated Sites. The assessment results presented in the ES chapter were not sensitive to such accuracy, as discrete receptors were not modelled in close proximity to the roads, as is the case here.

Table 3.2: Traffic Data for Additional Road Link

Road	2004			2010 DM			2010 DS		
	AADT	% HDV	Speed (kph)	AADT	% HDV	Speed (kph)	AADT	% HDV	Speed (kph)
B2092 (from A2100 to Napier Road)	9485	4	100	11798	4	100	21907	4	100
B2092 (from Napier Road to junction with Link Road)	7011	3	101	9331	3	101	21487	3	101
B2092 (from junction of Link Road to Crowhurst Road)	7011	4	101	9331	4	101	7891	4	40

Note: AADT = Annual Average Daily Traffic Flows
 HDV = Heavy Duty Vehicles
 DM = Do minimum scenario
 DS = Do something scenario

All NO_x contributions from roads used within this assessment are taken from the results of the detailed dispersion modelling reported within the ES. Although a new method for deriving NO₂ from NO_x for air quality assessments of roads [Ref 5] has been released since the ES was published, the original modelling data have been used as results were verified and adjusted against local monitoring data.

The DMRB guidance advises that assessment of potential air quality effects on Designated Sites should be carried out for the base year (2004) and opening year (2010). These years represent the most sensitive (i.e. worst) years for ecological receptors as background concentrations of pollutants across the UK are anticipated to reduce in future years.

3.3 Oxides of Nitrogen (NO_x)

Assessment of NO_x concentrations has included the following key stages (following the DMRB methodology):

1. Identification of all Designated Sites which are within 200 metres of roads ‘affected’ (see below) by the project and have designated features which are sensitive to air pollutants directly or indirectly; and
2. Calculation of annual average NO_x concentrations at the Designated Sites with and without the proposals.

‘Affected’ roads are defined as:

- road alignment will change by 5 m or more; or
- daily traffic flows will change by 1,000 AADT or more; or
- HDV flows will change by 200 AADT or more; or

- daily average speed will change by 10 km.hr⁻¹ or more; or
- peak hour speed will change by 20 km.hr⁻¹ or more.

Increases in NO_x concentrations at Designated Sites as a result of the proposals are concluded to be potentially significant when:

- The proposed link road is predicted to cause an increase in annual mean NO_x concentrations of at least 2 µg.m⁻³; and
- predicted concentrations (including background) are very close to or exceed the criterion [Ref 3].

Result from the dispersion modelling have been used to compare concentrations at the Designated Sites with and without the proposals and to identify potentially significant effects in accordance with the above. In the absence of a more specific definition within DRMB, 'very close to the criterion' is assumed to be 29 µg.m⁻³ for the purposes of this assessment.

3.4 Nitrogen (N) Deposition

Assessment of nitrogen deposition has included the following key stages (following the DMRB methodology):

1. Identification of all Designated Sites which are within 200 metres of roads 'affected' (see previous definition in Section 3.3 above) by the project and have designated features which are sensitive to nitrogen deposition;
2. Obtaining total average nitrogen deposition for all 5 kilometre by 5 kilometre grid squares for the study area of interest from the Air Pollution Information System (APIS) [Ref 6];
3. Obtaining background NO_x and nitrogen dioxide (NO₂) concentrations for the study area from the UK Air Quality Archive (AQA) [Ref 7];
4. Calculation of annual average NO₂ concentrations at the Designated Sites with and without the proposals;
5. Estimation of the dry deposition of NO₂ at the Designated Sites with and without the proposals and the dry deposition of NO₂ in the 5 kilometre by 5 kilometre APIS square;
6. Determination of the road contribution to NO₂ dry deposition, and total nitrogen deposition; and
7. Comparison with the relevant critical load.

Increases in nitrogen deposition at Designated Sites as a result of the proposals are concluded to be potentially significant when the critical load for the site is exceeded.

No assessment has been made of acid deposition or contributions to wet deposition as these are considered to be regional issues. The change in regional emissions of NO_x as a result of the proposals has already been assessed within the original ES chapter and is therefore not assessed further.

