

ANNEX 1

A66 NORTHERN TRANS-PENNINE PROJECT (THE PROJECT)

POST EXAMINATION POSITION STATEMENT FROM THE APPLICANT

HABITATS REGULATIONS ASSESSMENT AND NORTH PENNINE MOORS SAC

1. INTRODUCTION

1.1 During the Examination of National Highways Limited's (**National Highways**) application for development consent to authorise the construction, operation and maintenance of the Project (**the Application**), the Examining Authority (**ExA**) requested certain further information under Rule 17 of the Infrastructure Planning (Examination Procedure) Rules 2010 (as amended) on 19 May 2023 (**the R17 Request**).

1.2 In particular, the ExA requested in the R17 Request an agreed position between National Highways and Natural England (**NE**) in respect of the conclusions of National Highways' *Habitat Regulations Assessment (HRA) Stage 2 Statement to Inform Appropriate Assessment* [APP-235] (**the SIAA**) at North Pennines Moors SAC.

1.3 The parties provided the requested information by way of a joint position statement – this was attached to the document entitled *Applicant's Response to the Examining Authority's Rule 17* at Appendix B [REP9-034] that was submitted at Deadline 9 of the Examination on 26 May 2023. The Examination closed on 29 May 2023.

1.4 Within that joint position statement, it was stated that agreement had not been able to be reached between the parties on the SIAA by the Examination submission deadline, but that the parties would continue to engage on the issues and:

"...jointly report to the Secretary of State, as soon as possible after the ExA's recommendation period has ended or earlier, on progress between the parties on reaching agreement on the issue of the assessment and conclusions of the SIAA in relation to the North Pennines Moors SAC..."¹

1.5 On 14 July 2023, NE wrote to the Planning Inspectorate (entitled 'Natural England response to HRA Supplemental Note') (**NE's letter**). In summary, NE's letter set out that NE remains of the view that absent of mitigation, adverse effects on the integrity of the North Pennines Moor SAC cannot be ruled out as a result of the Project.

1.6 On 11 August 2023 the Secretary of State for Transport issued a letter requesting the Applicant's comments on NE's letter.

1.7 The purpose of this document is to provide the Secretary of State with an update on the status of ongoing discussions with NE on the SIAA and the Applicant's comments on NE's letter.

2. POST EXAMINATION ENGAGEMENT

2.1 Following the end of the Examination on 29 May 2023, National Highways and Natural England continued to communicate and engage on the HRA and the North Pennine's SAC.

¹ Paragraph 2.5.2

- 2.2 Following receipt of NE's letter dated 14 July 2023 the National Highways project team met with NE on 20 July to discuss the points raised, and to discuss drafting an updated joint position statement for submission to the Secretary of State, which would include proposed DCO wording (on a without prejudice basis) to provide assurance to NE that the Project would not have an adverse effect on the integrity of the site should the DCO be granted.
- 2.3 On 26 July 2023 both parties met again to review the draft joint position statement and agreed to a further meeting once NE had taken legal advice on the proposed DCO wording.
- 2.4 On 17 August 2023 both parties met again to review the joint position statement in light of the Secretary of State's letter dated 11 August 2023, which was received by the National Highways project team on 14 August 2023.
- 2.5 On 22 August 2023 both parties met again with the aim of finalising the joint position statement and draft DCO wording, and to discuss potential opportunities for National Highways to support NE in achieving their conservation objectives by enhancing the baseline condition of the SAC.
- 2.6 The conclusion of this post Examination engagement to date is that the Applicant and NE are not able to agree about the conclusions of the SIAA, in that the Project would not have an adverse effect on the integrity of the North Pennine Moors SAC.

3. NATIONAL HIGHWAYS' POSITION

- 3.1 National Highways has reviewed NE's letter and has provided a response to it in the Habitats Regulations Assessment Second Supplementary Note – North Pennine Moors SAC/SPA, which is set out in **Appendix A** to this statement. In summary, based on the available evidence the Applicant concludes no adverse effects beyond reasonable scientific doubt, and therefore remains confident in the evidence and conclusions contained in the SIAA and associated supplementary notes [(REP9-036) and **Appendix A** of this submission, that the Project would not have an adverse effect on the integrity of the North Pennine Moors SAC. Therefore, National Highways stands by the conclusions presented in the HRA that an adverse effect on the integrity of the site can be ruled out and that the Project would not hinder Natural England's ability to achieve its conservation objectives.
- 3.2 Recent walk over surveys undertaken by the Applicant have confirmed that there are multiple opportunities to enhance the habitats in the part of the SAC adjacent to the A66 by addressing the more dominant land use pressures that are currently affecting the existing condition of the habitats in this area. These opportunities would work towards bringing the habitats into a favourable condition by addressing the existing historic damage, not related to the Project, and therefore increasing the habitats' resilience to the predicted minor increase in pollutants on the small area of the overall SAC as a result of the Project.
- 3.3 Therefore in the event that the Secretary of State decides, when determining the DCO application and in its capacity as competent authority for the purposes of the Conservation of Habitats and Species Regulations 2017, that steps are required to improve the site's resilience in order to be sure of there being no adverse effect of the Project on the integrity of the SAC, National Highways would be willing to work with NE, the Ministry of Defence as landowner, and tenant farmers, to enhance the small area of the SAC adjacent to the A66 by addressing the identified existing land use pressures.
- 3.4 This would not be mitigation to avoid an adverse effect on the SAC, or compensation for any adverse effect on the SAC, but would operate as an assurance of there being no adverse effect on integrity of the site, i.e. to allow the Secretary of State to be sure on this issue by improving the resilience of the baseline environment to the minor changes predicted.
- 3.5 National Highways would enhance the part of the SAC adjacent to the A66 and address the identified existing land use pressures by developing and then implementing the measures set out in the Habitats Regulations Assessment Second Supplementary Note – North Pennine Moors SAC/SPA (**Appendix A**), in the form of a comprehensive Blanket Bog and Land Management Plan.

4. **BLANKET BOG AND LAND MANAGEMENT PLAN**

4.1 National Highways acknowledges that the final decision on this point will need to be made by the Secretary of State in his capacity as competent authority for the purposes of the Conservation of Habitats and Species Regulations 2017.

4.2 In the event that the Secretary of State requires National Highways, when determining the DCO application, to develop and then implement a comprehensive Blanket Bog and Land Management Plan, National Highways considers that this could be provided for by an addition to article 53 of the Development Consent Order for the Project (as a new paragraph (11)), as follows:

“(11) No part of Work Nos. 0102-1, 03-1, 0405-1, 0405-2, 06-1, 07-1, 07-2, 08-1, 09-1 or 11-1 are to be opened for public use until-

- (a) a Blanket Bog and Land Management Plan relating to the North Pennine Moors SAC, as proposed in the Habitats Regulations Assessment Second Supplementary Note – North Pennine Moors SAC/SPA submitted with the application for this Order, has been submitted to and approved by the Secretary of State in writing, following consultation with Natural England; and*
- (b) the approved Blanket Bog and Land Management Plan has been implemented to the Secretary of State’s satisfaction following consultation with Natural England.”*

25 August 2023

APPENDIX A
HABITATS REGULATIONS ASSESSMENT SECOND SUPPLEMENTARY NOTE
– NORTH PENNINE MOORS SAC/SPA

A66 Northern Trans-Pennine Project

TR010062

Habitats Regulations Assessment Second Supplementary Note – North Pennine Moors SAC/SPA

Appendix A - to the Applicant's Position Statement

25 August 2023

Deadline:	N/A
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1 Introduction

1.1.1 This Second Supplementary Note, to the Habitats Regulations Assessment (HRA¹), summarises National Highways' position in relation to ongoing discussions with Natural England regarding the effect of the A66 Northern Trans-Pennine project (the Project) on the part of the North Pennine Moors SAC that is adjacent to the A66. It sets out the findings of further walkover surveys undertaken within the area of the SAC and identifies scope for potential Blanket Bog enhancement opportunities that could be implemented by National Highways to increase the resilience of the habitats to the minor increase in pollutants predicted as a result of the Project, whilst addressing the historic damage of the site, in line with Natural England's conservation objectives of the SAC. As noted in the Applicant's cover letter forming this Response to the Secretary of State's Request for Information (RfI), this scope is presented not as mitigation or compensation but as an assurance of there being no Adverse Effects on Integrity as a result of the Project.

