

4. Calculate the NO2 Concentration in transect near the road

See typical DMRB screening

Most App Background for Ash to Brookwood SPA/SAC 2020 (Only Available to 2020 - can use as worst case)

	Nox	NO2	
Average Values		10.97	8.40

With out dev flows A		With Dev (scenario D) flows A320	WITH MINUS WITHOUT		% HGV without	with	Ave Speed (kph)		WORST CASE PC
22306		24157	1851		6	6	without	with	
							33.7	33.1	
						AVERAGE		33.4	
Receptor number	Name	Year	NO _x		NO ₂ *				
			Annual mean µg/m ³		Annual mean				
1	Colony Bog & Pirbright A322 without 5m	2025	27.54		13.42				
2	Colony Bog & Pirbright A322 with 5m	2025	28.08		13.56		0.139		
3	Colony Bog & Pirbright A322 without 10m	2025	25.93		13.00				
4	Colony Bog & Pirbright A322 with 10m	2025	26.41		13.12		0.129		
5	Colony Bog & Pirbright A322 without 50m	2025	16.29		10.20				
6	Colony Bog & Pirbright A322 with 50m	2025	16.46		10.26		0.054		
7	Colony Bog & Pirbright A322 without 100m	2025	12.56		8.97				
8	Colony Bog & Pirbright A322 with 100m	2025	12.61		8.98		0.018		

* See traffic analysis for derivation of AADF

NB IS WITH MINUS WITHOUT GREATER THAN 1000? FURTHER ANALYSIS REQUIRED

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Assessment of Designated Sites Annex F

1. Identify Sensitive Site

Is the site sensitive to N deposition?

Colony Bog and Bagshot Heaths SPA

Part of Thames Basin Heaths

SPA due to three bird species - See APIS

All sensitive to Nitrogen - See APIS

PIRBRIGHT SAC

part of Thursley Ash and Pribright SAC

All habitats sensitive to Nitrogen

2. Obtain total average N deposition for 5km grid square

See APIS

Pirbright SAC - Location for SSSI unit 11 SU936596

www.gridreferencefinder.com - 493600, 159600

NB - Location ~55m from Lucas Green Road and 1.3km from Guildford Road

www.apis.ac.uk - search database by habitat or species - Site Relevant Critical Loads

Therefore:

Species	2005 N deposition (kg/ha/yr)	2020 N deposition (kg/ha/yr)
Woodlark	16.24	10.78
Nightjar	16.24	10.78
Dartford Warbler	16.24	10.78

TYPICAL N DEPOSTION FOR CALCULATION

10.78

*www.english-nature.org.uk

SSSI Colony Bog Bagshot Heath	2005 N deposition (kg/ha/yr)	2020 N deposition (kg/ha/yr)
Northern Atlantic wet Heaths with Erica tetralix	16.261	10.22

3. Obtain NO2 and NOX background

Air Quality Archive - <http://uk-air.defra.gov.uk/>

Local Air quality Managment (LAQM) - Tools for LAQM - Background Maps - Nox NO2 etc 2008 background maps - download CSV 2008 2020 background maps

Select Authority - Select Pollutants (NO2 -Nox) - Select year (2010) - Get data - save

Locate grid ref (see previous sheet)

Therefore:

Best Grid ref see below

Grid Ref chosen	NO2 2020	NOX 2020
493500, 160500	8.56	11.2 SHBC
492500, 160500	8.57	11.19 SHBC
492500, 159500	8.27	10.79 SHBC
493500, 159500	8.19	10.69 SHBC
AVE	8.40	10.97

*NB these values provide an average for the area. Guidance recommends background is taken from up to 4km away so that road contrib is not double Counted. Road contribution to Nox is calculated here as at ~1.82ug/m3

5. Estimate the dry deposition of NO2 in a transect near the road

Distance from Road NO2 2020 N deposition 2020*

5m	0.139	0.014
10m	0.129	0.013
50m	0.054	0.005
100m	0.018	0.002

* As per EMEP Eulerian photochemistry model see Annex F

6. Determine the road increment to NO2 dry deposition

Step 6 not clear. Therefore :

APIS Background N for this location in 2020	10.78
Calculated 'process contribtion' N deposition for this location*	0.014
Calculated 'process contribtion' N deposition for this location*	0.013
Calculated 'process contribtion' N deposition for this location*	0.005
Calculated 'process contribtion' N deposition for this location*	0.002

* Based upon Annex F instructions

Assesment of Impact as a % of Critical Load**COLONY BOG AND BAGSHOT HEATH**

Distance (m)	Estimated Worst Case Background 2020	Critical Load*	Worst case process PEC	PEC as % of Critical load
5	10.78	10	0.014	10.79 108
10	10.78	10	0.013	10.79 108
50	10.78	10	0.005	10.79 108
100	10.78	10	0.002	10.78 108

IS IMPACT LESS THAN 1% OF CRITICAL LOAD?

Where critical load is taken as

5	10	0.139	NO
10	10	0.129	NO
50	10	0.054	YES
100	10	0.018	YES

Distance Regression (Exponential)

DISTANCE	EXPONENTIAL
5	0.142
25	0.091
50	0.053

**NB THIS WILL ACCOUNT FOR A
VERY SMALL FACTION OF THE AREA
DUE TO THE SHAPE OF THE SAC/SPA**

CRITICAL LOADS*APIS 2011**

Northern Atlantic wet Heaths
with Erica tetralix

kg N ha⁻¹ y⁻¹

10 - 20

APIS 2010

WOODLARK NIGHTJAR &
DARTFORD WARBLER

10 - 20

Assesment of Impact as a % of Critical Load

Colony Bog Bagshot Heath SPA Pirbright SAC

Estimated Worst Case Background 2020	Critical Load*	Worst case process		PEC as % of Critical load	
		process	PEC		
10.78	10	0.01	10.79		108
10.78	20	0.01	10.79		54

IS IMPACT LESS THAN 1% OF CRITICAL LOAD?

Where critical load is taken as

10	0.139	NO
20	0.070	YES

IS PEC LESS THAN 70% OF CRITICAL LOAD?

10	108	NO
20	54	YES

***CRITICAL LOADS**

APIS 2011

kg N ha⁻¹ y⁻¹

Northern Atlantic wet Heaths with *Erica tetralix*

10 - 20

APIS 2010

WOODLARK NIGHTJAR &
DARTFORD WARBLER

10 - 20