

## High Speed Rail (West Midlands - Crewe)

Supplementary Environmental Statement 2 and  
Additional Provision 2 Environmental Statement

Volume 5: Technical appendices

CA2: Colwich to Yarlet  
Air quality report (AQ-001-002)

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## Department for Transport

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

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# 1 Introduction

## 1.1 Structure of this appendix

- 1.1.1 This document is an appendix to the air quality assessment, which forms part of Volume 5 of the Supplementary Environmental Statement 2 (SES2) and Additional Provision 2 Environmental Statement (AP2 ES) for the Colwich to Yarlet community area (CA2).
- 1.1.2 This appendix provides details of changes to the air quality assessment since the production of the High Speed Two (HS2) Phase 2a (West Midlands - Crewe) Environmental Statement (ES)<sup>1</sup> published in July 2017 (the main ES), as well as the Supplementary Environmental Statement (SES1) and Additional Provision Environmental Statement (AP1 ES) published in March 2018<sup>2</sup>.
- 1.1.3 This report should be read in conjunction with Volume 5, Appendix AQ-001-002, which accompanied the main ES.
- 1.1.4 Maps referred to in this appendix are contained in the SES2 and AP2 ES Volume 5, Air quality Map Book, Map Series AQ-01. In addition, the traffic data used for the air quality assessment is set out in Background Information and Data (BID)<sup>3</sup>, which accompanies the SES2 and AP2 ES (see BID-AQ-002-000: Traffic data used for the air quality assessment in the SES2 and AP2 ES).
- 1.1.5 In this appendix the scheme is referred to as the AP2 revised scheme, which is the SES2 scheme (i.e. the SES1 scheme, submitted to Parliament in March 2018, with the changes described in the SES2) as amended by the AP2 amendments.
- 1.1.6 Where it has been possible to differentiate the air quality assessment between the SES2 changes and the AP2 amendments, this has been done and presented in this report. However, the assessment of road traffic emissions is a combined assessment of both SES2 changes and AP2 amendments in this area.

## 1.2 Scope, methodology, data sources, assumptions and limitations

- 1.2.1 The assessment scope, key assumptions and limitations are as set out in the main ES Environmental Impact Assessment Scope and Methodology Report and its Addendum (see main ES Volume 5: Appendix CT-001-001<sup>4</sup> and Volume 5: Appendix CT-001-002<sup>5</sup>).

<sup>1</sup> HS2 Ltd (2017), *High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Environmental Statement*, <https://www.gov.uk/government/collections/hs2-phase-2a-environmental-statement>

<sup>2</sup> HS2 Ltd (2018), *High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Supplementary Environmental Statement and Additional Provision Environmental Statement*, <https://www.gov.uk/government/collections/hs2-phase-2a-supplementary-environmental-statement-and-additional-provision-environmental-statement>

<sup>3</sup> HS2 Ltd (2019), *High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Background Information and Data to accompany Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement*, <https://www.gov.uk/government/organisations/high-speed-two-limited>

<sup>4</sup> HS2 Ltd (2017), *High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Environmental Impact Assessment Scope and Methodology Report, Main ES, Volume 5: Appendix CT-001-001*, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/627187/E23\\_EIA\\_SMR\\_CT-001-001\\_WEB.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/627187/E23_EIA_SMR_CT-001-001_WEB.pdf)

<sup>5</sup> HS2 Ltd (2017), *High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Environmental Impact Assessment Scope and Methodology Report Addendum, Main ES, Volume 5: Appendix CT-001-002*, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/627188/E24A\\_CT-001-002\\_Part\\_1\\_WEB.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/627188/E24A_CT-001-002_Part_1_WEB.pdf) and [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/627189/E24-B\\_CT-001-002\\_Part\\_B\\_WEB.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/627189/E24-B_CT-001-002_Part_B_WEB.pdf)

1.2.2 In order to differentiate between the original proposals assessed as part of the main ES and subsequent changes the following terms are used:

- 'the original scheme' – the Bill scheme submitted to Parliament in July 2017, which was assessed in the main ES;
- 'the SES1 scheme' – the original scheme with the changes described in the SES1 submitted in March 2018;
- 'the AP1 revised scheme' – the SES1 scheme as amended by the AP1 submitted in March 2018;
- 'the SES2 scheme' – the SES1 scheme with the changes described in the SES2; and
- 'the AP2 revised scheme' – the SES2 scheme as amended by the AP2.

## 2 Baseline air quality data

### 2.1 Overview

2.1.1 Since the production of the main ES, air quality measurements for the baseline year of 2016 have become available. Background pollutant concentrations provided by the Department for Environment, Food and Rural Affairs (Defra) have also been updated.

2.1.2 This section provides the new baseline information in the Colwich to Yarlet area.

### 2.2 Local air quality monitoring data

2.2.1 Monitoring sites within the study area that are considered relevant for this assessment are shown in the SES2 and AP2 ES Volume 5: Map AQ-01-102.

#### *Continuous monitoring*

2.2.2 There are no continuous air quality monitoring sites within the Colwich to Yarlet area.

#### *Diffusion tubes*

2.2.3 There are seven diffusion tube sites within the Colwich to Yarlet area considered relevant for the assessment of air quality. Table 1 summarises the results from these diffusion tube sites. Annual mean nitrogen dioxide (NO<sub>2</sub>) concentrations were below the air quality standard at all sites in 2016.

Table 1: Annual mean NO<sub>2</sub> concentrations recorded at diffusion tube monitoring sites<sup>6</sup>

Site	Ordnance Survey coordinates	Annual mean NO <sub>2</sub> concentrations (µg/m <sup>3</sup> )			
		2013	2014	2015	2016
1	390270, 325520,	26	37	37	32
2	390380, 325390	30	33	38	34
3	390130, 321700	25	32	29	33
21	339105,328693	28	27	27	27
29	391393, 325388	30	22	24	25
31	391581, 320743	26	39	35	34
33	392154, 319970	30	38	39	34

<sup>6</sup> Stafford Borough Council (2018), 2018 Air Quality Annual Status Report



## 2.3 Background pollutant concentrations

- 2.3.1 Since the production of the main ES, updated background pollutant concentrations have become available from Defra<sup>7</sup>. The updated background NO<sub>2</sub>, PM<sub>10</sub><sup>8</sup> and PM<sub>2.5</sub><sup>9</sup> concentrations are within the air quality standards throughout the study area for the baseline year of 2016.
- 2.3.2 Annual mean NO<sub>2</sub> concentrations in the study area were in the range 11.1µg/m<sup>3</sup> – 12.9µg/m<sup>3</sup> in 2016. Annual mean PM<sub>10</sub> and PM<sub>2.5</sub> concentrations were in the range 12.6µg/m<sup>3</sup> – 17.3µg/m<sup>3</sup> and 12.8µg/m<sup>3</sup> – 14.9µg/m<sup>3</sup> in 2016 respectively. The updated background pollutant concentrations are lower than those reported in the main ES.

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<sup>7</sup> Department for Environment, Food and Rural Affairs (Defra), *Background mapping data for local authorities - 2015*, <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2015>

<sup>8</sup> Particulate matter with aerodynamic diameter of less than 10.

<sup>9</sup> Particulate matter with aerodynamic diameter of less than 2.5 micrometres.

## 3 Construction dust assessment

### 3.1 Overview

3.1.1 This section provides details of the assessment of dust emissions during construction of the AP2 revised scheme. The assessment is provided separately for each proposed amendment to the design, where it has been identified that the amendment has the potential to change the risk of dust soiling, human health effects or ecological effects compared to the main ES.

### 3.2 Additional land required to relocate a temporary material stockpile and for a new transfer node, east of the Yarlet South cutting (AP2-002-025)

#### *Assessed receptors and sensitivity of the area*

3.2.1 The assessment of dust soiling and human health effects has been undertaken for the area around the A34 Stone Road and Yarlet School. Residential dwellings are located within 100m of demolition and within 20m of earthworks, construction, and trackout<sup>10</sup> activities in this area. No ecological receptors are located in this area and therefore an assessment of ecological effects from dust generating activities associated with this amendment has not been undertaken.