2 Summary of National Highways' Position

- 2.1.2 The letter submitted by Natural England to the Planning Inspectorate on 14 July 2023 (**NE letter**), after the close of Examination of the Project, sets out Natural England's position in relation to the Habitats Regulation Assessment (HRA). Specifically this correspondence contains Natural England's response to National Highways' Habitats Regulations Assessment Supplementary Note - North Pennine Moors SAC/SPA, which was submitted at Deadline 9 of the Examination and received by Natural England on 23 May 2023¹.
- 2.1.3 To address the precautionary position taken by Natural England in the NE letter, and the subsequent RfI received from the Secretary of State dated 11 August 2023, National Highways, as Applicant, sets out in this second supplementary note to the HRA supporting evidence, based on the existing assessment and as set out in the HRA, to give additional confidence, that the Project would not have an Adverse Effect on site Integrity (AEoI) or hinder Natural England's ability to achieve the conservation objectives at the North Pennines Moors SAC in respect of air quality impacts.
- 2.1.4 National Highways has been working with Natural England and whilst we acknowledge that the Project will change the levels of nitrogen (N)

¹ HRA Documents

- 3.5 Habitat Regulations Assessment Stage 1 Likely Significant Effects Report, document APP-234
- 3.6 Habitat Regulations Assessment Stage 2 Statement to Inform Appropriate Assessment, document APP-235
- 7.52 Habitats Regulations Assessment Supplementary Note – North Pennine Moors SAC/SPA, document REP9-036
- 8.5 Change Application – Habitats Regulations Assessment (HRA) Technical Note, document CR1-018
- 8.4 Habitat Regulations Assessment Technical Note (Rev 2) (Clean), document REP7-172

deposition, ammonia (NH₃) and oxides of nitrogen (NO_x) concentrations, we maintain the position stated in the HRA that the outcome of our air quality assessment supports the conclusion of no adverse effect on the integrity of the North Pennine Moors SAC due to the Project, i.e. a small increase in concentration and deposition arising from the change in emissions from road traffic using the improved A66. Consequently, no specific additional mitigation measures are required to address the impacts of the Project in order to reach a conclusion of no AEol.

- 2.1.5 As a result of the on-going discussions with Natural England, we provided confirmatory information into the DCO Examination, by way of the HRA Supplementary Note (REP9-036) relating to the potential impacts of pollutants on the North Pennine Moors SAC¹.
- 2.1.6 It is understood from the NE letter that Natural England's key concern is that the predicted increase of these pollutants (N, NH₃ and NO_x) caused by the Project must not hinder their ability to achieve the conservation objectives for the SAC. The purpose of Natural England's conservation objectives is to bring the site into a favourable condition. The *European Site Conservation Objectives: supplementary advice on conserving and restoring site features* (2022) for the North Pennine Moors conservation objectives for the SAC² cover a wide range of threats and pressures for this site including, for example, grazing, drainage, air quality, etc.
- 2.1.7 The North Pennine Moors SAC has been designated for Blanket Bog and for this feature the supplementary advice² sets a target of maintaining or restoring the appropriate concentrations and deposition of air pollutants to at, or below, the site-relevant Critical Loads [*N deposition*] or Levels [*concentrations*].
- 2.1.8 The potential effect of these pollutants on the North Pennine Moors SAC have been assessed within the Project HRA and associated supplementary note [(REP9-036)]. A summary is provided below for convenience.
- 2.1.9 With respect to N (Nitrogen), the modelled points which fall within the North Pennine Moors SAC show an exceedance of 1% during operation up to 65m from the road north of the existing A66 and 37m from the road south of the existing A66. The maximum impact in nutrient nitrogen deposition at North Pennine Moors SAC is predicted to be 0.9 kg N/ha/year. The change in nitrogen deposition reduces moving away from the road to a change of 0.2 kg N/ha/yr at 65m (1.1% in relation to do-minimum (without Project) nitrogen deposition). Beyond 65m the impact of air pollution is considered to be imperceptible.
- 2.1.10 With respect to NH₃ (Ammonia), the maximum increase in concentrations as a result of the Project in the opening year 2029 is predicted to be

² Natural England (2022) *European Site Conservation Objectives: Supplementary advice on conserving and restoring site features for North Pennine Moors Special Area of Conservation Site Code: UK0030033*.

- 0.1µg/m³ at a location 5m from the edge of the road. Beyond 65m the impact of air pollution is considered to be imperceptible.
- 2.1.11 With respect to NO_x (Nitrogen Oxides), no exceedances of the Critical Level (30µg/m³) as a result of the Project were predicted within 200m of the affected road network.
- 2.1.12 The Project biodiversity specialists have used the results of the air quality modelling and other available data, as described in Project HRA and associated supplementary note¹, to conclude that the air quality impacts from the Project would not affect the coherence of the SAC's ecological structure and function across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which the site is designated. In this regard, 99.98% of the blanket bog feature of the SAC, and twelve of the thirteen qualifying habitats of the SAC, remain unaffected by the Project; it is therefore considered that the integrity of the SAC is maintained, i.e. there is considered to be No Adverse Effect on the Integrity of the North Pennine Moors SAC arising from the Project.
- 2.1.13 Appendix C to this note presents supporting information and reasoning for National Highways to conclude that the change in NO_x, NH₃ and N deposition with the operation of the Project will not hinder the site achieving favourable conservation status of the Blanket Bog Qualifying Feature, and therefore does not result in an adverse effect on site integrity.
- 2.1.14 With respect to the conservation objective to maintain or restore the appropriate concentrations and deposition of air pollutants to, at or below, the site-relevant Critical Loads [N deposition] or Levels [concentrations], National Highways' considers that in order to achieve the conservation objectives of the SAC in relation to air quality overall, particularly for N deposition, there would need to be a substantive reduction in emissions from a wide range of the sectors evidenced in the data from the Air Pollution Information System (APIS) set out in Appendix B to this note.
- 2.1.15 It is National Highways' position, as assessed in the HRA and associated supplementary note¹, that the Project will not hinder the achievement of the site conservation objectives for air quality. The impact of pollutants on the SAC from existing road transport on the A66 is very small, at 6.5% of the total of all nitrogen deposited on the site (see Appendix B).
- 2.1.16 National Highways acknowledges that although there will be a small increase in levels from road traffic as a result of the Project, this is not considered to hinder Natural England's ability to meet the conservation objectives for air quality. For example, National Highways notes that even with the removal of all road traffic emissions (both existing and as a result of the Project) the conservation objectives for air quality at the SAC would not be achieved due to far larger contributions from other sources, including agriculture which accounts for 45% of the N deposition and long-range sources such as contributions from Europe (e.g. industrial activities) which makes up 15% of the total N deposition (see Appendix B). This

suggests that future restoration of the site would likely focus on other (non-road transport) sources of nitrogen.

- 2.1.17 To put this into context, we can consider an equivalent source that would result in same small level of change associated with the Project. One consideration of emissions from local sources of nitrogen is in the form of faecal deposits from animals currently on the SAC e.g. sheep. Using the calculations from the NPK nutritional values³ we calculate the total change in N Dep associated with the Project would be the same as nitrogen produced in faecal deposits from around 4 sheep grazing on the SAC over the course of one year.
- 2.1.18 In response to the Rfl received from the Secretary of State dated 11 August 2023, this second supplementary note to the HRA provides analysis of the existing air quality issues affecting the North Pennine Moors SAC and the sites' current ability to achieve favourable conservation status for the Blanket Bog qualifying habitat. It should also be noted with respect to the integrity test that the Project would not inhibit other (non-road transport related) future restoration measures being implemented across the vast majority (99.98%) of the SAC, which remains unaffected by the Project.
- 2.1.19 Clarification has been sought by NE on how the permanent road can cause only a short or temporary impact on the North Pennine Moors SAC.
- 2.1.20 In response to NE's request for clarification it is worth noting that in relation to the wider road transport sector generally, future emissions of NO_x and NH₃ which can impact on designated ecological sites, are set to reduce due to Government policies such as the ban on new conventional petrol and diesel cars in 2030 and policies within the Transport Decarbonation Plan (TDP). The TDP promotes the uptake of electric vehicles and will result in future emissions from road transport continuing to decrease, resulting in smaller contributions to the total background N deposition than currently reported, which would lead to an improved position in 2029 at the road opening. The transport emission projections published in the Emission Factor Toolkit (EFT v11) by Defra show a steady reduction in emissions over time. This reflects the uptake of cleaner petrol and diesel powered vehicles and the increased transition to electric vehicles which on a precautionary basis, the assessment has not taken into account. This precautionary position has arisen due to the timing of the Project DCO Application in relation to the natural lag in DfT issuing updated traffic projections following policy changes, and the further lag in updating appraisal tools (such as EFT v11) to reflect traffic projections.
- 2.1.21 Following on from the concerns raised by Natural England in the NE letter, that any change in air pollution, regardless of size, would materially affect the integrity of the North Pennine Moors SAC, biodiversity specialists

