



High Speed Rail (West Midlands - Crewe)

Environmental Statement

Volume 5: Technical appendices

CA2: Colwich to Yarlet

Air quality report (AQ-001-002)



High Speed Rail (West Midlands - Crewe)

Environmental Statement

Volume 5: Technical appendices

CA2: Colwich to Yarlet

Air quality report (AQ-001-002)



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.

High Speed Two (HS2) Limited,
Two Snowhill
Snow Hill Queensway
Birmingham B4 6GA

Telephone: 08081 434 434

General email enquiries: HS2enquiries@hs2.org.uk

Website: www.gov.uk/hs2

A report prepared for High Speed Two (HS2) Limited:

ARUP



High Speed Two (HS2) Limited has actively considered the needs of blind and partially sighted people in accessing this document. The text will be made available in full on the HS2 website. The text may be freely downloaded and translated by individuals or organisations for conversion into other accessible formats. If you have other needs in this regard, please contact High Speed Two (HS2) Limited.

© High Speed Two (HS2) Limited, 2017, except where otherwise stated.

Copyright in the typographical arrangement rests with High Speed Two (HS2) Limited.

This information is licensed under the Open Government Licence v2.0. To view this licence, visit www.nationalarchives.gov.uk/doc/open-government-licence/version/2 **OGL** or write to the Information Policy Team, The National Archives, Kew, London TW9 4DU, or e-mail: psi@nationalarchives.gsi.gov.uk. Where we have identified any third-party copyright information you will need to obtain permission from the copyright holders concerned.



Printed in Great Britain on paper containing at least 75% recycled fibre.

Contents

1	Introduction	1
2	Relevant policies and guidance	2
3	Baseline air quality data	3
3.1	Existing air quality	3
4	Construction dust assessment	5
4.2	Dust soiling and human health effects	5
4.3	Ecological effects	8
5	Air quality assessment - road traffic	10
5.1	Overall assessment approach	10
5.2	Model inputs and verification	10
5.3	Assessment of construction traffic emissions	11
5.4	Assessment of operational traffic emissions	40
6	References	48

List of tables

Table 1:	Annual mean NO ₂ concentrations recorded at diffusion tube monitoring sites	4
Table 2:	Sensitivity of area to dust soiling and human health effects	6
Table 3:	Dust emission magnitude for dust soiling and human health effects	7
Table 4:	Risk of dust soiling and human health effects	7
Table 5:	Sensitivity of area to ecological effects	9
Table 6:	Dust emission magnitude for ecological effects	9
Table 7:	Risk of ecological effects	9
Table 8:	Comparison of monitored and modelled NO ₂ concentrations	10
Table 9:	Modelled human receptors (construction phase)	12
Table 10:	Modelled ecological receptors (construction phase)	15
Table 11:	Background 2020 concentrations at assessed receptors	16
Table 12:	Background data for ecological sites	19
Table 13:	Predicted annual mean NO ₂ concentrations and impacts (construction phase)	21
Table 14:	Predicted annual mean PM ₁₀ concentrations and impacts (construction phase)	26

Appendix AQ-001-002

Table 15: Predicted annual mean PM _{2.5} concentrations and impacts (construction phase)	32
Table 16: Predicted annual mean of NO _x concentrations at ecological sites (construction phase)	37
Table 17: Assessment of N deposition at ecological sites (construction phase)	38
Table 18: Modelled receptors (construction phase)	40
Table 19: Background 2027 concentrations at assessed receptors	41
Table 20: Predicted annual mean NO ₂ concentrations and impacts (operation phase)	43
Table 21: Predicted annual mean PM ₁₀ concentrations and impacts (operation phase)	44
Table 22: Predicted annual mean PM _{2.5} concentrations and impacts (operation phase)	45

1 Introduction

- 1.1.1 This document is the air quality assessment Appendix for the Colwich to Yarlet community area (CA2); it comprises:
- a discussion of relevant policies and guidance (Section 2);
 - baseline air quality data (Section 3);
 - dust impact evaluation and risk rating (Section 4); and
 - the air quality assessment - road traffic (Section 5).
- 1.1.2 Maps referred to throughout this appendix are contained in the Volume 5, Air Quality Map Book, Map Series AQ-01.
- 1.1.3 In addition, the traffic data used for the air quality assessment is set out in Background Information and Data (BID)¹, (see BID-AQ-002-000: Traffic data used for the air quality assessment).
- 1.1.4 The assessment scope, key assumptions and limitations and the methodology for determining significance of effects for air quality are set out in Volume 1² and the Scope and Methodology Report (SMR)³ and its Addendum⁴.

¹ HS2 Ltd (2017), *High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Background Information and Data*, www.gov.uk/hs2.

² See Environmental Statement Volume 1, Introduction to the Environmental Statement

³ *Environmental Impact Assessment Scope and Methodology Report*, Volume 5: Appendix CT-001-001

⁴ *Environmental Impact Assessment Scope and Methodology Report Addendum*, Volume 5: Appendix CT-001-002

2 Relevant policies and guidance

2.1.1 The Colwich to Yarlet area lies within the administrative area of Stafford Borough Council (SBC).

Stafford Borough Council

2.1.2 The Plan for Stafford Borough Council⁵ sets out a vision for the development of the Borough outlining the key strategic policies to guide where new development will take place, whilst ensuring that they meet local needs and are in-line with national policy.

2.1.3 Policy T1 (Transport) outlines that a sustainable transport system will be achieved through: '...Seeking to reduce the impact of traffic from new development on the road networks, by ensuring that the generation of traffic is minimised through sustainable transport measures. Ensuring that all developments that generate significant traffic flows, including commercial traffic must be located in close proximity to the primary road network, do not have a negative impact on the network or at junctions, air quality, and nearby communities, and should have adequate capacity to accommodate the development or can be improved or mitigated as part of the development'.

2.1.4 Policy N5 (Sites of European, National & Local Nature Conservation Importance) outlines that in relation to air quality issues identified, planning permission will only be granted where:

1. 'It can be demonstrated that development will not significantly contribute to adverse effects caused by local and/or diffuse air pollution at European sites, alone or in combination with other plans and projects;
2. Where development would result in an increase in local and/or diffuse air pollution at European Sites, it would be expected to include measures in line with the Staffordshire Local Transport Plan towards securing an equivalent improvement in air quality, or reduction in emissions from other sources; and
3. Require a pollution-neutral strategy for major development near to European sites.'

⁵ Stafford Borough Council (2014), *The Plan for Stafford Borough 2011 – 2031 (Adopted 19 June 2014)*, <http://www.staffordbc.gov.uk/live/Documents/Planning%20Policy/Plan%20for%20Stafford%20Borough/PFSB-Adoption.pdf>.

3 Baseline air quality data

3.1 Existing air quality

Local authority review and assessment information

- 3.1.1 SBC has reviewed air quality throughout the area since 2004, following the Department for Environment, Food and Rural Affairs (Defra) local air quality management (LAQM) regime⁶.
- 3.1.2 No Air Quality Management Areas (AQMAs) have been declared⁷ within the Colwich to Yarlet area.

Local air quality monitoring data

- 3.1.3 Monitoring sites within the study area that are considered relevant for this assessment are shown in Volume 5: Map AQ-01-102. The following sections provide a summary of the recorded pollutant concentrations at these sites.
- 3.1.4 The pollutant concentrations can be compared to the air quality standards:
- 40µg/m³ as an annual mean for nitrogen dioxide (NO₂) and particulate matter (PM₁₀);
 - 200µg/m³ one-hour mean for NO₂ not to be exceeded more than 18 times a year (equivalent to the 99.8th percentile of the one-hour mean);
 - 50µg/m³ 24-hour mean for PM₁₀ not to be exceeded more than 35 times a year (equivalent to the 90.4th percentile of the 24-hour mean); and
 - 25µg/m³ as an annual mean for fine particulate matter (PM_{2.5}).

Continuous monitoring

- 3.1.5 There are no continuous monitoring sites operated by SBC in the Colwich to Yarlet area.

Diffusion tubes

- 3.1.6 SBC undertakes air quality monitoring with the use of passive diffusion tube as part of its LAQM process, with 31 diffusion tube sites positioned around within the Borough. Of these, there are four diffusion tube sites located within the Colwich to Yarlet area for monitoring NO₂ concentrations.
- 3.1.7 Table 1 summarises the results from the diffusion tube sites that are considered relevant for the assessment of air quality in this study area. At the time of assessment, measurements for 2015 were the latest published annual monitoring baseline data.

⁶ In fulfilment of Part IV of the *Environment Act 1995*. London, Her Majesty's Stationary Office

⁷ Stafford Borough Council (2016), *2016 Air Quality Annual Status Report*, <http://www.staffordbc.gov.uk/live/Documents/Environmental%20Health/Air-Quality-Annual-Status-Report.pdf>.

Appendix AQ-001-002

Table 1: Annual mean NO₂ concentrations recorded at diffusion tube monitoring sites⁸

Site	Ordnance Survey coordinates	Annual mean NO ₂ concentrations (µg/m ³)			
		2012	2013	2014	2015
No.1 (M6 junction 14 roundabout)	390270, 325520,	31	26	37	37
No.2 (M6 junction 14 roundabout)	390380, 325390	30	30	33	38
No.21 (A34 Stone Road, Yarlet)	339105,328693	30	28	27	27
No.29 (A34 Stone Road, Stafford)	391393, 325388	n/a*	30	22	24

* data not available for this year at this location

Background pollutant concentrations

3.1.8 Estimates of background air quality were obtained from the Defra maps⁹. Background concentrations are within air quality standards throughout the study area for all pollutants. NO₂ annual mean concentrations were in the range 11.1µg/m³ – 12.9µg/m³ in 2016. PM₁₀ annual mean concentrations were in the range 12.8µg/m³ – 14.9µg/m³ in 2016.

3.1.9 While the diffusion tube sites in Table 1 can be used to indicate trends in concentrations, they are not considered to be representative of the predominantly rural area within the study area through which the Proposed Scheme will pass. On this basis the Defra background concentrations maps have been used to characterise the baseline air quality for the study area. These maps indicate that the average background pollutant concentrations across the Colwich to Yarlet area are within the relevant air quality standards.

Local emission sources

3.1.10 The main sources of pollution within the study area are road vehicles and agricultural activities. Major roads include the M6, the A34 Stone Road, the A518 Weston Road, the A51 Lichfield Road and the A513 Beaconside. Other emission sources include three industrial installations (regulated by the Environment Agency) with permits for emissions to air; namely:

- Bostik Limited- Common Road Emulsion Polymer Plant (Permit Number: AP3435MN);
- JBMI Group Ltd - Kingsilver Refinery, Hixon Industrial Estate (Permit Number: DP3236TJ); and
- Grindley Biogas Limited, Grindley House Farm (Permit Number: CP3230DW).

3.1.11 Contributions to local pollutant concentrations made by these industrial installations are included within background concentrations used in this assessment.

⁸ Stafford Borough Council (2016), 2016 Air Quality Annual Status Report, <http://www.staffordbc.gov.uk/live/Documents/Environmental%20Health/Air-Quality-Annual-Status-Report.pdf>.

⁹ Department for Environment, Food and Rural Affairs (Defra) (2013), Defra Background Pollutant Concentration Maps, <https://uk-air.defra.gov.uk/data/laqm-background-maps>.

4 Construction dust assessment

4.1.1 This section provides details of the assessment of dust emissions during construction of the Proposed Scheme. Due to the elongated nature of the Proposed Scheme and associated dust generating activities, the construction dust assessment has been undertaken in detail for distinct assessment areas in the Colwich to Yarlet area.

