MIDDLEMARCH

Creation of an Air Pollution Evidence Base Brief to Support Local Plan HRA

Staffordshire, Wolverhampton, Walsall, Sandwell and Dudley

A Report to: South Staffordshire District Council
c/o the Combined Partnership Authorities
Report Number: RT-MME-159172-01, Rev B
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Declaration of Compliance

This study has been undertaken in accordance with British Standard 42020:2013 "Biodiversity, Code of Practice for Planning and Development". The information which we have prepared is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide **opinions.**

Disclaimer

The contents of this report are the responsibility of Middlemarch Environmental Ltd. It should be noted that, whilst every effort is made to meet the client's brief, no site investigation can ensure complete assessment or prediction of the natural environment. Middlemarch Environmental Ltd accepts no responsibility or liability for any use that is made of this document other than by the client for the purposes for which it was originally commissioned **and prepared.**

Validity of Data

The findings of this study are valid for a period of 24 months from the date of survey. If works have not commenced by this date, an updated site visit should be carried out by a suitably qualified ecologist to assess any changes in the habitats present on site, and to inform a review of the conclusions and recommendations made.

Non-Technical Summary

Project Background

In October 2022, Middlemarch Environmental were instructed by South Staffordshire District Council (SSDC) to prepare a brief; a detailed step by step methodology of how SSDC and one or more partnership Local Planning Authorities (hereafter referred to collectively as the 'partnership authorities') could establish a scientific and robust evidence base to determine the likely air pollution impacts (via increased traffic generation) on several European sites should emerging Local Plan/s be adopted.

Footprint Ecology's October 2022 Habitats Regulations Assessment (HRA) of the South Staffordshire Local Plan Review 2018-2038 (Publication Plan, Regulation 19) concluded that without additional evidence, and in line with the precautionary principle, the reasonable possibility of the proposed allocations resulting in traffic growth sufficient to have a significant impact upon several European sites via increased deposition of nitrogen (NO_x and NH_3) could not be screened out.

This work is, in the first instance, to support the undertaking of the Local Plan Habitats Regulations Assessment/s for SSDC, for which Footprint Ecology Ltd has already been engaged.

However, the evidence base that is to be established is planned to be sufficient (in its geographic scope and scale of considered in-combination traffic growth) to allow it to be used as an evidence base to support the HRAs of the other partnership authorities over several years, as proposed allocations within Local Plan/s move forward.

This brief does not consider traffic generation created as a result of agricultural development or their subsequent operations.

This brief clarifies in detail the European sites, road locations, methodology and thresholds by which further screening will be undertaken.

It is important to note that if the screening threshold for a European site is exceeded, this does not result in the conclusion that increased air pollution will have a significant impact upon the qualifying features of the European site, the habitats or ecological functions upon which the qualifying feature rely or else prevent or otherwise impede the delivery of the site/s conservation objectives. Rather, it displays that there is a likelihood of such an impact occurring and that an Appropriate Assessment must be undertaken to conclude if the level of atmospheric deposition of nitrogen (and the locations within the statutory boundaries where it is deposited) is likely to result in a significant impact upon the integrity of the European site.

For any European site where possible impacts cannot be screened out, this brief also outlines an approach by which an Appropriate Assessment can be undertaken to determine if the available nitrogen deposition volume and location is likely to result in a significant impact upon the integrity of the European site/s.

Natural England's consideration and input into this brief was sought and written comments were provided on the 8th of February 2023. Subsequently a meeting was held between Natural England and representatives of the partnership authorities on the 14th of February 2023 where further recommendations were provided. All recommendations and further considerations raised by Natural England have been incorporated into this revised Evidence Base Brief (Rev B).

The relevant European sites to be assessed are depicted in Drawing C159172-03 (see Map Annex RT-MME-159172-02). They comprise of all Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar Wetlands of International Importance land parcels where:

- The qualifying habitats or criterion for selection of the European site are known to be impacted by increased deposition of nitrogen;
- Increased deposition of nitrogen is known to impact on habitats on which the qualifying species or criterion for selection of the European site rely;
- The site is within the SSDC local plan area or the local plan area of another partner authority; or,
- The site is within 10km of the boundaries of these areas or has been identified by Natural England as requiring consideration.

The European sites considered within this brief are:

- Cannock Chase SAC;
- Pasturefields Salt Marsh SAC;
- West Midlands Mosses SAC;
- Midlands Meres and Mosses Phase 1 Ramsar Site;
- Midlands Meres and Mosses Phase 2 Ramsar Site;
- Mottey Meadows SAC;
- Cannock Extension Canal SAC;
- Fens Pools SAC,
- Peak District Dales SAC, and
- Bees Nest and Green Clay Pits SAC

Contents

1. Identification of Assessment Locations

1.1. Introduction

1.1.1. The Department of Transport's Transport Analysis Guidance[1] states *"Beyond 200m the contribution of vehicle emissions from roadside to local pollution levels is not significant"*.

1.1.2. Additionally, section 5.3.7 of the Institute of Air Quality Management (IAQM) 2020 guidance on the assessment of air quality impacts on designated nature conservation sites[2] concludes *"For strategic planning, where substantial changes in traffic volumes are being considered, there is the potential for wider-scale impacts, which can potentially affect the future background concentrations, as well as concentrations within 200m of individual roads within the affected network."*

1.1.3. The 200m atmospheric deposition distance for vehicular emissions is also recognised by Natural England in their 2018 guidance (Approach to advising competent authorities on the assessment of road traffic emission under the Habitats Regulations", (NEA001-2018))[3]. The guidance advises that the first step is to identify the spatial distribution of qualifying features within a designated site and that if there are no qualifying features sensitive to air pollution within 200m of a road, then no further assessment is required.

1.1.4. Natural England's 2018 guidance determines that a Competent Authority should consider the implications of a plan or project against three 'nitrogen thresholds' when undertaking HRA screening.

1.1.5. These thresholds are:

- An increase (on any single road) in Annual Average Daily Traffic (AADT) of 1000 domestic vehicles or greater;
- An increase (on any single road) in AADT of 200 HGV or greater; or
- That the predicted pollution concentration of nutrient deposition for the oxides of nitrogen (NO_x), ammonia (NH_3) or nitrogen (N), due to vehicular emissions and/or direct emissions from the development is:
  - Equal to or greater than 1% of the pollutants Critical Level (µg/$m^{3\text{-}s}$), or
  - Equal to or greater than 1% of the site's Nitrogen Critical load (Kg/N/ha^1/$year^1$).

1.1.6. It should be noted that even if a plan exceeds either, or both AADT thresholds it may still be screened out if the level of modelled emissions and nitrogen deposition are shown to be less than 1% of the Nitrogen Critical Load of the European site under consideration.

1.1.7. Additionally, the impacts of increased air pollution on European sites due to traffic growth will also be determined in line with the Institute of Air Quality Management 2020

[1] Gov.uk, Transport analysis guidance, (2021), Available at: https://www.gov.uk/guidance/transport-analysis-guidance-tag
[2] Institute of Air Quality Management, (2020), A guide to the assessment of air quality impacts on designated nature conservation sites, V1.1, Available at: https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2020.pdf
[3] Natural England (2018), approach to advising competent authorities on the assessment of road traffic emission under the Habitats Regulations, NEA001-2018 , Available at: http://publications.naturalengland.org.uk/publication/4720542048845824

methodology[4] and using relevant critical load levels derived from the UK Air Pollution Information System (APIS) website.

1.2. Identification of Roads where Significant Traffic Growth May Occur

1.2.1. Drawing C159172-01 (see Map Annex RT-MME-159172-02) illustrates all roads within 200m of the boundary of all parcels of the ten European sites in consideration.