³ Allotment Garden n.d , *NPK Nutritional Values of Animal Manures & Compost Etc.*, Allotment Garden, viewed 25 August 2023, < <https://www.allotment-garden.org/composts-fertilisers/npk-nutritional-values-animal-manures-compost/>>

undertook an additional site walk over on behalf of National Highways on 18 and 19 July 2023. The purpose of the site walk overs was to confirm the current condition of the site in terms of effects from the existing road and other land management pressures, to confirm the HRA conclusion of no adverse effect on site integrity, and identify potential Blanket Bog enhancement opportunities that could be implemented (should they be required by the Secretary of State) to improve the condition and resilience of the habitats to the minor increase in pollutants predicted as a result of the Project, whilst addressing the historic damage caused to the site.

3 Findings of the Walk Over Survey

- 3.1.1 The specialists walked through the SAC in the area covered by the Phase 1 Habitat Survey¹ (refer HRA Documents; Appendix E of App- 235), and observed that both the presence of the existing road and land use pressures have impacted the area of habitat immediately adjacent to the road, especially in terms of hydrology and land management. The Phase 1 habitat map, selected images and survey target notes are presented in Appendix A to this note.
- 3.1.2 The survey results indicate that the 65m zone (i.e. the area within which air quality pollutants are calculated to increase as a result of the Project) has been heavily influenced by land practices already, compromising this conservation objective. Hydrological impacts are evident across the surveyed SAC and noted beyond. Bog habitat, with *Sphagnum* spp., is present within this mosaic of habitats. However, drainage throughout the area, but especially in the east has resulted in drier habitats, including acid grassland and *Vaccinium myrtillus* communities. These exist both within and beyond the 65m zone. Vehicular access tracks (both hard unbound surface and grass tracks) are evident, and have had an impact, especially in the construction of a route in the west beyond the 65m zone. Finally, the original construction of the A66 has resulted in a steep drop in the west, severing hydrological connection and exposing the soil and rock to weathering. Grazing is a factor across the area, especially in the west, where delineating grassland habitat is complex, due to the mosaic nature. Further detail on the identified pressures is provided in Table 1 below, and images of current land use pressures are provided in Appendix A.
- 3.1.3 The Peatland Code Field Protocol (IUCN, 2023) categorises none of the peatland as Near Natural. Instead, the eastern section is classed as the most damaged category, i.e., Actively Eroding (with subsequent Drained within 30m), with sections of Modified. The west is between Modified and Drained: Hagg/Gully. To achieve the conservation objectives, remedial action is required, especially in the Actively Eroding categories.
- 3.1.4 The existing pressures on the habitat identified, which has led to areas of bare peat, peat erosion and habitat change through drying, are considered to severely inhibit the habitats returning to favourable conservation status. Therefore, it is not considered that any change to air quality as a result of the Project would result in a reduction of conservation value, in particular

due to existing land management pressures. Reducing these pressures on the site, which are unrelated to the Project, would therefore likely be beneficial in restoring the site's condition.

4 Enhancement and Improved Resilience

- 4.1.5 As described above there are multiple opportunities to restore and enhance the habitats in the 65m zone where there is potential for air quality changes by addressing the more dominant land management pressures that are currently affecting the condition of the Blanket Bog habitats in this area and adjacent. The aim of this would be to work towards bringing the habitats into favourable condition, by addressing the historic damage, and increasing the resilience of the habitats to the minor increase in pollutants predicted as a result of the Project. In this regard, should the Secretary of State so require in determining the DCO application, National Highways would be willing to work with Natural England and the other stakeholders (i.e. the Ministry of Defence and tenant farmers) to help them to restore the site and address the identified historic land use pressures.
- 4.1.6 Table 1 presents the core enhancement activities identified in relation to each pressure that could be investigated (in co-operation with Natural England) to enhance the Blanket Bog habitats in the area potentially affected by an increase in air pollution, increasing their resilience and addressing the historic damage. The table has been guided by *Conserving Bogs: The Management Handbook* (Thom et al., 2019)⁴. The table also sets out what the expected benefit would be of each measure, and how this would contribute towards the Blanket Bog habitats within the affected area reaching their conservation objectives as described in the supplementary advice². Each of the measures listed is in accordance with and supportive of the 'Issues and Actions' listed in Natural England's 'North Pennines Group: Site Improvement Plan' (SIP1540)⁵. The SIP identifies 19 key issues affecting the North Pennines designated sites and identifies actions required to address each issue; these include hydrology, grazing, agricultural management, etc.
- 4.1.7 To inform the design of any enhancement works, survey and monitoring would be required, such as Common Standards Monitoring (CSM) (JNCC, 2009) and peat depth profiles, as well as post-intervention monitoring, such as fixed point photography and CSM monitoring quadrat surveys.

⁴ Thom, T., Hanlon, A., Lindsay, R., Richards, J., Stoneman, R., and Brooks, S. (2019). *Conserving Bogs: The Management Handbook*.

⁵ Natural England (2014) Site Improvement Plan North Pennines Group, available at <http://publications.naturalengland.org.uk/publication/6534899699810304> [accessed: 24/08/23]

Table 1 Potential Blanket Bog Enhancement Techniques

Factor / Pressure	Location	Impact	Potential Enhancement Opportunity	Potential benefit to achieving the conservation objectives
Drains	<p>Small drains were noted throughout the survey area. To the west, these were usually infilled with <i>Juncus</i>, often with <i>Sphagnum</i>.</p> <p>In the east, the dry modified bog may well have had drains that have been vegetated over but are now dominated by <i>Calluna</i>.</p> <p>Medium (1-1.5m) to large (>1.5m) drains are especially prevalent in the eastern site.</p> <p>In areas, this is close to wet heath communities</p>	<p>Although infilled, these still present a drainage route, with no grips (stops) noted as being present.</p> <p>These drains have areas of exposed peat. Given that a bog should be around 80%+ water, exposure leads to a drying out of the surrounds.</p> <p>Drains also impact the geomorphology of the bog as a whole. The immediate dryness leads to a squeezing of the adjacent peat, thus leading to a squeezing out of water, similar to compressing a sponge.</p> <p>Drying can reduce the water table from the more natural drier hummocks and wet pits to a vegetation where the water table is all below the 'topsoil', leading to a change in surface vegetation.</p>	<p>A block with peat or heather bale can add to the look of the system, whilst also being locally sourced. Plastic or corrugated iron may be utilised where vegetation / soil is not sufficient.</p> <p>Peat depth probes can assess whether these wet heaths are as a result of water table lowering or as a result of peat being >0.5m.</p> <p>Moderate dams may possibly be blocked with peat, although plastic/wood is more likely. Large drains require the advice of an engineer to reinstate and reprofile the dam.</p>	<p>Improved hydrology, re-vegetation and return to peat forming conditions</p>

Factor / Pressure	Location	Impact	Potential Enhancement Opportunity	Potential benefit to achieving the conservation objectives
Sheep grazing	Sheep were numerous in the neutral grassland adjacent to the boundary of the SAC. However, no fencing was in place, so were also found throughout the survey area, although to a much lesser extent in the east.	More deleterious in winter when trampling from heavy grazing (>1 sheep/ha) can invoke erosion, and a reduction in target species. In wetter areas, dominated by Sphagnum, damage can be seen in much reduced densities. Additional feed is usually also required due to the low nutrient status of bog, leading to localised enrichment. Summer grazing can reduce scrub encroachment and grasses. However, there is a trade off with stocking density between trampling and grass / scrub control.	<p>Light seasonal grazing may be beneficial in degraded bogs. Grazing by wild animals is usually the only necessity in blanket bog, with nothing other than light seasonal grazing having a negative effect.</p> <p>Livestock may be restricted from certain areas using fencing. However, this can be expensive and have visual landscape effects. Virtual fencing may be an option.</p> <p>Dry stone walling is a traditional form of boundary, local to the area. It does, nevertheless, require skilled workers for both creating and maintaining this.</p>	Potential reduction in undesirable species (i.e. grasses and scrub) and return / maintenance of desirable blanket bog vegetation communities.