4.2 Dust soiling and human health effects

Assessed receptors and sensitivity of the area

4.2.1 The assessment of dust soiling and human health effects has been undertaken for the following areas from south to north. Table 2 presents the sensitivity of each area to dust soiling and human health effects:

- area around Moreton Grange Farm and Moreton House: there are no demolition activities in this area. Residential dwellings are located within 20m of earthworks, construction and trackout activities;
- area around Tolldish Lane and Great Haywood Marina: there are demolition activities located within 100m of residential dwellings in this area. Residential dwellings are also located within 50m of earthworks and within 20m of construction and trackout activities;
- area around Ingestre: there are no demolition activities in this area which may affect residential receptors. Ingestre Park Golf Club clubhouse is located within 50m of earthworks and construction activities. Residential dwellings are located within 350m of earthworks and construction activities, and within 20m of trackout activities;
- area around Staffordshire County Showground: there are demolition activities located within 100m of residential dwellings. Earthworks, construction and trackout activities are also located within 20m of residential dwellings;
- area around Hopton: there are residential dwellings located within 20m of demolition activities, earthworks, construction and trackout activities;
- area around Marston Lane: there are demolition activities located within 50m of residential dwellings in this area. Residential dwellings are also located within 20m of earthworks, construction and trackout activities;
- area around Yarlet Lane: there are demolition activities located within 100m of residential dwellings in this area. Residential dwellings are also located within 20m of earthworks and construction activities, and within 200m of trackout activities; and
- area around the A34 Stone Road and Yarlet School: there are demolition activities located within 100m of residential dwellings in this area. Residential dwellings are also located within 20m of earthworks, construction and trackout activities in this area.

Appendix AQ-001-002

Table 2: Sensitivity of area to dust soiling and human health effects

Effect	Demolition	Earthworks	Construction	Trackout
Area around Moreton Grange Farm and Moreton House				
Dust soiling	n/a	Medium	Medium	Medium
Human health	n/a	Low	Low	Low
Area around Toldish Lane and Great Haywood Marina				
Dust soiling	Low	Low	Medium	Medium
Human health	Low	Low	Low	Low
Area around Ingestre				
Dust soiling	n/a	Low	Low	Medium
Human health	n/a	Low	Low	Low
Area around Staffordshire County Showground				
Dust soiling	Low	Medium	Medium	Medium
Human health	Low	Low	Low	Low
Area around Hopton				
Dust soiling	Medium	Medium	Medium	Medium
Human health	Low	Low	Low	Low
Area around Marston Lane				
Dust soiling	Low	Medium	Medium	Medium
Human health	Low	Low	Low	Low
Area around Yarlet Lane				
Dust soiling	Low	Medium	Medium	Low
Human health	Low	Low	Low	Low
Area around the A34 Stone Road and Yarlet School				
Dust soiling	Low	Medium	Medium	Medium
Human health	Low	Low	Low	Low

Dust emission magnitude

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

Appendix AQ-001-002

Table 3: Dust emission magnitude for dust soiling and human health effects

Area	Demolition	Earthworks	Construction	Trackout
Area around Moreton Grange Farm and Moreton House	n/a	Large	Medium	Large
Area around Tolldish Lane and Great Haywood Marina	Small	Large	Large	Large
Area around Ingestre	n/a	Large	Small	Large
Area around Staffordshire County Showground	Small	Large	Medium	Large
Area around Hopton	Medium	Large	Medium	Large
Area around Marston Lane	Small	Medium	Medium	Large
Area around Yarlet Lane	Small	Medium	Small	Large
Area around the A34 Stone Road and Yarlet School	Small	Large	Medium	Large

Risk of impacts

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

Table 4: Risk of dust soiling and human health effects

Effect	Demolition	Earthworks	Construction	Trackout
Area around Moreton Grange Farm and Moreton House				
Dust soiling	n/a	Medium risk	Medium risk	Medium risk
Human health	n/a	Low risk	Low risk	Low risk
Area around Tolldish Lane and Great Haywood Marina				
Dust soiling	Negligible risk	Low risk	Medium risk	Medium risk
Human health	Negligible risk	Low risk	Low risk	Low risk
Area around Ingestre				
Dust soiling	n/a	Low risk	Negligible risk	Medium risk
Human health	n/a	Low risk	Negligible risk	Low risk
Area around Staffordshire County Showground				
Dust soiling	Negligible risk	Medium risk	Medium risk	Medium risk
Human health	Negligible risk	Low risk	Low risk	Low risk

Effect	Demolition	Earthworks	Construction	Trackout
Area around Hopton				
Dust soiling	Medium risk	Medium risk	Medium risk	Medium risk
Human health	Low risk	Low risk	Low risk	Low risk
Area around Marston Lane				
Dust soiling	Negligible risk	Medium risk	Medium risk	Medium risk
Human health	Negligible risk	Low risk	Low risk	Low risk
Area around Yarlet Lane				
Dust soiling	Negligible risk	Medium risk	Low risk	Low risk
Human health	Negligible risk	Low risk	Negligible risk	Low risk
Area around the A34 Stone Road and Yarlet School				
Dust soiling	Negligible risk	Medium risk	Medium risk	Medium risk
Human health	Negligible risk	Low risk	Low risk	Low risk

4.3 Ecological effects

Assessed receptors and sensitivity of the area

- 4.3.1 The assessment of ecological effects has been undertaken for the following areas from south to north. Table 5 presents the sensitivity of each area to ecological effects:
- area around Tolldish Lane and Great Haywood Marina: there are no demolition activities in this area. An ecological receptor (Tithebarn Covert Ancient Woodland) is located within 20m of earthworks, construction and trackout activities;
 - area around Ingestre: there are no demolition activities in this area. An ecological receptor (Ingestre Wood Ancient Woodland) is located within 50m of earthworks. Two further ecological receptors (Flushing Covert and Town Field Plantation ancient woodlands) are located within 20m of earthworks, construction and trackout activities; and
 - area around A34 Stone Road and Yarlet School: there are no demolition or trackout activities in this area. An ecological receptor (The Grove Ancient Woodland) is located within 20m of earthworks and construction activities.
- 4.3.2 Two additional ecological receptors, Pasturefields Salt Marsh Special Area of Conservation (SAC) and Lambert's Coppice Ancient Woodland, are located further than 50m away from any dust generating activities in the Colwich to Yarlet area, and therefore the effects on these ecological receptors are considered to be negligible.

Appendix AQ-001-002

Table 5: Sensitivity of area to ecological effects

Area	Demolition	Earthworks	Construction	Trackout
Area around Tolldish Lane and Great Haywood Marina	n/a	Low	Low	Low
Area around Ingestre	n/a	Low	Low	Low
Area around the A34 Stone Road and Yarlet School	n/a	Low	Low	n/a

Dust emission magnitude

4.3.3 Each dust-generating activity has been assigned a dust emission magnitude as shown in Table 6.

Table 6: Dust emission magnitude for ecological effects

Area	Demolition	Earthworks	Construction	Trackout
Area around Tolldish Lane and Great Haywood Marina	n/a	Large	Large	Large
Area around Ingestre	n/a	Large	Small	Large
Area around the A34 Stone Road and Yarlet School	n/a	Large	Medium	n/a

Risk of impacts

4.3.4 Taking into consideration the dust emissions magnitude of each activity and the sensitivity of each area, the risk of dust effects has been defined for each area as shown in Table 7.

Table 7: Risk of ecological effects

Area	Demolition	Earthworks	Construction	Trackout
Area around Tolldish Lane and Great Haywood Marina	n/a	Low risk	Low risk	Low risk
Area around Ingestre	n/a	Low risk	Negligible risk	Low risk
Area around the A34 Stone Road and Yarlet School	n/a	Low risk	Low risk	n/a

5 Air quality assessment - road traffic

5.1 Overall assessment approach

5.1.1 The air quality assessment for road related emissions has used the approach described in the SMR and its Addendum.

5.2 Model inputs and verification

Model parameters

5.2.1 The ADMS-Roads model was used to predict pollutant concentrations from changes in construction traffic emissions. A surface roughness of 0.5m was used for this area and a surface roughness of 0.2m was used for the meteorological site. A minimum Monin-Obukhov length of 10m and latitude of 53 degrees were used in the assessment. Meteorological data from the Shawbury site was used for the year 2016.

Model verification

5.2.2 Verification was undertaken for the year 2015 comparing monitored and modelled NO₂ concentrations (since monitoring data for 2016 was not available at the time of the assessment) on a route-wide basis. Traffic data provided was assumed to be representative of 2015. The results of this comparison are shown in Table 8.

5.2.3 Model verification was undertaken 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.

5.2.4 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 16 monitoring sites were included in the verification exercise, spread across the entire route.

Table 8: Comparison of monitored and modelled NO₂ concentrations

Site	Monitored concentration (µg/m ³)	Modelled concentration (µg/m ³)	Difference [(modelled - monitored)/monitored] * 100
A38-2/2(1) – Lichfield DC	32.6	38.2	17%
A38-2A/B – Lichfield DC	42.2	40.6	-4%
1 – Stafford BC	37.0	48.9	32%
21 – Stafford BC	27.0	29.8	10%
29 – Stafford BC	24.0	23.8	-1%
DT13 – Stoke-on-Trent CC	41.6	47.3	14%
DT14 – Stoke-on-Trent CC	40.6	47.1	16%
DT24 – Stoke-on-Trent CC	42.4	35.3	-17%
DT36 – Stoke-on-Trent CC	42.1	49.7	18%

Site	Monitored concentration ($\mu\text{g}/\text{m}^3$)	Modelled concentration ($\mu\text{g}/\text{m}^3$)	Difference [(modelled - monitored)/monitored] * 100
DT37 – Stoke-on-Trent CC	43.6	34.9	-20%
DT38 – Stoke-on-Trent CC	34.7	34.1	-2%
DT39 – Stoke-on-Trent CC	38.3	29.1	-24%
DT40 – Stoke-on-Trent CC	38.7	38.4	-1%
DT41 – Stoke-on-Trent CC	37.3	39.2	5%
DT43 – Stoke-on-Trent CC	38.4	41.2	7%
DT55 – Stoke-on-Trent CC	40.7	44.0	8%

5.2.5 As the majority of modelled NO₂ concentrations were within $\pm 25\%$ of the monitored concentrations and there was no consistent over or under prediction, no model adjustment was undertaken. Modelled concentrations of PM₁₀ and PM_{2.5} have not been adjusted.

5.3 Assessment of construction traffic emissions

5.3.1 Construction traffic data used in this assessment is detailed in the Background Information and Data (BID) (see BID-AQ-002-000: Traffic data used for the air quality assessment). 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, construction vehicle emissions and background concentrations have been taken for the first construction year in 2020.

Screening of traffic data

5.3.2 The screening process identified a total of seven roads in the Colwich to Yarlet area exceeding the Design Manual for Roads and Bridges (DMRB) thresholds for changes in annual average daily traffic (AADT) and/or changes in daily heavy goods vehicles (HGVs) flows. These roads include:

- M6 Motorway;
- A51 Lichfield Road / London Road / Rugeley Eastern Bypass / Main Road / Wolseley Bridge;
- A518 Weston Road / Weston Bank;
- A513 Beaconside / Sandon Road;
- A34 Stone Road;
- Mill Lane; and
- Tixall Road.

5.3.3 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

- 5.3.4 Sensitive receptors have been selected from an OS AddressBase Premium database. The receptors consist of residential properties, schools and care homes within 200m of the screened in roads and represent worst-case exposure locations (Table 9). The location of all receptors is shown Volume 5: Map AQ-01-102.
- 5.3.5 Two designated ecological receptors have been selected within the vicinity of the screened roads: the Doxey and Tillington Marshes SSSI, located adjacent to the M6, south of junction 14; and the Pasturefields Salt Marsh SAC and SSSI, located adjacent to the A51 Lichfield Road (Table 10).

