

Sheffield Local Plan Habitats Regulations Assessment Addendum Sheffield City Council

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Ecus Ltd

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1. Introduction

1.1 Need for this Report

- 1.1.1 This report is an addendum to the Habitats Regulations Assessment (HRA) Appropriate Assessment for Sheffield City Council's (SCC) draft Local Plan.
- 1.1.2 Ecus Limited (Ecus) prepared a HRA Appropriate Assessment for SCC's draft Local Plan in November 2022 for the effects identified during the HRA screening report (The Sheffield Plan: Our City, Our Future - Integrated Impact Assessment - Scoping Report, September 2020).
- 1.1.3 Consultation with Natural England on the draft HRA identified several issues that had not been sufficiently identified at the screening stage and therefore had not been considered in the HRA. These are set out in Section 1.2 below.

1.2 Summary of Consultation

1.Review of 15 km Buffer

- 1.2.1 The search area for this Appropriate Assessment incorporates the SCC boundary and a 15 km zone of influence. This zone was determined in accord with the earlier Screening report ('The Sheffield Plan: Our City, Our Future - Integrated Impact Assessment - Scoping Report', Appendix 2, September 2020) and following consultation with Natural England (email comms. with Natural England Lead Advisor, Yorkshire and Northern Lincolnshire Team (August and September 2022)).
- 1.2.2 Natural England have since identified that 15 km seems excessive compared to other local plans in the region and requested that a smaller buffer be used with evidence given to explain why this new buffer has been selected.
- 1.2.3 A review of Zones of Influence has been undertaken and is discussed in Section 2.3 of this report.

2.Functionally Linked Land

- 1.2.4 Functionally linked land was not identified as an issue at the time of HRA screening and therefore was omitted from the Appropriate Assessment. Natural England now requires this to be considered for all plans and projects, and request that this is addressed in the SCC HRA.
- 1.2.5 An assessment of effects to functionally linked land has been undertaken, this is provided in Section 3.1.

3.Water

- 1.2.6 Water Resources was not identified as an issue at the time of producing the HRA screening and therefore was omitted from the Appropriate Assessment. Natural England require assessment regarding the potential for impacts from planned housing growth and the water abstraction

requirements this will entail. Abstraction within, or in close proximity to European Sites can lead to damage to vulnerable notified habitats and species.

1.2.7 Natural England also advised that additional wastewater demands of growth proposed in the Plan are considered in relation to potential water quality impacts on designated Sites.

1.2.8 An assessment of effects on water resources has been undertaken, this is provided in Section 3.2.

4. Air Quality

1.2.9 Air Quality was not identified as an issue at the time of HRA screening and therefore was omitted from the Appropriate Assessment. Natural England have requested that this be considered in the HRA.

1.2.10 An assessment of effects arising from changes in air quality has been undertaken, this is provided in Section 3.3.

5. In-combination

1.2.11 Natural England have advised that the assessment cannot rule out likely significant effects in-combination with other plans and projects. Although those other plans or projects already have mitigation measures built in and may be acceptable individually, they may cause damage to Habitats Sites when combined with the Sheffield Local Plan. The purpose of in-combination assessment is to consider the combined effect of the Sheffield Local Plan with the other plans and projects

1.2.12 A review of in-combination effects has been undertaken; this is presented in Section 3.4.

2. Habitats Regulations Assessment

2.1 Legislation

- 2.1.1 Whilst the regulatory requirement for HRA historically originated from European legislation, post the UK's formal departure from the European Union on 31 December 2020, UK legislation known as The Conservation of Habitats and Species Regulations 2017 (as amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019) (the Habitats Regulations) has been amended to maintain the requirements of the Habitats Directive and the Habitat Regulations.
- 2.1.2 The legislation includes the provision that any plan or project likely to have a significant effect on a European designated site (currently referred to as Habitats Sites), shall be subject to an Appropriate Assessment of its implications in view of the site's conservation objectives. As a 'Competent Authority', SCC has a duty to implement the Habitats Regulations in the exercise of its function.
- 2.1.3 Designated Habitats Sites include Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar Sites and also include potential Special Protection Areas (pSPA) and candidate Special Areas of Conservation (cSACs) for the purpose of considering plans and projects affecting them.
- 2.1.4 HRA is a process which evaluates the effects of plans on the designated features of Habitats Sites and determines whether identified effects will adversely affect the integrity of the Sites.
- 2.1.5 UK Government Guidance on the use of Habitats Regulations Assessment (2019) identifies a staged process to the assessment of the effects of plans or projects on these protected Sites. These stages are collectively referred to as the HRA. There are potentially up to four stages:
- i. Screening;
 - ii. Appropriate Assessment;
 - iii. Mitigation and alternatives; and
 - iv. Imperative Reasons of Overriding public Interest (IROPI).
- 2.1.6 This report provides a summary of the HRA Screening stage (Stage 1) and details of the Appropriate Assessment (Stage 2) (where required).
- 2.1.7 Stage 1 comprised identification of Likely Significant Effects (LSE) on the designated features of any Habitats Sites. An LSE is any effect that may be reasonably predicted as a consequence of a project that may affect the conservation objectives of the features of the protected site but excluding trivial or inconsequential effects.

- 2.1.8 A 'significant effect' is not defined; however, it is taken to mean an effect upon the integrity of a site, or its ability to achieve or maintain a favourable conservation status.
- 2.1.9 Similarly, likelihood is not defined; however, in line with the precautionary principle, it is not necessary to determine that a significant effect is certain.
- 2.1.10 In accordance with the European Court of Justice Ruling on the 'People over Wind and Sweetman' case in 2018, mitigation at the Screening stage cannot be considered. Therefore, where LSEs are anticipated in the absence of mitigation, an Appropriate Assessment will be required.
- 2.1.11 SCC, as a statutory undertaker, is considered a section 28G authority under the Wildlife and Countryside Act 1981 (as amended) (the WCA 1981). As such, SCC is also a competent authority under the Habitats Regulations. This means that SCC is able and required to undertake HRA of its own activities/functions. This report is a statement to inform SCC's own assessment.