1.2.2. Consistent with the categories used by Footprint Ecology[5] the roads have been split into four different categories:

- *Motorways;*
- *A Roads;*
- *B Roads; or*
- *Unclassified/Minor Roads.*

1.2.3. For the majority of '*unclassified and minor roads',* due to their reduced traffic capacity and lack of connectivity between settlements and to areas of employment or services (i.e., medical, schools, provisioning, etc.) it can be considered highly unlikely the partner authorities land use allocations (either alone or in combination with partners plans) could result in a significant AADT increase (see Section 1.1.5).

1.2.4. As such (with some key exceptions) it is recommended that the majority of '*unclassified and minor roads'* can be screened out from the need for assessment of traffic growth.

1.2.5. Table 1.1. identifies what is considered to represent the key roads within 200m of the land parcels of European sites in consideration. For each key road a Recommended Assessment Point (RAP) has been determined.

[4] Institute of Air Quality Management, (2020), A guide to the assessment of air quality impacts on designated nature conservation sites, V1.1, Available at: https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2020.pdf
[5] Footprint Ecology, (2022), HRA of the South Staffordshire Local Plan Review 2018-2038 (publication Plan, Regulation 19), Available at: https://www.sstaffs.gov.uk/planning/local-plan-review-3.cfm

European Site Name	Land Parcel (If Applicable)	Road Type	Road Name	Location/s (Grid Ref)	RAP Ref Number
Cannock Chase SAC	N/A	A	A513	SJ 97863 20801	RAP 1
		A	A460 (Rugeley Rd)	SK 02167 14729	RAP 2
		Unclassified/Minor	Camp Rd	SJ 97715 17067	RAP 3
Pasturefields Salt Marsh SAC	N/A	A	A51	SJ 99458 24888	RAP 4
West Midlands Mosses SAC and Midlands Meres and Mosses Ramsar Phase 1 Site	Chartley Moss	A	A518	SK 02143 28927	RAP 5
	Wybunbury Moss	B	B5071	SJ 69555 49964	RAP 22
Midlands Meres and Mosses Phase 2 Ramsar Site	Aqualate Mere	Unclassified/Minor	Walkley Bank	SJ 75639 20961	RAP 6
		Unclassified/Minor	Guild Lane	SJ 78883 20220	RAP 7
	Cop Mere	Unclassified/Minor	Un-named Rd to East of Cop Mere	SJ 80303 29457	RAP 8
	Black Firs & Cranberry Bog	A	A531 (Newcastle Rd)	SJ 74654 50071	RAP 23
		Unclassified/Minor	Post Office Lane	SJ 74778 50478	RAP 24
	Oakhanger Moss	Motorway	M6	SJ 77091 55066	RAP 25
Mottey Meadows SAC	N/A	Unclassified/Minor	Marston Rd	SJ 84388 13684	RAP 9
Cannock Extension Canal SAC	N/A	A	A5 (Watling St)	SK 02021 06915	RAP 10
		B	B4154 (Lime Ln)	SK 02005 06290	RAP 11
Fens Pools SAC	N/A	A	A4101 (High Street)	SO 92068 89240	RAP 12
		A	A461 (Stourbridge Rd)	SO 92407 88622	RAP 13
Midlands Meres and Mosses Ramsar Phase 1 Site	Betley Mere	Unclassified/Minor	Cracow Moss	SJ 75260 47444	RAP 14

Table 1.1: Roads to be Assessed (Continues)

European Site Name	Land Parcel (if applicable)	Road Type	Road Name	Location/s (Grid Ref)	RAP Ref Number
Peak District Dales SAC	N/A	Unclassified/Minor	The Pinch	SK 1461 5507	RAP 15
		Unclassified/Minor	Liffs Rd	SK 1579 5673	RAP 16
		Unclassified/Minor	Larkstone Lane	SK 1003 5411	RAP 17
		Unclassified/Minor	-	SK 1225 5156	RAP 18
		Unclassified/Minor	-	SK 1336 5042	RAP 19
		Unclassified/Minor	Leek Rd	SK 0984 5567	RAP 20
		Unclassified/Minor	Parwick Lane	SK 1942 5620	RAP 21
Bees Nest & Green Clay Pits SAC	N/A	Unclassified/Minor	Manystones Lane	SK 24035 54943	RAP 26

Table 1.1: (Continued) Roads to be Assessed

1.2.6. In total it is considered that a robust screening assessment could be undertaken by determining the likely impact at 26 RAPs across the total area of consideration. The location of each RAP is depicted on Drawing C159172-02 (Map Annex RT-MME-159172-02).

1.2.7. However, it is considered that there is rationale to reduce the total RAPs down to ten locations without a material reduction in the robustness of the evidence base.

1.2.8. At the evidence base's inception stage, it appears highly unlikely that the adoption of land usage allocations within any of the partnership authorities' local plans (either alone or in combination) could result in a significant impact (as a result of increased nitrogen deposition derived from traffic growth) upon:

- Chartley Moss;
- Aqualate Mere;
- Mottey Meadows;
- Betely Mere;
- Wynbunbury Moss;
- Black Firs & Cranberry Bog
- Bees Nest & Green Clay Pits SAC or
- Any land parcel of the Peak District Dales SAC.

1.2.9. The rationale for Screening out these areas from the need for further assessment are provided in sections 1.3 to 1.10.

1.2.10. Whilst it is recommended that these land parcels could be removed from the need for further assessment (without degrading the robustness of the evidence base produced) it is important that discussions with the Appropriate Authority (Natural England) are undertaken on this matter, and due regard given to their considerations before determining the final approach.

1.3. Chartley Moss, Rationale for Scoping Out

1.3.1. Within 200m of Chartley Moss (which constitutes a land parcel of both West Midlands Mosses SAC and Midlands Meres and Mosses Ramsar Phase 1 Site) it is considered that adoption of land use allocations by the partnership authorities local plans could only result in significant traffic growth on the A518 (RAP 5).

1.3.2. This is due to all other roads within 200m either only:

- Providing access to private residences, or
- Being a single tracked road, which does not act as a link between settlements or a route to the provision of services.

1.3.3. It is considered highly unrealistic that the adoption of land use allocations (from one or more partnership local plans) could result in an increase in AADT of 1000 or greater domestic vehicles or 200 or greater HGVs along a single-track road, which does not provide a clear link between two settlements or provide a route linking areas or residential growth to employment or services.

1.3.4. As such the A518 is the only key road identified in Table 1.1.

1.3.5. Section 4.19 of Natural England's 2018 guidance (see Section 1.1.3) states:

- *"An early understanding of the spatial distribution of features within a site can help to decide whether or not appropriate assessment will be required*… [if] *any sensitive qualifying features are not present within the area to be affected by emissions (and Natural England's advice is that there is no conservation objective to restore the features to that area), it will be relatively straightforward to ascertain that the plan or project poses no credible air quality risk to it*."

1.3.6. The only habitat within the SAC and Ramsar site which lies within 200m of the A518 is an area of broad-leaved deciduous woodland within Parcel 5 of the underlying Chartley Moss SSSI[6]. Broad-leaved deciduous woodland is not a qualifying feature of the SAC designation, a criterion for its selection as a Ramsar site or a habitat upon which the species (which form its criterion for Ramsar selection) rely.

[6] Natural England, Chartley Moss SSSI, Parcel 5 'RAILWAY – BUFFER', Site information, Available at: https://designatedsites.naturalengland.org.uk/UnitDetail.aspx?UnitId=1022792

1.3.7. In line with Natural England's 2018 guidance, no further assessment should be required on the Chartley Moss land parcel of the West Midlands Mosses SAC and the Midlands Meres and Mosses Ramsar Phase 1 Site.

