In Parliament – Session 2022 - 2023

HS2

High Speed Rail (Crewe – Manchester)

Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement

Volume 5: Appendix EC-016-00005

Ecology and biodiversity

Designated site assessment for Rixton Clay Pits Special Area of Conservation

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Department for Transport

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1 Introduction

1.1 Purpose of this appendix

1.1.1 This report is an appendix to the ecology and biodiversity assessment which forms part of Volume 5 of the Supplementary Environmental Statement 2 (SES2) and Additional Provision 2 Environmental Statement (AP2 ES).

1.1.2 It provides an assessment to enable the identification of likely significant effects on the Rixton Clay Pits Special Area of Conservation (SAC).

1.1.3 This report provides the background assessment for identifying any likely significant effects on Rixton Clay Pits SAC as a result of the AP2 revised scheme to be reported under the EIA Regulations 2017 (as amended)[1]. This background assessment is provided in Section 3 of this report.

1.1.4 The High Speed Two (HS2) High Speed Rail (Crewe – Manchester) Environmental Statement (ES) was published in 2022[2] (the main ES). Volume 5 of the main ES included a draft assessment to inform a Habitats Regulations Assessment for Rixton Clay Pits SAC[3]. Further and separate assessment is being carried out in line with Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended)[4]. Section 4 of this report provides the emerging results at this current stage of design and assessment, which will be finalised as part of the further and separate assessment.

1.1.5 This report should be read in conjunction with the SES2 and AP2 ES Volume 2, Community Area report: Hulseheath to Manchester Airport (MA06).

1.1.6 In order to differentiate between the original scheme and the subsequent changes, the following terms are used in the SES2 and AP2 ES:

- 'the original scheme' – the Bill scheme submitted to Parliament in 2022, which was assessed in the main ES;

[1] *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017. SI 2017 No. 571*. Her Majesty's Stationery Office, London. Available online at: http://www.legislation.gov.uk/uksi/2017/571/pdfs/uksi_20170571_en.pdf.

[2] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement.* Available online at: https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement.

[3] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement*, *Document to inform a Habitats Regulations Assessment for Rixton Clay Pits Special Area of Conservation,* Volume 5, Appendix: EC-016-00005. Available online at: https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement.

[4] *The Conservation of Habitats and Species Regulations 2017 (2017/1012)*, as amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (2019/579). Her Majesty's Stationery Office, London.

- 'the SES1 scheme' – the original scheme with any changes described in SES1 that are within the existing powers of the Bill;
- 'the AP1 revised scheme' – the original scheme as amended by SES1 changes and AP1 amendments;
- 'the SES2 scheme' – the original scheme with any changes described in SES1 (submitted in July 2022) and the SES2; and
- 'the AP2 revised scheme' – the original scheme as amended by SES1 and SES2 changes (as relevant) and AP2 amendments.

1.1.7 This report assesses the impacts on Rixton Clay Pits SAC using an updated methodology for the assessment of air pollution arising from traffic flows. Further details are provided in the SES2 and AP2 ES Volume 5, Appendix: CT-001-00003 Air quality – Technical note – Updated guidance on the assessment methodology for Phase 2b SES2 and AP2 ES.

2 Context

2.1 AP2 revised scheme

2.1.1 Rixton Clay Pits SAC lies approximately 4km northeast from land required for the construction of the AP2 revised scheme in the Hulseheath to Manchester Airport community area (MA06). Land required for access modification is found closer, approximately 3km to the north of Rixton Clay Pits SAC. This is to provide access to Little Woolden Moss where HS2 Ltd propose to contribute to habitat restoration and enhancement rather than to undertake construction activities (see Figure 1).

2.1.2 A construction traffic route, required to move Heavy Duty Vehicles[5] (HDV) from various construction compounds, will use the A57 Manchester Road which lies adjacent to Rixton Clay Pits SAC.

2.1.3 The A57 Manchester Road is also anticipated to be utilised by a proportion of the workforce making their way to and from the construction sites. Construction traffic is anticipated to make use of the A57 Manchester Road. However, it is not anticipated that the AP2 revised scheme will change traffic movements in the operational phase once construction has ceased.

2.2 Site description and nature conservation targets

Rixton Clay Pits SAC

2.2.1 Rixton Clay Pits SAC occupies two discrete parts of a disused brickworks east of Warrington that covers an area of 13.7ha (see Figure 1). The SAC citation[6] adds that previous excavations have '...left a mosaic of water-filled hollows and clay banks. Long-abandoned areas have undergone natural succession to scrub and woodland while more recently worked areas support calcareous grassland'. Its sole qualifying feature is the population of great crested newts (*Triturus cristatus*), described as the largest in Cheshire.

[5] HDV are defined as those with an unladen weight of greater than 3.5 tonnes, including: large vans; medium goods vehicles (rigid and artic); heavy goods vehicles (rigid and artic); and, buses/coaches.

[6] English Nature (2005), *Citation for Special Area of Conservation Rixton Clay Pits*. Available online at: https://publications.naturalengland.org.uk/publication/5186918258049024.

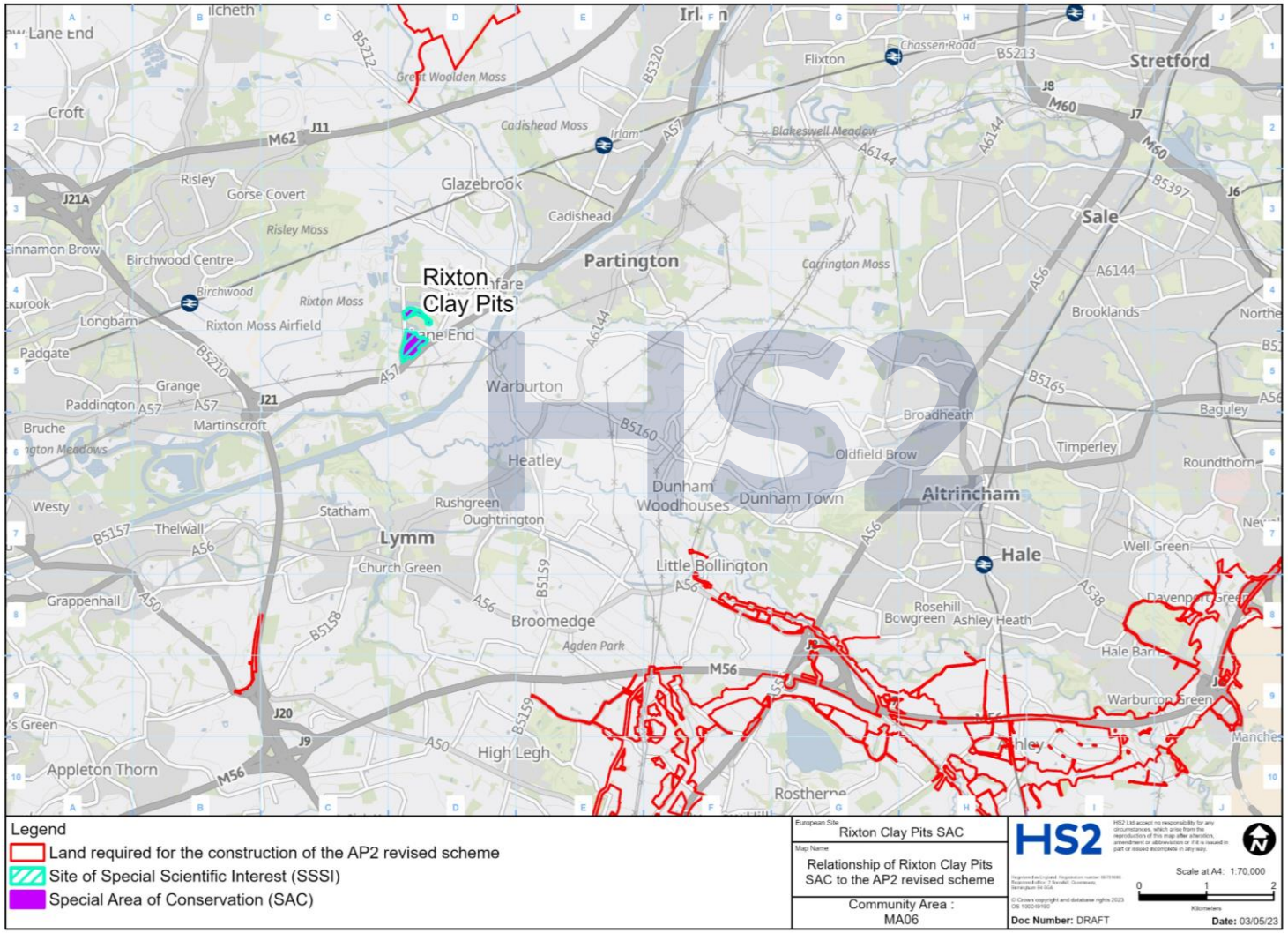
2.2.2 Natural England's Supplementary advice for the SAC[7] and the citation for the underpinning Site of Special Scientific Interest (SSSI)[8] describe the open water, fen, calcareous grassland, scrub and woodland communities (or 'supporting habitats') that the population of great crested newt relies on during both aquatic and terrestrial stages of its life cycle.