4 Identification of Potentially Significant Effects

4.1 Oxides of Nitrogen (NO_x)

There are two Designated Sites which are located within 200 metres of roads affected by the project and require assessment of effects from NO_x:

1. Combe Haven SSSI
2. Marline Valley Woods SSSI

Table 4.1 presents the results of the dispersion modelling for specific receptor transects at the two Designated Sites. The results show that, without the proposed link road, exceedences of the annual mean NO_x limit value of 30 µg.m⁻³ are predicted to occur in 2004 and 2010 at areas of the Marline Valley Woods SSSI closest to the B2092. With the proposed link road, exceedences also occur at locations near to the road at the Combe Haven SSSI and at the Marline Valley Woods SSSI near the proposed link road. Further analysis of the areas of exceedence are provided with the contour plots, below

Table 4.1: Annual Mean NO_x Concentrations at SSSI Transects

SSSI	Distance to Road Centre (m)	National Grid Reference		Annual Mean NO _x µg.m ⁻³			Change DM/DS
		X	Y	2004	2010 DM	2010 DS	
Combe Haven	46	576191	110610	18.8	14.8	<i>38.4</i>	23.6
	70	576191	110586	18.9	14.8	<i>31.6</i>	16.8
	115	576191	110541	18.9	14.9	26.0	11.1
	175	576191	110481	18.9	14.9	22.6	7.8
Marline Valley Woods (near link road)	9	577414	111111	23.0	17.9	<i>62.5</i>	44.7
	70	577422	111172	22.4	17.5	27.0	9.5
	115	577428	111216	22.1	17.3	24.0	6.7
	175	577435	111276	21.7	17.0	22.1	5.1
Marline Valley Woods (near B2092)	12	577940	111790	<i>48.5</i>	<i>40.6</i>	<i>69.4</i>	28.9
	70	577896	111830	25.1	19.9	27.2	7.2
	115	577862	111860	22.6	17.9	22.7	4.8
	175	577818	111900	21.1	16.7	20.0	3.3

Note: DM = Do minimum scenario

DS = Do something scenario

Italics identify exceedence of the annual mean NO_x limit of 30 µg.m⁻³

Figure A.1 presents a contour plot of modelled concentrations of annual mean NO_x in and around these two sites in 2004 (base year scenario). It can be seen that concentrations are above the annual mean NO_x limit value at locations near to the B2092 at the Marline Valley Woods SSSI, but below it at all locations at the Combe Haven SSSI.

Figure A.2 shows that, by 2010 without the proposals, annual mean NO_x concentrations in the area have reduced. This is primarily due to a reduction in background NO_x concentrations which is anticipated to occur across the UK in future years, primarily as a result of more stringent environmental regulations and improved vehicle emission technology. However, concentrations remain above the limit value at locations near to the road at the Marline Valley Woods SSSI.

Figure A.3 shows that, in 2010 with the proposals, emissions from the proposed link road cause an increase in annual mean NO_x concentrations within the two SSSIs. Concentrations at both Designated Sites exceed the NO_x limit value in areas closest to the roads. A comparison of Figure A.1 and Figure A.3 shows that areas predicted to exceed the limit value in 2004 at Marline Valley Woods SSSI are similar to the areas predicted to exceed the limit value in 2010 with the proposed link road.

Figure A.4 identifies areas where total annual mean NO_x concentrations in 2010, with the proposal, are above 29 µg.m⁻³ (i.e. 'very close to the criterion', in black) and areas where the changes in annual mean NO_x concentrations are above 2 µg.m⁻³ (in green). The locations in this contour plot where the black and green areas overlap, highlighted in orange, are those which are considered to experience potentially significant changes in NO_x concentrations as a result of the proposed scheme. These potentially significant effects are limited to small areas of the two Designated Sites which are closest to the roads.

All figures can be found in Appendix A to this document.

4.2 Nitrogen (N) Deposition

There are two Designated Sites which are located within two hundred metres of roads affected by the project and require assessment of nitrogen deposition:

1. Combe Haven SSSI
2. Marline Valley Woods SSSI

The EIA team ecology expert has advised that there are ten habitat classifications, as defined within APIS, which are applicable to these two sites. APIS total average existing nitrogen deposition rates for these classifications, at this location, are presented in Table 4.2.

