A66 Northern Trans-Pennine Project

TR010062

Habitats Regulations Assessment: Information submitted without prejudice to support a Derogation case

ANNEX 6

27 October 2023

Planning Inspectorate Scheme Reference	TR010062
Author:	A66 Northern Trans-Pennine Project, Project Team, National Highways

Version	Date	Status of Version
Rev 1	27 October 2023	Issue

CONTENTS

1. Introduction

1.1. The Project

1.1.1. The A66 Northern Trans-Pennine project is a programme of works to improve the A66 between the M6 Junction 40 at Penrith and A1(M) Junction 53 at Scotch Corner. The project will involve upgrading the single carriageway sections of the existing road to dual carriageway standard and making improvements to the junctions along the route. Parts of the project involve online widening of the carriageway and some are offline (in other words, new sections of road that follow a different route but reconnect into the main A66 alignment). Once complete, the project will lead to the entire 80km route having two lanes in both directions.

1.1.2. There is no development proposed within or adjacent to the North Pennine Moors Special Area of Conservation (SAC). The North Pennine Moors SAC lies outside any of the Project scheme areas, but the Project Affected Road Network (ARN) bisects the SAC.

1.2. Purpose of this Report

1.2.1. This document presents information (on a without prejudice basis) on the provisions of article 6(4) of the Habitats Directive as it has been given effect in domestic legislation in the Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations 2017), and sets out a Stage 3 Derogation case that demonstrates that there are no alternative solutions that avoid adverse effect on integrity (AEoI), that there are imperative reasons of overriding public interest (IROPI) for the Project and that compensatory measures can be secured should it not be possible for the SoS to rule out AEoI on the North Pennine Moor Special Area of Conservation (SAC) as a result of air quality impacts on blanket bog, a priority natural habitat type.

1.3. The Habitats Regulation Assessment Process and the Applicant's Position on the Need for Derogation

Stages of HRA process

1.3.1. The Habitats Regulations 2017 sets out the stages of assessment which must be undertaken to determine if a development project could adversely affect the integrity of a European site in view of that site's conservation objectives.

1.3.2. Regulation 63 of the Habitats Regulations 2017 states that a competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which is likely to have a significant effect on a European site (either alone or in combination with other plans or projects) and is not directly connected with or necessary to the management of that site, must make an appropriate assessment of the implications of that plan or project for that European site in view of that site's conservation objectives.

1.3.3. Regulation 63 (2) of the Habitats Regulations 2017 states that the Applicant for any such consent, permission or other authorisation must

provide such information as the competent authority may reasonably require for the purposes of the assessment, or to enable it to determine whether an appropriate assessment is required.

1.3.4. Regulation 63 (3) and (4) relate to consultation and require the competent authority to consult the appropriate nature conservation body and to have regard to any representations made by that body within such reasonable time as the authority specifies; and, if the competent authority considers it appropriate, to take the opinion of the general public (and to take such steps for that purpose as it considers appropriate).

1.3.5. Regulation 63 (5) of the Habitats Regulation 2017 states that, subject to Regulation 64 which is addressed below, the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site. In considering whether a plan or project will adversely affect the integrity of the site, Regulation 63 (6) requires that the competent authority must have regard to the manner in which it is proposed to be carried out or to any conditions or restrictions subject to which the consent, permission or authorisation should be given.

1.3.6. Regulation 64 states that if the competent authority is satisfied that, there being no alternative solutions, the plan or project must be carried out for imperative reasons of overriding public interest (IROPI), it may agree to the plan or project notwithstanding a negative assessment of the implications for the European site. Where the site concerned hosts a priority natural habitat type or a priority species, the reasons must be either (a) reasons relating to human health, public safety or beneficial consequences of primary importance to the environment; or (b) any other reasons which the competent authority, having due regard to the opinion of the appropriate authority, considers to be imperative reasons of overriding public interest.

1.3.7. By way of high-level summary, the HRA Stages have been summarised below:

- **Stage 1: Screening** – determination of whether *Likely Significant Effects* on a European site can be ruled out (beyond reasonable scientific doubt).
- **Stage 2: Appropriate Assessment** - determination of whether *Adverse Effects on Site Integrity* (AEoI) in view of the site's conservation objectives can be ruled out (beyond reasonable scientific doubt).
- **Stage 3: Derogations** - where AEoI cannot be ruled out (beyond reasonable scientific doubt), the competent authority may agree to the plan or project if the competent authority is satisfied there are no alternative solutions and that the plan or project must be carried out for imperative reasons of overriding public interest (and compensation is secured).

1.3.8. The Stage 1 and Stage 2 reports were provided to the Examining Authority during Examination (Stage 1 report [APP-234]; Stage 2 report [APP-235]) as supplemented by a HRA Supplementary Note provided at

Deadline 9 of Examination [REP9-036] and a HRA Second Supplementary Note (Annex I to Applicant's response to the Secretary of State's Request for Information dated 11 August 2023) issued 25 August 2023 (post Examination). This document provides, on a without prejudice basis, a Derogation case under Stage 3 in accordance with regulations 63 and 64 of the Habitats Regulations 2017.

1.3.9. National Highways as Applicant have concluded, and maintain the view, that the increases in air pollution (in the form of nitrogen and ammonia) associated with the A66 Project, alone or in combination, would not have AEoI of the North Pennine Moors SAC. Natural England (technical advisor to the Secretary of State on HRA issues) disagree with this position on the grounds they consider there remains uncertainty and a no AEoI conclusion cannot yet be reached beyond reasonable scientific doubt.

1.3.10. Notwithstanding Natural England's position, National Highways considers there is sufficient and adequate evidence to support its conclusion (no AEoI) as presented in the HRA documentation[1] and the Applicant's Position Statement dated 2023. However, should the SoS conclude otherwise, National Highways sets out within this document, on a without prejudice basis, a derogation case in accordance with Regulation 64 of the Habitats Regulations to allow for the SoS to grant consent for the proposed A66 Project.

Consultation and expert advice

1.3.11. The Evidence Plan process (as recommended in Advice Note Eleven, Annex H – Evidence Plans for Habitats Regulations Assessments of Nationally Significant Infrastructure Projects[2]) was identified as a tool that is potentially useful to aid consultation with key stakeholders and enhance agreements reached at the pre-application process.

1.3.12. National Highways adopted the principles of the Evidence Plan process to guide the consultation and development of the HRA for the Project, in relation to key areas of legislation and National Policy. The process was

[1] HRA Documents:

- Document Reference 3.5 Habitat Regulations Assessment Stage 1 Likely Significant Effects Report [APP-234]
- Document Reference 3.6 Habitat Regulations Assessment Stage 2 Statement to Inform Appropriate Assessment [APP-235]
- Document Reference 7.52 Habitats Regulations Assessment Supplementary Note – North Pennine Moors SAC/SPA [REP9-036]
- Document Reference 8.5 Change Application – Habitats Regulations Assessment (HRA) Technical Note [CR1-018]
- Document Reference 8.4 Habitat Regulations Assessment Technical Note (Rev 2) (Clean) [REP7-172]
- HRA Second Supplementary Note (Annex I to Applicant's response to the Secretary of State's Request for Information dated 11 August 2023) issued 25 August 2023 (post Examination)

[2] National Infrastructure Planning, *Advice Note Eleven – Evidence Plans for Habitats Regulations Assessments of Nationally Significant Infrastructure Projects,* Planning Inspectorate. Available online: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/an-eleven-annex-h/ [accessed October 2023].

led by the Integrated Project Team (IPT) (National Highways, their delivery partners and advisors).

1.3.13. The process followed in the preparation of the HRA Evidence Plan was aimed at producing a non-legally binding agreement between the developer and the relevant statutory authorities and advisers, and other relevant stakeholders. This agreement aims to cover the matters to be addressed by the impact assessments undertaken, the data that will be used to support the assessments and the methodology to be applied. The agreement can also be extended to cover the outputs of the assessment and development of proposed mitigation, as appropriate.

1.3.14. An Evidence Plan is intended to be a working document that is developed by the parties involved on an on-going basis through the development of the HRA, continuing up to the point of application. The intention is for the process to be informed by the HRA scoping processes, and for it to inform and feed into the Statements of Common Ground (SoCG).

1.3.15. The Project Evidence Plan forms Appendix 1.1 of the Environmental Statement (ES) [ES Volume 1, Application Document 3.4]. This document provides a summary of the consultation undertaken in the HRA Task Working Group.

1.3.16. Since submission of the Statement to Inform Appropriate Assessment (SIAA) [Document reference 3.6, APP-235], consultation with Natural England, with regards to potential for air quality impacts on the North Pennine Moors SAC has been ongoing. The consultation received from Natural England and National Highways responses are detailed in National Highways' Position Statement (dated 27 October 2023).

2. Assessment of adverse effects

2.1. Designated Habitats

2.1.1. The North Pennine Moors SAC is designated for various habitats and Marsh saxifrage *Saxifraga hiruculus* (Table 1). The primary reason for designation of the site relates to the presence of the following habitats: European dry heaths, blanket bog, petrifying springs with tufa formation, siliceous rocky slopes with chasmophytic vegetation, and old sessile oak woods with *Ilex* and *Blechnum* in the British Isles.

2.1.2. As described in the HRA Screening [Document reference 3.5, APP-234, likely significant effects could not be excluded for the North Pennine Moors SAC as a result of the potential for adverse effects through changes in air quality during operation (associated with the ARN). Appropriate Assessment was required under Regulation 63 (2) - (6) of the Habitats Regulations 2017 to ascertain whether the Project would adversely affect the integrity of the North Pennine Moors SAC.

2.1.3. Further detail on the findings of the Appropriate Assessment and the potential for adverse effects are provided in Section 3.2, but is should be noted here that the only qualifying feature of the North Pennine Moors SAC recorded within the potential air quality Zone of Influence (ZoI) was blanket bog (7130).

Table 1: North Pennine Moors SAC features and conservation objectives

North Pennine Moors SAC (Joint Nature Conservation Committee, 2015)[3]	
Physical area of the European Site	03,014.48ha
The qualifying interests of the European site	Annex I habitats that are a primary reason for selection of this site: • European dry heaths (4030) • *Juniperus communis* formations on heaths or calcareous grasslands (5130) • Blanket bogs (7130)[4] • Petrifying springs with tufa formation (*Cratoneurion*) (7220) • Siliceous rocky slopes with chasmophytic vegetation (8220) • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles (91A0) Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • Northern Atlantic wet heaths with *Erica tetralix* (4010) • Calaminarian grasslands of the *Violetalia calaminariae* (6130) • Siliceous alpine and boreal grasslands (6150) • Semi-natural dry grasslands and scrubland facies on calcareous substrates *Festuco Brometalia* (includes the priority feature 'important orchid sites') (6210) • Alkaline fens (7230) • Siliceous scree of the montane to snow levels *Androsacetalia alpinae* and *Galeopsietalia ladani* (8110) • Calcareous rocky slopes with chasmophytic vegetation (8210) Annex II species that are a primary reason for selection of this site: • Marsh saxifrage (*Saxifraga hiruculus*) (1528)

[3] Joint Nature Conservation Committee (2015) *Natura 2000 Standard Data Form: North Pennine Moors (UK0030033)*, available online: https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0030033.pdf [accessed: 01/05/23]

[4] Priority habitat if active bog.

North Pennine Moors SAC (Joint Nature Conservation Committee, 2015)[3]	
European site conservation objectives	The European Site Conservation Objectives for North Pennine Moors Special Area of Conservation (North Pennine Moors SAC Conservation Objectives) (Natural England, 2018)[5] aim 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 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 • The distribution of qualifying species within the site.

2.2. Potential adverse effects

Pathway for effect

2.2.1. There is no development proposed within or adjacent to the North Pennine Moors SAC. The SAC lies outside any of the A66 Project scheme areas, but the Project ARN, in this case the existing A66, is located adjacent to the SAC boundary (see Appendix A).

2.2.2. As reported in the A66's HRA Screening and SIAA, the only pathway for likely significant effect carried forward to the HRA appropriate assessment was an in-combination increase in air pollution associated with increased traffic flows resulting from the Project and other committed development. The air quality assessment has considered potential in combination effects; the traffic data provided was from the strategic traffic model which includes background growth and all committed developments in the area which impact traffic flows and followed Department for Transport (DfT) guidance on Forecasting and Uncertainty[6]. A full list of the committed developments included in the traffic data are identified in the DCO Combined Modelling and Appraisal (ComMA) Report [Document reference 3.8, APP-237]. Any developments that are not explicitly described in the ComMA report, and non-traffic sources, including sources relating to agriculture and industry, have been reviewed to ensure that there are no other sources that could act in combination that are not accounted for in the background concentrations.

[5] Natural England (2018) *European Site Conservation Objectives for North Pennine Moors Special Area of Conservation Site Code: UK0030033* (version 3), available online: http://publications.naturalengland.org.uk/publication/6361191412662272 [accessed: 13/10/23]

[6] Department for Transport (2022) *Transport Analysis Guidance Unit M4 Forecasting and Uncertainty – Department for Transport*, available online: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1139995/tag-m4-forecasting-and-uncertainty.pdf [accessed: 12/10/23]

2.2.3. The potential for adverse effects assessed in the appropriate assessment does not arise from the construction of a particular A66 scheme, rather the changes in emissions resulting from the operation of the A66 Project in combination with other sources of air pollution as defined above.

2.2.4. The predicted changes in air quality resulting from the Project are detailed in the HRA Supplementary Note [REP9-036] and summarised below with respect to each of the pollutants assessed.

2.2.5. With respect to nitrogen oxides (NOx), there are no exceedances of the Critical Level (30µg/m^3) as a result of the Project within 200m of the A66.

2.2.6. With respect to NOx, the modelled points which fall within the North Pennine Moors SAC predict an increase in NOx critical level above the 1% criterion (>0.3µg/m^3)[7] during operation up to 65m from changes in traffic flows to the north of the existing A66 and 37m to the south of the existing A66. Predicted changes in nitrogen deposition (N dep) up to these two distances are also predicted to exceed the 1% change criteria for the lower critical load for blanket bog. The maximum impact in N dep at North Pennine Moors SAC is predicted to be 0.9 kg N/ha/year 5m from the A66 (3.9 % increase in relation to do-minimum (without Project) nitrogen deposition). The change in N dep reduces moving away from the road to a change of 0.2 kg N/ha/yr at 65m (1.1% increase in relation to do-minimum (without Project) nitrogen deposition). Beyond 65m the impact of air pollution is considered to be imperceptible.

2.2.7. With respect to ammonia (NH_3), the maximum increase in concentrations as a result of the Project in the opening year (2029) is predicted to be 0.1µg/m^3 at a location 5m from the edge of the road. At this location there is predicted to be a 9.8% increase in NH_3 concentration. This reduces to 3.4% at 65m from the edge of the road. Beyond 65m the impact of air pollution is considered to be imperceptible.

Habitat within the Zone of Influence (ZoI)

2.2.8. To define the area of blanket bog within the North Pennine Moors SAC that could be impacted by the Project (the potential ZoI), the area of blanket bog (including blanket bog recorded in a mosaic with acid/marshy grassland) within the maximum area subject to a perceptible change in air quality (i.e. 65m north and 37m south of the A66) was calculated based on habitat mapping undertaken in 2021 and the SAC boundary (Appendix A).

2.2.9. The total area of blanket bog (H7130) within the ZoI (as defined by the sources and distances presented above) where Likely Significant Effects could not be ruled out totals 8.28ha* (3.18ha of blanket bog and 5.11ha of mosaic of blanket bog and acid grassland). All of this blanket bog

[7] Changes in annual mean NOx below 0.3µg/m^3 are considered to be imperceptible and therefore potential impacts on nitrogen deposition (N dep) below this criterion are not considered to be significant.

* Subject to rounding

habitat (8.28ha*) is located to the north of the A66; blanket bog was absent from within the ZoI south of the road (Appendix A). A summary of the appropriate assessment and the potential for adverse effects of site integrity, in light of the SAC conservation objectives, is set out below.

Baseline – Desk study information

2.2.10. The area of blanket bog within the ZoI, which will receive increased N dep and NH_3 concentrations, is located within Bowes Moor SSSI[8] Unit 1 and Unit 3 which are located to the north of the A66; the ZoI also overlaps with Unit 4 (located to the south of the A66) but blanket bog habitat was confirmed absent from this area (Appendix A).

2.2.11. The latest condition status Natural England has applied to Bowes Moor SSSI units 1, 3 and 4 are provided below.

- Unit 001: Unfavourable - Recovering (30/03/2016); the unit failed on a number of features, including species diversity, grazing pressure and burning leading to the exposure of bare peat in places. Other areas of concern were vehicle access damage, leading to the compression and rutting damage to the wetter areas of blanket bog, active grips around the northern part of the unit and the recent outbreak of heather beetle.
- Unit 003: Unfavourable - No change (02/03/2015); there are localised areas of dry heath and degraded bog in the eastern part of the unit. There is an excellent species diversity and cover of blanket bog indicator species to the north of the unit and on Duckett Sike. There were little signs of grazing pressure across this area. There was localised heavy grazing pressure along the southern and eastern boundaries, particularly where two hefts congregate below Ravock Hill and nr pasture end. Foddering still occurs in the unit and there was evidence of hay remaining on the heather. On these areas, the heather showed signs of topiary growth forms. Vehicle access damage was also evident on the wetter areas of bog, related to the positions of the grit stations and traps. Burning has also occurred in the sensitive no burn areas, across a watercourse and on M18 blanket bog where there is an almost continuous cover of sphagnum with frequent bog pools.
- Unit 004: Unfavourable - No change (29/02/2016). Blanket bog is absent from the area of this unit which overlaps with the potential ZoI.

Baseline surveys

2.2.12. A habitat survey aligned to Phase 1 Habitat survey methodology[9] on areas within the North Pennine Moors SAC which were located within 200m of the ARN (the survey area) was undertaken in 2022, to determine the presence and extent of cover of qualifying features of the SAC (Appendix A). Blanket bog was the only qualifying feature recorded within the survey. For the purpose of this assessment, areas of recorded

* Subject to rounding

[8] Bowes Moor SSSI is a nationally designated sites that forms a component that its North Pennine Moors SAS and is subject to condition assessment from Natural England.

[9] JNCC (2010) *Handbook for Phase 1 Habitat survey – a technique for environmental audit.*

blanket bog are assumed to be Annex I. Blanket bog was often recorded in a mosaic with acid and marshy grassland; for the purposes if this assessment this habitat is also assumed to be Annex I blanket bog.

2.2.13. Areas of blanket bog were recorded to be on the edge of the SAC. The habitat areas adjacent to the A66 were frequently recorded to be acid grassland. Areas of blanket bog were recorded across Unit 1 and Unit 3. Two small, isolated areas of blanket bog (totalling approximately 0.05ha) were recorded within the area of Unit 4 south of the A66 within the habitat survey area. It should be noted that the areas of Unit 1, Unit 3 and Unit 4 extend much further into the North Pennine Moors SAC (relating to Bowes Moor SSSI) and that the habitat survey was undertaken within 200m of the existing A66 only, in line with DMRB LA 105[10]. This 200m survey area is considered appropriate, given that modelling has shown that air quality changes beyond 65m are imperceptible.

2.2.14. In 2023 additional walkover surveys were undertaken. Bog specialists walked through the SAC in the area covered by the Phase 1 Habitat Survey (undertaken in 2022 and reported in Appendix E of Habitat Regulations Assessment (HRA) Stage 2 Statement to Inform Appropriate Assessment [Document reference 3.6, 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. Selected images and survey target notes are presented in Appendix A of Annex I to Applicant's response to the Secretary of State's Request for Information dated 11 August 2023, issued 25 August 2023[11] (post-Examination).

2.2.15. The survey results indicated that the 65m ZoI has been heavily influenced by land practices already, compromising the conservation objectives. 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, particularly in the east, has resulted in drier habitats, including acid grassland and *Vaccinium myrtillus* communities. These exist both within and beyond the 65m ZoI. Vehicular access tracks (both hard unbound surface and grass tracks) were 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.