Table 9: Modelled human receptors (construction phase)

Receptor	Description/Location	Ordnance Survey coordinates
2-C-H1	Proposed residential development for up to 20 dwellings - committed development 16/24235/OUT	400883,322143
2-C-H2	Proposed residential development for up to 77 dwellings - committed development 14/20886/OUT	400444,322622
2-C-H3	Proposed residential development for up to 45 dwellings, Little Tixall Lane - committed development 14/21135/OUT	400271,322819
2-C-H4	Roseacre Nursery Medical Centre - committed development Policy SA2 Roseacre Nursery	400062,323248
2-C-H5	Proposed Stafford Primary Academy School - committed development S/14/05	394695,323990
2-C-H6	Bricklyn Cottages, Sandon Road, Hopton	392977,325946
2-C-H7	Aston Bank Farm, Aston	389761,323647
2-C-H8	Carisbrooke Drive, Stafford	390529,321394
2-C-H9	Road End Farm, Whitgreave	389036,328659
2-C-H10	Oxbarn Road, Stafford	391734,320568
2-C-H11	Bluebells, Wolseley Bridge, Stafford	401968,320621
2-C-H12	Talbot House, Blackheath Lane, Tixall	395080,324033
2-C-H13	Rose Cottage, Tixall	397753,322796
2-C-H14	Wolseley Close, Colwich	401380,321051
2-C-H15	Farley Cottage, Farley Corner, Great Haywood	400037,324075
2-C-H16	Lincoln Meadows, Stafford	390203,321615
2-C-H17	Burleyfields Farm, Burleyfields	389811,322928
2-C-H18	Burley, Seighford Lane, Stafford	389442,323903
2-C-H19	Redlands Farm, Stone Road, Yarlet	390870,327323
2-C-H20	Halfway House, Tixall Road, Stafford	395137,323403

Appendix AQ-001-002

Receptor	Description/Location	Ordnance Survey coordinates
2-C-H21	Burton Manor Cp School, Uplands Road, Stafford	391715,320738
2-C-H22	Mospit Farm, Barn Bank Lane, Stafford	392126,319875
2-C-H23	Furness Grove, Stafford	391018,321084
2-C-H24	Stafford Grammar School, Burton Manor Road, Stafford	391473,320624
2-C-H25	Brancote Lodge, Brancote, Stafford	396665,322822
2-C-H26	Devon Way, Stafford	391713,320597
2-C-H27	Narrowboat, Old Boat Inn Yard, Pasturefields, Great Haywood	399444,324806
2-C-H28	Creswell Grove, Stafford	390230,325530
2-C-H29	The Pippins, Stafford	392159,320018
2-C-H30	Overdale, Main Road, Colwich	401445,321145
2-C-H31	Ash Rise, Stafford	392235,319850
2-C-H32	Ashbrook, Ashflats Lane, Stafford	392404,319282
2-C-H33	High Meadows, Main Road, Great Haywood	399992,323053
2-C-H34	St. Johns RC Cp School, School Lane, Great Haywood	399877,322722
2-C-H35	Barn Bank Lane, Stafford	392196,319922
2-C-H36	The Toll House, Tolldish Lane, Great Haywood	400083,323354
2-C-H37	Newstead, Ashflats Lane, Stafford	392313,319628
2-C-H38	Higher Coley Cottage, Coley Lane, Little Haywood	400941,322218
2-C-H39	Haywood Farm, Main Road, Great Haywood	399878,322872
2-C-H40	The Old House, Wolseley Bridge, Stafford	401683,320835
2-C-H41	Farley Villa, Farley Corner, Great Haywood	400065,324188
2-C-H42	Elsdon Road, Stafford	391436,320820
2-C-H43	Fiddlers Cottage, Weston Bank, Stafford	396073,326229
2-C-H44	Beaconside, Stafford	393167,324883
2-C-H45	Little Tixall Lane, Great Haywood	400126,322784
2-C-H46	Eccleshall Road, Stafford	390353,325365
2-C-H47	Whitgreave Manor, Whitgreave Lane, Whitgreave	390574,327720
2-C-H48	Burton Manor Road, Stafford	391587,320692
2-C-H49	Oldfields Crescent, Great Haywood	400091,323094
2-C-H50	Hillcrest Home Farm, Creswell Grove, Creswell	390277,325956

Appendix AQ-001-002

Receptor	Description/Location	Ordnance Survey coordinates
2-C-H51	Lower Farm, Ashflats Lane, Mosspit	392285,319442
2-C-H52	Sheringham Covert, Stafford	394365,323757
2-C-H53	Stone Road, Stafford	391183,326030
2-C-H54	Stafford Lodge, Weston Road, Stafford	395319,324643
2-C-H55	The Birches, Stone Road, Yarlet	390770,327889
2-C-H56	Burton Bank Lane, Stafford	392046,320226
2-C-H57	Colwich Church of England Primary School, Main Road, Colwich	401173,321208
2-C-H58	Samemma, Thorneyfields Lane, Hyde Lea	390511,321125
2-C-H59	London Road, Shirleywich	398377,326029
2-C-H60	Weston Road High School, Blackheath Lane, Stafford	394948,324102
2-C-H61	The Spinney, Whitgreave Lane, Whitgreave	389374,328277
2-C-H62	Bishton Lane, Wolseley Bridge, Stafford	402071,320734
2-C-H63	Dobree Close, Colwich	401347,321118
2-C-H64	Southfields Close, Stafford	391876,320421
2-C-H65	The Lodge, Orchard Lane, Wolseley Bridge, Stafford	402601,320098
2-C-H66	Kingfisher Drive, Colwich	401304,321363
2-C-H67	Pool Cottage, Weston Road, Stafford	395636,325640
2-C-H68	The White Lodge, Mill Lane, Great Haywood	399290,323110
2-C-H69	Homestall Barn, Marston	392437,327657
2-C-H70	Grove Farm, Yarlet	391155,328913
2-C-H71	Hoo Mill Lane, Great Haywood	399262,323871
2-C-H72	Mount Farm, Hopton	394189,326176
2-C-H73	Woodhill Farm, Yarlet Lane, Marston	392149,327876
2-C-H74	Wayside, Marston	392327,327599
2-C-H75	Yarlet Hall Lodge, Yarlet	391213,329189
2-C-H76	The Moos, Lower Lane, Hopton	394477,325913
2-C-H77	Bank Cottages, Hopton Lane, Hopton	394145,326215
2-C-H78	Mount Edge, Hopton	393985,326111
2-C-H79	Park Farm, Weston Road, Stafford	395807,325044
2-C-H80	Plot adjacent Woodhouse Farm, Yarlet Lane, Marston	391531,328454

Appendix AQ-001-002

Receptor	Description/Location	Ordnance Survey coordinates
2-C-H81	Farm Cottage, Sandon Road, Hopton	392934,327081
2-C-H82	North of Stafford housing - committed development 1, Policy Stafford 2, North of Stafford Housing	392144,326238
2-C-H83	North of Stafford housing - committed development 2, Policy Stafford 2, North of Stafford Housing	393387,326553
2-C-H84	North of Stafford housing - committed development 3, Policy Stafford 2, North of Stafford Housing	393721,326344
2-C-H85	Moreton House Farmhouse, Bishton Lane, Wolseley Bridge	402393,322998
2-C-H86	Moreton Grange, Bishton Lane, Wolseley Bridge	402659,322730
2-C-H87	Rosemary Cottage, Moreton Farm, Bishton Lane, Wolseley Bridge	402804,322893

Table 10: Modelled ecological receptors (construction phase)

Receptor	Description	Distance from road (m)	Ordnance Survey coordinates
2-C-E1	Doxey and Tillington Marshes SSSI	30	390125,325092
2-C-E2	Doxey and Tillington Marshes SSSI	50	390137,325084
2-C-E3	Doxey and Tillington Marshes SSSI	100	390175,325055
2-C-E4	Doxey and Tillington Marshes SSSI	150	390213,325021
2-C-E5	Doxey and Tillington Marshes SSSI	200	390253,324993
2-C-E6	Pasturefields Salt Marsh SAC	70.5	399420,324799
2-C-E7	Pasturefields Salt Marsh SAC	100	399395,324779
2-C-E8	Pasturefields Salt Marsh SAC	150	399354,324754
2-C-E9	Pasturefields Salt Marsh SAC	200	399311,324728
2-C-E10	Pasturefields Salt Marsh SSSI	70.5	399420,324799
2-C-E11	Pasturefields Salt Marsh SSSI	100	399395,324779
2-C-E12	Pasturefields Salt Marsh SSSI	150	399354,324754
2-C-E13	Pasturefields Salt Marsh SSSI	200	399311,324728

Background concentrations

5.3.6 The background concentrations used in the assessment are shown in Table 11 and Table 12, taken from the Defra maps.

Appendix AQ-001-002

Table 11: Background 2020 concentrations at assessed receptors

Receptor	Description/Location	Background concentrations in 2020 ($\mu\text{g}/\text{m}^3$)			
		NOx	NO ₂	PM ₁₀	PM _{2.5}
2-C-H1	Proposed residential development for up to 20 dwellings - committed development 16/24235/OUT	14.3	10.5	13.2	9.5
2-C-H2	Proposed residential development for up to 77 dwellings - committed development 14/20886/OUT	14.3	10.5	13.2	9.5
2-C-H3	Proposed residential development for up to 45 dwellings, Little Tixall Lane - committed development 14/21135/OUT	14.3	10.5	13.2	9.5
2-C-H4	Roseacre Nursery Medical Centre - committed development Policy SA2 Roseacre Nursery	13.7	10.1	13.0	9.3
2-C-H5	Proposed Stafford Primary Academy School - committed development S/14/05	16.3	11.9	14.1	9.9
2-C-H6	Bricklyn Cottages, Sandon Road, Hopton	18.2	13.0	13.9	10.1
2-C-H7	Aston Bank Farm, Aston	18.9	13.7	15.4	10.5
2-C-H8	Carisbrooke Drive, Stafford	21.6	15.5	16.3	11.1
2-C-H9	Road End Farm, Whitgreave	18.9	13.7	15.4	10.4
2-C-H10	Oxbarn Road, Stafford	22.4	15.9	16.3	11.2
2-C-H11	Bluebells, Wolseley Bridge, Stafford	15.1	11.0	12.5	9.1
2-C-H12	Talbot House, Blackheath Lane, Tixall	13.8	10.1	13.2	9.4
2-C-H13	Rose Cottage, Tixall	13.9	10.2	12.7	9.1
2-C-H14	Wolseley Close, Colwich	14.9	10.9	12.8	9.3
2-C-H15	Farley Cottage, Farley Corner, Great Haywood	13.2	9.7	12.4	8.9
2-C-H16	Lincoln Meadows, Stafford	21.6	15.5	16.3	11.1
2-C-H17	Burleyfields Farm, Burleyfields	18.8	13.6	16.7	11.4
2-C-H18	Burley, Seighford Lane, Stafford	18.9	13.7	15.4	10.5
2-C-H19	Redlands Farm, Stone Road, Yarlet	14.9	10.9	14.2	9.8
2-C-H20	Halfway House, Tixall Road, Stafford	14.1	10.4	13.2	9.4
2-C-H21	Burton Manor Cp School, Uplands Road, Stafford	22.4	15.9	16.3	11.2
2-C-H22	Mossnit Farm, Barn Bank Lane, Stafford	23.4	16.5	16.6	11.2
2-C-H23	Furness Grove, Stafford	16.1	11.7	13.9	9.8
2-C-H24	Stafford Grammar School, Burton Manor Road, Stafford	22.4	15.9	16.3	11.2
2-C-H25	Brancote Lodge, Brancote, Stafford	14.9	10.9	13.2	9.3

Appendix AQ-001-002

Receptor	Description/Location	Background concentrations in 2020 ($\mu\text{g}/\text{m}^3$)			
		NOx	NO2	PM10	PM2.5
2-C-H26	Devon Way, Stafford	22.4	15.9	16.3	11.2
2-C-H27	Narrowboat, Old Boat Inn Yard, Pasturefields, Great Haywood	15.4	11.2	13.0	9.3
2-C-H28	Creswell Grove, Stafford	22.3	15.9	15.6	10.7
2-C-H29	The Pippins, Stafford	19.0	13.6	15.1	10.5
2-C-H30	Overdale, Main Road, Colwich	14.9	10.9	12.8	9.3
2-C-H31	Ash Rise, Stafford	23.4	16.5	16.6	11.2
2-C-H32	Ashbrook, Ashflats Lane, Stafford	23.4	16.5	16.6	11.2
2-C-H33	High Meadows, Main Road, Great Haywood	15.4	11.2	12.6	9.2
2-C-H34	St. Johns RC Cp School, School Lane, Great Haywood	16.2	11.7	12.6	9.3
2-C-H35	Barn Bank Lane, Stafford	23.4	16.5	16.6	11.2
2-C-H36	The Toll House, Tolldish Lane, Great Haywood	13.7	10.1	13.0	9.3
2-C-H37	Newstead, Ashflats Lane, Stafford	23.4	16.5	16.6	11.2
2-C-H38	Higher Coley Cottage, Coley Lane, Little Haywood	14.3	10.5	13.2	9.5
2-C-H39	Haywood Farm, Main Road, Great Haywood	16.2	11.7	12.6	9.3
2-C-H40	The Old House, Wolseley Bridge, Stafford	15.1	11.0	12.5	9.1
2-C-H41	Farley Villa, Farley Corner, Great Haywood	13.2	9.7	12.4	8.9
2-C-H42	Elsdon Road, Stafford	22.4	15.9	16.3	11.2
2-C-H43	Fiddlers Cottage, Weston Bank, Stafford	13.2	9.8	13.4	9.4
2-C-H44	Beaconside, Stafford	16.3	11.8	14.1	10.0
2-C-H45	Little Tixall Lane, Great Haywood	14.3	10.5	13.2	9.5
2-C-H46	Eccleshall Road, Stafford	22.3	15.9	15.6	10.7
2-C-H47	Whitgreave Manor, Whitgreave Lane, Whitgreave	14.9	10.9	14.2	9.8
2-C-H48	Burton Manor Road, Stafford	22.4	15.9	16.3	11.2
2-C-H49	Oldfields Crescent, Great Haywood	13.7	10.1	13.0	9.3
2-C-H50	Hillcrest Home Farm, Creswell Grove, Creswell	22.3	15.9	15.6	10.7
2-C-H51	Lower Farm, Ashflats Lane, Mossnit	23.4	16.5	16.6	11.2
2-C-H52	Sheringham Covert, Stafford	16.3	11.9	14.1	9.9