Table 4.2: APIS Total Nitrogen Deposition (Background)

APIS Grid Square NGR		APIS Habitat Classification	Total Nitrogen Deposition (kg N ha ⁻¹ yr ⁻¹)	
X	Y		2003 - 2005	2010 ⁽¹⁾
577500	112500	Alkaline fens and reedbeds	14.7	13.0
		Grazing Marsh	14.7	13.0
		Improved Grassland	14.7	13.0
		Urban Grasslands	14.7	13.0
		Ash Woodland	31.4	27.8
		Oak Woodland	31.4	27.8
		Urban Woodlands	31.4	27.8
		Ancient/Species Rich Hedgerows	31.4	27.8
		Eutrophic Standing Waters	-(2)	-(2)
		Rivers and Burns	-(2)	-(2)

Note: NGR = National Grid Reference

(1) Based on a 2% reduction from 2003 – 2005 values per year [Ref 3]

(2) Total nitrogen deposition value unavailable

Based on detailed dispersion modelling carried out for the ES, concentrations of NO₂ have been determined at discrete receptor transects within the SSSIs (as described in Section 3.2). DMRB guidance requires that dry NO₂ deposition, which is a component of total nitrogen deposition, is calculated for each of the receptor points assessed. These data are presented in Table 4.3.

Also presented in Table 4.3 are existing dry NO₂ deposition rates for the 5 kilometre by 5 kilometre APIS square which is applicable to Designated Sites. This is calculated based on the NO₂ concentrations provided by the AQA for the area covered by the APIS square.

Table 4.3: Modelled Annual Mean NO₂ Concentrations and NO₂ Dry Deposition

SSSI	Distance to Road Centre (m)	Location NGR		Annual Mean NO ₂ Concentrations (µg.m ⁻³)			Modelled Dry NO ₂ Deposition (kg N h ⁻¹ yr ⁻¹) ⁽²⁾			Dry NO ₂ Deposition for APIS Square (kg N h ⁻¹ yr ⁻¹) ^{(2) (3)}	
		X	Y	2004	2010 DM	2010 DS	2004	2010 DM	2010 DS	2004	2010
Combe Haven	46	576191	110610	13.64	10.69	13.72	1.36	1.07	1.37	1.208	0.966
	70	576191	110586	13.64	10.69	12.91	1.36	1.07	1.29		
	115	576191	110541	13.65	10.70	12.21	1.36	1.07	1.22		
	175	576191	110481	13.65	10.70	11.77	1.37	1.07	1.18		
Marline Valley Woods (near Link Road)	9	577414	111111	14.20	11.13	16.34	1.42	1.11	1.63		
	70	577422	111172	14.13	11.08	12.34	1.41	1.11	1.23		
	115	577428	111216	14.08	11.04	11.95	1.41	1.10	1.20		
	175	577435	111276	14.03	11.00	11.70	1.40	1.10	1.17		
Marline Valley Woods (near B2092)	12	577940	111790	17.26	13.98	17.03	1.73	1.40	1.70		
	70	577896	111830	14.48	11.41	12.36	1.45	1.14	1.24		
	115	577862	111860	14.15	11.13	11.78	1.41	1.11	1.18		
	175	577818	111900	13.95	10.96	11.42	1.39	1.10	1.14		

Note: NGR = National Grid Reference

DM = Without proposed scheme

DS = With proposed scheme

⁽¹⁾ Closest distance to link road centre

⁽²⁾ Based on 1 µg.m⁻³ = 0.1 kg N ha⁻¹ yr⁻¹ [Ref 3]

⁽³⁾ Based on average of annual mean NO₂ concentrations of all 25 AQA squares within the APIS square [Ref 3]

In accordance with the DMRB guidance, the road contribution to dry NO₂ deposition has been determined by subtracting the dry NO₂ deposition rate for the APIS square (as shown in Table 4.3) from the receptor dry NO₂ deposition rate (also shown in Table 4.3). This provides the road contribution to dry NO₂ deposition which has been added to the APIS average total nitrogen deposition rate (shown in Table 4.2) to give the total nitrogen deposition rate at each receptor within the SSSIs.