1.4. Aqualate Mere, Rational for Scoping Out

1.4.1. No 'A' or 'B' roads lie within 200m of the boundary of Aqualate Mere.

1.4.2. Only two minor roads (Walkley Bank and Guild Lane) lie within 200m of the site boundary.

1.4.3. Both roads are single track along their entire length.

1.4.4. Walkley Bank (RAP 6) links the hamlets of Meretown and Forton.

1.4.5. Guild Lane (RAP 7) does not provide a clear link between any settlements or provide a route linking areas or residential growth to employment or services, rather it functions primarily to provide access to a small capacity car park by which members of the public can access Aqualate Mere.

1.4.6. Due to their inherent low traffic capacity and their lack of obvious connectivity between notable settlements, places of employment or services, it is considered highly unrealistic to consider that the adoption of land use allocations (from one or more local plans) would result in an increase in AADT of 1000 (or greater) domestic vehicles or 200 (or greater) HGVs on either of the minor roads within 200m of the boundary of Aqualate Mere.

1.4.7. Section 4.17 of the Natural England's 2018 Guidelines (see Section 1.1.3) states:

- *"Usually, only those European sites present within 200m of the edge of a road on which a plan or project will generate traffic will need to be considered when checking for the likelihood of significant effects from road traffic emissions."*

1.4.8. Based on the information available it appears highly unlikely that the future adoption of partnership local authorities' local plans (alone or in combination) could result in a measurable increase in annual traffic generation on either Walkley Bank or Guild Lane.

1.4.9. In line with Natural England's 2018 guidelines[7] no further assessment should be required on the Aqualate Mere land parcel of the Midlands Meres and Mosses Phase 2 Ramsar Site.

[7] [7] Natural England (2018), approach to advising competent authorities on the assessment of road traffic emission under the Habitats Regulations, NEA001-2018 , Available at: http://publications.naturalengland.org.uk/publication/4720542048845824

1.5. Mottey Meadows, Rational for Scoping Out

1.5.1. No ‘A’ or ‘B’ roads lie within 200m of the boundary of Mottey Meadows SAC.

1.5.2. Only two minor roads (Marston Road and Gay Lane) lie within 200m of the site boundary.

1.5.3. Both roads are single track along their entire length.

1.5.4. Gay Lane only provides access to a single private residence.

1.5.5. Marston Road (RAP 9) links the village of Wheaton Aston to the hamlet of Marston.

1.5.6. Due to their inherent low traffic capacity and their lack of obvious connectivity between notable settlements and places of employment or services, it is highly unrealistic to consider that the adoption of land use allocations (from one or more of the partnership authorities’ local plans) would result in an increase in AADT of 1000 (or greater) domestic vehicles or 200 (or greater) HGVs on either of the minor roads within 200m of the boundary of Mottey Meadows.

1.5.7. Based on the information available it appears highly unlikely that the future adoption of partnership local authorities’ local plans (alone or in combination) could result in a measurable increase in annual traffic generation on either Gay Lane or Marston Road.

1.5.8. In line with Natural England’s 2018[8] guidelines no further assessment should be required on Mottey Meadows SAC.

1.6. Betley Mere, Rational for Scoping Out

1.6.1. Betley Mere (a land parcel of the Midlands Meres and Mosses Ramsar Phase 1 Site) does not lie within a partnership authorities’ boundary but does lie within 10km of a jurisdictive boundary.

1.6.2. No ‘A’ or ‘B’ roads lie within 200m of the Betley Mere land parcel of the Midlands Meres and Mosses Ramsar Phase 1 Site.

1.6.3. Only one minor road (Cracow Moss) lies within 200m of the site boundary.

1.6.4. Cracow Moss (RAP 14) only provides access to a small number of scattered private residences.

1.6.5. The road is single track along its entire length.

[8] Natural England (2018), approach to advising competent authorities on the assessment of road traffic emission under the Habitats Regulations, NEA001-2018 , Available at: http://publications.naturalengland.org.uk/publication/4720542048845824

1.6.6. Due to its inherent low traffic capacity and lack of any connectivity between notable settlements and places of employment or services, it is highly unrealistic to consider that the adoption of land use allocations (from one or more of the partnership authorities' local plans) would result in any increase in AADT on Cracow Moss.

1.6.7. In line with Natural England's 2018 guidelines[9] no further assessment should be required on the Betley Mere land parcel of the Midlands Meres and Mosses Ramsar Phase 1 Site.

1.7. Wynbunbury Moss, Rational for Scoping Out

1.7.1. No part of the Wynbunbury Moss (a land parcel of the Midlands Meres and Mosses Phase 1 Ramsar Site) lies within a partnership authorities' boundary, or within 10km of any jurisdictive boundary.

1.7.2. No 'A' roads lie within 200m of the boundary of Wynbunbury Moss and only one B road, Stock Lane is present (the B5071). Where Stock Lane is present within 200m of the site it is either at the very limit of the 200m deposition distance buffer or it is separated from the Ramsar site by intervening residential development (the village of Wybunbury). It is considered that the residential developments would likely act as anthropogenic physical barriers, notably reducing the dispersal distance of any air pollution, nitrogen deposition and acidification.

1.7.3. Stock Lane (RAP 22) links the village of Wynbunbury to the village of Shavington.

1.7.4. Based on the information available it appears highly unlikely that the future adoption of partnership local authorities' local plans (alone or in combination) could result in a measurable increase in annual traffic generation between the villages of Wynbunbury to the village of Shavington.

1.7.5. In line with Natural England's 2018 guidelines[10] no further assessment should be required on the Wynbunbury Moss land parcel of the Midlands Meres and Mosses Phase 1 Ramsar Site.

1.8. Black Firs & Cranberry Bog, Rational for Scoping Out

1.8.1. No part of the Black Firs and Cranberry Bog (a land parcel of the Midlands Meres and Mosses Phase 2 Ramsar Site) lies within a partnership authorities' boundary, or within 10km of any jurisdictive boundary.

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[9] Natural England (2018), approach to advising competent authorities on the assessment of road traffic emission under the Habitats Regulations, NEA001-2018 , Available at: http://publications.naturalengland.org.uk/publication/4720542048845824

[10] [10] Natural England (2018), approach to advising competent authorities on the assessment of road traffic emission under the Habitats Regulations, NEA001-2018 , Available at: http://publications.naturalengland.org.uk/publication/4720542048845824

1.8.2. Only one A road, Newcastle Rd (the A531) and one B road (B5500) lies within 200m of the boundary of the site.

1.8.3. Newcastle Rd (RAP 23) links several small villages and hamlets, Madeley Heath, Bowsey Wood, Wrinehil, Betley, New Thorntree, Hough, Shavington and Blakelow. It is considered highly unlikely that the future adoption of partnership local authorities' local plans (alone or in combination) could result in a measurable increase in annual traffic generation between these villages.

1.8.4. The B5500 runs north of the site and only likes the hamlet of New Thorntree to the hamlet of Balterley.

1.8.5. Only two minor roads are within 200m of the boundary of the site, Waybutt Lane and Post Office Lane.

1.8.6. Waybutt Lane provides access (off of the A531) to a single farm and the village of Chorlton.

1.8.7. Post Office Lane (RAP 24) provides an alternative access from the hamlet of New Thorntree to the B5500 and is single track along the majority of its length.

1.8.8. Based on the information available it appears highly unlikely that the future adoption of partnership local authorities' local plans (alone or in combination) could result in a measurable increase in annual traffic generation between the hamlets of New Thorntree and Balterley or result in additional trips to/from the village Chorlton.