2.2 Summary of Original HRA Screening

- 2.2.1 The Sheffield Plan Issues and Options document (2020) was supported by a HRA Screening report (*The Sheffield Plan: Our City, Our Future - Integrated Impact Assessment - Scoping Report*, Appendix 2, September 2020) which, following consultation with Natural England, considered impacts to Habitats Sites inside the SCC boundary and for up to 15 km from the boundary.
- 2.2.2 The Screening stage comprised the identification of LSE on the features of any Habitats Site.
- 2.2.3 The Screening report identified no Habitats Sites within the SCC boundary but two SAC and one SPA to the west of the city, within 15 km. These are:
- South Pennine Moors SAC;
 - Peak District Dales SAC; and
 - Peak District Moors (Pennine Moors Phase 1) SPA.
- 2.2.4 The Screening report acknowledged a number of uncertainties in regard to proposed development in the Green Belt and recommended that an Appropriate Assessment be undertaken to further assess potential impacts to Habitats Sites, to be carried out with reference to:
- The specific location and scale of future site allocations;
 - SCC policies SP1 and SP2, including those covering ecology and biodiversity, air quality and water resources; and
 - Plans and programmes of adjacent authorities that may act 'in-combination' to cause an effect. It was noted that this was mainly likely to relate to air quality or disturbance arising

from increased recreational pressure due to the higher urban population.

2.3 Limitations

- 2.3.1 Ecus has prepared this report on behalf of SCC and there are a number of limitations to consider when reviewing LSE outlined within which could result in effects differing from those identified.
- 2.3.2 Prediction of effects is made using an evidence based approach and incorporates professional judgement. Assessment is based on the best available information, including that provided to Ecus by SCC and information that is publicly available, e.g. from adjacent authorities. No attempt to verify secondary data sources has been made and they are assumed to be accurate as published.
- 2.3.3 Every attempt has been made to predict effects as accurately as possible using the available information, though many effects will be dependent on the size and location of development, building design, construction, proximity to sensitive receptors and the range of uses that take place.
- 2.3.4 Air quality effects have been considered in relation to their distance from the Habitats Site. The 200 m impact zone has been identified from published guidance available from Natural England, the Department of Transport's Transport Analysis Guidance and Highways England (see Section 7 References).
- 2.3.5 This Appropriate Assessment is not intended to be a substitute for Strategic Environmental Assessment of the Sheffield Plan or site/project specific Environmental Impact Assessment (ref. '*Sheffield Plan: Our City, Our Future - Interim Sustainability Appraisal/ Strategic Environmental Assessment on Citywide Options Report*', SCC).

2.4 Zones of Influence

- 2.4.1 A desk study review of all Plan Level HRA located within 15 km of South Pennine Moors SAC, Peak District Moors (Pennine Moors Phase 1) SPA and Peak District Dales SAC has been completed to see what zones of influence / buffers have been applied to other plans that could affect the Habitats Sites.
- 2.4.2 Table 1 provides the summary information for buffers used in nearby Plan level HRAs.

Table 1 – Summary of Nearby Plan Level HRAs.

Plan	ZOI used	Reason
Derbyshire Dales Local Plan – Post-Submission Modifications Habitats Regulations Report June 2017	Cannock Chase SAC 15 km for recreation	Based on the visitor impacts mitigation report
High Peak Local Plan August 2014	None	N/A
Habitat Regulations Assessment of the North East Derbyshire District Council Local Plan April 2018	None	N/A
HRA – Calderdale Local Plan	15 km for recreation	From a review of other districts local plan HRA as well as the latest guidance material available at the time of writing a 15 km buffer distance as well as a 10 km distance has been applied by other local authorities in their HRA. In line with the precautionary principle the larger buffer distance (15 km) is to be applied for the HRA of the Calderdale Local Plan.
Barnsley Local Plan HRA 2016	5 km for recreation	This approach and the extent of the buffer was agreed with Natural England at an earlier consultation stage in 2012. This followed the approach to use a buffer taken by Wakefield Metropolitan District Council to their HRA. It was agreed that this was a reasonable approach that could be adopted by Barnsley Metropolitan Borough Council and a 5 km buffer was suggested by Natural England as being appropriate.
Places for everyone (Bolton, Bury, Manchester, Oldham, Rochdale,	15 km for water 8 km for recreation	The largest (most cautious) buffer zone considered is 15 km; that is, most operations with the potential of causing direct water and/or air pollution impacts located further than 15 km from the boundary of a European site are considered very

Plan	ZOI used	Reason
Salford, Tameside, Trafford and Wigan) 2021		<p>unlikely to have a significant effect on the special interest of that site.</p> <p>Around 68% of visitors to the South Pennines are “walking with a dog”, by far the most popular recreational activity. The survey also identified that people walking with a dog travelled no more than 8 km to reach their dog walking location. For the purposes of this assessment, 7 km has therefore been taken to be the threshold distance at which development within allocated areas could result in impacts upon the SPA/SAC. This distance threshold has been used in HRAs prepared to inform the Bradford Core Strategy and has been reaffirmed in the HRA supporting the Kirklees Local Plan (March 2017), the Burnley Local Plan (2018), and the Calderdale Local Plan (2019). It is the distance that encompasses most of the trips made to the South Pennines identified in the Natural England NERC150 Report 2014.</p>
Bradford South Pennine Moors SPA/SAC Planning Framework SPD January 2022	<p>2.5 km for Functionally Linked Land</p> <p>7 km for recreation</p>	<p>The Core Strategy HRA considers the data collected during visitor surveys conducted on the South Pennine Moors in 2013. Visitor survey data can help to identify the extent to which people are travelling to the European site. The 2013 data concluded that the majority of visitors were travelling under 7km, and this distance was therefore used in the Core Strategy as a ‘zone of influence’ within which additional housing may add to the visitor pressure on the moorlands.</p>
Yorkshire Water's Drainage and Wastewater Management Plan HRA Stage 1 Screening and Stage 2 Appropriate Assessment	5 km for water resources	<p>A 5km buffer has been applied defined by professional judgement based on an initial evaluation of Habitats Sites and their qualifying feature ecological needs. If the location of an option is downstream of relevant Habitats Sites within 5km, or outside a 5km radius from all relevant Sites, then no further action is required.</p>

2.4.3 Bradford Local Plan and Places for Everyone have both used 7km for recreational disturbance based on visitor data collected during visitor surveys conducted on the South Pennine Moors in 2013 and 2019. Visitor survey data can help to identify the extent to which people are travelling to the European site. The data concluded that the majority of visitors were travelling under 7km, and this distance was therefore used in these documents as a zone of influence within which additional housing may add to the visitor pressure on the moorlands.