3.2.2 The sensitivity of the area to dust soiling and human health effects has been defined as shown in Table 2.

Table 2: Sensitivity of area to dust soiling and human health effects (AP2-002-025)

Effect	Demolition	Earthworks	Construction	Trackout
Dust soiling	Low	Medium	Medium	Medium
Human health	Low	Low	Low	Low

#### *Dust emission magnitude*

3.2.3 Each dust generating activity has been assigned a dust emission magnitude as shown in Table 3.

Table 3: Dust emission magnitude for dust soiling and human health effects (AP2-002-025)

Area	Demolition	Earthworks	Construction	Trackout
AP2-002-025	Small	Large	Medium	Large

#### *Risk of impacts*

3.2.4 Taking into consideration the dust emission magnitude of each activity and the sensitivity of the area, the risk of dust effects has been defined as shown in Table 4.

<sup>10</sup> Trackout refers to the transport of dust and dirt from the construction site(s) onto the public road network, where it may be deposited and then re-suspended by vehicles using the network.

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Table 4: Risk of dust soiling and human health effects (AP2-002-025)

Effect	Demolition	Earthworks	Construction	Trackout
Dust soiling	Negligible	Medium risk	Medium risk	Medium risk
Human health	Negligible	Low risk	Low risk	Low risk

3.2.5 There is no change to the risks of dust soiling and human health effects from dust generating activities from those reported in the main ES.

3.2.6 The main ES reported no significant effects on air quality from dust generating activities in this area. With the application of the mitigation measures contained in the draft Code of Construction Practice (CoCP)<sup>11</sup>, no new or different significant effects are anticipated from dust generating activities associated with this amendment.

<sup>11</sup> HS2 Ltd (2017), *High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Environmental Statement, Draft Code of Construction Practice*, Volume 5: Appendix CT-003-000, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/627182/E26\\_CT-003-000\\_WEB.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/627182/E26_CT-003-000_WEB.pdf)

## 4 Air quality assessment – road traffic

### 4.1 Overview

4.1.1 This section provides details of the assessment of road traffic emissions during construction of the AP2 revised scheme. The assessment considers the combined effects of SES2 changes and AP2 amendments in this area.

### 4.2 Model verification

4.2.1 Since the production of the main ES, air quality measurements for the baseline year of 2016 have become available. The model verification has therefore been updated to take account of the 2016 monitoring data.

4.2.2 Model verification was undertaken on a route-wide basis where monitoring sites are located adjacent to the modelled road network. The objectives of the model verification are to evaluate model performance and to determine if model adjustment is required.

4.2.3 Some of the monitoring locations were not considered suitable for model verification, due to missing traffic or monitoring data, or other spatial considerations. A total of 21 monitoring sites were included in the verification exercise. The comparison of monitored and modelled NO<sub>2</sub> concentrations is shown in Table 5.

Table 5: Comparison of monitored and modelled NO<sub>2</sub> concentrations

Site	Monitored concentration (µg/m <sup>3</sup> )	Modelled concentration (µg/m <sup>3</sup> )	Difference [(modelled – monitored)/monitored] *100]
CE206	30.7	22.9	-25.4%
CE225	35.1	25.1	-28.4%
CE247	20.6	20.1	-2.6%
DT28	30.8	32.6	5.9%
2	34.0	49.5	45.5%
5	34.0	21.5	-36.8%
8	33.0	40.7	23.2%
10	27.0	23.4	-13.4%
21	27.0	22.4	-16.9%
26	33.0	31.0	-6.1%
29	25.0	23.4	-6.5%
M6CLAYTON	36.0	46.7	29.6%

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Site	Monitored concentration (µg/m <sup>3</sup> )	Modelled concentration (µg/m <sup>3</sup> )	Difference [(modelled – monitored)/monitored] *100]
DT13	35.0	34.0	-2.8%
DT14	39.0	34.7	-11.2%
DT36	38.0	36.8	-3.2%
DT38	37.0	29.3	-20.8%
DT39	39.0	31.7	-18.6%
DT43	41.0	37.9	-7.5%
A38-1	43.0	41.7	-3.0%
A38-2/2(1)	37.6	40.0	6.4%
A38-2A/B	45.1	42.8	-5.2%

4.2.4 As the majority of modelled NO<sub>2</sub> concentrations were within ±25% of the monitored concentrations and there was no systematic under or over prediction, no model adjustment was undertaken. Modelled concentrations of PM<sub>10</sub> and PM<sub>2.5</sub> have not been adjusted.

4.2.5 Therefore, no changes are predicted from the assessment presented in the main ES.

### 4.3 Assessment of construction traffic emissions

4.3.1 Construction traffic data used in this assessment is detailed in the BID that accompanies the SES<sub>2</sub> and AP<sub>2</sub> ES (see BID-AQ-002-000: Traffic data used for the air quality assessment in the SES<sub>2</sub> and AP<sub>2</sub> ES). The assessment of construction traffic emissions has used traffic data based on an estimate of the average daily flows at the peak year during the construction period (2020-2026). However, vehicle emissions and background concentrations have been taken for the first construction year in 2020.

4.3.2 As set out in SES<sub>2</sub> and AP<sub>2</sub> ES Volume 1, Introduction to the SES<sub>2</sub> and the AP<sub>2</sub> ES, since the production of the main ES, updated background pollutant concentrations<sup>7</sup> and road vehicle emission factors<sup>12</sup> have become available from Defra. These have been used in this assessment. The updated road vehicle emission factors are higher for nitrogen oxides (NO<sub>x</sub>) than those used in the main ES, especially along motorways. Therefore, higher concentrations have been predicted for the future baseline scenario (without the HS<sub>2</sub> scheme). At locations where NO<sub>2</sub> concentrations are predicted to exceed the annual mean air quality standard of 40µg/m<sup>3</sup> without the scheme, it is more likely that a small increase in concentrations due to the scheme will result in a significant effect.

<sup>12</sup> Department for Environment, Food and Rural Affairs (Defra), *Emissions Factors Toolkit*, <https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html>

## Screening of traffic data

4.3.3 The screening process has identified a total of 23 roads in the Colwich to Yarlet area for further assessment; these are along the following roads:

- M6 Motorway;
- A51 Butterhill Bank/ Main Road/ Stone Road/ Rugeley Eastern Bypass/ Lichfield Road;
- A34 Stone Road;
- A513 Beaconside; and
- A518 Weston Road/ Western Bank.

4.3.4 Traffic data for construction vehicles using the haul roads and moving between compounds has also been included in the assessment. Further roads have been included in the assessment to account for their emissions at nearby receptors.

## Receptors assessed and background concentrations

4.3.5 Table 6 and Table 7 present the sensitive human and ecological receptors included in this assessment and the background pollutant concentrations for 2020.

