



High Speed Rail (West Midlands - Crewe)

Environmental Statement

Volume 5: Technical appendices

CA1: Fradley to Colton

Air quality report (AQ-001-001)



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Department for Transport

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1 Introduction

- 1.1.1 This document is the air quality assessment Appendix for the Fradley to Colton community area (CA1); 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);
 - mineral dust assessment (Section 5); and
 - the air quality assessment - road traffic (Section 6).
- 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 Fradley to Colton area lies within the administrative areas of Lichfield District Council (LDC), East Staffordshire Borough Council and Stafford Borough Council.

Lichfield District Council

2.1.2 The Lichfield District Council Core Strategy⁵ sets out a vision for the development of the District 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 Core Policy 5 on sustainable transport states that development proposals will, either individually or collectively, need to make appropriate provisions for:

- reducing the need to travel;
- widening travel choices and making travel by sustainable means of transport more attractive than the private car;
- improving road safety; and
- improving air quality and reducing the impact of travel upon the environment, in particular reducing carbon emissions that contribute to climate change.

2.1.4 Core Policy 10 on healthy and safe lifestyles states that the District Council will ensure that the current high standard of air quality in the District is monitored and maintained and, where possible, improved with no decline in standards being deemed acceptable as a result of new development.

East Staffordshire Borough Council

2.1.5 East Staffordshire's Plan⁶ 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.

2.1.6 Strategic Policy 12 (Derby Road, Burton upon Trent, Regeneration Corridor) outlines that planning permission will only be granted for development which contributes towards the wider Derby Road regeneration corridor. The principles are that development should: '...ensure buildings are set back from the highway sufficiently to avoid occupiers experiencing unacceptable air quality standards'.

2.1.7 Strategic Policy 35 (Accessibility and Sustainable Transport) outlines that the Council is committed to developing a well-integrated community connected by a sustainable transport system. This will be achieved encouraging the use of sustainable modes of transport and other steps, such as promoting and supporting traffic management measures and environmental improvements which increase safety and improve air quality.

⁵ Lichfield District Council (2010), *Lichfield District Core Strategy 2010*, <https://www.lichfielddc.gov.uk/Council/Planning/The-local-plan-and-planning-policy/Resource-centre/Local-Plan-documents/Downloads/Historic-local-plan-core-strategy-documents/Core-strategy-shaping-our-district.pdf>.

⁶ East Staffordshire Borough Council (2015), *East Staffordshire Local Plan*, <http://www.eaststaffsbcc.gov.uk/sites/default/files/docs/planning/planningpolicy/localplan2012-2031/Local-Plan-2012-2031-FINAL.pdf>.

Stafford Borough Council

- 2.1.8 The Plan for Stafford Borough Council⁷ 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.
- 2.1.9 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’.
- 2.1.10 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.’

⁷ 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 LDC covers most of the Fradley to Colton area with Stafford and East Staffordshire Borough Councils lying on the eastern and western edges of the area respectively. All councils review air quality throughout the area following Defra's local air quality management (LAQM) regime⁸.
- 3.1.2 There is one Air Quality Management Area (AQMA) within the Fradley to Colton area (Lichfield AQMA No. 2) which was declared for exceedances to annual mean nitrogen dioxide (NO₂) concentrations in August 2016 by Lichfield District Council. This AQMA is located approximately 2.8km from the Proposed Scheme.

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-01-101. 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 NO₂ and fine 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 air quality monitoring sites within the Fradley to Colton area. There is one continuous monitoring site within East Staffordshire Borough Council, however this has been discounted as it is too far from the Proposed Scheme.

Diffusion tubes

- 3.1.6 Lichfield District Council undertakes air quality monitoring with the use of passive diffusion tubes as part of its local air quality management (LAQM) process, with 23 diffusion tube sites positioned within the Borough. Of these, five diffusion tube sites are located with the Fradley to Colton area. No air quality monitoring sites with the use of passive diffusion tubes from other Borough Councils are located within the Fradley to Colton area.

⁸ In fulfilment of Part IV of the *Environment Act 1995*. London, Her Majesty's Stationary Office

- 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.

Table 1: Annual mean NO₂ concentrations recorded at diffusion tube monitoring sites⁹

Site	Ordnance Survey coordinates	Annual mean NO ₂ concentrations (µg/m ³)			
		2012	2013	2014	2015
Alrewas A38-1	417101, 314180	44	38	37	38
Fradley A38-2/2(1)	416295, 313186	37	35	36	33
Fradley A38-2A/B	416290, 313175	45	43	43	42
Lichfield A38-3	412891, 306817	33	36	31	30
Lichfield L	410544, 310760	20	17	17	16

Background pollutant concentrations

- 3.1.8 Estimates of background air quality were obtained from the Department for Environment, Food and Rural Affairs (Defra) maps¹⁰. Background NO₂, PM₁₀ and PM_{2.5} concentrations are within the air quality standards throughout the study area. Annual mean NO₂ concentrations in the study area were in the range 10.2µg/m³ – 18.6µg/m³ in 2016. Annual mean PM₁₀ and PM_{2.5} concentrations were in the range 12.6µg/m³ – 17.3µg/m³ and 9.1µg/m³ – 11.8µg/m³ in 2016 respectively.
- 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 through which the Proposed Scheme will pass within the study area. On this basis the Defra background concentrations maps have been used to characterise the baseline air quality for the study area. These maps indicate the average background pollutant concentrations across the Fradley to Colton area are within the relevant air quality standards.

Local emission sources

- 3.1.10 The main source of air pollution within the study area is road vehicles. Major roads include: the A38 Lichfield Road; the A5192 Eastern Avenue; the A515 Lichfield Road; the A513 Rugeley Road; the A51 Stafford Road; the B5014 Uttoxeter Road; the B5013 Uttoxeter Road; and local roads serving the settlements of Kings Bromley, Handsacre and Armitage, Colton and Stockwell Heath. Other emission sources include two industrial installations (regulated by the Environment Agency) with permits for emissions to air, namely:

⁹ Lichfield District Council (2016), *Annual Status Report 2016*, Bureau Veritas

¹⁰ Department for Environment, Food and Rural Affairs (Defra) (2013), *Defra Background Pollutant Concentration Maps*, <https://uk-air.defra.gov.uk/data/laqm-background-maps>.

- a National Grid plc compressor station, Burton-on-Trent (Permit Number: PP3039LM); and
- Rugeley Power Station run by Rugeley Power Limited, Rugeley (Permit number: EP3538LB).

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

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 Fradley to Colton 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 Riley Hill Farm: there are no demolition activities in this area. Residential dwellings are located within 20m of earthworks and trackout activities, and within 100m of construction activities;
- area around Shaw Lane: residential dwellings are located within 20m of demolitions and trackout activities and within 50m of earthworks and construction activities in this area;
- area around Trentside Meadow and Pipe Ridware: there are no demolition activities in this area. Residential dwellings are located within 20m of earthworks and trackout activities, and within 200m of construction activities;
- area around Woodhouse Farm: there are no demolition activities in this area. Residential dwellings are located within 20m of trackout activities, within 50m of earthworks and 200m of construction activities;
- area around Blithbury Farm: there are no demolition activities in this area. Residential dwellings are located within 20m of earthworks and trackout activities, and within 200m of construction activities;
- area around Rosewood Farmhouse: residential dwellings are located within 20m of demolitions, earthworks, construction and trackout activities;
- area around Colton (north): there are no demolition activities in this area. Residential dwellings are located within 20m of earthworks and trackout activities and 50m of construction activities; and
- area around Hamley Cottage Farm: there are no demolition activities in this area. Residential dwellings are located within 20m of earthworks, construction and trackout activities.

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

Effect	Demolition	Earthworks	Construction	Trackout
Area around Riley Hill Farm				
Dust soiling	n/a	Medium	Low	Medium
Human health	n/a	Low	Low	Low
Area around Shaw Lane				
Dust soiling	Medium	Low	Low	Medium
Human health	Low	Low	Low	Low
Area around Trentside Meadow and Pipe Ridware				
Dust soiling	n/a	Medium	Low	Medium
Human health	n/a	Low	Low	Low
Area around Woodhouse Farm				
Dust soiling	n/a	Low	Low	Medium
Human health	n/a	Low	Low	Low
Area around Blithbury Farm				
Dust soiling	n/a	Medium	Low	Medium
Human health	n/a	Low	Low	Low
Area around Rosewood Farmhouse				
Dust soiling	Medium	Medium	Medium	Medium
Human health	Low	Low	Low	Low
Area around Colton (north)				
Dust soiling	n/a	Medium	Low	Medium
Human health	n/a	Low	Low	Low
Area around Hamley Cottage Farm				
Dust soiling	n/a	Medium	Medium	Medium
Human health	n/a	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.

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

Area	Demolition	Earthworks	Construction	Trackout
Area around Riley Hill Farm	n/a	Large	Large	Large
Area around Shaw Lane	Small	Large	Medium	Large
Area around Trentside Meadow and Pipe Ridware	n/a	Large	Medium	Large
Area around Bentley Farm	n/a	Large	Medium	Large
Area around Blithbury Farm	n/a	Large	Medium	Large
Area around Rosewood Farmhouse	Small	Large	Large	Large
Area around Colton (north)	n/a	Large	Large	Large
Area around Hamley Cottage Farm	n/a	Large	Large	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 shown in Table 4.

Table 4: Risk of dust soiling and human health effects

Effect	Demolition	Earthworks	Construction	Trackout
Area around Riley Hill Farm				
Dust soiling	n/a	High risk	Medium risk	High risk
Human health	n/a	Medium risk	Medium risk	Medium risk
Area around Shaw Lane				
Dust soiling	Low risk	Medium risk	Low risk	High risk
Human health	Negligible risk	Medium risk	Low risk	Medium risk
Area around Trentside Meadow and Pipe Ridware				
Dust soiling	n/a	High risk	Low risk	High risk
Human health	n/a	Medium risk	Low risk	Medium risk
Area around Bentley Farm				
Dust soiling	n/a	Medium risk	Low risk	High risk
Human health	n/a	Medium risk	Low risk	Medium risk
Area around Blithbury Farm				
Dust soiling	n/a	High risk	Low risk	High risk
Human health	n/a	Medium risk	Low risk	Medium risk

Effect	Demolition	Earthworks	Construction	Trackout
Area around Rosewood Farmhouse				
Dust soiling	Low risk	High risk	High risk	High risk
Human health	Negligible risk	Medium risk	Medium risk	Medium risk
Area around Colton (north)				
Dust soiling	n/a	High risk	Medium risk	High risk
Human health	n/a	Medium risk	Medium risk	Medium risk
Area around Hamley Cottage Farm				
Dust soiling	n/a	High risk	High risk	High risk
Human health	n/a	Medium risk	Medium risk	Medium 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 Pyrford Brook: there are no demolition or construction activities in this area. An ecological receptor, (Coventry Canal), is located within 20m of earthworks and trackout activities;
- area around Oak Farm: there are no demolition activities in this area. Two ecological receptors (the Kings Bromley Pit Local Wildlife Site and the Trentside Meadow Local Wildlife Site) lie within 20m of trackout activities. The Trentside Meadow Local Wildlife Site also lies within 20m of earthwork and construction activities;
- area around Woodhouse Farm: there are no demolition activities in this area. One ecological receptor, the Pipe Lane Local Wildlife Site, lies within 20m of earthworks, construction and trackout activities; and
- area around Colton footpath: there are no demolition activities in this area. One ecological receptor, the Newlands Lane Local Wildlife Site, lies within 20m of earthworks, construction and trackout activities.