1.8.9. In line with Natural England's 2018 guidelines[11] no further assessment should be required on the Black Firs and Cranberry Bog land parcel of the Midlands Meres and Mosses Phase 2 Ramsar Site.

1.9. Bees Nest & Green Clay Pits SAC, Rational for Scoping Out

1.9.1. No part of the Bees Nest and Green Clay Pits SAC lies within a partnership authorities' boundary, but it does lie within 10km of a jurisdictive boundary.

1.9.2. No 'A' or 'B' roads lie within 200m of the SAC boundary.

1.9.3. Only two minor roads, Manystones Lane (RAP 26) and Wirksworth Dale lie within 200m of the SAC boundary.

1.9.4. Both roads are single track along their entire length. Wirksworth Dale provides access to several fields. Manystone Lane links the villages of Bassington and Bolehill.

1.9.5. Based on the information available it appears highly unlikely that the future adoption of partnership local authorities' local plans (alone or in combination) could result in a

[11] [11] Natural England (2018), approach to advising competent authorities on the assessment of road traffic emission under the Habitats Regulations, NEA001-2018 , Available at: http://publications.naturalengland.org.uk/publication/4720542048845824

measurable increase in annual traffic generation to the fields along Wirkworth Dale or between the villages of Bassington and Bolehill.

1.9.6. In line with Natural England's 2018 guidelines no further assessment should be required on the Bees Nest and Green Clay Pits SAC.

1.10. Peak District Dales SAC, Rational for Scoping Out

1.10.1. No part of the Peak District Dales SAC lies within a partnership authorities' boundary, but several land parcels are within 10km of a jurisdictive boundary.

1.10.2. In total 17 land parcels (of varying sizes) lie within 10km of the jurisdictive boundary of a partnership authority.

1.10.3. No 'A' or 'B' roads lie within 200m of any of the land parcels of the Peak District Dales SAC which are partly, or wholly, within 10km of a jurisdictive boundary of a partnership authority.

1.10.4. Whilst a large number of roads lie within 200m of the 17 land parcels, the vast majority only provide access to isolated private residences and farms or are farm tracks providing access to fields and so are not public highways.

1.10.5. It is considered that seven key roads lie within 200m of the land parcels considered (The Pinch, Liffs Road, Larkstone Lane, Leek Road, Parwick Lane and two unnamed roads). All are minor roads.

1.10.6. All seven roads are single track along their entire length.

1.10.7. None of the roads appear to function as a link between any notable settlements, to connect a settlement/s with places of employment (with the exception of agricultural access) or services.

1.10.8. Due to their inherent low traffic capacity and their lack of obvious connectivity between notable settlements and places of employment or services, it is highly unrealistic to consider that the adoption of land use allocations (from one of more of the partnership authorities' local plans) would result in an increase in AADT of 1000 (or greater) domestic vehicles or 200 (or greater) HGVs on any of the identified seven key roads within 200m of any of the land parcels of the Peak District Dales SAC.

1.10.9. Based on the information available, it appears highly unlikely that the future adoption of partnership local authorities' local plans (alone or in combination) could result in a measurable increase in annual traffic generation on any of the key roads.

1.10.10. In line with Natural England's 2018[12] guidelines no further assessment should be required on the Peak District Dales.

[12] Natural England (2018), approach to advising competent authorities on the assessment of road traffic emission under the Habitats Regulations, NEA001-2018 , Available at: http://publications.naturalengland.org.uk/publication/4720542048845824

1.11. Recommended Assessment Locations

1.11.1. Based upon the rational provided above (see Sections 1.3 - 1.10), and assuming that consultation with Natural England is completed (and they provide written conformation confirming that they concur that the reasons for removing several European sites from further consideration to be robust), the revised list of RAP's is detailed below in Table 1.2.

European Site Name	Land Parcel (If Applicable)	Road Type	Road Name	Location/s (Grid Ref)	RAP Ref Number
Cannock Chase SAC	N/A	A	A513	SJ 97863 20801	RAP 1
		A	A460 (Rugeley Rd)	SK 02167 14729	RAP 2
		Unclassified/Minor	Camp Rd	SJ 97715 17067	RAP 3
Pasturefields Salt Marsh SAC	N/A	A	A51	SJ 99458 24888	RAP 4
Midlands Meres and Mosses Phase 2 Ramsar Site	Cop Mere	Unclassified/Minor	Un-named Rd to East of Cop Mere	SJ 80303 29457	RAP 8
	Oakhanger Moss	Motorway	M6	SJ 77091 55066	RAP 25
Cannock Extension Canal SAC	N/A	A	A5 (Watling St)	SK 02021 06915	RAP 10
		B	B4154 (Lime Ln)	SK 02005 06290	RAP 11
Fens Pools SAC	N/A	A	A4101 (High Street)	SO 92068 89240	RAP 12
		A	A461 (Stourbridge Rd)	SO 92407 88622	RAP 13

Table 1.2.: Roads to be Assessed after Scoping

2. Screening Thresholds

2.1. Screening Against Modelled AADT Growth

2.1.1. A suitably experienced Traffic and Transport Consultancy (TTC) should be engaged and provided with appropriately attributed shape files of all the land use allocations of the partnership authorities where preferred options are known[13].

2.1.2. At all RAPs the TTC must model the likely traffic growth of all known site allocations over the total extent of the (combined) local plan periods. This information can be derived via Trip Rate Information Computer System datasets (TRICS[14])[15].

2.1.3. TRICS is a national system of trip generation analysis based on an extensive database formed from several thousand transport surveys. This allows TRICS datasets to determine inbound and outbound traffic generation and trip dispersal for a wide variety of development types across all geographic regions of the UK.

2.1.4. The vehicular and HGV trip generation rates for all the site allocations provided to the TCC (and the likely destinations of these new trips) can be combined to determine likely net-AADT growth at each assessment location.

2.1.5. Site allocation's that will result in the re-development of a previously developed site (especially those that result in a reallocation from employment to residential) frequently have the outcome of changing traffic types and traffic patterns. These types of site allocation often result in changes in the types and patterns of vehicle trip cause by the site and will reduce in AADT on some roads whilst increasing it on others.

2.1.6. As such, where a site allocation is for the re-development of a currently developed and still operational, only its net-increase in AADT at any RAP should be considered.

[13] **Please note: It is understood that, at this time, many partnership authorities have not yet identified the preferred locations of future Local Plan allocations. This will not prevent the assessment being undertaken as the likely in-combination traffic growth / nitrogen deposition can be accounted for using national data sets to derive regional traffic growth factors which can then be used to reflect traffic growth from both 'unallocated partnership a thorites' and traffic growth originating from outside the combined partner authority's area (see Section 2.2). Subsequently, when a partnership authority (which currently lacks preferred allocation location data) wishes to assess the possible impacts of their own AADT growth, the traffic growth at all RAPs will need to be re-modelled (in accordance with the methodology detailed in Section 2.1), but only using the shape files of their allocations. Once AADT growth figures for that partnership authorities are determined (in isolation) they can then be compared against the previously modelled in-combination values at each RAP. Should their AADT growth be determined to be less than the previously modelled in-combination values then it can be assumed that their impacts have already been accounted for and their likely impacts fully assessed. Their AADT growth would then be deducted from the previously modelled in-combination values, reducing the 'pool' of in-combination AADT for future partnership authorities to test against. In this manner it is anticipated that the pool of in-combination AADT at each RAP will reduce over time as successive additional sets of Local Plan allocations are tested against it.**

[14] TRICS, 2022, Available at: https://www.trics.org/Default.aspx

[15] Based upon the TTC's advice, alternative traffic models to TRICS may be recommended to generate site specific trip data. These other models could be used if deemed more robust, but re-consultation with NE should occur prior to the adoption of an alternative model.