Table 6: Modelled receptors (construction phase) and 2020 background pollutant concentrations

Receptor	Description/location	Ordnance Survey coordinates	Background concentrations in 2020 ( $\mu\text{g}/\text{m}^3$ )			
			NOx	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
2-C-H1	Proposed residential development for up to 20 dwellings (16/24235/OUT)	400883, 322143	11.2	8.5	12.0	8.2
2-C-H2	Proposed residential development for up to 77 dwellings (14/20886/OUT)	400444, 322622	11.2	8.5	12.0	8.2
2-C-H3	Proposed residential development for up to 45 dwellings, Little Tixall Lane (14/21135/OUT)	400271, 322819	11.2	8.5	12.0	8.2
2-C-H4	Roseacre Nursery Medical Centre - Policy SA2 Roseacre Nursery	400062, 323248	10.7	8.2	11.8	8.1
2-C-H5	Proposed Stafford Primary Academy School - committed development S/14/05	394695, 323990	14.5	10.8	13.2	9.0
2-C-H6	Bricklyn Cottages, Sandon Road, Hopton	392977, 325946	15.4	11.4	12.5	8.6
2-C-H7	Aston Bank Farm, Aston	389761, 323647	18.2	13.5	14.3	9.3
2-C-H8	Carisbrooke Drive, Stafford	390529, 321394	21.1	15.5	15.6	10.3
2-C-H9	Road End Farm, Whitgreave	389036, 328659	17.7	13.2	14.0	9.0

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Receptor	Description/location	Ordnance Survey coordinates	Background concentrations in 2020 ( $\mu\text{g}/\text{m}^3$ )			
			NOx	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
2-C-H10	Oxbarn Road, Stafford	391734, 320568	21.8	15.9	15.2	10.0
2-C-H11	Bluebells, Wolseley Bridge, Stafford	401968, 320621	11.9	9.0	11.2	7.7
2-C-H12	Talbot House, Blackheath Lane, Tixall	395080, 324033	11.3	8.6	12.2	8.3
2-C-H14	Wolseley Close, Colwich	401380, 321051	11.8	8.9	11.8	8.3
2-C-H16	Lincoln Meadows, Stafford	390203, 321615	21.1	15.5	15.6	10.3
2-C-H17	Burleyfields Farm, Burleyfields	389811, 322928	17.9	13.3	15.2	9.8
2-C-H18	Burley, Seighford Lane, Stafford	389442, 323903	18.2	13.5	14.3	9.3
2-C-H19	Redlands Farm, Stone Road, Yarlet	390870, 327323	13.0	9.9	13.1	8.6
2-C-H21	Burton Manor School, Uplands Road, Stafford	391715, 320738	21.8	15.9	15.2	10.0
2-C-H22	Mossnit Farm, Barn Bank Lane, Stafford	392126, 319875	22.7	16.5	15.5	10.0
2-C-H23	Furness Grove, Stafford	391018, 321084	13.8	10.4	13.6	9.3
2-C-H24	Stafford Grammar School, Burton Manor Road, Stafford	391473, 320624	21.8	15.9	15.2	10.0
2-C-H26	Devon Way, Stafford	391713, 320597	21.8	15.9	15.2	10.0
2-C-H28	Creswell Grove, Stafford	390230, 325530	22.3	16.2	14.5	9.6
2-C-H29	The Pippins, Stafford	392159, 320018	17.1	12.7	15.0	10.1
2-C-H30	Overdale, Main Road, Colwich	401445, 321145	11.8	8.9	11.8	8.3
2-C-H31	Ash Rise, Stafford	392235, 319850	22.7	16.5	15.5	10.0
2-C-H32	Ashbrook, Ashflats Lane, Stafford	392404, 319282	22.7	16.5	15.5	10.0
2-C-H33	High Meadows, Main Road, Great Haywood	399992, 323053	12.3	9.3	11.4	7.9
2-C-H35	Barn Bank Lane, Stafford	392196, 319922	22.7	16.5	15.5	10.0
2-C-H36	The Toll House, Tolldish Lane, Great Haywood	400083, 323354	10.7	8.2	11.8	8.1
2-C-H37	Newstead, Ashflats Lane, Stafford	392313, 319628	22.7	16.5	15.5	10.0

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Receptor	Description/location	Ordnance Survey coordinates	Background concentrations in 2020 ( $\mu\text{g}/\text{m}^3$ )			
			NOx	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
2-C-H38	Higher Coley Cottage, Coley Lane, Little Haywood	400941, 322218	11.2	8.5	12.0	8.2
2-C-H40	The Old House, Wolseley Bridge, Stafford	401683, 320835	11.9	9.0	11.2	7.7
2-C-H42	Elsdon Road, Stafford	391436, 320820	21.8	15.9	15.2	10.0
2-C-H44	Beaconside, Stafford	393167, 324883	14.2	10.7	13.7	9.5
2-C-H45	Little Tixall Lane, Great Haywood	400126, 322784	11.2	8.5	12.0	8.2
2-C-H46	Eccleshall Road, Stafford	390353, 325365	22.3	16.2	14.5	9.6
2-C-H47	Whitgreave Manor, Whitgreave Lane, Whitgreave	390574, 327720	13.0	9.9	13.1	8.6
2-C-H48	Burton Manor Road, Stafford	391587, 320692	21.8	15.9	15.2	10.0
2-C-H49	Oldfields Crescent, Great Haywood	400091, 323094	10.7	8.2	11.8	8.1
2-C-H50	Hillcrest Home Farm, Creswell Grove, Creswell	390277, 325956	22.3	16.2	14.5	9.6
2-C-H51	Lower Farm, Ashflats Lane, Mossdit	392285, 319442	22.7	16.5	15.5	10.0
2-C-H52	Sheringham Covert, Stafford	394365, 323757	14.5	10.8	13.2	9.0
2-C-H53	Stone Road, Stafford	391183, 326030	14.0	10.6	13.6	9.0
2-C-H54	Stafford Lodge, Weston Road, Stafford	395319, 324643	11.3	8.6	12.2	8.3
2-C-H55	The Birches, Stone Road, Yarlet	390770, 327889	13.0	9.9	13.1	8.6
2-C-H56	Burton Bank Lane, Stafford	392046, 320226	17.1	12.7	15.0	10.1
2-C-H58	Samemma, Thorneyfields Lane, Hyde Lea	390511, 321125	21.1	15.5	15.6	10.3
2-C-H61	The Spinney, Whitgreave Lane, Whitgreave	389374, 328277	17.7	13.2	14.0	9.0
2-C-H62	Bishton Lane, Wolseley Bridge, Stafford	402071, 320734	12.4	9.4	11.5	7.9
2-C-H63	Dobree Close, Colwich	401347, 321118	11.8	8.9	11.8	8.3
2-C-H64	Southfields Close, Stafford	391876, 320421	21.8	15.9	15.2	10.0
2-C-H65	The Lodge, Orchard Lane, Wolseley Bridge, Stafford	402601, 320098	12.4	9.4	11.5	7.9



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Receptor	Description/location	Ordnance Survey coordinates	Background concentrations in 2020 ( $\mu\text{g}/\text{m}^3$ )			
			NOx	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
2-C-H66	Kingfisher Drive, Colwich	401304, 321363	11.8	8.9	11.8	8.3
2-C-H67	Pool Cottage, Weston Road, Stafford	395636, 325640	10.7	8.1	11.9	8.1
2-C-H69	Homestall Barn, Marston	392437, 327657	10.0	7.7	11.6	7.9
2-C-H70	Grove Farm, Yarlet	391155, 328913	10.8	8.3	11.5	7.7
2-C-H71	Hoo Mill Lane, Great Haywood	399262, 323871	12.3	9.3	11.4	7.9
2-C-H72	Mount Farm, Hopton	394189, 326176	9.8	7.5	11.9	8.1
2-C-H73	Woodhill Farm, Yarlet Lane, Marston	392149, 327876	10.0	7.7	11.6	7.9
2-C-H74	Wayside, Marston	392327, 327599	10.0	7.7	11.6	7.9
2-C-H75	Yarlet Hall Lodge, Yarlet	391213, 329189	11.1	8.5	11.5	7.8
2-C-H76	The Moos, Lower Lane, Hopton	394477, 325913	10.6	8.1	12.5	8.4
2-C-H77	Bank Cottages, Hopton Lane, Hopton	394145, 326215	9.8	7.5	11.9	8.1
2-C-H78	Mount Edge, Hopton	393985, 326111	10.5	8.0	11.6	7.9
2-C-H80	Plot Adjacent Woodhouse Farm, Yarlet Lane, Marston	391531, 328454	10.8	8.3	11.5	7.7
2-C-H82	North of Stafford housing - committed development 1, Policy Stafford 2, North of Stafford Housing	392144, 326238	11.6	8.9	12.4	8.4
2-C-H84	North of Stafford housing - committed development 3, Policy Stafford 2, North of Stafford Housing	393721, 326344	10.5	8.0	11.6	7.9
2-C-H88	Proposed residential development for up 66 dwellings - committed development 14/21007/FUL	391239, 326163	14.0	10.6	13.6	9.0
2-C-H89	Proposed residential development for up 700 dwellings, 60 bed elderly living facility, primary school and local centre - committed development 16/24595/OUT	391769, 326229	14.0	10.6	13.6	9.0
2-C-H90	Proposed residential development for up 16 dwellings - committed development 17/25983/FUL	393531, 324324	14.2	10.7	13.7	9.5