Table 5: Sensitivity of area to ecological effects

Area	Demolition	Earthworks	Construction	Trackout
Area around Pyrford Brook	n/a	Low	n/a	Low
Area around Oak Farm	n/a	Low	Low	Low
Area around Woodhouse Farm	n/a	Low	Low	Low
Area around Colton Footpath	n/a	Low	Low	Low

Dust emission magnitude

4.3.2 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 Pyrford Brook	n/a	Large	Large	Large
Area around Oak Farm	Small	Large	Medium	Large
Area around Woodhouse Farm	n/a	Large	Medium	Large
Area around Colton Footpath	Small	Large	Large	Large

Risk of impacts

4.3.3 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 7.

Table 7: Risk of ecological effects

Area	Demolition	Earthworks	Construction	Trackout
Area around Pyrford Brook	n/a	Low risk	n/a	Low risk
Area around Oak Farm	n/a	Low risk	Low risk	Low risk
Area around Woodhouse Farm	n/a	Low risk	Low risk	Low risk
Area around Colton Footpath	n/a	Low risk	Low risk	Low risk

5 Mineral dust assessment

5.1.1 This section provides details of the assessment of mineral dust emissions during construction of the Proposed Scheme from the operations of borrow pits. The use of borrow pits is intended to reduce the need for longer distance transport and import of materials, therefore reducing the volume and impact of road traffic on local roads and communities.

5.1.2 There are four borrow pits in the Fradley to Colton area:

- a borrow pit in the area near Ashby Stitch culvert and Common Farm;
- a borrow pit in the area around Shaw Lane (north);
- a borrow pit in the area around Shaw Lane (south); and
- a borrow pit in the area near Trentside Meadow.

5.2 Disamenity dust

5.2.1 All four borrow pits are being excavated for sands and gravels, which are classified as soft rock in the assessment. The predominant wind direction across these sites is south-westerly.

5.2.2 The borrow pit near Ashby Stitch Culvert and Common Farm has an area of 400,000m². There are no sensitive receptors within 250m of this site. Therefore, no further assessment has been undertaken for this site.

5.2.3 The borrow pit around Shaw Lane (north) has an area of 300,000m². There are no ecological receptors within 250m of this site. There are three human receptors within 250m of this borrow pit, namely:

- Old Farm House, Burton-on-Trent (412234, 316187), residential, 140m north, downwind of the borrow pit;
- a residential property at 57 Lichfield Road, King's Bromley (411976, 316430), 230m north west, downwind of the borrow pit; and
- a residential property at 59 Lichfield Road, King's Bromley (411970, 316448), 230m north west, downwind of the borrow pit.

5.2.4 The borrow pit around Shaw Lane (south) has an area of 250,000m². There are no ecological receptors within 250m of this site. There are three human receptors within 250m of this site, namely:

- Kings Bromley Farms, King's Bromley (411400, 316126), residential, 120m north, downwind of the borrow pit;
- Rugeley Rd, Burton-on-Trent (411443, 316267), residential, 250m north, downwind of the borrow pit; and
- White Oaks, King's Bromley (410854, 316383), residential, 250m west, upwind of the borrow pit.

5.2.5 The borrow pit near Trentside Meadow has an area of 300,000m². There is one ecological receptor, the Trentside Meadow, within 250m of this site. There are also five human receptors within 250m of this site, namely:

- Ridware Theatre (409614, 317729), 190m south, upwind of the borrow pit;
- Parva House, Pipe Ridware (409568, 317786), residential, 210m south, upwind of the borrow pit;
- Littleton House, Pipe Ridware (409550, 317737), residential, 260m south, upwind of the borrow pit;
- Media House, Pipe Ridware (409550, 317776), residential, 240m south, upwind of the borrow pit; and
- Farm House, Pipe Ridware (409564, 317754), 240m south, upwind of the borrow pit.

Residual source emissions

5.2.6 The activities assessed for residual source emissions are: site preparation and restoration; mineral extraction; materials handling; on-site transportation; minerals processing; stockpiles and exposed surfaces; and off-site transportation. The residual source emissions can be classified as small, medium or large.

5.2.7 All borrow pits are estimated to have large mineral extraction emissions, small minerals processing emissions and large residual source emissions for all other activities. The overall residual source emissions for all borrow pits is therefore large.

Pathway effectiveness

5.2.8 To assess pathway effectiveness each receptor within the 250m distance band has been assessed separately, taking into account the frequency of winds likely to impact the receptor. Meteorological data from the past five years has been filtered to identify the percentage of time for dry days when the wind direction could carry dust from the borrow pit to the receptor. This value represents the frequency and has been classified as: infrequent, moderately frequent, frequent or very frequent using criteria classified by the IAQM mineral dust guidance¹¹. Meteorological data has been taken from Birmingham Elmdon, which is located 32km south of the borrow pits in this area. Table 8 presents the details of this assessment.

Table 8: Frequency of potentially dusty winds

Type of receptor	Receptor	Wind direction impacting receptor (degrees)	% yearly winds over 5m/s on dry days	Frequency of potentially dusty winds
Borrow pit around Shaw Lane (north)				
Human	Old Farm House, Burton-on-Trent	170-220	5%	Moderately Frequent

¹¹ IAQM (2016), *Guidance on the assessment of mineral dust impacts for planning*

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Type of receptor	Receptor	Wind direction impacting receptor (degrees)	% yearly winds over 5m/s on dry days	Frequency of potentially dusty winds
	57 Lichfield Road, King's Bromley	110 - 170	2%	Infrequent
	59 Lichfield Rd, King's Bromley	110 - 170	2%	Infrequent
Borrow pit around Shaw Lane (south)				
Human	Kings Bromley Farms, King's Bromley	140 - 240	8%	Moderately Frequent
	Rugeley Rd, Burton-on-Trent	140 - 220	6%	Moderately Frequent
	White Oaks, King's Bromley	80 - 140	2%	Infrequent
Borrow pit near Trentside Meadow				
Human	Ridware Theatre	20 - 70	2%	Infrequent
	Parva House	20 - 70	2%	Infrequent
	Littleton House	20 - 60	2%	Infrequent
	Media House, Pipe Ridware	20 - 60	2%	Infrequent
	Farm House	20 - 60	2%	Infrequent
Ecological	Trentside Meadow, Kings Bromley	250 - 40	10%	Moderately Frequent

5.2.9 For each receptor, receptor sensitivity was classified as high, medium or low. The distance of the receptor from the source was measured and the distance category was classified as: close (<100m), intermediate (100 – 200m) or distant (400-1000m).

5.2.10 All human receptors are residential so are classified as high sensitivity. The ecological receptor is classified as low sensitivity due its local designation. For each receptor, the frequency of potentially dusty winds and the distance category was used to classify the pathway effectiveness using the IAQM mineral guidance, as shown in Table 9.

Table 9: Receptor sensitivity, distance from source and pathway effectiveness.

Type of receptor	Receptor	Frequency of potentially dusty winds	Distance Category	Pathway effectiveness
Borrow pit around Shaw Lane (north)				
Human	Old Farm House, Burton-on-Trent	Moderate	Intermediate	Moderate
	57 Lichfield Road, King's Bromley	Infrequent	Distant	Ineffective
	59 Lichfield Rd, King's Bromley	Infrequent	Distant	Ineffective

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Type of receptor	Receptor	Frequency of potentially dusty winds	Distance Category	Pathway effectiveness
Borrow pit around Shaw Lane (south)				
Human	Kings Bromley Farms, King's Bromley	Moderate	Intermediate	Moderate
	Rugeley Rd, Burton-on-Trent	Moderate	Distant	Ineffective
	White Oaks, King's Bromley	Infrequent	Intermediate	Ineffective
Borrow pit near Trentside Meadow				
Human	Ridware Theatre	Infrequent	Intermediate	Ineffective
	Parva House	Infrequent	Distant	Ineffective
	Littleton House	Infrequent	Distant	Ineffective
	Media House, Pipe Ridware	Infrequent	Distant	Ineffective
	Farm House	Infrequent	Distant	Ineffective
Ecological	Trentside Meadow, Kings Bromley	Moderate	Close	Moderate

Risk of dust impacts

5.2.11 For each receptor, the residual source emissions and the pathway effectiveness were used to define the risk of dust impacts, as shown in Table 10.

Table 10: Risk of mineral dust impacts

Type of receptor	Receptor	Residual Source Emissions	Pathway Effectiveness	Estimation of Dust Impact Risk
Borrow pit around Shaw Lane (north)				
Human	Old Farm House, Burton-on-Trent	Large	Moderate	Medium Risk
	57 Lichfield Road, King's Bromley	Large	Ineffective	Low Risk
	59 Lichfield Rd, King's Bromley	Large	Ineffective	Low Risk
Borrow pit around Shaw Lane (south)				
Human	Kings Bromley Farms, King's Bromley	Large	Moderate	Medium Risk
	Rugeley Rd, Burton-on-Trent	Large	Ineffective	Low Risk
	White Oaks, King's Bromley	Large	Ineffective	Low Risk

Type of receptor	Receptor	Residual Source Emissions	Pathway Effectiveness	Estimation of Dust Impact Risk
Borrow pit near Trentside Meadow				
Human	Ridware Theatre	Large	Ineffective	Low Risk
	Parva House	Large	Ineffective	Low Risk
	Littleton House	Large	Ineffective	Low Risk
	Media House, Pipe Ridware	Large	Ineffective	Low Risk
	Farm House	Large	Ineffective	Low Risk
Ecological	Trentside Meadow, Kings Bromley	Large	Moderate	Medium Risk

Magnitude of dust effects

5.2.12 For each receptor, the risk of dust impacts and the receptor sensitivity was used to define the magnitude of dust effects, as shown in Table 11.