2.1.7. The net-AADT of site allocations on previously developed and still operational sites can be calculated by the TTC by:

- Determining the currently operational site's trip generation / AADT along the highway network, and
- Deducting the sites current trip generation / AADT figures from the modelled trip generation / AADT figures, attributed to its new allocation.

2.1.8. At any RAP where the likely **net-AADT of all known land usage allocations** is determined to be **0,** no further assessment is required at that location.

2.1.9. At any RAP where the likely **net-AADT of all known land usage allocations** is determined to be **between 1-999 domestic vehicles** or **1-199 HGV's,** an **in-combination assessment is required,** and the possible traffic growth caused by other plans and projects must be considered (see Section 1.6).

2.1.10. At any RAP where the likely **net-AADT of all known land usage allocations** is determined to be **1000 or greater domestic vehicles** or **200 or greater HGV's,** there is a **possible significant impact upon a European site in isolation.** In this instance then further screening against site specific critical load thresholds using nitrogen deposition modelling must occur (see Section 1.7).

2.2. Traffic Growth In-combination Assessment

2.2.1. The requirement for in-combination assessment is enshrined within the HRA process and must be undertaken on every potential impact which is shown to be insignificant in isolation.

2.2.2. By amalgamating the spatial data of all available preferred land usage allocations from multiple partnership authorities, their combined traffic growth at each RAP has already been calculated (via TRICS derived modelling) and considered against each other. However, this figure is unlikely to represent all the future traffic growth of these roads as:

- It is unable to account for traffic growth from those partnership authorities where the locations of preferred land usage allocation have yet to be determined; and
- It is unable to account for traffic growth originating from plans or projects that occur outside of the partner authority's area.

2.2.3. To account for both currently 'unallocated partnership authorities' and 'out of partnership area' growth it is considered that an appropriate value to represent likely in-combination growth could be determined by the TCC via usage of the Trip End Model Presentation Program (TEMPro[16]). TEMPro is used to view the National Trip End Model (NTEM[17])[18] which allows for the forecasting of regional traffic growth up to the end of the combined

[16] Trip End Model Presentation Program (TEMPro), available at: https://www.gov.uk/government/publications/tempro-downloads
[17] The Department for Transport (2022) National Trip End Model (NTEM), OGL, Available at: https://www.data.gov.uk/dataset/11bc7aaf-ddf6-4133-a91d-84e6f20a663e/national-trip-end-model-ntem
[18] Based upon the TTC's advice, alternative traffic models to NTEM may be recommended to generate in-combination AADT. These other models could be used if deemed more robust, but re-consultation with NE should occur prior to the adoption of an alternative model.

local plan periods. Once this growth factor is determined it can be applied to the existing base rate of AADT for the roads being assessed and the 'in-combination AADT' can be calculated.

- *For example: if the baseline AADT was 3000 and the growth factor was 2%, the likely 'in-combination AADT' would be 3060.*

2.2.4. On any road where the total value of the **known land usage allocations** generated **net-AADT** (calculated using TRICS dataset) and the forecast for the regional traffic growth (derived using TEMPro) is **less than 1000 AADT for domestic vehicles** or less than **200 AADT for HGV** then it has been clearly demonstrated that the **adoption of the known allocations, in combination with other plans, are highly unlikely to result in a significant impact** to that European site (due to increased traffic emissions).

2.2.5. On any road where the total value of **the known land usage allocations generated net-AADT** and the forecast for the regional traffic growth is **1000 AADT or greater for domestic vehicles**, or **200 AADT or greater for HGVs**, then there is a **possible significant impact upon a European site in combination with other plans.** In this instance, further screening against site specific critical load thresholds using nitrogen deposition modelling must occur (see Section 1.7).

2.2.6. It is noted that to allow for in-combination traffic growth to be calculated via TEMPro, the current baseline traffic rate for the roads at each RAP will need to be determined (where it has been concluded that net-AADT of all known allocations is less than 0). Whilst recent baseline traffic rate data may already be available for 'A' and 'B' roads, it is considered unlikely that this information will be available for the majority (or possibly all) of the unclassified / minor roads. As such, the existing traffic level at several RAPs may need to be determined via a new traffic counting survey.

2.2.7. The undertaking of traffic counting surveys is restricted to certain times of the year (i.e., periods deemed to represent 'usual traffic').

2.2.8. Where and when additional traffic counting surveys will need to be undertaken will need to be discussed with the TCC upon their appointment to ensure that robust and current traffic figures are available at all RAP locations where an in-combination assessment needs to be undertaken.

2.3. Screening Against Modelled Air Pollution, Nitrogen Deposition and Acidification.

2.3.1. A suitably experienced Air Quality Consultant (AQC) should be engaged and provided with the traffic growth data for all RAP locations where the net-AADT (alone or in-combination exceeds either of the traffic screening thresholds (see Section 1.1.5.).

2.3.2. The AQC will be instructed to model[19] the levels of gaseous ammonia (NH_3) and the oxides of Nitrogen (collectively NO_x) generated by the likely traffic growth along a 200m transect (running from the RAP location towards the nearest location in the Europeans site where the qualifying habitat is present (or habitats upon which the qualifying species relies).

2.3.3. The AQC will also determine the levels of deposition of nitrogen and acidification that could occur from the modelled levels of pollutants along the same 200m transect.

2.3.4. The AQC should take account or relevant meteorological data for each RAP where a transect is to be modelled.

2.3.5. **Critical Levels for NO_x and NH_3**

- In extreme cases NO_x can be directly toxic to vegetation and so impact directly on the qualifying habitats of European sites, but its main importance is as a source of nitrogen, which is then deposited. The 'critical level' is the atmospheric concentration at which NO_x could begin to directly impact upon vegetation. **For NO_x the critical level**, as detailed on the UK Air Pollution Information System (APIS)[20], **is 30 µg/m$^{3\text{-s}}$**. As such, **if the change in concentration is predicted to be greater than 0.3 µg/m$^{3\text{-s}}$, then 1% of the critical level has been exceeded**.

- NH_3 differs from NO_x in that it is both a source of nitrogen and is also directly toxic to vegetation in relatively low concentrations. **For NH_3 the critical level**, as detailed on the UK Air Pollution Information System (APIS)[21], **is either 1 µg/m$^{3\text{-s}}$ for lower plants or 3 µg/m$^{3\text{-s}}$ for higher plants**. To determine which critical level should be accessed against consideration must be given as to which order/s of plant constitute a key ecological component of the qualifying habitat, or habitat on which qualifying species rely. If lower plants (bryophytes, stoneworts, liverworts etc.) are considered to constitute a key ecological component then the lower value should be used. As such, **if the change in concentration is predicted to be greater than either 0.01 µg/m$^{3\text{-s}}$ or 0.03 µg/m$^{3\text{-s}}$ (whichever is determined to be most appropriate), then 1% of the critical level has been exceeded.**

- The change in pollutant concentrations due to the modelled traffic growth is known as the Process Contribution (PC).

[19] Via usage of ADMS-Roads, the Emission Factor Toolkit (EFT) or another recognised pollution model.
[20] UK Air Pollution Information System (APIS), 2020, Available at: https://www.apis.ac.uk/
[21] UK Air Pollution Information System (APIS), 2020, Available at: https://www.apis.ac.uk/

- To determine in-combination impacts and to see if the predicted traffic growth will result in a significant change in pollutant concentration, the PC is added to the background levels of each pollutant at, or near to each RAP. When the PC is added to the background level it is referred to as the predicted environmental concentration (PEC). The PEC should be determined across the total time period of the local plans.