Factor / Pressure	Location	Impact	Potential Enhancement Opportunity	Potential benefit to achieving the conservation objectives
			Where additional feed is provided offsite of the bog, this can reduce grazing on the bog, due to the low nutrient status of the vegetation.	
Tracks	This was prevalent in the eastern section, with evidence of a track.	The track has scarred the landscape, leading to compaction and erosion.	Tracks should be rerouted outside of sensitive areas. When used only occasionally, temporary geogrids or similar may be used.	Potential for improved hydrology, vegetation community composition and structural diversity
Deer grazing	Grazing is a factor across the area, especially in the west, where delineating grassland habitat is complex, due to the mosaic nature. Deer dung was noted. However, due to their elusive nature, an estimate of their impact could not be	Although not usually an issue where only non-farmed animals graze on bog sites, when sheep are also present, this will exacerbate the risks of overgrazing. However, when mainly wild deer, this can aid in reducing scrub encroachment.	This mitigation is linked with farmed animals grazing. On blanket bog, wild deer usually have a positive effect of reducing grass and scrub invasion where there is little livestock.	Potential reduction in undesirable species (i.e. grasses and scrub) and return / maintenance of desirable blanket bog vegetation communities.

Factor / Pressure	Location	Impact	Potential Enhancement Opportunity	Potential benefit to achieving the conservation objectives
	quantitatively assessed.			
Muir Burning	Bare peat was noted occasionally in the eastern section, potentially from muir burning.	Muir burning is the intentional and controlled burning of moorland vegetation to encourage new growth. However, on sites with Sphagnum (or that have had Sphagnum), this can have a deleterious effect.	Avoid - Ensure muir burning does not take place on sensitive areas.	Potential improved / maintained vegetation community composition and structural diversity

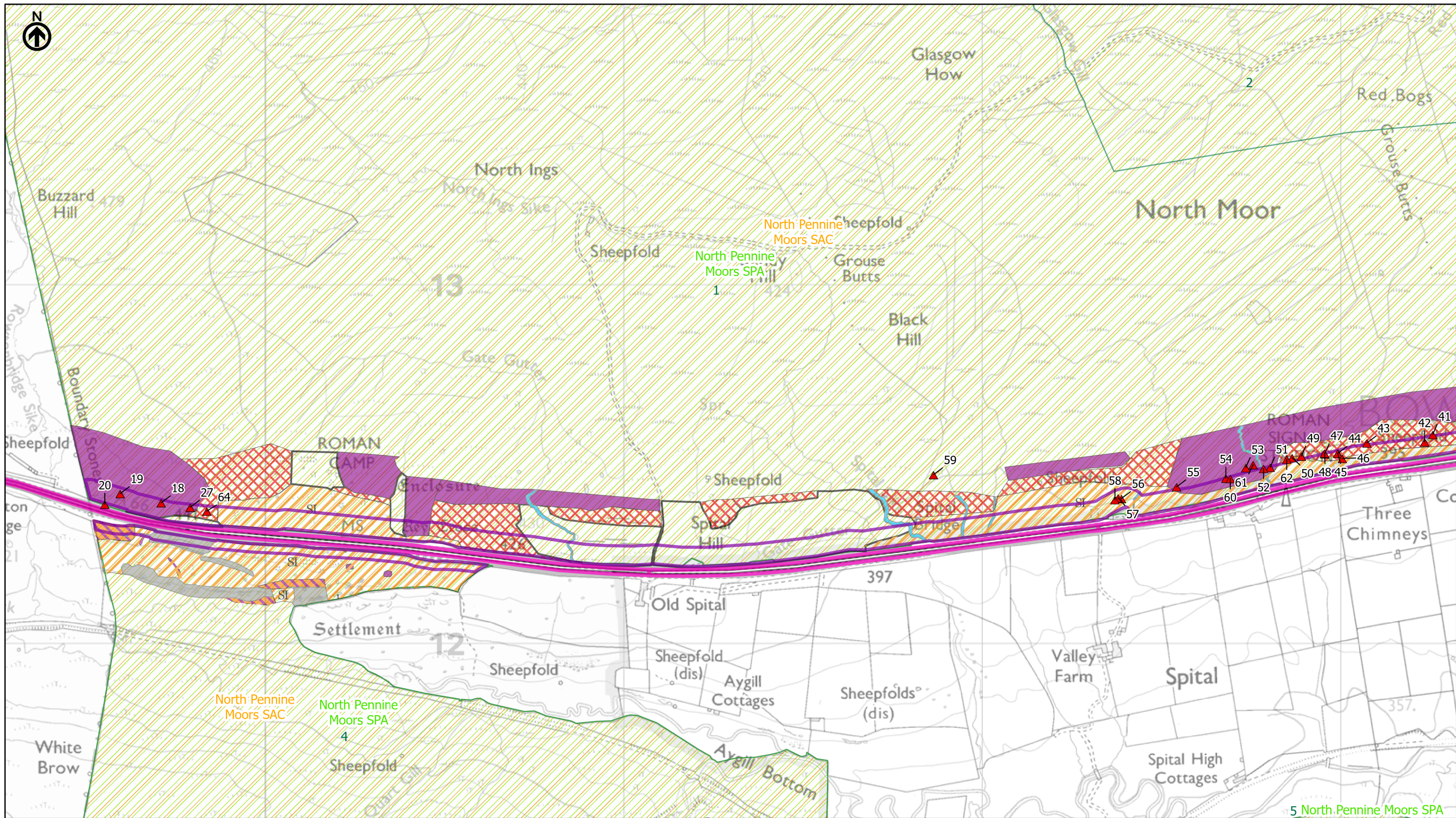
5 Conclusion

- 5.1.1 The small increase in pollutants as a result of the Project would not affect the coherence of the SAC's ecological structure and function across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which the site is designated. In this regard, 99.98% of the blanket bog feature of the SAC, and the other twelve of the thirteen qualifying habitats of the SAC remain unaffected by the Project.
- 5.1.2 Based on the available evidence the Applicant concludes no adverse effects beyond reasonable scientific doubt on the basis that:
- As set out in Appendix C, pollution levels were considerably higher at the time of SAC designation (2005) above the worst case predicted emission levels for the Project. This demonstrates that the blanket bog habitat has maintained its extent, structure and function during times of significantly higher air quality pollution levels. As a consequence this provides evidence and confidence that the change attributable to the Project contributory pollution levels would not be sufficient to hinder the site maintaining or restoring to favourable conservation status the Blanket Bog Qualifying Feature.
 - The change in NO_x, NH₃ and N deposition has no effect on the supporting processes (hydrology, land management etc) on which the blanket bog habitat relies.
- 5.1.3 On this basis, there will be no AEol on the SAC arising from the Project,. Therefore the Applicant stands by the conclusions presented in the HRA and associated supplementary notes¹ and considers that an adverse effect on the integrity of the site arising from the Project can be ruled out.
- 5.1.4 The Project would also not hinder the site's ability to achieve its conservation objectives as the impact of pollutants on the SAC from existing road transport on the A66 is very small, at 6.5% of the total of all nitrogen deposited on the site (see Appendix B). As described, even with the removal of all road traffic emissions (both existing and as a result of the Project) the conservation objectives for air quality at the SAC would not be achieved due to far larger contributions from other sources, including agriculture which accounts for 45% of the N deposition and long-range sources such as contributions from Europe (e.g. industrial activities) which makes up 15% of the total N deposition (see Appendix B).
- 5.1.5 In order to achieve the conservation objectives of the SAC in relation to air quality overall, particularly for N deposition, there would need to be a substantive reduction in emissions from a wide range of the sectors depicted in the data from the Air Pollution Information System (APIS) set out in Appendix B to this note. In this regard, and with respect to the integrity test, it should be noted that the Project would not inhibit other (non-road transport related) future restoration measures being implemented across the vast majority (99.98%) of the SAC, which remains unaffected by the Project.

- 5.1.6 However, in the event that the Secretary of State decides that steps are required to improve the site's resilience, in order to be sure of there being no adverse effect on the integrity of the site arising from the Project, National Highways will work with Natural England and relevant others to develop the measures set out in Table 1 to form and implement a comprehensive Blanket Bog and Land Management Plan.