Table 11: Magnitude of dust effect

Type of receptor	Receptor	Receptor Sensitivity	Estimation of Dust Impact Risk	Magnitude of Dust Effect
Borrow pit around Shaw Lane (north)				
Human	Old Farm House, Burton-on-Trent	High	Medium Risk	Moderate Adverse
	57 Lichfield Road, King's Bromley	High	Low Risk	Slight Adverse
	59 Lichfield Rd, King's Bromley	High	Low Risk	Slight Adverse
Borrow pit around Shaw Lane (south)				
Human	Kings Bromley Farms, King's Bromley	High	Medium Risk	Moderate Adverse
	Rugeley Rd, Burton-on-Trent	High	Low Risk	Slight Adverse
	White Oaks, King's Bromley	High	Low Risk	Slight Adverse
Borrow pit near Trentside Meadow				
Human	Ridware Theatre	High	Low Risk	Slight Adverse
	Parva House	High	Low Risk	Slight Adverse
	Littleton House	High	Low Risk	Slight Adverse
	Media House, Pipe Ridware	High	Low Risk	Slight Adverse
	Farm House	High	Low Risk	Slight Adverse

Type of receptor	Receptor	Receptor Sensitivity	Estimation of Dust Impact Risk	Magnitude of Dust Effect
Ecological	Trentside Meadow, Kings Bromley	Medium	Medium Risk	Negligible

5.2.13 With the implementation of basic good practice mitigation measures at all borrow pit sites, the magnitude of dust effect will be negligible at all receptors.

5.3 Human health effects

5.3.1 To assess the impacts of borrow pits on human health, the background PM₁₀ concentration for the centre of each borrow pit was obtained from the Defra background maps¹² for 2016 and the number of sensitive receptors within 1km of the borrow pit were calculated. The IAQM mineral dust guidance¹³ notes that if the background PM₁₀ concentrations are under 17µg/m³ then the effects on human health can be considered not significant. Table 12 presents the results of this assessment.

Table 12: Human health impacts

Borrow pit	Background PM ₁₀ concentrations (µg/m ³)	Number of sensitive receptors within 1km	Effect
Borrow pit near Ashby Stitch culvert and Common Farm	10.5	< 10	Not significant
Borrow pit around Shaw Lane (north)	10.8	< 100	Not significant
Borrow pit around Shaw Lane (south)	10.8	< 10	Not significant
Borrow pit near Trentside Meadow	9.9	< 10	Not significant

¹² Department for Environment, Food and Rural Affairs (Defra) (2013), *Defra Background Pollutant Concentration Maps*, <http://uk-air.defra.gov.uk/data/iaqm-background-maps?year=2013>.

¹³ IAQM (2016), *Guidance on the assessment of mineral dust impacts for planning*

6 Air quality assessment - road traffic

6.1 Overall assessment approach

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

6.2 Model inputs and verification

Model parameters

6.2.1 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 Birmingham airport monitoring site was used for the year 2015.

Model verification

6.2.2 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 13.

6.2.3 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.

6.2.4 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 13: 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%

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

6.3 Assessment of construction traffic emissions

6.3.1 Construction traffic data used in this assessment is detailed in 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, vehicle emissions and background concentrations have been taken for the first construction year in 2020.

Screening of traffic data

6.3.2 The screening process identified a total of eight roads in the Fradley to Colton 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:

- the A38 Rykneld St;
- Cappers Lane;
- Wood End Lane;
- the A51 Stafford Road;
- the A515 Lichfield Road;
- the A5192 Eastern Avenue;
- the A513 Kings Bromley Lane; and
- the B5014 Ridware Road.

6.3.3 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

- 6.3.4 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 14). The location of all receptors is shown in Volume 5: Map AQ-01-101.
- 6.3.5 No designated ecological receptors were identified within 200m of the screened in roads within the Fradley to Colton area during construction of the Proposed Scheme.

Table 14: Modelled receptors (construction phase)

Receptor	Description/Location	Ordnance Survey coordinates
1-C-H1	Residential development of 71 new homes, including 62 affordable homes, access, landscaping and all associated works near A513 (14_01018_FULM)	406041,316688
1-C-H2	Rosewood Farm, Rugeley	406991,320265
1-C-H3	Luthbur, Pipe Ridware, Rugeley	409284,318075
1-C-H4	Hadley Gate Farm, Rugeley	407209,320364
1-C-H5	Hamley Fields, Rugeley	405677,321497
1-C-H6	Bleak Cottage	405526,321542
1-C-H7	Rose Cottage, Rileyhill	412000,315108
1-C-H8	Parva House, Pipe Ridware	409568,317786
1-C-H9	Dimble Cottage, Blithbury	408055,319729
1-C-H10	Echills Farmhouse, Kings Bromley	410855,316384
1-C-H11	Woodhouse Farm, Pipe Ridware	409088,318737
1-C-H12	Barn Farmhouse, Rileyhill	412247,315257
1-C-H13	Conversion of existing agricultural buildings to two dwellings on Pipe Lane (12_01025_COU)	408777,318507
1-C-H14	Wellfield Road, Alrewas	417287,314520
1-C-H15	Wharf Farmhouse, Bromley Hayes	411600,314693
1-C-H16	Glebe Cottage, Rugeley	409708,316803
1-C-H17	Lysways Lodge, Longdon	409020,312796
1-C-H18	The Meadows, Lichfield	410656,313088
1-C-H19	Rileyhill Farm, Rileyhill	411684,315103
1-C-H20	Cherry Orchard Farm, Longdon	408593,313884
1-C-H21	Mill House, Lichfield	413772,308672
1-C-H22	Croxall Road, Alrewas	417624,314844
1-C-H23	Hill Top Coppice, Brereton Hill	406013,315772

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Receptor	Description/Location	Ordnance Survey coordinates
1-C-H24	Bridge Bungalow, Rugeley	404905,318934
1-C-H25	West Farmhouse, Lichfield	414050,309202
1-C-H26	Humpty Dumpty Day Nursery, Lichfield	413313,310008
1-C-H27	The Colliers, Rugeley	405106,317769
1-C-H28	Pool Farm, Kings Bromley	411825,315232
1-C-H29	Woods Farmhouse, Fradley	412084,313350
1-C-H30	Valley Lane, Lichfield	413209,310018
1-C-H31	Wychnor Bridges Farm Cottage, Wychnor	418622,316191
1-C-H32	Bell Bridge Cottage, Lichfield	415899,312597
1-C-H33	The Hartlands, Longdon	407922,314333
1-C-H34	Whiteoaks, Kings Bromley	411399,316358
1-C-H35	Rookery Lodge, Kings Bromley	410862,316786
1-C-H36	Laburnum Cottage, Streethay	414278,310457
1-C-H37	Streethay House Farm, Streethay	414275,310528
1-C-H38	Eastfields, Hill Ridware	408644,317474
1-C-H39	Stafford Road, Lichfield	410386,310566
1-C-H40	Featherbed Cottages, Lichfield	409972,311213
1-C-H41	Coppice Grove, Lichfield	413621,309527
1-C-H42	New Haven, Fradley	414199,312566
1-C-H43	Highbridge House, Hill Ridware	409297,316766
1-C-H44	Thimble Cottage, Hill Ridware	408126,317839
1-C-H45	Oaklands Close, Hillridware	408038,317920
1-C-H46	Henry Chadwick Primary School, Hill Ridware	408283,317799
1-C-H47	Street Hay Cottage, Streethay	414498,310791
1-C-H48	Worcester Close, Lichfield	411985,311449

Background concentrations

6.3.6 The background concentrations used in the assessment are shown in Table 15 taken from the Defra maps.

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Table 15: 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}
1-C-H1	Residential development of 71 new homes, including 62 affordable homes, access, landscaping and all associated works near A513 (14_01018_FULM)	16.4	11.8	13.0	9.5
1-C-H2	Rosewood Farm, Rugeley	12.7	9.4	12.9	9.2
1-C-H3	Luthbur, Pipe Ridware, Rugeley	12.1	9.0	13.9	9.7
1-C-H4	Hadley Gate Farm, Rugeley	12.3	9.1	13.7	9.5
1-C-H5	Hamley Fields, Rugeley	12.5	9.2	13.1	9.3
1-C-H6	Bleak Cottage	12.5	9.2	13.1	9.3
1-C-H7	Rose Cottage, Rileyhill	13.4	9.9	14.0	9.8
1-C-H8	Parva House, Pipe Ridware	12.9	9.5	13.6	9.6
1-C-H9	Dimble Cottage, Blithbury	12.1	9.0	13.9	9.6
1-C-H10	Echills Farmhouse, Kings Bromley	13.5	9.9	14.4	10.0
1-C-H11	Woodhouse Farm, Pipe Ridware	12.1	9.0	13.9	9.7
1-C-H12	Barn Farmhouse, Rileyhill	13.4	9.9	14.0	9.8
1-C-H13	Conversion of existing agricultural buildings to two dwellings on Pipe Lane (12_01025_COU)	12.5	9.2	13.7	9.7
1-C-H14	Wellfield Road, Alrewas	18.3	13.2	16.2	11.1
1-C-H15	Wharf Farmhouse, Bromley Hayes	15.2	11.1	14.5	10.2
1-C-H16	Glebe Cottage, Rugeley	14.7	10.7	14.6	10.3
1-C-H17	Lysways Lodge, Longdon	14.0	10.3	14.0	9.8
1-C-H18	The Meadows, Lichfield	13.8	10.2	13.5	9.6
1-C-H19	Rileyhill Farm, Rileyhill	14.4	10.5	15.1	10.4
1-C-H20	Cherry Orchard Farm, Longdon	13.9	10.3	13.6	9.6
1-C-H21	Mill House, Lichfield	19.0	13.7	15.7	10.8
1-C-H22	Croxall Road, Alrewas	18.3	13.2	16.2	11.1
1-C-H23	Hill Top Coppice, Brereton Hill	14.3	10.5	13.0	9.4
1-C-H24	Bridge Bungalow, Rugeley	23.3	16.1	16.5	11.8
1-C-H25	West Farmhouse, Lichfield	17.4	12.6	15.3	10.5
1-C-H26	Humpty Dumpty Day Nursery, Lichfield	18.4	13.2	15.2	10.5
1-C-H27	The Colliers, Rugeley	17.4	12.5	14.0	10.0

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Receptor	Description/Location	Background concentrations in 2020 ($\mu\text{g}/\text{m}^3$)			
		NO _x	NO ₂	PM ₁₀	PM _{2.5}
1-C-H28	Pool Farm, Kings Bromley	14.4	10.5	15.1	10.4
1-C-H29	Woods Farmhouse, Fradley	15.5	11.3	14.2	10.1
1-C-H30	Valley Lane, Lichfield	18.4	13.2	15.2	10.5
1-C-H31	Wychnor Bridges Farm Cottage, Wychnor	18.2	13.0	15.3	10.6
1-C-H32	Bell Bridge Cottage, Lichfield	19.1	13.6	16.6	11.3
1-C-H33	The Hartlands, Longdon	14.0	10.3	13.7	9.9
1-C-H34	Whiteoaks, Kings Bromley	13.4	9.8	14.1	9.8
1-C-H35	Rookery Lodge, Kings Bromley	13.5	9.9	14.4	10.0
1-C-H36	Laburnum Cottage, Streethay	19.4	13.9	16.1	11.1
1-C-H37	Streethay House Farm, Streethay	19.4	13.9	16.1	11.1
1-C-H38	Eastfields, Hill Ridware	13.5	9.9	14.1	10.0
1-C-H39	Stafford Road, Lichfield	15.6	11.4	13.9	9.9
1-C-H40	Featherbed Cottages, Lichfield	14.5	10.6	14.5	10.1
1-C-H41	Coppice Grove, Lichfield	20.3	14.4	14.8	10.4
1-C-H42	New Haven, Fradley	15.9	11.5	14.5	10.1
1-C-H43	Highbridge House, Hill Ridware	14.7	10.7	14.6	10.3
1-C-H44	Thimble Cottage, Hill Ridware	13.5	9.9	14.1	10.0
1-C-H45	Oaklands Close, Hillridware	13.5	9.9	14.1	10.0
1-C-H46	Henry Chadwick Primary School, Hill Ridware	13.5	9.9	14.1	10.0
1-C-H47	Street Hay Cottage, Streethay	19.4	13.9	16.1	11.1
1-C-H48	Worcester Close, Lichfield	15.5	11.3	14.2	10.0

Assessment results

6.3.7 Table 16, Table 17 and Table 18 provides the summary of the modelled pollutant concentrations for the assessed receptors. The magnitude of change and impact descriptor are also derived following the IAQM / Environmental Protection UK (EPUK) methodology¹⁴.