2.4.4 We have therefore applied the following zones of influence in this addendum:

- Recreation 7 km;
- Functionally Linked Land 2.5 km; and
- Water 5 km.

3. Assessment of effects to Habitats Sites

3.1 Functionally Linked Land

Introduction

3.1.1 Functionally linked land (FLL) is a term often used to describe areas of land or sea occurring outside a designated site which is considered to be critical to, or necessary for, the ecological or behavioural functions in a relevant season of a qualifying species for which a Special Area of Conservation (SAC) / Special Protection Area (SPA) / Ramsar site has been designated (Natural England, 2021). These habitats are frequently used by SAC/SPA species and supports the functionality and integrity of the designated Sites for these features.

3.1.2 There is a requirement for competent authorities to consider the importance of functionally linked habitats in HRAs when assessing new plans or projects to ensure the Conservation Objectives for the site can still be delivered.

Approach to Assessment

3.1.3 SCC has no defined guidance on assessing functionally linked land in relation to Habitats Sites.

3.1.4 A search of neighbouring Local Authorities which border the South Pennine Moors SPA/SAC and Peak District Dales SAC has been undertaken and the City of Bradford Metropolitan District Council have published the South Pennine Moors SPA/SAC Supplementary Planning Document which has been used to inform this assessment. (BMDC 2022).

3.1.5 The South Pennine Moors SPA/SAC Planning Framework SPD provides guidance and information to enable planning officers and developers to understand the necessary steps that need to be taken to ensure compliance with the Habitats Regulations.

3.1.6 For an area to be considered to be functionally linked to a European site it must be shown to regularly support significant numbers of species for which a European site has been designated.

3.1.7 'Regularly' is taken to mean over a number of years, but there is no accepted standard definition of what may constitute 'significant numbers' because this will depend on the species concerned. The concept has been most often studied in relation to birds, bats and marine species, because these species are highly mobile in their habits and can rely on Sites very far apart to complete their life cycles.

3.1.8 Bradford SPD provides protection for the South Pennine Moors SPA and mitigation for impacts from development through a requirement that any application (including non-residential development) within 2.5 km of the European site boundary will need to confirm whether or not the site is important ecologically in supporting populations of birds for which the South Pennine Moors

SPA has been classified, i.e. functionally-linked to the SPA. Depending on these findings, ensure any impacts are addressed through mitigation before any planning application can be approved.

Screening Stage

South Pennine Moors SAC

3.1.9 The South Pennine Moors SAC is designated for habitats only therefore there is no requirement to consider this Habitat Site for effects to functionally Linked Land.

Peak District Moors (Pennine Moors Phase 1) SPA.

3.1.10 Areas of land outside the boundary of the South Pennine Moors SPA may be important in supporting populations of birds for which the SPA has been classified. Within the 0 - 2.5 km zone it is necessary to confirm whether or not relevant habitats (that could indicate a functional link to the SPA) are present and the applicant will be required to provide such information.

3.1.11 Some types of habitat or types of site are straight forward to discount as supporting habitat and would generate no credible risk. Likely significant effects would be ruled out if the entire site comprised one or more of the following:

- Brownfield Sites;
- Within the immediate curtilage of an existing farm building or house;
- Within a settlement boundary or within 25 m of a settlement boundary;
- Within 25 m of a main road;
- Woodland; and
- Arable.

3.1.12 A review of the housing allocations proposed by SCC has been undertaken using these criteria buffers set in the Bradford SPD.

3.1.13 Table 2 demonstrates that all of the proposed locations for housing meet the criteria for discounting effects and therefore it can be concluded that there will be no LSE to functionally linked land for the South Pennine Moors SPA/SAC.

Table 2 - Screening for Functionally Linked Land within 2.5 km of Peak District Moors (Pennine Moors Phase 1) SPA.

Option	Housing Site Ref	Land description from housing allocation	Does it meet criteria for exclusion?
3,4 and 5	S00671	Brownfield (Stockbridge Steelworks)	Yes Brownfield Within 25 m of a settlement boundary.
3,4 and 5	Site Ref S00788	Greenfield Land At The Rear Of 13 And 42 Coppice Close	Yes Within 25 m of a settlement boundary.
3,4 and 5	Site Ref S01471	Brownfield Sweeney House	Yes Brownfield Within 25 m of a settlement boundary.
3,4 and 5	Site Ref S03991	Brownfield (The orchards) Totley Hall Farm	Yes Brownfield Within 25 m of a settlement boundary.
3,4 and 5	S03680	Greenfield Abbeydale Tennis Club	Yes Within 25 m of a settlement boundary.

Option	Housing Site Ref	Land description from housing allocation	Does it meet criteria for exclusion?
5	S01883	Greenfield Land to the north of Parkers Lane, Dore	Yes Within 25 m of a settlement boundary.
5	S03045	Greenfield Land either side of Cross Lane	Yes Within 25 m of a settlement boundary.
5	S03012	Greenfield Ryecroft Farm, Dore Road	Yes Within 25 m of a settlement boundary.

Peak District Dales SAC

3.1.14 There is no published guidance on assessment of functionally linked land or zones of influence for the Peak District Dales SAC. The conservation objectives for the Peak District Dales SAC (Natural England, 2018) include a requirement to:

“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 supporting processes on which qualifying natural habitats and the habitats of qualifying species rely “

3.1.15 The qualifying species of the SAC that would use functionally linked land are provided in Table 3 below, along with their habitat requirements.

Table 3 - Habitat requirement for qualifying features of Peak District Dales SAC.