SES2 and AP2 ES Appendix AQ-001-002

Receptor	Description/location	Ordnance Survey coordinates	Background concentrations in 2020 ( $\mu\text{g}/\text{m}^3$ )			
			NOx	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
2-C-Hg1	Carr House Barns, Burston, Stafford	392799, 331386	12.2	9.2	11.4	7.8
2-C-Hg2	St Vincents Cottage, Burston, Stafford	393872, 330355	11.4	8.6	11.7	8.1
2-C-Hg3	Chapel House, Lichfield Road, Sandon	394622, 329867	11.2	8.5	11.3	7.8
2-C-Hg4	Lichfield Road, Sandon	394728, 329723	11.2	8.5	11.3	7.8
2-C-Hg5	Lichfield Road, Sandon	394860, 329317	11.2	8.5	11.3	7.8

Table 7: Modelled ecological receptors (construction phase) and background data for ecological sites

Receptor	Distance to road (m)	Ordnance Survey coordinates	Description	Sensitive habitat	2020 NOx background concentration ( $\mu\text{g}/\text{m}^3$ )	2020 NO <sub>2</sub> background concentration ( $\mu\text{g}/\text{m}^3$ )	APIS data <sup>13</sup> (average total nitrogen (N) deposition)
2-C-E1	30	390125, 325092	Doxey and Tillington Marshes SSSI <sup>14</sup>	Fen, marsh and swamp	22.3	16.2	23.5
2-C-E2	50	390137, 325084	Doxey and Tillington Marshes SSSI	Fen, marsh and swamp	22.3	16.2	23.5
2-C-E3	100	390175, 325055	Doxey and Tillington Marshes SSSI	Fen, marsh and swamp	22.3	16.2	23.5
2-C-E4	150	390213, 325021	Doxey and Tillington Marshes SSSI	Fen, marsh and swamp	22.3	16.2	23.5
2-C-E5	200	390253, 324993	Doxey and Tillington Marshes SSSI	Fen, marsh and swamp	13.8	10.4	23.5

<sup>13</sup> Air Pollution Information System (APIS), <http://www.apis.ac.uk/>

<sup>14</sup> Site of Special Scientific Interest (SSSI)

## Assessment results

4.3.6 Table 8 to Table 10 provide the summary of the modelled pollutant concentrations at the assessed receptors, including the magnitude of change and impact descriptor, and comparison against the main ES. Table 11 and Table 12 present the summary of the modelled pollutant concentrations at the assessed ecological receptors and the predicted nitrogen (N) deposition.

Table 8: Predicted annual mean NO<sub>2</sub> concentrations and impacts (construction)

Receptor	Description/location	NO <sub>2</sub> concentrations (µg/m <sup>3</sup> )		Change in NO <sub>2</sub> concentrations (µg/m <sup>3</sup> )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H1	Proposed residential development for up to 20 dwellings - committed development 16/24235/OUT	11.2	11.3	0.1	Negligible	Negligible	Not significant
2-C-H2	Proposed residential development for up to 77 dwellings - committed development 14/20886/OUT	11.2	11.3	0.1	Negligible	Negligible	Not significant
2-C-H3	Proposed residential development for up to 45 dwellings, Little Tixall Lane - committed development 14/21135/OUT	11.7	11.8	0.1	Negligible	Negligible	Not significant
2-C-H4	Roseacre Nursery Medical Centre - committed development Policy SA2 Roseacre Nursery	12.5	12.6	0.1	Negligible	Negligible	Not significant
2-C-H5	Proposed Stafford Primary Academy School - committed development S/14/05	16.8	16.9	0.1	Negligible	Negligible	Not significant
2-C-H6	Bricklyn Cottages, Sandon Road, Hopton	14.8	14.8	0.0	Negligible	Negligible	Not significant

Receptor	Description/location	NO2 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in NO2 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H7	Aston Bank Farm, Aston	32.2	32.3	0.1	Negligible	Negligible	Not significant
2-C-H8	Carisbrooke Drive, Stafford	29.1	29.2	0.1	Negligible	Negligible	Not significant
2-C-H9	Road End Farm, Whitgreave	21.3	21.3	0.0	Negligible	Negligible	Not significant
2-C-H10	Oxbarn Road, Stafford	53.3	53.6	0.3	Moderate adverse	Moderate adverse	Different significant effect
2-C-H11	Bluebells, Wolseley Bridge, Stafford	22.4	22.9	0.5	Negligible	Negligible	Not significant
2-C-H12	Talbot House, Blackheath Lane, Tixall	12.4	12.4	0.0	Negligible	Negligible	Not significant
2-C-H14	Wolseley Close, Colwich	11.8	11.9	0.1	Negligible	Negligible	Not significant
2-C-H16	Lincoln Meadows, Stafford	40.5	40.7	0.2	Negligible	Negligible	Not significant
2-C-H17	Burleyfields Farm, Burleyfields	30.6	30.7	0.1	Negligible	Negligible	Not significant
2-C-H18	Burley, Seighford Lane, Stafford	21.6	21.7	0.1	Negligible	Negligible	Not significant
2-C-H19	Redlands Farm, Stone Road, Yarlet	18.5	18.6	0.1	Negligible	Negligible	Not significant
2-C-H21	Burton Manor School, Uplands Road, Stafford	27.2	27.2	0.0	Negligible	Negligible	Not significant
2-C-H22	Mosspit Farm, Barn Bank Lane, Stafford	41.1	41.3	0.2	Negligible	Negligible	Not significant

Receptor	Description/location	NO2 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in NO2 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H23	Furness Grove, Stafford	26.2	26.3	0.1	Negligible	Negligible	Not significant
2-C-H24	Stafford Grammar School, Burton Manor Road, Stafford	30.6	30.6	0.0	Negligible	Negligible	Not significant
2-C-H26	Devon Way, Stafford	47.8	48.0	0.2	Moderate adverse	Moderate adverse	Different significant effect
2-C-H28	Creswell Grove, Stafford	37.1	37.3	0.2	Negligible	Negligible	Not significant
2-C-H29	The Pippins, Stafford	41.4	41.5	0.1	Negligible	Negligible	Not significant
2-C-H30	Overdale, Main Road, Colwich	11.7	11.8	0.1	Negligible	Negligible	Not significant
2-C-H31	Ash Rise, Stafford	42.9	43.0	0.1	Negligible	Negligible	Not significant
2-C-H32	Ashbrook, Ashflats Lane, Stafford	54.3	54.5	0.2	Moderate adverse	Moderate adverse	Different significant effect
2-C-H33	High Meadows, Main Road, Great Haywood	11.0	11.0	0.0	Negligible	Negligible	Not significant
2-C-H35	Barn Bank Lane, Stafford	48.2	48.4	0.2	Moderate adverse	Moderate adverse	Different significant effect
2-C-H36	The Toll House, Tolldish Lane, Great Haywood	15.2	15.4	0.2	Negligible	Negligible	Not significant
2-C-H37	Newstead, Ashflats Lane, Stafford	41.8	41.9	0.1	Negligible	Negligible	Not significant