Table 16: 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			
1-C-H1	Residential development of 71 new homes, including 62 affordable homes, access, landscaping and all associated works near A513 (14_01018_FULM)	15.7	15.8	0.1	Negligible	Not significant
1-C-H2	Rosewood Farm, Rugeley	10.0	10.1	0.1	Negligible	Not significant
1-C-H3	Luthbur, Pipe Ridware, Rugeley	9.3	9.3	0.0	Negligible	Not significant
1-C-H4	Hadley Gate Farm, Rugeley	9.4	9.5	0.1	Negligible	Not significant
1-C-H5	Hamley Fields, Rugeley	9.4	9.6	0.2	Negligible	Not significant
1-C-H6	Bleak Cottage	9.4	9.9	0.5	Negligible	Not significant
1-C-H7	Rose Cottage, Rileyhill	10.4	10.4	0.0	Negligible	Not significant
1-C-H8	Parva House, Pipe Ridware	10.0	10.1	0.1	Negligible	Not significant
1-C-H9	Dimble Cottage, Blithbury	9.7	9.9	0.2	Negligible	Not significant
1-C-H10	Echills Farmhouse, Kings Bromley	10.3	10.3	0.0	Negligible	Not significant
1-C-H11	Woodhouse Farm, Pipe Ridware	9.2	9.3	0.1	Negligible	Not significant
1-C-H12	Barn Farmhouse, Rileyhill	10.3	10.3	0.0	Negligible	Not significant

¹⁴ 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			
1-C-H13	Conversion of existing agricultural buildings to two dwellings on Pipe Lane (12_01025_COU)	9.4	9.5	0.1	Negligible	Not significant
1-C-H14	Wellfield Road, Alrewas	26.3	26.5	0.2	Negligible	Not significant
1-C-H15	Wharf Farmhouse, Bromley Hayes	12.1	12.2	0.1	Negligible	Not significant
1-C-H16	Glebe Cottage, Rugeley	12.4	12.5	0.1	Negligible	Not significant
1-C-H17	Lysways Lodge, Longdon	13.0	13.1	0.1	Negligible	Not significant
1-C-H18	The Meadows, Lichfield	11.6	11.7	0.1	Negligible	Not significant
1-C-H19	Rileyhill Farm, Rileyhill	11.2	11.2	0.0	Negligible	Not significant
1-C-H20	Cherry Orchard Farm, Longdon	12.4	12.5	0.1	Negligible	Not significant
1-C-H21	Mill House, Lichfield	16.4	16.4	0.0	Negligible	Not significant
1-C-H22	Croxall Road, Alrewas	35.6	35.9	0.3	Negligible	Not significant
1-C-H23	Hill Top Coppice, Brereton Hill	13.0	13.0	0.0	Negligible	Not significant
1-C-H24	Bridge Bungalow, Rugeley	19.3	19.3	0.0	Negligible	Not significant
1-C-H25	West Farmhouse, Lichfield	16.0	16.0	0.0	Negligible	Not significant
1-C-H26	Humpty Dumpty Day Nursery, Lichfield	18.9	19.1	0.2	Negligible	Not significant
1-C-H27	The Colliers, Rugeley	13.8	13.9	0.1	Negligible	Not significant
1-C-H28	Pool Farm, Kings Bromley	12.4	12.5	0.1	Negligible	Not significant
1-C-H29	Woods Farmhouse, Fradley	14.7	14.7	0.0	Negligible	Not significant
1-C-H30	Valley Lane, Lichfield	18.3	18.5	0.2	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			
1-C-H31	Wychnor Bridges Farm Cottage, Wychnor	28.0	28.1	0.1	Negligible	Not significant
1-C-H32	Bell Bridge Cottage, Lichfield	28.2	28.2	0.0	Negligible	Not significant
1-C-H33	The Hartlands, Longdon	13.8	13.9	0.1	Negligible	Not significant
1-C-H34	Whiteoaks, Kings Bromley	11.3	11.5	0.2	Negligible	Not significant
1-C-H35	Rookery Lodge, Kings Bromley	11.3	11.4	0.1	Negligible	Not significant
1-C-H36	Laburnum Cottage, Streethay	20.3	20.4	0.1	Negligible	Not significant
1-C-H37	Streethay House Farm, Streethay	19.0	19.0	0.0	Negligible	Not significant
1-C-H38	Eastfields, Hill Ridware	10.6	10.7	0.1	Negligible	Not significant
1-C-H39	Stafford Road, Lichfield	15.5	15.6	0.1	Negligible	Not significant
1-C-H40	Featherbed Cottages, Lichfield	15.8	16.0	0.2	Negligible	Not significant
1-C-H41	Coppice Grove, Lichfield	18.1	18.1	0.0	Negligible	Not significant
1-C-H42	New Haven, Fradley	13.7	13.7	0.0	Negligible	Not significant
1-C-H43	Highbridge House, Hill Ridware	11.4	11.4	0.0	Negligible	Not significant
1-C-H44	Thimble Cottage, Hill Ridware	10.8	10.9	0.1	Negligible	Not significant
1-C-H45	Oaklands Close, Hillridware	10.8	10.9	0.1	Negligible	Not significant
1-C-H46	Henry Chadwick Primary School, Hill Ridware	10.3	10.4	0.1	Negligible	Not significant
1-C-H47	Street Hay Cottage, Streethay	28.9	29.1	0.2	Negligible	Not significant
1-C-H48	Worcester Close, Lichfield	13.5	13.5	0.0	Negligible	Not significant

Table 17: Predicted annual mean PM10 concentrations and impacts (construction phase)

Receptor	Description/Location	PM10 concentrations ($\mu\text{g}/\text{m}^3$)		Change in PM10 concentrations ($\mu\text{g}/\text{m}^3$)	Impact descriptor	Significance
		2020 without the Proposed Scheme	2020 with the Proposed Scheme			
1-C-H1	Residential development of 71 new homes, including 62 affordable homes, access, landscaping and all associated works near A513 (14_01018_FULM)	13.7	13.8	0.1	Negligible	Not significant
1-C-H2	Rosewood Farm, Rugeley	13.0	13.0	0.0	Negligible	Not significant
1-C-H3	Luthbur, Pipe Ridware, Rugeley	13.9	13.9	0.0	Negligible	Not significant
1-C-H4	Hadley Gate Farm, Rugeley	13.8	13.8	0.0	Negligible	Not significant
1-C-H5	Hamley Fields, Rugeley	13.1	13.1	0.0	Negligible	Not significant
1-C-H6	Bleak Cottage	13.1	13.1	0.0	Negligible	Not significant
1-C-H7	Rose Cottage, Rileyhill	14.1	14.1	0.0	Negligible	Not significant
1-C-H8	Parva House, Pipe Ridware	13.7	13.7	0.0	Negligible	Not significant
1-C-H9	Dimble Cottage, Blithbury	14.0	14.0	0.0	Negligible	Not significant
1-C-H10	Echills Farmhouse, Kings Bromley	14.5	14.5	0.0	Negligible	Not significant
1-C-H11	Woodhouse Farm, Pipe Ridware	13.9	13.9	0.0	Negligible	Not significant
1-C-H12	Barn Farmhouse, Rileyhill	14.0	14.0	0.0	Negligible	Not significant
1-C-H13	Conversion of existing agricultural buildings to two dwellings on Pipe Lane (12_01025_COU)	13.8	13.8	0.0	Negligible	Not significant
1-C-H14	Wellfield Road, Alrewas	19.0	19.1	0.1	Negligible	Not significant
1-C-H15	Wharf Farmhouse, Bromley Hayes	14.7	14.7	0.0	Negligible	Not significant
1-C-H16	Glebe Cottage, Rugeley	14.9	15.0	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			
1-C-H17	Lysways Lodge, Longdon	14.6	14.6	0.0	Negligible	Not significant
1-C-H18	The Meadows, Lichfield	13.8	13.9	0.1	Negligible	Not significant
1-C-H19	Rileyhill Farm, Rileyhill	15.2	15.2	0.0	Negligible	Not significant
1-C-H20	Cherry Orchard Farm, Longdon	14.0	14.1	0.1	Negligible	Not significant
1-C-H21	Mill House, Lichfield	16.2	16.2	0.0	Negligible	Not significant
1-C-H22	Croxall Road, Alrewas	20.9	21.1	0.2	Negligible	Not significant
1-C-H23	Hill Top Coppice, Brereton Hill	13.6	13.6	0.0	Negligible	Not significant
1-C-H24	Bridge Bungalow, Rugeley	17.1	17.1	0.0	Negligible	Not significant
1-C-H25	West Farmhouse, Lichfield	15.9	15.9	0.0	Negligible	Not significant
1-C-H26	Humpty Dumpty Day Nursery, Lichfield	16.3	16.4	0.1	Negligible	Not significant
1-C-H27	The Colliers, Rugeley	14.2	14.2	0.0	Negligible	Not significant
1-C-H28	Pool Farm, Kings Bromley	15.5	15.5	0.0	Negligible	Not significant
1-C-H29	Woods Farmhouse, Fradley	15.0	15.0	0.0	Negligible	Not significant
1-C-H30	Valley Lane, Lichfield	16.1	16.1	0	Negligible	Not significant
1-C-H31	Wychnor Bridges Farm Cottage, Wychnor	18.2	18.3	0.1	Negligible	Not significant
1-C-H32	Bell Bridge Cottage, Lichfield	19.5	19.5	0.0	Negligible	Not significant
1-C-H33	The Hartlands, Longdon	14.5	14.6	0.1	Negligible	Not significant
1-C-H34	Whiteoaks, Kings Bromley	14.3	14.3	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			
1-C-H35	Rookery Lodge, Kings Bromley	14.7	14.7	0.0	Negligible	Not significant
1-C-H36	Laburnum Cottage, Streethay	17.3	17.4	0.1	Negligible	Not significant
1-C-H37	Streethay House Farm, Streethay	17.0	17.1	0.1	Negligible	Not significant
1-C-H38	Eastfields, Hill Ridware	14.2	14.2	0.0	Negligible	Not significant
1-C-H39	Stafford Road, Lichfield	14.7	14.7	0.0	Negligible	Not significant
1-C-H40	Featherbed Cottages, Lichfield	15.3	15.3	0.0	Negligible	Not significant
1-C-H41	Coppice Grove, Lichfield	15.5	15.5	0.0	Negligible	Not significant
1-C-H42	New Haven, Fradley	15.0	15.0	0.0	Negligible	Not significant
1-C-H43	Highbridge House, Hill Ridware	14.7	14.7	0.0	Negligible	Not significant
1-C-H44	Thimble Cottage, Hill Ridware	14.2	14.3	0.1	Negligible	Not significant
1-C-H45	Oaklands Close, Hillridware	14.3	14.3	0.0	Negligible	Not significant
1-C-H46	Henry Chadwick Primary School, Hill Ridware	14.2	14.2	0.0	Negligible	Not significant
1-C-H47	Street Hay Cottage, Streethay	18.6	18.7	0.1	Negligible	Not significant
1-C-H48	Worcester Close, Lichfield	14.6	14.7	0.1	Negligible	Not significant