Species	Habitat Requirements
Brook lamprey <i>Lampetra planeri</i> (qualifying feature, but not a primary reason for site selection)	Migratory freshwater species, occurring in streams and occasionally in lakes in north-west Europe. Like other lamprey species, the brook lamprey requires clean gravel beds for spawning and soft marginal silt or sand for the amosite larvae. It spawns mostly in parts of the river where the current is not too strong.
Bullhead <i>Cottus gobio</i>	Requires fast-flowing, clear shallow water with a hard substrate (gravel/cobble/pebble) and is frequently found in the headwaters of upland streams. However, it also occurs in lowland situations on softer substrates so long as the water is well-oxygenated and there is sufficient cover. It is not found in badly polluted rivers.
White-clawed (or Atlantic stream) crayfish <i>Austropotamobius pallipes</i>	This species lives in a diverse variety of clean aquatic habitats but especially favours hard-water streams and rivers. The River Dove represents white-clawed crayfish in a high-quality, upland limestone river, in the north-east of the species' UK range.

3.1.16 None of the household allocations would result in direct loss of any functionally linked land for the qualifying species of the Peak District Dales SAC therefore there will be no LSE associated with habitat loss.

3.1.17 An increase in population would have an associated increase in use of water resources which may affect water levels in the rivers that support the qualifying species. There is therefore a potential for LSE from water resources. An assessment of future demands on water is presented in section 3.2 which concludes that there is no effect to the designated site, therefore there will be no LSE from indirect impacts to functionally linked land.

3.2 Water

Introduction

3.2.1 Abstraction and/or discharge within or in close proximity to Habitats Sites can lead to damage to vulnerable habitats and species due to a reduction in water resources or changes in water quality. It is therefore necessary to consider the proposed growth from the Sheffield Local Plan in relation to the species and habitat requirements of the Habitats Sites to ensure the Conservation Objectives for the Sites can still be delivered.

Approach to Assessment

3.2.2 Guidance published by the UK Government on “Habitats Regulations Assessments: Protecting a European Site” (Defra and Natural England, 2021) states that you can use an HRA previously carried out by another competent authority for the same proposal if:

- There is no new information or evidence that may lead to a different conclusion;
- The assessments already done are relevant, thorough and correct; and
- The conclusions are rigorous and robust there’s no new case law that changes the way an HRA should be carried out or interpreted.

3.2.3 Yorkshire Water has undertaken HRA for both their emerging Water Resources Management Plan 2024 (Yorkshire Water 2022a) and their Yorkshire Water Drainage and Wastewater Management Plan Yorkshire Water 2022b.

3.2.4 Both of these strategic documents are based on population growth provided by SCC and both reports assess the effect of this increased population on the environment including risks to Habitat Sites.

3.2.5 Under the advice set out above, the findings of these assessments can be adopted by SCC for this HRA.

Screening Stage

3.2.6 The Peak District Dales SAC is located over 5 km from SCC’s boundary. Using the 5 km buffer set out in the DWMP Likely Significant Effects as a result of increased abstraction or discharge can be screened out due to distance.

3.2.7 Effects to the South Pennine Moors SAC and Peak District Moors (Pennine Moors Phase 1) SPA are considered in the remainder of this section.

3.2.8 Yorkshire Water set out how they plan to maintain a safe and reliable water supply to customers over the long term in their Water Resources Management Plan. This is updated every 5 years taking into account the most up to date information on the future risks to water supply.

3.2.9 The latest plan, draft Water Resources Management Plan 2024 (Yorkshire Water 2022a), has identified some significant risks to future supply-demand balance. These risks include the impacts of climate change, population growth, reductions in supply to protect the environment and the loss of a water transfer we currently receive from a neighbouring water company.

3.2.10 The Strategic Environmental Assessment (SEA) of the draft WRMP24 preferred plan (Ricardo 2022) incorporates the HRA findings as part of its assessment. The SEA has concluded that,

following inclusion of appropriate mitigation measures during the construction phase of relevant schemes, no adverse effects on the integrity of any European site are anticipated. Given that the proposed growth within SCC has been assessed by Yorkshire Water we can adopt this conclusion in this HRA and also conclude that the resource management for the population increase will not result in adverse effects to the integrity of any Habitats Sites.

- 3.2.11 With regard to wastewater capacity, Yorkshire Water Drainage and Wastewater Management Plan (Yorkshire Water 2022b) identifies changes in levels of risk to the core services Yorkshire Water provide across a range of time horizons. By exploring different time horizons, Yorkshire Water will identify and anticipate risks arising from climate change and population growth and the effects Yorkshire Water may have on the levels of service we provide.
- 3.2.12 An HRA Stage 1 Screening and Stage 2 Appropriate Assessment has been undertaken at plan level (Stantec, 2023) to check if proposals within the plan are likely to have a significant effect on the conservation objectives of Sites within the national site network (previously known as ‘Habitats Sites’), i.e., SPA and SAC.
- 3.2.13 The screening has identified the relevant Sites within and adjacent to (within 5 km) of the study area, their qualifying features, and the potential negative and positive impacts on the Sites. Blackburn Meadows Waste Water Treatment Works (WWtW) catchment is located approximately 210 m from the South Pennine Moors SPA and SAC.
- 3.2.14 There is potential for the DWMP to result in positive impacts to the national site network (such as through improved water quality), as well as negative impacts (such as through construction works only). The plan level appropriate assessment shows that with appropriate mitigation, no likely impact is expected on South Pennine Moors SPA and SAC. Whilst there are high level threats identified within the report, these are expected to be mitigated by siting the options appropriately, i.e., not siting options within Habitats Sites or within 500-1000 m of any Habitats Sites.
- 3.2.15 Given that the proposed growth within SCC has been assessed by Yorkshire Water we can adopt this conclusion in this HRA and also conclude that the water discharge change associated with the population increase will not result in adverse effects to the integrity of any Habitats Sites.

3.3 Air Quality

Introduction

- 3.3.1 Increased growth within Local Plans is of relevance to HRAs where increased traffic volumes (as a result of new growth) will occur in close proximity to Habitats Sites hosting habitats that are sensitive to reduced air quality.
- 3.3.2 The South Pennine Moors SPA/SAC is known to be adversely affected by relatively poor local air

quality alongside the roads that run through it.