Appendix AQ-001-002

Receptor	Description/Location	Background concentrations in 2020 ($\mu\text{g}/\text{m}^3$)			
		NOx	NO ₂	PM ₁₀	PM _{2.5}
2-C-H53	Stone Road, Stafford	15.7	11.5	14.3	9.9
2-C-H54	Stafford Lodge, Weston Road, Stafford	13.8	10.1	13.2	9.4
2-C-H55	The Birches, Stone Road, Yarlet	14.9	10.9	14.2	9.8
2-C-H56	Burton Bank Lane, Stafford	19.0	13.6	15.1	10.5
2-C-H57	Colwich Church of England Primary School, Main Road, Colwich	14.9	10.9	12.8	9.3
2-C-H58	Samemma, Thorneyfields Lane, Hyde Lea	21.6	15.5	16.3	11.1
2-C-H59	London Road, Shirleywich	14.6	10.7	13.4	9.5
2-C-H60	Weston Road High School, Blackheath Lane, Stafford	15.1	11.0	13.8	9.7
2-C-H61	The Spinney, Whitgreave Lane, Whitgreave	18.9	13.7	15.4	10.4
2-C-H62	Bishton Lane, Wolseley Bridge, Stafford	15.6	11.3	12.9	9.3
2-C-H63	Dobree Close, Colwich	14.9	10.9	12.8	9.3
2-C-H64	Southfields Close, Stafford	22.4	15.9	16.3	11.2
2-C-H65	The Lodge, Orchard Lane, Wolseley Bridge, Stafford	15.6	11.3	12.9	9.3
2-C-H66	Kingfisher Drive, Colwich	14.9	10.9	12.8	9.3
2-C-H67	Pool Cottage, Weston Road, Stafford	13.4	9.9	12.9	9.2
2-C-H68	The White Lodge, Mill Lane, Great Haywood	15.4	11.2	12.6	9.2
2-C-H69	Homestall Barn, Marston	12.8	9.5	12.8	9.0
2-C-H70	Grove Farm, Yarlet	13.3	9.9	12.7	9.0
2-C-H71	Hoo Mill Lane, Great Haywood	15.4	11.2	12.6	9.2
2-C-H72	Mount Farm, Hopton	12.8	9.5	13.0	9.3
2-C-H73	Woodhill Farm, Yarlet Lane, Marston	12.8	9.5	12.8	9.0
2-C-H74	Wayside, Marston	12.8	9.5	12.8	9.0
2-C-H75	Yarlet Hall Lodge, Yarlet	13.6	10.1	12.8	9.0
2-C-H76	The Moos, Lower Lane, Hopton	13.3	9.8	13.5	9.5
2-C-H77	Bank Cottages, Hopton Lane, Hopton	12.8	9.5	13.0	9.3
2-C-H78	Mount Edge, Hopton	13.4	9.9	12.8	9.1
2-C-H79	Park Farm, Weston Road, Stafford	13.4	9.9	12.9	9.2

Appendix AQ-001-002

Receptor	Description/Location	Background concentrations in 2020 ($\mu\text{g}/\text{m}^3$)			
		NOx	NO ₂	PM ₁₀	PM _{2.5}
2-C-H80	Plot adjacent Woodhouse Farm, Yarlet Lane, Marston	13.3	9.9	12.7	9.0
2-C-H81	Farm Cottage, Sandon Road, Hopton	12.8	9.5	12.8	9.0
2-C-H82	North of Stafford housing - committed development 1, Policy Stafford 2, North of Stafford Housing	14.2	10.4	13.4	9.5
2-C-H83	North of Stafford housing - committed development 2, Policy Stafford 2, North of Stafford Housing	13.4	9.9	12.8	9.1
2-C-H84	North of Stafford housing - committed development 3, Policy Stafford 2, North of Stafford Housing	13.4	9.9	12.8	9.1
2-C-H85	Moreton House Farmhouse, Bishton Lane, Wolseley Bridge	12.4	9.2	13.1	9.3
2-C-H86	Moreton Grange, Bishton Lane, Wolseley Bridge	12.4	9.2	13.1	9.3
2-C-H87	Rosemary Cottage, Moreton Farm, Bishton Lane, Wolseley Bridge	12.4	9.2	13.1	9.3

Table 12: Background data for ecological sites

Receptor	Distance to road (m)	Description	Sensitive habitat	2020 NOx background concentration ($\mu\text{g}/\text{m}^3$)	2020 NO ₂ background concentration ($\mu\text{g}/\text{m}^3$)	APIS data ¹⁰ (average total nitrogen (N) deposition)
2-C-E1	30	Doxey and Tillington Marshes SSSI	Fen, marsh and swamp	22.3	15.9	22.0
2-C-E2	50	Doxey and Tillington Marshes SSSI	Fen, marsh and swamp	22.3	15.9	22.0
2-C-E3	100	Doxey and Tillington Marshes SSSI	Fen, marsh and swamp	22.3	15.9	22.0
2-C-E4	150	Doxey and Tillington Marshes SSSI	Fen, marsh and swamp	22.3	15.9	22.0
2-C-E5	200	Doxey and Tillington Marshes SSSI	Fen, marsh and swamp	16.3	11.9	22.0
2-C-E6	70.5	Pasturefields Salt Marsh SAC	Inland salt meadows	15.5	11.2	20.3
2-C-E7	100	Pasturefields Salt Marsh SAC	Inland salt meadows	15.5	11.2	20.3
2-C-E8	150	Pasturefields Salt Marsh SAC	Inland salt meadows	15.5	11.2	20.3
2-C-E9	200	Pasturefields Salt Marsh SAC	Inland salt meadows	15.5	11.2	20.3

¹⁰ Air Pollution Information System; <http://www.apis.ac.uk/>.

Appendix AQ-001-002

Receptor	Distance to road (m)	Description	Sensitive habitat	2020 NOx background concentration ($\mu\text{g}/\text{m}^3$)	2020 NO2 background concentration ($\mu\text{g}/\text{m}^3$)	APIS data ¹⁰ (average total nitrogen (N) deposition)
2-C-E10	70.5	Pasturefields Salt Marsh SSSI	Littoral sediment	15.5	11.2	20.3
2-C-E11	100	Pasturefields Salt Marsh SSSI	Littoral sediment	15.5	11.2	20.3
2-C-E12	150	Pasturefields Salt Marsh SSSI	Littoral sediment	15.5	11.2	20.3
2-C-E13	200	Pasturefields Salt Marsh SSSI	Littoral sediment	15.5	11.2	20.3

Assessment results

5.3.7 Table 13, Table 14 and Table 15 provide the summary of the modelled pollutant concentrations for the assessed receptors. The magnitude of change and impact descriptors are also derived following the Institute of Air Quality Management (IAQM) / Environmental Protection UK (EPUK) methodology¹¹. Table 16 and Table 17 provide a summary of the ecological receptor assessment.

Table 13: Predicted annual mean NO₂ concentrations and impacts (construction phase)

Receptor	Description/Location	NO ₂ concentrations (µg/m ³)		Change in NO ₂ concentrations (µg/m ³)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
2-C-H1	Proposed residential development for up to 20 dwellings - committed development 16/24235/OUT	12.5	12.5	0.0	Negligible	Not significant
2-C-H2	Proposed residential development for up to 77 dwellings - committed development 14/20886/OUT	12.5	12.6	0.1	Negligible	Not significant
2-C-H3	Proposed residential development for up to 45 dwellings, Little Tixall Lane - committed development 14/21135/OUT	12.9	13.0	0.1	Negligible	Not significant
2-C-H4	Roseacre Nursery Medical Centre - committed development Policy SA2 Roseacre Nursery	13.4	13.6	0.2	Negligible	Not significant
2-C-H5	Proposed Stafford Primary Academy School - committed development S/14/05	16.5	16.8	0.3	Negligible	Not significant
2-C-H6	Bricklyn Cottages, Sandon Road, Hopton	15.5	15.6	0.1	Negligible	Not significant
2-C-H7	Aston Bank Farm, Aston	28.1	28.3	0.2	Negligible	Not significant
2-C-H8	Carisbrooke Drive, Stafford	25.8	26.0	0.2	Negligible	Not significant
2-C-H9	Road End Farm, Whitgreave	19.9	20.0	0.1	Negligible	Not significant

¹¹ IAQM (2017), *Land-use planning & development control: Planning for air quality*

Receptor	Description/Location	NO ₂ concentrations (µg/m ³)		Change in NO ₂ concentrations (µg/m ³)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
2-C-H10	Oxbarn Road, Stafford	45.6	46.0	0.4	Moderate adverse	Significant
2-C-H11	Bluebells, Wolseley Bridge, Stafford	17.3	17.6	0.3	Negligible	Not significant
2-C-H12	Talbot House, Blackheath Lane, Tixall	13.1	13.2	0.1	Negligible	Not significant
2-C-H13	Rose Cottage, Tixall	11.3	11.3	0.0	Negligible	Not significant
2-C-H14	Wolseley Close, Colwich	13.1	13.1	0.0	Negligible	Not significant
2-C-H15	Farley Cottage, Farley Corner, Great Haywood	13.5	13.8	0.3	Negligible	Not significant
2-C-H16	Lincoln Meadows, Stafford	34.9	35.2	0.3	Negligible	Not significant
2-C-H17	Burleyfields Farm, Burleyfields	27.0	27.2	0.2	Negligible	Not significant
2-C-H18	Burley, Seighford Lane, Stafford	19.8	19.9	0.1	Negligible	Not significant
2-C-H19	Redlands Farm, Stone Road, Yarlet	17.3	17.4	0.1	Negligible	Not significant
2-C-H20	Halfway House, Tixall Road, Stafford	14.5	14.7	0.2	Negligible	Not significant
2-C-H21	Burton Manor Cp School, Uplands Road, Stafford	24.5	24.6	0.1	Negligible	Not significant
2-C-H22	Mospit Farm, Barn Bank Lane, Stafford	35.7	36.0	0.3	Negligible	Not significant
2-C-H23	Furness Grove, Stafford	23.8	24.0	0.2	Negligible	Not significant
2-C-H24	Stafford Grammar School, Burton Manor Road, Stafford	27.2	27.3	0.1	Negligible	Not significant
2-C-H25	Brancote Lodge, Brancote, Stafford	12.5	12.5	0.0	Negligible	Not significant
2-C-H26	Devon Way, Stafford	41.1	41.4	0.3	Moderate adverse	Significant
2-C-H27	Narrowboat, Old Boat Inn Yard, Pasturefields, Great Haywood	12.6	12.7	0.1	Negligible	Not significant