Table 18: Predicted annual mean PM2.5 concentrations and impacts (construction phase)

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			
1-C-H1	Residential development of 71 new homes, including 62 affordable homes, access, landscaping and all associated works near A513 (14_01018_FULM)	9.9	9.9	0.0	Negligible	Not significant
1-C-H2	Rosewood Farm, Rugeley	9.2	9.2	0.0	Negligible	Not significant
1-C-H3	Luthbur, Pipe Ridware, Rugeley	9.7	9.7	0.0	Negligible	Not significant
1-C-H4	Hadley Gate Farm, Rugeley	9.6	9.6	0.0	Negligible	Not significant
1-C-H5	Hamley Fields, Rugeley	9.3	9.3	0.0	Negligible	Not significant
1-C-H6	Bleak Cottage	9.3	9.3	0.0	Negligible	Not significant
1-C-H7	Rose Cottage, Rileyhill	9.8	9.8	0.0	Negligible	Not significant
1-C-H8	Parva House, Pipe Ridware	9.6	9.6	0.0	Negligible	Not significant
1-C-H9	Dimble Cottage, Blithbury	9.7	9.7	0.0	Negligible	Not significant
1-C-H10	Echills Farmhouse, Kings Bromley	10.1	10.1	0.0	Negligible	Not significant
1-C-H11	Woodhouse Farm, Pipe Ridware	9.7	9.7	0.0	Negligible	Not significant
1-C-H12	Barn Farmhouse, Rileyhill	9.8	9.8	0.0	Negligible	Not significant
1-C-H13	Conversion of existing agricultural buildings to two dwellings on Pipe Lane (12_01025_COU)	9.7	9.7	0.0	Negligible	Not significant
1-C-H14	Wellfield Road, Alrewas	12.7	12.8	0.1	Negligible	Not significant
1-C-H15	Wharf Farmhouse, Bromley Hayes	10.3	10.3	0.0	Negligible	Not significant
1-C-H16	Glebe Cottage, Rugeley	10.5	10.5	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			
1-C-H17	Lysways Lodge, Longdon	10.2	10.2	0.0	Negligible	Not significant
1-C-H18	The Meadows, Lichfield	9.8	9.8	0.0	Negligible	Not significant
1-C-H19	Rileyhill Farm, Rileyhill	10.5	10.5	0.0	Negligible	Not significant
1-C-H20	Cherry Orchard Farm, Longdon	9.9	9.9	0.0	Negligible	Not significant
1-C-H21	Mill House, Lichfield	11.1	11.1	0.0	Negligible	Not significant
1-C-H22	Croxall Road, Alrewas	13.9	14.0	0.1	Negligible	Not significant
1-C-H23	Hill Top Coppice, Brereton Hill	9.7	9.7	0.0	Negligible	Not significant
1-C-H24	Bridge Bungalow, Rugeley	12.2	12.2	0.0	Negligible	Not significant
1-C-H25	West Farmhouse, Lichfield	10.9	10.9	0.0	Negligible	Not significant
1-C-H26	Humpty Dumpty Day Nursery, Lichfield	11.1	11.2	0.1	Negligible	Not significant
1-C-H27	The Colliers, Rugeley	10.2	10.2	0.0	Negligible	Not significant
1-C-H28	Pool Farm, Kings Bromley	10.6	10.7	0.1	Negligible	Not significant
1-C-H29	Woods Farmhouse, Fradley	10.5	10.5	0.0	Negligible	Not significant
1-C-H30	Valley Lane, Lichfield	11.0	11.0	0.0	Negligible	Not significant
1-C-H31	Wychnor Bridges Farm Cottage, Wychnor	12.3	12.4	0.1	Negligible	Not significant
1-C-H32	Bell Bridge Cottage, Lichfield	13.0	13.0	0.0	Negligible	Not significant
1-C-H33	The Hartlands, Longdon	10.3	10.4	0.1	Negligible	Not significant
1-C-H34	Whiteoaks, Kings Bromley	10.0	10.0	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			
1-C-H35	Rookery Lodge, Kings Bromley	10.2	10.2	0.0	Negligible	Not significant
1-C-H36	Laburnum Cottage, Streethay	11.8	11.8	0.0	Negligible	Not significant
1-C-H37	Streethay House Farm, Streethay	11.6	11.6	0.0	Negligible	Not significant
1-C-H38	Eastfields, Hill Ridware	10.0	10.1	0.1	Negligible	Not significant
1-C-H39	Stafford Road, Lichfield	10.3	10.3	0.0	Negligible	Not significant
1-C-H40	Featherbed Cottages, Lichfield	10.6	10.6	0.0	Negligible	Not significant
1-C-H41	Coppice Grove, Lichfield	10.8	10.8	0.0	Negligible	Not significant
1-C-H42	New Haven, Fradley	10.4	10.4	0.0	Negligible	Not significant
1-C-H43	Highbridge House, Hill Ridware	10.4	10.4	0.0	Negligible	Not significant
1-C-H44	Thimble Cottage, Hill Ridware	10.1	10.1	0.0	Negligible	Not significant
1-C-H45	Oaklands Close, Hillridware	10.1	10.1	0.0	Negligible	Not significant
1-C-H46	Henry Chadwick Primary School, Hill Ridware	10.0	10.0	0.0	Negligible	Not significant
1-C-H47	Street Hay Cottage, Streethay	12.6	12.6	0.0	Negligible	Not significant
1-C-H48	Worcester Close, Lichfield	10.3	10.3	0.0	Negligible	Not significant

6.3.8 Annual mean concentrations of NO₂, PM₁₀ and PM_{2.5} are predicted to be within the air quality standards with and without construction of the Proposed Scheme. Since the annual mean NO₂ concentrations are predicted to be well below 60µg/m³, the hourly mean standard is also expected to be met. Similarly, since the annual mean PM₁₀ concentrations are predicted to be below 35µg/m³, the daily mean standard is also expected to be met.

6.3.9 Negligible impacts are predicted at all receptors for annual mean NO₂, PM₁₀, PM_{2.5} concentrations.

Assessment of significance

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

6.4 Assessment of operational traffic emissions

Operational traffic model

6.4.1 Operational 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). 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

6.4.2 The screening process identified a total of eight roads in the Fradley to Colton 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:

- the A515 Lichfield Road;
- the B5013 Uttoxeter Road;
- Shaw Lane;
- Pipe Lane;
- Stonyford Lane;
- Hadley Gate Lane;
- Newlands Lane; and
- Moor Lane.

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

Receptors assessed

6.4.4 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 19). The location of all receptors is shown Volume 5: Map AQ-01-101.

6.4.5 One designated ecological site has been identified within 200m of the screened in roads, the Blithfield Reservoir SSSI, located north east of the Proposed Scheme near Admaston (Table 20).

Table 19: Modelled human receptors (operational phase)

Receptor	Description/Location	Ordnance Survey coordinates
1-O-H1	Dimble Cottage, Blithbury	408055,319729
1-O-H2	New House Farmhouse, Blithbury	408202,319995
1-O-H3	Plods End, Rugeley	405526,321261
1-O-H4	Lea Hall Farmhouse, Rugeley	404743,322757
1-O-H5	Hamley House Farm, Stockwell Heath	405028,321547
1-O-H6	Bleak Cottage, Rugeley	405526,321542
1-O-H7	Blithbury Bank Farmhouse, Blithbury	408358,320683
1-O-H8	Bank House Farm, Blithbury	408069,320702
1-O-H9	The Cottage, Pipe Ridware	409400,317703
1-O-H10	Wheelwrights House, Pipe Ridware	409584,317662
1-O-H11	Pipe Lane Farm, Blithbury	408585,319318
1-O-H12	Horizon School, Blithbury	408610,319908
1-O-H13	Firs Farm House, Blithbury	408447,320080
1-O-H14	Longacre Farm, Blithbury	408858,320032
1-O-H15	Goldhayfields Barn, Blithbury	409459,318971
1-O-H16	Edlyn Cottage, Rugeley	407210,320344
1-O-H17	Forge Cottages, Abbots Bromley	408601,323024
1-O-H18	Fair Haven, Admaston	405072,323191
1-O-H19	Crawley Lodge, Kings Bromley	412229,316190
1-O-H20	Woodgate Farm Cottage, Kings Bromley	412628,315990
1-O-H21	Lichfield Road, Kings Bromley	411967,316485
1-O-H22	Rookery Lodge, Kings Bromley	410862,316786
1-O-H23	White Oaks, Kings Bromley	411399,316358
1-O-H24	Shaw Lane Farm, Kings Bromley	411399,316123
1-O-H25	Hadley Gate Field Farm, Blithbury	407293,319733
1-O-H26	Manor Farmhouse, Blithbury	408236,320113
1-O-H27	Hurst Wood Farm, Rugeley	406595,320246