- 3.3.3 As such, emissions from road traffic have been the focus of the air quality assessment. Emissions of NO_x from road traffic are decreasing due to the implementation of tighter European type approval standards (Euro Standards). However, ammonia is produced by the control systems that are designed to reduce emissions of NO_x from road traffic vehicles. Emissions of ammonia are greater from petrol than from diesel cars, whilst the converse is generally the case for NO_x.
- 3.3.4 Atmospheric pollutants of concern to sensitive habitats that are derived from vehicles include oxides of nitrogen (NO_x), ammonia (NH₃) and the consequential deposition of nitrogen (N) and acid, which can then lead to changes in species composition and mortality. It is known that traffic emissions lead to an increase in N, and that this presents a major concern for sensitive habitats. Regulations control the sulphur content of fuel used by vehicles, therefore emissions of SO₂ have not been assessed.
- 3.3.5 The main impacts of NO_x and NH₃ are through N deposition and acidification. N deposition can lead to an increase in N loving species at the expense of other species; an increased risk of frost damage in spring, increased sensitivity to drought; increased incidence of pest and pathogen attack and direct damage to sensitive species. The impacts of acid deposition are often indirect, resulting from a change of pH in soils and water. Chemical changes lead to nutrient deficiencies, release of toxins and changes in microbial N transformations.

Approach to Assessment

- 3.3.6 Natural England has advised that emissions from point sources more than 200 m from the boundary of a site can be considered negligible (this does not mean that there is not the possibility of impacts due to increasing emissions from diffuse sources). A GIS exercise was undertaken to identify any European sites within 200 m of an A road. This analysis was based on the assumption that only traffic on A roads is significant.
- 3.3.7 Traffic modelling for the whole Local Plan area has been undertaken by Systra with baseline and future Average Annual Daily Traffic (AADT) data generated for roads that intersect or are within 200 m of the South Pennine Moors SAC and Peak District Moors SPA. The data is presented in Appendix 1 and summarised in Table 4.
- 3.3.8 AADT has not been generated for the Peak District Dales SAC as it is not located within 200 m of any A road and therefore increased traffic within the modelled boundary would not affect this site.
- 3.3.9 The implications of the Local Plan in relation to air quality have been assessed using the training provided by DTA Ecology in their Masterclass on HRA: Dealing with air pollution, and the principles provided in the *Guidance on Decision-Making Thresholds for Air Pollution (Chapman & Kite, 2021)*

and the Decision-Making Thresholds for Air Pollution (Technical Report) (Air Quality Consultants, 2021).

Table 4 - Baseline and future AADT data for main roads in the Sheffield Local Plan area

Road Name	Baseline AADT	Future AADT	Modelled change in traffic count
A621 (Abbeydale Road South) SW	2,782	3,131	349
A621 (Abbeydale Road South) NE	2,055	2,131	77
A625 (Ecclesall Road South East Bound	4,292	4,483	191
A625 (Ecclesall Road South) West Bound	4,784	4,749	-35
A57 (Manchester Road) West Bound	3,381	3,681	299
A57 (Manchester Road) East Bound	3,962	3,920	-42
A616 (Stocksbridge Bypass) West Bound	7,145	7,209	64

Screening Stage

3.3.10 The first stage in undertaking assessment of effects is to establish baseline levels and critical loads of pollutants for the European Sites.

3.3.11 The Air Pollution Information Site (APIS) has Site Relevant Critical Loads and a Source Apportionment for the UK Natura 2000 network. The user is able to select a specific European site and identify the critical load function for acidification for this site where applicable, together with a range of critical loads for nutrient nitrogen deposition. This data is presented in Table 5.

3.3.12 Critical Loads are defined as “the threshold level for the deposition of a pollutant above which harmful indirect effects can be shown on a habitat or species, according to current knowledge”.

Table 5 - Whole Site Air Quality Data for South Pennine Moors SPA / SAC for the period (2019-2021) (red = exceeded critical load, amber = at critical load)

Habitat	Nitrogen (kg/N/ha/yr)	Ammonia (μm^{-3})	NO _x (μm^{-3})
Blanket bogs	Critical load 5-10 Baseline 18.32-25.78	Critical load 1 Baseline 0.86-1.98	Critical load 30 Baseline 5.9-17.7
European dry heaths Northern Atlantic wet heaths with <i>Erica tetralix</i> Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	Critical load 10-15 Baseline 27.68-38.04	Critical load 1 or 3 Baseline 0.86-1.98	Critical load 30 Baseline 5.9-17.7
Transition mires and quaking bogs	Critical load 5-15 Baseline 18.32-25.78	Critical load 1 Baseline 0.86-1.98	Critical load 30 Baseline 5.9-17.7

3.3.13 It can be seen from Table 5 that baseline Nitrogen levels for South Pennine Moors SPA/ SAC are already above the critical loads for all habitat types. Baseline Ammonia levels vary across the site with the range sitting across the critical load depending on location. NO_x baseline levels are below the critical load for this site.

3.3.14 A review of habitat data and aerial photographs has identified that there are no SAC woodland habitats located within 200m of any A roads. Likely Significant effects are therefore screened out for woodland habitats as a result of increased traffic.

3.3.15 Blanket bog is not located within 200m of the A625 but is present within 200m of the remaining A roads. Transition mires and heathland are located within 200m of all modelled roads A roads.

3.3.16 Baseline Air Quality Data within 200m of modeled A roads is presented in Table 6 below.

Table 6 - Baseline Air Quality Data within 200m of modeled A roads for South Pennine Moors SPA/ SAC for the period (2019-2021)

Location	Nitrogen (kgN/ha/yr)	Ammonia (μm^{-3})	No _x (μm^{-3})
A621	19.2-19.4	1.3	7.8-8.0
A625	19.2-19.8	1.1-1.2	8.3-8.6
A57	19.4-21.2	1.1-1.2	7.5-7.6
A616	20.9-22.7	0.9-1	6.0-6.8

3.3.17 The technical guidance for decision making thresholds (Air Quality Consultants, 2021) provides data on the changes in concentrations and fluxes that (in 2019 and 2015) could reasonably be expected from an increase of 1,000 AADT on a typical road. This data has been adjusted to reflect the changes in AADT on the A roads modelled for the Sheffield Local Plan (the look up tables are provided in Appendix 2).