2.2.3 The Supplementary advice adds that great crested newts are '…known to occur in at least 20 ponds and breed in at least 7, but describes a 'very complex site' managed to maintain the availability of breeding ponds for great crested newts. The population has increased from 95 (1994), to 437 (2005) then to 518 (2015). The SAC and surrounding area have been managed as a Local Nature Reserve by Warrington Borough Council since 1996. It can therefore be safely assumed that great crested newts are distributed widely across the SAC, although some of the larger pools are known to support fish and so will be suboptimal for great crested newts to breed in successfully.

[7] Natural England (2016), *European Site Conservation Objectives: Supplementary advice on Conserving and Restoring Site Features, Rixton Clay Pits Special Area of Conservation*. Available online at: https://publications.naturalengland.org.uk/publication/5186918258049024.

[8] English Nature (1990), *Citation for Rixton Clay Pits SSSI*. Available online at: https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1003514.pdf.

Figure 1: Relationship of Rixton Clay Pits SAC to the AP2 revised scheme



Conservation objectives

2.2.4 Natural England's conservation objectives for Rixton Clay Pits[9] state:

'Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- the extent and distribution of the habitats of qualifying species;
- the structure and function of the habitats of qualifying species;
- the supporting processes on which the habitats of qualifying species rely;
- the populations of qualifying species; and
- the distribution of the qualifying species within the site.'

2.2.5 These are given greater expression in the associated Supplementary advice and Site Improvement Plan (SIP)[10]. The latter only identifies one current threat: fly-tipping. In contrast, the former not only focuses on the maintenance of the seven breeding ponds and suitable terrestrial habitat, but also highlights the potential threat from the exceedance of critical loads and levels of airborne pollutants. Accordingly, the Supplementary advice target states:

'Maintain or restore [the] deposition of air pollutants at or below the site-relevant Critical Load or Level…'.

2.2.6 The Supplementary advice provides other objectives including those relating to the maintenance of water quality to support processes on which the qualifying feature relies.

Condition assessment

2.2.7 Natural England's most recent, formal condition monitoring assessment of Rixton Clay Pits was carried out in 2015[11] and so pre-dated publication of the Supplementary advice and the most recent conservation objectives, but remains valid as the latter were subject to only modest changes. The assessment found that the entire site was considered to be in 'favourable' condition. It describes both monitoring units to be in 'excellent condition' as a consequence of scrub removal and the introduction of grazing, which had led to an expansion in the extent and quality of fen communities. In addition, it noted that peak

[9] Natural England (2018), *European Site Conservation Objectives for Rixton Clay Pits Special Area of Conservation, Version 3.* Available online at: https://publications.naturalengland.org.uk/publication/5186918258049024.

[10] Natural England (2014), *Site Improvement Plan Rixton Clay Pits, Version 1*. Available online at: http://publications.naturalengland.org.uk/publication/5221653453733888.

[11] Natural England (2015), *Condition of SSSI Units for Site Rixton Clay Pits SSSI*. Available online at: https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1003514&ReportTitle=Rixton%20Clay%20Pits%20SSSI.

numbers of great crested newts in 2015 was 518 adults. Natural England undertook an additional assessment in 2017 and 569 adults were recorded.

2.2.8 Natural England undertook a site walkover of SSSI Unit 2 in 2019[12] and Unit 1 in 2022[13]. It was found during both visits that ongoing scrub and grazing management continued to be successful.

2.2.9 Whilst the formal condition assessment was carried out eight years ago, there is little to suggest circumstances have changed and, overall, it is assumed that Rixton Clay Pits SAC remains in favourable condition. Whilst it is reasonable to conclude that the site gains some resilience from current management, over-reliance on this is not assumed in this report.

[12] Natural England (2023), *Designated Sites View*, *information on Unit 2 of Rixton Claypits SSSI*. Available online at: https://designatedsites.naturalengland.org.uk/UnitDetail.aspx?UnitId=1011663&SiteCode=S1003514&SiteName=rixton%20clay%20pits&countyCode=&responsiblePerson=.

[13] Natural England (2023), *Designated Sites View, information on Unit 1 of Rixton Claypits SSSI.* Available online at: https://designatedsites.naturalengland.org.uk/UnitDetail.aspx?UnitId=1011662&SiteCode=S1003514&SiteName=rixton%20clay%20pits&countyCode=&responsiblePerson=.

3 Assessment of the AP2 revised scheme

3.1 Introduction

3.1.1 This section provides the background assessment for identifying any likely significant effects on Rixton Clay Pits SAC to be reported under the EIA Regulations 2017 (as amended). The conclusions of this assessment are summarised in the SES2 and AP2 ES Volume 2, Community Area report: Hulseheath to Manchester Airport (MA06).

3.1.2 This assessment identifies the likely significant effects as a result of the AP2 revised scheme. In addition, the air quality modelling, from which the impacts and effects reported below are derived, has taken into account cumulative effects from background traffic growth, committed developments[14] and impacts related to traffic emissions arising from the SES2 changes and AP2 amendments.

3.2 Scope, assumptions and limitations

3.2.1 Rixton Clay Pits SAC lies approximately 4km from the land required for the construction of the AP2 revised scheme[15]. Given the distance from the SAC direct impacts can be ruled out. The only potential impacts that could arise as a result of the AP2 revised scheme are restricted to changes in air quality and hydrology.

3.2.2 Rixton Clay Pits SAC is located in a different surface water catchment than the AP2 revised scheme, on the opposite side of the River Mersey/Manchester Ship Canal. The site is underlain by glacial till and Mercia Mudstone Group. Making the reasonable assumption that groundwater flow in the superficial deposits follows topography, there would be no hydraulic connection between the site and the AP2 revised scheme. Therefore, potential impacts from changes in hydrology can be ruled out.

3.2.3 Consequently, the only plausible impact is from air pollution caused by changes in traffic brought about by the AP2 revised scheme, allied with the general growth in traffic in the area. This issue is assessed below.

[14] Committed developments relevant to the AP2 revised scheme are reported in Volume 5 Planning data report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). Committed developments are defined as developments with planning permission and sites allocated for development in adopted development plans, on or close to the land required for the scheme.

[15] Given the type and scale of the works proposed at Little Woolden Moss, despite its closer proximity to Rixton Clay Pits SAC (see Section 2), there are no plausible impact pathways from the AP2 revised scheme.