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Receptor	Description/Location	Ordnance Survey coordinates
1-O-H28	Rosewood Farm, Rugeley	406991,320265
1-O-H29	Crabtree Farmhouse, Stockwell Heath	405682,321902
1-O-H30	School Lane, Rugeley	408417,317686
1-O-H31	Barcliff, Rugeley	404382,321081
1-O-H32	Far End, Kings Bromley	411442,316264
1-O-H33	The Oaks, Riley Hill	411688,315140
1-O-H34	Lloyds Cottages, Colton	405230,320510
1-O-H35	Stockwell, Stockwell Heath	405643,321536
1-O-H36	Hamley Heath House, Hamley Heath	404492,321660
1-O-H37	Hadley Gate, Rugeley	407274,320474
1-O-H38	Holly Cottage, Riley Hill	411974,315087
1-O-H39	Oakleigh House, Blithbury	408416,320056
1-O-H40	Oakleigh House, Pipe Ridware	408416,320056
1-O-H41	Farm House, Pipe Ridware	409564,317754
1-O-H42	Old Wood Farm, Rugeley	406255,319670
1-O-H43	Blithbury Road, Colton	406513,320037
1-O-H44	Pool Farm, Riley Hill	411825,315232
1-O-H45	Rake End Cottage, Hill Ridware	407729,318623
1-O-H46	Luthbur, Pipe Ridware	409284,318075
1-O-H47	Bank Top Farm, Colton	405936,320314
1-O-H48	High Street, Colton	405270,320549
1-O-H49	Stoneyford House, Rugeley	407051,320217
1-O-H50	Stoneyford Farm, Blithbury	407514,319652
1-O-H51	Blithbury House, Rugeley	407955,320144
1-O-H52	Hollow Lane - Demolition of dwelling known as The Fuscias and erection of two storey side extension to form kitchen, family room, entrance hall, two bedrooms and en-suite and including a 2 bedroom granny annex (16_00599_FUL)	405759,320407
1-O-H53	Hamley House Farm - Change of use of barn to 3no bedroom dwelling house; change of use of swimming pool enclosure to 3no bedroom dwelling house (16_01019_FUL)	405027,321557
1-O-H54	Woodhouse Farm - Removal of condition no 14 of application 10/00581/COU relating to occupancy (14/00614/FUL)	409051,318764

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Table 20: Modelled ecological receptors (operational phase)

Ecological Receptor	Name	Distance from road (m)	Ordnance Survey coordinates
1-O-Eg	Blithfield Reservoir SSSI (north side of road)	5	405822, 323821
1-O-E1	Blithfield Reservoir SSSI (north side of road)	50	405803, 323861
1-O-E2	Blithfield Reservoir SSSI (north side of road)	100	405783, 323907
1-O-E3	Blithfield Reservoir SSSI (north side of road)	150	405764, 323956
1-O-E4	Blithfield Reservoir SSSI (north side of road)	200	405745, 324002
1-O-E10	Blithfield Reservoir SSSI (south side of road)	5	405830, 323800
1-O-E5	Blithfield Reservoir SSSI (south side of road)	50	405852, 323760
1-O-E6	Blithfield Reservoir SSSI (south side of road)	100	405874, 323716
1-O-E7	Blithfield Reservoir SSSI (south side of road)	150	405898, 323673
1-O-E8	Blithfield Reservoir SSSI (south side of road)	200	405920, 323627

Background concentrations

6.4.6 The background concentrations used in the assessment are shown in Table 21 and Table 22, taken from the Defra maps.

Table 21: Background 2027 concentrations at assessed receptors

Receptor	Description/Location	Background concentrations in 2027 ($\mu\text{g}/\text{m}^3$)			
		NO _x	NO ₂	PM ₁₀	PM _{2.5}
1-O-H1	Dimble Cottage, Blithbury	10.4	7.8	13.6	9.4
1-O-H2	New House Farmhouse, Blithbury	10.4	7.8	13.6	9.4
1-O-H3	Plods End, Rugeley	10.8	8.1	12.9	9.1
1-O-H4	Lea Hall Farmhouse, Rugeley	10.3	7.7	12.5	8.8
1-O-H5	Hamley House Farm, Stockwell Heath	10.8	8.1	12.9	9.1
1-O-H6	Bleak Cottage, Rugeley	10.8	8.1	12.9	9.1
1-O-H7	Blithbury Bank Farmhouse, Blithbury	10.2	7.7	13.0	9.1
1-O-H8	Bank House Farm, Blithbury	10.2	7.7	13.0	9.1
1-O-H9	The Cottage, Pipe Ridware	11.1	8.3	13.3	9.4
1-O-H10	Wheelwrights House, Pipe Ridware	11.1	8.3	13.3	9.4
1-O-H11	Pipe Lane Farm, Blithbury	10.4	7.8	13.6	9.4
1-O-H12	Horizon School, Blithbury	10.4	7.8	13.6	9.4
1-O-H13	Firs Farm House, Blithbury	10.2	7.7	13.0	9.1

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Receptor	Description/Location	Background concentrations in 2027 ($\mu\text{g}/\text{m}^3$)			
		NO _x	NO ₂	PM ₁₀	PM _{2.5}
1-O-H14	Longacre Farm, Blithbury	10.2	7.7	13.0	9.1
1-O-H15	Goldhayfields Barn, Blithbury	10.4	7.8	13.6	9.4
1-O-H16	Edlyn Cottage, Rugeley	10.5	7.9	13.5	9.3
1-O-H17	Forge Cottages, Abbots Bromley	9.6	7.3	12.5	8.8
1-O-H18	Fair Haven, Admaston	10.0	7.5	12.0	8.6
1-O-H19	Crawley Lodge, Kings Bromley	11.6	8.6	14.0	9.9
1-O-H20	Woodgate Farm Cottage, Kings Bromley	11.6	8.7	13.7	9.6
1-O-H21	Lichfield Road, Kings Bromley	11.5	8.6	13.8	9.6
1-O-H22	Rookery Lodge, Kings Bromley	11.7	8.7	14.2	9.8
1-O-H23	White Oaks, Kings Bromley	11.5	8.6	13.8	9.6
1-O-H24	Shaw Lane Farm, Kings Bromley	11.5	8.6	13.8	9.6
1-O-H25	Hadley Gate Field Farm, Blithbury	10.8	8.1	13.4	9.4
1-O-H26	Manor Farmhouse, Blithbury	10.2	7.7	13.0	9.1
1-O-H27	Hurst Wood Farm, Rugeley	11.0	8.2	12.7	9.0
1-O-H28	Rosewood Farm, Rugeley	11.0	8.2	12.7	9.0
1-O-H29	Crabtree Farmhouse, Stockwell Heath	10.8	8.1	12.9	9.1
1-O-H30	School Lane, Rugeley	11.7	8.7	13.8	9.7
1-O-H31	Barcliff, Rugeley	10.9	8.1	12.3	8.8
1-O-H32	Far End, Kings Bromley	11.5	8.6	13.8	9.6
1-O-H33	The Oaks, Riley Hill	12.6	9.3	14.8	10.2
1-O-H34	Lloyds Cottages, Colton	11.7	8.7	13.1	9.3
1-O-H35	Stockwell, Stockwell Heath	10.8	8.1	12.9	9.1
1-O-H36	Hamley Heath House, Hamley Heath	10.9	8.1	12.3	8.8
1-O-H37	Hadley Gate, Rugeley	10.5	7.9	13.5	9.3
1-O-H38	Holly Cottage, Riley Hill	12.6	9.3	14.8	10.2
1-O-H39	Oakleigh House, Blithbury	10.2	7.7	13.0	9.1
1-O-H40	Oakleigh House, Pipe Ridware	10.2	7.7	13.0	9.1
1-O-H41	Farm House, Pipe Ridware	11.1	8.3	13.3	9.4
1-O-H42	Old Wood Farm, Rugeley	11.4	8.5	13.1	9.2

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Receptor	Description/Location	Background concentrations in 2027 ($\mu\text{g}/\text{m}^3$)			
		NO _x	NO ₂	PM ₁₀	PM _{2.5}
1-O-H43	Blithbury Road, Colton	11.0	8.2	12.7	9.0
1-O-H44	Pool Farm, Riley Hill	12.6	9.3	14.8	10.2
1-O-H45	Rake End Cottage, Hill Ridware	11.3	8.4	13.9	9.6
1-O-H46	Luthbur, Pipe Ridware	10.4	7.8	13.6	9.4
1-O-H47	Bank Top Farm, Colton	11.7	8.7	13.1	9.3
1-O-H48	High Street, Colton	11.7	8.7	13.1	9.3
1-O-H49	Stoneyford House, Rugeley	10.5	7.9	13.5	9.3
1-O-H50	Stoneyford Farm, Blithbury	10.8	8.1	13.4	9.4
1-O-H51	Blithbury House, Rugeley	10.5	7.9	13.5	9.3
1-O-H52	Hollow Lane - Demolition of dwelling known as The Fuscias and erection of two storey side extension to form kitchen, family room, entrance hall, two bedrooms and en-suite and including a 2 bedroom granny annex (16_00599_FUL)	11.7	8.7	13.1	9.3
1-O-H53	Hamley House Farm - Change of use of barn to 3no bedroom dwelling house; change of use of swimming pool enclosure to 3no bedroom dwelling house (16_01019_FUL)	10.8	8.1	12.9	9.1
1-O-H54	Woodhouse Farm - Removal of condition no 14 of application 10/00581/COU relating to occupancy (14/00614/FUL)	10.4	7.8	13.6	9.4

Table 22: Modelled ecological receptor backgrounds, APIS data and critical loads

Receptor	Distance to road (m)	Description	Sensitive habitat	2020 NO _x background concentration ($\mu\text{g}/\text{m}^3$)	2020 NO ₂ background concentration ($\mu\text{g}/\text{m}^3$)	APIS data ³⁵ (average total nitrogen (N) deposition, kg N/ha/yr)
1-O-E1 to 14-O-E5	5 to 200	Blithfield Reservoir SSSI (north side of the road)	Broad Habitat: Littoral sediment	10.0	7.5	18.9
1-O-E6 to 1-O-E10	5 to 200	Blithfield Reservoir SSSI (south side of the road)	Broad Habitat: Littoral sediment	10.0	7.5	18.9

³⁵ Air Pollution Information System, <http://www.apis.ac.uk/>.

Assessment results

6.4.7 Table 23, Table 24 and Table 25 provide the summary of the modelled pollutant concentrations for the assessed human receptors. The magnitude of change and impact descriptor are also derived following the IAQM / EPUK methodology¹⁶. Table 26 also provides the summary of the ecological receptor assessment.

