# DMRB: Assessment of Local Air Quality

### **OUTPUT SHEET**

Current receptor				
Receptor Name	Whitmoor Com	mon A320 with 100m	Receptor number	8
Assessment year	2025			

	Results							
		Annual mean				For comparison with Air Quality Standards		
	Pollutant	Background concentration	Road traffic component	Total	Units	Metric	Value	Units
Ī	со	0.00	0.01	0.01	mg/m <sup>3</sup>	Annual mean*	0.01	mg/m³
	Benzene	0.00	0.01	0.01	μg/m³	Annual mean	0.01	μg/m³
	1,3-butadiene	0.00	0.01	0.01	μg/m³	Annual mean	0.01	μg/m³
ı	NO <sub>x</sub>	10.6	1.4	12.0		Not applicable		
ı	NO <sub>2</sub>	8.1	0.5	8.6		Annual mean*	8.6	μg/m³
	PM <sub>10</sub>	0.0	0.14	0.14	•	A	0.1	μg/m³ Days

<sup>\*</sup> See Footnote 32 in DMRB Volume 11 Chapter 3

Contrib	Contribution of each link to annual mean						
Link number	CO (mg/m³)	Benzene (μg/m³)	1,3-butadiene (μg/m³)	NOx (μg/m³)	PM <sub>10</sub> (μg/m³)		
1	0.01	0.01	0.01	1.35	0.14		
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12				·			
13							
14							
15							

All rece	eptors			P	ollutant conce	entrations at	receptor		
			co*	Benzene	1,3-butadiene	NO <sub>x</sub>	NO <sub>2</sub> *	PM	10
Receptor number	Name	Year	Annual mean mg/m <sup>3</sup>	Annual mean μg/m <sup>3</sup>	Annual mean μg/m <sup>3</sup>	Annual mean μg/m <sup>3</sup>	Annual mean μg/m <sup>3</sup>	Annual mean μg/m³	Days >50μg/m³
1	Whitmoor Common A320 without 5m	2025	0.06	0.07	0.06	24.08	12.33	1.38	0.00
2	Whitmoor Common A320 with 5m	2025	0.06	0.08	0.07	24.72	12.50	1.45	0.00
3	Whitmoor Common A320 without 10m	2025	0.05	0.06	0.06	22.77	11.97	1.25	0.00
4	Whitmoor Common A320 with 10m	2025	0.05	0.07	0.06	23.35	12.13	1.31	0.00
5	Whitmoor Common A320 without 50m	2025	0.02	0.02	0.02	14.92	9.61	0.44	0.00
6	Whitmoor Common A320 with 50m	2025	0.02	0.03	0.02	15.13	9.68	0.46	0.00
7	Whitmoor Common A320 without 100m	2025	0.01	0.01	0.01	11.89	8.59	0.13	0.00
8	Whitmoor Common A320 with 100m	2025	0.01	0.01	0.01	11.95	8.61	0.14	0.00

<sup>\*</sup> See Footnote 32 in DMRR Volume 11 Chanter 3

# Assesment of Impact as a % of Critical Load WHITMOOR COMMON

Estimated Worst Case Background 2020	Critical Load*	Worst case proce	ess conti PEC	PEC as % of	Critical load
11.3	2	10	0.018	11.22	112
11.7	2	20	0.018	11.22	56

IS IMPACT LESS THAN 1% OF CRITICAL LOAD?				
Where critical load is taken as				
	10	0.175 <b>NO</b>		
	20	0.088 <b>YES</b>		

#### IS PEC LESS THAN 70% OF CRITICAL LOAD?

10 112 **NO**20 56 **YES** 

#### \*CRITICAL LOADS

APIS 2011 kg N ha-1 y-1
Northern Atlantic wet Heaths 10 - 20

with Erica tetralix

**APIS 2011** 

**kg N ha-1 y-1** 10 - 20

WOODLARK NIGHTJAR AND

DARTFORD WARBLER

# Assesment of Impact as a % of Critical Load WHITMOOR COMMON

Distance (m)	Estimated Worst Case Background 2020	Critical Load*	Wo	orst case process (PEC	PE	C as % of Critical load
ţ	5	10.78	10	0.018	10.80	108
10	)	10.78	10	0.016	10.80	108
50	)	10.78	10	0.007	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	0.175 <b>NO</b>			
10		10	0.161 <mark>NO</mark>			
50		10	0.067 <b>YES</b>			
100		10	0.022 <b>YES</b>			