Receptor	Description/location	NO2 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in NO2 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H38	Higher Coley Cottage, Coley Lane, Little Haywood	11.3	11.4	0.1	Negligible	Negligible	Not significant
2-C-H40	The Old House, Wolseley Bridge, Stafford	13.2	13.4	0.2	Negligible	Negligible	Not significant
2-C-H42	Elsdon Road, Stafford	40.9	41.0	0.1	Negligible	Negligible	Not significant
2-C-H44	Beaconside, Stafford	14.7	14.8	0.1	Negligible	Negligible	Not significant
2-C-H45	Little Tixall Lane, Great Haywood	10.4	10.4	0.0	Negligible	Negligible	Not significant
2-C-H46	Eccleshall Road, Stafford	37.9	38.1	0.2	Slight adverse	Negligible	Not significant
2-C-H47	Whitgreave Manor, Whitgreave Lane, Whitgreave	13.5	13.5	0.0	Negligible	Negligible	Not significant
2-C-H48	Burton Manor Road, Stafford	52.3	52.5	0.2	Moderate adverse	Moderate adverse	Different significant effect
2-C-H49	Oldfields Crescent, Great Haywood	10.6	10.7	0.1	Negligible	Negligible	Not significant
2-C-H50	Hillcrest Home Farm, Creswell Grove, Creswell	32.5	32.6	0.1	Negligible	Negligible	Not significant
2-C-H51	Lower Farm, Ashflats Lane, Mossdit	47.0	47.2	0.2	Moderate adverse	Slight adverse	New significant effect
2-C-H52	Sheringham Covert, Stafford	21.9	22.0	0.1	Negligible	Negligible	Not significant

Receptor	Description/location	NO2 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in NO2 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H53	Stone Road, Stafford	21.8	22.1	0.3	Negligible	Negligible	Not significant
2-C-H54	Stafford Lodge, Weston Road, Stafford	11.8	11.8	0.0	Negligible	Negligible	Not significant
2-C-H55	The Birches, Stone Road, Yarlet	19.7	19.8	0.1	Negligible	Negligible	Not significant
2-C-H56	Burton Bank Lane, Stafford	39.4	39.6	0.2	Negligible	Negligible	Not significant
2-C-H58	Samemma, Thorneyfields Lane, Hyde Lea	29.0	29.1	0.1	Negligible	Negligible	Not significant
2-C-H61	The Spinney, Whitgreave Lane, Whitgreave	32.4	32.5	0.1	Negligible	Negligible	Not significant
2-C-H62	Bishton Lane, Wolseley Bridge, Stafford	11.4	11.4	0.0	Negligible	Negligible	Not significant
2-C-H63	Dobree Close, Colwich	12.7	12.8	0.1	Negligible	Negligible	Not significant
2-C-H64	Southfields Close, Stafford	54.2	54.4	0.2	Moderate adverse	Moderate adverse	Different significant effect
2-C-H65	The Lodge, Orchard Lane, Wolseley Bridge, Stafford	16.3	16.5	0.2	Negligible	Negligible	Not significant
2-C-H66	Kingfisher Drive, Colwich	12.7	12.7	0.0	Negligible	Negligible	Not significant
2-C-H67	Pool Cottage, Weston Road, Stafford	13.2	13.2	0.0	Negligible	Negligible	Not significant

Receptor	Description/location	NO2 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in NO2 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H69	Homestall Barn, Marston	9.3	9.3	0.0	Negligible	Negligible	Not significant
2-C-H70	Grove Farm, Yarlet	15.9	16.0	0.1	Negligible	Negligible	Not significant
2-C-H71	Hoo Mill Lane, Great Haywood	9.9	9.9	0.0	Negligible	Negligible	Not significant
2-C-H72	Mount Farm, Hopton	9.0	9.0	0.0	Negligible	Negligible	Not significant
2-C-H73	Woodhill Farm, Yarlet Lane, Marston	9.4	9.4	0.0	Negligible	Negligible	Not significant
2-C-H74	Wayside, Marston	9.4	9.4	0.0	Negligible	Negligible	Not significant
2-C-H75	Yarlet Hall Lodge, Yarlet	14.9	15.0	0.1	Negligible	Negligible	Not significant
2-C-H76	The Moos, Lower Lane, Hopton	9.2	9.2	0.0	Negligible	Negligible	Not significant
2-C-H77	Bank Cottages, Hopton Lane, Hopton	9.0	9.0	0.0	Negligible	Negligible	Not significant
2-C-H78	Mount Edge, Hopton	9.5	9.5	0.0	Negligible	Negligible	Not significant
2-C-H80	Plot Adjacent Woodhouse Farm, Yarlet Lane, Marston	10.4	10.4	0.0	Negligible	Negligible	Not significant
2-C-H82	North of Stafford housing - committed development 1, Policy Stafford 2, North of Stafford Housing	14.8	14.9	0.1	Negligible	Negligible	Not significant



Receptor	Description/location	NO2 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in NO2 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H84	North of Stafford housing - committed development 3, Policy Stafford 2, North of Stafford Housing	10.0	10.0	0.0	Negligible	Negligible	Not significant
2-C-H88	Proposed residential development for up 66 dwellings - committed development 14/21007/FUL	22.1	22.4	0.3	Negligible	N/A	Not significant
2-C-H89	Proposed residential development for up 700 dwellings, 60 bed elderly living facility, primary school and local centre - committed development 16/24595/OUT	24.4	24.7	0.3	Negligible	N/A	Not significant
2-C-H90	Proposed residential development for up 16 dwellings - committed development 17/25983/FUL	14.0	14.0	0.0	Negligible	N/A	Not significant
2-C-H91	Carr House Barns, Burston, Stafford	11.8	11.9	0.1	Negligible	N/A	Not significant
2-C-H92	St Vincents Cottage, Burston, Stafford	18.1	18.3	0.2	Negligible	N/A	Not significant
2-C-H93	Chapel House, Lichfield Road, Sandon	17.1	17.3	0.2	Negligible	N/A	Not significant
2-C-H94	Lichfield Road, Sandon	18.1	18.3	0.2	Negligible	N/A	Not significant
2-C-H95	Lichfield Road, Sandon	19.7	19.9	0.2	Negligible	N/A	Not significant

Table 9: Predicted annual mean PM10 concentrations and impacts (construction)

Receptor	Description/location	PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H1	Proposed residential development for up to 20 dwellings - committed development 16/24235/OUT	12.3	12.4	0.1	Negligible	Negligible	Not significant
2-C-H2	Proposed residential development for up to 77 dwellings - committed development 14/20886/OUT	12.3	12.4	0.1	Negligible	Negligible	Not significant
2-C-H3	Proposed residential development for up to 45 dwellings, Little Tixall Lane - committed development 14/21135/OUT	12.4	12.4	0.0	Negligible	Negligible	Not significant
2-C-H4	Roseacre Nursery Medical Centre - committed development Policy SA2 Roseacre Nursery	12.4	12.4	0.0	Negligible	Negligible	Not significant
2-C-H5	Proposed Stafford Primary Academy School - committed development S/14/05	14.1	14.1	0.0	Negligible	Negligible	Not significant
2-C-H6	Bricklyn Cottages, Sandon Road, Hopton	13.0	13.0	0.0	Negligible	Negligible	Not significant
2-C-H7	Aston Bank Farm, Aston	16.5	16.5	0.0	Negligible	Negligible	Not significant
2-C-H8	Carisbrooke Drive, Stafford	17.2	17.2	0.0	Negligible	Negligible	Not significant
2-C-H9	Road End Farm, Whitgreave	14.9	15.0	0.1	Negligible	Negligible	Not significant