Table 4.4 to Table 4.9 provide results for 2004 and 2010 (with and without the proposals), assuming the two different APIS average total nitrogen deposition rates which apply at these two SSSIs (see Table 4.2). These tables also provide a comparison with the relevant critical loads for 'Temperate and boreal forests' and 'Low and medium altitude hay meadows' which have been determined by the project ecology consultants to be applicable for the Combe Haven and Marline Valley Woods SSSIs. Table 4.10 presents the increase in nitrogen deposition caused by the proposed link road

The tables show that the critical loads for Combe Haven SSSI and Marline Valley Woods SSSI are exceeded in the following circumstances:

- In 2004, for areas where the high background nitrogen deposition rates associated with Ash Woodland, Oak Woodland, Urban Woodlands or Ancient/Species Rich Hedgerows habitats are present.
- In 2010, for areas where the high background deposition rates associated with Ash Woodland, Oak Woodland, Urban Woodlands or Ancient/Species Rich Hedgerows habitats are present, but, only where the critical load for 'temperate and boreal forests' is applicable.

The exceedences identified in 2010 occur with or without the proposed link road. The maximum increase in nitrogen deposition, as a result of the proposed scheme, is 0.7 kg N Ha⁻¹ y⁻¹ for Combe Haven SSSI and 1.1 kg N Ha⁻¹ y⁻¹ for Marline Valley Woods SSSI.

This represents 3.3% of the critical load for Combe Haven SSSI and 5.4% of the critical load for Marline Valley Woods SSSI. The results show that, where exceedences of the critical load occur, this is primarily due to existing background concentrations.

DMRB guidance recognises that ammonia emissions from road vehicles can lead to significant additional deposition of nitrogen to vegetation within 10 metres of roads. No part of the Combe Haven SSSI is within 10 metres of the proposed link road and therefore significant effects from ammonia emissions are not anticipated. As described in Section 3.2, an area of Marline Valley Woods SSSI is located between 8 and 13 metres below the underbridge of the proposed link road. Modelling carried out to determine the road contribution to dry NO₂ deposition at this location is considered to be conservative (see Section 3.2) as the SSSI is assumed to be at the same height as the road. Based on the conservative assumptions already made for nitrogen deposition, and the distance from the underbridge to ground level it is considered unlikely that ammonia emissions would cause an exceedence of the critical load at this location.

Table 4.4: Total N Deposition 2004, Assuming Background Deposition Rate of 14.7 kg N Ha⁻¹ y⁻¹(¹)

SSSI	Distance to Road Centre (m)	Total N Deposition 2004 (kg N Ha ⁻¹ y ⁻¹)	Critical Load (kg N Ha ⁻¹ y ⁻¹)	
			Temperate and Boreal Forests	Low and Medium Altitude Hay Meadows
Combe Haven	46	14.90	10-20	20-30
	70	14.90	10-20	20-30
	115	14.90	10-20	20-30
	175	14.90	10-20	20-30
Marline Valley Woods (near Link Road)	9	15.03	10-20	20-30
	70	15.01	10-20	20-30
	115	15.00	10-20	20-30
	175	14.99	10-20	20-30
Marline Valley Woods (near B2092)	12	15.67	10-20	20-30
	70	15.09	10-20	20-30
	115	15.02	10-20	20-30
	175	14.97	10-20	20-30

Note: (¹) Background value applies to Alkaline fens and reedbeds, Grazing Marsh, Improved Grassland and Urban Grasslands habitats

Table 4.5: Total N Deposition 2004, Assuming Background Deposition Rate of 31.4 kg N Ha⁻¹ y⁻¹(¹)