Air pollution assessment methodology

3.2.4 The assessment of air pollution is informed by established best practice guidance provided by National Highways[16,17], Natural England[18,19], and the Institute for Air Quality Management (IAQM)[20].

3.2.5 These provide evidence that natural or semi-natural habitats can be harmed by vehicle emissions through two intimately linked pathways: via the concentration of nitrogen oxides (NOx) and ammonia (NH_3) and the subsequent deposition of nitrogen and acid. The assessment of the impact of air pollution therefore comprises the analysis of the dispersal of these compounds.

3.2.6 In sufficient concentrations, airborne NOx and NH_3 can result in direct toxic effects on vegetation. Further, the subsequent deposition of nitrogen compounds can lead to the acidification and nutrient enrichment of land and water. Over time, this may not only hinder the growth, abundance and distribution of plants, and especially, bryophytes and lichens, but can also prompt the growth of ruderal species or algal blooms which can lead to changes in the structure and function of qualifying or supporting habitats. Whilst certain species and communities are less susceptible to harm than others, increases in the airborne concentration of pollutants or the rate of their deposition can also exacerbate the effects of other factors such as climate change or pathogens leading to negative, synergistic effects.

3.2.7 The concentrations and/or rates of the deposition of nitrogen compounds fall quickly in the first few metres from the roadside before gradually levelling out, eventually becoming indistinguishable from background levels. This means that impacts at 10m, 50m or 200m or more can be very different from those at the roadside.

3.2.8 The assessment of air pollution impacts for ecologically sensitive sites within 200m of roads is undertaken where one or more of the following Design Manual for Roads and Bridges (DMRB)[16] criteria are met:

- change in road alignment by 5m or more;

[16] Highways Agency (2019), Design Manual for Roads and Bridges (DMRB), Sustainability and Environmental Appraisal, LA 105 Air Quality, Highways Agency, London. Available online at: https://www.standardsforhighways.co.uk/dmrb/search/10191621-07df-44a3-892e-c1d5c7a28d90.

[17] National Highways (2021), *Ammonia N Deposition Tool V2.*

[18] Natural England (2018), *Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations.* Available online at: http://publications.naturalengland.org.uk/publication/4720542048845824.

[19] Although designed for Habitats Regulations Assessments, Natural England (2018) guidance is applicable for the assessment under the EIA Regulations, 2017 (as amended). Section 1.1.6 states: '...this guidance does not specifically cover nationally significant sites, which are covered by a different regulatory framework. However, the general principles for air quality assessment outlined here for European Sites are likely to be equally relevant for this and other designations...'.

[20] Institute of Air Quality Management (2020), *A guide to the assessment of air quality impacts on designated nature conservation sites, Version 1.1*. Available online at: https://iaqm.co.uk/guidance/.

- change in daily traffic flows by 1,000 vehicles or more as Annual Average Daily Traffic (AADT);
- change in daily flows of HDV by 200 AADT or more;
- change in daily average speed by 10kph or more; or
- change in peak hour speed by 20kph or more.

3.2.9 It can be seen, therefore, that the additional emissions that might arise from increased traffic are only likely to be significant where:

- a designated site lies within 200m of a road;
- traffic flows are expected to increase (or other DMRB criteria are met); and
- a qualifying feature is known to be sensitive to such impacts.

3.2.10 Should all three criteria be met, best practice guidance recommends that the ecological characteristics of the site should be explored and, if necessary, traffic and/or air quality assessments carried out to evaluate any impacts during construction or operation.

3.2.11 The ecological characteristics of a site are derived from the formal citations, condition assessments, conservation objectives, Favourable Conservation Tables (FCT), SIP, supplementary advice and any other surveys and management plans where available.

3.2.12 Traffic flows are assessed by calculating AADT figures using established models[21]. Should increases in traffic from the AP2 revised scheme be less than 1,000 AADT[22] or 200 HDV, the risk of a significant effect can be ruled out and no further assessment is required. Should flows exceed these values, air quality analysis is necessary.

3.2.13 The air quality analysis typically models any changes at fixed points on a 200m transect extending from the roadside. Impacts identified through the air quality analysis are assessed by calculating the relative contribution of the plan or project in relation to the relevant critical level for NOx and NH_3 and the critical loads for the deposition of nitrogen and acid, as described by the Air Pollution Information System (APIS)[23], as follows:

- the critical level for NOx is fixed and is expressed as a concentration: 30µg/m^3. It is a precautionary threshold below which there is confidence that harmful effects on vegetation communities will not arise, and further assessment may not be necessary;

[21] It should be noted that traffic data used in the air quality assessment presented in the SES2 and AP2 ES is based on daily peak derived traffic data. The assessment presented in this appendix is based on annualised traffic data which is considered more appropriate for the purposes of the Designated Site Assessment.

[22] These values are utilised as there is evidence to show that these equate approximately to a 1% change in critical loads.

[23] UK Centre for Ecology and Hydrology (2021), *Air Pollution Information System*. Available online at: http://www.apis.ac.uk/.

- the critical level for NH_3 is also expressed as a concentration: set at 3µg/m^3 for higher plants; and, at 1µg/m^3 where bryophytes or lichens are present and considered to '...form a key part of the ecosystem integrity'[24];
- the critical loads for nitrogen deposition vary and are specific to each qualifying feature. These are presented as a range of values (expressed as a rate, e.g. 10kg N/ha/yr – 20kg N/ha/yr) and typically only the lowest value is used (unless there are compelling reasons to do otherwise) as this will emphasise any negative outcomes; and
- acid deposition is also assessed via critical loads, though measured in keq/ha/yr.

3.2.14 Natural England best practice guidance[18] specifies that should nitrogen deposition increase by less than 1% of the lower critical load or should concentrations of NOx or NH_3 increase by less than 1% of the critical level, likely significant effects can be ruled out. However, should the 1% threshold be exceeded, a likely significant effect cannot be ruled out.

3.2.15 The assessment of significance of acid deposition differs. If the total concentration is predicted to be less than the lower critical load, then the effect is considered not to be significant. However, a likely significant effect cannot be ruled out when: the change in concentration is more than 1% of the maximum critical load and the total for acid deposition is also greater than the maximum critical load.

3.2.16 The 1% threshold, set at two orders of magnitude below the critical load or level, is highly precautionary. Account must also be taken of the type of habitats (some are more resilient than others) and the distribution of the designated features as not all will be distributed evenly across sites, and other factors may be at play. In addition, where the qualifying feature of a designated site is a mobile animal, and where individuals could normally be considered resilient to nitrogen deposition, it is the impact on the supporting habitat of the species which requires assessment.

3.3 Assessment of impact and effects

3.3.1 Rixton Clay Pits lies adjacent to the A57 Manchester Road, within the 200m threshold described in Section 3.2. Consequently, an assessment of traffic flows is required.

3.3.2 The following assessment utilises relevant traffic and air quality analysis as set out in Annex A and reports any likely significant effects on a precautionary basis. HS2 Ltd is continuing to identify suitable measures to mitigate or compensate for potential significant effects identified on designated sites.

[24] Air Pollution Information System (2016), *Critical Loads and Critical Levels – a guide to the data provided in APIS*. Available online at: https://www.apis.ac.uk/critical-loads-and-critical-levels-guide-data-provided-apis#_Toc279788054.

Assessment of traffic flows and air pollution during construction

3.3.3 The traffic analysis (see Section 5.1, Annex A) indicates that the construction of the AP2 revised scheme will not exceed the AADT or HDV traffic thresholds described in Section 3.2. Therefore, no air quality assessment is required.

Assessment of traffic flows and air pollution during operation

3.3.4 The traffic analysis (see Section 7.1, Annex A) indicates that the AP2 revised scheme will not change traffic movements in the operational phase. Consequently, there are no air quality impacts and no assessment is required.

