

Natural England advice on review of 'Air Quality Assessment for Warrington Local Plan Habitats Regulations Assessment (August 2022)'

1 Relevant background to the Manchester Mosses SAC and Holcroft Moss component SSSI

1.1 Qualifying features and conservation objectives

1.1.1 The Manchester Mosses SAC is designated for Annex 1 habitat type 'H7120 Degraded raised bogs still capable of natural regeneration'. The conservation objectives of the SAC are 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 extent and distribution of qualifying natural habitats*
- *The structure and function (including typical species) of qualifying natural habitats, and,*
- *The supporting processes on which qualifying natural habitats rely*

1.1.2 The conservation objectives and supported by Supplementary Advice. The supplementary Advice to the Manchester Mosses SAC is clear and explicit that:

You should use the Conservation Objectives, this Supplementary Advice and any case-specific advice given by Natural England, when developing, proposing or assessing an activity, plan or project that may affect this site. Any proposals or operations which may affect the site or its qualifying features should be designed so they do not adversely affect any of the attributes listed in the objectives and supplementary advice.

This supplementary advice to the Conservation Objectives describes in more detail the range of ecological attributes on which the qualifying features will depend and which are most likely to contribute to a site's overall integrity. It sets out minimum targets for each qualifying feature to achieve in order to meet the site's objectives.

1.1.3 Extracts from the supplementary advice which are relevant to the current advice are provided in table 1 below with corresponding Natural England (NE) commentary. It is also relevant to note some additional observations from the SSSI citation document which includes the following:

'Although historical information suggests that the majority of Holcroft Moss was cut for peat this portion is believed never to have been cut, and is the only known unexploited area of raised bog remaining in Cheshire...

Five species of bog moss have been recorded from these hollows, including Sphagnum papillosum and S. tenellum. The latter is of particular interest because it was formerly considered to be extinct in south Lancashire.'

Table 1 conservation objective supplementary advice extracts and NE commentary

COSA attributes / targets	Explanatory text	NE commentary
Qualifying habitat description	<i>'This site is included as Natura 2000 sites to provide an example of the habitat type under restoration back to active bog'.</i>	The primary reason for site designation is restoration of degraded habitat. The presence of degraded habitat is therefore recognised and the overarching restoration aims should be central to any assessment.
<p>Extent and distribution: extent of feature within the site - Avoid the further degradation of the extent of the H7120 feature, whilst restoring 172.81 of the H7120 feature to H7110 Active Raised Bog by 2035</p>	<p><i>'For this feature, 'Bog' is taken here to be the peat deposit together with typical bog vegetation, irrespective of the precise nature and condition of that vegetation. 'Lagg fen' comprises both peat deposit and vegetation, irrespective of nature and condition'.</i></p> <p><i>...Approximately 106ha of the site supports the SAC feature in a Degraded raised bogs still capable of natural regeneration. The remainder of the site comprises approximately 66.81 ha of W4 and W2 wet woodland on peat critical to the hydrological integrity of the bog.</i></p>	<p>The SSSI citation notes the presence of <i>'a strip of clay spoil associated with the M62 motorway, along the northern edge of the site, has been colonised by willow Salix sp. and birch Betula sp.'</i></p> <p>Hence it is reasonable to argue that Holcroft Moss is comprised of a strip of woodland habitat associated with the clay spoil and 'lagg' W4 wet woodland on peat. The transition between bog habitat and 'lagg' woodland is easily discernible but the transition from 'lagg' woodland to buffer woodland will depend on local ground conditions.</p>
<p>Structure and function: Vegetation community composition - Restore the component vegetation communities of the H7210 feature to those resembling and characterised by the following National Vegetation Classification type(s) typical of H7110 Active Raised Bog;</p>	<p><i>This habitat feature will comprise a number of associated semi-natural vegetation types and their transitional zones, reflecting the geographical location of the site, altitude, aspect, soil conditions (especially base-status and drainage) and vegetation management. In the UK these have been categorised by the National Vegetation Classification (NVC).</i></p> <p><i>Restoring degraded vegetation to characteristic and distinctive active bog vegetation types, and the range of types as appropriate, will be important to restoring the overall habitat feature. This will also help to conserve their typical plant species (i.e. the constant and preferential species of a community), and therefore that of the SAC feature, at appropriate levels (recognising natural fluctuations).</i></p>	<p>The conservation objective target is to restore a number of associated semi natural vegetation types and transitional zones to characteristic and distinctive active bog vegetation types.</p>