- Two PEC scenarios should be modelled to estimate changes in pollution concentration: '**with adoption of preferred land usage allocations**' and '**without adoption of preferred land usage allocations**'. This allows for the impacts of the adopted plans to be compared against a 'do nothing scenario' (i.e., where local plans are not ever adopted). The change in pollution concentration between the 'do something scenario' (i.e., adopt local plans) to be directly assessed against the 'do nothing scenario' across each year of the local plan. The difference between the PEC of the two scenarios can then be determined and expressed as a percentage change of the critical level. If it is found that it is likely that 1% of the critical level will be exceeded (for one or more years across the span of the local plan) then Appropriate Assessment will need to be undertaken (see Chapter 3).

- For many of the RAP's, additional work has already occurred to better understand the background levels of pollutants via a network of diffusion tube monitoring stations installed by the Cannock Chase SAC Partnership. This diffusion tube monitoring provides data on the background concentrations of NO_x and NH_3 for six of the European sites being considered which can be used to complement modelled regional information provided by the APIS website[22]. The locations of these monitoring station are depicted on drawing C159172-01-02 (see Chapter 4).

- Where the Cannock Chase SAC Partnership has not established a monitoring station near to a RAP, the background pollution levels may be able to be derived from data from nearby monitoring stations established by highways or other local authority departments (Environmental Health). If no relevant monitoring station data is available, then modelled background pollution concentration across the whole of the UK (5km grid squares) is available from the APIS website[23].

- For each European site considered, the site-specific critical levels are displayed in Table 2.2. This information is provided by the UK Air Pollution Information System (APIS)[24].

2.3.6. Nitrogen Critical Load

- Nitrogen deposition is a form of eutrophication, derived from the combined nitrogen of NO_x and NH_3. Eutrophication negatively effects the biodiversity and ecological functions of habitats over time, altering soil chemistry and encouraging more competitive plant species. In aquatic habitats, nutrient enrichment frequently results in algal blooms, reducing water quality and resulting in anoxic conditions.

[22] UK Air Pollution Information System (APIS), 2020, Available at: https://www.apis.ac.uk/
[23] UK Air Pollution Information System (APIS), 2020, Available at: https://www.apis.ac.uk/
[24] UK Air Pollution Information System (APIS), 2020, Available at: https://www.apis.ac.uk/

On terrestrial habitats, new plant species can force out less competitive species assemblages, which often constitute the qualifying habitats of a European site, or provide the specific conditions needed to maintain healthy populations of the qualifying species. The nitrogen deposition rate below which these harmful ecological effects would not occur is referred to as the 'critical load'; these are different for each habitat.

- For each European site considered, the site-specific critical loads are displayed in Table 2.2. This information is provided by the UK Air Pollution Information System (APIS)[25].

- The critical loads for nitrogen deposition are described in the units of Kg/N/ha^{1}/year^{1}.

- Deposition rates for nitrogen are calculated by multiplying the ground level concentration of the appropriate pollutant by the appropriate deposition velocity, followed by multiplication with a conversion factor[26]. Deposition velocities and conversion factors for nitrogen deposition NO_x and NH_3 are provided in Table 2.1.

Pollutant	Vegetation type	Deposition velocity	Conversion factor for nitrogen deposition (from µg/m^{3-s} to kg/N/ha^{1}/year^{1})
NO_x	Grassland (sites with short vegetation)	0.0015	96
	Woodland (sites with tall vegetation)	0.003	
NH_3	Grassland (sites with short vegetation)	0.02	260
	Woodland (sites with tall vegetation)	0.03	

Table 2.1: Pollutant Deposition Velocities and Conversion Factors

2.3.7. If the calculations determine the modelled nitrogen deposition will meet or exceed 1% of the lowest range of the site-specific critical load (see Table 2.2), then Appropriate Assessment will need to be undertaken to determine if their levels, location and temporal span of the nitrogen deposition could impact upon the integrity of the European site (see Chapter 3).

2.3.8. **Acid Deposition Critical Load**

[25] UK Air Pollution Information System (APIS), 2020, Available at: https://www.apis.ac.uk/
[26] Deposition velocities and conversion factors provided via Institute of Air Quality Management, (2020), A guide to the assessment of air quality impacts on designated nature conservation sites, V1.1, Available at: https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2020.pdf

- A range of air pollutants can cause the acidification of soil and freshwater. The key pollutants are sulphur, in the form of sulphate ions (SO_4^{2-}), and nitrogen, as nitrate (NO_3^-), nitric acid (HNO_3) and ammonium ($NH4^+$) which arises from ammonia.

- Acid deposition predominantly impacts vegetation indirectly through changes to soil properties, with increasing the soil acidity, tending to increase the mobility of toxic metals (i.e., aluminium and manganese). Acid deposition is also known to result in root damage and nutrient deficiencies within the soils, both of which can stunt plant growth.

- How great a habitat is at risk from acid deposition is mainly dependant on the soil type, bedrock geology, weathering rate and its buffering capacity. In general, habitats dependent on slightly acidic substrate (i.e., heathland or acid grassland) and bog habitats are at greater risk of being adversely affected by increased rates of acid deposition compared with those associated with calcareous soils.

- Traffic emissions generate a negligible amount of additional sulphur, and so increased acid deposition is mostly a result of additional levels of nitrate and ammonium. These deposition rates must be modelled by the AQC, combined and then assessed against the site specific Minimum Critical Load for each European site provided by APIS. The relevant Minimum Critical Loads are provided in Table 2.2.

- It should be noted that, assuming Natural England agrees with the rationale for screening out several European sites from the need for assessment (see Sections 1.3 - 1.10, the determination of Acid Deposition against Minimum Critical Load levels is only possible / applicable for Cannock Chase SAC.

European Site of land parcel	Relevant RAP/s	Q.habitat/s or habitats which Q.species rely	Critical Level (µg/m^{3-s})	Critical Load range (kg/N/ha^{1}/year^{1})	Critical Load N Acid Dep (keq/ha/yr MinCLMaxN)	Pollutants	Recommended Vegetation type when Determining Deposition Velocity	Recommended Deposition Velocity NO_x / NH_3
Cannock Chase SAC	1,2,3	European dry heaths	1	10-20	1.285	NO_x / NH_3	Grassland – for RAP 1&3 Woodland – for RAP 2[27]	0.0015 / 0.003 0.02 / 0.03
		Northern Atlantic wet heaths with *Erica tetralix*	1					
Pasturefields Salt Marsh SAC	4	Inland salt meadows	3	20-30[28]	N/A[29]	NO_x / NH_3	Grassland	0.0015 / 0.003
Chartley Moss	5	Natural dystrophic lakes and ponds[30]	1	3-10	0.621	NO_x / NH_3	Grassland	0.0015 / 0.003
		Transition mires and quaking bogs[31]	1	10-15	0.621			
Aqualate Mere	6, 7	Fen, marsh and swamp (*Juncus effusus / acutiflorus - Galium palustre* rush pasture)	1	15-25	4.506	NO_x / NH_3	Grassland	0.0015 / 0.003
		Fen, marsh and swamp (*Filipendula ulmaria - Angelica sylvestris* mire)	1	15-30	4.506[32]			
		Fen, marsh and swamp (*Phragmites australis* swamp and reed-beds)	1	15-30	N/A[33]			

Table 2.2: Site Specific Critical Levels, Loads and Deposition Velocities (Continues)

[27] Representative of substantial area of mature woodland between road and qualifying habitat
[28] No critical load range is available for inland salt meadows, as such the values for coastal saltmarsh are recommended to be used instead.
[29] Habitat not sensitive to acidification.
[30] Not within 200m of key road
[31] Not within 200m of key road
[32] Habitat not sensitive to acidification.
[33] Habitat not sensitive to acidification.