3.4 Mitigation measures

3.4.1 The likely significant effects assessment above has been undertaken on a precautionary basis.

3.4.2 Where necessary, HS2 Ltd is continuing to seek to identify suitable measures to mitigate or compensate for potential significant effects identified on designated sites. In doing so HS2 Ltd will continue to engage with stakeholders to fully understand the receptors and the suitability of the measures.

3.5 Summary of likely significant effects

3.5.1 Traffic flows as a result of the AP2 revised scheme during construction do not trigger the requirement for an air quality assessment and there are no changes identified to traffic flows during operation. Therefore, likely significant effects as a result of the AP2 revised scheme can be ruled out for both the construction and operational phases.

4 Ongoing work

4.1 Introduction

4.1.1 A further and separate assessment is being carried out to meet the needs of Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended) ('Habitats Regulations')[4]. This section provides the emerging results at this current stage of design and assessment, which will be finalised as part of the further and separate assessment.

4.1.2 This section uses language that will be applicable to the further assessment carried out under the Habitats Regulations.

4.1.3 This section considers the AP2 revised scheme in combination with other plans and projects that fall within a 10km radius of the designated site. The other plans and projects relevant to this assessment have been identified Section 2 of Annex A.

4.2 Air quality assessment of traffic flows in combination

Methodology

4.2.1 The scope of the in combination assessment has been limited to those plans or projects that could contribute to a cumulative increase in air pollution at Rixton Clay Pits.

4.2.2 In combination effects are taken into account in the traffic and the non-traffic related emission sources used for the assessment, which incorporate likely changes brought about by other proposed and committed developments. The approach to this assessment, which has been agreed with Natural England, is provided in Section 2 of Annex A.

Critical loads and levels

4.2.3 The A57 Manchester Road was the only road that triggered the AADT thresholds. Given the orientation of the site to the A57 Manchester Road (see Figure 2), only one air quality modelling transect (represented by yellow dots) was employed to reflect the greatest air quality impact as well as to take account of the most sensitive habitat features.

4.2.4 The transect intercepts the boundary of the site 3m from the kerbside, initially running through a thin band of woodland before crossing a mosaic of fen, pools, and calcareous grassland before returning to woodland on the north-western boundary of the modelled area of the SAC.

4.2.5 Although great crested newts are considered relatively resilient to increases in nitrogen, they can be susceptible to the associated acidification of standing waters[25] and their supporting habitats can be affected by nutrient enrichment. Great crested newts will use suitable water bodies during the breeding season and then make use of the surrounding terrestrial habitats for foraging and resting.

4.2.6 Although a critical level for great crested newts for NH_3 of 3µg/m^3 is given on APIS, critical loads for nitrogen deposition are not. Consequently, use was made of the critical loads for the habitats described for the SSSI. Drawing on this and the type and distribution of habitats described in the Supplementary advice and elsewhere, the habitat types found within the modelled area were identified as broadleaved deciduous woodland, calcareous grassland, fen and mire. The habitats adopted in this assessment differ from those on APIS for the SSSI which identifies only fens, mires and great crested newts as qualifying features.

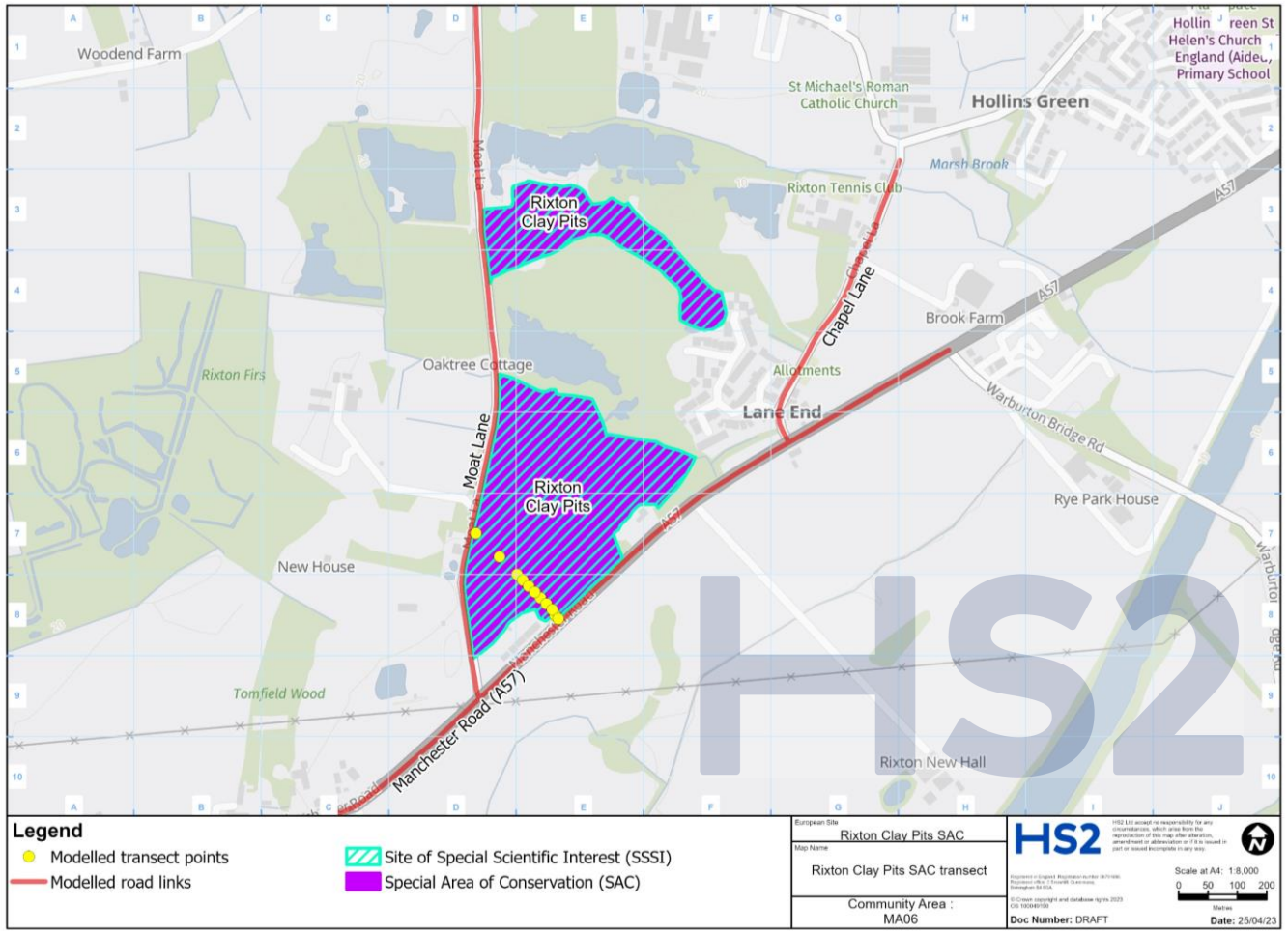
4.2.7 Given the mosaic of pool, mire and swamp communities present, the model assessed all as poor fen as this provided the lowest critical load of 10kg N/ha/yr – 15kg N/ha/yr. Given that neither woodland nor grassland (both of which occupy a substantial part of the site) represents a qualifying feature of either the SAC or SSSI, a value of 15kg N/ha/yr was considered appropriate and was adopted in this report.

4.2.8 The focus of the assessment is not that harmful effects on the floristic interest of the terrestrial habitats need to be avoided. In contrast, it is the ability of the habitats to continue to provide appropriate breeding, foraging areas and shelter for great crested newts that is of importance. In this context, the use of the minimum critical loads can be considered precautionary and provide a benchmark to assess possible changes to vegetation, against which, potential effects on great crested newts can be described.

4.2.9 Given that bryophytes are not considered to be an integral component of the site, a critical level for NH_3 of 3µg/m^3 has been applied to the habitats. As described above, the critical level for NOx is a constant (30µg/m^3).