Receptor	Description/location	PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H10	Oxbarn Road, Stafford	20.1	20.2	0.1	Negligible	Negligible	Not significant
2-C-H11	Bluebells, Wolseley Bridge, Stafford	12.6	12.7	0.1	Negligible	Negligible	Not significant
2-C-H12	Talbot House, Blackheath Lane, Tixall	12.7	12.7	0.0	Negligible	Negligible	Not significant
2-C-H14	Wolseley Close, Colwich	12.2	12.2	0.0	Negligible	Negligible	Not significant
2-C-H16	Lincoln Meadows, Stafford	18.7	18.8	0.1	Negligible	Negligible	Not significant
2-C-H17	Burleyfields Farm, Burleyfields	17.3	17.3	0.0	Negligible	Negligible	Not significant
2-C-H18	Burley, Seighford Lane, Stafford	15.2	15.2	0.0	Negligible	Negligible	Not significant
2-C-H19	Redlands Farm, Stone Road, Yarlet	14.3	14.3	0.0	Negligible	Negligible	Not significant
2-C-H21	Burton Manor Cp School, Uplands Road, Stafford	16.5	16.6	0.1	Negligible	Negligible	Not significant
2-C-H22	Mosspit Farm, Barn Bank Lane, Stafford	18.6	18.6	0.0	Negligible	Negligible	Not significant
2-C-H23	Furness Grove, Stafford	15.4	15.4	0.0	Negligible	Negligible	Not significant
2-C-H24	Stafford Grammar School, Burton Manor Road, Stafford	17.0	17.0	0.0	Negligible	Negligible	Not significant
2-C-H26	Devon Way, Stafford	19.3	19.4	0.1	Negligible	Negligible	Not significant

Receptor	Description/location	PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H28	Creswell Grove, Stafford	17.2	17.3	0.1	Negligible	Negligible	Not significant
2-C-H29	The Pippins, Stafford	18.5	18.6	0.1	Negligible	Negligible	Not significant
2-C-H30	Overdale, Main Road, Colwich	12.2	12.2	0.0	Negligible	Negligible	Not significant
2-C-H31	Ash Rise, Stafford	18.8	18.8	0.0	Negligible	Negligible	Not significant
2-C-H32	Ashbrook, Ashflats Lane, Stafford	20.5	20.6	0.1	Negligible	Negligible	Not significant
2-C-H33	High Meadows, Main Road, Great Haywood	11.6	11.6	0.0	Negligible	Negligible	Not significant
2-C-H35	Barn Bank Lane, Stafford	19.6	19.6	0.0	Negligible	Negligible	Not significant
2-C-H36	The Toll House, Toldish Lane, Great Haywood	12.6	12.6	0.0	Negligible	Negligible	Not significant
2-C-H37	Newstead, Ashflats Lane, Stafford	18.7	18.7	0.0	Negligible	Negligible	Not significant
2-C-H38	Higher Coley Cottage, Coley Lane, Little Haywood	12.4	12.4	0.0	Negligible	Negligible	Not significant
2-C-H40	The Old House, Wolseley Bridge, Stafford	11.8	11.8	0.0	Negligible	Negligible	Not significant
2-C-H42	Elsdon Road, Stafford	18.3	18.3	0.0	Negligible	Negligible	Not significant
2-C-H44	Beaconside, Stafford	14.4	14.5	0.1	Negligible	Negligible	Not significant

Receptor	Description/location	PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H45	Little Tixall Lane, Great Haywood	12.2	12.2	0.0	Negligible	Negligible	Not significant
2-C-H46	Eccleshall Road, Stafford	17.5	17.5	0.0	Negligible	Negligible	Not significant
2-C-H47	Whitgreave Manor, Whitgreave Lane, Whitgreave	13.6	13.6	0.0	Negligible	Negligible	Not significant
2-C-H48	Burton Manor Road, Stafford	19.9	20.0	0.1	Negligible	Negligible	Not significant
2-C-H49	Oldfields Crescent, Great Haywood	12.1	12.2	0.1	Negligible	Negligible	Not significant
2-C-H50	Hillcrest Home Farm, Creswell Grove, Creswell	16.6	16.6	0.0	Negligible	Negligible	Not significant
2-C-H51	Lower Farm, Ashflats Lane, Mossdit	19.4	19.5	0.1	Negligible	Negligible	Not significant
2-C-H52	Sheringham Covert, Stafford	15.0	15.0	0.0	Negligible	Negligible	Not significant
2-C-H53	Stone Road, Stafford	15.3	15.4	0.1	Negligible	Negligible	Not significant
2-C-H54	Stafford Lodge, Weston Road, Stafford	12.7	12.7	0.0	Negligible	Negligible	Not significant
2-C-H55	The Birches, Stone Road, Yarlet	14.5	14.5	0.0	Negligible	Negligible	Not significant
2-C-H56	Burton Bank Lane, Stafford	18.3	18.3	0.0	Negligible	Negligible	Not significant
2-C-H58	Samemma, Thorneyfields Lane, Hyde Lea	17.2	17.2	0.0	Negligible	Negligible	Not significant

Receptor	Description/location	PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H61	The Spinney, Whitgreave Lane, Whitgreave	16.3	16.4	0.1	Negligible	Negligible	Not significant
2-C-H62	Bishton Lane, Wolseley Bridge, Stafford	11.7	11.7	0.0	Negligible	Negligible	Not significant
2-C-H63	Dobree Close, Colwich	12.3	12.4	0.1	Negligible	Negligible	Not significant
2-C-H64	Southfields Close, Stafford	20.2	20.3	0.1	Negligible	Negligible	Not significant
2-C-H65	The Lodge, Orchard Lane, Wolseley Bridge, Stafford	12.5	12.6	0.1	Negligible	Negligible	Not significant
2-C-H66	Kingfisher Drive, Colwich	12.4	12.4	0.0	Negligible	Negligible	Not significant
2-C-H67	Pool Cottage, Weston Road, Stafford	12.6	12.6	0.0	Negligible	Negligible	Not significant
2-C-H69	Homestall Barn, Marston	11.8	11.8	0.0	Negligible	Negligible	Not significant
2-C-H70	Grove Farm, Yarlet	12.6	12.6	0.0	Negligible	Negligible	Not significant
2-C-H71	Hoo Mill Lane, Great Haywood	11.5	11.5	0.0	Negligible	Negligible	Not significant
2-C-H72	Mount Farm, Hopton	12.1	12.1	0.0	Negligible	Negligible	Not significant
2-C-H73	Woodhill Farm, Yarlet Lane, Marston	11.8	11.8	0.0	Negligible	Negligible	Not significant

Receptor	Description/location	PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H74	Wayside, Marston	11.8	11.8	0.0	Negligible	Negligible	Not significant
2-C-H75	Yarlet Hall Lodge, Yarlet	12.4	12.5	0.1	Negligible	Negligible	Not significant
2-C-H76	The Moos, Lower Lane, Hopton	12.6	12.6	0.0	Negligible	Negligible	Not significant
2-C-H77	Bank Cottages, Hopton Lane, Hopton	12.1	12.1	0.0	Negligible	Negligible	Not significant
2-C-H78	Mount Edge, Hopton	11.8	11.8	0.0	Negligible	Negligible	Not significant
2-C-H80	Plot Adjacent Woodhouse Farm, Yarlet Lane, Marston	11.8	11.8	0.0	Negligible	Negligible	Not significant
2-C-H82	North of Stafford housing - committed development 1, Policy Stafford 2, North of Stafford Housing	13.5	13.6	0.1	Negligible	Negligible	Not significant
2-C-H84	North of Stafford housing - committed development 3, Policy Stafford 2, North of Stafford Housing	11.9	11.9	0.0	Negligible	Negligible	Not significant
2-C-H88	Proposed residential development for up to 66 dwellings - committed development 14/21007/FUL	15.3	15.3	0.0	Negligible	Not modelled	Not significant
2-C-H89	Proposed residential development for up to 700 dwellings, 60 bed elderly living facility, primary school and	16.5	16.6	0.1	Negligible	Not modelled	Not significant