[10] Highways England (2019) *Design Manual for Roads and Bridges LA 105 Air quality*.
[11] Annex I to Applicant's response to the Secretary of State's Request for Information dated 11 August 2023, issued 25 August 2023. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010062/TR010062-002246-National%20Highways_Annex%201.pdf

2.2.16. The IUCN Peatland Code Field Protocol[12] 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. Blanket bog is a priority habitat when active[13]. Whilst it is considered unlikely that all the blanket bog within the ZoI (8.28ha[*]) is active, as a result of the pressures outlined, for the purposes of this assessment and in line with the precautionary principle, it has been assumed that all blanket bog within the ZoI is active and is therefore considered priority habitat.

Ecological effects

2.2.17. The assessment of potential air quality impacts on the North Pennine Moors SAC resulting from operation of the road in the opening year (2029) are described in detail in the Stage 1 (Screening) and Stage 2 (Statement to Inform Appropriate Assessment) HRA reports and core supporting documents[14]. Note that the change application [CR1-018] and technical note [REP7-172] listed as part of the HRA supporting documents relate to design changes relevant to the appropriate assessment and are not related to potential air quality effects.

2.2.18. With respect to nitrogen oxides (NOx), there are no exceedances of the Critical Level (30µg/m^3) as a result of the Project within 200m of the A66.

2.2.19. Habitat surveys (Appendix A) confirmed that the only qualifying feature of the SAC present within the ZoI is blanket blog and blanket bog mosaic with acid and marshy grassland. In line with the precautionary principle and following consultation with Natural England, blanket bog recorded in a mosaic was assumed to be qualifying blanket bog (7130).

---

[12] International Union for Conservation of Nature (2023) *Peatland Code Field Protocol: Assessing eligibility, determining baseline condition category and monitoring change* (v 2.0 March 2023)

[13] According to JNCC 'active' blanket bog is defined as supporting a significant area of vegetation that is normally peat-forming. Important peat-forming species include as bog-mosses *Sphagnum spp*. and cotton grasses *Eriophorum spp*., or purple moor-grass *Molinia caerulea* in certain circumstances, together with heather *Calluna vulgaris* and other ericaceous species.

[*] Subject to rounding

[14] HRA Documents:

- Document Reference 3.5 Habitat Regulations Assessment Stage 1 Likely Significant Effects Report [APP-234]
- Document Reference 3.6 Habitat Regulations Assessment Stage 2 Statement to Inform Appropriate Assessment [APP-235]
- Document Reference 7.52 Habitats Regulations Assessment Supplementary Note – North Pennine Moors SAC/SPA [REP9-036]
- HRA Position Statement (Annex I to Applicant's response to the Secretary of State's Request for Information dated 11 August 2023) – 25 August 2023 (post Examination)
- Document Reference 8.5 Change Application – Habitats Regulations Assessment (HRA) Technical Note [CR1-018]
- Document Reference 8.4 Habitat Regulations Assessment Technical Note (Rev 2) (Clean), document [REP7-172]

The other twelve SAC qualifying features[15], were not recorded with the Zone of Impact. They were also absent from the habitat mapping survey area, which covered a wider survey area covering the land 200m north and 200m south of the A66 (Appendix A). These species and habitats were therefore screened out of the Appropriate Assessment.

2.2.20. As described above, the potential impact from N dep and NH_3 is greatest at 5m reducing with distance from the road to a point where it is imperceptible beyond 65m from the road. The potential ecological impacts on the blanket bog habitat within the ZoI, as a result of N Dep, NH_3 and NOx, are described in Section 4 of the HRA Supplementary Note [REP9-036]. They can be summarised as:

- Modification of the chemical status of the blanket bog, accelerating or damaging plant growth, altering its vegetation structure and composition, and potentially causing the loss of sensitive blanket bog species and potential degradation of the blanket bog habitat.
- Potential for an increase in nitrogen loving plant groups such as the graminoids (grasses and sedges), altered growth and species composition in bryophytes, and increased nitrogen in peat and peat water. This may alter species composition and result in the potential loss of certain key blanket bog species (such as mosses, bryophytes and heather) due to an increased competition from grasses and sedges, such as cotton grass.
- Damage or potential loss of certain species, associated with the shift to a grass dominated assemblage, which has the potential to adversely impact blanket bog in the ZoI.

2.2.21. Should the Secretary of State be minded to agree with Natural England and find an Adverse Effect on Integrity of the SAC cannot be ruled out, the Applicant has set out below a without prejudice derogation case including proposing suitable and appropriate compensation.

[15] European dry heaths (4030), *Juniperus communis* formations on heaths or calcareous grasslands (5130), Petrifying springs with tufa formation (*Cratoneurion*) (7220), Siliceous rocky slopes with chasmophytic vegetation (8220), Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles (91A0), Northern Atlantic wet heaths with *Erica tetralix* (4010), Calaminarian grasslands of the *Violetalia calaminariae* (6130), Siliceous alpine and boreal grasslands (6150), Semi-natural dry grasslands and scrubland facies on calcareous substrates *Festuco Brometalia* (includes the priority feature 'important orchid sites') (6210), Alkaline fens (7230), Siliceous scree of the montane to snow levels *Androsacetalia alpinae* and *Galeopsietalia ladani* (8110), Calcareous rocky with slopes with chasmophytic vegetation (8210) and marsh saxifrage *Saxifraga hirculus* (1528)

3. Stage 3 Derogations Test 1: Consideration and assessment of alternative solutions

3.1. Introduction to consideration and assessment of alternative solutions

3.1.1. This section sets out the evidence for a (without prejudice) case for the first limb of a Derogation case made under the Habitats Regulations 2017. This section is structured such that it:

- Outlines relevant legislation, case law and guidance that has informed the Applicant's approach to the first limb of the derogation case.
- Provides an overview of the approach to assessment of alternative solutions undertaken by the Applicant, including summaries of:
  - The strategic need for the Project.
  - The development and definition of the Project objectives.
  - The performance of the Project against its objectives.
- Provides an overview of the residual environmental effects of the Project.
- Considers the identification and assessment of alternative solutions, including:
  - The impact of not implementing the Project (the 'Do Nothing' option)
  - Alternative dualling routes
  - Implementing the Project as proposed with additional works adjacent to the North Pennine Moors Special Area of Conservation (NPM SAC)
  - Non-dualling alternatives
  - Alternative modes.
- Presents the conclusions of these assessments in the context of the first limb of the three legal tests for Derogation under the Habitats Regulations 2017.

3.2. Relevant legislation, case law and guidance

3.2.1. If a competent authority is unable to ascertain that a project will not adversely affect the integrity of a European Site, it may only undertake or authorise the project in accordance with derogation requirements as set out in regulations 64 and 68 of the Habitats Regulations 2017. Regulation 64 (1) states that "*if the competent authority is satisfied that, **there being no alternative solutions**, the plan or project must be carried out for imperative reasons of overriding public interest…*" (text emphasised to flag the relevance to this first limb of the derogation case).

3.2.2. The three limbs of a derogation case are sequential, i.e., if the decision maker is satisfied that there are no alternative solutions to the project, the decision maker may move on to considering whether there are imperative reasons of overriding public interest (IROPI) for the project, and, if so, whether sufficient compensatory measures are secured.

Accordingly, the Applicant, finding there are no alternative solutions to the A66 Project and that there are IROPI for the A66 Project (Section 4), has also presented adequate compensatory measures (Section 5).

3.2.3. The DTA Habitats Regulations Assessment Handbook[16] sets out the recommended steps for the consideration of Alternative Solutions, with reference to Regulation 64(1), as follows:

- What are the objectives of the plan or project and what is the nature of and need for the plan or project?
- Are there financially, legally, and technically feasible alternative solutions?
- Would any of these financially, legally and technically feasible alternative solutions have no or a lesser effect on the integrity of the European site?

3.2.4. The above steps are referred to in the assessment reported in Section 3.4 of this Report. It should be noted that when considering alternatives, the HRA Handbook states, "*The test is whether there is an absence of 'alternative solutions' to the plan or project, not merely 'alternatives'…What constitutes an alternative solution, in any particular case, will depend on the circumstances, including the nature, scale, duration, timing and location of the project and its objectives, and may include options that could be delivered by someone other than the applicant.*"[17]

3.2.5. The Applicant also notes the case law on the requirements of alternatives for consideration, for instance as set out in Spurrier, R (On the Application of) v The Secretary of State for Transport [2019] EWHC 1070, where it was held that: "Even by itself, the noun "alternative" carries the ordinary, Oxford English Dictionary meaning of "a thing available in place of another", which begs the question what are the relevant objectives or purposes which an alternative would need to serve. However, article 6(4) does not refer simply to the absence of an "alternative" but to an "alternative solution", "alternative" appearing as an adjective, which makes this meaning plain beyond any doubt. In our view, "an alternative" must necessarily be directed at identified objectives or purposes; but it is beyond doubt that "an alternative solution" must be so aimed."

3.2.6. In addition, the Applicant notes the Opinion of the European Commission C (2018) 466, 2018 IV in respect of a proposal for the deepening of the Danube waterway in Germany. For that scheme, four other alternatives as well as a zero alternative were thoroughly assessed, and none of the alternatives were found to give rise to a "*significantly lower impact*" than the chosen option.

[16] DTA Publications, *The Habitats Regulations Assessment Handbook*, Part C: The general principles, C.13 Alternative solutions. Available online at: https://www.dtapublications.co.uk/handbook [accessed October 2023].
[17] DTA Publications, *The Habitats Regulations Assessment Handbook*. Section C13 Alternative solutions, C.13.1 The principles, paragraphs 3 and 4. Available online at: https://www.dtapublications.co.uk/handbook [accessed October 2023].

3.2.7. To guide this process of consideration and assessment, the DTA Habitats Regulations Assessment Handbook (C.13 Alternative Solutions) recommends 17 Principles to be followed in the identification and assessment of alternative solutions, which have informed the approach taken as reported in Section 3.4 of this report. This includes Principles 13 and 14 copied below:

> *13. If a plan or project proposer, or a competent authority, is looking to identify possible alternative solutions, they should take care not to reject an alternative that could meet the same 'genuine and critical' objectives that the plan or project is intended to meet. If an option could meet the same 'central policy' objectives as the proposals in the plan or project, and it is a financially, legally and technically feasible solution it should be considered further, for example, in terms of its relative effects on European Sites.*
>
> *14. Conversely, if an alternative plan or project could not meet the central, genuine and critical objectives to be met by the proposal, it may be rejected as not constituting an 'alternative solution', even though interested parties may argue that the alternative has less effect on the environment or a European Site.*

3.3. Overview of approach to assessment of alternative solutions

Approach to assessment of alternative solutions

3.3.1. In accordance with the Habitats Regulations and guidance, the first of the three sequential steps to a derogation case, is to consider the alternatives to the project. In summary, the Secretary of State (SoS) as competent authority should be satisfied that there are no feasible alternatives that would not have an adverse effect on the integrity of this or any other European site.

3.3.2. This section of the Applicant's without prejudice derogation case sets out the reasons and justifications to robustly demonstrate that there are no feasible alternative solutions that would be less damaging, or avoid damage to, the SAC.

3.3.3. There is no prescribed statutory method for approaching an assessment of alternatives. However, UK Government guidance[18] and National Infrastructure Planning Advice Note 10 (PINS AN10)[19] state that "*Alternatives need to meet the original objectives of the proposal*", and that

> *"An alternative solution is acceptable if it:*
>
> - *Achieves the same overall objectives of the original proposal*
> - *Is financially, legally and technically feasible*
> - *Is less damaging to the European site and does not have an adverse effect on the integrity of this or any other European site".*

[18] HM Government, *Habitats regulations assessment: protecting a European site*, 24 February 2021. Available online: Habitats regulations assessments: protecting a European site - GOV.UK (www.gov.uk) [accessed October 2023].

[19] National Infrastructure Planning, *Advice Note 10: Habitats Regulations Assessment relevant to nationally significant infrastructure projects, Planning Inspectorate*, republished August 2022 (version 9). Available online: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-ten/ [accessed October 2023].

3.3.4. The guidance also suggests that considering alternative solutions:

> *"might include whether the proposal could:*
>
> - *Happen at a different location*
> - *Use different routes across a site*
> - *Change its scale, size, design, method or timing".*

3.3.5. Following the approach set out in the guidance and AN10, the Applicant's assessment of alternatives adopts the three-step approach of considering:

(i) whether the same overall objectives of the A66 Project are achieved;

(ii) whether an alternative is financially, legally and technically feasible, and

(iii) whether an alternative has less adverse effect to the integrity of the SAC and does not have an adverse effect on the integrity of this or any other European site.

3.3.6. In order to support this three-step approach, the following sections set out the reasons that gave rise to the need for the A66 Project, how this informed the development of the Project objectives and how those address the identified need for the Project. The A66 Project's residual effects upon the SAC have been summarised above in Section 2.

3.3.7. In the assessment of alternative solutions section below, the Applicant has presented a comprehensive analysis of the wide-ranging alternatives considered. The Applicant has assessed each alternative against the three steps outlined above. The Applicant concludes in light of this assessment that there are no alternatives that would have less adverse effect to the integrity of the SAC and does not have an adverse effect on the integrity of this or any other European site.

The strategic need for the Project

3.3.8. The strategic need for the A66 Project is outlined in Section 1.7 of the Case for the Project [Document Reference 2.2, APP-008].

3.3.9. The existing A66 is a key national and regional strategic transport corridor carrying high levels of freight traffic as well as being an important route for tourism and connecting nearby communities. It is the most direct route between the Tees Valley, North, South and West Yorkshire, the East Midlands, eastern England, north Cumbria and the central belt of Scotland and Cairnryan (for access to Ireland).

3.3.10. The Transport for the North (TfN) Strategic Transport Plan[20] explains that a transformed North could have an additional 850,000 jobs and generate almost £97 billion additional Gross Value Added. This could result in a significant increase in travel demand – an improved A66 would enable this significant increase. For end-to-end freight journeys to

[20] Transport for the North, *Strategic Transport Plan*, February 2019. Available online: https://transportforthenorth.com/wp-content/uploads/TfN-final-strategic-transport-plan-2019.pdf [accessed October 2023].

be as reliable, safe and efficient as possible, the North needs better surface access to ports, airports and intermodal terminals. The dualling of the A66 has been identified by the Department for Transport (DfT) and TfN, as an essential requirement to achieve this objective, as well as unlocking opportunities for employment, supply chain development and housing.

3.3.11. If the existing A66 route is not improved, it will constrain national and regional connectivity, due to its strategic importance as an east-west connection for freight and other vehicle movements and may threaten the transformational growth envisaged by the Northern Powerhouse initiative and the achievement of the Government's 'Levelling Up' agenda. There are no direct rail alternatives for passenger or freight movements along the corridor.

3.3.12. Despite the strategic importance of the A66, the route between the M6 at Penrith and the A1(M) at Scotch Corner is only intermittently dualled and has six separate lengths of single carriageway. The route carries local slow moving agricultural and other traffic making short journeys, which impacts road speeds, safety and capacity. It also includes a high number of private and direct access points along the route. This has a detrimental impact on other users, especially on the single carriageway lengths. The variable road standards, together with the lack of available diversionary routes when incidents occur, affect road safety, reliability, resilience, and attractiveness of the route.

3.3.13. Further information on the existing situation, and how the Project seeks to improve this, can be found in the Transport Assessment [Document Reference 3.7, APP-236] and the Combined Modelling and Appraisal Report (ComMA) [Document Reference 3.8, APP-237].

Development and definition of the Project objectives

3.3.14. The development of the A66 Northern Trans-Pennine Project to the point of Development Consent Order (DCO) Application in 2022, is reported in the Project Development Overview Report (PDOR) [Document Reference 4.1, APP-244]. Section 3.3 of the PDOR sets out the work undertaken to establish a need for intervention, and to develop and define a set of Project objectives. These objectives would go on to inform the development of the Project such that it conformed to them and thus addressed the strategic need for the Project as set out in the Case for the Project [Document Reference 2.2, APP-008]. This process, and the resulting objectives, is summarised below.

3.3.15. The Northern Trans-Pennine Routes Strategic Study (NTPRSS) was announced in 2014 as part of the Department for Transport and Highways Agency's first Road Investment Strategy (RIS1).

3.3.16. From Chapter 4 of the March 2015 RIS1[21], the NTPRSS is introduced as follows:

[21] Department for Transport. *Road Investment Strategy: for the 2015/16 – 2019/20 Road Period.* Published March 2015. Available online: https://assets.publishing.service.gov.uk/media/5a80ef47e5274a2e8ab52fed/ris-for-2015-16-road-period-web-version.pdf [accessed October 2023].

> *"Between Leeds and Manchester in the south and Edinburgh and Glasgow in the north, there is no complete dual carriageway link between the east and west of the country. This is one of the most visible gaps in the UK transport network, and is seen as a barrier to business in the north of England. It also leaves the economy of the north of England heavily dependent on one road – the M62 – to provide strategic east-west connectivity.*
>
> *"There is potential to create a new strategic corridor in the region and link the A1 and the M6. Doing so could help the economies of the North East and Cumbria, as well as improve journeys between England and Scotland.*
>
> *"The two main east-west roads in this area, the A69 and A66, have been partially upgraded over the years. Both roads have a mix of high-quality dual carriageway and single carriageway. This study will examine the case for dualling one or both of these roads and making other improvements along their length. In doing this, we would further help the development of a northern powerhouse."*

3.3.17. The NTPRSS was one of six strategic studies announced as part of RIS1, and progressed over 2015 and 2016, as reported in Section 3.3 of the PDOR [Document Reference 4.1, APP-244]. It identified issues impacting the existing A66 (informed and supported by a Stakeholder Reference Group, coordinated by the DfT), and established the need for intervention to address these.

3.3.18. In March 2020, the Department for Transport and Highways England published their second Road Investment Strategy, RIS2. Within Part 1d of RIS2[22], Government outlines the key areas where National Highways (then Highways England) and other partners must take action, to deliver a Strategic Road Network that:

- Supports the economy
- Is greener
- Is safer and more reliable
- Is more integrated
- Is smarter.

3.3.19. Following the conclusion of the NTPRSS and the established need for intervention, RIS2 committed to upgrading the A66. Dualling the remaining single carriageway sections between Penrith and Scotch Corner was announced in the HM Treasury Autumn Statement of 2016 (refer to Section 3.3 of the PDOR [Document Reference 4.1, APP-244]).

3.3.20. As such, and as set out in Section 1.7 of the Case for the Project [Document Reference 2.2, APP-008], "*In upgrading the A66, the Project is required to demonstrate that it can meet the specified project objectives as defined by the DfT within the RIS2…Strategy: 2020-2025.*"

3.3.21. In addition to aligning with Government strategy with respect to RIS2, the A66 Northern Trans-Pennine Project's objectives are also aligned with National Highways' three priorities, as set out in paragraph 2.1.2 of the Project Development Overview Report [Document Reference 4.1, APP-244] and outlined below:

[22] Department for Transport, *Road Investment Strategy 2: 2020-2025*. Published March 2020. Available online: https://assets.publishing.service.gov.uk/media/5ffb39808fa8f56405c5f5bf/road-investment-strategy-2-2020-2025.pdf [accessed October 2023].

- Safety: “By 2040, we aim for no one to be killed or seriously injured while travelling or working on our network.”
- Customer: “We will shape our future by listening to, predicting and responding to the needs of our customers.”
- Delivery: “We are upgrading our network to be fit for the 21st century and driving a step change in efficiency.”

3.3.22. The resulting route-wide Project objectives, that informed development of the design presented in the DCO application, are shown in Table 2 below.