Table 23: 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			
1-O-H1	Dimble Cottage, Blithbury	8.2	8.2	0.0	Negligible	Not Significant
1-O-H2	New House Farmhouse, Blithbury	8.0	8.1	0.1	Negligible	Not Significant
1-O-H3	Plods End, Rugeley	8.1	8.1	0.0	Negligible	Not Significant
1-O-H4	Lea Hall Farmhouse, Rugeley	7.8	7.9	0.1	Negligible	Not Significant
1-O-H5	Hamley House Farm, Stockwell Heath	8.1	8.1	0.0	Negligible	Not Significant
1-O-H6	Bleak Cottage, Rugeley	8.1	8.1	0.0	Negligible	Not Significant
1-O-H7	Blithbury Bank Farmhouse, Blithbury	8.0	7.9	-0.1	Negligible	Not Significant
1-O-H8	Bank House Farm, Blithbury	7.8	7.8	0.0	Negligible	Not Significant
1-O-H9	The Cottage, Pipe Ridware	8.5	8.5	0.0	Negligible	Not Significant
1-O-H10	Wheelwrights House, Pipe Ridware	8.4	8.4	0.0	Negligible	Not Significant
1-O-H11	Pipe Lane Farm, Blithbury	7.9	7.9	0.0	Negligible	Not Significant
1-O-H12	Horizon School, Blithbury	7.9	7.9	0.0	Negligible	Not Significant

¹⁶ 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			
1-O-H13	Firs Farm House, Blithbury	7.9	7.9	0.0	Negligible	Not Significant
1-O-H14	Longacre Farm, Blithbury	7.7	7.7	0.0	Negligible	Not Significant
1-O-H15	Goldhayfields Barn, Blithbury	7.8	7.8	0.0	Negligible	Not Significant
1-O-H16	Edlyn Cottage, Rugeley	8.0	8.0	0.0	Negligible	Not Significant
1-O-H17	Forge Cottages, Abbots Bromley	7.4	7.4	0.0	Negligible	Not Significant
1-O-H18	Fair Haven, Admaston	8.0	8.1	0.1	Negligible	Not Significant
1-O-H19	Crawley Lodge, Kings Bromley	8.7	8.7	0.0	Negligible	Not Significant
1-O-H20	Woodgate Farm Cottage, Kings Bromley	8.7	8.7	0.0	Negligible	Not Significant
1-O-H21	Lichfield Road, Kings Bromley	9.9	9.8	-0.1	Negligible	Not Significant
1-O-H22	Rookery Lodge, Kings Bromley	9.6	9.4	-0.2	Negligible	Not Significant
1-O-H23	White Oaks, Kings Bromley	9.4	9.2	-0.2	Negligible	Not Significant
1-O-H24	Shaw Lane Farm, Kings Bromley	8.8	8.7	-0.1	Negligible	Not Significant
1-O-H25	Hadley Gate Field Farm, Blithbury	8.2	8.2	0.0	Negligible	Not Significant
1-O-H26	Manor Farmhouse, Blithbury	8.3	8.3	0.0	Negligible	Not Significant
1-O-H27	Hurst Wood Farm, Rugeley	8.4	8.5	0.1	Negligible	Not Significant
1-O-H28	Rosewood Farm, Rugeley	8.5	8.4	-0.1	Negligible	Not Significant
1-O-H29	Crabtree Farmhouse, Stockwell Heath	8.1	8.1	0.0	Negligible	Not Significant
1-O-H30	School Lane, Rugeley	8.7	8.7	0.0	Negligible	Not Significant

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			
1-O-H31	Barcliff, Rugeley	8.9	8.9	0.0	Negligible	Not Significant
1-O-H32	Far End, Kings Bromley	9.0	8.9	-0.1	Negligible	Not Significant
1-O-H33	The Oaks, Riley Hill	9.5	9.5	0.0	Negligible	Not Significant
1-O-H34	Lloyds Cottages, Colton	9.1	9.1	0.0	Negligible	Not Significant
1-O-H35	Stockwell, Stockwell Heath	8.1	8.1	0.0	Negligible	Not Significant
1-O-H36	Hamley Heath House, Hamley Heath	8.7	8.4	-0.3	Negligible	Not Significant
1-O-H37	Hadley Gate, Rugeley	8.0	8.0	0.0	Negligible	Not Significant
1-O-H38	Holly Cottage, Riley Hill	9.4	9.4	0.0	Negligible	Not Significant
1-O-H39	Oakleigh House, Blithbury	7.8	7.8	0.0	Negligible	Not Significant
1-O-H40	Oakleigh House, Pipe Ridware	7.8	7.8	0.0	Negligible	Not Significant
1-O-H41	Farm House, Pipe Ridware	8.5	8.4	-0.1	Negligible	Not Significant
1-O-H42	Old Wood Farm, Rugeley	8.8	8.7	-0.1	Negligible	Not Significant
1-O-H43	Blithbury Road, Colton	8.5	8.4	-0.1	Negligible	Not Significant
1-O-H44	Pool Farm, Riley Hill	10.3	9.7	-0.6	Negligible	Not Significant
1-O-H45	Rake End Cottage, Hill Ridware	8.7	8.7	0.0	Negligible	Not Significant
1-O-H46	Luthbur, Pipe Ridware	7.9	7.9	0.0	Negligible	Not Significant
1-O-H47	Bank Top Farm, Colton	8.8	8.8	0.0	Negligible	Not Significant
1-O-H48	High Street, Colton	8.9	8.9	0.0	Negligible	Not Significant

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			
1-O-H49	Stoneyford House, Rugeley	8.2	8.0	-0.2	Negligible	Not Significant
1-O-H50	Stoneyford Farm, Blithbury	8.2	8.2	0.0	Negligible	Not Significant
1-O-H51	Blithbury House, Rugeley	8.1	8.1	0.0	Negligible	Not Significant
1-O-H52	Hollow Lane - Demolition of dwelling known as The Fuscias and erection of two storey side extension to form kitchen, family room, entrance hall, two bedrooms and en-suite and including a 2 bedroom granny annex (16_00599_FUL)	8.8	8.8	0.0	Negligible	Not Significant
1-O-H53	Hamley House Farm - Change of use of barn to 3no bedroom dwelling house; change of use of swimming pool enclosure to 3no bedroom dwelling house (16_01019_FUL)	8.1	8.1	0.0	Negligible	Not Significant
1-O-H54	Woodhouse Farm - Removal of condition no 14 of application 10/00581/COU relating to occupancy (14/00614/FUL)	7.9	7.9	0.0	Negligible	Not Significant

Table 24: 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			
1-O-H1	Dimble Cottage, Blithbury	13.7	13.7	0.0	Negligible	Not Significant
1-O-H2	New House Farmhouse, Blithbury	13.7	13.7	0.0	Negligible	Not Significant
1-O-H3	Plods End, Rugeley	12.9	12.9	0.0	Negligible	Not Significant
1-O-H4	Lea Hall Farmhouse, Rugeley	12.6	12.6	0.0	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	Significance
		2027 without the Proposed Scheme	2027 with the Proposed Scheme			
1-O-H5	Hamley House Farm, Stockwell Heath	12.9	12.9	0.0	Negligible	Not Significant
1-O-H6	Bleak Cottage, Rugeley	12.9	12.9	0.0	Negligible	Not Significant
1-O-H7	Blithbury Bank Farmhouse, Blithbury	13.1	13.1	0.0	Negligible	Not Significant
1-O-H8	Bank House Farm, Blithbury	13.1	13.1	0.0	Negligible	Not Significant
1-O-H9	The Cottage, Pipe Ridware	13.4	13.4	0.0	Negligible	Not Significant
1-O-H10	Wheelwrights House, Pipe Ridware	13.3	13.3	0.0	Negligible	Not Significant
1-O-H11	Pipe Lane Farm, Blithbury	13.6	13.6	0.0	Negligible	Not Significant
1-O-H12	Horizon School, Blithbury	13.6	13.6	0.0	Negligible	Not Significant
1-O-H13	Firs Farm House, Blithbury	13.1	13.1	0.0	Negligible	Not Significant
1-O-H14	Longacre Farm, Blithbury	13.1	13.1	0.0	Negligible	Not Significant
1-O-H15	Goldhayfields Barn, Blithbury	13.6	13.6	0.0	Negligible	Not Significant
1-O-H16	Edlyn Cottage, Rugeley	13.5	13.5	0.0	Negligible	Not Significant
1-O-H17	Forge Cottages, Abbots Bromley	12.5	12.5	0.0	Negligible	Not Significant
1-O-H18	Fair Haven, Admaston	12.2	12.2	0.0	Negligible	Not Significant
1-O-H19	Crawley Lodge, Kings Bromley	14.0	14.0	0.0	Negligible	Not Significant
1-O-H20	Woodgate Farm Cottage, Kings Bromley	13.7	13.7	0.0	Negligible	Not Significant
1-O-H21	Lichfield Road, Kings Bromley	14.2	14.2	0.0	Negligible	Not Significant
1-O-H22	Rookery Lodge, Kings Bromley	14.4	14.4	0.0	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	Significance
		2027 without the Proposed Scheme	2027 with the Proposed Scheme			
1-O-H23	White Oaks, Kings Bromley	14.0	14.0	0.0	Negligible	Not Significant
1-O-H24	Shaw Lane Farm, Kings Bromley	13.9	13.9	0.0	Negligible	Not Significant
1-O-H25	Hadley Gate Field Farm, Blithbury	13.5	13.5	0.0	Negligible	Not Significant
1-O-H26	Manor Farmhouse, Blithbury	13.2	13.2	0.0	Negligible	Not Significant
1-O-H27	Hurst Wood Farm, Rugeley	12.7	12.8	0.1	Negligible	Not Significant
1-O-H28	Rosewood Farm, Rugeley	12.8	12.7	-0.1	Negligible	Not Significant
1-O-H29	Crabtree Farmhouse, Stockwell Heath	12.9	12.9	0.0	Negligible	Not Significant
1-O-H30	School Lane, Rugeley	13.8	13.8	0.0	Negligible	Not Significant
1-O-H31	Barcliff, Rugeley	12.5	12.5	0.0	Negligible	Not Significant
1-O-H32	Far End, Kings Bromley	13.9	13.9	0.0	Negligible	Not Significant
1-O-H33	The Oaks, Riley Hill	14.9	14.9	0.0	Negligible	Not Significant
1-O-H34	Lloyds Cottages, Colton	13.1	13.1	0.0	Negligible	Not Significant
1-O-H35	Stockwell, Stockwell Heath	12.9	12.9	0.0	Negligible	Not Significant
1-O-H36	Hamley Heath House, Hamley Heath	12.5	12.4	-0.1	Negligible	Not Significant
1-O-H37	Hadley Gate, Rugeley	13.5	13.5	0.0	Negligible	Not Significant
1-O-H38	Holly Cottage, Riley Hill	14.9	14.8	-0.1	Negligible	Not Significant
1-O-H39	Oakleigh House, Blithbury	13.1	13.1	0.0	Negligible	Not Significant
1-O-H40	Oakleigh House, Pipe Ridware	13.1	13.1	0.0	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	Significance
		2027 without the Proposed Scheme	2027 with the Proposed Scheme			
1-O-H41	Farm House, Pipe Ridware	13.4	13.4	0.0	Negligible	Not Significant
1-O-H42	Old Wood Farm, Rugeley	13.2	13.2	0.0	Negligible	Not Significant
1-O-H43	Blithbury Road, Colton	12.8	12.8	0.0	Negligible	Not Significant
1-O-H44	Pool Farm, Riley Hill	15.1	14.9	-0.2	Negligible	Not Significant
1-O-H45	Rake End Cottage, Hill Ridware	14.0	14.0	0.0	Negligible	Not Significant
1-O-H46	Luthbur, Pipe Ridware	13.6	13.6	0.0	Negligible	Not Significant
1-O-H47	Bank Top Farm, Colton	13.1	13.1	0.0	Negligible	Not Significant
1-O-H48	High Street, Colton	13.1	13.1	0.0	Negligible	Not Significant
1-O-H49	Stoneyford House, Rugeley	13.5	13.5	0.0	Negligible	Not Significant
1-O-H50	Stoneyford Farm, Blithbury	13.5	13.5	0.0	Negligible	Not Significant
1-O-H51	Blithbury House, Rugeley	13.6	13.6	0.0	Negligible	Not Significant
1-O-H52	Hollow Lane - Demolition of dwelling known as The Fuscias and erection of two storey side extension to form kitchen, family room, entrance hall, two bedrooms and en-suite and including a 2 bedroom granny annex (16_00599_FUL)	13.1	13.1	0.0	Negligible	Not Significant
1-O-H53	Hamley House Farm - Change of use of barn to 3no bedroom dwelling house; change of use of swimming pool enclosure to 3no bedroom dwelling house (16_01019_FUL)	12.9	12.9	0.0	Negligible	Not Significant
1-O-H54	Woodhouse Farm - Removal of condition no 14 of application 10/00581/COU relating to occupancy (14/00614/FUL)	13.6	13.6	0.0	Negligible	Not Significant