SSSI	Distance to Road Centre (m)	Total N Deposition 2004 (kg N Ha ⁻¹ y ⁻¹)	Critical Load (kg N Ha ⁻¹ y ⁻¹)	
			Temperate and Boreal Forests	Low and Medium Altitude Hay Meadows
Combe Haven	46	31.60	<u>10-20</u>	<u>20-30</u>
	70	31.60	<u>10-20</u>	<u>20-30</u>
	115	31.60	<u>10-20</u>	<u>20-30</u>
	175	31.60	<u>10-20</u>	<u>20-30</u>
Marline Valley Woods (near Link Road)	9	31.73	<u>10-20</u>	<u>20-30</u>
	70	31.71	<u>10-20</u>	<u>20-30</u>
	115	31.70	<u>10-20</u>	<u>20-30</u>
	175	31.69	<u>10-20</u>	<u>20-30</u>
Marline Valley Woods (near B2092)	12	32.37	<u>10-20</u>	<u>20-30</u>
	70	31.79	<u>10-20</u>	<u>20-30</u>
	115	31.72	<u>10-20</u>	<u>20-30</u>
	175	31.67	<u>10-20</u>	<u>20-30</u>

Note: (¹) Background value applies to Ash Woodland, Oak Woodland, Urban Woodlands and Ancient/Species Rich Hedgerows habitats.
Underlined text, denotes an exceedence of the critical load

Table 4.6: Total N Deposition 2010 (without proposed link road), Assuming Background Deposition Rate of 13.0 kg N Ha⁻¹ y⁻¹(¹)

SSSI	Distance to Road Centre (m)	Total N Deposition 2010 (kg N Ha ⁻¹ y ⁻¹)	Critical Load (kg N Ha ⁻¹ y ⁻¹)	
			Temperate and Boreal Forests	Low and Medium Altitude Hay Meadows
Combe Haven	46	13.16	10-20	20-30
	70	13.16	10-20	20-30
	115	13.16	10-20	20-30
	175	13.16	10-20	20-30
Marline Valley Woods (near Link Road)	9	13.26	10-20	20-30
	70	13.24	10-20	20-30
	115	13.24	10-20	20-30
	175	13.23	10-20	20-30
Marline Valley Woods (near B2092)	12	13.86	10-20	20-30
	70	13.32	10-20	20-30
	115	13.26	10-20	20-30
	175	13.22	10-20	20-30

Note: (¹) Background value applies to Alkaline fens and reedbeds, Grazing Marsh, Improved Grassland and Urban Grasslands habitats

Underlined text, denotes an exceedence of the critical load

Table 4.7: Total N Deposition 2010 (without proposed link road), Assuming Background Deposition Rate of 27.8 kg N Ha⁻¹ y⁻¹(¹)

SSSI	Distance to Road Centre (m)	Total N Deposition 2010 (kg N Ha ⁻¹ y ⁻¹)	Critical Load (kg N Ha ⁻¹ y ⁻¹)	
			Temperate and Boreal Forests	Low and Medium Altitude Hay Meadows
Combe Haven	46	27.95	<u>10-20</u>	20-30
	70	27.95	<u>10-20</u>	20-30
	115	27.95	<u>10-20</u>	20-30
	175	27.95	<u>10-20</u>	20-30
Marline Valley Woods (near Link Road)	9	28.05	<u>10-20</u>	20-30
	70	28.04	<u>10-20</u>	20-30
	115	28.03	<u>10-20</u>	20-30
	175	28.02	<u>10-20</u>	20-30
Marline Valley Woods (near B2092)	12	28.66	<u>10-20</u>	20-30
	70	28.11	<u>10-20</u>	20-30
	115	28.05	<u>10-20</u>	20-30
	175	28.01	<u>10-20</u>	20-30

Note: (¹) Background value applies to Ash Woodland, Oak Woodland, Urban Woodlands and Ancient/Species Rich Hedgerows habitats.