Table 2 Project objectives for the A66 Northern Trans-Pennine Project

Theme	Project objectives
Economic	Regional: support the economic growth objectives of the Northern Powerhouse and Government levelling up agenda.
	Ensure the improvement and long-term development of the Strategic Road Network (SRN) through providing better national connectivity including freight.
	Maintain and improve access for tourism served by the A66.
	Seek to improve access to services and jobs for local road users and the local community.
Transport	Improve road safety, during construction, operation and maintenance for all, including road users, walkers, cyclists and horse-riders (WCH), road workers, local businesses and local residents.
	Improve journey time reliability for road users.
	Improve and promote the A66 as a strategic connection for all traffic and users.
	Improve the resilience of the route to the impact of events such as incidents, roadworks and severe weather events.
	Seek to improve WCH provision along the route.
Community	Reduce the impact of the route on severance for local communities.
Environment	Minimise adverse impacts on the environment and where practicable optimise environmental improvement opportunities.

Performance of the Project against its objectives

3.3.23. As highlighted in Issue Specific Hearing 1 (ISH1) Post Hearing Submissions (including written submissions of oral case) [Document Reference 7.2, REP1-006]:

> *“The resulting objectives demonstrate the importance of the A66 route as a national and strategic link for communities and freight and align with wider connectivity aspirations such as those held by organisations including Transport for the North. They also reflect recommendations from the Northern Powerhouse Independent Economic Review to support transformational economic growth across the Northern Region. From a community perspective, they highlight issues raised by the Stakeholder Reference Group around reliability, resilience, and safety of the route.*

"As the A66 Northern Trans-Pennine project has progressed, these objectives have remained constant and have shaped route selection, design and development throughout each of its key stages."

3.3.24. Table 3 below draws on material presented in Section 1.7 of the Case for the Project [Document Reference 2.2, APP-008], and demonstrates how the Project as proposed conforms to the objectives defined in Table 2 above, which were developed to address the strategic need set out in paragraphs 3.3.8 through 3.3.13 previously.

Table 3 Performance of the Project against its objectives

Project objective	Performance of the Project against the objective
Economic	
Regional: support the economic growth objectives of the Northern Powerhouse and Government levelling up agenda.	The Project facilitates improved vehicle movements on the A66 route network. The resulting improvements to journey time have particular economic benefits for freight and other business connectivity; thus, supporting the economic growth objectives of the Northern Powerhouse and Government levelling up agenda.
Ensure the improvement and long-term development of the Strategic Road Network (SRN) through providing better national connectivity including freight.	Ensures the improvement and long-term development of the SRN by improving strategic regional and national connectivity, particularly for hauliers. Heavy goods vehicles account for a quarter of all traffic on the road and any delays to journeys can have an extremely negative effect on business and commerce, including lost working time and missed shipment slots. Improves connectivity between the key employment areas of Cumbria, Tees Valley and Tyne and Wear.
Maintain and improve access for tourism served by the A66.	Improves access to key tourist destinations such as the North Pennines and Lake District.
Seek to improve access to services and jobs for local road users and the local community.	Improves connectivity and access to services such as healthcare, employment areas, education and active travel for local road users and the local community. Improves the local road network, with new junctions and 'offline' improvements removing local traffic from the A66, making local movements more efficient.
Transport	
Improve road safety, during construction, operation and maintenance for all, including road users, walkers, cyclists and horse-riders (WCH), road workers, local businesses and local residents.	A consistent standard of dual carriageway, with the same speed limit throughout (with the exception of a short length of 50mph dualling between M6 Junction 40 and east of Kemplay Bank), will lead to fewer accidents and a safer road.
Improve journey time reliability for road users.	Reduces congestion and improves the reliability of people's journeys between the M6 Junction 40 at Penrith and the A1(M) Junction 53 at Scotch Corner, and nationwide. Reduces delays and queues during busy periods and improves the performance of key junctions such as the M6

Project objective	Performance of the Project against the objective
	Junction 40, Kemplay Bank Roundabout and A1(M) Junction 53 Scotch Corner. An improved A66, with consistent speed limits, will lead to fewer accidents which, in turn, makes the road more reliable.
Improve and promote the A66 as a strategic connection for all traffic and users.	The Project facilitates improved vehicle movements to the A66 route network, which will help promote the A66 as a strategic route for all traffic and users.
Improve the resilience of the route to the impact of events such as incidents, roadworks and severe weather events.	Having a dual carriageway improves the resilience of the route, providing the option to close lanes where required for routine maintenance or in response to incidents such as breakdowns or severe weather events.
Seek to improve WCH provision along the route.	Use of the 'old' A66 as part of the local road network will provide better, safer routes for cyclists and pedestrians. The Project also provides safer routes to cross the A66, via grade-separated crossing points.
Community	
Reduce the impact of the route on severance for local communities.	Re-connects communities and provides better links between settlements along the route, with improved junctions and an improved local road network.
Environment	
Minimise adverse impacts on the environment and where practicable optimise environmental improvement opportunities.	The Project seeks to minimise noise levels for people living and working near the route and reduces the congestion currently occurring in the single carriageway lengths. The Project is also being designed to minimise any potential negative impacts on the natural environment and landscapes of the North Pennines and Lake District.

3.4. Assessment of alternative solutions

3.4.1. As set out in the HRA Handbook, "*The test is whether there is an absence of 'alternative solutions' to the plan or project, not merely 'alternatives'…What constitutes an alternative solution, in any particular case, will depend on the circumstances, including the nature, scale, duration, timing and location of the project and its objectives, and may include options that could be delivered by someone other than the applicant.*"[23]

3.4.2. This section of the Applicant's without prejudice derogation case sets out the alternatives to the A66 Project and assesses these against the criteria set out above in Section 3.3. It is an essential part of the assessment of alternative solutions to place those into the context of the project being determined. An "alternative" that does not meet the objectives of that project cannot be an alternative solution.

[23] DTA Publications, *The Habitats Regulations Assessment Handbook*. Section C13 Alternative solutions, C.13.1 The principles, paragraphs 3 and 4. Available online at: https://www.dtapublications.co.uk/handbook [accessed October 2023].

3.4.3. The Applicant concludes, having made this assessment, that there are no feasible alternatives that would be less damaging or avoid damage to the SAC and that do not have an adverse effect on the integrity of this or any other European site, compared to the A66 Northern Trans-Pennine Project as proposed.

3.4.4. Alternatives considered for assessment by the Applicant have been grouped as follows:

- The 'Do Nothing' option, that would see no element of the Project progressed.
- Alternative dualling routes, which would upgrade an alternative route to the A66, in a different location, to dual carriageway standard.
- Dualling the A66 with additional works local to the North Pennine Moors SAC, which would see the Project progress as promoted, with localised additional works to the Brough to Bowes section of the existing A66 (currently dual carriageway and outside the A66 Northern Trans-Pennine Project DCO Order limits).
- Non-dualling alternatives.
- Alternative modes.

The 'Do Nothing' Option

3.4.5. This "alternative" would see no element of the A66 Northern Trans-Pennine Project progressed at all. Accordingly, under this scenario there would be no impact or change to the bog habitat of the SAC arising from or attributable to the improved A66. However, the strategic needs case (see paragraphs 3.3.8 through 3.3.13 above), that is delivered by the A66 Project as proposed would not be met, and the Project objectives would not be achieved.

3.4.6. Accordingly, because none of the overall objectives of the A66 Project are met, the 'Do Nothing' is not an alternative solution.

3.4.7. Additionally, during Examination the Applicant identified the following financial, safety and environmental costs that would result in the event of a 'do nothing' approach (refer to paragraph 7.4.6 of the Case for the Project [Document Reference 2.2, APP-008]):

> *"It is considered that a 'do nothing' option in relation to the A66 would not be feasible without a financial, safety and environmental cost. The following costs are identified if the scheme were not to be implemented:*
>
> *• Without the scheme, journey times on the A66 between Penrith and Scotch Corner are predicted to be between 19-22% slower.*
>
> *• The current issues on road safety, which contribute to continued high rates of fatal and serious casualties compared to the national average, will remain and would likely increase as traffic volumes increase. Between 2013 and 2019, there were 266 accidents which occurred along the route, equating to an average of 40 accidents per year. Of the 266 reported accidents, 74% resulted in slight injuries, 21% resulted in serious injuries and 5% resulted in fatality. There were five fatal accidents in 2015, including three which involved head-on collisions at the Warcop bends and at Crackenthorpe.*
>
> *• Without the scheme, traffic would need to continue to navigate a number of at grade junctions and accesses from the A66 which impact on the overall flow of*

traffic, reliability of journey and journey time. In addition, the changing standards along the route from dual to single carriageway and the fact that some lengths of road do not match modern standards will continue to cause significant congestion and delay to users of the A66.

• As a priority infrastructure project to support the regional growth, ambitions of the Northern Powerhouse and Levelling Up agenda will not be realised to their full extent, suppressing long-term economic growth and productivity.

• Users of a number of footpaths and cycleways would continue to have to cross the A66 at-grade, affecting the safety and enjoyment of the route for users of all ages and abilities.

• Full road closures will continue to be necessary when there are accidents or adverse weather conditions. Single carriageways are 40% more likely to have a closure along the route and these closures are likely to be 50% longer in duration. For significant incidents average closure times are between 15 and 18 hours.

• Freight hauliers will continue to be affected by delay and disruption to their journeys, due to few opportunities for diversion or turning around along the route for large vehicles. The single largest travel time savings that will be realised by Business Users, including freight, with HGVs comprising 22.5% of total vehicles on the route. In the event of closures on the existing route there is significant disruption to business-to-business transactions.

• Rat-running through local villages would continue and potentially worsen due to continued issues with congestion, unreliable journey times and poor road safety on the A66. This would continue to detrimentally affect the safety and wellbeing of local communities."

3.4.8. Accordingly, because none of the overall objectives of the A66 Project are met, and given the implications outlined above, 'Do Nothing' is not an alternative solution.

Alternative dualling routes

Alternative identified	Upgrade the A684 instead of dualling the A66

Other than the A69 (see below), the nearest existing potential strategic route between the M6 and the A1(M) is the A684. This route is approximately 48km south of the A66 at its western end (approximately 20km south of the A66 at its eastern end), and links M6 Junction 37 to A1(M) Junction 51 Leeming Interchange through challenging and elevated terrain. The existing route is single carriageway along its 51-mile length.

A potential alternative solution would be to upgrade the A684 from single (varying speed limits) to dual carriageway (70mph) standard rather than the A66.

Does the alternative conform to the Project objectives?

Improvements to the A684 have the potential to meet some of the Project objectives were the entirely single carriageway route considered feasible to be improved. For example, upgrading the A684 corridor would improve road safety and may provide improved resilience for a route with a history of closures due to incidents and severe weather events.

However, the A684 corridor is not part of the SRN and therefore not currently a recognised freight route and upgrading it to dual carriageway standard is unlikely to provide better national connectivity for freight traffic, given the terrain and the resultant speed / fuel efficiency impacts on HGVs. Therefore, this alternative does not conform to the Economic and Transport Project objectives.

Is this a financially, legally and technically feasible alternative solution?

The cost of providing alternative infrastructure would likely be prohibitive to the implementation of this alternative, as it would be substantially more than that of the proposed A66 Northern Trans-Pennine Project (for example, upgrading approximately 82km of single carriageway on A684 compared to approximately 29km of single carriageway on A66). Multiple bypasses would likely be required to avoid further severance to communities along the route, as would a number of river crossings, and a crossing of the Settle to Carlisle rail line that currently runs under the A684 near Garsdale.

The land required for the route would result in adverse effects upon the environment. Most notably, would be its impact on biodiversity due to the large sections of offline works that would be required.

The route would pass through the Yorkshire Dales National Park which is a protected landscape due to its special qualities of significant value. The land that would be required within the National Park would pose a risk to these qualities, particularly those in relation to biodiversity and landscape value. As such any proposal for this alternative would need to demonstrate compliance with the requirements of enhanced protections attached to the site in policy terms.

Assessment continued overleaf.

Alternative identified	Upgrade the A684 instead of dualling the A66 (cont.)
Describe the relative effects of the alternative solution on the conservation objectives of the European site. Confirm if less damaging to the European site and that it does not have an adverse effect on the integrity of this or any other European site.	
The existing A684 does not interact with the North Pennine Moors SAC, which is located over 900m away from the existing A684 at its closest location. There are two further European sites that may be impacted by an upgraded A684, one is the North Pennine Dales Meadows SAC that is located approximately 280m south of the existing A684. Further from the A684 is Ox Close SAC, approximately 430m north of the current alignment. Direct effects on the three SACs are unlikely given the distance from the existing route. If an online upgrade was feasible, indirect effects from the A684 itself (e.g. air quality) from the route are also unlikely, given nitrogen deposition is typically expected to reduce to background levels well within the distances between the road and these sites. However, the existing route passes through the Yorkshire Dales National Park, and is heavily constrained by topography in places, therefore offline routes may be required in order to upgrade this route. This therefore has the potential to take the traffic closer to the two SACs that are located closer to the route, and indirect effects can therefore not be ruled out depending on route options and the extent and location of the Affected Road Network.	
Based on the above assessment, is this an alternative solution for further consideration in the context of this Derogation?	
This alternative does not meet the Transport and Economic Project objectives and so can be ruled out as a proposed alternative solution to the A66 Project. Additionally, the costs of this alternative (financially and environmentally) are prohibitive, given the extent of dualling required and the potential biodiversity loss resulting from significant offline construction to facilitate this. In addition to the potential adverse effects on integrity of European sites in the vicinity, this option would have a direct impact on the Yorkshire Dales National Park. Therefore, it is not feasible and may have adverse effects on site integrity, and so is not an alternative solution to the A66 Project.	

Alternative identified	Upgrade the A69 instead of dualling the A66

Other than the A66, the main strategic route across the Pennines is the A69.

This route is approximately 32km north of the A66 at its western end (approximately 80km north of the A66 at its eastern end), and links M6 Junction 43 to A1(M) Junction 75 Denton Burn. Other than short dual carriageway sections at either end, the 55-mile route is majority single carriageway standard.

A potential alternative solution would be to upgrade the A69 to dual carriageway (70mph) standard throughout, rather than the A66.

Does the alternative conform to the Project objectives?

Improvements to the A69 have the potential to meet some of the Project objectives were the lengths of single carriageway route considered feasible to be improved. For example, upgrading the A69 corridor would improve road safety and may provide improved resilience for a route with a history of closures due to incidents.

However, due to significant impacts on environmental receptors (including Northumberland National Park, the North Pennines AONB, and significant heritage assets), this option does not meet the Environment objective of the Project.

Is this a financially, legally and technically feasible alternative solution?

The route alignment of the A69 passes between both the North Pennines AONB and the Northumberland National Park. At various points along the A69 the designations are immediately adjacent to the A69. Any offline sections of highways would be likely to have a significant landscape impact because of the sensitivity of the designated sites to both the north and south of the A69. In addition, any proposal for this alternative would need to demonstrate compliance with the requirements of enhanced protections attached to the designated sites in policy terms.

Significant heritage assets are known in the area such as Hadrians Wall and Vindolanda. This suggests that the area around the A69 will be of notable historical importance and that encountering both above ground and below ground assets will occur for any offline sections that may be required.

Corridor and route option selection is also likely to have significant landscape and visual impacts on the North Pennines AONB and Northumberland National Park, adversely affecting the designated area and its purposes.

Financially, Section 3.11 of the Highways England Business Case A69 Schemes [Document Reference 4.1, APP-251], Appendix 7 to the Project Development Overview Report (PDOR) [Document Reference 4.1, APP-244] states that:

“The recommendation of the strategic and economic assessment of the options for improving the A69 corridor is that there are some strategic benefits to dualling the A69, but the economic case is weak, particularly if the option includes a by-pass of Warwick Bridge.”

For the above reasons, this option is not considered to be feasible.

Assessment continued overleaf.

Alternative identified	Upgrade the A69 instead of dualling the A66 (cont.)
Describe the relative effects of the alternative solution on the conservation objectives of the European site. Confirm if less damaging to the European site and that it does not have an adverse effect on the integrity of this or any other European site.	
The existing A69 does not interact with the North Pennine Moors SAC; the site is located approximately 1.2 km south of the A69 at its closest location and so impacts of the dualling on the site are unlikely to have an adverse effect on integrity and are considered less damaging. The A69 currently crosses the River Eden SAC in two locations (at Warwick-on-Eden and Low Geltbridge) which may result in localised impacts associated with watercourse crossing upgrades during construction. The only other European site in proximity to the A69 is Tyne and Allen River Gravels SAC, which is located approximately 400m south of the existing A69. When considering mitigation, such as best practice watercourse crossing design, adverse effects on any of these sites as a result of dualling the A69 are considered unlikely. However, there is potential for the sites to experience indirect effects through changes in air quality on the North Pennine Moors SAC from the Affected Road Network depending on the corridor and route options identified.	
Based on the above assessment, is this an alternative solution for further consideration in the context of this Derogation?	
When considered alongside the strategic case for intervention on the A66 (as per the NTPRSS; refer to Section 3.3 of the PDOR), and the Project objectives that drove the A66 Project, it was concluded that upgrading the A69 to dual carriageway standard between Carlisle and Newcastle is not a feasible alternative to the A66 Project as proposed. As such, dualling of the A66 between Penrith and Scotch Corner was recommended and announced in 2016, alongside a series of smaller-scale interventions to upgrade the A69 corridor between Carlisle and Newcastle. Accordingly, as this alternative is not feasible and could result in indirect effects on air quality on the North Pennine Moors SAC, as well as potential adverse effects on the Northumberland National Park, North Pennines Area of Outstanding Natural Beauty and significant heritage assets along the route, this is not an alternative solution to the A66 Project.	

Implement the Project as proposed, with additional works to the route adjacent to the North Pennine Moors (NPM) SAC

Alternative identified	Alternative route of the existing A66 dual carriageway between Brough and Bowes – offline construction to the south
Realign the existing A66 dual carriageway between Brough and Bowes and construct a new dual carriageway to the south of the existing highway alignment, running through the SAC at the western extent as the road currently crosses the site, but otherwise running further away from the boundary of the NPM SAC. To the south of the existing A66 dual carriageway, the SAC designation is adjacent to the road for approximately 1km at the western extents. Thereafter the SAC is up to approximately 1km from the existing A66 dual carriageway in this area so there is a potential alternative corridor, save for the initial 1km length, located between the existing A66 and the historic railway line. The existing ground is higher than the current A66 where a potential route would traverse the SAC designation – the existing ground is also undulating on approach to this SAC area.	
Does the alternative conform to the Project objectives?	
This option has the potential to conform to all of the Economic and Transport objectives of the Project; a new dual carriageway would offer the same benefits in terms of road safety, operation and maintenance, journey time reliability and resilience of the route as the existing highway. However, it may create severance for communities not currently affected by the alignment of the existing A66. For example, the existing properties in the area (if not acquired) would be sandwiched between a new dual carriageway to the south and the existing road to the north. In addition, offline construction would have significant associated environmental impacts, including substantial land take. There would also be negative impact to historic field patterns, established forestry and some priority habitats. In addition, the visual impact of new sections of road and associated new structures would have to be considered. Accordingly, this option would not meet the Community and Environment Project objectives.	
Is this a financially, legally and technically feasible alternative solution?	
This alternative would incur an additional cost to the Project as proposed to construct approximately 6 to 7km new dual carriageway (to replace existing provision), plus connections to proposed dual carriageway sections to be constructed east of Brough and west of Bowes. There would also be additional costs associated with realigning the existing carriageway and amending it to make it suitable for local access / WCH use. The route would continue to pass through the North Pennine Moors SAC for a length as it currently does, resulting in adverse effects on what is a protected area of notable biodiversity value. In addition, constructing a new section of dual carriageway south of the A66 in this location would place any new construction within the boundaries of the North Pennines Area of Outstanding Natural Beauty (AONB). Accordingly, this route is not considered likely to be legally or financially feasible.	

Assessment continued overleaf.