European Site of land parcel	Relevant RAP/s	Q.habitat/s or habitats which Q.species rely	Critical Level ($\mu g/m^{3-s}$)	Critical Load range ($kg/N/ha^{1}/year^{1}$)	Critical Load N Acid Dep (keq/ha/yr MinCLMaxN)	Pollutants	Recommended Vegetation type when Determining Deposition Velocity	Recommended Deposition velocity NO_x / NH_3
Cop Mere	8	Permanent dystrophic lakes, ponds and pools	1	10[34]	N/A[35]	NO_x / NH_3	Grassland	0.0015 / 0.003
Cannock Extension Canal SAC	10, 11	Permanent oligotrophic waters: Softwater lakes	3	10[36]	No critical loads available	NO_x / NH_3	Grassland	0.0015 / 0.003
Fens Pools SAC	12, 13	Permanent oligotrophic waters: Softwater lakes[37]	3	10[38]	No critical loads available	NO_x / NH_3	Woodland[39]	0.02 / 0.03
Betley Mere	14	Fen, marsh and swamp (*Juncus effusus / acutiflorus - Galium palustre* rush pasture)	1	15-25	1.133	NO_x / NH_3	Grassland	0.0015 / 0.003
		Fen, marsh and swamp (*Juncus subnodulosus - Cirsium palustre* fen meadow)	1	15-30	1.133			
		Fen, marsh and swamp (*Phragmites australis* swamp and reed-beds)	1	15-30	N/A[40]			

Table 2.2: (Continued) Site Specific Critical Levels, Loads and Deposition Velocities (Continues)

[34] Range is between 3-10 $kg/N/ha^{1}/year^{1}$. The lower end of the range is intended for boreal and alpine lakes, and the higher end of the range for Atlantic softwaters. Site conditions considered to more closely relate to Atlantic softwaters so a critical load of 10 $kg/N/ha^{1}/year^{1}$ is recommended.
[35] Habitat not sensitive to acidification.
[36] Range is between 3-10 $kg/N/ha^{1}/year^{1}$. The lower end of the range is intended for boreal and alpine lakes, and the higher end of the range for Atlantic softwaters Site conditions considered to more closely relate to Atlantic softwaters so a critical load of 10 $kg/N/ha^{1}/year^{1}$ is recommended.
[37] No critical load data in available for the breeding pool utilised by the sites qualifying species (great crested newts). As such the values for softwater lakes are recommended to be used instead
[38] Range is between 3-10 kg/N/ha1/year1. The lower end of the range is intended for boreal and alpine lakes, and the higher end of the range for Atlantic softwaters.. Site conditions considered to more closely relate to Atlantic softwaters so a critical load of 10 $kg/N/ha^{1}/year^{1}$ is recommended.
[39] Representative of substantial areas of mature woodland between both key roads and qualifying habitat.
[40] Habitat not sensitive to acidification.

European Site of land parcel	Relevant RAP/s	Q.habitat/s or habitats which Q.species rely	Critical Level ($\mu g/m^{3-s}$)	Critical Load range ($kg/N/ha^{1}/year^{1}$)	Critical Load N Acid Dep (keq/ha/yr MinCLMaxN)	Pollutants	Recommended Vegetation type when Determining Deposition Velocity	Recommended Deposition velocity NO_x / NH_3
Peak District Dales SAC	15 - 21	Various	1	Consult Natural England[41]	Various[42]	NO_x / NH_3	Grassland Woodland	0.0015 / 0.003 0.02 / 0.03
Wybunbury Moss	22	Raised and blanket bogs	1	5-10	0.562	NO_x / NH_3	Grassland	0.0015 / 0.003
Black Firs & Cranberry Bog	23, 24	Broadleaved deciduous woodland	1	10-20	1.855	NO_x / NH_3	Woodland (RAP 23)	0.02 / 0.03
		Raised and blanket bogs	1	5-10	0.574	NO_x / NH_3	Grassland (RAP 24)	0.0015 / 0.003
Oakhanger Moss	25	Broadleaved deciduous woodland	1	10-20	1.946	NO_x / NH_3	Woodland	0.02 / 0.03
		Carex Acutiformis Swamp	3	N/A[43]	N/A[44]	N/A	N/A	N/A
		Rich fens	3	15-30	N/A[45]	NO_x / NH_3	Grassland	0.0015 / 0.003
		Valley mires, poor fens and transition mires	1	10-15	0.9			
		Raised and blanket bogs	1	5-10	0.573			
		Moist and wet oligotrophic grasslands: Molinia caerulea meadows	1	15-25	1.338			

Table 2.2: (Continued) Site Specific Critical Levels, Loads and Deposition Velocities (Continues)

[41] Due the site containing seven different qualifying habitats and uncertainty over their geographic distribution within the considered land parcels of the SAC it is unclear which critical load level/s to use. If it is determined that any parcels of the Peak District Dales SAC do require assessment (see Section 1.7) Natural England should be consulted as to the appropriate critical load/s to test against.
[42] Due the site containing seven different qualifying habitats and uncertainty over their geographic distribution within the considered land parcels of the SAC it is unclear which critical load level/s to use. If it is determined that any parcels of the Peak District Dales SAC do require assessment (see Section 1.7) Natural England should be consulted as to the appropriate critical load/s to test against.
[43] Habitat not sensitive to eutrophication.
[44] Habitat not sensitive to acidification.
[45] Habitat not sensitive to acidification.

European Site of land parcel	Relevant RAP/s	Q.habitat/s or habitats which Q.species rely	Critical Level ($\mu g/m^{3-s}$)	Critical Load range ($kg/N/ha^{1}/year^{1}$)	Critical Load N Acid Dep (keq/ha/yr MinCLMaxN)	Pollutants	Recommended Vegetation type when Determining Deposition Velocity	Recommended Deposition velocity NO_x / NH_3
Bees Nest & Green Clay Pits SAC	26	Sub-atlantic semi-dry calcareous grassland	1	15-25	4.954	NO_x / NH_3	Grassland	0.0015 / 0.003

Table 2.2: (Continued) Site Specific Critical Levels, Loads and Deposition Velocities

3. Appropriate Assessment

3.1. Determining Likely Impacts of Nitrogen Deposition on the Integrity of a European site

3.1.1. A suitably experienced Ecological Consultant (EC) should be engaged and provided with all reports and modelled data completed by the TTC and AQC.

3.1.2. An Appropriate Assessment (AA) must be undertaken of all European sites where all the below criteria have been met:

- The sites qualifying habitats (or habitat on which the qualifying species rely) which are sensitive to air quality impacts;
- The sites qualifying habitats are within 200m of a road/s;
- Quantifiable traffic growth on the identified road/s is a reasonable possibility;
- The traffic growth at one or more RAP meets or exceeds a net-growth of 1000 AADT for vehicles or 200 AADT for HGVs; either alone (derived through use of TRICS) or in-combination with other plans or projects (derived through use of TEMPro); and
- The modelled air pollution concentration meets or exceeds 1% of critical level for NO_x, NH_3 and/or 1% of the site-specific critical load for nitrogen deposition and/or the site specific acid deposition minimum critical load (where applicable) is met or exceeded; either alone or in combination.