Receptor	Description/Location	NO ₂ concentrations (µg/m ³)		Change in NO ₂ concentrations (µg/m ³)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
2-C-H28	Creswell Grove, Stafford	31.7	31.9	0.2	Negligible	Not significant
2-C-H29	The Pippins, Stafford	36.0	36.2	0.2	Negligible	Not significant
2-C-H30	Overdale, Main Road, Colwich	12.9	13.0	0.1	Negligible	Not significant
2-C-H31	Ash Rise, Stafford	37.1	37.4	0.3	Negligible	Not significant
2-C-H32	Ashbrook, Ashflats Lane, Stafford	46.4	46.8	0.4	Moderate adverse	Significant
2-C-H33	High Meadows, Main Road, Great Haywood	12.6	12.7	0.1	Negligible	Not significant
2-C-H34	St. Johns RC Cp School, School Lane, Great Haywood	12.5	12.5	0.0	Negligible	Not significant
2-C-H35	Barn Bank Lane, Stafford	41.5	41.8	0.3	Moderate adverse	Significant
2-C-H36	The Toll House, Tolldish Lane, Great Haywood	15.3	15.6	0.3	Negligible	Not significant
2-C-H37	Newstead, Ashflats Lane, Stafford	36.3	36.5	0.2	Negligible	Not significant
2-C-H38	Higher Coley Cottage, Coley Lane, Little Haywood	12.5	12.6	0.1	Negligible	Not significant
2-C-H39	Haywood Farm, Main Road, Great Haywood	15.1	15.2	0.1	Negligible	Not significant
2-C-H40	The Old House, Wolseley Bridge, Stafford	14.2	14.4	0.2	Negligible	Not significant
2-C-H41	Farley Villa, Farley Corner, Great Haywood	14.2	14.5	0.3	Negligible	Not significant
2-C-H42	Elsdon Road, Stafford	35.0	35.3	0.3	Negligible	Not significant
2-C-H43	Fiddlers Cottage, Weston Bank, Stafford	13.8	14.1	0.3	Negligible	Not significant
2-C-H44	Beaconside, Stafford	14.9	15.1	0.2	Negligible	Not significant
2-C-H45	Little Tixall Lane, Great Haywood	11.9	12.0	0.1	Negligible	Not significant

Receptor	Description/Location	NO ₂ concentrations (µg/m ³)		Change in NO ₂ concentrations (µg/m ³)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
2-C-H46	Eccleshall Road, Stafford	32.0	32.2	0.2	Negligible	Not significant
2-C-H47	Whitgreave Manor, Whitgreave Lane, Whitgreave	13.6	13.7	0.1	Negligible	Not significant
2-C-H48	Burton Manor Road, Stafford	44.8	45.2	0.4	Moderate adverse	Significant
2-C-H49	Oldfields Crescent, Great Haywood	12.0	12.1	0.1	Negligible	Not significant
2-C-H50	Hillcrest Home Farm, Creswell Grove, Creswell	28.5	28.7	0.2	Negligible	Not significant
2-C-H51	Lower Farm, Ashflats Lane, Mossdit	40.5	40.9	0.4	Slight adverse	Not significant
2-C-H52	Sheringham Covert, Stafford	19.2	19.5	0.3	Negligible	Not significant
2-C-H53	Stone Road, Stafford	18.9	19.2	0.3	Negligible	Not significant
2-C-H54	Stafford Lodge, Weston Road, Stafford	12.5	12.6	0.1	Negligible	Not significant
2-C-H55	The Birches, Stone Road, Yarlet	18.1	18.2	0.1	Negligible	Not significant
2-C-H56	Burton Bank Lane, Stafford	34.4	34.7	0.3	Negligible	Not significant
2-C-H57	Colwich Church of England Primary School, Main Road, Colwich	11.9	11.9	0.0	Negligible	Not significant
2-C-H58	Samemma, Thorneyfields Lane, Hyde Lea	25.8	26.0	0.2	Negligible	Not significant
2-C-H59	London Road, Shirleywich	13.7	13.9	0.2	Negligible	Not significant
2-C-H60	Weston Road High School, Blackheath Lane, Stafford	15.5	15.8	0.3	Negligible	Not significant
2-C-H61	The Spinney, Whitgreave Lane, Whitgreave	28.7	28.9	0.2	Negligible	Not significant
2-C-H62	Bishton Lane, Wolseley Bridge, Stafford	12.5	12.6	0.1	Negligible	Not significant
2-C-H63	Dobree Close, Colwich	13.7	13.8	0.1	Negligible	Not significant

Receptor	Description/Location	NO ₂ concentrations (µg/m ³)		Change in NO ₂ concentrations (µg/m ³)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
2-C-H64	Southfields Close, Stafford	46.3	46.7	0.4	Moderate adverse	Significant
2-C-H65	The Lodge, Orchard Lane, Wolseley Bridge, Stafford	16.2	16.4	0.2	Negligible	Not significant
2-C-H66	Kingfisher Drive, Colwich	13.6	13.7	0.1	Negligible	Not significant
2-C-H67	Pool Cottage, Weston Road, Stafford	12.9	13.0	0.1	Negligible	Not significant
2-C-H68	The White Lodge, Mill Lane, Great Haywood	12.5	12.6	0.1	Negligible	Not significant
2-C-H69	Homestall Barn, Marston	10.7	10.8	0.1	Negligible	Not significant
2-C-H70	Grove Farm, Yarlet	15.4	15.5	0.1	Negligible	Not significant
2-C-H71	Hoo Mill Lane, Great Haywood	11.8	11.8	0.0	Negligible	Not significant
2-C-H72	Mount Farm, Hopton	10.5	10.5	0.0	Negligible	Not significant
2-C-H73	Woodhill Farm, Yarlet Lane, Marston	10.7	10.8	0.1	Negligible	Not significant
2-C-H74	Wayside, Marston	10.8	10.8	0.0	Negligible	Not significant
2-C-H75	Yarlet Hall Lodge, Yarlet	14.7	14.8	0.1	Negligible	Not significant
2-C-H76	The Moos, Lower Lane, Hopton	10.7	10.7	0.0	Negligible	Not significant
2-C-H77	Bank Cottages, Hopton Lane, Hopton	10.5	10.6	0.1	Negligible	Not significant
2-C-H78	Mount Edge, Hopton	11.0	11.1	0.1	Negligible	Not significant
2-C-H79	Park Farm, Weston Road, Stafford	10.8	10.8	0.0	Negligible	Not significant
2-C-H80	Plot adjacent Woodhouse Farm, Yarlet Lane, Marston	11.4	11.4	0.0	Negligible	Not significant
2-C-H81	Farm Cottage, Sandon Road, Hopton	10.6	10.7	0.1	Negligible	Not significant

Receptor	Description/Location	NO ₂ concentrations (µg/m ³)		Change in NO ₂ concentrations (µg/m ³)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
2-C-H82	North of Stafford housing - committed development 1, Policy Stafford 2, North of Stafford Housing	14.9	15.1	0.2	Negligible	Not significant
2-C-H83	North of Stafford housing - committed development 2, Policy Stafford 2, North of Stafford Housing	11.0	11.1	0.1	Negligible	Not significant
2-C-H84	North of Stafford housing - committed development 3, Policy Stafford 2, North of Stafford Housing	11.3	11.4	0.1	Negligible	Not significant
2-C-H85	Moreton House Farmhouse, Bishton Lane, Wolseley Bridge	9.2	9.3	0.1	Negligible	Not significant
2-C-H86	Moreton Grange, Bishton Lane, Wolseley Bridge	9.2	9.3	0.1	Negligible	Not significant
2-C-H87	Rosemary Cottage, Moreton Farm, Bishton Lane, Wolseley Bridge	9.2	9.3	0.1	Negligible	Not significant

Table 14: Predicted annual mean PM₁₀ concentrations and impacts (construction phase)

Receptor	Description/Location	PM ₁₀ concentrations (µg/m ³)		Change in PM ₁₀ concentrations (µg/m ³)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
2-C-H1	Proposed residential development for up to 20 dwellings - committed development 16/24235/OUT	13.6	13.6	0.0	Negligible	Not significant
2-C-H2	Proposed residential development for up to 77 dwellings - committed development 14/20886/OUT	13.6	13.6	0.0	Negligible	Not significant
2-C-H3	Proposed residential development for up to 45 dwellings, Little Tixall Lane - committed development 14/21135/OUT	13.6	13.7	0.1	Negligible	Not significant
2-C-H4	Roseacre Nursery Medical Centre - committed development Policy SA2 Roseacre Nursery	13.7	13.8	0.1	Negligible	Not significant

Receptor	Description/Location	PM ₁₀ concentrations (µg/m ³)		Change in PM ₁₀ concentrations (µg/m ³)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
2-C-H5	Proposed Stafford Primary Academy School - committed development S/14/05	15.0	15.1	0.1	Negligible	Not significant
2-C-H6	Bricklyn Cottages, Sandon Road, Hopton	14.4	14.4	0.0	Negligible	Not significant
2-C-H7	Aston Bank Farm, Aston	17.6	17.7	0.1	Negligible	Not significant
2-C-H8	Carisbrooke Drive, Stafford	17.9	17.9	0.0	Negligible	Not significant
2-C-H9	Road End Farm, Whitgreave	16.3	16.3	0.0	Negligible	Not significant
2-C-H10	Oxbarn Road, Stafford	21.2	21.3	0.1	Negligible	Not significant
2-C-H11	Bluebells, Wolseley Bridge, Stafford	13.9	14.0	0.1	Negligible	Not significant
2-C-H12	Talbot House, Blackheath Lane, Tixall	13.8	13.8	0.0	Negligible	Not significant
2-C-H13	Rose Cottage, Tixall	12.9	12.9	0.0	Negligible	Not significant
2-C-H14	Wolseley Close, Colwich	13.2	13.2	0.0	Negligible	Not significant
2-C-H15	Farley Cottage, Farley Corner, Great Haywood	13.2	13.2	0.0	Negligible	Not significant
2-C-H16	Lincoln Meadows, Stafford	19.4	19.4	0.0	Negligible	Not significant
2-C-H17	Burleyfields Farm, Burleyfields	18.7	18.7	0.0	Negligible	Not significant
2-C-H18	Burley, Seighford Lane, Stafford	16.4	16.4	0.0	Negligible	Not significant
2-C-H19	Redlands Farm, Stone Road, Yarlet	15.4	15.5	0.1	Negligible	Not significant
2-C-H20	Halfway House, Tixall Road, Stafford	14.0	14.0	0.0	Negligible	Not significant
2-C-H21	Burton Manor Cp School, Uplands Road, Stafford	17.6	17.6	0.0	Negligible	Not significant
2-C-H22	Mossnit Farm, Barn Bank Lane, Stafford	19.6	19.7	0.1	Negligible	Not significant

Receptor	Description/Location	PM ₁₀ concentrations (µg/m ³)		Change in PM ₁₀ concentrations (µg/m ³)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
2-C-H23	Furness Grove, Stafford	15.7	15.7	0.0	Negligible	Not significant
2-C-H24	Stafford Grammar School, Burton Manor Road, Stafford	18.0	18.0	0.0	Negligible	Not significant
2-C-H25	Brancote Lodge, Brancote, Stafford	13.5	13.5	0.0	Negligible	Not significant
2-C-H26	Devon Way, Stafford	20.3	20.4	0.1	Negligible	Not significant
2-C-H27	Narrowboat, Old Boat Inn Yard, Pasturefields, Great Haywood	13.3	13.3	0.0	Negligible	Not significant
2-C-H28	Creswell Grove, Stafford	18.2	18.3	0.1	Negligible	Not significant
2-C-H29	The Pippins, Stafford	18.6	18.7	0.1	Negligible	Not significant
2-C-H30	Overdale, Main Road, Colwich	13.2	13.2	0.0	Negligible	Not significant
2-C-H31	Ash Rise, Stafford	19.8	19.9	0.1	Negligible	Not significant
2-C-H32	Ashbrook, Ashflats Lane, Stafford	21.5	21.6	0.1	Negligible	Not significant
2-C-H33	High Meadows, Main Road, Great Haywood	12.9	12.9	0.0	Negligible	Not significant
2-C-H34	St. Johns RC Cp School, School Lane, Great Haywood	12.8	12.8	0.0	Negligible	Not significant
2-C-H35	Barn Bank Lane, Stafford	20.6	20.7	0.1	Negligible	Not significant
2-C-H36	The Toll House, Tolldish Lane, Great Haywood	13.9	14.0	0.1	Negligible	Not significant
2-C-H37	Newstead, Ashflats Lane, Stafford	19.7	19.8	0.1	Negligible	Not significant
2-C-H38	Higher Coley Cottage, Coley Lane, Little Haywood	13.6	13.6	0.0	Negligible	Not significant
2-C-H39	Haywood Farm, Main Road, Great Haywood	13.2	13.2	0.0	Negligible	Not significant
2-C-H40	The Old House, Wolseley Bridge, Stafford	13.2	13.3	0.1	Negligible	Not significant