3.3.18 Using this data the process contribution can be calculated (Table 7). This is the amount of ‘new’ pollution that will be added to the environment from a new proposal. Current Natural England guidance states that, where the critical load is already exceeded, a process contribution, either alone or in combination with other plans or projects >1% of the critical load or level is a likely significant effect.

Table 7 - Process contributions (PC) for A roads as a % of Critical Load

	N deposition to Short Vegetation (kgN/ha/yr)			Annual Mean Ammonia ($\mu\text{g}/\text{m}^3$)		Annual Mean NO _x ($\mu\text{g}/\text{m}^3$)	
	PC	% of CL (bog/heath)	% of CL (mires)	PC	% of CL	PC	% of CL
A621	0.36	3.62	2.41	0.05	4.64	1.07	3.55
A625	0.13	1.33	0.88	0.02	1.70	0.39	1.30
A57	0.22	2.18	1.46	0.03	2.80	0.64	2.14

A616	0.05	0.54	0.36	0.16	2.80	0.16	0.53
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3.3.19 As can be seen from Table 7, Likely Significant Effects from increases in Nitrogen and NOx are predicted from increased traffic on the A625, A621 and A57.

3.3.20 Likely Significant Effects from Ammonia are predicted for all roads.

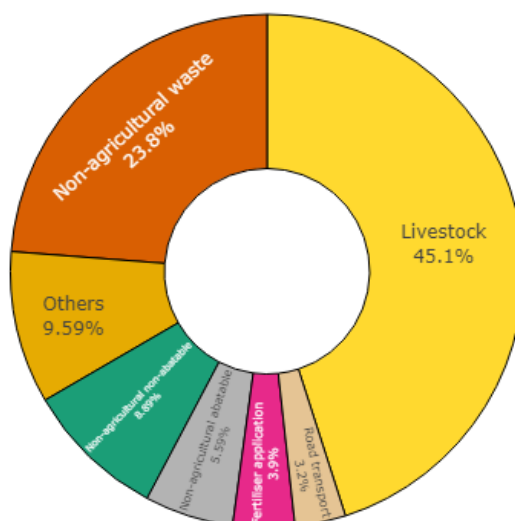
Mitigation

3.3.21 The evidence demonstrates that the effects of Local Plan development on air quality will require mitigation measures to be implemented. Some of the required measures will not only help to avoid adverse impacts of development, but also support objectives including responding to the climate change crisis, managing the effects of growth on the highway network and supporting healthy lifestyles.

3.3.22 It should be noted here that traffic only contributes 3.2% to the local sources of Nitrogen deposition (Figure 1). While mitigation measures identified here should bring the process contribution down to more acceptable levels, the European Site baseline is, and will remain, above critical loads due to the other sources listed in Figure 1.

3.3.23 Mitigation of these sources is outside of the scope of this assessment.

Figure 1. Local contributions to Nitrogen deposition (KgN/ha/yr) from sources (UK)



3.3.24 Sheffield Transport Strategy (2019) is a medium term strategy that dovetails both with the arrival of High Speed Rail in 2033 and the delivery of the proposed Sheffield Plan to create improved, sustainable and safe transport networks, for Sheffield through:

- Public transport which is integrated, faster and user friendly;
- Better, safer active travel options; and
- Protecting the fast, reliable movement of traffic between the city and other economic centres.

3.3.25 The transport plan proposes to support the development of transport technologies that work towards fully integrated and inclusive transport. SCC plans to adopt technology solutions that remove or reduce the need to travel and reduce the negative impacts of transport.

National & regional connectivity Railways & motorways

- Lobby for additional and faster rail services, in particular to Leeds and Manchester;
- Support High Speed 2 and deliver station and growth masterplans;
- Provide new Sheffield – Rotherham road link to avoid M1; and
- Support and provide highway improvements to Trans-Pennine Tunnel City region connectivity.

Trams, trains and Major Road Network

- Secure Supertram as part of an expanded City Public Transport Partnership;
- Develop new high speed mass transit corridors with park & ride;
- Review of bus operating model; and
- Improved cycling infrastructure prioritised in city centre and areas with greatest potential to reduce car trips.

Cross-cutting Across the city

- Develop and enact roadmap to decarbonisation of motorised transport;
- Review relevant Council processes to align with strategy;
- Investigate a Workplace Parking Levy;
- Investigate other Demand management measures, including a city centre congestion charge; and
- Produce and maintain register of threats and opportunities provided by change.

3.3.26 The measures contained within the Transport Plan will be secured through a number of

mechanisms including:

- The use of planning conditions and/or legal agreements to secure financial contributions for the implementation of off-site measures as part of the determination of planning and other development related applications; and
- Strategic initiatives to be implemented by SCC and its partners.

3.3.27 Successful implementation of the measures above will reduce air quality from traffic such that there will be no adverse effect to the integrity of the Site.

3.4 In-combination Assessment

Recreation

South Pennine Moors SPA and SAC

3.4.1 Using the 7 km zone of influence a review of Local Plans and their HRAs has been undertaken for consideration of effects from recreation. Of the plans considered, only Bradford and Pendle conclude adverse effects to the integrity of the South Pennine Moors SPA/SAC and identify mitigation measures to compensate the effect.

3.4.2 When considered cumulatively with all allocations for new housing in places within 7 km of the SPA/SAC (including local allocations within GM and allocations in neighbouring authorities) it cannot be concluded that there will not be an adverse effect in-combination from recreation.

3.4.3 To manage this risk a strategic approach to development within 7 km of the SPA/SAC is proposed which follows the principles set out in the Bradford Supplementary Planning Guidance. The Bradford SPD used the following zoned approach

- Zone 1 – a 400 m exclusion zone around the SPA and SAC where only exceptional development will be permitted to mitigate urban edge effects;
- Zone 2 – a 2.5 km zone within which important foraging areas outside the SPA will be protected; and
- Zone 3 – a 7 km zone within which residential developments contribute to greenspace improvements that deflect visitors away from the SPA (and avoid effects), the implementation of onsite access management measures and a programme of habitat management and monitoring.