3.1.3. The purpose of AA should first be to determine the scope and scale of the possible impacts and to ascertain if they are sufficient to affect the integrity of the European site. The integrity of the European site is unlikely to be affected if it can be demonstrated that "**it is highly unlikely that traffic growth will result in a significant impact upon the qualifying features of the sites, will prevent the attainment of the site's conservation objectives or otherwise impede their delivery**".

3.1.4. At this nascent stage of the establishment of the evidence bases, it is not possible or appropriate to anticipate which of the European sites considered (if any) will need to progress to AA, or the outcome of those assessments.

3.1.5. However, the following are considered material questions that should be answered by the EC at AA to allow the impact of traffic growth on a sites integrity to be robustly understood:

- Does the qualifying habitat occur in any area where the modelled air pollution, nitrogen deposition and acidification concentrations meet or in exceed 1% of the critical level / load.
- What is the total measured area of the qualifying habitat where critical levels/critical loads are likely to be in exceedance?
- Does the total measured area of any qualifying habitat where critical levels/critical loads are likely to be in exceedance represent a notable percentage of its total area within the European site?

- If the habitat is not the qualifying feature, but instead supports a qualifying species, is it likely that the additional levels of air pollution / nitrogen deposition will result in habitat quality degradation sufficient to impact upon the population or distribution of the qualifying species?
- Is there any habitat, ecological or geological features (either within the site, functionally connected to, or between the road and modelled deposition areas) which may buffer, mitigate or exacerbate the likely impacts of air pollution or nitrogen deposition?
- What is the temporal span of the air pollution, nitrogen deposition or acidification concentration (at or in exceedance of critical levels) across the modelled local plan period?

3.1.6. For any European site where the EC determines that the best scientific evidence available does not suggest that 'it is highly unlikely that traffic growth will prevent the attainment of the site's conservation objectives or otherwise impede their delivery', then it should be deemed that a significant impact upon the site is likely, and mitigation against the likely scale or harm must be determined.

3.2. Determining Proportional Mitigation

3.2.1. As with AA, it is not possible or appropriate to anticipate which of the European sites may require mitigation against the impacts of air pollution or nitrogen deposition. However, it is a requirement of HRA that all mitigation is both proportional to the scale of determined impact and securable.

3.2.2. Any proposed mitigation must be discussed and developed in concert with the considerations of Natural England.

3.2.3. It is considered that there are four main mitigation pathways available to the partnership authorities:

- **Policy;**
- **Habitat management;**
- **Redirection of traffic; or**
- **Increased interception or abstraction of air pollution.**

3.2.4. In the future **Policies** which promote or require the following are likely to reduce the level of traffic growth and / air pollution that is discharged for vehicles have the potential to be considered as mitigatory. However, advice provided by Natural England[46] suggest that insufficient evidence is currently available to robustly determine the likely extent by with policies alone are able to reduce air pollution impacts to European sites. As such, if used, any mitigation of impacts via new policy adoption must form part of an extensive suit of other mitigatory measures. Their inclusion should be viewed more as bringing

[46] Communications from Natural England, 8/02/2023

'added benefit' rather than being a 'mitigatory solution' in and of themselves. That notwithstanding, policies which promote the following should be considered:

- Reduction of reliance on private cars via promotion of sustainable transport (train, bus, cycles, walking networks etc.);
- Increased provision for electric cars (including setting expected percentages for charging and incorporation within new residential, employment and provisioning/servicing developments), and
- Improved communication infrastructure (ensuring that developments make provision for high-speed internet and telecommunications potentially reduces the need to travel, particularly during the morning and evening peak hours).

3.2.5. On some European sites it may be possible that additional **habitat management** could be enacted upon the areas where nitrogen deposition is in exceedance of critical load so as to increase the speed of the nitrogen cycle; removing available 'nutrient nitrogen' from the soil at an accelerated rate. However, it must be noted that forms of habitat management that improve the condition of European sites more generally will be considered as a compensatory measure by Natural England and so should be avoided. This mitigation could take the form of:

- Cutting and collecting vegetation to reduce nutrient levels in soil,
- Spot treatment of areas of undesirable 'high nutrient' plant species,
- Encouraging conditions for de-nitrifying plants or bacterial species to become abundant, or
- The introduction of conservation grazing regimes to reduce nutrient levels in soil.

3.2.6. These additional habitat management prescriptions could be funded via proportional developer contributions from new residential and employment developments across the partnership authorities.

3.2.7. However, any new mitigatory habitat management suggested will need to ensure that:

- It is additional to current management being enacted (i.e., through an existing agreed Agri-environment scheme etc.);
- It is possible (physically and legally);
- It has been agreed with the landowner;
- The delivering party has been identified (if other than the landowner);
- That management will occur across a temporal span which equals (and preferably exceeds) the time where deposition will meet or exceed 1% of the critical load;
- That its enactment will not result in additional ecological harm, or-else this harm can also be mitigated against (i.e., disturbance or nesting / overwintering birds, injury to protected species, overgrazing, etc.); and
- That Natural England agree that this management represents mitigation and not compensation.

3.2.8. **Redirection of traffic** could be achieved via the creation of one or more Clean Air Zones (CAZ), which would charge a toll to use certain roads with certain vehicle types. This approach has recently been taken to resolve air pollution and nitrogen deposition issues

impacting upon the Epping Forest SAC[47]. However, it is unclear if such an approach is practical within the partnership authorities' areas, how such a scheme would be developed and how long it would take to enact.

3.2.9. **Increased interception or abstraction of air pollution** may be possible via the creation of addition man-made air pollution control barriers, the planting and management of additional roadside trees or creation of new intervening woodland blocks.

3.2.10. Man-made air pollution control barriers have the benefit of being immediately affective once installed but thy are often considered to be 'unsightly'. For roadside trees and woodland trees will need to be semi-mature before they begin to meaningfully reduce the level of air pollution reaching the qualifying habitats via both mechanical (i.e., acting as a physical barrier increasing deposition rates) and biological means (i.e., nutrient uptake).

3.2.11. The creation of man-made air pollution control barriers or additional tree / woodland planting and management could be funded via proportional developer contributions from new residential and employment developments across the partnership authorities.

3.2.12. However, the practicality of mitigation by this means and the likely levels of air pollution reduction that it could reliably account for, will need to be carefully considered.

3.2.13. For example, tree planting close to highways may not be practical due to lack of available land, health and safety concerns (because of future overhanging trees) or the potential to impact upon pre-existing underground services.

3.2.14. Also (as with habitat management) any suggested mitigation via new tree planting will need to ensure:

- It is possible (physically and legally);
- It has been agreed with the landowner;
- The delivering party has been identified (if other than the landowner); and
- That mitigation will be affective (i.e., the tree will reach a required minimum height/size) by the start of the temporal span which equals (and preferably exceeds) the time where deposition will meet or exceed 1% of critical load.

3.2.15. The species composition and starting age/size of any trees planted will have a material effect on the likely success of the mitigation. For example, the planting of semi-mature fast growing conifer species could quickly establish a new vegetative barrier and maintain it through all seasons.

[47] Epping Forest District Council, (2020), Epping Forest Interim Air Pollution Mitigation Strategy: Managing the Effects of Air Pollution on the Epping Forest Special Area of Conservation, Available at: https://www.eppingforestdc.gov.uk/wp-content/uploads/2021/02/Interim-Epping-Forest-Air-Pollution-Mitigation-Strategy.pdf

3.2.16. However, the planting of new areas of woodlands and roadside trees (especially conifers) could cause several concerns that would need to be considered and addressed prior to the adoption of mitigation by this method, including:

- Impacts upon biodiversity and ecological connectivity;
- Visual impact; and
- Impacts upon landscape character.