Receptor	Description/location	PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
	local centre - committed development 16/24595/OUT						
2-C-H90	Proposed residential development for up to 16 dwellings - committed development 17/25983/FUL	14.3	14.3	0.0	Negligible	Not modelled	Not significant
2-C-H91	Carr House Barns, Burston, Stafford	11.9	11.9	0.0	Negligible	Not modelled	Not significant
2-C-H92	St Vincents Cottage, Burston, Stafford	13.7	13.7	0.0	Negligible	Not modelled	Not significant
2-C-H93	Chapel House, Lichfield Road, Sandon	13.0	13.0	0.0	Negligible	Not modelled	Not significant
2-C-H94	Lichfield Road, Sandon	13.3	13.4	0.1	Negligible	Not modelled	Not significant
2-C-H95	Lichfield Road, Sandon	12.8	12.9	0.1	Negligible	Not modelled	Not significant

Table 10: Predicted annual mean PM2.5 concentrations and impacts (construction)

Receptor	Description/location	PM2.5 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H1	Proposed residential development for up to 20 dwellings - committed development 16/24235/OUT	8.5	8.5	0.0	Negligible	Negligible	Not significant
2-C-H2	Proposed residential development for up to 77 dwellings - committed development 14/20886/OUT	8.5	8.5	0.0	Negligible	Negligible	Not significant



Receptor	Description/location	PM2.5 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H3	Proposed residential development for up to 45 dwellings, Little Tixall Lane - committed development 14/21135/OUT	8.5	8.5	0.0	Negligible	Negligible	Not significant
2-C-H4	Roseacre Nursery Medical Centre - committed development Policy SA2 Roseacre Nursery	8.4	8.5	0.1	Negligible	Negligible	Not significant
2-C-H5	Proposed Stafford Primary Academy School - committed development S/14/05	9.5	9.5	0.0	Negligible	Negligible	Not significant
2-C-H6	Bricklyn Cottages, Sandon Road, Hopton	8.9	8.9	0.0	Negligible	Negligible	Not significant
2-C-H7	Aston Bank Farm, Aston	10.7	10.8	0.1	Negligible	Negligible	Not significant
2-C-H8	Carisbrooke Drive, Stafford	11.3	11.3	0.0	Negligible	Negligible	Not significant
2-C-H9	Road End Farm, Whitgreave	9.6	9.6	0.0	Negligible	Negligible	Not significant
2-C-H10	Oxbarn Road, Stafford	13.1	13.2	0.1	Negligible	Negligible	Not significant
2-C-H11	Bluebells, Wolseley Bridge, Stafford	8.6	8.6	0.0	Negligible	Negligible	Not significant
2-C-H12	Talbot House, Blackheath Lane, Tixall	8.6	8.6	0.0	Negligible	Negligible	Not significant
2-C-H14	Wolseley Close, Colwich	8.5	8.5	0.0	Negligible	Negligible	Not significant

Receptor	Description/location	PM2.5 concentrations (µg/m³)		Change in PM10 concentrations (µg/m³)	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H16	Lincoln Meadows, Stafford	12.2	12.3	0.1	Negligible	Negligible	Not significant
2-C-H17	Burleyfields Farm, Burleyfields	11.1	11.2	0.1	Negligible	Negligible	Not significant
2-C-H18	Burley, Seighford Lane, Stafford	9.9	9.9	0.0	Negligible	Negligible	Not significant
2-C-H19	Redlands Farm, Stone Road, Yarlet	9.3	9.3	0.0	Negligible	Negligible	Not significant
2-C-H21	Burton Manor Cp School, Uplands Road, Stafford	10.8	10.9	0.1	Negligible	Negligible	Not significant
2-C-H22	Mosspit Farm, Barn Bank Lane, Stafford	11.9	12.0	0.1	Negligible	Negligible	Not significant
2-C-H23	Furness Grove, Stafford	10.4	10.4	0.0	Negligible	Negligible	Not significant
2-C-H24	Stafford Grammar School, Burton Manor Road, Stafford	11.1	11.1	0.0	Negligible	Negligible	Not significant
2-C-H26	Devon Way, Stafford	12.6	12.6	0.0	Negligible	Negligible	Not significant
2-C-H28	Creswell Grove, Stafford	11.3	11.3	0.0	Negligible	Negligible	Not significant
2-C-H29	The Pippins, Stafford	12.3	12.4	0.1	Negligible	Negligible	Not significant
2-C-H30	Overdale, Main Road, Colwich	8.5	8.5	0.0	Negligible	Negligible	Not significant
2-C-H31	Ash Rise, Stafford	12.1	12.1	0.0	Negligible	Negligible	Not significant

Receptor	Description/location	PM2.5 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H32	Ashbrook, Ashflats Lane, Stafford	13.2	13.2	0.0	Negligible	Negligible	Not significant
2-C-H33	High Meadows, Main Road, Great Haywood	8.0	8.1	0.1	Negligible	Negligible	Not significant
2-C-H35	Barn Bank Lane, Stafford	12.6	12.6	0.0	Negligible	Negligible	Not significant
2-C-H36	The Toll House, Tolldish Lane, Great Haywood	8.6	8.6	0.0	Negligible	Negligible	Not significant
2-C-H37	Newstead, Ashflats Lane, Stafford	12.0	12.0	0.0	Negligible	Negligible	Not significant
2-C-H38	Higher Coley Cottage, Coley Lane, Little Haywood	8.5	8.5	0.0	Negligible	Negligible	Not significant
2-C-H40	The Old House, Wolseley Bridge, Stafford	8.1	8.1	0.0	Negligible	Negligible	Not significant
2-C-H42	Elsdon Road, Stafford	12.0	12.0	0.0	Negligible	Negligible	Not significant
2-C-H44	Beaconside, Stafford	9.9	9.9	0.0	Negligible	Negligible	Not significant
2-C-H45	Little Tixall Lane, Great Haywood	8.4	8.4	0.0	Negligible	Negligible	Not significant
2-C-H46	Eccleshall Road, Stafford	11.4	11.4	0.0	Negligible	Negligible	Not significant
2-C-H47	Whitgreave Manor, Whitgreave Lane, Whitgreave	8.9	8.9	0.0	Negligible	Negligible	Not significant

Receptor	Description/location	PM2.5 concentrations (µg/m³)		Change in PM10 concentrations (µg/m³)	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H48	Burton Manor Road, Stafford	13.0	13.1	0.1	Negligible	Negligible	Not significant
2-C-H49	Oldfields Crescent, Great Haywood	8.3	8.3	0.0	Negligible	Negligible	Not significant
2-C-H50	Hillcrest Home Farm, Creswell Grove, Creswell	10.9	10.9	0.0	Negligible	Negligible	Not significant
2-C-H51	Lower Farm, Ashflats Lane, Mossdit	12.5	12.5	0.0	Negligible	Negligible	Not significant
2-C-H52	Sheringham Covert, Stafford	10.0	10.0	0.0	Negligible	Negligible	Not significant
2-C-H53	Stone Road, Stafford	10.0	10.1	0.1	Negligible	Negligible	Not significant
2-C-H54	Stafford Lodge, Weston Road, Stafford	8.6	8.6	0.0	Negligible	Negligible	Not significant
2-C-H55	The Birches, Stone Road, Yarlet	9.4	9.4	0.0	Negligible	Negligible	Not significant
2-C-H56	Burton Bank Lane, Stafford	12.2	12.2	0.0	Negligible	Negligible	Not significant
2-C-H58	Samemma, Thorneyfields Lane, Hyde Lea	11.3	11.3	0.0	Negligible	Negligible	Not significant
2-C-H61	The Spinney, Whitgreave Lane, Whitgreave	10.5	10.5	0.0	Negligible	Negligible	Not significant
2-C-H62	Bishton Lane, Wolseley Bridge, Stafford	8.0	8.0	0.0	Negligible	Negligible	Not significant