Appendix A

Selected images and target notes



Existing A66
 Target Notes
 Affected Road Network (ARN)
 Area Where a Change in Nitrogen Deposition Exceeds 1% of the Critical Load, as Defined by the Air Quality Modelling Data

Statutory Designated Sites
 Special Area of Conservation
 Special Protection Areas
 Site of Special Scientific Interest Units (With IDs)

SAC Survey Habitat Description

- Blanket Bog - Assumed to be Annex 1 following Phase 1 survey methodology
- Blanket Bog Habitat Mosaic
- Acid Grassland
- Acid/Marshy Grassland Mosaic
- Marshy Grassland
- Rock Exposure and Waste
- Watercourse
- Flush and Spring



national highways
 3 Piccadilly Place
 Manchester
 M1 3BN

P01	First Issue				
	KBIG	LHAN	THOU	AWAR	KWHA
	18/08/23	18/08/23	18/08/23	21/08/23	21/08/23
Revision	Created	Checked	Reviewed	Approved	Authorised

Kilometres
 0 0.25 0.5

Scale @ A3: 1:10,000 | Project Ref No HE565627 | Stage: Stage 3
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Project Name
A66 Northern Trans-Pennine Project

Map Title
 Figure 1.1
 Appendix A: North Pennine Moors Habitat Survey with Additional Walkover Target Notes
 Appleby to Brough to Bowes Bypass
 Sheet 1 of 2

Map Number	Project	Originator	Volume
HE565627	-	AMY	-
S00	-	MP - LB	-
Location	Type	Role	Number

Suitability	Suitability Description	Revision
S4	FIT FOR STAGE APPROVAL	P01



Existing A66
 Target Notes
 Affected Road Network (ARN)
 Area Where a Change in Nitrogen Deposition Exceeds 1% of the Critical Load, as Defined by the Air Quality Modelling Data
Statutory Designated Sites
 Special Area of Conservation
 Special Protection Areas
 Site of Special Scientific Interest Units (With IDs)

SAC Survey Habitat Description
 Blanket Bog - Assumed to be Annex 1 following Phase 1 survey methodology
 Blanket Bog Habitat Mosaic
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Project Name
 A66 Northern Trans-Pennine Project

Map Title
 Figure 1.1
 Appendix A: North Pennine Moors Habitat Survey with Additional Walkover Target Notes
 Appleby to Brough to Bowes Bypass
 Sheet 2 of 2

Map Number	Project	Originator	Volume
HE565627	-	AMY	- EBD
S00	-	MP	- LB - 003701
Location	Type	Role	Number

Suitability	Suitability Description	Revision
S4	FIT FOR STAGE APPROVAL	P01

Appendix A: Selected images and target notes

Images from the Site Walk Overs - 18 and 19 July 2023

Plate 1 - Steep drop to the roadside, with neutral grassland (TN20)



Plate 2 - Vehicle track with exposed peat (TN58)



Plate 3 - Exposed peat (TN32)



Plate 4 – Channel with exposed peat (TN52)



Plate 5 – Calluna (heather)-dominated habitat, with acid grassland by the roadside (TN63)



Plate 6 – Close cropped neutral grassland with rush (outside survey area)



Survey Target Notes

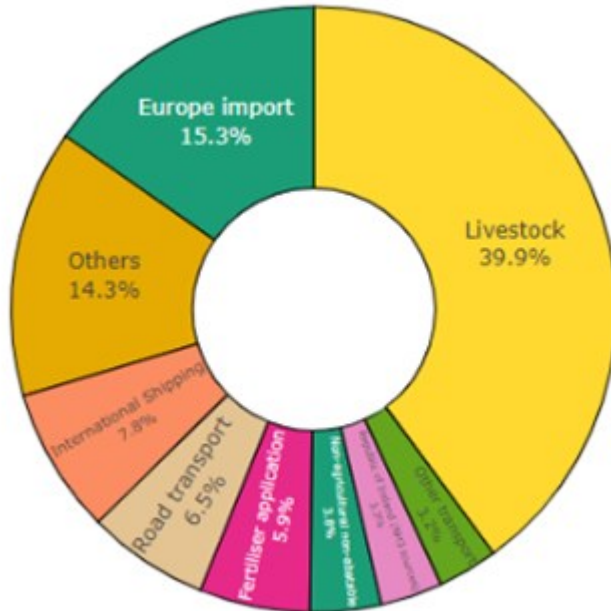
TN number	Remarks
18	Acid grassland complex with rare drains filled with Sphagnum
19	Bare eroding peat leading to a former drain dominated by J effusus
20	Semi-improved neutral grassland below wall.
21	Occasional moss species in acid grassland, including Polytrichum strictum, P schreberi, Rhytidiadelphus triquetrus and Sphagnum
22	Grazed neutral grass to the south and J effusu / H lanatus to the north, with Agrostis sp. Locally dominant clumps of moss (frequent overall). This is dominated by Polytrichum, with Sphagnum occasional.
23	A mosaic of Polytrichum dominates areas with occasional Sphagnum interspersed between Juncus effusus areas.
24	150 m north photo displaying similar habitats.
25	Drain through Polytrichum dominated mosaic with Eriophorum frequent
26	A mix of dominant Polytrichum with frequent Sphagnum. Eriophorum is frequent to abundant in patches. Stands of Juncus spp. occasional in this habitat and dominant in between. Drains are frequent.
27	Photo looking west. 15m span of abundant Eriophorum with abundant D flexuosa. Polytrichum is abundant with Sphagnum occasional.
28	A similar mix of now dominant acid grassland and frequent grazed neutral grassland.
29	Location check (ignore)
30	Looking north beyond boundary. Eriophorum becoming abundant to frequent going further north.
31	10-15m of acid grassland comprising dominant D flexuosa, frequent J squarrosus and frequent various mosses. Two drains running parallel to road in the middle of the acid grassland.
32	Bare peat
33	Bare peat
34	Occasional stands of J. conglomeratus
35	C vulgaris largely dies out to be replaced by the D flex community
36	Beyond 65m, D flexuosa is dominant with the C vulgaris community frequent. Large peat exposure in view but distant (100m, possibly more)
37	8x5m of abundant C vulgaris with frequent Eriophorum, occasional J squarrosus and rare Sphagnum. Peat exposure frequent.
38	Multiple dry drains with J conglomeratus dominating with occasional Sphagnum. Surrounded by acid grassland.
39	Fence in acid grassland with J conglomeratus around the edge
40	short drain of J conglomeratus with Sphagnum
41	Extensive acid grassland beyond 65m with exposed peat
42	Track all the way through acid grassland, exposing peat. J conglomeratus rare to occasional throughout acid grassland.
43	Extensive peat erosion significantly beyond 65m
44	Towards the windbreak, appropriate 20% mosses with Sphagnum, plus Eriophorum present, scattered within acid grassland. Bare peat occasional.
45	Mossy area
46	Tracks continue with exposed peat
47	In the frequent moss, the edges have an exposed peat crust. Vaccinium myrtillus and Cladonia are abundant, with frequent D flexuosa. Peat exposure is frequent.
48	V. myrtillus and Cladonia present.
49	Small pool with Sphagnum. The surround has occasional Eriophorum and rare C vulgaris / E cinerea. Peat exposure on ledges
50	10x10m circular depression of acid grassland with Sphagnum. Bare peat around edges. Surround of acid grassland with V. myrtillus.