Table 1 conservation objective supplementary advice extracts and NE commentary

COSA attributes / targets	Explanatory text	NE commentary
<p>Structure and function: Structural diversity - Restore the full range of typical structural features associated with active bogs at this site, e.g. vegetation cover, surface patterning and hydrological zonations.</p>	<p><i>Active raised bogs in particular show varying degrees of structural variation and surface patterning reflecting hydrological gradations (which may be natural or the result of previous damage).</i></p> <p><i>These can occur at both macro and micro scales across the habitat and include alternative aquatic and terrestrial surface features, such as pools and hummocks, and terrestrial features such as ridges and hollows. These features will support distinctive patterns of bog vegetation, and so will be sensitive to changes in topography and hydrology. These can be modified or disrupted by activities such as drainage, burning, grazing, vehicular access and peat digging.</i></p>	<p>It is necessary to recognise that the objective is to restore structural diversity across the SAC reflecting hydrological gradients.</p>
<p>Structure and function: Key structural, influential and distinctive species - Restore the abundance of listed species to enable each of them to be a viable component of the Annex 1 habitat;</p>	<p><i>Some plant or animal species (or related groups of such species) make a particularly important contribution to the structure, function and/or quality of an Annex I habitat feature at a particular site. These species will include;</i></p> <ul style="list-style-type: none"> • <i>Structural species which form a key part of the habitat’s structure or help to define an Annex I habitat on a site (see also the attribute for ‘vegetation community composition’).</i> • <i>Influential species which are likely to have a key role affecting the structure and function of the habitat (such as bioturbators (mixers of soil/sediment), grazers, surface borers, predators or other species with a significant functional role linked to the habitat).</i> • <i>Site-distinctive species which are considered to be a particularly special and distinguishing component of an Annex I habitat on a particular site.</i> 	<p>It is necessary to recognise that the objective is to restore the abundance of listed species.</p>
<p>Structure and function: Soils, substrate and nutrient cycling - Avoid further degradation of the peat</p>	<p><i>The typical substrate for this feature is acidic and nutrient-poor peat. Peat is distinguished from other soil types by its high content of organic matter, which results from plant growth and waterlogging combining to reduce decomposition rates and allow a build-up, over</i></p>	<p>Peat is naturally lacking in nutrients and the nutrient status of the soil is identified as important. A restore target applies to restore peat substrate properties to ‘within typical values’.</p>

Table 1 conservation objective supplementary advice extracts and NE commentary		
COSA attributes / targets	Explanatory text	NE commentary
substrate of the H7120 feature and restore its properties, including its structure, bulk density, total carbon, pH, soil nutrient status and fungal/bacterial ratio, to within typical values for H7110 Active Raised Bog habitat.	<i>time, of semi-decomposed plant material to form peat. Peat is naturally lacking in nutrients with typically low values of calcium, phosphate, nitrate and pH.</i>	
Structure and function: Invasive, non-native and/or introduced species - Ensure invasive and introduced non-native species are either rare or absent, but if present are causing minimal damage to the H7210 feature.	<i>Invasive or introduced non-native species can be a serious potential threat to the structure and function of these habitats, because they are able to exclude, damage or suppress the growth of their associated typical species, reduce structural diversity of the habitat and prevent the natural regeneration of characteristic site-native species.</i>	There is an objective to ensure any invasive species are either rare or absent. It will be necessary to understand whether nutrient enrichment might influence the distribution of any recognised invasive species on the site.
Supporting Processes: Air quality - Restore as necessary the concentrations and deposition of air pollutants to below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk).	<i>This habitat type is considered sensitive to changes in air quality, especially acidity and nitrogen. Critical values are currently being exceeded at this SAC (APIS, 2016).</i> <i>Exceedance of these critical values for air pollutants may modify the chemical status of its substrate, accelerating or damaging plant growth, altering its vegetation structure and composition and causing the loss of sensitive typical species associated with it.</i>	The conservation objectives target for air quality is to restore the concentrations and deposition of air pollutants to below the critical loads/levels. Holcroft Moss in an ombrotrophic bog and the Air Pollution Information System (APIS) website is clear that ombrotrophic bogs rely on atmospheric inputs for nutrients and are thus highly sensitive to increases in Nitrogen deposition and are particularly vulnerable to ammonia.