[25] Gustafson et al. (2009), *Pond Quality Determinants of Occurrence Patterns of Great Crested Newts (Triturus cristatus).* Journal of Herpetology, Vol. 43, No. 2.

Figure 2: Location of Rixton Clay Pits SAC and the modelled transect



Construction phase impacts in combination

4.2.10 Table A5 of Annex A shows that NOx concentrations with the AP2 revised scheme are lower than the 2018 baseline at all modelled receptors (i.e. transect points). However, NOx concentrations are predicted to be above the air quality standard up to 11m from the kerbside with or without the AP2 revised scheme. In addition, there is a greater than 1% exceedance of the NOx critical level brought about by the AP2 revised scheme in combination, with a maximum change of 7.6% at the kerbside, falling sharply from this point. Exceedances fall to below 1% of the critical level between approximately 92m and 106m from the road. Although all values lie below the 30µg/m^3 standard beyond 11m from the kerbside, likely significant effects in combination cannot be ruled out.

4.2.11 Table A6 of Annex A shows that NH_3 concentrations with the AP2 revised scheme, are lower than the 2018 baseline at all modelled receptors. However, NH_3 concentrations are predicted to be above the relevant air quality standard with or without the AP2 revised scheme. In addition, there is a greater than 1% exceedance of the critical level up to 92m from the road, with a maximum change of 6.6%. Therefore, likely significant effects in combination cannot be ruled out.

4.2.12 Table A7 of Annex A shows that nitrogen deposition rates with the AP2 revised scheme are lower than the 2018 baseline at all modelled receptors. However, nitrogen deposition rates are predicted to be above the air quality standard at all modelled receptors with or without the AP2 revised scheme. In addition, there is a greater than 1% exceedance of the critical load brought about by the AP2 revised scheme in-combination. The maximum change is 12.5% at 3m from the A57 Manchester Road; however, this falls to below 1% of the critical load between approximately 92m and 106m. Despite the rate of decline, likely significant effects in combination cannot be ruled out.

4.2.13 Table A8 of Annex A shows that acid deposition rates with the AP2 revised scheme are lower than the 2018 baseline at all modelled receptors. However, acid deposition rates are predicted to be above the relevant air quality standard with or without the AP2 revised scheme. In addition, there is a greater than 1% exceedance of the critical load, which falls sharply from a maximum of 7.2% at 3m from the kerbside to below 1% between 92m and 106m. Despite this decline, likely significant effects in combination cannot be ruled out.

Operational phase impacts in combination

4.2.14 As described in Section 3.4, the traffic analysis predicted that the AP2 revised scheme would not change traffic movements during the operational phase. Consequently, no air quality assessment was required, and likely significant effects were ruled out without any non-significant air quality impacts. Therefore, no in combination assessment is required.

4.3 Current status of the ongoing work

4.3.1 At this current stage of design and assessment, it is considered that likely significant effects cannot be ruled out as a result of the construction of the AP2 revised scheme in combination with other plans or projects.

4.3.2 Therefore, further and separate assessment of the AP2 revised scheme is being carried out to meet the needs of Regulation 63 of the Habitats Regulations. This will confirm the assessment conclusions at that stage of the design and assessment.

Annex A: Additional air quality information

1 Purpose

This annex provides additional air quality information in relation to impacts from vehicle emissions to support the assessment of Rixton Clay Pits SSSI and SAC.

This annex assesses the impact of air pollution on the Rixton Clay Pits SSSI and SAC. For simplicity, it is referred to as Rixton Clay Pits throughout the rest of this annex.

2 Scope, assumptions and limitations

The scope, assumptions and limitations for the air quality assessment are set out in full in Volume 1 (Section 8) of the SMR (see Volume 5: Appendix CT-001-00001) and accompanying SMR Technical note – Air quality: Guidance on the assessment methodology[26] and the SES2 and AP2 ES Volume 5, Appendix: CT-001-00003 Air quality – Technical note – Updated guidance on the assessment methodology for Phase 2b SES2 and AP2 ES.

Key elements in relation to the assessment of vehicle emissions on ecologically sensitive sites are:

- screening of traffic data using the criteria set out in the SMR, which is based on the DMRB criteria[17], to identify where assessment is required;
- these criteria are the following for assessing the impacts of the AP2 revised scheme:
  - change in road alignment by 5m or more;
  - change in daily traffic flows by 1,000 vehicles or more as AADT;
  - change in daily flows of HDV by 200 AADT or more;
  - change in daily average speed by 10kph or more; or
  - change in peak hour speed by 20kph or more.
- the following criteria are used for assessing the impacts of the scheme in combination with other plans and projects:
  - change in daily traffic flows by 1,000 vehicles or more as AADT; or
  - change in daily flows of HDV by 200 AADT or more.
- ecological receptors included in the air quality assessment are designated sites with habitats sensitive to nitrogen. These could include SAC, Special Protection Areas (SPA) and Ramsar sites;
- transects have been used within a designated site with modelled points at 0m, 10m, 20m, 30m, 40m, 50m, 75m, 100m, 150m and 200m from the edge of the road unless the shape of the site and potential impacts require different distances to characterise the impacts; and
- a deposition velocity relevant to the habitat of each site has been used, as detailed in the IAQM ecological guidance[20]. Data on ammonia, nitrogen deposition and acid deposition has been taken from the most recent information available on the APIS[24] website. No plume depletion for ammonia dispersion modelling has been included. No reduction in future background deposition rates or background pollutant concentrations has been applied to the APIS data.

[26] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement, Environmental Impact Assessment Scope and Methodology Report,* Volume 5, Appendix CT-001-00001. Available online at: https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement.

The following scenarios were assessed:

- baseline;
- selected year(s) within the construction period for the assessment of the effects of construction. The year(s) of assessment were selected based on the worse case peak period traffic during the construction programme and when significant effects might be expected; and
- a scenario for the first full operational year after construction is completed.

The baseline scenario represents 2018.

For the construction assessments, emission factors and backgrounds (with the exception of the APIS data) used the earliest construction year (i.e. 2026). This is a worst case assumption as emissions from road vehicles are improving year-on-year (e.g. due to increasing numbers of electric vehicles) and the worst case construction period may not fall in the first year of construction.

For each assessment year, both the scenario without the AP2 revised scheme in place and the scenario with the AP2 revised scheme in place have been modelled, with background pollutant concentrations, deposition rates and emission factors representing the future year being assessed (with the exception of the APIS data). This comparison was used to assess the impacts of the AP2 revised scheme.

For the assessment of the AP2 revised scheme in combination with other plans and projects, a different 'without' scheme scenario was used and described as the 'do nothing' scenario. This uses traffic data from the 2018 baseline, but background pollutant concentrations, deposition rates and emission factors representing the future year being assessed (with the exception of the APIS data).

The assessment incorporated HS2 Ltd's policy on construction vehicle emissions standards. These standards are published in Information Paper E14[27]; Air Quality and include Euro VI for HGV, and Euro 6 and Euro 4 for diesel and petrol Light Duty Vehicles (LDV) respectively.

The traffic forecasts that underpin the designated sites report were derived from strategic traffic models that have been sourced from key stakeholders, including Local Highway Authorities and National Highways. In combination, these models cover the areas that are expected to be affected by the AP2 revised scheme and have been used as the basis of assessment for traffic flow analysis. The models have been developed by the relevant stakeholders in accordance with Transport Analysis Guidance (TAG) provided by the Department for Transport, with each model representing a base year position between 2016 and 2018. It is understood that the strategic traffic models supplied to HS2 Ltd take account of the core development growth scenarios set out in the relevant local plan documents, transport strategy documents and model forecasting reports published at that time.

[27] High Speed Two Ltd (2022*), High Speed Two Phase 2b Information Paper E14: Air Quality.* Version 2.0. Available online at: https://www.gov.uk/government/publications/hs2-phase-2b-information-papers-environment-e-series.