3.4.4 Having reviewed the policies and allocations in the draft Plan it is felt that these will deliver the desired impact of the zoned approach described above based on the following:

- There are no site allocations within the 400-metre exclusion zone. In addition, Policy GS5

(Development and Biodiversity) in Part 2 of the Plan is clear that '*Development will not be permitted where it is likely to result in the loss of or deterioration of irreplaceable habitats unless there are wholly exceptional circumstances and losses are kept to a minimum with a suitable compensation strategy provided and implemented before any works proceed.*' An addition to the supporting text to Policy GS5 has also been proposed in response to this addendum to clarify that important foraging areas with 2.5 km of the SPA/SAC must be considered as 'important habitats'.

- Policy NC1 in Part 2 of the Plan secures new recreational space as part of strategic housing sites. In addition, Policy NC15 (Creating Open Space in Residential Developments) within Part 2 requires residential development with a capacity for 100 or more dwellings to provide 10% of the site as open space, unless such provision is, or will remain, above minimum standards. For residential developments under 100 units, Policy NC15 requires a financial contribution towards open space enhancement/provision where this is underprovided in the vicinity of a development site. A minor addition to the wording of the explanatory text is proposed for Policy NC15 in response to this addendum to make it clear that for sites within 7 km of the SPA/SAC, priority should be given to the creation/enhancement of accessible natural greenspace within the relevant catchment that would help deflect visitors away from the SPA/SAC.
- Policy NC15 has a requirement for new open space to be supported by a management and maintenance plan.

3.4.5 Successful implementation of the above policy approach will reduce the risk of recreational disturbance such that there would be no adverse effect to the integrity of the site.

Peak District Dales SAC

3.4.6 The Peak District Dales SAC is a scattered site. Only three local plans are identified within 7 km of the SAC under consideration in this HRA. No effects from recreation are identified from the North East Derbyshire Local Plan.

3.4.7 Effects from the Derbyshire Dales Local Plan are only screened in for Matlock Woods SSSI; and Via Gellia Woodlands SSSI, and effects from High Peak were only screened in for Wye Valley SSSI. None of these are component parts of the SAC within 7km of the Sheffield Plan Boundary therefore there is no pathway for in-combination effects from recreation to the Peak District Dales SAC.

Air Quality

3.4.8 Of the local plans adjacent to Sheffield, only the Derbyshire Dales HRA identifies LSE as a result of changes in air quality. The Derbyshire Dales HRA undertook a GIS based exercise to identify the A roads assessment that pass within 200m of the European sites and also considered the relative locations of the Plan Area and possible major destinations. This analysis concluded that,

with the exception of the A621 and A625, no other roads within 200m of a European site are a direct route between any Derbyshire Dales main settlements and any major conurbations and possible major destinations. The A621 and A625 are routes between the northern part of the Derbyshire Dales and Sheffield.

3.4.9 The Derbyshire Dales HRA made an estimate of the potential in-combination effects on traffic levels on the A621 and A625 with other Local Plans within the wider Peak District. It was assumed that the increase in numbers of cars, and also the increase in traffic, might be approximately twice this local increase in population, which would generate an increase in traffic of approximately 16.8% over the Plan Period.

3.4.10 Now that SCC has completed their traffic assessment this estimated in-combination assessment has been revisited to determine changes in AADT from both plans in combination. Estimated AADT data for 2022 for Derbyshire Dales has been obtained from the department for transport as the data presented in their HRA is from 2014. The modelled % changes in AADT for Sheffield (0.89% for A621 and 1.7% A625) have been applied to Derbyshire Dales data as similar levels of growth are predicted in both regions (Table 8).

Table 8 - Total increased traffic from the Derbyshire Dales and Sheffield Local Plans

Road	Derbyshire Dales Increase in traffic		Sheffield Increase in traffic		Total
	Value	%	Value	%	
A621	287	40%	425	60%	712
A625	58	27%	156	73%	214

3.4.11 Using the same method set out in Section 3.3 the process contribution as a percentage of critical load has been worked out for the two plans in-combination. This is shown In Table 9. The results show an increase in effect but do not change the conclusions of the effect of the project alone.

Table 9 - In-combination Process contributions (PC) for A roads as a % of Critical Load

	N deposition to Short Vegetation (kgN/ha/yr)			Annual Mean Ammonia (µg/m ³)		Annual Mean NO _x (µg/m ³)	
	PC	% of CL (bog/ heath)	% of CL (mires)	PC	% of CL	PC	% of CL
A621	0.6	8.5	4.03	0.08	7.8	1.78	5.9
A625	0.18	1.8	0.16	0.03	2.3	0.54	1.8

4. Conclusions

- 4.1.1 This report has been prepared in response to consultation from Natural England on the SCC Local Plan HRA (Ecus, 2022). This assessment has reviewed the zone of influence to be used in the HRA, undertaken a screening assessment of the effects of the plan on, Functionally Linked Land, Water Resources and Air Quality from the plan alone as well as an assessment of in-combination effects.
- 4.1.2 The conclusions of this assessment are that there will be no effect from the plan alone on Functionally Linked Land and Water Resources. No further assessment is required.
- 4.1.3 There will be a likely significant effect from the project alone, and in-combination, arising from air quality changes from the increased population. It is considered such effects can be suitably mitigated via the existing Air Quality Action Plan and the SYMCA and Sheffield Transport Strategies and that there is no need to make any changes to the proposed policies in the Local Plan.
- 4.1.4 There is the potential for in-combination effects arising from recreation to South Pennine Moors SPA and SAC and it is considered that the existing policy approach set out in the emerging Local Plan (with some slight adjustments to wording) will be able to mitigate these effects.