Alternative identified	Alternative route of the existing A66 dual carriageway between Brough and Bowes – offline construction to the south (cont.)
Describe the relative effects of the alternative solution on the conservation objectives of the European site. Confirm if less damaging to the European site and that it does not have an adverse effect on the integrity of this or any other European site.	
This option is considered less damaging to the North Pennine Moors SAC as re-routing the road south from the existing A66 alignment would limit operational air quality impacts to a shorter section of the existing A66 (in the far west of the SAC) where the SAC boundary is present on both the north and south of the A66. This would reduce the length of road interacting with SAC habitats (blanket bog). Potential effects from a reduction in air quality (N Dep and HN_3) would be reduced from approximately 5.2km of road to 1km of road. This would reduce the area of blanket bog habitat subject to increase N Dep and NH_3 providing a less damaging solution. This assessment assumes that the option requires no direct land take of SAC habitat to construct the new section of road. No other European sites would be affected by this alternative.	
Based on the above assessment, is this an alternative solution for further consideration in the context of this Derogation?	
This option would not meet the Community and Environment Project objectives. Additionally, it is not financially feasible as it would require prohibitively expensive, significant offline construction which would have adverse impacts on the North Pennines AONB. This option is not, therefore, an alternative solution to the A66 Project.	

Alternative identified	Alternative route of the existing A66 dual carriageway between Brough and Bowes – offline construction to the north
Realign the existing A66 dual carriageway between Brough and Bowes and construct a new dual carriageway to the north of the existing highway alignment. To the north, there is a potential offline corridor between SAC designated land, approximately 17km in length, between Stainmore and Bowes which traverses through a 300m gap between Cotherstone Moor and Bowes Moor, both of which are part of the North Pennine Moors SAC designations.	
Does the alternative conform to the Project objectives?	
The alternative has the potential to conform to all of the Economic and Transport objectives of the Project; a new dual carriageway would offer the same benefits in terms of road safety, operation and maintenance, journey time reliability and resilience of the route as the existing highway. However, although the existing A66 would remain and become a local route, and WCH facilities could be provided where these are currently limited, constructing a new dual carriageway to the north would not improve issues due to severance or poor local access provision. Offline construction would also have significant associated environmental impacts, including substantial land take and the visual impact of new sections of road and associated new structures across the moors where there currently is none, would be significant. Accordingly, this option would not meet the Community and Environment Project objectives.	
Is this a financially, legally and technically feasible alternative solution?	
This alternative would incur an additional cost to the Project as proposed to construct approximately 17km of new dual carriageway (to replace existing provision), plus connections to proposed dual carriageway sections to be constructed east of Brough and west of Bowes. There would also be additional costs associated with realigning the existing carriageway and amending it to make it suitable for local access / WCH use. The route would continue to pass through the North Pennine Moors SAC for a length as it currently does, resulting in adverse effects on what is a protected area of notable biodiversity value. In addition, constructing a new section of dual carriageway north of the A66 in this location would place any new construction within the boundaries of the North Pennines Area of Outstanding Natural Beauty (AONB). Therefore, any proposal for this alternative would need to demonstrate compliance with the requirements of enhanced protections attached to the designated sites in policy terms. In light of the above reasons, the Applicant considers this option may not be financially, technically or legally feasible owing to substantial additional cost, policy designation and environmental challenges.	

Assessment continued overleaf.

Alternative identified	Alternative route of the existing A66 dual carriageway between Brough and Bowes – offline construction to the north (cont.)
Describe the relative effects of the alternative solution on the conservation objectives of the European site. Confirm if less damaging to the European site and that it does not have an adverse effect on the integrity of this or any other European site.	
This option is approximately 150m from the south of the Cotherstone Moor and 150m to the north of the Bowes Moor, which are both part of the North Pennine Moors SAC designation. This option may reduce the potential effects of air quality degradation to the southern part of the North Pennine Moors SAC but may increase the likelihood of effects to the northern section depending on route options and traffic flows. Re-routing to the north from the existing A66 alignment may limit air quality effects to a shorter section of the existing A66 and potentially reduce emissions interacting with SAC habitats (blanket bog). As this option runs between two sections of the SAC / SPA, there should be no direct land take of SAC habitat to construct the new section of road, however the Annex II bird species listed as part of this SPA may be affected due to higher mortality risk from increased collision rates from high-speed traffic. The species listed as part of the designation are hen harrier (*Circus cyaneus*), merlin (*Falco columbarius*), peregrine falcon (*Falco peregrinus*) and european golden plover (*Pluvalis apricaria*).	
Based on the above assessment, is this an alternative solution for further consideration in the context of this Derogation?	
This option does not meet the Community and Environment Project objectives. It may also not be feasible and may have more adverse effects on site integrity to the North Pennine Moors SAC, as well as adverse impacts on the North Pennines AONB. This is not an alternative solution to the A66 Project.	

Alternative identified	Tunnel beneath the North Pennine Moors SAC section
Realign the existing A66 dual carriageway between Brough and Bowes and construct a new dual carriageway through a 7 to 8km tunnel passing beneath the North Pennine Moors. The existing dual carriageway would then be re-purposed as a local connection, reducing community severance by improving access and WCH facilities.	
Does the alternative conform to the Project objectives?	
Due to onerous environmental impacts associated with tunnelling of this scale, this alternative option would not meet the Environmental objective of the Project. However, this alternative does have the potential to meet some of the Economic, Transport and Community objectives for the Project, as it retains dual carriageway provision (and its associated benefits regarding route resilience, safety, etc.) in this location. It also provides the opportunity to improve local access and WCH facilities through re-purposing the existing dual carriageway.	
Is this a financially, legally and technically feasible alternative solution?	
Tunnelling projects of this scale are technically challenging to deliver, particularly beneath designated sites (as here). It is realistic to anticipate substantial feasibility issues with delivering a tunnel in this location. There would also be substantial capital cost associated to implement this alternative, significantly above the budget of the A66 Northern Trans-Pennine Project. In addition, there would be higher operation and maintenance costs associated with a tunnelled route rather than a standard, above-ground dual carriageway, including for example pumping stations to manage drainage and potential flood incidents. These operation and maintenance costs would be in addition to those associated with maintaining the existing route (preserved for local access) and are beyond the budget of the Project.	
Describe the relative effects of the alternative solution on the conservation objectives of the European site. Confirm if less damaging to the European site and that it does not have an adverse effect on the integrity of this or any other European site.	
This proposed alternative option may reduce air quality impacts directly to the North Pennine Moors SAC, associated with the impact of wider Project upgrades and increased traffic volumes, as the pollution from vehicle emissions arising on this stretch of the dual carriageway would be contained within the carriageway tunnel. However, it would not eliminate adverse effects on the integrity of the site and may in fact result in a worsening of impacts as there would be localised adverse air quality impacts at ventilation locations and tunnel entrances. This would be in addition to the pollutants and emissions arising from the existing surface level A66 carriageway (which would have to be retained to provide local access and meet the Project objective of reduced community severance), and the same adverse impact currently affecting the SAC would remain. There may also be hydrology and geomorphology impacts from underground earthworks which may affect the groundwater which the blanket bog depends on. This alternative would have a direct adverse effect on site integrity within the vicinity of the SAC during construction and indirectly affect the integrity of the SAC in the short term from dust and noise pollution from extensive earthworks, including haulage for offsite disposal of excavated material. The tunnel entrances and ventilation shafts would require significant earthworks and landscape design to minimise adverse effects on the landscape and heritage setting, with additional impacts as vehicles emerge from underground.	

Assessment continued overleaf.

Alternative identified	Tunnel beneath the North Pennine Moors SAC section (cont.)
Based on the above assessment, is this an alternative solution for further consideration in the context of this Derogation?	
This proposed alternative option would not meet all Project objectives, particularly the Environmental objective, given the onerous adverse environmental impacts anticipated to be caused by a tunnel project in this location. This option is also anticipated to result in adverse effects on integrity of the SAC, arising from noise pollution and localised air quality impacts. In addition, there would be substantial impacts associated with changes to groundwater regimes as a result of tunnelling, which would have a direct adverse effect on the integrity of the North Pennine Moors SAC, and potentially also adverse effects on the integrity of the River Eden SAC. Further, the high capital, operational and maintenance costs demonstrate that this option is not financially feasible and may not be technically feasible. Accordingly, this is not an alternative solution to the A66 Project.	

Alternative identified	Reduce existing dualled A66 to single carriageway through SAC section
To reduce the attractiveness of the route and therefore traffic volumes, reduce the section of existing dualled A66 between east of Stainmore and west of Bowes, to single carriageway (a length of approximately 7-8km).	
Does the alternative conform to the Project objectives?	
The alternative would not conform to the Project objectives due to its reduced scope. Introducing a single carriageway section to a route currently negatively impacted by inconsistencies in road standard along its length, does not improve or maintain the long-term development of the Strategic Road Network. Access to tourism, and services and jobs for local users would also be negatively impacted due to reducing the level of service currently provided by the road. Single carriageway roads are typically at increased risk of incidents and show a higher accident rate per million vehicle km travelled (as defined in DfT COBALT software). When incidents occur, the impacts would be greater due to the removal of the resilience currently available through dual lane provision. Maintenance would be more onerous on a single carriageway route than on a dual carriageway route, due to the need to implement lane closures and stop/go traffic management for routine works. Journey time reliability would also be negatively impacted through a combination of reducing speed limits, and reverting back to mixed usage between cars, cyclists, a high percentage of HGVs and slow-moving agricultural vehicles on single carriageway sections. By reducing the carriageway to single lane there is an increased likelihood of standing traffic which would have adverse air quality impacts on the local area.	
Is this a financially, legally and technically feasible alternative solution?	
This alternative would incur an additional cost to the Project as proposed to convert 7 to 8km of existing dual carriageway to single carriageway, plus connections to local roads and accesses.	
Describe the relative effects of the alternative solution on the conservation objectives of the European site. Confirm if less damaging to the European site and that it does not have an adverse effect on the integrity of this or any other European site.	
This option may reduce air quality impacts directly to the North Pennine Moors SAC as a result of a reduction in vehicle movements. However, this benefit would likely be offset by an increased likelihood in standing traffic, as referenced above and impacts on the wider area. By restricting travel along the A66, cars are likely to seek alternative routes which may mean driving along the B2676 which travels in a similar direction to the A66 and affects other designations such as the North Pennine Dales Meadow SAC / SPA and the Helbeck and Swindale Woods SAC. This may change the Affected Road Network for the proposed Project and increase the vehicle emissions from the B road to these designations.	
Based on the above assessment, is this an alternative solution for further consideration in the context of this Derogation?	
Downgrading the existing A66 would not be in accordance with the Project objectives and may have adverse impacts on site integrity of the SAC. This is not an alternative solution to the A66 Project.	

Non-dualling alternatives

3.4.9. A number of non-dualling alternatives were considered and are as summarised below. None of these alternatives would include the dualling of the single carriageway lengths of the existing A66 between M6 Junction 40 and A1(M) Junction 53.

- Impose restrictions on HGVs and other freight traffic, to reduce adverse effects on integrity on the SAC by reducing the number of vehicles travelling on the route, and/or the speed at which they travel.
- Implementing a series of junction upgrades along the Project length to provide localised access and safety improvements.
- Improve signage and access to real-time traffic information along the length of the A66 route to reduce traffic volumes along the corridor by providing drivers with information of alternative routes and raising awareness of current incidents that may impact journey times.

3.4.10. However, the Applicant notes that given the resultant constraints that would be placed on the scope of the A66 Northern Trans-Pennine Project to deliver such alternatives, the strategic needs case (see Section 3.3 above), that is delivered by the Project as proposed would not be met, and the majority of Project objectives would not be achieved.

3.4.11. As stated in paragraph 3.1.10 of Deadline 8 – Closing Submissions [Document Reference 7.45, REP-074]:

> *"…it is clear that the principal strategic benefits of the Project…are only derived from the dualling of the entire length of the A66 between the M6 and A1(M). Failure to deliver any Scheme in part or in whole would have a detrimental impact on the overall Project. The Project only delivers the identified benefits against the Project Objectives if delivered as a whole."*

3.4.12. Accordingly, these are not considered to be alternative solutions but nonetheless have been included in this assessment for completeness.

Alternative modes

3.4.13. The Applicant would also note that alternative modes were considered during the early stages of Project development, specifically as part of the work informing the Northern Trans-Pennine Routes Strategic Study (refer to Section 3.3 of the Project Development Overview Report (PDOR) [Document Reference 4.1, APP-244]).

3.4.14. Rail infrastructure and services to provide an alternative solution to road-based trips along the A66 corridor was found to be unsuitable, with there being no existing rail line between Penrith and Darlington that could be adopted for this purpose. This is highlighted in paragraph 3.3.18 of the Project Development Overview Report (PDOR) [Document Reference 4.1, APP-244], which explains that non-highway interventions were not identified for the A66 as "…*there is no rail line to provide an alternative main mode and public transport route to the A66 between Darlington and Penrith.*"

3.4.15. Bus service provision was highlighted by the Stakeholder Reference Group engaged during the NTPRSS, to be low, with partial coverage and infrequent services. However, although greater public transport

provision would improve access to services and jobs for local road users and the local community, whilst also improving access for tourism served by the A66, there would be no benefit to hauliers and the wider freight economy, which would counter the benefits outlined above. There would potentially be a reduction in car use along the route, but not on freight traffic, which still accounts for 25% of traffic on the A66.

3.4.16. As such, these alternatives do not meet the Project objectives and are not alternative solutions to the A66 Project.

3.5. Conclusions

3.5.1. This section of the Applicant's without prejudice derogation case has considered whether there are any alternative solutions to the A66 Project. It has considered guidance and case law in carrying out this assessment of alternative solutions.

3.5.2. Having considered the alternative options presented, the Applicant concludes that none are alternative solutions to the A66 Project, in light of the A66 Project's objectives, legal, technical and financial feasibility and adverse effects on site integrity.

3.5.3. Table 4 below summarises the outcomes of this assessment of alternatives.

Table 4 Summary of potential alternative solutions discounted for the A66 Northern Trans-Pennine Project

Category	Alternative considered	Reasoning why alternative was discounted
The 'Do Nothing' option	Do Nothing	Does not meet the strategic need for the Project or conform to the Project objectives.
Alternative dualling routes	Upgrade the A684 instead of dualling the A66	Does not meet the strategic need for the Project. Not financially or technically feasible. Would not avoid impacts on European sites.
	Upgrade the A69 instead of dualling the A66	
Dualling of the A66 with local NPM SAC variant	Alternative route of the existing A66 dual carriageway between Brough and Bowes – offline construction to the south	Does not conform to the Project objectives. Not financially or technically feasible. Would not avoid impacts on European sites.
	Alternative route of the existing A66 dual carriageway between Brough and Bowes – offline construction to the north	
	Reduce existing dualled A66 to single carriageway through SAC section	Does not meet the strategic need for the Project or conform to the Project objectives. Would not avoid impacts on European sites.

Category	Alternative considered	Reasoning why alternative was discounted
	Tunnel beneath the North Pennine Moors SAC section	Does not conform to the Project objectives. Not financially feasible. Would not avoid impacts on European sites.
Non-dualling alternatives	HGV restrictions	Does not meet the strategic need for the Project or conform to the Project objectives.
	Junction upgrades only along Project length	
	Improve signage and access to real-time traffic information along the length of the A66 route	
Alternative modes	Rail	Does not meet the strategic need for the Project.
	Improve public transport provision	

3.5.4. The Applicant therefore considers that in the context and circumstances of this Project, there is no alternative solution to the A66 Northern Trans-Pennine Project.

4. Stage 3 Derogations Test 2: Consideration of Imperative Reasons of Overriding Public Interest (IROPI)

4.1. Overview of approach to IROPI

4.1.1. This section of the Applicant's without prejudice derogation case addresses the second stage of the derogation process. It demonstrates that, should the Secretary of State find an adverse effect on the integrity of the SAC, they can be satisfied that there is a robust and sound basis for finding there are Imperative Reasons of Overriding Public Interest (IROPI) for the A66 Project.

4.2. Legislation and guidance concerning Imperative Reasons of Overriding Public Interest (IROPI)

4.2.1. Regulation 64 of the Habitats Regulations (2017) contains provisions relating to IROPI. The provisions relating to IROPI are summarised as follows:

- Regulation 64 (1) of the Habitats Regulations 2017 states that if the competent authority is satisfied that, there being no alternative solutions, the plan or project must be carried out for imperative reasons of overriding public interest (which, subject Regulation 64 (2), may be of a social or economic nature), it may agree to the project notwithstanding a negative assessment of the implications for the SAC.
- Regulation 64 (2) states that where the SAC hosts a priority natural habitat type, the reasons referred to in paragraph (1) must be either—
  (a) reasons relating to human health, public safety or beneficial consequences or primary importance to the environment; or
  (b) any other reasons which the competent authority, having due regard to the opinion of the appropriate authority, considers to be imperative reasons of overriding public interest.
- Regulation 64 (3) states that where a competent authority other than the Secretary of State desires to obtain the opinion of the appropriate authority as to whether reasons are to be considered imperative reasons of overriding public interest, it may submit a written request to the appropriate authority—
  (a) identifying the matter on which an opinion is sought; and
  (b) accompanied by any documents or information which may be required.
- Regulation 64 (4) states that in giving its opinion as to whether the reasons are imperative reasons of overriding public interest, the appropriate authority must have regard to the national interest and provide its opinion to the competent authority.
- Regulation 64 (4A) goes on to state that before giving its opinion as to whether the reasons are imperative reasons of overriding public interest, the appropriate authority must consult the following, and have regard to their opinion-
  (a) the Joint Nature Conservation Committee;
  (b) where the appropriate authority is the Secretary of State, the devolved administrations;

(c) where the appropriate authority is the Welsh Ministers, the Secretary of State, and the other devolved administrations; and
(d) any other person the appropriate authority considers appropriate.

4.2.2. UK Government guidance (DEFRA 2021)[24] gives the following explanatory definitions for the IROPI stage:

- *"Imperative - it's essential that it proceeds for public interest reasons*
- *in the public interest - it has benefits for the public, not just benefits for private interests*
- *overriding - the public interest outweighs the harm, or risk of harm, to the integrity of the European site that's predicted by the appropriate assessment*

National strategic plans, policy statements and major projects are more likely to have a high level of public interest and be able to show they are imperative and overriding. Plans or projects that only provide short-term or very localised benefits are less likely to be able to show imperative reasons of overriding public interest."

4.2.3. The parameters of IROPI are also explored in earlier guidance provided by DEFRA (2012)[25] and the European Commission (2019)[26], which provides the following guidance on the IROPI stage:

- Imperative: the plan or project is necessary (whether urgent or otherwise)
- Overriding: the interest served by the plan or project outweighs the harm to the integrity of the site as assessed in light of the weight to be given to the protection of such sites under the directive.
- Public Interest: a public good is delivered rather than a solely private interest. Public interest can occur at national, regional, or even local level, provided the other elements of the test are met.

4.2.4. As noted above, Regulation 64 (2) of the Habitats Regulation 2017 states that where the SAC hosts a priority natural habitat type, the "reasons" must be either (a) reasons relating to human health, public safety or beneficial consequences or primary importance to the environment; or (b) any other reasons which the competent authority, having due regard to the opinion of the appropriate authority, considers to be imperative reasons of overriding public interest.

4.2.5. As part of a robust and precautionary reasonable worst case scenario approach, the Applicant has assumed that the bog habitat relevant to

[24] HM Government, *Habitats regulations assessment: protecting a European site*, 24 February 2021. Available online: Habitats regulations assessments: protecting a European site - GOV.UK (www.gov.uk) [accessed October 2023].
[25] Department for Environment, Food and Rural Affairs *Habitats Directive: guidance on the application of article 6(4).* Available online: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/82647/habitats-directive-iropi-draft-guidance-20120807.pdf [accessed October 2023].
[26] Publications Office of the European Union, Managing Natura 2000 sites The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (2019). Available online: https://op.europa.eu/en/publication-detail/-/publication/11e4ee91-2a8a-11e9-8d04-01aa75ed71a1 [accessed October 2023].

this derogation case is active blanket bog, a priority habitat and designated feature of the SAC (as defined in Section 3.2 and copied as follows: "*Blanket bog is a priority habitat when active. Whilst it is considered unlikely that all the blanket bog within the Zone of Influence (8.28ha) is active, as a result of the pressures outlined, for the purposes of this assessment and in line with the precautionary principle, it has been assumed that all blanket bog within the Zone of Influence is active and is therefore considered priority habitat.*"

4.2.6. Therefore, in accordance with Regulation 64 (2), the Applicants have presented reasons relating to human health, public safety and beneficial consequences of primary importance to the environment. The Applicant considers however that there are additional IROPI, relating to the social and economic benefits of the A66 Project to be considered, and these are also presented in this section of the report.