Distance Regression (Exponential)					
DISTANCE	<b>EXPONENTIAL</b>				
	10	0.1598			
	35	0.0922			
_	50	0.0663			

#### \*CRITICAL LOADS

APIS 2011 kg N ha-1 y-1
Northern Atlantic wet Heaths 10 - 20

to be the second to

with Erica tetralix

**APIS 2011** 

kg N ha-1 y-1

WOODLARK NIGHTJAR AND 10 - 20

DARTFORD WARBLER

DMRB Volume 11 Section 3 Part 1 HA 207/07 Assessment of Designated Sites Annex F

#### 1. Identify Sensitive Site

Is the site sensitive to N deposition?

Whitmoor Common SPA (within 200m of A320)

Part of Thames Basin Heaths

SPA due to three bird species - See APIS

All sensitive to Nitrogen - See APIS

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

See APIS

Whitmoor Common SPA - Location for SSSI unitS 8 & 9\* - SU993538 & SU 996536

www.gridreferencefinder.com - 499300, 153800 / 499600, 153600 NB - Location  $^{\sim}200$ m & 130from A320

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 CA	ALCULATION	10.78

<sup>\*</sup>www.english-nature.org.uk

SSSI Whitmoor Common 2005 N deposition (kg/ha/yr) 2020 N deposition (kg/ha/yr)
Northern Atlantic wet Heaths 17.07 11.2
with Erica tetralix

#### 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 to 499300, 153800 / 499600, 153600

Grid Ref chosen NO2 2020 NOX 2020 498500, 153500 8.12 10.6

<sup>\*</sup>NB this location is within Guildford Borough Council and is approx 370m from roadside. 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 ~1.6ug/m3

#### 4. Calculate the NO2 Concentration in transect near the road

See typical DMRB screening

Most App Background for Whitmoor Common 2020 (Only Available to 2020 - can use as worst case)

Nox NO2

500500, 161500 10.87 8.19

			% HGV	Ave Speed	(kph)	
With out dev flows A	With Dev (scenario D) flows A320 WITH MINUS WITHOUT		without	with without	with	
20052	22542	2490	5	4 79.1	77.5	_
	_		AVERAGE	4.5 AVERAGE	78.3	
				NO <sub>x</sub>	NO <sub>2</sub> *	WORST
Receptor number	Name		Year	A may sol make a /m <sup>3</sup>	Annual	CASE PC
				Annual mean μg/m <sup>3</sup>	mean	
1	Whitmoor Common A320 without 5m		2025	24.08	12.33	
2	Whitmoor Common A320 with 5m		2025	24.72	12.50	0.18
3	Whitmoor Common A320 without 10m		2025	22.77	11.97	•
4	Whitmoor Common A320 with 10m		2025	23.35	12.13	0.16
5	Whitmoor Common A320 without 50m		2025	14.92	9.61	
6	Whitmoor Common A320 with 50m		2025	15.13	9.68	0.07
7	Whitmoor Common A320 without 100m		2025	11.89	8.59	-
8	Whitmoor Common A320 with 100m		2025	11.95	8.61	0.02

<sup>\*</sup> See traffic analysis for derivation of AADF

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

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

Distance from Road	NO2 2020	N deposition 2020*
5m	0.18	0.018
10m	0.16	0.016
50m	0.07	0.007
100m	0.02	0.002

<sup>\*</sup> As per EMEP Eulerian photochemistry model see Annex F

Dec 2011 Whitmoor Common - Assessment of Designated Sites DMRB HA 207 07 Annex F.xlsRoad increment to NO2 dry dep

### 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 contribution' N deposition for this location at 5m*	0.018
Calculated 'process contribution' N deposition for this location at 10m*	0.016
Calculated 'process contribution' N deposition for this location at 50m *	0.007
Calculated 'process contribution' N deposition for this location at 100m*	0.002

<sup>\*</sup> Based upon Annex F instructions