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Appendix 1: Systra Traffic Data

		AADT Data																				SYSTRA				
		Pk Hr AM Vehicles				Pk Hr IP Vehicles				Pk Hr PM Vehicles				Pk Hr Vehicle Totals			Period Vehicle Totals			Vehicles						AADT Vehicles (7day)
		UC1-4	UC5	UC6	Buses	UC1-4	UC5	UC6	Buses	UC1-4	UC5	UC6	Buses	AM	IP	PM	AM 3h	IP 6h	PM 3h	12h	24H	CAR	LGV	HGV	BUS	
EB																					0%	0%	-3%			
2039 Reference Case																										
A621 (Abbeyle Road South)	SW	276	4	9	2	199	4	10	2	208	1	2	2	291	215	213	787	1,293	593	2,673	2,993	2,632	38	84	27	total
	NE	143	6	8	1	103	6	9	1	295	1	1	2	159	120	299	428	717	832	1,977	2,214	1,907	57	74	17	2,782
A625 (Ecclesall Road South)	EB	377	6	2	4	272	6	3	5	478	3	1	2	390	285	484	1,052	1,710	1,346	4,108	4,601	4,157	62	23	49	2,055
	WB	415	7	11	4	299	7	12	5	523	2	1	5	437	322	531	1,179	1,935	1,475	4,589	5,140	4,565	63	98	58	4,292
A57 (Manchester Road)	WB	289	1	3	1	208	1	3	1	414	1	2	1	294	214	418	794	1,282	1,162	3,238	3,627	3,324	17	27	14	4,784
	EB	379	2	6	1	273	2	7	1	371	3	2	1	389	284	377	1,049	1,701	1,048	3,798	4,254	3,860	31	57	14	3,381
A616 (Stocksbridge Bypass)	WB	602	25	30	-	434	24	33	-	743	22	16	-	657	491	780	1,773	2,944	2,170	6,887	7,713	6,582	272	292	-	3,962
	EB	496	34	43	-	358	33	47	-	718	15	31	-	573	438	763	1,547	2,626	2,121	6,295	7,050	5,730	334	437	-	7,145
																									6,502	
2039 With Local Plan																										
A621 (Abbeyle Road South)	SW	322	4	9	2	232	4	10	2	212	1	2	2	337	248	218	911	1,491	605	3,007	3,367	2,980	39	84	27	3,131
	NE	147	6	7	1	106	6	8	1	315	1	1	2	161	121	319	435	725	888	2,049	2,295	1,997	52	65	17	2,131
A625 (Ecclesall Road South)	EB	406	6	2	4	293	6	3	5	470	3	1	2	419	306	476	1,131	1,837	1,323	4,291	4,806	4,349	62	24	49	4,483
	WB	405	7	11	4	292	6	12	5	538	2	1	5	426	314	546	1,150	1,886	1,518	4,555	5,101	4,536	61	94	58	4,749
A57 (Manchester Road)	WB	320	2	3	1	231	2	3	1	437	2	2	1	325	236	442	878	1,418	1,228	3,525	3,948	3,621	19	27	14	3,681
	EB	364	2	6	1	262	2	7	1	395	3	2	1	373	273	401	1,008	1,635	1,115	3,758	4,209	3,819	31	56	14	3,920
A616 (Stocksbridge Bypass)	WB	619	23	29	-	446	23	32	-	730	21	15	-	671	501	766	1,812	3,004	2,130	6,947	7,780	6,666	259	285	-	7,209
	EB	478	34	42	-	344	33	47	-	724	15	31	-	554	424	770	1,497	2,545	2,139	6,181	6,922	5,613	335	435	-	6,383
2039 Change as a result of Local Plan																										
A621 (Abbeyle Road South)	SW																					13%	2%	0%	0%	
	NE																					5%	-8%	-11%	0%	
A625 (Ecclesall Road South)	EB																					5%	-1%	1%	0%	
	WB																					-1%	-4%	-4%	0%	
A57 (Manchester Road)	WB																					9%	14%	-1%	0%	
	EB																					-1%	1%	-2%	0%	
A616 (Stocksbridge Bypass)	WB																					1%	-5%	-2%		
	EB																					-2%	0%	0%		

Appendix 2: Air Quality Look Up Tables

Table 1 – Data for average fleet (1000 AADT)

Distance from Road Edge (m)	N deposition to Short Vegetation (kgN/ha/yr)	Annual Mean Ammonia (µg/m ³)	Annual Mean NOx (µg/m ³)
1	0.85	0.109	2.5
5	0.34	0.039	1.8
10	0.23	0.025	1.1
25	0.14	0.014	0.55
50	0.095	0.0087	0.33
100	0.064	0.0056	0.19
150	0.051	0.0043	0.12
200	0.043	0.0036	0.093

Table 2 - Data for Sheffield based on modelled AADT

Distance from Road Edge (m)	N deposition to Short Vegetation (kgN/ha/yr)			
	A621	A625	A57	A616
1	0.3621	0.132600	0.21845	0.0544
5	0.14484	0.053040	0.08738	0.02176
10	0.09798	0.035880	0.05911	0.01472
25	0.05964	0.021840	0.03598	0.00896
50	0.04047	0.014820	0.024415	0.00608
100	0.027264	0.009984	0.016448	0.004096
150	0.021726	0.007956	0.013107	0.003264
200	0.018318	0.006708	0.011051	0.002752
	Annual Mean Ammonia (µg/m ³)			
	A621	A625	A57	A616
1	0.046434	0.017004	0.028013	0.16
5	0.016614	0.006084	0.010023	0.1152
10	0.01065	0.0039	0.006425	0.0704
25	0.005964	0.002184	0.003598	0.0352
50	0.0037062	0.0022359	0.0022359	0.02112
100	0.0023856	0.0008736	0.0014392	0.01216
150	0.0018318	0.0006708	0.0011051	0.00768
200	0.0015336	0.0005616	0.0009252	0.005952
	Annual Mean NOx (µg/m ³)			
	A621	A625	A57	A616
1	1.065	0.39	0.6425	0.16
5	0.7668	0.7668	0.4626	0.1152
10	0.4686	0.4686	0.2827	0.0704
25	0.2343	0.2343	0.14135	0.0352
50	0.14058	0.14058	0.08481	0.02112
100	0.08094	0.08094	0.04883	0.01216

	150	0.05112	0.05112	0.03084	0.00768
	200	0.039618	0.039618	0.023901	0.005952

Table 3- In-combination Data based on modelled AADT

	N deposition to Short Vegetation (kgN/ha/yr)	Annual Mean Ammonia (µg/m3)	Annual Mean NOx (µg/m3)
A621	0.6052	0.077608	1.78
A625	0.1819	0.023326	0.535