4.2.7. The Planning Inspectorate's Advice Note 10 states that, "*although it is for the Competent Authority to seek such an opinion, as noted above, Applicants should provide evidence and justifications of their reasons for the IROPI case, including whether or not other reasons are being considered where priority habitats and species would be affected.*".

4.2.8. The Applicant's IROPI case and justification is set out in the ensuing sections of this report.

4.3. Imperative reasons for the Project

4.3.1. The following sections set out a compelling case for why the A66 Project is 'imperative' and that those reasons are in the 'public interest', and the public interest reasons are 'overriding'. These reasons are structured around the following matters: public safety, human health, social-economic benefits and environmental improvements.

Public safety

4.3.2. The A66 Project is necessary so that it can deliver urgent safety upgrades to the existing A66. This is reflected in the Project Objectives (as shown in Table 1-2 of the Case for the Project [Document reference 2.2, APP-008] to improve road safety, during construction, operation, and maintenance for all, including road users, Walkers, Cyclists and Horse-riders (WCH), Non-Motorised Users (NMU), road workers, local businesses, and residents.

4.3.3. As outlined in paragraphs 3.3.8 through 3.3.13, the A66 is a key national and regional strategic transport corridor. It is the most direct route between several geographies including the Tees Valley, North, South and West Yorkshire, the East Midlands, eastern England, north Cumbria and the central belt of Scotland and Cairnryan (for ferry access to Ireland).

4.3.4. While most of the existing A66 road is dual carriageway, and despite the recognised strategic importance of the A66, there is still approximately 18 miles (30km) of single carriageway in six separate sections along the 50-mile (80km) route. This has a detrimental impact on users of the

road, particularly through road safety, reliability, resilience, and overall attractiveness of the route.

4.3.5. The route also carries local slow moving agricultural traffic and NMU traffic making short journeys. These forms of traffic can have an adverse impact on other users, especially on the single carriageway sections. The mix of single and dual carriageway sections, together with the lack of available diversionary routes that can be utilised when incidents occur, negatively affects road safety[27].

4.3.6. The A66 has a higher-than-average number of accidents across some lengths of the route, with several accident cluster sites, as shown in Figure 2-8 of the Combined Modelling and Appraisal Report [Document Reference 3.8, APP-237]. There is a direct correlation between road accidents within the single carriageway lengths of the route and where dualled lengths meet or are reduced to single carriageway lengths.

4.3.7. The Project proposes to improve forward visibility, through the removal of short merges and diverges and by simplifying junction accesses on and off the A66, including removal of right turns across live traffic carriageways. These complexities which are often a factor in road accidents along this route will be removed, offering an overall improvement to safety for users.

4.3.8. The Project would provide a consistent standard of dual carriageway with a speed of 70mph (50mph at Kemplay Bank), which is predicted to reduce the number of accidents. The varying road standards along the route lengths lead to difficulties with overtaking, poor forward visibility, and difficulties at junctions as a result of short merges and diverges and right turning traffic off and on to the A66[28]. These factors are considered to add complexity to the road and are a factor in increased road accidents. In dualling the A66 as proposed by the Project, and ensuring a consistent speed limit and road standard along the route, accidents along the route will be reduced. In addition, the proposed use of the existing A66 as part of the local road network will provide better and safer routes for cyclists and pedestrians.

4.3.9. Where public rights of way (PRoWs) are severed by or converge at the upgraded A66 carriageway, then they have been gathered and redirected to the nearest grade-separated crossing facility in order to provide a safe place to cross the dual carriageway. The nearest crossing may be a new grade separated junction, an accommodation underpass or overbridge, or a designated WCH underpass or bridge. All schemes forming part of the Project have some level of betterment compared with the provision on the existing single carriageway sections[29]. For most schemes, this includes a parallel shared multi-user route segregated from the dual carriageway. This parallel provision is in the form of either a new path adjacent to the dualling or has been provided along the verge of the old de-trunked A66, where it remains. Based upon the above, the safety issues for existing WCH users will be

[27] Document Reference 2.2 Case for the Project, Paragraph 1.2.2 [APP-008]
[28] Document Reference 3.7 Transport Assessment, Paragraph 12.3.1 [APP-236]
[29] Document Reference 3.7 Transport Assessment, Paragraph 12.5.1 [APP-236]

improved as a result of the Project, in accordance with the Project objectives, through the provision of dedicated WCH infrastructure.

4.3.10. The proposed reduction in speed at the Kemplay Bank length allows for the retention and extension of an existing underpass from Carleton Avenue which provides access to the Police and Fire site to the south of the existing A66. As this is a critical access requirement, retaining it has avoided the need to construct a replacement underpass or overbridge to maintain access and therefore reducing construction impacts and reducing embodied carbon. This existing underpass would be extended to accommodate the widening of the A66. The reduced speed limit is considered acceptable for this length of the route due to the proximity to key junctions with the A6, A686 and M6 and associated safety considerations [Document Reference 2.2, APP-008].

4.3.11. Data covering the period since 2019 was not included in the Applicants analysis of collisions. However, it should be noted that data (refer to Chapter 9 of the Transport Assessment [Document Reference 3.7, APP-236] covering the five-month period preceding submission of the DCO application, from December 2021 to April 2022 shows that there was a total of five fatal accidents on the single carriageway lengths of the A66, at the following locations:

- Rokeby;
- Kirkby Thore (in two separate incidents); and
- Warcop (in two separate incidents).

4.3.12. Between 2013 and 2019 (as provided in paragraph 4.2.11 of the Case for the Project [Document reference 2.2, APP-008]), there were 266 accidents which occurred along the A66 equating to an average of 40 accidents per year. Of the 266 reported accidents, 74% resulted in slight injuries, 21% resulted in serious injuries and 5% resulted in fatalities. There were five fatal accidents in 2015, including three which involved head-on collisions at the Warcop bends and at Crackenthorpe.

4.3.13. The number of accidents and accident severity by year from 2013-2019 is outlined in Table 5 below.

Table 5: Accident data

Year	Number of Accidents			
	Fatal	**Serious**	**Slight**	**Total**
2013	0	11	28	39
2014	0	7	36	43
2015	5	10	30	45
2016	1	5	26	32
2017	3	9	26	38
2018	3	6	37	46
2019	1	7	15	23
Total	13	55	198	266

4.3.14. In some cases, accidents caused multiple casualties; of the 266 accidents, 197 resulted in 502 casualties, of which 24 were fatal, 121

were serious and 357 were slight. The casualties distribution by year is shown in Table 6 below.

Table 6: Casualties data

Year	Number of Casualties			
	Fatal	Serious	Slight	Total
2013	0	27	39	66
2014	0	11	66	77
2015	12	22	51	85
2016	1	16	37	54
2017	5	17	36	58
2018	5	19	92	116
2019	1	9	36	46
Total	24	121	357	502

4.3.15. The A66 has average casualties 50% higher than the average casualties across the Strategic Road Network, with road traffic accidents being a major cause of incidents and closures on the A66 route [Document reference 3.8, APP-239].

4.3.16. The likely change in the number of road accidents as a result of the A66 Project improvements has been assessed. The assessment includes the prediction of the consequential change in the number and severity of casualties in terms of individuals who are killed or injured.

4.3.17. Cost and Benefit to Accidents – Light Touch (COBALT) is DfT's recommended computer program for undertaking the analysis of the impact of a road scheme on accidents. This program has been used to appraise the impact of the Project on accidents (refer to paragraph 4.5.2 of the Case for the Project [Document reference 2.2, APP-008]).

4.3.18. The Project is expected to avoid 138 road accidents over the 60-year period, resulting in 336 fewer casualties in the study area (refer to paragraph 4.5.6 of the Case for the Project [Document Reference 2.2, APP-008]). The breakdown of fatal and serious accidents is considered below:

- 15 fatalities and 124 serious casualties are forecast to be saved on the scheme lengths by removing the single carriageway lengths.
- The saving on the improved lengths for fatal and serious accidents is greater than the increase on the non-improved lengths, therefore a net saving of nine fatalities and 83 serious injuries is forecast to occur.
- The increased flow on the improved A66 removes traffic from other roads on the surrounding road network (rural links with a poorer safety record). This is predicted to remove 13 fatalities, and 127 serious accidents as a result of the Project.

Public safety conclusion

4.3.19. The A66 Project is essential and necessary to reduce fatalities, serious accidents and other injuries arising on the existing road. These safety

improvements are required urgently and will be of long-term and lasting benefit once the improved A66 is opened.

4.3.20. The need for public safety road improvements is reflected in national policy. The National Policy Statement for National Networks states (NN NPS) (paragraph 4.60): "*New highways developments provide an opportunity to make significant safety improvements. Some developments may have safety as a key objective, but even where safety is not the main driver of a development the opportunity should be taken to improve safety, including introducing the most modern and effective safety measures where proportionate. Highway developments can potentially generate significant accident reduction benefits when they are well designed."* In considering this in the design, the Project will comprise of a consistent standard of dual carriageway, with the same speed limit throughout (with the exception of a short section of 50mph dualling between M6 Junction 40 and east of Kemplay Bank), leading to fewer accidents. The use of the 'old' A66 as part of the local road network will provide better, safer routes for cyclists and pedestrians. An analysis of the Projects predicted accidents and casualties for a 60-year period highlights that within the whole study area for accidents and road safety, the Project saves 281 personal injury accidents over the 60-year period, resulting in an overall reduction of 530 casualties (refer to paragraph 5.5.3 of the Case for the Project [Document reference 2.2, APP-008]).

4.3.21. The urgent need to reduce fatalities and other accidents and improve public safety for all is in the public interest. The Applicant is a Government owned company, delivering and contributing to the Government's long-term plan for the strategic road network. The Project is a long-term infrastructure project in the public interest for the benefit of road users, non-motorised users and people living and working in the local area and across the wider region.

4.3.22. There is a clear, compelling, and imperative public safety case supporting the A66 Project. In the context of the impact of the A66 on the SAC, this being the impact but not loss to the 8.28ha* of blanket bog, where no likely significant effects could not be ruled out the Applicant submits this public safety case is in the public interest, long-lasting and overriding to any adverse impact.

Human health

4.3.23. The term "human health" is not defined in the Habitats Regulations 2017 or in guidance. However, drawing on information from the Applicant's human health assessment [reported in Chapter 13 of the Environmental Statement APP-056] submitted as part of the A66 DCO application, the Applicant sets out in this section the imperative human health benefits that would be delivered by the improved A66.

4.3.24. The reduction in fatalities, serious accidents and other injuries delivered by the A66 Project is clearly of fundamental value to human health and saving lives. The Project would provide a consistent standard of dual

* Subject to rounding

carriageway with a speed of 70mph throughout, with 50mph at Kemplay Bank. The existing varying road standards along the route lengths lead to difficulties with overtaking, poor forward visibility, and difficulties at junctions as a result of short merges and diverges and right turning traffic off and on to the A66. Therefore, a consistent speed limit will help to reduce accidents and fatalities. The benefits are set out in the previous section in relation to Public Safety matters.

4.3.25. The need for human health improvements is reflected in the following Project objective: seeking to improve access to services and jobs for local road users and the local community; minimising adverse impacts on the environment and where possible optimise environmental improvement opportunities; and reducing the impact of the route on severance for local communities.

4.3.26. During operation, the Project is assessed in the Applicant's Environmental Statement (ES) [Document Reference 3.2 Chapter 13, APP-056] to bring beneficial impacts to population and human health receptors through re-connecting communities and providing better links between settlements along the route, as well as improving access to services such as healthcare, employment areas and education. The human health impact of the Project is assessed as overall positive in operation, as a result of improved connectivity, improved access to health facilities, creation of improved public right of way (PRoW) network to encourage active travel and improved safety by removal of right turns across live traffic carriageways. These benefits are described in more detail below, in regard to WCH, driver stress, severance and accessibility, noise and vibration improvements, and access to employment.

Positive human health effects: walkers, cyclists, and horse-riders (WCH)

4.3.27. Chapter 13 of the ES reports that the Project is predicted to result in a permanent, route wide, significant beneficial effect on walkers, cyclists, and horse-riders due to a reduction in severance and an improvement in connectivity and local travel patterns through the provision of new walking and cycling routes. A safer, more accessible, and better-connected route makes active travel options more attractive, leading to increased beneficial health effects from improved provision for WCH and increased WCH usage. These improvements to and maintenance of accessibility through WCH provision are summarised below.

- M6 Junction 40 to Kemplay Bank - Existing Toucan crossings and parallel shared cycle/footway on north side into Penrith to be retained to the north of the dual carriageway, although the alignment of the path may change slightly.
- Penrith to Temple Sowerby - Shared cycle/footway parallel to scheme running entire length. New route ties into existing provision at each end of the scheme.
- Temple Sowerby to Appleby - Shared cycle/footway primarily in the verge of de-trunked A66 running entire length. New route ties into existing provision at each end of the scheme.

- Appleby to Brough - Shared cycle/footway parallel to scheme running entire length. New route ties into existing provision at each end of the scheme.
- Bowes Bypass - Segregated crossing of dual carriageway for PRoW at Bowes Cross Farm to Hulands Quarry. Existing footway to be retained under Bowes junction, signed National Cycle Route to be retained over new Clint Lane bridge.
- Cross Lane to Rokeby - Shared cycle/footway parallel to the scheme from Cross Lanes to Greta Bridge, connecting into existing cycleway at Greta Bridge.
- Stephen Bank to Carkin Moor - Shared bridleway/footway in verge of old de-trunked A66 running entire length. Segregated crossings of dual carriageway at several locations to reconnect and tie into existing PRoWs.

4.3.28. The Operational Assessment reported within Chapter 13 of the ES (Population and Human Health [Document reference 3.2, APP-056]) considers that whilst the benefits on an individual scheme by scheme basis may not be significant, the route wide benefits will result in a permanent moderate beneficial effect on WCH across the whole route, which will be significant.

Positive human health effects: Driver stress

4.3.29. The Project would result in a reduction in driver stress, through the improvements to the A66 that will reduce congestion, increase connectivity, and increase the reliability and safety of the route. There are multiple improvements proposed by the Project that are considered to result in a reduction in driver stress (see pages 161, 174, 185, 194, 202 and 210 of ES Chapter 13 Population and Human Health [Document reference 3.2, APP-056]). These are summarised below.

- The existing at-grade junction at Center Parcs will be replaced by a grade-separated junction, removing the need to cross oncoming traffic when turning right.
- The existing at-grade junction at Long Marton will be replaced by a grade-separated junction, removing the need to cross oncoming traffic when turning right.
- Three at-grade junctions at Sandford, Warcop and Brough will be replaced by grade-separated junctions, which will improve safety by removing the need to cross oncoming traffic when turning right. In addition, two existing field accesses and two minor side roads will be diverted to use the new grade-separated junctions.
- At the Bowes Bypass stretch, an upgraded, fully grade-separated junction will replace the existing partially grade-separated junction. This will improve safety by removing the need to cross oncoming traffic when turning right onto the A66 from The Street to the east of Bowes. Additionally, three farm accesses in this area will be diverted onto the new grade-separated junction.
- The new grade-separated junction at Cross Lanes will replace three at-grade junctions, which will improve safety by removing the need to

cross oncoming traffic when turning right. In addition, four farm accesses will be diverted onto the new grade-separated junction.

- A new grade-separated junction will provide access to the dualled A66 at Moor Lane, to the east of West Layton. The de-trunked existing A66 will function as a collector road for local access via Collier Lane, West Layton, and three other local roads. To the west, the existing farm access at Dick Scott Lane will be replaced with an underpass. To the east, the right turn across the existing dual carriageway to Warrener Lane will be removed and traffic diverted to the new grade-separated junction via a new link road.

4.3.30. The increased safety of the improved sections of the Project, through upgraded junctions and reduced right turns, and the overall decrease in congestion along the route, will reduce driver stress and contribute a positive wellbeing effect for road users.

Positive human health effects: Severance and accessibility

4.3.31. Traffic congestion along the A66 would be reduced because of the Project, leading to shorter, more reliable journey times. Better connectivity can benefit mental and physical health through increased access to a wide range of resources including employment, educational facilities, health and social care, sport, leisure and cultural facilities as well as basic needs such as food shopping, and increased opportunities for social interaction. The improved connectivity resulting from the Project is likely to result in an increase in the number of people accessing these resources and is assessed as a positive health effect. Positive human health effects relating to severance and accessibility improvements are summarised below in relation to each scheme with beneficial effect.

Penrith to Temple Sowerby

- The existing at-grade junction at Center Parcs will be replaced by a grade-separated junction, removing the need to cross oncoming traffic when turning right. The resulting reduction in driver stress on this stretch of the A66 is considered a positive wellbeing effect for road users, particularly during peak tourism seasons when traffic flows are higher (refer to paragraph 13.10.16 of ES Chapter 13 Population and Human Health [Document Reference 3.2, APP-056]).
- The Road Safety assessment reported in the Transport Assessment [Document Reference 3.2, Chapter 13, Table 8-5] predicts that, over the 60-year appraisal period, the Project will save 9 slight, 13 serious and 2 fatal casualties on the Penrith to Temple Sowerby section of the A66 and associated junctions and links. This is due to the removal of the single carriageway, junction improvements and diversion of traffic from the surrounding rural road network. This is assessed as a positive health effect.
- A parallel shared cycleway/footway will be provided on the north side of the A66 between Penrith and Temple Sowerby. Two existing rural routes (Byway 311013 and Footpath 311004), which currently terminate at the A66, will be connected via the new route and grade-separated junction, creating enhanced opportunities for walking and

cycling. By providing a safe crossing of the A66 and a 6-mile segregated route between Penrith and Temple Sowerby, the scheme will encourage active travel, physical activity, and access to the countryside, which are linked to positive mental and physical health outcomes. The health effect is assessed as positive (refer to paragraph 13.10.40 of ES Chapter 13 Population and Human Health [Document Reference 3.2, APP-056]).

Temple Sowerby to Appleby

- The existing at-grade junction at Long Marton will be replaced by a grade-separated junction, removing the need to cross oncoming traffic when turning right. The resulting reduction in driver stress on this stretch of the A66 is considered a positive wellbeing effect for road users. The Road Safety assessment reported in the Transport Assessment (Table 8-5) predicts that, over the 60-year appraisal period, the Project will save 184 slight, 39 serious and 4 fatal casualties on the Temple Sowerby to Appleby section of the A66 and associated junctions and links. This is due to the removal of the single carriageway, junction improvements and diversion of traffic from the surrounding rural road network. This is assessed as a positive health effect (refer to paragraph 13.10.97 of ES Chapter 13 Population and Human Health [Document Reference 3.2, APP-056]).
- At Kirkby Thore, the Transport Assessment (Table 7-3) reports a 98% reduction in traffic flow on the de-trunked A66 along the southern edge of the village and an 86% reduction in flows on Main Street through the centre of the village. The speed limit on the de-trunked A66 will be reduced from 40 to 30mph. These changes will improve conditions for pedestrians and cyclists, increasing community connectivity within the village. This is assessed as a positive health effect (refer to paragraph 13.10.98 of ES Chapter 13 Population and Human Health [Document Reference 3.2, APP-056]).
- A new shared cycle/footway will be provided alongside the de-trunked A66 from Kirkby Thore to the western extent of Appleby. The new 5-mile segregated route will encourage active travel, physical activity and access to the countryside, which are linked to positive mental and physical health outcomes. The health effect of the new route is assessed as positive (refer to paragraph 13.10.101 of ES Chapter 13 Population and Human Health [Document Reference 3.2, APP-056]).