Information about these development growth scenarios can be found in the following documents:

- Cheshire East Local Plan Strategy 2010-2030, July 2017[28];
- Cheshire West and Chester Local Plan (Part Two) Land Allocations and Detailed Policies, November 2017[29];
- Winsford Transport Strategy Recommendations Report, June 2016[30];
- Northwich Transport Strategy Recommendations Report, April 2018[31];
- Regional Investment Programme (RIP) M6 Junction 19 Improvement PCF Stage 3 Transport Forecasting Report, January 2019[32]; and
- GMVDM4A Uncertainty Log for NTEM GMSF Full Scenario, Version 2, November 2018[33].

In all cases, the traffic growth forecasts have been constrained to TEMPro version 7.2 which uses the National Trip End Model (NTEM 7.2 (2017))[34] dataset and the National Transport Model (NTM) 2015. TEMPro inherently incorporates future planned development, being based on approved plans, irrespective of whether it is approved, committed, or simply included in approved plans.

Consideration was also given to relevant non-road plans and projects that could contribute to a cumulative increase in air pollution at Rixton Clay Pits. Searches were carried out for the following non-traffic related emission sources (which were also included in the air quality model) within a 10km radius (unless stated otherwise below). This is considered to be reasonable and proportionate and meets the expectations in Section 4.48 of Natural England's guidance[18]:

- combustion and energy < 20MW (within 5km);

[28] Cheshire East Council (2022), *Local Plan Strategy 2010 – 2030*. Adopted 17 July 2017. Available online at: https://www.cheshireeast.gov.uk/planning/spatial-planning/cheshire_east_local_plan/local-plan-strategy/local_plan_strategy.aspx.

[29] Cheshire West and Chester Council (2019), *Local Plan (Part Two) Land Allocations and Detailed Policies*. Adopted 18 July 2019. Available online at: https://consult.cheshirewestandchester.gov.uk/kse/event/34617/section/.

[30] Mott MacDonald (2016), *Winsford Transport Strategy: Recommendations Report*. Available online at: https://www.cheshirewestandchester.gov.uk/residents/transport-and-roads/public-transport/transport-strategy.

[31] Mott MacDonald (2018), *Northwich Transport Strategy: Recommendations Report*. Available online at: https://www.cheshirewestandchester.gov.uk/residents/transport-and-roads/public-transport/transport-strategy.

[32] Highways England (2019), *Regional Investment Programme (RIP) M6 Junction 19 Improvement*. Issue Number 1.0. Available online at: https://assets.highwaysengland.co.uk/roads/road-projects/M6+junction+19/Statement+of+Reasons.pdf.

[33] TfGM (2018), *GMVDM4A Uncertainty Log for NTEM GMSF Full Scenario, Version 2', November 2018, provided by personal communication to Mott MacDonalds in December 2018*

[34] Department for Transport, *TEMPro version 7.2*. Available online at: https://www.data.gov.uk/dataset/11bc7aaf-ddf6-4133-a91d-84e6f20a663e/national-trip-end-model-ntem.

- combustion and energy > 20MW;
- farming, livestock and poultry;
- waste, e.g. landfill gas; and
- minerals activities.

3 Air quality standards

Air quality limit values and objectives are quality standards for clean air and to protect human health or harm to vegetation. The term 'air quality standards' has been used to refer to both the English air quality objectives and the air quality limit values and critical levels introduced in the UK based on EU Directives. Table A1 sets out the air quality standard for NOx.

Table A1: Air quality standards

Pollutant	Averaging period	Standard
NOx (for protection of vegetation)	Annual mean	30µg/m^3

In the context of air pollution impacts on ecological sites (e.g. in this case SAC, SPA and Ramsar sites), road traffic emits NOx and ammonia, which both contribute to nitrogen and acid deposition. Therefore, this assessment considers changes in NOx and ammonia as well as changes in nitrogen and acid deposition. Comparisons have been made against the applicable critical loads[35], critical level or relevant standard for the site, as above or as provided by APIS.

[35] The critical loads for deposition vary and are specific to each qualifying feature. These are presented as a range of values (expressed as a rate, e.g. 10kg N/ha/yr - 20 kg N/ha/yr) and typically, as a precautionary approach, only the lowest value is used (unless there are compelling reasons to do otherwise) as this will emphasise any negative outcomes.

4 How significance is assessed

For the assessment of NOx concentrations, if the change is predicted to be less than 1% of the air quality standard then the effect is considered to be not significant. However, should the NOx concentration change by more than 1% then the assessment of significance will be undertaken by an ecologist and reported within the main report.

For the assessment of ammonia (NH_3), if the change is predicted to be less than 1% of the air quality critical level[36], then the effect is considered to be not significant. However, should the concentration change by more than 1%, then the assessment of significance will be undertaken by an ecologist and reported within the main report.

For the assessment of nitrogen deposition, if the change is predicted to be less than 1% of the lower critical load[35], then the effect is considered to be not significant. However, should the deposition change by more than 1%, then the assessment of significance will be undertaken by an ecologist and reported within the main report.

For the assessment of acid deposition, if the total concentration is predicted to be less than the lower critical load, then the effect is considered to be not significant. If the change in concentration is more than 1% of the maximum critical load and the total for acid deposition is greater than the maximum critical load, then the assessment of significance will be undertaken by an ecologist and reported within the main report.

[36] The critical level for NH_3 is 3µg/m^3 for low level vegetation and 1µg/m^3 high vegetation (e.g. trees).

5 Assessment of construction traffic effects – AP2 revised scheme

5.1 Screening of traffic data

The screening process identified no roads in the area exceeding the screening thresholds and therefore no further assessment was required.

6 Assessment of construction traffic effects – AP2 revised scheme in combination with other plans and projects

6.1 Screening of traffic data

The assessment of construction traffic impacts has used traffic data based on an estimate of the average daily flows in the peak year during the construction period (2026 – 2039). Traffic data are presented in Table A2.

The screening process identified one road in the area exceeding the screening thresholds:

- the A57 Manchester Road.

The A57 Manchester Road is a planned HS2 Ltd construction traffic route.

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

Figure A1 presents a detailed map of the modelled area including assessed roads (Modelled Road Links in red) and Modelling Transect Points (yellow dots).

Table A2: Traffic data used in modelling (construction phase, AP2 revised scheme in combination)

Road ID	Start and end coordinates	Annual Average Daily Traffic (AADT)			In combination change (2026 with the AP2 revised scheme – 2018 baseline)	Heavy Duty Vehicles (HDV)			In combination change (2026 with the AP2 revised scheme – 2018 baseline)
		2018 baseline	2026 without the AP2 revised scheme	2026 with the AP2 revised scheme (SC2)		2018 baseline	2026 without the AP2 revised scheme	2026 with the AP2 revised scheme (SC2)	
2328_4144	368858, 390327 to 368968, 390562	1,140	1,291	1,296	156	0	0	0	0
1216_2322	368350, 389837 to 368322, 390000	151	173	173	23	0	0	0	0
2328_2470	368858, 390327 to 368874, 390282	1,140	1,291	1,296	156	0	0	0	0
2322_2811	368322, 390000 to 368345, 391060	151	173	173	23	0	0	0	0
1442_4048	368523, 390000 to 368671, 390120	16,316	18,463	18,505	**2,189**	1,007	1,025	1,025	18
1216_1442	368350, 389837 to 368523, 390000	16,316	18,463	18,505	**2,189**	1,007	1,025	1,025	18

Road ID	Start and end coordinates	Annual Average Daily Traffic (AADT)			In combination change (2026 with the AP2 revised scheme – 2018 baseline)	Heavy Duty Vehicles (HDV)			In combination change (2026 with the AP2 revised scheme – 2018 baseline)
		2018 baseline	2026 without the AP2 revised scheme	2026 with the AP2 revised scheme (SC2)		2018 baseline	2026 without the AP2 revised scheme	2026 with the AP2 revised scheme (SC2)	
1216_4047	368350, 389837 to 367678, 389616	17,179	19,680	19,722	**2,542**	1,317	1,340	1,340	23
2470_4048	368874, 390282 to 368671, 390120	16,316	18,463	18,505	**2,189**	1,007	1,025	1,025	18
12975_1788 (GMSM Traffic Model Link)	368953, 390352 to 369149, 390427	23,489	23,550	23,983	494	901	879	744	-157

Note: Values in bold indicate change in traffic flow triggering for assessment.