51	Large peat exposure. surround of <i>D flexuosa</i> / <i>V myrtilis</i> co-dominating, plus frequent mounds of <i>Cladonia</i> / <i>V myrtilis</i> /moss community with exposed peat. <i>C vulgaris</i> is rare.
52	Large area of exposed peat from the drain. This ends with a <i>J conglomeratus</i> stand.
53	Moss assemblage with <i>Sphagnum</i>
54	Peat exposure
55	Extensive section of bare peat amongst <i>Eriophorum</i> / <i>E tetralix</i> community
56	Dominant <i>D flexuosa</i> that is very tufted. Non- <i>Sphagnum</i> mosses in-between frequent, but otherwise <i>D flex</i> on level ground. Ffrequent <i>J squarrosus</i> and <i>G saxatile</i> .
57	<i>J conglomeratus</i> rush pasture abundant towards the fence and in drains.
58	Tracks still going through the habitat.
59	Acid grassland well beyond the 65 m, with <i>J conglomeratus</i> in streams and drains.
60	South of <i>C vulgaris</i> gives away, with <i>Eriophorum</i> dominating. <i>E tetralix</i> is occasional but becoming frequent to the west as is <i>Potentilla erecta</i> , with occasional <i>Drosera rotundifolia</i> in wet hollows. <i>Tricopherum cespitosa</i> is frequent in the west. <i>Narhecium ossifragum</i> is rare. Mosses with <i>Sphagnum</i> is occasional in hollows. Former drains make undulating with peat exposure.
61	Dominant <i>C vulgaris</i> with abundant to locally domiant <i>Eriophorum</i> , with <i>E tetralix</i> frequent. <i>V myrtilis</i> is occasional as is exposed peat and <i>Sphagnum</i> spp.
62	Abundant <i>V myrtilis</i> within <i>D flexuosa</i> . Drainage towards road where <i>V myrtilis</i> disappears. <i>E tetralix</i> very rare. Frequent hollows with <i>Sphagnum</i> .
63	Looking south. The area is dominated by <i>Eriophorum</i> . <i>E tetralix</i> occasional with bare peat rare to occasional. There is a mossy undercarpet with <i>Pleurozium</i> . <i>Polytrichum</i> in clumps alongside <i>Eriophorum</i> . <i>Sphagnum</i> is very rare.
64	A mosaic of <i>D. flexuosa</i> acid grassland, interspered with clumps of <i>Juncus</i> spp and frequent moss areas with <i>Sphagnum</i> and <i>Eriophorum</i> .

Appendix B

Background N Deposition (Source APIS⁶) for North Pennine Moors SAC.

Sources ranked by total Nitrogen deposition (KgN/ha/yr) from combined UK sources (2018) accessed August 2023.



Road transport makes up 6.5% (1.84kg N/ha/yr) of the total N deposition 28.2kg N/ha/yr

Other transport refers to air, sea and rail transport

⁶ APIS (2023) <https://www.apis.ac.uk/> [accessed 24/08/2023]

Appendix C

Supporting information specific to air quality effects on the North Pennine Moors SAC

Appendix C

Supporting Information Specific to Air Quality Effects on the North Pennine Moors SAC

1. Background

1.1.1 This Appendix to the Habitats Regulations Assessment Second Supplementary Note – North Pennine Moors SAC/SPA is complimentary to the information provided in the Habitats Regulations Assessment Supplementary Note - North Pennine Moors SAC/SPA (REP9-036) submitted at Deadline 9 of the DCO Examination and has been prepared in response to the additional request for information from the Secretary of State for Transport, dated 11 August 2023.

2. Conservation Objectives for the North Pennine Moors SAC

2.1.1 The European Site Conservation Objectives for North Pennine Moors Special Area of Conservation states:

2.1.2 *“With regard to the SAC and the natural habitats and/or species for which the site has been designated (the ‘Qualifying Features’ listed below), and subject to natural change;*

2.1.3 *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 and habitats of qualifying species*
- The structure and function (including typical species) of qualifying natural habitats*
- The structure and function of the habitats of qualifying species*
- The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely*
- The populations of qualifying species, and,*
- The distribution of qualifying species within the site.”*

3. Assessment of Supporting Information

3.1 Potential effect on Habitat

3.1.1 The Applicant concludes that the change in oxides of nitrogen (NO_x), ammonia (NH₃) concentrations and nitrogen deposition (N Dep) will not hinder the site achieving favourable conservation status of the Blanket Bog Qualifying Feature and therefore does not result in an adverse effect on site integrity. The reasoning for this is set out below.

3.1.2 The North Pennine Moors SAC was originally designated on the 1 April 2005¹ and the designation included blanket bog as one of the qualifying habitats. At the time of the designation air pollution, including NO₂ concentrations and N Dep, was higher than in the base year for this assessment (2019) and higher

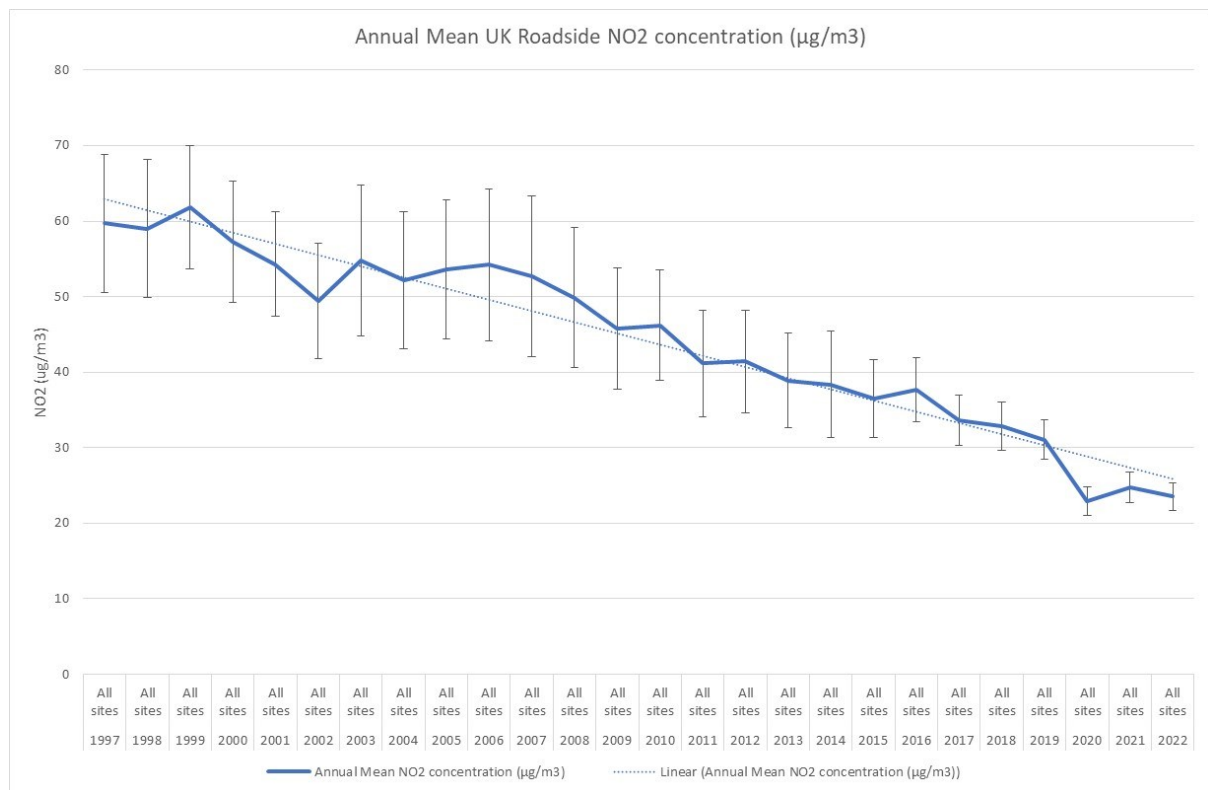
¹ <https://publications.naturalengland.org.uk/file/4953816529108992>

than it is likely to be in the opening year of the Project (2029). Government published emission factors for road vehicles show a down trend in vehicle emissions as newer vehicles enter the fleet. The newer vehicles are either petrol or diesel vehicles with lower prescribed emission standards than in the past or an electric equivalent, which have no tailpipe emissions.

3.1.3 Given the remote nature of the SAC alongside the A66, neither National Highways (NH), the local authority nor Defra have any automatic air quality monitoring stations installed in this area. However, Defra have operated a network of automatic air quality stations across the UK since 1997, and based on this long-term historic data set it is possible to examine the ongoing changes in NO₂ concentrations over this timeline (see Figure 1), as well as derive a trend line over the same time. It is helpful to understand changes in NO₂ concentrations as it is one of the pollutants used to calculate N Dep.