Appleby-in-Westmorland

- Three at-grade junctions at Sandford, Warcop and Brough will be replaced by grade-separated junctions, which will improve safety by removing the need to cross oncoming traffic when turning right. In addition, two existing field accesses and two minor side roads will be diverted to use the grade-separated junctions. The resulting reduction in driver stress on this stretch of the A66 is considered a positive wellbeing effect for road users (refer to paragraph 13.10.156 of ES Chapter 13 Population and Human Health [Document Reference 3.2, APP-056]).
- The Road Safety assessment reported in the Transport Assessment (Table 8-5) predicts that, over the 60-year appraisal period, the

Project will save 129 slight, 36 serious and 5 fatal casualties on the Appleby to Brough section of the A66 and associated junctions and links. This is due to the removal of the single carriageway, junction improvements and diversion of traffic from the surrounding rural road network. This is assessed as a positive health effect.

- A shared cycleway/footway is proposed to run alongside the dual carriageway from east of Appleby to Brough. The route will connect into 10 existing PRoWs, which currently terminate at the A66. Proposed safe crossing points at grade-separated junctions and shared underpasses will improve pedestrian access and remove the severance caused by the existing A66. The new 5-mile segregated route and improved north to south connectivity on the rural PRoW network will encourage active travel, physical activity and access to the countryside, which are linked to positive mental and physical health outcomes. The health effect is assessed as positive (refer to paragraph 13.10.158 of ES Chapter 13 Population and Human Health [Document Reference 3.2, APP-056]).

Bowes Bypass

- An upgraded, fully grade-separated junction will replace the existing partially grade-separated junction. This will improve safety by removing the need to cross oncoming traffic when turning right onto the A66 from The Street to the east of Bowes. Additionally, three farm accesses in this area will be diverted onto the new grade-separated junction. The resulting reduction in driver stress on this stretch of the A66 is considered a positive wellbeing effect for road users (refer to paragraph 13.10.202 of ES Chapter 13 Population and Human Health [Document Reference 3.2, APP-056]).
- The Road Safety assessment reported in the Transport Assessment (Table 8-5) predicts that, over the 60-year appraisal period, the Project will result in an increase of 17 slight casualties and save 3 serious and 0 fatal casualties on the Bowes Bypass section of the A66 and associated junctions and links. This is due to the junction improvements, increased traffic flow on the existing dualled sections of the A66, and changes to traffic flows on the surrounding road network. These impacts are assessed respectively as negative and positive health effects.
- To the northeast of Bowes, a new accommodation underpass will reconnect Footpath 6, which is currently severed by the existing A66. This will provide better links for the east of Bowes to the rural PRoW on the north side of the A66. Further east, the gap in the central reservation will be closed to prevent WCH from crossing the dual carriageway and the PRoW on the south side of the A66 will be diverted westwards to the accommodation underpass. These changes will result in better provision for WCH to the east of Bowes. However, the scale of change is not considered to have a material effect on active travel, physical activity and access to the countryside and therefore the health effect is assessed as neutral.

Cross Lane to Rokeby

- The new grade-separated junction at Cross Lanes will replace three at-grade junctions, which will improve safety by removing the need to cross oncoming traffic when turning right. In addition, four farm accesses will be diverted onto one of the new grade-separated junctions. The resulting reduction in driver stress associated with congestion on this stretch of the A66 is considered a positive wellbeing effect for road users (refer to paragraph 13.10.248 of ES Chapter 13 Population and Human Health [Document Reference 3.2, APP-056]).
- The Road Safety assessment reported in the Transport Assessment (Table 8-5) predicts that, over the 60-year appraisal period, the Project will result in an increase of 23 slight casualties and save 4 serious and 1 fatal casualty on the Cross Lanes to Rokeby section of the A66 and associated junctions and links. This is due to the junction improvements, increased traffic flow on the existing dualled sections of the A66, and changes to traffic flows on the surrounding road network. This is assessed as a negative and positive health effect (refer to paragraph 13.10.249 of ES Chapter 13 Population and Human Health [Document Reference 3.2, APP-056]).
- A 2-mile shared cycleway/footway is proposed to run alongside the dual carriageway from Cross Lanes junction to Greta Bridge, where it will connect to an existing cycle route through the village. The grade separated junction at Cross Lanes will connect existing footpaths to the north and south of the A66 and provide a safe crossing point for cyclists travelling between Rutherford Lane and the B6277. At Rokeby, three existing footpaths on the north side of the A66 will be joined to the new shared cycleway/footway and connected to the PRoW network south of the A66 via the new grade-separated junction. The new shared cycleway/footway will provide a safer option for cyclists travelling from Greta Bridge to Barnard Castle, who currently use a route including steps down to a poorly maintained path leading onto the A66 carriageway. These changes are considered to improve the provision for WCH to the southeast of Barnard Castle. This will encourage active travel, physical activity, and access to the countryside, which are linked to positive mental and physical health outcomes. The health effect is assessed as positive (refer to paragraph 13.10.250 of ES Chapter 13 Population and Human Health [Document Reference 3.2, APP-056]).

Positive human health effects: Noise and vibration

4.3.32. The Noise and Vibration assessment [Document Reference ES Chapter 12, APP-055] identifies beneficial effects on residential and non-residential receptors with a reported beneficial health effect. This includes the following.

- The operation of the Project is predicted to give rise to beneficial effects at 408 residential and 46 non-residential receptors where the existing A66 is by-passed and where the traffic volume on the by-passed roads decreases. There are three Noise Important Areas (NIA) predicted to be subject to significant beneficial effects.

- The Rokeby scheme will encourage traffic to use the A66 instead of travelling through Barnard Castle and therefore there will be a decrease in traffic flow and noise emissions along Newgate Road and A67 within the town. This will result in a significant beneficial effect on 60 residential and 27 non-residential receptors, including a village hall, hotels, restaurants, bars/pubs, and commercial properties such as offices and shops. This will improve wellbeing through increased enjoyment of outdoor space and a perceived improvement in the quality of the living environment. This is assessed as a positive health effect.

Positive human health effects – access to employment

4.3.33. The Project will generate new job opportunities in the study area throughout the five-year construction period, with an estimated maximum monthly workforce of 540 staff working across all schemes. A range of jobs will be created, including unskilled and skilled construction jobs, engineering, planning and management professionals. Without deliberate intervention, the majority of professional and skilled workers are likely to come from outside the local area, with jobs that are available to the local population likely to comprise mainly low-skilled or unskilled positions. The Skills and Employment Strategy [Document Reference 2.7 Environmental Management Plan Annex B12, APP-032] will seek to enable local people to access the opportunities for employment and training resulting from the presence of the large-scale 5-year construction project.

4.3.34. When operational, the Project will improve accessibility of employment sites, with businesses benefiting from the improved connectivity, aiding businesses with efficiency and lowering costs leading to improved overall earnings and positive likely significant effects on quality of life (refer to paragraph 13.8.24 of ES Chapter 13 Population and Human Health [Document Reference 3.2, APP-056]). For people who are currently unemployed, in low-paid or insecure employment, or who have low levels of qualifications, access to employment and training during the construction of the Project may lead to positive health outcomes, including improved mental health and the ability to access healthier lifestyle choices through increased income. There is a potential for long-term health benefits resulting from improved future employment prospects.

Conclusion for human health benefits

4.3.35. The A66 Project is essential and necessary to not only reduce fatalities, serious accidents and other injuries arising on the existing road, but for wider reaching positive human health effects. This includes benefits for WCH provision, reduced driver stress and the positive effects for human health resulting from the improved access to employment and improved accessibility and reduced severance.

4.3.36. The beneficial impacts to human health the Project would bring will be of long-term and lasting benefit to the public, across both a local and regional level. The Project is a long-term infrastructure project in the

public interest for the benefit of road users, non-motorised users and people living and working in the local area and across the wider region.

4.3.37. Therefore, the Project will contribute to the transformation of the North of England and associated positive health outcomes, including improved mental health and the ability to access healthier lifestyle choices through increased income. There is further potential for longer-term health benefits resulting from improved future employment prospects.

Benefits of Primary Importance to the Environment

4.3.38. A key objective for the Project is to reduce adverse impacts on the environment and where possible optimise environmental improvement opportunities. The Project meets this objective, and this section summarises points that are of primary importance to the environment and are reported within the Environmental Statement. These benefits, of primary importance to the environment, include effects on landscape, cultural heritage, community land and assets and noise and vibration (refer to Table 4-1 of the Non-Technical Summary of the Environmental Statement [Document Reference 3.1, APP-043]. In particular, the ES (in Chapter 13) reports several significant positive effects to accessibility to local communities and with regards access to key facilities and services including schools, hospitals, and health related facilities. In addition, there will be an improvement to noise and vibration disturbance to many residents and to the users of non-residential properties.

Positive effects on Cultural Heritage

4.3.39. The Project provides increased accessibility to some cultural heritage assets, and this results in a predicted significant permanent beneficial effect on these assets as summarised below.

4.3.40. Penrith to Temple Sowerby - Significant permanent beneficial effects (see Table 8-11 of ES Chapter 8 Cultural Heritage [Document reference 3.2, APP-051] upon Scheduled Monument and Grade II* listed Countess Pillar, Grade II* listed Alms Table due to a new amenity parking area and footway access providing better access to the site (paragraph 8.8.25 of APP-051]. Significant permanent beneficial effects as the existing car park will be relocated improving accessibility to the scheduled monument of St Ninian's and Grade II listed building the Church of St Ninian.

Positive effects on Community Land and Assets

4.3.41. During operation of the Project it is anticipated that there would be an overall reduction in congestion and enhancements to the resilience of the local road network around the A66 [Document Reference 3.7 Transport Assessment, APP-236].

4.3.42. The improvements will have an impact upon the tourism sector by improving access to and from the Lake District National Park and the North Pennines AONB, which is of very high sensitivity, particularly during peak seasons when congestion can be higher. Overall, the Project will therefore lead to permanent moderate beneficial effects relating to tourism, which will be significant.

4.3.43. During operation, the Project is anticipated to lead to improvements in travel conditions which will be a minor beneficial impact due to the improved connectivity. The resulting effect upon the following community land and assets, which are of very high sensitivity, will be moderate beneficial and significant (large beneficial effects are not anticipated, in order to account for a reasonable worst-case scenario):

- Wetheriggs Country Park
- Birbeck Medical Group
- North Lakes Primary School
- Penrith Community Hospital
- Fire Service National Benevolent Fund/Rehabilitation Centre
- Kiddlywinks Nursery
- Winter Park Care Home
- Ambulance Station
- Ullswater Community College
- Village Hall
- Cumbria Fire & Rescue Service
- Eden Deployment Centre
- Hunter Hall Primary School
- Mountain Rescue
- Skirsgill Dental Surgery
- Greengarth Assisted Living Facility
- Ghyllmount Dental
- Queen Elizabeth Grammar School
- Great North Air Ambulance Station
- The Lakes Medical Centre
- Cumbria Constabulary
- The Bridgeway
- NHS Teaching Hospital
- NHS Primary Care Trust
- Smile Fast.
- Temple Sowerby Church of England Primary School
- Temple Sowerby Medical Practice
- Kirkby Thore Primary School
- Kirkby Thore Pre-School
- Appleby Grammar School
- Appleby Sports Centre.
- Appleby Golf Course
- St Columbas Church
- Kingdom Hall of Jehovas Witnesses
- Brough Pre-School
- Brough Primary School
- Ambulance station
- Upper Eden Medical Practice
- The relocated MoD Playing Field and Helipad
- Ketland Common, Common Land
- Platts Green, Common Land
- Sandfire Mire, Common Land.

Positive effects on Noise and Vibration[30]

4.3.44. The operation of the Project is predicted to give rise to beneficial effects at 408 residential and 46 non-residential receptors where the existing A66 is by-passed and where the traffic volume on the by-passed roads decreases. There are three NIAs predicted to be subject to significant beneficial effects.

4.3.45. There are 109 receptors located in-between schemes or close to roads predicted to experience a significant permanent beneficial effect as a result of the operation of the Project. These receptors are located around Cliburn and Bolton (alongside Wetheriggs and Chapel Street to the southeast of Penrith), Barnard Castle (alongside A67 and Newgate), Ravensworth (alongside Waitlands Lane and Stonygate Bank) and Richmond (alongside Gallowgate). 28 non-residential receptors are predicted to experience a significant permanent beneficial effect as a result of the operation of the Project. These receptors are located in Barnard Castle and Richmond.

4.3.46. The following provides a summary of the beneficial noise and vibration effects specific to each scheme at which they are identified:

- M6 Junction 40 to Kemplay Bank - Significant permanent beneficial effects to one residential receptor south of Kemplay Bank roundabout and three commercial receptors located east of Kemplay Bank roundabout. Significant permanent adverse effects to one residential receptor west of Skirsgill Business Park and one commercial property to the north of Skirsgill roundabout
- Penrith to Temple Sowerby - Significant permanent beneficial effects to four residential receptors;: one near Whinfell (north of the A66) and three receptors located off Moor Lane (Fremington) and to the Brougham Institute at Whinfell.
- Temple Sowerby to Appleby - Significant permanent beneficial effects to 280 residential receptors within Kirkby Thore, Crackenthorpe, near Long Marton Road and along the existing A66, one NIA and 12 community assets including Kirkby Thore primary school.
- Appleby to Brough - Significant permanent beneficial effects to five residential receptors at Turks Head and Wheatsheaf Cottage and one NIA.
- Cross Lanes to Rokeby - Significant permanent beneficial effects to one residential receptor the School House in Rokeby and two non-residential receptors; the Old School village hall and St Mary's Church in Rokeby.
- Stephen Bank to Carkin Moor - Significant permanent beneficial effects to eight residential receptors located at Ravensworth Lodge, Foxwell, Foxgrove Farm and Foxhall and one NIA.

Positive effects on Landscape

4.3.47. Transport corridors are an everyday part of all our lives; the challenge is to ensure the travel experience is positive and occasionally uplifting. The

[30] As outlined in Environmental Statement Chapter 12 Noise and Vibration [Document reference 3.2, APP-055].

view from the road has an impact on the perception of place and is important to the traveller and tourist, and their awareness of our wider environment. It is important therefore that the journey experience is developed to create high quality places to stop and enjoy the opportunities this transport corridor offers (refer to paragraph 10.7.23 of ES Chapter 10 Landscape and Visual [Document reference 3.2, APP-053]).

4.3.48. Landscapes by their combinations and patterns of elements and features create areas of distinctive character and diverse habitats. A sense of place arises from the character and special qualities of each location and the connections that people make. A positive sense of place and reinforcement of distinctive qualities ensures and strengthens the perception and understanding of our environment. The Project objectives support, conserve and create distinctive places, reinforce character, and promote the experience of the landscape. Transport routes can provide opportunities for creating a sense of place and a memorable experience by virtue of their course through the landscape, the provision of access and the need to provide locations for resting. A high quality of design and continuity along the corridor is essential to enhancing and exploiting these opportunities and their contribution to the experience of the whole journey (refer to paragraph 10.7.24 of ES Chapter 10 Landscape and Visual [Document reference 3.2, APP-053]).

4.3.49. Continuity of design along the whole road corridor is essential for maintaining the narrative of the whole landscape journey. Transport corridors can support and create opportunities that present and direct views, create vistas and provide the elements that support the overall character and identity of the route (refer to paragraph 10.7.25 of ES Chapter 10 Landscape and Visual [Document reference 3.2, APP-053]).

4.3.50. The following provides a summary of the beneficial landscape effects specific to each scheme at which they are identified [Document Reference 3.2 ES Chapter 10, APP-053]:

- Bowes Bypass - The proposed species rich grassland is considered to provide improved opportunities for biodiversity and textural and tonal qualities to the landscape in comparison to the agricultural fields. These ecological and vegetation cover improvements are considered to be beneficial to the landscape character.
- Cross Lanes to Rokeby - The proposed species rich grassland is considered to provide improved opportunities for biodiversity and textural and tonal qualities to the landscape in comparison to the agricultural fields. These ecological and vegetation cover improvements are considered to be beneficial to the landscape character.
- Stephen Bank to Carkin Moor - The proposed species rich grassland is considered to provide improved opportunities for biodiversity and textural and tonal qualities to the landscape in comparison to the agricultural fields. These ecological and vegetation cover improvements are considered to be beneficial to the landscape character.

- M6 Junction 40 to Kemplay Bank - The scheme would result in a beneficial effect due to the reduction of road infrastructure features and less queuing traffic due to the construction of the Kemplay underpass.

4.3.51. Whether the experience of the journey on the A66 Trans-Pennine route starts from the east or the west, the transition from either the A1(M) in the east or M6 (J40) in the west, the journey is imbued with a sense of anticipation and transition, from the environment of the national motorway network to a more agrarian character with views of upland environments. The sinuous A66 route offers a journey where the traveller's experience changes in elevation and direction. It is a journey, valued by tourists, that provides panoramic views of high moorland, river valleys and a distinctive landscape pattern of agricultural land bounded by mature trees, hedges, and dry-stone walls (refer to paragraph 10.7.3 of ES Chapter 10 Landscape and Visual [Document reference 3.2, APP-053]).

4.3.52. The A66 Project presents the opportunity to improve the setting of, and journey through, an area of primary landscape importance. The A66 route encompasses extensive open moorlands, distinctive upland plateaus, National Landscape Character Areas and large designated Areas of Outstanding Natural Beauty. Therefore, the improvement of the A66 route via a reduction in traffic congestion and accidents, landscape disturbance and user experience is of primary importance to environment.

Socio-Economic benefits

4.3.53. As set out above, the Applicant notes Regulation 64 of the Habitats Regulations 2017, which states that:

4.3.54. Where the SAC hosts a priority natural habitat type, the reasons referred to in paragraph (1) [i.e. the imperative reasons of overriding public interest] must be either—

> (a) reasons relating to human health, public safety or beneficial consequences or primary importance to the environment; or
> (b) any other reasons which the competent authority, having due regard to the opinion of the appropriate authority, considers to be imperative reasons of overriding public interest.

4.3.55. Regulation 64 (3) states that where a competent authority other than the Secretary of State desires to obtain the opinion of the appropriate authority as to whether reasons are to be considered imperative reasons of overriding public interest, it may submit a written request to the appropriate authority—

> (a) identifying the matter on which an opinion is sought; and
> (b) accompanied by any documents or information which may be required.

4.3.56. Regulation 64 (4) states that in giving its opinion as to whether the reasons are imperative reasons of overriding public interest, the

appropriate authority must have regard to the national interest and provide its opinion to the competent authority.

4.3.57. Regulation 64 (4A) goes on to state that before giving its opinion as to whether the reasons are imperative reasons of overriding public interest, the appropriate authority must consult the following, and have regard to their opinion-

(a) the Joint Nature Conservation Committee;
(b) where the appropriate authority is the Secretary of State, the devolved administrations;
(c) where the appropriate authority is the Welsh Ministers, the Secretary of State, and the other devolved administrations; and
(d) any other person the appropriate authority considers appropriate

4.3.58. In the event that the SoS obtains an opinion under Regulation 64, the Applicant provides additional reasons below that it considers are IROPI. The first of these additional reasons relates to the socio-economic benefits of the A66 Project.

4.3.59. The socio-economic benefits of the Project are reflected in four of the Project objectives. These being:

- Regional support to the economic growth objectives of the Northern Powerhouse and Government levelling up agenda.
- Ensure the improvement and long-term development of the strategic road network (SRN) through providing better national connectivity including freight.
- Maintain and improve access for tourism served by the A66.
- Seek to improve access to services and jobs for local road users and the local community.