6.2 Non-road plans and projects

No non-road plans or projects have been identified that require further consideration within the in combination assessment.

6.3 Receptors assessed and background concentrations

Table A3 presents the details of the receptor assessed, background concentrations for NOx, background nitrogen deposition and critical loads. Table A4 shows the background acid deposition, critical loads and background ammonia concentrations.

Figure A1 presents a detailed map of the modelled area including assessed roads (road network in blue, site haul route in green) and modelled receptors (yellow dots). The yellow transect points in Figure A1 represent the closest point to the road for the three sensitive habitat types.

Figure A1: Map of Rixton Clay Pits, including modelled road links and modelled transect points

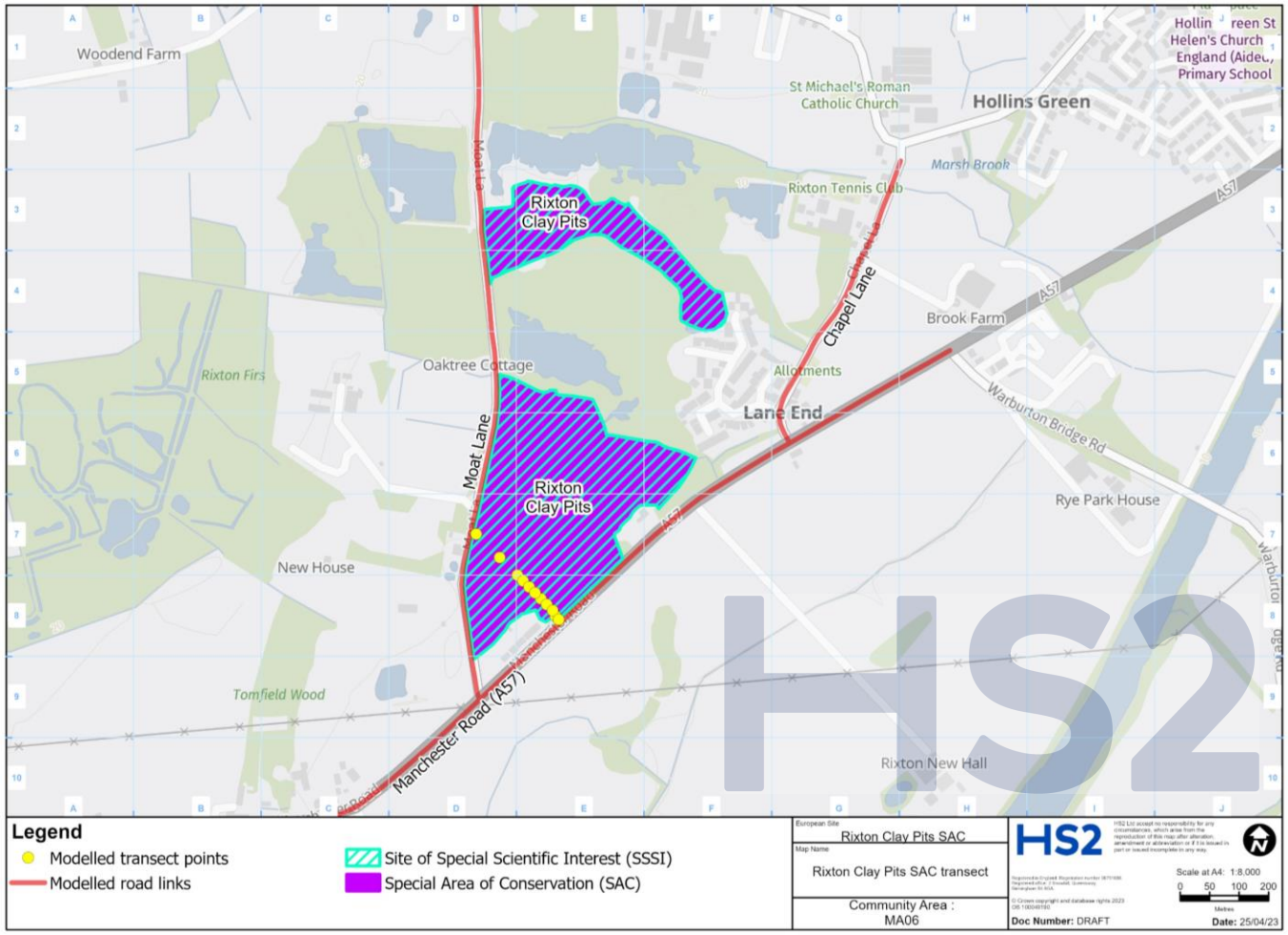


Table A3: Modelled ecological receptor backgrounds, APIS data and critical loads (construction phase)

Receptor	Sensitive habitat	2018 NOx background concentration (µg/m^3)	2026 NOx background concentration (µg/m^3)	APIS data of average total nitrogen deposition (kg N/ha/yr)	Lower critical load (kg N/ha/yr)
Rixton Clay Pits	Broadleaved deciduous woodland	18.2 – 20.7	13.1 – 15.5	42.0 – 42.9	15
	Calcareous grassland	18.2 – 20.7	13.1 – 15.5	24.9	15
	Poor fen	18.2 – 20.7	13.1 – 15.5	24.9 – 25.4	10

Table A4: Modelled ecological receptor acid deposition backgrounds, critical loads and ammonia background concentrations (construction phase)

Receptor	Sensitive habitat	APIS data of average total acid deposition (k eq/ha/yr)	APIS Critical load nitrogen (k eq/ha/yr) (min)	APIS Critical load nitrogen (k eq/ha/yr) (max)	APIS ammonia background concentration (µg/m^3)
Rixton Clay Pits	Broadleaved deciduous woodland	3.2 – 3.3	0.4	1.9	2.9 – 3.0
	Calcareous grassland	2.0	1.1	5.1	2.9
	Poor fen	2.0	0.3	0.6	2.9 – 3.0

6.4 Assessment results

Table A5 presents a summary of the modelled NOx concentrations for the ecological site, the change in concentration and a comparison against the air quality standard (30µg/m^3).

Table A6 presents a summary of the ammonia concentration results taken from the National Highways Ammonia N Deposition Tool[17], change in concentration and percentage change in relation to the critical level.

Table A7 presents a summary of the modelled nitrogen deposition, with an additional ammonia component applied using the National Highways Ammonia N Deposition Tool, change in deposition and percentage change in relation to the lower critical load.

Table A8 presents a summary of the modelled acid deposition, with an additional ammonia component applied using the National Highways Ammonia N Deposition Tool, and percentage change in deposition and percentage change in relation to the critical load.