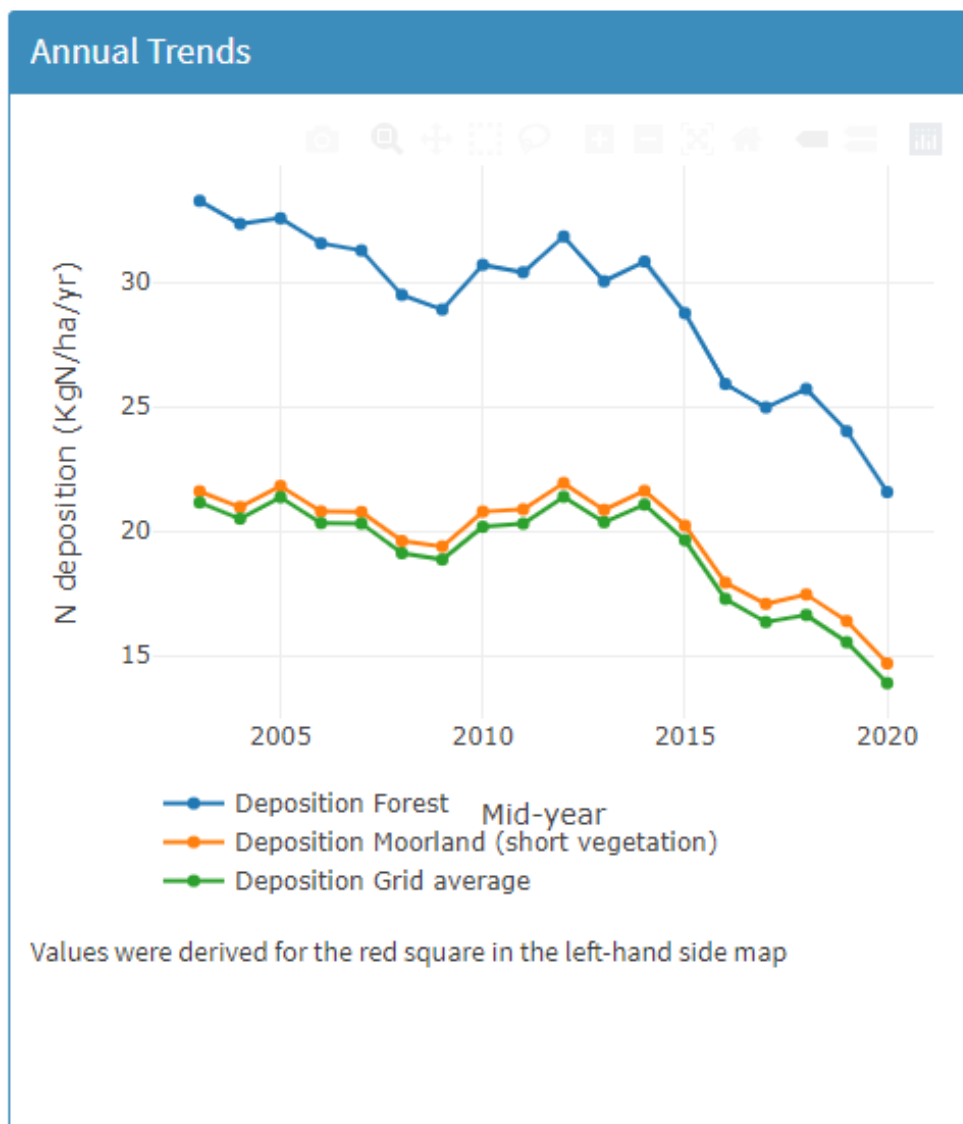
3.1.4 As clearly shown in Figure 1, roadside NO₂ concentrations decreased between 1997 and 2022. With reference to the date of the designation for the North Pennine Moors SAC in 2005, NO₂ concentrations were higher in 2005 than currently.

Figure 1 - Long Term Annual Mean UK Roadside NO₂ Concentrations (µg/m³)



3.1.5 Alongside the evidence presented for long term reduction in NO₂ concentration above, long term changes in N Dep for the North Pennine Moors SAC are provided by the Air Pollution Information System (APIS). As shown in Figure 2, N Dep for the North Pennine Moors SAC, like national trend in NO₂ concentrations, have decreased since the time SAC was designated in 2005.

Figure 2 - Long Term Nitrogen Deposition for North Pennine Moors SAC



3.1.6 Using the trend line derived from the monitoring data, it is possible to calculate an annual rate of change in NO₂ concentrations over this timeline (normalising for the impact of COVID 19 lockdown restrictions brought in during 2020/21) to calculate a reasonable estimate of roadside NO₂ at the nearest point 5m to the A66 alongside the North Pennine Moors SAC in 2005, based on the modelled baseline NO₂ concentrations in 2019 (see Table 1).

Table 1 - Equivalent / Modelled Annual Mean NO₂ Concentrations

Year	Annual Mean NO₂ Concentration (µg/m³)
2005	19.0
2019	11.3
2029 Without Scheme (a)	10.0
2029 With Scheme (a)	11.1
Modelled NO ₂ concentrations adjusted using National Highways gap factor tool, which is assumes more precautionary emissions reduction than observed monitoring trends	

- 3.1.7 Air quality modelling to support the Project assessment has calculated the NO₂ concentrations i.e. a representation of road traffic emissions for the Without and With Scheme scenarios in the proposed opening year of 2029. The modelled annual mean NO₂ concentration in 2029 at 5m from the A66 is also provided in Table 1 for both scenarios.
- 3.1.8 The numbers presented in the HRA supplementary note and referenced in Table 1 above, are considered to contain built in conservatism when using the gap factor methodology (i.e. the process of adjusting NO₂ concentrations in-line with observed monitoring trends using the LTT_{E6} factors which is outlined in DMRB LA 105) for Nitrogen deposition.
- 3.1.9 The approach is considered to be precautionary because of the planned uptake of EVs which will increase over time, reducing vehicle NO_x and NH₃ emissions as a result. Where you have small road component in relation to the background concentration, it is also known that gap factoring can overestimate relevant contributions, which is what is considered to have occurred in this assessment.
- 3.1.10 The NO_x concentrations can be seen to reduce over time as expected and the NH₃ concentrations are largely consistent between the 2019 base year and the opening year (2029). Therefore, as the predicted increase in N deposition does not follow these trends, it is considered to be as a result of the precautionary methodology using the gap factor.
- 3.1.11 As shown in Table 1, modelled NO₂ concentrations in 2029, for either scenario, are lower than in 2019, and also in 2005 when the SAC was designated. As the blanket bog was a qualifying feature of the site at the time of the designation in 2005 when concentrations were higher, then it is reasonable to conclude that, even with a small increase in pollution as a result of the Project, the change will not hinder the site achieving favourable conservation status of the Blanket Bog Qualifying Feature and therefore does not result in an adverse effect on site integrity.
- 3.2 Potential change to supporting processes**
- 3.2.1 The Applicant concludes that the change in NO_x, NH₃ concentrations and N Dep will not result in an adverse effect on site integrity through a change in any species or parts of the habitats that make up the blanket bog with the operation of the A66 Project in the opening year (2029) due to the reasons expressed below.

- 3.2.2 The evidence presented on page 56 of Natural England’s commissioned report on Assessing the effects of small increments of atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance (NECR210)² states that, “*Within the bog habitat, losses are less severe with species richness reducing by around 1 % for approximately every 3 kg increase in long term N deposition across the range studied. This is likely due to the hydrology regime limiting species responses to nitrogen.*”
- 3.2.3 The Project will not affect the hydrological regime of the North Pennine Moors SAC, so we do not need to consider this aspect. The highest change in N Dep with the Project in the opening year is 0.9kg N/ha/yr, at a distance of 5m from the road. This is far below the 3kg N/ha/yr increase described in NECR 210, required to lead to the reduction of species richness.
- 3.2.4 However, if a very precautionary approach to assessment were taken, i.e. by assuming that the Project could give rise to a small increase in pollution levels in 2029 and could lead to a change in species, a question then arises as to whether this could affect the integrity of the blanket bog. This is addressed in the following paragraphs.
- 3.2.5 Blanket bogs are characterised by, “the presence of a deep peat deposit, formed from bog-mosses (*sphagnum spp*s) and other peat forming *spps* which is draped across large expanses of the landscape like a blanket. All but the steepest slopes are permanently waterlogged (F1a Habitat type)”³.
- 3.2.6 The citation for the North Pennine Moors sets out that, “it holds a major area of blanket bog in England. A significant proportion remains active with accumulating peat, although these areas are often bounded by sizeable zones of currently non-active bog, albeit on deep peat. The main national vegetation classification type is M19 *Calluna vulgaris – Eriophorum vaginatum* blanket mire, but there is also representation of M18 *Erica tetralix – Sphagnum papillosum* blanket mire and some western localities support M17 *Scirpus cespitosus – Eriophorum vaginatum* blanket mire. Forms of M20 *Eriophorum vaginatum* blanket mire predominate on many areas of non-active bog.” The citation does not specify individual species as basis for the blanket bog designation.
- 3.2.7 If this over-precautionary hypothetical scenario assumes that the small change in N Dep arising from the Project could somehow lead to a change in species richness of some dimension, there would still remain a mix of different species required to constitute a blanket bog. Table 22 of NECR 210 (reproduced below) helpfully provides some information on how different bog species change in their cover in response to changes in N Dep. For example, *Eriophorum vaginatum*, one of the named blanket bog species in the SAC citation is identified in Table 22 of NECR 210 as being able to expand its range with increases in N Dep.