Receptor	Description/Location	PM ₁₀ concentrations (µg/m ³)		Change in PM ₁₀ concentrations (µg/m ³)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
2-C-H41	Farley Villa, Farley Corner, Great Haywood	13.2	13.3	0.1	Negligible	Not significant
2-C-H42	Elsdon Road, Stafford	19.3	19.3	0.0	Negligible	Not significant
2-C-H43	Fiddlers Cottage, Weston Bank, Stafford	14.2	14.3	0.1	Negligible	Not significant
2-C-H44	Beaconside, Stafford	14.8	14.9	0.1	Negligible	Not significant
2-C-H45	Little Tixall Lane, Great Haywood	13.4	13.4	0.0	Negligible	Not significant
2-C-H46	Eccleshall Road, Stafford	18.3	18.4	0.1	Negligible	Not significant
2-C-H47	Whitgreave Manor, Whitgreave Lane, Whitgreave	14.7	14.7	0.0	Negligible	Not significant
2-C-H48	Burton Manor Road, Stafford	21.0	21.1	0.1	Negligible	Not significant
2-C-H49	Oldfields Crescent, Great Haywood	13.4	13.5	0.1	Negligible	Not significant
2-C-H50	Hillcrest Home Farm, Creswell Grove, Creswell	17.6	17.6	0.0	Negligible	Not significant
2-C-H51	Lower Farm, Ashflats Lane, Mossdit	20.4	20.5	0.1	Negligible	Not significant
2-C-H52	Sheringham Covert, Stafford	15.6	15.7	0.1	Negligible	Not significant
2-C-H53	Stone Road, Stafford	15.8	15.8	0.0	Negligible	Not significant
2-C-H54	Stafford Lodge, Weston Road, Stafford	13.7	13.8	0.1	Negligible	Not significant
2-C-H55	The Birches, Stone Road, Yarlet	15.6	15.6	0.0	Negligible	Not significant
2-C-H56	Burton Bank Lane, Stafford	18.3	18.4	0.1	Negligible	Not significant
2-C-H57	Colwich Church of England Primary School, Main Road, Colwich	13.0	13.0	0.0	Negligible	Not significant
2-C-H58	Samemma, Thorneyfields Lane, Hyde Lea	17.9	17.9	0.0	Negligible	Not significant

Receptor	Description/Location	PM ₁₀ concentrations (µg/m ³)		Change in PM ₁₀ concentrations (µg/m ³)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
2-C-H59	London Road, Shirleywich	14.1	14.1	0.0	Negligible	Not significant
2-C-H60	Weston Road High School, Blackheath Lane, Stafford	14.7	14.8	0.1	Negligible	Not significant
2-C-H61	The Spinney, Whitgreave Lane, Whitgreave	17.7	17.8	0.1	Negligible	Not significant
2-C-H62	Bishton Lane, Wolseley Bridge, Stafford	13.1	13.1	0.0	Negligible	Not significant
2-C-H63	Dobree Close, Colwich	13.3	13.4	0.1	Negligible	Not significant
2-C-H64	Southfields Close, Stafford	21.3	21.4	0.1	Negligible	Not significant
2-C-H65	The Lodge, Orchard Lane, Wolseley Bridge, Stafford	13.9	14.0	0.1	Negligible	Not significant
2-C-H66	Kingfisher Drive, Colwich	13.4	13.4	0.0	Negligible	Not significant
2-C-H67	Pool Cottage, Weston Road, Stafford	13.5	13.6	0.1	Negligible	Not significant
2-C-H68	The White Lodge, Mill Lane, Great Haywood	12.9	12.9	0.0	Negligible	Not significant
2-C-H69	Homestall Barn, Marston	13.0	13.0	0.0	Negligible	Not significant
2-C-H70	Grove Farm, Yarlet	13.8	13.8	0.0	Negligible	Not significant
2-C-H71	Hoo Mill Lane, Great Haywood	12.7	12.8	0.1	Negligible	Not significant
2-C-H72	Mount Farm, Hopton	13.2	13.2	0.0	Negligible	Not significant
2-C-H73	Woodhill Farm, Yarlet Lane, Marston	13.0	13.0	0.0	Negligible	Not significant
2-C-H74	Wayside, Marston	13.0	13.0	0.0	Negligible	Not significant
2-C-H75	Yarlet Hall Lodge, Yarlet	13.7	13.7	0.0	Negligible	Not significant
2-C-H76	The Moos, Lower Lane, Hopton	13.6	13.6	0.0	Negligible	Not significant

Receptor	Description/Location	PM ₁₀ concentrations (µg/m ³)		Change in PM ₁₀ concentrations (µg/m ³)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
2-C-H77	Bank Cottages, Hopton Lane, Hopton	13.2	13.2	0.0	Negligible	Not significant
2-C-H78	Mount Edge, Hopton	13.0	13.0	0.0	Negligible	Not significant
2-C-H79	Park Farm, Weston Road, Stafford	13.1	13.1	0.0	Negligible	Not significant
2-C-H80	Plot adjacent Woodhouse Farm, Yarlet Lane, Marston	13.0	13.0	0.0	Negligible	Not significant
2-C-H81	Farm Cottage, Sandon Road, Hopton	13.0	13.0	0.0	Negligible	Not significant
2-C-H82	North of Stafford housing - committed development 1, Policy Stafford 2, North of Stafford Housing	14.6	14.6	0.0	Negligible	Not significant
2-C-H83	North of Stafford housing - committed development 2, Policy Stafford 2, North of Stafford Housing	13.0	13.0	0.0	Negligible	Not significant
2-C-H84	North of Stafford housing - committed development 3, Policy Stafford 2, North of Stafford Housing	13.0	13.0	0.0	Negligible	Not significant
2-C-H85	Moreton House Farmhouse, Bishton Lane, Wolseley Bridge	13.1	13.1	0.0	Negligible	Not significant
2-C-H86	Moreton Grange, Bishton Lane, Wolseley Bridge	13.1	13.1	0.0	Negligible	Not significant
2-C-H87	Rosemary Cottage, Moreton Farm, Bishton Lane, Wolseley Bridge	13.1	13.1	0.0	Negligible	Not significant

Table 15: Predicted annual mean PM_{2.5} concentrations and impacts (construction phase)

Receptor	Description/Location	PM _{2.5} concentrations (µg/m ³)		Change in PM _{2.5} concentrations (µg/m ³)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
2-C-H1	Proposed residential development for up to 20 dwellings - committed development 16/24235/OUT	9.7	9.7	0.0	Negligible	Not significant
2-C-H2	Proposed residential development for up to 77 dwellings - committed development 14/20886/OUT	9.7	9.7	0.0	Negligible	Not significant
2-C-H3	Proposed residential development for up to 45 dwellings, Little Tixall Lane - committed development 14/21135/OUT	9.8	9.8	0.0	Negligible	Not significant
2-C-H4	Roseacre Nursery Medical Centre - committed development Policy SA2 Roseacre Nursery	9.7	9.7	0.0	Negligible	Not significant
2-C-H5	Proposed Stafford Primary Academy School - committed development S/14/05	10.5	10.6	0.1	Negligible	Not significant
2-C-H6	Bricklyn Cottages, Sandon Road, Hopton	10.4	10.4	0.0	Negligible	Not significant
2-C-H7	Aston Bank Farm, Aston	11.9	11.9	0.0	Negligible	Not significant
2-C-H8	Carisbrooke Drive, Stafford	12.1	12.1	0.0	Negligible	Not significant
2-C-H9	Road End Farm, Whitgreave	11.0	11.0	0.0	Negligible	Not significant
2-C-H10	Oxbarn Road, Stafford	14.3	14.4	0.1	Negligible	Not significant
2-C-H11	Bluebells, Wolseley Bridge, Stafford	9.9	10.0	0.1	Negligible	Not significant
2-C-H12	Talbot House, Blackheath Lane, Tixall	9.7	9.7	0.0	Negligible	Not significant
2-C-H13	Rose Cottage, Tixall	9.2	9.2	0.0	Negligible	Not significant
2-C-H14	Wolseley Close, Colwich	9.6	9.6	0.0	Negligible	Not significant
2-C-H15	Farley Cottage, Farley Corner, Great Haywood	9.4	9.5	0.1	Negligible	Not significant

Receptor	Description/Location	PM2.5 concentrations ($\mu\text{g}/\text{m}^3$)		Change in PM2.5 concentrations ($\mu\text{g}/\text{m}^3$)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
2-C-H16	Lincoln Meadows, Stafford	13.0	13.1	0.1	Negligible	Not significant
2-C-H17	Burleyfields Farm, Burleyfields	12.6	12.6	0.0	Negligible	Not significant
2-C-H18	Burley, Seighford Lane, Stafford	11.1	11.1	0.0	Negligible	Not significant
2-C-H19	Redlands Farm, Stone Road, Yarlet	10.5	10.5	0.0	Negligible	Not significant
2-C-H20	Halfway House, Tixall Road, Stafford	9.8	9.8	0.0	Negligible	Not significant
2-C-H21	Burton Manor Cp School, Uplands Road, Stafford	12.0	12.0	0.0	Negligible	Not significant
2-C-H22	Mospit Farm, Barn Bank Lane, Stafford	13.1	13.1	0.0	Negligible	Not significant
2-C-H23	Furness Grove, Stafford	11.0	11.0	0.0	Negligible	Not significant
2-C-H24	Stafford Grammar School, Burton Manor Road, Stafford	12.3	12.3	0.0	Negligible	Not significant
2-C-H25	Brancote Lodge, Brancote, Stafford	9.5	9.5	0.0	Negligible	Not significant
2-C-H26	Devon Way, Stafford	13.8	13.8	0.0	Negligible	Not significant
2-C-H27	Narrowboat, Old Boat Inn Yard, Pasturefields, Great Haywood	9.5	9.5	0.0	Negligible	Not significant
2-C-H28	Creswell Grove, Stafford	12.3	12.4	0.1	Negligible	Not significant
2-C-H29	The Pippins, Stafford	12.7	12.8	0.1	Negligible	Not significant
2-C-H30	Overdale, Main Road, Colwich	9.5	9.6	0.1	Negligible	Not significant
2-C-H31	Ash Rise, Stafford	13.2	13.3	0.1	Negligible	Not significant
2-C-H32	Ashbrook, Ashflats Lane, Stafford	14.3	14.3	0.0	Negligible	Not significant
2-C-H33	High Meadows, Main Road, Great Haywood	9.3	9.3	0.0	Negligible	Not significant

Receptor	Description/Location	PM2.5 concentrations ($\mu\text{g}/\text{m}^3$)		Change in PM2.5 concentrations ($\mu\text{g}/\text{m}^3$)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
2-C-H34	St. Johns RC Cp School, School Lane, Great Haywood	9.4	9.4	0.0	Negligible	Not significant
2-C-H35	Barn Bank Lane, Stafford	13.7	13.8	0.1	Negligible	Not significant
2-C-H36	The Toll House, Tolldish Lane, Great Haywood	9.8	9.9	0.1	Negligible	Not significant
2-C-H37	Newstead, Ashflats Lane, Stafford	13.1	13.2	0.1	Negligible	Not significant
2-C-H38	Higher Coley Cottage, Coley Lane, Little Haywood	9.7	9.7	0.0	Negligible	Not significant
2-C-H39	Haywood Farm, Main Road, Great Haywood	9.7	9.7	0.0	Negligible	Not significant
2-C-H40	The Old House, Wolseley Bridge, Stafford	9.5	9.5	0.0	Negligible	Not significant
2-C-H41	Farley Villa, Farley Corner, Great Haywood	9.4	9.5	0.1	Negligible	Not significant
2-C-H42	Elsdon Road, Stafford	13.1	13.1	0.0	Negligible	Not significant
2-C-H43	Fiddlers Cottage, Weston Bank, Stafford	9.9	10.0	0.1	Negligible	Not significant
2-C-H44	Beaconside, Stafford	10.4	10.5	0.1	Negligible	Not significant
2-C-H45	Little Tixall Lane, Great Haywood	9.7	9.7	0.0	Negligible	Not significant
2-C-H46	Eccleshall Road, Stafford	12.4	12.4	0.0	Negligible	Not significant
2-C-H47	Whitgreave Manor, Whitgreave Lane, Whitgreave	10.0	10.0	0.0	Negligible	Not significant
2-C-H48	Burton Manor Road, Stafford	14.2	14.3	0.1	Negligible	Not significant
2-C-H49	Oldfields Crescent, Great Haywood	9.6	9.6	0.0	Negligible	Not significant
2-C-H50	Hillcrest Home Farm, Creswell Grove, Creswell	11.9	12.0	0.1	Negligible	Not significant
2-C-H51	Lower Farm, Ashflats Lane, Mossdit	13.6	13.7	0.1	Negligible	Not significant