Underlined text, denotes an exceedence of the critical load

Table 4.8: Total N Deposition 2010 (with proposed link road), Assuming Background Deposition Rate of 13.0 kg N Ha⁻¹ y⁻¹(¹)

SSSI	Distance to Road Centre (m)	Total N Deposition 2010 (kg N Ha ⁻¹ y ⁻¹)	Critical Load (kg N Ha ⁻¹ y ⁻¹)	
			Temperate and Boreal Forests	Low and Medium Altitude Hay Meadows
Combe Haven	46	13.81	10-20	20-30
	70	13.64	10-20	20-30
	115	13.49	10-20	20-30
	175	13.40	10-20	20-30
Marline Valley Woods (near Link Road)	9	14.33	10-20	20-30
	70	13.52	10-20	20-30
	115	13.44	10-20	20-30
	175	13.38	10-20	20-30
Marline Valley Woods (near B2092)	12	14.46	10-20	20-30
	70	13.53	10-20	20-30
	115	13.40	10-20	20-30
	175	13.32	10-20	20-30

Note: (¹) Background value applies to Alkaline fens and reedbeds, Grazing Marsh, Improved Grassland and Urban Grasslands habitats

Underlined text, denotes an exceedence of the critical load

Table 4.9: Total N Deposition 2010 (with proposed link road), Assuming Background Deposition Rate of 27.8 kg N Ha⁻¹ y⁻¹(¹)

SSSI	Distance to Road Centre (m)	Total N Deposition 2010 (kg N Ha ⁻¹ y ⁻¹)	Critical Load (kg N Ha ⁻¹ y ⁻¹)	
			Temperate and Boreal Forests	Low and Medium Altitude Hay Meadows
Combe Haven	46	28.60	<u>10-20</u>	20-30
	70	28.44	<u>10-20</u>	20-30
	115	28.29	<u>10-20</u>	20-30
	175	28.19	<u>10-20</u>	20-30
Marline Valley Woods (near Link Road)	9	29.12	<u>10-20</u>	20-30
	70	28.32	<u>10-20</u>	20-30
	115	28.23	<u>10-20</u>	20-30
	175	28.18	<u>10-20</u>	20-30
Marline Valley Woods (near B2092)	12	29.25	<u>10-20</u>	20-30
	70	28.32	<u>10-20</u>	20-30
	115	28.19	<u>10-20</u>	20-30
	175	28.12	<u>10-20</u>	20-30

Note: (¹) Background value applies to Ash Woodland, Oak Woodland, Urban Woodlands and Ancient/Species Rich Hedgerows habitats

Underlined text, denotes an exceedence of the critical load

Table 4.10: Change in Total N Deposition in 2010 as a Result of the Proposals

SSSI	Distance to Road Centre (m)	Change in Total N Deposition 2010 (kg N Ha ⁻¹ y ⁻¹)	Change as a % of the Critical Load (kg N Ha ⁻¹ y ⁻¹)	
			Temperate and Boreal Forests	Low and Medium Altitude Hay Meadows
Combe Haven	46	0.65	3.27	2.18
	70	0.49	2.43	1.62
	115	0.34	1.69	1.12
	175	0.24	1.21	0.81
Marline Valley Woods (near Link Road)	9	1.07	5.36	3.57
	70	0.28	1.39	0.93
	115	0.20	1.01	0.67
	175	0.16	0.78	0.52
Marline Valley Woods (near B2092)	12	0.60	2.99	1.99
	70	0.21	1.03	0.69
	115	0.14	0.72	0.48
	175	0.10	0.52	0.35

Note: ⁽¹⁾ Background value applies to Alkaline fens and reedbeds, Grazing Marsh, Improved Grassland and Urban Grasslands habitats

5 Summary and Conclusions

An assessment has been carried out to determine potentially significant air quality effects as a result of the proposed Bexhill to Hastings link road on sensitive Designated Sites, in accordance with recent guidance.

It has been determined that the proposed link road leads to potentially significant increases in NO_x concentrations in small areas of the Combe Haven SSSI and Marline Valley Woods SSSI which are closest to affected roads.

Areas of the Combe Haven SSSI and Marline Valley Woods SSSI are predicted to experience exceedences of the critical loads for nitrogen deposition, where specific habitat types and background concentrations are present, in 2004 and 2010.

The proposed link road will cause an increase in nitrogen deposition within Combe Haven SSSI and Marline Valley Woods SSSI in 2010, including those habitats where exceedences are already occurring.

The proposals are not predicted to cause new exceedences of the critical loads at any location or any habitat type. All identified exceedences are predicted to occur with or without the proposed link road.

References

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Appendix A Contour Plots