2 Review of 'Air Quality Assessment for Warrington Local Plan HRA – Further modelling of Manchester Mosses (August 2022)

2.1 Does the approach follow NE guidance at screening?

- 2.1.1 Natural England has produced guidance setting out its approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations ([link](#)).
- 2.1.2 Section 4 of the HRA report refers to this guidance in respect of the test for likely significant effect and the 4 steps are summarised at paragraph 4.6. Steps 4a and 4b refer to the application of screening thresholds alone and in combination with other plans and projects.
- 2.1.3 These thresholds are generally applied at the nearest site boundary but in the current assessment they have been applied, instead, at the location of the nearest bog habitat, some 90m from the boundary of the site. As a result, air quality impacts have not been subject to assessment within the woodland habitat to the north of Holcroft Moss.
- 2.1.4 It is entirely appropriate to take account of the location of designated features but there is no explanation provided within the assessment to explain why the woodland habitat is not included in the assessment. Step 2 of the Natural England guidance asks whether there are qualifying features within 200m of a road which are sensitive to air pollution. The approach recognises the presence of bog habitat within 200m and concludes 'yes' at step 2 but there is no reference to the sensitivity (or otherwise) of the woodland habitat. The remainder of the assessment proceeds on an unsubstantiated assumption that only the bog habitat is sensitive to air quality impacts. The thresholds at step 4a and 4b are applied at 90m from the boundary of the site which has knock on effects for the robustness of subsequent stages.
- 2.1.5 Having identified sensitive qualifying features within 200m the NE guidance is, admittedly, unclear as to the location at which screening thresholds should then be applied. In principle, where a robust argument can be put forward that land within a defined distance is inherently not sensitive to air quality impacts, it is possible that screening criteria might be applied at the location of the nearest sensitive qualifying feature. Where a position is taken at the screening for a likely significant effect step this would need to be robustly supported by clear and compelling evidence that associated effects *can* properly be ignored. In other words, given an effect is 'significant' (in HRA terms) where it 'undermines the conservation objectives'¹, **a clear case would need to be made that excluding parts of the site from further assessment would not undermine the achievement of the conservation objectives.** This has not been done.
- 2.1.6 An alternative (more common) approach is to start with the maximum process contribution to the site (i.e. at the nearest site boundary). Where a screening threshold is exceeded an appropriate assessment is required and it is at this stage that site specific circumstances (such as sensitivity of habitats) can be taken into account. It is for this reason that the Natural England guidance on appropriate assessment includes 'consider whether the sensitive qualifying features of the site would be exposed to emissions' as an early step.
- 2.1.7 It is the opinion of Natural England that the exclusion of the woodland from the air quality assessment has not been sufficiently justified.

¹ Refer Case C-127/02 – the Waddenzee ruling

2.1.8 Even if the 90m distance was accepted, the analysis of data provided in Appendix A2 of the April report calls into question the assertion that 1% is not exceeded in respect of ammonia beyond 90m. The data should be presented to 3 decimal places to allow a proper evaluation.

2.2 Does the assessment follow NE guidance at appropriate assessment

2.2.1 Section 5 of the Natural England [guidance](#) is relevant to the scope and content of an appropriate assessment. Before evaluating the approach in light of Natural England guidance it is also relevant to note that, as a matter of law, **regulation 105 is clear that an appropriate assessment must be made 'in view of the site's conservation objectives'**. There is no reference to the conservation objectives or the supporting supplementary advice within the appropriate assessment in the report subject to review. For completeness the April 2022 report has also been reviewed and this also makes no reference to conservation objectives within the appropriate assessment. The original August 2021 HRA lists the conservation objectives for each site but the appropriate assessment section includes the phrase 'conservation objectives' only once against the assessment for Rixton Pits SAC, which is excluded from further assessment.

2.2.2 It is therefore the advice of Natural England that **the appropriate assessment has not been made in light of the conservation objectives for the site. The assessment cannot therefore be considered 'appropriate' as it is not in accordance with the wording of the regulations.**

2.2.3 Turning to the Natural England guidance on the scope and content of an appropriate assessment (section 5), a number of factors are highlighted as being of relevance for consideration. Whilst the guidance is not prescriptive and clearly states that *'it does not recommend a sequential steps or provide definitive guidance about how or to what degree these factors should inform an assessment'* it is reasonable to assume that an assessment should include many of the factors referred to. Table 2 below considers the assessment approach and findings against each of these factors.

2.2.4 The general approach to the appropriate assessment is to emphasise the scale of the contribution, the precautionary nature of the modelling approach and predicted trends in emissions from vehicles. Whilst all these are relevant when considering implications for site integrity they are not, in and of themselves, sufficient to support a conclusion of no adverse effect to site integrity. Manchester Mosses SAC is subject to a restore objective in respect of air quality and **the appropriate assessment must consider the implications of the predicted changes in air quality in light of the achievement of this (and other) objectives** referred to in table 1 as follows:

- restore air pollutants to below relevant critical loads/levels
- restore component vegetation communities;
- restore the full range of typical structural features associated with active bogs at this site;
- restore the abundance of listed species;
- avoid further degradation of the peat substrate of the H7120 feature and restore its properties, including its structure, bulk density, total carbon, pH, soil nutrient status and fungal/bacterial ratio; and
- ensure invasive and introduced non-native species are either rare or absent.