Receptor	Description/Location	PM2.5 concentrations ($\mu\text{g}/\text{m}^3$)		Change in PM2.5 concentrations ($\mu\text{g}/\text{m}^3$)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
2-C-H52	Sheringham Covert, Stafford	10.8	10.9	0.1	Negligible	Not significant
2-C-H53	Stone Road, Stafford	10.7	10.8	0.1	Negligible	Not significant
2-C-H54	Stafford Lodge, Weston Road, Stafford	9.6	9.7	0.1	Negligible	Not significant
2-C-H55	The Birches, Stone Road, Yarlet	10.6	10.6	0.0	Negligible	Not significant
2-C-H56	Burton Bank Lane, Stafford	12.5	12.6	0.1	Negligible	Not significant
2-C-H57	Colwich Church of England Primary School, Main Road, Colwich	9.4	9.4	0.0	Negligible	Not significant
2-C-H58	Samemma, Thorneyfields Lane, Hyde Lea	12.1	12.1	0.0	Negligible	Not significant
2-C-H59	London Road, Shirleywich	9.9	9.9	0.0	Negligible	Not significant
2-C-H60	Weston Road High School, Blackheath Lane, Stafford	10.2	10.3	0.1	Negligible	Not significant
2-C-H61	The Spinney, Whitgreave Lane, Whitgreave	11.8	11.9	0.1	Negligible	Not significant
2-C-H62	Bishton Lane, Wolseley Bridge, Stafford	9.4	9.4	0.0	Negligible	Not significant
2-C-H63	Dobree Close, Colwich	9.6	9.7	0.1	Negligible	Not significant
2-C-H64	Southfields Close, Stafford	14.4	14.4	0.0	Negligible	Not significant
2-C-H65	The Lodge, Orchard Lane, Wolseley Bridge, Stafford	9.9	10.0	0.1	Negligible	Not significant
2-C-H66	Kingfisher Drive, Colwich	9.7	9.7	0.0	Negligible	Not significant
2-C-H67	Pool Cottage, Weston Road, Stafford	9.5	9.6	0.1	Negligible	Not significant
2-C-H68	The White Lodge, Mill Lane, Great Haywood	9.3	9.3	0.0	Negligible	Not significant
2-C-H69	Homestall Barn, Marston	9.2	9.2	0.0	Negligible	Not significant

Receptor	Description/Location	PM2.5 concentrations ($\mu\text{g}/\text{m}^3$)		Change in PM2.5 concentrations ($\mu\text{g}/\text{m}^3$)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
2-C-H70	Grove Farm, Yarlet	9.6	9.6	0.0	Negligible	Not significant
2-C-H71	Hoo Mill Lane, Great Haywood	9.2	9.2	0.0	Negligible	Not significant
2-C-H72	Mount Farm, Hopton	9.4	9.4	0.0	Negligible	Not significant
2-C-H73	Woodhill Farm, Yarlet Lane, Marston	9.2	9.2	0.0	Negligible	Not significant
2-C-H74	Wayside, Marston	9.2	9.2	0.0	Negligible	Not significant
2-C-H75	Yarlet Hall Lodge, Yarlet	9.6	9.6	0.0	Negligible	Not significant
2-C-H76	The Moos, Lower Lane, Hopton	9.6	9.6	0.0	Negligible	Not significant
2-C-H77	Bank Cottages, Hopton Lane, Hopton	9.4	9.4	0.0	Negligible	Not significant
2-C-H78	Mount Edge, Hopton	9.3	9.3	0.0	Negligible	Not significant
2-C-H79	Park Farm, Weston Road, Stafford	9.3	9.3	0.0	Negligible	Not significant
2-C-H80	Plot adjacent Woodhouse Farm, Yarlet Lane, Marston	9.1	9.1	0.0	Negligible	Not significant
2-C-H81	Farm Cottage, Sandon Road, Hopton	9.2	9.2	0.0	Negligible	Not significant
2-C-H82	North of Stafford housing - committed development 1, Policy Stafford 2, North of Stafford Housing	10.1	10.1	0.0	Negligible	Not significant
2-C-H83	North of Stafford housing - committed development 2, Policy Stafford 2, North of Stafford Housing	9.3	9.3	0.0	Negligible	Not significant
2-C-H84	North of Stafford housing - committed development 3, Policy Stafford 2, North of Stafford Housing	9.3	9.3	0.0	Negligible	Not significant
2-C-H85	Moreton House Farmhouse, Bishton Lane, Wolseley Bridge	9.3	9.3	0.0	Negligible	Not significant
2-C-H86	Moreton Grange, Bishton Lane, Wolseley Bridge	9.3	9.3	0.0	Negligible	Not significant

Receptor	Description/Location	PM2.5 concentrations ($\mu\text{g}/\text{m}^3$)		Change in PM2.5 concentrations ($\mu\text{g}/\text{m}^3$)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
2-C-H87	Rosemary Cottage, Moreton Farm, Bishton Lane, Wolseley Bridge	9.3	9.3	0.0	Negligible	Not significant

Table 16: Predicted annual mean of NOx concentrations at ecological sites (construction phase)

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 air quality standard ($30\mu\text{g}/\text{m}^3$)	Magnitude of change	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme				
Doxey and Tillington Marshes SSSI	30	70.0	70.7	0.7	Above standard	Small	N deposition assessment required to assess significance
	50	60.3	60.8	0.5	Above standard	Small	N deposition assessment required to assess significance
	100	46.2	46.4	0.2	Above standard	Imperceptible	Not significant
	150	40.0	40.2	0.2	Above standard	Imperceptible	Not significant
	200	30.7	30.9	0.2	Above standard	Imperceptible	Not significant
Pasturefields Salt Marsh SAC/SSSI	70.5	17.5	17.6	0.1	Below standard	Imperceptible	Not significant
	100	17.1	17.2	0.1	Below standard	Imperceptible	Not significant
	150	16.8	16.9	0.1	Below standard	Imperceptible	Not significant
	200	16.7	16.7	0.0	Below standard	Imperceptible	Not significant

Table 17: Assessment of N deposition at ecological sites (construction phase)

Ecological Site	Distance to road (m)	Dry N 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 Proposed Scheme	2020 with the Proposed Scheme			
Doxey and Tillington Marshes SSSI	30	24.3	24.4	0.1	15 – 25	0.7%
	50	23.9	23.9	0.0		0.0%
	100	23.3	23.3	0.0		0.0%
	150	22.9	23.0	0.1		0.7%
	200	22.8	22.8	0.0		0.0%

- 5.3.8 Changes in modelled concentrations with and without the Proposed Scheme have been calculated to determine the impact to local air quality. A moderate adverse impact is expected at six receptors and one slight adverse impact is predicted at one receptor in relation to NO₂ concentrations. Those seven receptors are close to the M6 motorway in Stafford where the NO₂ concentrations are already above the air quality standard (40µg/m³ as an annual mean). Negligible impacts are expected at all other receptors for NO₂ concentrations. Since the annual mean NO₂ concentrations are predicted to be less than 60µg/m³ at all receptors, the hourly mean standard is also expected to be met.
- 5.3.9 Both the annual mean PM₁₀ and PM_{2.5} concentrations are predicted to be within the air quality standards with and without construction of the Proposed Scheme. Since the annual mean PM₁₀ concentrations are predicted to be less than 35µg/m³, the daily mean standard is also expected to be met. Negligible impacts are predicted at all receptors for annual mean PM₁₀ and PM_{2.5} concentrations.
- 5.3.10 NO_x concentrations at the Doxey and Tillington Marshes SSSI are predicted to be above the air quality standard. At distances closer to the road (less than 100m), small changes in NO_x concentrations are predicted, which triggered the assessment of N deposition. Changes in N deposition at this site are predicted to be below 1% of the lower critical load.
- 5.3.11 NO_x concentrations at the Pasturefields Salt Marsh SAC and SSSI are predicted to be below the air quality standard.

Assessment of significance

- 5.3.12 Significant air quality effects are anticipated at some receptors along the M6 south-west of Stafford, in relation to annual mean NO₂ concentrations; no significant effects are anticipated at other receptors in the area. No significant effects are anticipated at any receptor in relation to annual mean PM₁₀ and PM_{2.5} concentrations.
- 5.3.13 For ecological sites, there is considered to be an insignificant effect if the total predicted NO_x concentrations are below the air quality standard of 30µg/m³ or if the predicted change in NO_x concentrations is less than 0.4µg/m³ when the concentrations are predicted to exceed the air quality standard. If these conditions are not met, then an assessment of N deposition has been undertaken. If the change in N deposition is predicted to be less than 1% of the lower critical load, there is considered to be an insignificant effect. Should the N deposition change by more than 1%, then the assessment of significance has been undertaken by an ecologist and reported within Volume 2¹², Section 8, Ecology and biodiversity.
- 5.3.14 At the Doxey and Tillington Marshes SSSI changes to N 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. No significant effects are anticipated at the Pasturefields Salt March SAC and SSSI.

¹² See ES Volume 2, CA2 Colwich to Yarlet Community area report

5.4 Assessment of operational traffic emissions

Operational traffic model

- 5.4.1 Operational traffic data used in this assessment are detailed in the Background Information and Data (BID) (see BID-AQ-002-000: Traffic data used for the air quality assessment). For the assessment of traffic on the highway network, data for the year 2027 was used as the operational year of the Proposed Scheme.

Screening of traffic data

- 5.4.2 The screening process identified a total of six roads in the Colwich to Yarlet area exceeding the DMRB thresholds for changes in AADT or daily HGV flows and/or changes in road alignment by 5m or more. These roads include:

- Tolldish Lane;
- Hoo Mill Lane;
- A518 Weston Road;
- B5066 Sandon Road;
- Hopton Lane; and
- Marston Lane.

- 5.4.3 Further roads have been included in the assessment to account for their emissions at nearby receptors.

Receptors assessed

- 5.4.4 Sensitive receptors have been selected from an OS AddressBase Premium database. The receptors consist of residential properties, schools and care homes within 200m of the screened in roads and represent worst-case exposure locations (Table 18). The location of all receptors is shown on Map AQ-01-102.
- 5.4.5 No designated ecological receptors were identified within 200m of the screened in roads within the Colwich to Yarlet area during operation of the Proposed Scheme.