Receptor	Description/location	PM2.5 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H63	Dobree Close, Colwich	8.6	8.6	0.0	Negligible	Negligible	Not significant
2-C-H64	Southfields Close, Stafford	13.2	13.3	0.1	Negligible	Negligible	Not significant
2-C-H65	The Lodge, Orchard Lane, Wolseley Bridge, Stafford	8.5	8.5	0.0	Negligible	Negligible	Not significant
2-C-H66	Kingfisher Drive, Colwich	8.6	8.6	0.0	Negligible	Negligible	Not significant
2-C-H67	Pool Cottage, Weston Road, Stafford	8.5	8.5	0.0	Negligible	Negligible	Not significant
2-C-H69	Homestall Barn, Marston	8.0	8.0	0.0	Negligible	Negligible	Not significant
2-C-H70	Grove Farm, Yarlet	8.4	8.4	0.0	Negligible	Negligible	Not significant
2-C-H71	Hoo Mill Lane, Great Haywood	8.0	8.0	0.0	Negligible	Negligible	Not significant
2-C-H72	Mount Farm, Hopton	8.2	8.2	0.0	Negligible	Negligible	Not significant
2-C-H73	Woodhill Farm, Yarlet Lane, Marston	8.0	8.0	0.0	Negligible	Negligible	Not significant
2-C-H74	Wayside, Marston	8.0	8.0	0.0	Negligible	Negligible	Not significant
2-C-H75	Yarlet Hall Lodge, Yarlet	8.3	8.3	0.0	Negligible	Negligible	Not significant
2-C-H76	The Moos, Lower Lane, Hopton	8.5	8.5	0.0	Negligible	Negligible	Not significant

Receptor	Description/location	PM2.5 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H77	Bank Cottages, Hopton Lane, Hopton	8.2	8.2	0.0	Negligible	Negligible	Not significant
2-C-H78	Mount Edge, Hopton	8.1	8.1	0.0	Negligible	Negligible	Not significant
2-C-H80	Plot Adjacent Woodhouse Farm, Yarlet Lane, Marston	7.9	7.9	0.0	Negligible	Negligible	Not significant
2-C-H82	North of Stafford housing - committed development 1, Policy Stafford 2, North of Stafford Housing	9.0	9.0	0.0	Negligible	Negligible	Not significant
2-C-H84	North of Stafford housing - committed development 3, Policy Stafford 2, North of Stafford Housing	8.1	8.1	0.0	Negligible	Negligible	Not significant
2-C-H88	Proposed residential development for up 66 dwellings - committed development 14/21007/FUL	10.0	10.1	0.1	Negligible	Not modelled	Not significant
2-C-H89	Proposed residential development for up 700 dwellings, 60 bed elderly living facility, primary school and local centre - committed development 16/24595/OUT	10.7	10.7	0.0	Negligible	Not modelled	Not significant
2-C-H90	Proposed residential development for up 16 dwellings - committed development 17/25983/FUL	9.8	9.8	0.0	Negligible	Not modelled	Not significant

Receptor	Description/location	PM2.5 concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in PM10 concentrations ( $\mu\text{g}/\text{m}^3$ )	Impact descriptor	Impact descriptor in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme				
2-C-H91	Carr House Barns, Burston, Stafford	8.1	8.1	0.0	Negligible	Not modelled	Not significant
2-C-H92	St Vincents Cottage, Burston, Stafford	9.2	9.2	0.0	Negligible	Not modelled	Not significant
2-C-H93	Chapel House, Lichfield Road, Sandon	8.8	8.8	0.0	Negligible	Not modelled	Not significant
2-C-H94	Lichfield Road, Sandon	8.9	9.0	0.1	Negligible	Not modelled	Not significant
2-C-H95	Lichfield Road, Sandon	8.7	8.7	0.0	Negligible	Not modelled	Not significant

Table 11: Predicted annual mean NOx concentrations at ecological receptors (construction)

Ecological site	Distance to road (m)	NOx concentrations ( $\mu\text{g}/\text{m}^3$ )		Change in NOx concentrations ( $\mu\text{g}/\text{m}^3$ )	Comparison against the air quality standard ( $30\mu\text{g}/\text{m}^3$ )	Magnitude of change	Magnitude of change in the main ES	Significance
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme					
2-C-E1	30	83.7	84.1	0.4	Above standard	Imperceptible	Small	Not significant
2-C-E2	50	71.5	71.8	0.3	Above standard	Imperceptible	Small	Not significant
2-C-E3	100	53.5	53.7	0.2	Above standard	Imperceptible	Imperceptible	Not significant
2-C-E4	150	45.5	45.7	0.2	Above standard	Imperceptible	Imperceptible	Not significant
2-C-E5	200	32.8	32.9	0.1	Above standard	Imperceptible	Imperceptible	Not significant

Table 12: Assessment of N deposition at ecological receptors (construction)

Ecological site	Distance to road (m)	Dry deposition (kg N / ha / yr)		Change in N deposition (kg N / ha / yr)	Critical load (kg N / ha / yr)	% change in relation to lower critical load
		2020 without the AP2 revised scheme	2020 with the AP2 revised scheme			
2-C-E1	30	26.4	26.4	0.0	15 – 25	0.0%
2-C-E2	50	25.9	25.9	0.0		0.0%
2-C-E3	100	25.1	25.1	0.0		0.0%
2-C-E4	150	24.7	24.7	0.0		0.0%
2-C-E5	200	24.5	24.5	0.0		0.0%



- 4.3.7 Annual mean NO<sub>2</sub> concentrations are predicted to be above the air quality standard at 13 receptors along the M6 in Stafford. Moderate adverse impacts are expected at seven of these receptors in relation to NO<sub>2</sub> concentrations and negligible impacts are expected at all other receptors in the area. Since the annual mean NO<sub>2</sub> concentrations are predicted to be less than 60µg/m<sup>3</sup> at all receptors, the hourly mean standard is expected to be met.
- 4.3.8 Both the annual mean PM<sub>10</sub> and PM<sub>2.5</sub> concentrations are predicted to be within the air quality standards during construction of the AP2 revised scheme. Since the annual mean PM<sub>10</sub> concentrations are predicted to be less than 35µg/m<sup>3</sup>, the daily mean standard is also expected to be met. Negligible impacts are predicted at all receptors for annual mean PM<sub>10</sub> and PM<sub>2.5</sub> concentrations.
- 4.3.9 NO<sub>x</sub> concentrations at the Doxey and Tillington Marshes SSSI are predicted to be above the air quality standard. Imperceptible changes in NO<sub>x</sub> concentrations are predicted at this site and changes in nitrogen deposition at this site are predicted to be below 1% of the lower critical load.

### Assessment of significance

- 4.3.10 One new and six different significant effects are anticipated at receptors along the M6 in Stafford in relation to annual mean NO<sub>2</sub> concentrations. However, the AP2 revised scheme reduces HS2 construction traffic along this section of the M6, compared to the main ES. Therefore, the new and different significant effects at this location are mainly due to changes in predicted emissions in the revised future baseline. No new or different significant effects are anticipated at other receptors in the area, as the change from the AP2 revised scheme did not trigger the exceedance.
- 4.3.11 No new or different significant effects are anticipated at any receptor in relation to annual mean PM<sub>10</sub> and PM<sub>2.5</sub> concentrations.
- 4.3.12 For ecological sites, there is considered to be an insignificant effect if the total predicted NO<sub>x</sub> concentrations are below the air quality standard of 30µg/m<sup>3</sup> or if the predicted change in NO<sub>x</sub> concentrations is less than 0.4µg/m<sup>3</sup> when the concentrations are predicted to exceed the air quality standard. Furthermore, if the change in nitrogen deposition is predicted to be less than 1% of the lower critical load, there is considered to be an insignificant effect. At the Doxey and Tillington Marshes SSSI changes to nitrogen deposition are predicted to be less than 1% of the lower critical load and therefore no significant effects are anticipated at this site for air quality. Therefore, no new or different significant effects are anticipated for ecological receptors in the Colwich to Yarlet area.

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