Table 25: Predicted annual mean PM2.5 concentrations and impacts (operation phase)

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			
1-O-H1	Dimble Cottage, Blithbury	9.5	9.5	0.0	Negligible	Not Significant
1-O-H2	New House Farmhouse, Blithbury	9.5	9.5	0.0	Negligible	Not Significant
1-O-H3	Plods End, Rugeley	9.1	9.1	0.0	Negligible	Not Significant
1-O-H4	Lea Hall Farmhouse, Rugeley	8.9	8.9	0.0	Negligible	Not Significant
1-O-H5	Hamley House Farm, Stockwell Heath	9.1	9.1	0.0	Negligible	Not Significant
1-O-H6	Bleak Cottage, Rugeley	9.1	9.1	0.0	Negligible	Not Significant
1-O-H7	Blithbury Bank Farmhouse, Blithbury	9.2	9.1	-0.1	Negligible	Not Significant
1-O-H8	Bank House Farm, Blithbury	9.1	9.1	0.0	Negligible	Not Significant
1-O-H9	The Cottage, Pipe Ridware	9.4	9.4	0.0	Negligible	Not Significant
1-O-H10	Wheelwrights House, Pipe Ridware	9.4	9.4	0.0	Negligible	Not Significant
1-O-H11	Pipe Lane Farm, Blithbury	9.4	9.4	0.0	Negligible	Not Significant
1-O-H12	Horizon School, Blithbury	9.4	9.4	0.0	Negligible	Not Significant
1-O-H13	Firs Farm House, Blithbury	9.1	9.1	0.0	Negligible	Not Significant
1-O-H14	Longacre Farm, Blithbury	9.1	9.1	0.0	Negligible	Not Significant
1-O-H15	Goldhayfields Barn, Blithbury	9.4	9.4	0.0	Negligible	Not Significant
1-O-H16	Edlyn Cottage, Rugeley	9.4	9.4	0.0	Negligible	Not Significant
1-O-H17	Forge Cottages, Abbots Bromley	8.8	8.8	0.0	Negligible	Not Significant
1-O-H18	Fair Haven, Admaston	8.7	8.7	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			
1-O-H19	Crawley Lodge, Kings Bromley	9.9	9.9	0.0	Negligible	Not Significant
1-O-H20	Woodgate Farm Cottage, Kings Bromley	9.6	9.6	0.0	Negligible	Not Significant
1-O-H21	Lichfield Road, Kings Bromley	9.9	9.9	0.0	Negligible	Not Significant
1-O-H22	Rookery Lodge, Kings Bromley	9.9	9.9	0.0	Negligible	Not Significant
1-O-H23	White Oaks, Kings Bromley	9.7	9.7	0.0	Negligible	Not Significant
1-O-H24	Shaw Lane Farm, Kings Bromley	9.6	9.6	0.0	Negligible	Not Significant
1-O-H25	Hadley Gate Field Farm, Blithbury	9.4	9.4	0.0	Negligible	Not Significant
1-O-H26	Manor Farmhouse, Blithbury	9.2	9.2	0.0	Negligible	Not Significant
1-O-H27	Hurst Wood Farm, Rugeley	9.0	9.0	0.0	Negligible	Not Significant
1-O-H28	Rosewood Farm, Rugeley	9.0	9.0	0.0	Negligible	Not Significant
1-O-H29	Crabtree Farmhouse, Stockwell Heath	9.1	9.1	0.0	Negligible	Not Significant
1-O-H30	School Lane, Rugeley	9.7	9.7	0.0	Negligible	Not Significant
1-O-H31	Barcliff, Rugeley	8.9	8.9	0.0	Negligible	Not Significant
1-O-H32	Far End, Kings Bromley	9.7	9.7	0.0	Negligible	Not Significant
1-O-H33	The Oaks, Riley Hill	10.2	10.2	0.0	Negligible	Not Significant
1-O-H34	Lloyds Cottages, Colton	9.3	9.3	0.0	Negligible	Not Significant
1-O-H35	Stockwell, Stockwell Heath	9.1	9.1	0.0	Negligible	Not Significant
1-O-H36	Hamley Heath House, Hamley Heath	8.9	8.8	-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
		2027 without the Proposed Scheme	2027 with the Proposed Scheme			
1-O-H37	Hadley Gate, Rugeley	9.4	9.4	0.0	Negligible	Not Significant
1-O-H38	Holly Cottage, Riley Hill	10.2	10.2	0.0	Negligible	Not Significant
1-O-H39	Oakleigh House, Blithbury	9.1	9.1	0.0	Negligible	Not Significant
1-O-H40	Oakleigh House, Pipe Ridware	9.1	9.1	0.0	Negligible	Not Significant
1-O-H41	Farm House, Pipe Ridware	9.4	9.4	0.0	Negligible	Not Significant
1-O-H42	Old Wood Farm, Rugeley	9.3	9.3	0.0	Negligible	Not Significant
1-O-H43	Blithbury Road, Colton	9.0	9.0	0.0	Negligible	Not Significant
1-O-H44	Pool Farm, Riley Hill	10.4	10.3	-0.1	Negligible	Not Significant
1-O-H45	Rake End Cottage, Hill Ridware	9.7	9.7	0.0	Negligible	Not Significant
1-O-H46	Luthbur, Pipe Ridware	9.4	9.4	0.0	Negligible	Not Significant
1-O-H47	Bank Top Farm, Colton	9.3	9.3	0.0	Negligible	Not Significant
1-O-H48	High Street, Colton	9.3	9.3	0.0	Negligible	Not Significant
1-O-H49	Stoneyford House, Rugeley	9.4	9.4	0.0	Negligible	Not Significant
1-O-H50	Stoneyford Farm, Blithbury	9.4	9.4	0.0	Negligible	Not Significant
1-O-H51	Blithbury House, Rugeley	9.4	9.4	0.0	Negligible	Not Significant
1-O-H52	Hollow Lane - Demolition of dwelling known as The Fuscias and erection of two storey side extension to form kitchen, family room, entrance hall, two bedrooms and en-suite and including a 2 bedroom granny annex (16_00599_FUL)	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
		2027 without the Proposed Scheme	2027 with the Proposed Scheme			
1-O-H53	Hamley House Farm - Change of use of barn to 3no bedroom dwelling house; change of use of swimming pool enclosure to 3no bedroom dwelling house (16_01019_FUL)	9.1	9.1	0.0	Negligible	Not Significant
1-O-H54	Woodhouse Farm - Removal of condition no 14 of application 10/00581/COU relating to occupancy (14/00614/FUL)	9.4	9.4	0.0	Negligible	Not Significant

Table 26: Predicted annual mean of NOx concentrations at ecological sites (operation 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
		2027 without the Proposed Scheme	2027 with the Proposed Scheme				
Blithfield Reservoir SSSI (north side of the road)	5	19.0	19.0	0.09%	Below standard	Imperceptible	Not significant
	50	18.9	18.9	0.02%	Below standard	Imperceptible	Not significant
	100	18.9	18.9	0.01%	Below standard	Imperceptible	Not significant
	150	18.9	18.9	0.01%	Below standard	Imperceptible	Not significant
	200	18.9	18.9	0.01%	Below standard	Imperceptible	Not significant
Blithfield Reservoir SSSI (south side of the road)	5	19.0	19.0	0.05%	Below standard	Imperceptible	Not significant
	50	18.9	18.9	0.02%	Below standard	Imperceptible	Not significant
	100	18.9	18.9	0.01%	Below standard	Imperceptible	Not significant
	150	18.9	18.9	0.01%	Below standard	Imperceptible	Not significant
	200	18.9	18.9	0.01%	Below standard	Imperceptible	Not significant

- 6.4.8 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 well below 60µg/m³, the hourly mean standard is also expected to be met. Similarly, since the annual mean PM₁₀ concentrations are predicted to be below 35µg/m³, the daily mean standard is also expected to be met.
- 6.4.9 Negligible impacts are predicted at all receptors for annual mean NO₂, PM₁₀, PM_{2.5} concentrations.
- 6.4.10 NO_x concentrations at the Blithfield Reservoir SSSI are predicted to be below the air quality standard.

Assessment of significance

- 6.4.11 No significant effects are anticipated at any receptors in relation to annual mean NO₂, PM₁₀ and PM_{2.5} concentrations.
- 6.4.12 For ecological sites, the effect is considered to be not significant 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. Similarly, if the change in N deposition is predicted to be less than 1% of the lower critical load, the effect is considered to be not significant. Should the N deposition change by more than 1%, then the assessment of significance has been undertaken by an ecologist and reported within Volume 2¹⁷, Section 8, Ecology and biodiversity.
- 6.4.13 Since the predicted NO_x concentrations are below the air quality standard, no significant effects are predicted at the Blithfield Reservoir SSSI.

¹⁷ See ES Volume 2, CA1 Fradley to Colton Community area report

7 References

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