- 2.2.5 Reference is made at paragraph 4.16 (Warrington Local Plan HRA) to the NE commission [report](#) 210 and the typical additional dose required to reduce species richness by the equivalent of 1 species. The assertion that species richness is more influenced by the hydrological regime is unsubstantiated and does not bear scrutiny. APIS is clear and explicit regarding the effects of nitrogen deposition on bog habitats² and associated effects on species diversity.
- 2.2.6 In the opinion of Natural England, the limited species richness of the bog will be a consequence of a variety of factors. Should the hydrological regime be restored it certainly cannot be demonstrated beyond reasonable scientific doubt that air quality will not become a primary consideration exerting an influence over the restoration of species richness (alongside other environmental parameters). Given the existing exceedances it is likely that the current limited species richness might be a consequence of both historic air pollution and site hydrological changes.
- 2.2.7 Finally, whilst we note that Natural England guidance refers to consideration of ‘small incremental impacts from nitrogen deposition’ and the NECR210 report, it is pertinent to note that species richness can be a misleading parameter when applying the Habitats Regulations. Where an assessment is made in view of a site’s conservation objectives species composition is more relevant than general species richness; it is also necessary to take account of a restore objective which is not taken into account in the NECR210 report.

² <https://www.apis.ac.uk/node/964>

Table 2 – Evaluation of appropriate assessment against NE guidance		
Natural England guidance	Has this been done?	NE commentary
Consider whether sensitive qualifying features will be exposed	Partially	The assessment identified bog habitat as sensitive but has not provided sufficient justification for exclusion of the woodland habitat.
Consider conservation objectives	No	Major issue – statutory requirement for an assessment to be made in view of the conservation objectives.
Consider background pollution	Very limited	Earlier versions of the report do provide information on background levels but the evaluation of effects is largely made without reference to background levels. This overlaps with issue above about conservation objectives as the site is subject to a restore objective in respect of air quality and this should more clearly be taken into account.
Review critical loads/levels and feature sensitivity	No	Minor issue as unlikely to be relevant
Consider trends and evidence of declining background levels	Yes	Given the pollution source is roads this is highly relevant. The declining background trends can inform the application of the integrity test.
Consider site in national context (rarity / importance)	No	Moderate issue - The site has some ecological significance in its own right (refer SSSI citation information in section 1) that has not been recognised or acknowledged.
Consider evidence on small incremental effects	Yes	Refer paragraphs 2.2.5 – 2.2.6.
Consider spatial scale and extent in light of ecological functionality	No	Major issue – the integrity test decision would be significantly more robust if they had engaged with the ecological functioning of the woodland buffer.
Consider survey data	No	Moderate issue – no justification provided for the 90m screening distance used to determine habitat sensitivity.
Consider national, regional or local strategic approaches to reduce pollution	Y to National trends	Unsure if any regional or local approaches of relevance?

2.3 Consideration of mitigation measures

- 2.3.1 Paragraph 4.21 of the HRA recognises that mitigation measures are required to reinforce the conclusion of no adverse effect to site integrity. The appropriate assessment then proceeds to set out a three tier approach of 'soft' mitigation measures. The assessment refers to a 2004 report published by [DfT](#) which reviewed the evidence for the effectiveness of 'soft measures' on traffic patterns. Drawing from this report, paragraph 4.24 of the HRA suggests that 'low intensity' measures such as those proposed by Warrington will reduce traffic by 2-3%. The assessment then argues that, as the Warrington plan will lead to an increase in traffic on the M62 by 2.1%, *'a reduction of 2.1% in M62 trips would entirely address the forecast contribution of the Warrington Local Plan'*.
- 2.3.2 Paragraph 4.28 of the HRA explains that the available evidence (the DfT report) indicates that it is reasonable to expect a reduction of at least 2% as a result of the implementation of the three-tier approach. This assertion requires careful consideration.
- 2.3.3 The DfT report is dated 2004 and does not take account of changing behaviour patterns and other influencing factors over the intervening 18 years. The precautionary approach under the Habitats Regulations requires confidence that mitigation measures relied upon to avoid adverse effects are effective. Furthermore, in order to be taken into account, case law³ has established that the future benefits of measures should be identified or quantified 'with certainty'. Finally, it is only when a decision-maker is sufficiently certain that measures will make an effective contribution to avoiding harm to the integrity of the site, by guaranteeing beyond reasonable scientific doubt that the plan or project will not adversely affect the integrity of the site that such a measure may be taken into account⁴.
- 2.3.4 In view of the need for confidence in mitigation measures, Natural England is of the opinion that the DfT report does not provide sufficient confidence to enable the 'soft measures' to be relied upon. It is therefore the advice of Natural England that, if it is still not possible to conclude no adverse effect to site integrity following a review of the appropriate assessment in accordance with the comments provided in 2.1 and 2.2 above, it would not be appropriate under the Habitats Regulations to rely on the soft measures included within the three-tier strategy.
- 2.3.5 Chapter 5 of the HRA then proceeds to set out various mitigation measures that could be more directly modelled than the 'soft measures' already proposed, if there was found to be a need for them. Natural England advise that there is insufficient detail in the report to explain how the need for these further measures would be identified and furthermore, there is not sufficient certainty that these measures would be deliverable or effective.