² <https://publications.naturalengland.org.uk/file/6431114569711616>

³ <https://ukhab.org/ukhab-documentation/>

3.2.8 There is no evidence published in NECR 210 that the small changes in N Dep predicted with this Project would lead to a substantive change in species richness, such that it would no longer be a blanket bog.

3.2.9 [Extract from NECR 210]

Table 22: Summary of relationships between long-term nitrogen deposition and species cover (C) or probability of presence (P) by habitat expressed as a percentage of the maximum in a habitat. Difference in species richness associated with a 1 kg ha⁻¹ y⁻¹ difference in long-term N deposition along the survey sites is shown. Modelled relationship only applied over N deposition range in which survey sites fell, where no sites were surveyed at a given N deposition level '-' is shown. When the relationship between N and species richness was not significant 'ns' is shown.

Habitat (Survey) /Species	Max cover/ presence (no. of quadrats)	Change in species cover expressed as a % of maximum species cover recorded in habitat with a 1 kg increase in long-term N deposition at different background N deposition levels					
		5 kg N	10 kg N	15 kg N	20 kg N	25 kg N	30 kg N
Upland heath (TU 2009)							
<i>Hylocomium splendens</i> cover (C)	73	-2.0 %	-1.6 %	-1.2 %	-0.8 %	-0.4 %	-0.1
<i>Deschampsia flexuosa</i> (C)	37	-0.3 %	0.1 %	0.5 %	0.9 %	1.3 %	1.7
Upland heath (MRS)*							
<i>Hylocomium splendens</i> presence (P)	5	-1.3 %	-0.4 %	-0.2 %	-0.1 %	-0.1 %	-0.04
<i>Campylopus introflexus</i> (P)	2	0.0 %	0.02 %	0.04 %	0.07 %	0.10 %	0.13
Lowland heath (TU 2009)							
<i>Hylocomium splendens</i> (C)	31	-4.0 %	-1.1 %	-0.5 %	-0.3 %	-0.2 %	-0.1
<i>Hylocomium splendens</i> (P)	5	-0.4 %	-0.2 %	-0.1 %	-0.1 %	-0.1 %	-0.1
<i>Cladonia portentosa</i> (C)	11	-0.7 %	-0.3 %	-0.2 %	-0.2 %	-0.1 %	-0.1
<i>Cladonia portentosa</i> (P)	5	-0.5 %	-0.3 %	-0.2 %	-0.1 %	-0.1 %	-0.1
<i>Brachythecium rutabulum</i> (P)	5	0.0 %	0.1 %	0.1 %	0.2 %	0.2 %	0.3
Bog (TU 2009)							
<i>Cladonia uncialis</i> (C)	1	-0.1 %	0.0 %	0.0 %	-0.01 %	-0.01 %	-0.01
<i>Cladonia uncialis</i> (P)	4	-0.8 %	-0.2 %	-0.1 %	-0.06 %	-0.04 %	-0.03
<i>Eriophorum vaginatum</i> (C)	65				1.5 %		
<i>Sphagnum fimbriatum</i> (C)	1	0.0 %	0.0 %	0.0 %	0.01 %	0.01 %	0.01
<i>Sphagnum fimbriatum</i> (P)	3	0.2 %	0.1 %	0.1 %	0.04 %	0.03 %	0.03

3.2.10 Another way to consider impact of potentially small changes in N Dep at particular points within the blanket bog habitat, is to consider the existing vegetation and species within the blanket bog with increased distance from the A66. As distance increases from a road, so the amount of mixing and dispersion of the vehicle emissions increases. This leads to a reduction in pollutant concentrations and N Dep with increasing distances from the road. Therefore, as we walk to or away from the road, we transverse the pollution gradient. This would be the equivalent of small incremental changes (increases or decreases depending on whether we are walking to or from the road).

- 3.2.11 Biodiversity specialists for National Highways undertook an extensive site walk over survey covering the North Pennine Moors SAC adjacent to the A66 on 18 and 19 July 2023. They walked from the roadside up to a distance of 200m into the site, over numerous different locations within the SAC. Based on their observations they were unable to find any conclusive evidence to distinguish a discernible difference in species composition or richness in the blanket bog habitat with increased distance from the road. Accordingly, based on this walk over survey, there is no conclusive evidence to show an observable difference in the composition or quality of the blanket bog habitat with decreasing pollution levels. It should be noted that this is also during a period when pollutant concentrations are higher than they will be when the Project opens (see Table 1).
- 3.2.12 However, the biodiversity specialists did identify a range of other impacts not related to air quality that may be affecting the condition of blanket bog habitats close to the road. This includes evidence of vehicular access tracks (both hard unbound surface and grass tracks), drainage channels and extensive sheep grazing (see photographic evidence presented in Annex 2). All of which has contributed to current areas of bare peat and peat erosion.
- 3.2.13 Based on the evidence set out in Natural England's published NECR 210 report and the site walk over by the biodiversity specialists, there is no evidence that the small changes in N Dep associated with the Project would lead to a change in bog species that would result in an adverse effect on site integrity.

3.3 Existing measures designed to achieve the conservation objectives for the SAC

- 3.3.1 The Project will not impinge on any existing measures designed to achieve the conservation objectives for the SAC due to the reasons expressed below.
- 3.3.2 A site Improvement Plan (SIP) for the North Pennine Group, which encompasses the North Pennine Moors SAC, was published in 2014 by Natural England (<https://publications.naturalengland.org.uk/file/6030347827412992>). The SIP lists a number of actions covering a range of different pressures. Priority 9 covers air quality and is reproduced verbatim in Table 2.

Table 2 - Extract of the Air Quality Entry for the North Pennine Group SIP

Plan Summary				
This table shows the prioritised issues for the site(s), the features they affect, the proposed measures to address the issues and the delivery bodies whose involvement is required to deliver the measures. The list of delivery bodies will include those who have agreed to the actions as well as those where discussions over their role in delivering the actions is on-going.				
Priority & Issue	Pressure or Threat	Feature(s) affected	Measure	Delivery Bodies
9 Air Pollution: risk of atmospheric nitrogen deposition	Pressure	A082(B) Hen Harrier, A098(B) Merlin, A103(B) Peregrine, A140(B) Golden Plover, H4010 Wet heathland with crossleaved heath, H4030 European dry heaths, H4060 Alpine and subalpine heaths, H5130 Juniper on heaths or calcareous grasslands, H6130 Grasslands on soils rich in heavy metals, H6150 Montane acid grasslands, H6210 Dry grasslands and scrublands on chalk or limestone (important orchid sites), H6410 Purple moor-grass meadows, H6430 Tall herb communities, H6520 Mountain hay meadows, H7130 Blanket bogs, H7220 Hard-water springs depositing lime, H7230 Calcium-rich springwater-fed fens, H7240 High-altitude plant communities associated with areas of water seepage, H8110 Acidic scree, H8120 Base-rich scree, H8210 Plants in crevices in base-rich rocks, H8220 Plants in crevices on acid rocks, H8240 Limestone pavements, H91A0 Western acidic oak woodland, S1015 Round-mouthed whorl snail, S1528 Marsh saxifrage	Control, reduce and ameliorate atmospheric nitrogen impacts. Implement site nitrogen action plan	University(ies), Not yet determined

3.3.3 One of the remedial measures required to address and improve air quality for the SAC, as set out in the SIP, is the implementation of a Site Nitrogen Action Plan (SNAP). The Applicant has reviewed all the published information relating to the SAC and has been unable to find a copy of the SNAP. Natural England confirmed at a post Examination meeting on 22 August 2023 that they have not produced a SNAP for the SAC. The absence of the SNAP means that the Applicant is unable to evaluate whether the operation of the A66 Project would impinge on the delivery of any measures to improve air quality as required by the SIP for the SAC.