4.3.60. The Applicant considers the socio-economic benefits that would be provided by the Project to be imperative, in the public interest and overriding to the likelihood or risk of harm to the integrity of the SAC due to support for the Project in both national strategy and the National Policy Statement for National Networks.

Economic appraisal[31]

4.3.61. The economic appraisal has followed a Cost-Benefit Analysis framework for monetised cost and benefit streams and has been developed in line with the latest TAG guidance (DfT 2013[32]). The scope of the appraisal covers the full range of economic, environmental and social impacts of the Project. The economic, environmental and social impact assessments provide a means of assessing the likelihood that the Project succeeds against the objectives established by the DfT.

4.3.62. The following benefits are expected to support the objective of 'Safety':

4.3.63. Forecast accident and road safety benefits are valued at £29.6m across the 60-year appraisal period (2010 prices, discounted to 2010), with reductions in fatal, serious and slight accidents. The Project is forecast

[31] As outlined in Chapter 5 of the Case for the Project [Document reference 2.2, APP-008]
[32] Last updated 2022.

to save 281 personal injury accidents and lead to an overall reduction of 530 casualties.

4.3.64. The following benefits are expected to support the objectives of 'Connectivity', 'Capacity' and 'Economic growth':

4.3.65. The Project is forecast to achieve total transport economic efficiency benefits of £521.1m. This is a result of the additional capacity and reduced delay provided by the Project. Of the overall masked[33] total travel cost savings for road users, 92% are gained by business users, 5% by commuters, and 3% by other users. The Project is forecast to achieve significant wider economic benefits, valued at £61.5m.

4.3.66. A further objective of the Project is 'increasing reliability' which is also forecast to be achieved by the Project improvements via the following benefits:

4.3.67. The Project is forecast to achieve reliability benefits valued at £272.2m. This reflects the high levels of travel time variability currently experienced on the A66 route infrastructure.

4.3.68. The overall 60-year total benefit of £272.2m is evenly spread amongst business and commuter users, with business users realising a 46% share and a 54% share for commuter and other users.

4.3.69. In summary, the economic appraisal demonstrates that there are significant monetised benefits that will contribute towards achieving the Project objectives, notably around safety; connectivity; capacity; and economic growth.

Road Investment Strategies

4.3.70. The Government set out its long-term investment plan in the road network, and particularly the Strategic Road Network, in the Road Investment Strategies. The need for improvements to the A66 corridor was identified in the Northern Trans-Pennine Routes Strategic Study Stage 3 Report ('NTPRSS') announced as part of the first Road Investment Strategy ('RIS1') in December 2014 (Department for Transport ('DfT'), 2015). The study was one of six national strategic studies. Funding for the A66 corridor improvements was committed to in the Road Investment Strategy 2 ('RIS2') in March 2020 (DfT, 2020). This was to include dualling of the remaining single carriageway sections as announced in the HM Treasury Autumn Statement of 2016.

Levelling Up White Paper

4.3.71. The Levelling Up White Paper ('Levelling-up the United Kingdom', UK Government, February 2022) sets out 12 medium term missions, one of which is to boost productivity, pay, jobs and living standards. The Project is an opportunity to focus investment in areas that are lagging behind national averages amongst a number of economic and social indicators. The A66 improvements are expected to boost connectivity in around 35% of the Government's priority areas (defined by the Levelling Up Fund Index), with total economic efficiency benefits of over £500m

[33] Masked as outlined in Combined Modelling and Appraisal Appendix E Stage 3 Economic Appraisal [Document reference 3.8, APP-241]

as a result of additional capacity and reduced delay, alongside over £62m of wider economic benefits.

Project Speed initiative

4.3.72. The UK Government's 'Project Speed' initiative announced as part of 'A New Deal for Britain' (Prime Minister's Office, 2020), aims to bring forward proposals to deliver public investment projects more strategically and efficiently. 'Project Speed' aims to ensure that the right things are built better, cutting construction time in half. The A66 Project has been identified as one of the 'vital infrastructure projects' subject to Project Speed. The initiative seeks to cut down the time it takes to design, develop, and deliver the 'right things better and faster than before'.

Transport for North

4.3.73. The TfN Strategic Transport Plan 4 explains that a transformed North could have an additional 850,000 jobs and generate almost £97 billion additional Gross Value Added. This could result in a significant increase in travel demand – an improved A66 would enable this significant increase. For end-to-end freight journeys to be as efficient as possible, the North needs better surface access to ports, airports and intermodal terminals. The dualling of the A66 has been identified by the DfT and TfN as an essential requirement to achieve this objective, as well as unlocking opportunities for employment, supply chain development and housing.

National Networks National Policy Statement

4.3.74. The Applicant has assessed the Project in accordance with the NNNPS. The Project demonstrates conformity with the NNNPS, including the Government's strategic vision for the development of the national road network, wider policies for economic performance, environment, safety, technology, sustainable transport and accessibility, as well as journey reliability and the experience of road users [Document Reference 3.9 Legislation and Policy Compliance Statement, Appendix A APP-242]:

> *"2.12 Roads are the most heavily used mode of transport in England and a crucial part of the transport network. By volume roads account for 90% of passenger miles and two thirds of freight. Every year road users travel more than 431 billion miles by road in Great Britain.*
>
> *2.13 The Strategic Road Network provides critical links between cities, joins up communities, connects our major ports, airports and rail terminals. It provides a vital role in people's journeys, and drives prosperity by supporting new and existing development, encouraging trade and attracting investment. A well-functioning Strategic Road Network is critical in enabling safe and reliable journeys and the movement of goods in support of the national and regional economies.*
>
> *2.14 The Strategic Road Network, although only making up 2% of roads in England, carries a third of all road traffic and two thirds of freight traffic. Some 85% of the public use the network as drivers or passengers in any 12-month period. Even those that never drive on the Strategic Road Network are reliant on it to deliver many of the goods that they need."*

4.4. Concluding comments on IROPI stage

4.4.1. The Project demonstrates conformity with national policy, strategies, and initiatives, including the Government's strategic vision for the development of the national road network, wider policies for economic performance, environment, safety, technology, sustainable transport, and accessibility, as well as journey reliability and the experience of road users. There are substantial and long-lasting benefits of the Project that are imperative reasons for the Project to proceed and those reasons are in the public interest, as set out above.

4.4.2. The urgent need to reduce fatalities and accidents and improve public safety for all is in the public interest. The Applicant is a government owned company, delivering and contributing to the Government's long-term plan for the strategic road network. The Project is a long-term infrastructure project in the public interest for the benefit of road users, non-motorised users and people living and working in the local area and across the wider region.

4.4.3. There is a clear, compelling, and imperative public safety and human health case supporting the A66 Project. There are also a substantial IROPI case relating to reasons of primary importance to the environment. If the SoS concludes that adverse effects on the integrity of the SAC cannot be ruled out in relation to the predicted air quality impact on 0.021% blanket bog of the SAC, there are imperative reasons of overriding public interest to carry out the A66 Project.

5. Stage 3 Derogations Test 3: Compensatory Measures

5.1. Strategy and approach

5.1.1. In Sections 3 and 4 of this without prejudice derogation case, the Applicant has demonstrated that, in the event the SoS determines that AEoI of the site cannot be excluded, there are no feasible alternative solutions to the A66 Project and that the A66 Project must proceed for imperative reasons of overriding public interest.

5.1.2. This section of the Applicant's without prejudice derogation case satisfies the requirements of the third limb of the derogation case: Compensatory Measures. The compensatory measures proposed by the Applicant would, in the event the Secretary of State determines a derogation case is required in order to consent the A66 Project, ensure that the coherence of the National Site Network is maintained.

5.1.3. The statutory requirements relating to compensatory measures are set out in Regulation 68 of the Habitats Regulations 2017:

> *68. Compensatory measures*
>
> *Where in accordance with regulation 64—*
>
> *(a) a plan or project is agreed to, notwithstanding a negative assessment of the implications for a European site or a European offshore marine site, or*
>
> *(b) a decision, or a consent, permission or other authorisation, is affirmed on review, notwithstanding such an assessment,*
>
> *the appropriate authority must secure that any necessary compensatory measures are taken to ensure that the overall coherence of Natura 2000 [now known as the National Site Network] is protected.*

5.1.4. The Habitats Regulations 2017 do not define "compensatory measures", or "overall coherence of the national site network", or state when the compensatory measures must be delivered. UK guidance[34] states that compensatory measures "will need to fully offset the damage which will or could be caused to the site". The guidance goes on to state that the decision maker and Applicant should work with the relevant statutory nature conservation body (here, Natural England) to identify, design and secure suitable compensatory measures. The Applicant has worked closely with Natural England to develop the Outline Blanket Bog Compensation and Management Plan (OBCMP), which sets out this derogation case's proposed compensatory measures and can be found annexed to this report at Annex 1.

5.1.5. In preparing the OBCMP, the Applicant has had regard to other elements of the UK Government guidance, where it states that:

- Compensatory measures themselves must not have a negative effect on the national network of European sites as a whole, despite the negative effects of the proposal on an individual European site.

[34] UK Government, *Habitats Regulations assessments: protecting a European site*, 24 February 2021. Available online: https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site#derogation [accessed October 2023]

- Compensatory measures can include creating or restoring the same or very similar habitat on areas of little or no conservation value within the same site, or at a suitable location outside the site.
- There must be confidence that the compensatory measures will fully compensate for the negative effects of the proposal, and the Applicant does not need to consider more compensation than is needed.
- The following aspects should also be considered:
    - how technically feasible and effective the measures will be - based on scientific evidence and previous examples
    - how financially viable the measures are – (the Applicant) must have enough funds to cover costs
    - how the compensation would be carried out, including how it'll be managed and monitored over the time that's needed, and how it's been secured
    - distance from the affected site - compensation closer to the site is generally preferred, unless measures further away will benefit the network of European sites as a whole
    - how long the compensatory measures will take to reach the required quality and amount of habitat
- All necessary legal, technical, financial and monitoring arrangements must be in place; and the compensatory measures should usually be in place and effective before the negative effect on a site is allowed to occur.

5.1.6. The OBCMP addresses all of the above points sufficiently and proportionately in securing that the overall coherence of the National Site Network is protected. The following section summarises the compensatory measures included in the OBCMP and sets out how the implementation of those measures will ensure that the overall coherence of the National Site Network is protected.

5.1.7. The OBCMP will be a certified document under the DCO. Without prejudice amendments to the draft DCO, which are discussed in more detail at 6.3 below, provide for a Detailed Blanket Bog Compensation and Maintenance Plan (DBCMP) to be produced by the Applicant, in accordance with the OBCMP, to be approved by the Secretary of State following consultation with Natural England and implemented to the Secretary of State's satisfaction(following consultation with Natural England) prior to the completion and opening for public use of the mainline A66.

Consultation

5.1.8. Following the SoS's RfI of 15th September 2023 requesting that the Applicant provides information to support the case for derogation, regular consultation has been undertaken with Natural England with regard to the OBCMP, in particular the proposed compensation measures that could be implemented, the size/area of compensation site considered to be required by Natural England, along with the approach to identifying a suitable compensation site and the proposed

draft DCO mechanism. Draft iterations of the potential compensation measures outlined in the OBCMP have been shared with Natural England and comments received from Natural England have been incorporated into the final OBCMP (Annex 1).

5.1.9. In addition, initial discussions have been held with the North Pennines AONB Partnership regarding potential opportunities for compensation land within the North Pennines AONB.

5.1.10. Following grant of development consent, the Applicant will continue to engage with Natural England as well as the North Pennines AONB Partnership, landowners and other stakeholders to identify an area of blanket bog that will be restored to deliver the necessary compensatory measures to protect the overall coherence of the National Site Network. The Applicant will also continue to engage closely with Natural England, and other relevant stakeholders, on the DCMBP including on the appropriate compensation measures required for the identified compensation site, the implementation and monitoring programme.

5.2. Summary of proposed Compensation

5.2.1. As noted above, the UK guidance (2021) 'Habitats regulations assessments: protecting a European site' notes that

> *"Compensatory measures can include creating or restoring the same or very similar habitat on areas of little or no conservation value:*
>
> - *within the same site - if it exists*
> - *at a suitable location outside the site*
>
> *If the area providing compensatory measures is not within the European site, it should become designated as part of the European site. Until that happens, it's protected by government planning policy."*

5.2.2. Therefore, the compensation site may be located within the North Pennine Moor SAC boundary, adjacent to the SAC boundary, or in other areas of blanket bog where restoration would provide maintained or improved overall coherence of the national site network.

5.2.3. Section 3 of this derogation case sets out the potential impacts which, if the SoS concludes AEoI of the Site cannot be ruled out, lead to compensatory measures being required. These relate to potential ecological effects arising from an increase in N dep, NH_3 and NOx emissions across an area of blanket bog habitat totalling 8.28ha*, which has the potential to cause damage to or loss of species or degradation of habitat. In selecting and designing compensation measures it is important to note that the area of habitat within the SAC that is potentially affected is currently in unfavourable condition arising from a number of pressures (in addition to air quality) and the potential effects of the Project relate to only one of those factors. Notwithstanding this, in consultation with Natural England, compensatory measures are proposed by the Applicant in order to fully compensate for the adverse

* Subject to rounding

effects. The compensatory measures proposed by the Applicant will ensure the overall coherence of the National Site Network is protected.

5.2.4. The following section sets out information as to where and how the compensation measures will be implemented, how the site will be selected and secured, what measures will be implemented and what monitoring will be undertaken to ensure the measures are successful.

Proposed Compensation site selection

5.2.5. As set out above, the intention is to select an area of existing degraded blanket bog and implement a series of measures designed to restore the habitat to functioning blanket bog and work toward improving its conservation status.

5.2.6. The compensation site may be located within the North Pennine Moors SAC boundary, adjacent to the SAC boundary, or in other areas of blanket bog where restoration would provide maintained or improved overall coherence of the National Site Network.

5.2.7. As set out in the OBCMP, the North Pennine Moors SAC includes an area of approximately 39,181.58 ha of blanket bog. Beyond the SAC boundary, the North Pennines Area of Outstanding Natural Beauty (AONB) contains almost 30% of England's blanket bog habitat [35]. There is around 90,000ha of peatland in the North Pennines and most of this is blanket bog[36].

5.2.8. National Highways is in discussion with the North Pennines AONB Partnership regarding a potential delivery mechanism for the compensatory measures. The AONB Partnership has nearly 20 years of experience of delivering successful blanket bog restoration within the North Pennines AONB, and are well placed, with existing landowner relationships, to identify a suitable location as well as having the capacity to deliver the required measures. National Highways will continue to engage with NE, the North Pennines AONB Partnership, landowners and other appropriate stakeholders to identity an area of blanket bog that could be restored to deliver the necessary compensation measures to protect the overall coherence of the national site network, and details will be included in the DBCMP.

5.2.9. A site will be selected, in consultation with Natural England, in accordance with the provisions of the securing mechanism contained within the DCO, and other relevant stakeholders such as the North Pennines AONB Partnership as appropriate, and based on the following criteria:

- Distance from area of impact (preference for suitable sites that are closer over those that are further away)

[35] IUCN Peatland Programme: North Pennines AONB Partnership Peatland Programme. Available at: https://www.iucn-uk-peatlandprogramme.org/projects/north-pennines-aonb-partnership-peatland-programme#:~:text=The%20North%20Pennines%20has%20almost,and%20carbon%20stores%20in%20Europe.

[36] North Pennines AONB Partnership: Peatland Restoration. Available at: https://www.northpennines.org.uk/what_we_do/peatland-programme/

- Location in relation to the boundary of SAC (this could be a site within the SAC boundary however, sites outside will be considered where the compensatory measure would ensure the overall coherence of the National Site Network). In particular, a site within the fragmentation action zone[37] of the SAC would be prioritised within the SAC, or a site in the network enhancement zone[37] outside of the existing SAC boundary, where the proposed compensation would reduce fragmentation and improve the resilience of the blanket bog.
- Current status of the habitat, the pressures leading to it being of minimal conservation value and the ability to provide measurable and meaningful improvement as compensation
- Site ownership status and ability to reach agreement on implementation and long-term management
- Ensuring that the compensatory measures will not themselves have a negative effect on the National Site Network

Compensation Habitat Ratio

5.2.10. During consultation with Natural England, they have agreed a compensation area of approximately 10 hectares of blanket bog, based on a ratio of marginally more than 1:1 to the potentially affected area of 8.28 hectares*, would be appropriate as the potential effect is a deterioration in blanket bog condition as opposed to complete loss of habitat.

Summary of the suite of compensatory measures and how they will ensure the coherence of the national site network is protected

Technical summary of proposed compensation and feasibility of implementation

5.2.11. The suite of blanket bog restoration and rehabilitation measures which have been proposed in the OBCMP are best practice, based on scientific evidence and accepted by Natural England as being established methods to restore blanket bog.

5.2.12. The pressures and threats to blanket bog within the North Pennine Moors SAC were identified through review of various relevant Natural England reports and observations from site visits and have informed the measures presented within the OBCMP. These measures include, as relevant to the compensation site selected, grip and gully blocking, peat bank/hag reprofiling, drain management, peat regeneration through translocation of suitable plant species, bracken control heather cutting, invasive species including non-native species removal, and adaptive grazing practices. Table 7 below sets out potential costs of restoration, but also provides a series of case studies where the proposed measures have been successfully implemented to deliver blanket bog habitat improvement (as also highlighted in the text below).

[37] As defined by the Habitat Networks (England) spatial data set published by Natural England Available at: https://www.data.gov.uk/dataset/0ef2ed26-2f04-4e0f-9493-ffbdbfaeb159/habitat-networks-england

* Subject to rounding

5.2.13. The restoration measures would improve the condition of the blanket bog in the selected location to fully compensate the negative impacts of the A66 Project and ensure that the overall coherence of the national site network is protected. Further detail on these measures is provided below:

- The primary measure to restore drained blanket bog is rewetting which can incorporate the blocking of grips, gullies and drains with peat, stone or plastic dams, promoting water table level to rise and thereby encouraging the growth of peat forming species, Sphagnum (Case Studies: Marsden Moor Estate[38]; Exmoor Mires, Exmoor National Park; Dove Stone, Peak District[39]; Lake Vyrnwy, Wales[40]; Scottish Windfarm Sites[41])
- Peat banks/hags have poor water retention due to the presence of bare edges resulting in low species diversity and contributing to the percentage of bare peat within a site. Reprofiling of these features, followed by inoculation with peat forming species (Sphagnum) encourages active peat growth, improves the structural diversity of the peat and the composition of vegetative species (Case Studies: Cuilcagh Mountains[42], Northern Ireland; Kinder Scout, North Pennine Moors[43]; Dove Stone[39]).
- Where heather is high, cutting reduces the overall height of dominant stands, thereby reducing the risk of wildfire, reducing shading impacts on ground floor flora and peat forming species (Case Study: South Pennine Moors[44])
- Peat banks/hags have poor water retention due to the presence of bare edges resulting in low species diversity and contributing to the percentage of bare peat within a site. Reprofiling of these features, followed by inoculation with peat forming species (Sphagnum) encourages active peat growth, improves the structural diversity of the peat and the composition of vegetative species (Case Studies: Cuilcagh Mountains[42], Northern Ireland; Kinder Scout, North Pennine Moors[43]; Dove Stone[39]).

[38] Lunt et al (2010) Impacts of Peatland Restoration. IUCN Peatland UK Peatland Programme. Available at https://www.iucn-uk-peatlandprogramme.org/sites/www.iucn-uk-peatlandprogramme.org/files/images/Review%20Peatland%20Restoration%2C%20June%202011%20Final.pdf

[39] International Union for Conservation of Nature, *Dove Stone*. Available at: https://www.iucn-uk-peatlandprogramme.org/projects/dove-stone-0 [accessed October 2023].

[40] International Union for Conservation of Nature, *Lake Vyrnwy (Breathing LIFE into Welsh blanket bogs)*. Available at: https://www.iucn-uk-peatlandprogramme.org/projects/lake-vyrnwy-breathing-life-welsh-blanket-bogs-0 [accessed October 2023].