2.4 Summary of Natural England Advice and next steps

- 2.4.1 It is therefore the advice of Natural England that the current assessment is not compliant with the requirements of the Habitats Regulations and associated Natural England guidance.
- 2.4.2 The failure to explain why the screening threshold was only considered 90m from the site boundary and that implications of air quality change within the woodland habitats were not included in the assessment renders the findings incomplete.

³ Joined cases C-293/17 and C-294/17 'Dutch Nitrogen Ruling' (para 132)

⁴ Joined cases C-293/17 and C-294/17 'Dutch Nitrogen Ruling' (para 126)

- 2.4.3 The appropriate assessment is not made in view of the conservation objectives. The implications of predicted air quality changes need to be considered in light of relevant targets referred to within the supplementary advice and the overarching high level conservation objectives. A failure to make an assessment in view of the conservation objectives is contrary to legal requirements.
- 2.4.4 **Whilst these comments would render the current assessment vulnerable to legal challenge it should not be assumed that an updated assessment would be unable to conclude no adverse effect to site integrity.** When the appropriate assessment is made in view of the conservation objectives it is certainly possible that the implications of air quality change on the achievements of those objectives may be such that a conclusion of no adverse effect to site integrity could be reached.
- 2.4.5 In making such an assessment it would be necessary to consider what action is necessary to deliver the restore objective for air quality for the site. Paragraphs 5.25 – 5.28 of the NE guidance is of particular relevance. Para 5.28 states that *‘in practice, where a site is already exceeding a relevant benchmark, the extent to which additional increments from plans and projects would undermine a conservation objective to ‘restore’ will involve further consideration of whether there is credible evidence that the emissions represent a real risk that the ability of other national or local measures and initiatives to otherwise reduce background levels will be compromised in a meaningful manner.’*
- 2.4.6 An appropriate assessment could therefore be informed by source attribution data available on APIS and an understanding of existing pollution sources and future trends. The relative contribution from road emissions can reasonably be taken into account in view of future trends from road emissions and the extent to which measures would need to be taken to reduce pollution sources from other sectors.
- 2.4.7 When considering the implications of air quality change within the woodland parts of the SAC, the ecological role and function of the lagg woodland can also be taken into account, with reference to conservation objective attributes and targets (refer paragraph 5.55 of NE guidance). It does not follow that an exceedance of the 1% threshold would inevitably preclude a conclusion of no adverse effect to site integrity when local circumstances and the ecological role and function of affected habitats are properly considered.

2.5 Natural England position on National Highways Methodology

In a letter from Warrington Council dated 6th September 2022, Natural England were advised that National Highways will undertake a sensitivity test to model the air quality impacts resulting from Warrington Local Plan.

Ammonia emissions from road traffic could make a significant difference to nitrogen deposition close to roads. As traffic composition transitions toward more petrol and electric cars (i.e. fewer diesel cars on the road), catalytic converters may aid in reducing NOx emissions but result in increased ammonia emissions, therefore consideration is needed (see [link](#)).

There are currently two models which can be used to calculate the ammonia concentration and contribution to total N deposition from road sources. One of these models is publicly available called [CREAM](#) by AQC and another produced by National

Highways which is as yet unpublished. It is not within Natural England's remit to review or endorse models, therefore we support the use of either at this time in light of the modelling expertise of the authors.

A handwritten signature in black ink that reads "G. Hinton". The signature is written in a cursive style with a large initial 'G'.

Ginny Hinton
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Natural England

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