Table 18: Modelled receptors (construction phase)

Receptor	Description/Location	Ordnance Survey coordinates
2-O-H1	Church Farm, Marston	392409,327642
2-O-H2	Farley Cottage, Farley Corner, Great Haywood	400037,324075
2-O-H3	Hoo Mill Lane, Great Haywood	399262,323871
2-O-H4	Mount Farm, Hopton	394189,326176
2-O-H5	Marston Cottage, Marston	392735,327565
2-O-H6	Wayside, Marston	392327,327599

Appendix AQ-001-002

Receptor	Description/Location	Ordnance Survey coordinates
2-O-H7	Lion Lodge, Ingestre	398978,324018
2-O-H8	The Toll House, Tolldish Lane, Great Haywood	400083,323354
2-O-H9	Spode Avenue, Stafford	393831,325973
2-O-H10	Stafford Lodge, Weston Road, Stafford	395319,324643
2-O-H11	Bank Cottages, Hopton Lane, Hopton	394145,326215
2-O-H12	Mount Edge, Hopton	393985,326111
2-O-H13	Caravan Opposite Holly Tree Farm, Marston Lane, Marston	393051,327726
2-O-H14	Sunnyhill Farm, Yarlet Lane, Marston	392227,327774
2-O-H15	Pool Cottage, Weston Road, Stafford	395636,325640
2-O-H16	Roseacre Nursery Medical Centre - committed development Policy SA2 Roseacre Nursery	400055,323309
2-O-H17	North of Stafford housing - committed development, Policy Stafford 2, North of Stafford Housing	393631,326232

Background concentrations

5.4.6 The background concentrations used in the assessment are shown in Table 19, taken from the Defra maps.

Table 19: Background 2027 concentrations at assessed receptors

Receptor	Description/Location	Background concentrations in 2027 ($\mu\text{g}/\text{m}^3$)			
		NOx	NO ₂	PM ₁₀	PM _{2.5}
2-O-H1	Church Farm, Marston	11.0	8.2	12.6	8.8
2-O-H2	Farley Cottage, Farley Corner, Great Haywood	11.6	8.6	12.1	8.7
2-O-H3	Hoo Mill Lane, Great Haywood	13.8	10.1	12.4	9.0
2-O-H4	Mount Farm, Hopton	11.0	8.3	12.8	9.1
2-O-H5	Marston Cottage, Marston	11.0	8.2	12.6	8.8
2-O-H6	Wayside, Marston	11.0	8.2	12.6	8.8
2-O-H7	Lion Lodge, Ingestre	11.5	8.6	12.4	8.9
2-O-H8	The Toll House, Tolldish Lane, Great Haywood	12.0	8.9	12.8	9.1
2-O-H9	Spode Avenue, Stafford	12.5	9.3	12.9	9.2
2-O-H10	Stafford Lodge, Weston Road, Stafford	11.9	8.9	13.0	9.2
2-O-H11	Bank Cottages, Hopton Lane, Hopton	11.0	8.3	12.8	9.1

Appendix AQ-001-002

Receptor	Description/Location	Background concentrations in 2027 ($\mu\text{g}/\text{m}^3$)			
		NO _x	NO ₂	PM ₁₀	PM _{2.5}
2-O-H12	Mount Edge, Hopton	11.6	8.7	12.6	8.9
2-O-H13	Caravan Opposite Holly Tree Farm, Marston Lane, Marston	10.9	8.2	12.1	8.6
2-O-H14	Sunnyhill Farm, Yarlet Lane, Marston	11.0	8.2	12.6	8.8
2-O-H15	Pool Cottage, Weston Road, Stafford	11.6	8.6	12.7	9.0
2-O-H16	Roseacre Nursery Medical Centre - committed development Policy SA2 Roseacre Nursery	12.0	8.9	12.8	9.1
2-O-H17	North of Stafford housing - committed development, Policy Stafford 2, North of Stafford Housing	11.6	8.7	12.6	8.9

Assessment results

5.4.7 Table 20, Table 21 and Table 22 provide the summary of the modelled pollutant concentrations for the assessed receptors. The magnitude of change and impact descriptors are also derived following the IAQM/EPUK methodology¹³.

Table 20: Predicted annual mean NO₂ concentrations and impacts (operation phase)

Receptor	Description/Location	NO ₂ concentrations (µg/m ³)		Change in NO ₂ concentrations (µg/m ³)	Impact descriptor	Significance
		2027 without the Proposed Scheme	2027 with the Proposed Scheme			
2-O-H1	Church Farm, Marston	8.3	8.2	-0.1	Negligible	Not Significant
2-O-H2	Farley Cottage, Farley Corner, Great Haywood	10.8	10.8	0.0	Negligible	Not Significant
2-O-H3	Hoo Mill Lane, Great Haywood	10.3	10.3	0.0	Negligible	Not Significant
2-O-H4	Mount Farm, Hopton	8.4	8.4	0.0	Negligible	Not Significant
2-O-H5	Marston Cottage, Marston	8.3	8.2	-0.1	Negligible	Not Significant
2-O-H6	Wayside, Marston	8.2	8.2	0.0	Negligible	Not Significant
2-O-H7	Lion Lodge, Ingestre	8.8	8.8	0.0	Negligible	Not Significant
2-O-H8	The Toll House, Tolldish Lane, Great Haywood	12.0	12.0	0.0	Negligible	Not Significant
2-O-H9	Spode Avenue, Stafford	9.5	9.4	-0.1	Negligible	Not Significant
2-O-H10	Stafford Lodge, Weston Road, Stafford	9.8	9.8	0.0	Negligible	Not Significant
2-O-H11	Bank Cottages, Hopton Lane, Hopton	8.4	8.4	0.0	Negligible	Not Significant
2-O-H12	Mount Edge, Hopton	8.8	8.8	0.0	Negligible	Not Significant

¹³ IAQM (2017), *Land-use planning & development control: Planning for air quality*

Receptor	Description/Location	NO ₂ concentrations (µg/m ³)		Change in NO ₂ concentrations (µg/m ³)	Impact descriptor	Significance
		2027 without the Proposed Scheme	2027 with the Proposed Scheme			
2-O-H13	Caravan Opposite Holly Tree Farm, Marston Lane, Marston	8.2	8.2	0.0	Negligible	Not Significant
2-O-H14	Sunnyhill Farm, Yarlet Lane, Marston	8.2	8.2	0.0	Negligible	Not Significant
2-O-H15	Pool Cottage, Weston Road, Stafford	10.5	10.5	0.0	Negligible	Not Significant
2-O-H16	Roseacre Nursery Medical Centre - committed development Policy SA2 Roseacre Nursery	11.6	11.6	0.0	Negligible	Not Significant
2-O-H17	North of Stafford housing - committed development, Policy Stafford 2, North of Stafford Housing	8.9	9.2	0.3	Negligible	Not Significant

Table 21: Predicted annual mean PM₁₀ concentrations and impacts (operation phase)

Receptor	Description/Location	PM ₁₀ concentrations (µg/m ³)		Change in PM ₁₀ concentrations (µg/m ³)	Impact descriptor	Significance
		2027 without the Proposed Scheme	2027 with the Proposed Scheme			
2-O-H1	Church Farm, Marston	12.6	12.6	0.0	Negligible	Not Significant
2-O-H2	Farley Cottage, Farley Corner, Great Haywood	12.8	12.8	0.0	Negligible	Not Significant
2-O-H3	Hoo Mill Lane, Great Haywood	12.5	12.5	0.0	Negligible	Not Significant
2-O-H4	Mount Farm, Hopton	12.8	12.8	0.0	Negligible	Not Significant
2-O-H5	Marston Cottage, Marston	12.6	12.6	0.0	Negligible	Not Significant
2-O-H6	Wayside, Marston	12.6	12.6	0.0	Negligible	Not Significant
2-O-H7	Lion Lodge, Ingestre	12.5	12.5	0.0	Negligible	Not Significant
2-O-H8	The Toll House, Tolldish Lane, Great Haywood	13.6	13.6	0.0	Negligible	Not Significant

Receptor	Description/Location	PM ₁₀ concentrations (µg/m ³)		Change in PM ₁₀ concentrations (µg/m ³)	Impact descriptor	Significance
		2027 without the Proposed Scheme	2027 with the Proposed Scheme			
2-O-H9	Spode Avenue, Stafford	12.9	12.9	0.0	Negligible	Not Significant
2-O-H10	Stafford Lodge, Weston Road, Stafford	13.3	13.3	0.0	Negligible	Not Significant
2-O-H11	Bank Cottages, Hopton Lane, Hopton	12.8	12.8	0.0	Negligible	Not Significant
2-O-H12	Mount Edge, Hopton	12.6	12.6	0.0	Negligible	Not Significant
2-O-H13	Caravan Opposite Holly Tree Farm, Marston Lane, Marston	12.1	12.1	0.0	Negligible	Not Significant
2-O-H14	Sunnyhill Farm, Yarlet Lane, Marston	12.6	12.6	0.0	Negligible	Not Significant
2-O-H15	Pool Cottage, Weston Road, Stafford	13.2	13.3	0.1	Negligible	Not Significant
2-O-H16	Roseacre Nursery Medical Centre - committed development Policy SA2 Roseacre Nursery	13.5	13.5	0.0	Negligible	Not Significant
2-O-H17	North of Stafford housing - committed development, Policy Stafford 2, North of Stafford Housing	12.6	12.7	0.1	Negligible	Not Significant

Table 22: Predicted annual mean PM_{2.5} concentrations and impacts (operation phase)

Receptor	Description/Location	PM _{2.5} concentrations (µg/m ³)		Change in PM _{2.5} concentrations (µg/m ³)	Impact descriptor	Significance
		2027 without the Proposed Scheme	2027 with the Proposed Scheme			
2-O-H1	Church Farm, Marston	8.9	8.8	-0.1	Negligible	Not Significant
2-O-H2	Farley Cottage, Farley Corner, Great Haywood	9.1	9.1	0.0	Negligible	Not Significant
2-O-H3	Hoo Mill Lane, Great Haywood	9.0	9.0	0.0	Negligible	Not Significant
2-O-H4	Mount Farm, Hopton	9.1	9.1	0.0	Negligible	Not Significant

Receptor	Description/Location	PM2.5 concentrations ($\mu\text{g}/\text{m}^3$)		Change in PM2.5 concentrations ($\mu\text{g}/\text{m}^3$)	Impact descriptor	Significance
		2027 without the Proposed Scheme	2027 with the Proposed Scheme			
2-O-H5	Marston Cottage, Marston	8.9	8.8	-0.1	Negligible	Not Significant
2-O-H6	Wayside, Marston	8.8	8.8	0.0	Negligible	Not Significant
2-O-H7	Lion Lodge, Ingestre	8.9	8.9	0.0	Negligible	Not Significant
2-O-H8	The Toll House, Tolldish Lane, Great Haywood	9.6	9.6	0.0	Negligible	Not Significant
2-O-H9	Spode Avenue, Stafford	9.3	9.3	0.0	Negligible	Not Significant
2-O-H10	Stafford Lodge, Weston Road, Stafford	9.3	9.4	0.1	Negligible	Not Significant
2-O-H11	Bank Cottages, Hopton Lane, Hopton	9.1	9.1	0.0	Negligible	Not Significant
2-O-H12	Mount Edge, Hopton	9.0	9.0	0.0	Negligible	Not Significant
2-O-H13	Caravan Opposite Holly Tree Farm, Marston Lane, Marston	8.7	8.7	0.0	Negligible	Not Significant
2-O-H14	Sunnyhill Farm, Yarlet Lane, Marston	8.8	8.8	0.0	Negligible	Not Significant
2-O-H15	Pool Cottage, Weston Road, Stafford	9.3	9.3	0.0	Negligible	Not Significant
2-O-H16	Roseacre Nursery Medical Centre - committed development Policy SA2 Roseacre Nursery	9.5	9.5	0.0	Negligible	Not Significant
2-O-H17	North of Stafford housing - committed development, Policy Stafford 2, North of Stafford Housing	9.0	9.0	0.0	Negligible	Not Significant

- 5.4.8 The annual mean NO₂, PM₁₀ and PM_{2.5} concentrations are predicted to be within the air quality standards with and without operation of the Proposed Scheme. Since the annual mean NO₂ concentrations are predicted to be less than 60µg/m³, the hourly mean standard is also expected to be met. Similarly, since the annual mean PM₁₀ concentrations are predicted to be less than 35µg/m³, the daily mean standard is also expected to be met.
- 5.4.9 Negligible impacts are predicted at all receptors for annual mean NO₂, PM₁₀ and PM_{2.5} concentrations.

Assessment of significance

- 5.4.10 No significant effects are anticipated at any receptor in relation to annual mean NO₂, PM₁₀ and PM_{2.5} concentrations.

6 References

Department for Environment, Food and Rural Affairs (2013), *Defra Background Pollutant Concentration Maps*. Available online at: <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2013>.

Environment Act 1995. London, Her Majesty's Stationary Office.

Highways Agency (2007), *The Design Manual for Roads and Bridges* (Volume 11, Section 3, Part 1 Air Quality HA207/07).

HS2 Ltd (2017), *High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Background Information and Data. Traffic data used for the air quality assessment*, BID-AQ-002-000. Available online at: www.gov.uk/hs2.

Institute of Air Quality Management (2014), *Assessment of dust from demolition and construction*.

Institute of Air Quality Management (2017), *Land-use planning & development control: Planning for air quality* (v1.2).

Stafford Borough Council (2014), *The Plan for Stafford Borough 2011 – 2031 (Adopted 19 June 2014)*. Available online at: <http://www.staffordbc.gov.uk/live/Documents/Planning%20Policy/Plan%20for%20Stafford%20Borough/PFSB-Adoption.pdf>.

Stafford Borough Council (2016), *2016 Air Quality Annual Status Report*. Available online at: <http://www.staffordbc.gov.uk/live/Documents/Environmental%20Health/Air-Quality-Annual-Status-Report.pdf>.

High Speed Two (HS2) Limited
Two Snowhill
Snow Hill Queensway
Birmingham B4 6GA

08081 434 434
HS2Enquiries@hs2.org.uk