Table A5: Assessment of NOx concentrations at ecological sites (construction phase, AP2 revised scheme in combination)

Ecological site	Sensitive Habitat	Distance to nearest road (m)	NOx concentrations (µg/m^3)			Change in NO_x concentrations (µg/m^3)	Comparison against air quality standard (30µg/m^3)	Percent change in relation to air quality standard
			2018 baseline	2026 do nothing	2026 with the AP2 revised scheme in combination			
Rixton Clay Pits	Woodland	3	61.90	33.31	35.59	2.28	Above standard	7.6%
	Woodland	11	45.21	26.03	27.38	1.35	Within standard	4.5%
	Woodland	21	37.53	22.68	23.61	0.93	Within standard	3.1%
	Poor fen	35	32.43	20.46	21.10	0.64	Within standard	2.2%
	Poor fen	49	27.24	16.95	17.45	0.50	Within standard	1.7%
	Poor fen	63	25.59	16.24	16.65	0.41	Within standard	1.4%
	Poor fen	78	24.46	15.76	16.10	0.34	Within standard	1.2%
	Poor fen	92	23.65	15.41	15.71	0.30	Within standard	1.0%
	Grassland	106	23.02	15.14	15.41	0.27	Within standard	0.9%
	Grassland	148	21.80	14.63	14.82	0.19	Within standard	0.7%
	Woodland	205	21.03	14.31	14.47	0.16	Within standard	0.5%

Table A6: Assessment of ammonia (NH_3) at ecological sites (construction phase, AP2 revised scheme in combination)

Ecological site	Sensitive Habitat	Distance to road (m)	NH_3 concentrations (µg/m³)			Change in NH_3 concentrations (µg/m³)	Comparison against critical level (3µg/m³ for low and 1µg/m³ high vegetation)	Percent change in relation to critical level
			2018 baseline	2026 do nothing	2026 with the AP2 revised scheme in combination			
Rixton Clay Pits	Woodland	3	4.91	4.57	4.77	0.20	Above standard	6.6%
	Woodland	11	4.14	3.93	4.05	0.12	Above standard	3.9%
	Woodland	21	3.78	3.64	3.72	0.08	Above standard	2.7%
	Poor fen	35	3.55	3.44	3.50	0.06	Above standard	1.9%
	Poor fen	49	3.35	3.27	3.31	0.04	Above standard	1.5%
	Poor fen	63	3.28	3.21	3.24	0.03	Above standard	1.2%
	Poor fen	78	3.22	3.17	3.20	0.03	Above standard	1.0%
	Poor fen	92	3.19	3.14	3.16	0.02	Above standard	0.9%
	Grassland	106	3.16	3.11	3.14	0.03	Above standard	0.8%
	Grassland	148	3.10	3.07	3.08	0.01	Above standard	0.6%
	Woodland	205	3.07	3.04	3.05	0.01	Above standard	0.5%

Table A7: Assessment of nitrogen deposition with ammonia at ecological sites (construction phase, AP2 revised scheme in combination)

Ecological site	Sensitive Habitat	Distance to nearest road (m)	Dry deposition (kg N/ha/yr)			Change in N deposition (kg N/ha/yr)	Lower critical load (kg N/ha/yr)	% Change in relation to lower critical load
			2018 baseline	2026 do nothing	2026 with the AP2 revised scheme in combination			
Rixton Clay Pits	Woodland	3	63.67	57.80	59.68	1.88	15	12.5%
	Woodland	11	55.39	51.75	52.88	1.13	15	7.5%
	Woodland	21	51.52	48.96	49.73	0.77	15	5.2%
	Poor fen	35	29.13	28.08	28.42	0.34	10	3.4%
	Poor fen	49	27.81	26.98	27.25	0.27	10	2.7%

Ecological site	Sensitive Habitat	Distance to nearest road (m)	Dry deposition (kg N/ha/yr)			Change in N deposition (kg N/ha/yr)	Lower critical load (kg N/ha/yr)	% Change in relation to lower critical load
			2018 baseline	2026 do nothing	2026 with the AP2 revised scheme in combination			
	Poor fen	63	27.29	26.60	26.82	0.22	10	2.2%
	Poor fen	78	26.93	26.34	26.53	0.19	10	1.8%
	Poor fen	92	26.67	26.16	26.32	0.16	10	1.6%
	Grassland	106	26.48	26.02	26.16	0.14	15	0.9%
	Grassland	148	26.09	25.74	25.85	0.11	15	0.7%
	Woodland	205	43.53	43.06	43.19	0.13	15	0.9%

Table A8: Assessment of acid deposition with ammonia at ecological sites (construction phase, AP2 revised scheme in combination)

Ecological site	Sensitive Habitat	Distance to road (m)	Acid deposition (k eq/ha/yr)			Change in acid deposition (k eq/ha/yr)	Change in acid deposition as percent of CLmax	Total with AP2 revised scheme acid deposition as percent of CLmax
			2018 baseline	2026 do nothing	2026 with the AP2 revised scheme in combination			
Rixton Clay Pits	Woodland	3	4.75	4.33	4.47	0.14	7.2%	239.2%
	Woodland	11	4.16	3.90	3.98	0.08	4.3%	213.3%
	Woodland	21	3.89	3.70	3.76	0.06	3.0%	201.3%
	Poor fen	35	2.25	2.17	2.20	0.03	4.3%	388.6%
	Poor fen	49	2.16	2.11	2.12	0.01	3.3%	375.3%
	Poor fen	63	2.13	2.08	2.09	0.01	2.7%	369.9%
	Poor fen	78	2.10	2.06	2.07	0.01	2.3%	366.2%
	Poor fen	92	2.08	2.05	2.06	0.01	2.0%	363.6%
	Grassland	106	2.07	2.04	2.05	0.01	0.2%	40.4%
	Grassland	148	2.04	2.02	2.02	<0.01	0.2%	39.9%
	Woodland	205	3.33	3.29	3.30	0.01	0.5%	176.8%

6.5 Assessment of significance (construction phase, AP2 revised scheme in combination)

NOx concentrations at Rixton Clay Pits are predicted to be above the air quality standard just above 35m from the road in the 2018 baseline scenario, and just above three metres from the road in the 2026 do nothing and 2026 with the AP2 revised scheme in combination scenarios. The changes in NOx concentrations between the 2026 do nothing scenario and with the AP2 revised scheme in combination scenario are greater than 1% of the air quality standard up to 92m from the road. Potentially significant effects are therefore predicted, and this is addressed further in Section 4.2 of the main report.

NH_3 concentrations at Rixton Clay Pits are predicted to be above the air quality critical level in all scenarios. The changes in NH_3 concentrations between the 2026 do nothing scenario and with the AP2 revised scheme in combination scenario are greater than 1% of the air quality critical level up to 78m from the road. Potentially significant effects are therefore predicted, and this is addressed further in Section 4.2 of the main report.

Nitrogen deposition rates are predicted to be above the relevant critical load at all modelled receptors in the 2018 baseline and future scenarios with or without the AP2 revised scheme in combination. Predicted nitrogen deposition rates in 2026, with the AP2 revised scheme in combination, are lower than the 2018 baseline rates at all modelled locations. The changes in nitrogen deposition between the 2026 do nothing scenario and with the AP2 revised scheme in combination scenario are greater than 1% of the relevant critical load up to around 92m from the road. Potentially significant effects are therefore predicted, and this is addressed further in Section 4.2 of the main report.

Acid deposition rates are predicted to be above the critical load at all modelled receptors in all scenarios with or without the AP2 revised scheme in combination with the exception of between 106m and 148m where the less stringent critical load for grassland applies. The changes in acid deposition between the 2026 do nothing scenario and with the AP2 revised scheme in combination scenario are greater than 1% of the maximum critical load up to 92m from the road. Potentially significant effects are therefore predicted, and this is addressed further in Section 4.2 of the main report.

7 Assessment of operational traffic effects – AP2 revised scheme

7.1 Screening of traffic data

The AP2 revised scheme will not change traffic movements on roads within 200m of Rixton Clay Pits in the operational phase and therefore no further assessment is required.

8 Assessment of operational traffic effects – AP2 revised scheme in combination with other plans and projects

8.1 Screening of traffic data

8.1.1 The screening process identified no roads in the area, around Rixton Clay Pits, exceeding the screening thresholds in the operation phase and therefore no further assessment is required.

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