[41] International Union for Conservation of Nature, *ScottishPower Renewables winder 2021 peatland restoration activity.* Available at: https://www.iucn-uk-peatlandprogramme.org/news/scottishpower-renewables-winter-2021-peatland-restoration-activity [accessed October 2023].

[42] Ulster Wildlife, *How peatland restoration at Cuilcagh is helping to tackle climate change.* Available at: https://www.ulsterwildlife.org/blog/roisin-grimes/how-peatland-restoration-cuilcagh-helping-tackle-climate-change [accessed October 2023].

[43] Moors for the Future Partnership (2018) *Kinder Scout Sphagnum Trials*. Available at https://www.moorsforthefuture.org.uk/__data/assets/pdf_file/0024/94236/MFFP-Sphagnum-Trials-Summary-2018.pdf [accessed October 2023].

[44] Natural England (2014) *Natural England European Site Conservation Objectives for North Pennine Moors Special Area of Conservation. Site Code UK0030033.*

- Where appropriate adaptive grazing measures are encouraged where point pressures such as bare peat, trampling, over/undergrazing occurs. Where grazing is considered necessary, native rare breed species such as Hebridean or Galloways are encouraged due to their resilience in rural upland areas in which blanket bog is typically found. Grazing can reduce stands of grass species which outcompete peat forming species, trample heather stands and bracken reducing their shading effects and improving the vegetation communities on-site (Case Studies: Cuilcagh Mountains, Northern Ireland[42]; Peak District and South Pennines[45]; Keighly Moor; Pumlumon, Wales).
- A combination of these measures, depending on the exact requirements of the site will improve the quality of the blanket bog in the selected site – demonstrated by improved blanket bog habitat quality, structure and function. The Applicant will work with Natural England, the AONB Partnership and landowners to determine the most appropriate measures for the selected site when preparing the Detailed Blanket Bog Compensation and Maintenance Plan (DBCMP).

Compensation Measures Implementation & Management

5.2.14. An appropriate combination of the measures referred to above would be implemented following the identification of a suitable compensation site, prior to the works to the mainline A66 being completed and opened for use. Whilst National Highways are the responsible body for the implementation of the OBCMP, it is anticipated that a third-party would be appointed to oversee the management and implementation of compensation measures at site level.

5.2.15. National Highways (or an appointed third-party) with the advice of suitably qualified ecologist will identify a preferred compensation site. Agreements with respective landowners will be made between National Highways or the appointed third-party and landowners regarding the compensation plan and agricultural management practices.

5.2.16. National Highways or the appointed third-party, with oversight from National Highways, will implement the DBCMP. Responsibilities will include, but are not limited to:

- the procurement of suitably qualified specialists in peatland restoration;
- the procurement and installation of monitoring equipment e.g. piezometers;
- on-site supervision during peatland restoration implementation;
- stakeholder communications on DBCMP implementation; and
- procurement and supervision of monitoring activities.

[45] Artz et al (2018) *Peatland Restoration – a comparative analysis of the costs and merits of different restoration methods.* Available at https://www.climatexchange.org.uk/media/3141/peatland-restoration-methods-a-comparative-analysis.pdf [accessed October 2023.

Required length of time for measures to be successful

5.2.17. It is anticipated that a minimum of ten years shall be required for the compensation measures to become successful based on best scientific evidence and case study examples in peatland restoration including:

- **Peat dams** in grip blocking are evidenced to restore key peat forming species within 5-10 years of installation[46];
- **Bare peat restoration** is evidenced to improve within 10 years of management actions[46];
- **Heather management** measures such as cutting improves overall biodiversity within peatland sites within one year[46];
- **Scrub removal** measures can improve biodiversity and water table conditions within one year of management[46].

5.3. Delivery mechanisms and timing

Securing the compensation measures within the DCO

5.3.1. The mechanism proposed by the Applicant to secure the compensation measures within the development consent order, if granted on the basis of this derogation, requires amendments to article 53 of, and Schedule 10 to, the draft DCO. The Applicant's preferred approach to the proposed securing mechanism is shown, in tracked changes, at Annex 3.

5.3.2. In summary, this provides, at the newly inserted article 53(11), that the mainline A66 must not be completed and opened for public use until:

- a Detailed Blanket Bog Compensation and Maintenance Plan, which has been prepared in accordance with the OBCMP, has been approved by the Secretary of State, following consultation with Natural England; and
- the approved Detailed Blanket Bog Compensation and Maintenance Plan has been implemented to the Secretary of State's satisfaction following consultation with Natural England.

5.3.3. The effect of the newly inserted article 53(11) is to ensure that the mainline A66 comprised in the authorised development is not completed and opened for public use until the Detailed Blanket Bog Compensation and Maintenance Plan has been satisfactorily implemented, following its approval by the Secretary of State. This ensures the potential adverse effect to the integrity of the site arising from the operation of the authorised development cannot take place until the compensatory measures have been satisfactorily implemented.

5.3.4. The newly inserted article 53(12) requires the Applicant to maintain the restored blanket bog in accordance with the terms of the approved Detailed Blanket Bog Compensation and Maintenance Plan, following its satisfactory implementation.

5.3.5. The newly inserted article 53(13) applies the procedures contained in the First Iteration EMP for consultation to the consultation required with

[46] Cris,R., Buckmaster,S., Bain,C.& Bonn,A.(Eds.)(2011) UK Peatland Restoration —Demonstrating Success. IUCN UK National Committee Peatland Programme, Edinburgh.

Natural England on the terms of the Detailed Blanket Bog Compensation and Maintenance Plan and on its implementation. It also facilitates the consultation to be carried out by the Applicant rather than by its contractor, if desired. It is considered to be beneficial for all parties to adopt, with minor modifications, the consultation procedures established in the First Iteration EMP to ensure a consistency of approach with other consultations under the Order and for procedural clarity.

5.3.6. To assist with the interpretation of the above provisions two new definitions are inserted into the interpretation paragraph. The first is the definition of “the mainline A66”. This is defined as the A66 carriageway to be constructed or improved as part of the corresponding numbered works described in Schedule 1 to the draft Order. This definition ties the “pre-operational” element to the aspect of the authorised development that has the potential to give rise to an adverse effect to integrity; the operation of the mainline A66. It is necessary to distinguish the operation of the A66 carriageway comprised in the relevant numbered works from the operation of other aspects of those works to avoid inadvertently prohibiting the completion and opening for public use of other aspects contained in those works that do not give rise to potential adverse effect to integrity, such as provision of public rights of way and private means of access, utility works and to facilitate traffic management during the construction of the project. The second definition defines the Outline Blanket Bog Compensation and Maintenance Plan and it does so by reference to the version of the plan appended to this derogation document, which would become a certified document.

5.3.7. The final aspect of the securing mechanism is an amendment to Schedule 10 to add the Outline Blanket Bog Compensation and Maintenance Plan to the table of documents to be certified in accordance with article 49 (certification of plans, etc.).

5.3.8. The Applicant has consulted Natural England on the drafting of the proposed securing mechanism and understands that, with one exception, the drafting of the proposed mechanism is agreed.

5.3.9. That exception relates to the timing for when the Detailed Blanket Bog Compensation and Maintenance Plan is required to be approved. It is understood that Natural England consider that the Detailed Blanket Bog Compensation and Maintenance Plan ought to be approved prior to the “commencement” (as defined in article 53) of the “mainline A66”. The Applicant considers that the most important aspect is to ensure that the approved plan is satisfactorily implemented before the completion and opening for public use of the mainline A66, ensuring that compensation is provided before the potential adverse effect to integrity arises.

5.3.10. This objective is achieved through the Applicant’s preferred approach to the proposed securing mechanism which requires the compensation to be satisfactorily implemented before the operation of the mainline A66. The imposition of a requirement to obtain approval of the Detailed Blanket Bog Compensation and Maintenance Plan before the mainline A66 is commenced would risk imposing a constraint to the timely

delivery of the Project without providing an appreciable benefit in terms of the quality of compensation. So long as the compensation is satisfactorily implemented prior to the risk of adverse effects to integrity arising, the timing of the approval of the Detailed Blanket Bog Compensation and Maintenance Plan is a matter that ought properly be left to the Applicant to manage as an important part of its delivery of the programme for the construction of the Project.

5.3.11. Despite this point of difference, should the Secretary of State be minded to favour Natural England's position, drafting reflecting Natural England's preferred position has been agreed on a basis that is without prejudice to the Applicant's preferred position stated above, and which can be found (in tracked changes) in Annex 4.

Financial Viability of the compensatory measures

5.3.12. Table 7 below, provides indicative costs for restoration measures and examples of their implementation success in several case studies. Whilst the bulk of costs will likely be in upfront capital costs, for example peat damming, there may be longer term recurring operational costs for measures such as grazing management. Costs for ongoing vegetation and hydrological monitoring over the period of restoration of the site will need to be incorporated. The indicative costs below for non-native invasive species removal are taken from the Basic Payment Scheme47 measures across the UK and Northern Ireland in which measures for grazing management on moorland sites were reviewed.

5.3.13. It must be noted that the total cost of restoration can be influenced by whether pre-restoration activities are needed or not and what is required at site level. It is likely that at least one measure will be required at any site which will be restored.

Table 7: Examples of successful implementation of restoration techniques and quoted costs from literature

Measure	Indicative Cost (£)	Case Study Example (UK location)
Drain blocking	£879/ha – drain blocking	Marsden Moor Estate, England[38] Exmoor Mires, Exmoor National Park
	Heather dams	Dove Stone, Peak District, England[39] Lake Vyrnwy, Wales[40] Exmoor Mires, Exmoor National Park, England Scottish Windfarm sites (ScottishPower Renewables)[41] Blawhorn Moss, Central Scotland
	£425/ha[48] – Damming plough furrows	
	£285/ha – peat dams	
	£5612 – timber dams	
	£5883/ha – stone dams	
Hag reprofiling	£704/ha	Cuilcagh Mountains, Northern Ireland[42]
Heather Cutting (alternative to Managed Rotational Burning)	£894/ha	South Pennine Moors, England

[47] The Basic Payment Scheme provides payments for farmers who carry out eligible agricultural activities on their land this includes measures which are beneficial for the climate and the environment.

[48] Okumah, M., Walker, C., Martin-Ortega, J., Ferré, M., Glenk, K. and Novo, P. (2019). How much does peatland restoration cost? Insights from the UK. University of Leeds -SRUC Report.

Measure	Indicative Cost (£)	Case Study Example (UK location)
Bare Peat restoration measures	£2976/ha – living mulch on bare peat £10.44/m^2 - Sphagnum inoculation	Kinder Scout – South Pennine Moors, England[43] North Pennine Moors, England Dove Stone, Peak District[39]
Non-Native Invasive Species Removal	£88/ha[49] – Scrub control	South Pennine Moors, England Lake Vyrnwy, Wales[40]
	£90/ha[50] - Deer exclusion management	Flow Country, Scotland
	£190.90/ha[51] - Bracken control	South Pennine Moors, England
	£2996 Forestry removal	South Pennine Moors, England Flow Country, Scotland
	£3500-£5500/ha[52] – Rhododendron control	South Pennine Moors
Grazing Management	£9/ha – Shepherding supplement	Cuilcagh Mountains, Northern Ireland[42]
	£19/ha[53] - Upland livestock exclusion supplement	Cuilcagh Mountains, Northern Ireland[42] Peak District and South Pennines, England Keighly Moor, England Pumlumon, Wales
	£39/ha[54] - Cattle grazing supplement	
	£115/ha[55] - Seasonal livestock removal	

5.3.14. The indicative costs set out in Table are restricted to the costs of restoration works and do not include other costs associated with bog restoration such as fees and land agreements. Discussions with the North Pennines AONB Partnership have indicated that in their experience, restoration of peat habitat within the AONB can cost in the region of £10,000 to £11,500 per hectare. This would indicate a cost in the region of £115,000.

[49] GOV UK (2023) *Countryside Stewardship grant finder.WD7: Management of successional areas and scrub*. Available at https://www.gov.uk/countryside-stewardship-grants/management-of-successional-areas-and-scrub-wd7 [accessed October 2023].
[50] GOV UK (2023) *Countryside Stewardship grant finder. WS1 Deer Control and management.* Available at https://www.gov.uk/countryside-stewardship-grants/ws1-deer-control-and-management [accessed October 2023].
[51] GOV UK (2023) *Countryside Stewardship grant finder. SB5 Mechanical bracken control*. Available at https://www.gov.uk/countryside-stewardship-grants/mechanical-bracken-control-sb5 [accessed October 2023].
[52] [52] GOV UK (2023) *Countryside Stewardship grant finder. SB6 Rhododendron control*. Available at https://www.gov.uk/countryside-stewardship-grants/rhododendron-control-sb6 [accessed October 2023].
[53] GOV UK (2023) *Countryside Stewardship grant finder. UP6: Upland livestock exclusion supplement.* Available at https://www.gov.uk/countryside-stewardship-grants/upland-livestock-exclusion-supplement-up6 [accessed October 2023].
[54] GOV UK (2023) *Countryside Stewardship grant finder. SP6: Cattle grazing supplement.* Available at https://www.gov.uk/countryside-stewardship-grants/cattle-grazing-supplement-sp6 [October 2023].
[55] GOV UK (2023) *Countryside Stewardship grant finder. SW10: Seasonal livestock removal on grassland in SDAs next to streams, rivers and lakes*. Available at https://www.gov.uk/countryside-stewardship-grants/seasonal-livestock-removal-on-grassland-in-sdas-next-to-streams-rivers-and-lakes-sw10 [accessed October 2023].

5.3.15. These measures are considered to be financially viable and will be funded as part of the project delivery.

Timing of implementation

5.3.16. The timing of the implementation of the compensation measures will be secured through article 53 of the DCO. This will ensure that the DBCMP has been approved and the initial measures (i.e. not including the ongoing monitoring and adaptive management period) are implemented in full prior to the works on the mainline A66 being completed and open for public use (i.e. the time when the volume of traffic adjacent to the North Pennines Moors SAC would be anticipated to increase).

5.4. Monitoring

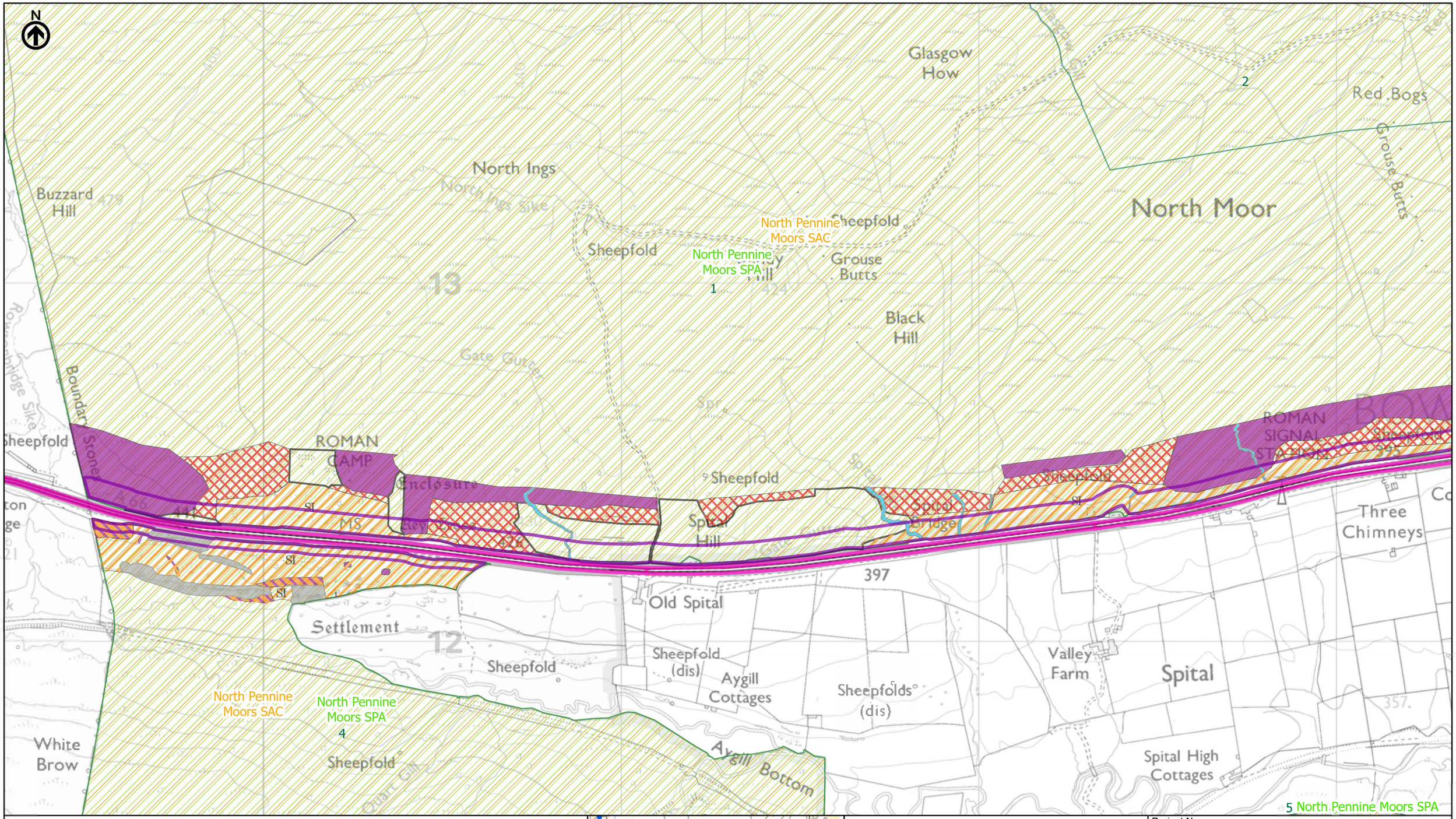
5.4.1. Post-intervention monitoring will be implemented to observe the success of the compensation measures. The DBCMP will specify the types, frequency and duration of the monitoring to be implemented along with a specified process for adaptive management (to ensure the measures are effective) and will clearly specify the measures of success (examples of which are provided in the OBCMP).

5.4.2. The OBCMP describes the likely types of monitoring that will be implemented, which may include fixed point photography, remote sensing, repeat Common Standards Monitoring (CSM) for blanket and upland habitats (JNCC, 2009)[56], monitoring and installation of piezometers.

[56] JNCC (2009) *Common Standards Monitoring Guidance for Upland Habitats*. Available at https://data.jncc.gov.uk/data/78aaef0b-00ef-461d-ba71-cf81a8c28fe3/CSM-UplandHabitats-2009.pdf [accessed October 2023].

APPENDIX A

NORTH PENNINE MOORS SURVEY MAP



Existing A66

Affected Road Network (ARN)

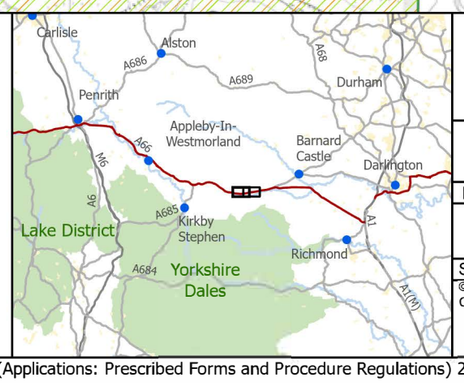
Area Where a Change in Nitrogen Deposition Exceeds 1% of the Critical Load, as Defined by the Air Quality Modelling Data

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

Revision	Created	Checked	Reviewed	Approved	Authorised
P02	First Issue				
	CESL	LHAN	THOU	AWAR	KW HA
	12/04/22	19/04/22	20/04/22	21/04/22	21/04/22

Kilometres: 0 0.25 0.5

Scale @ A3: 1:10,000 | Project Ref No HE565627 | Stage: Stage 3

Project Name
A66 Northern Trans-Pennine Project

Map Title
Figure 1.1
North Pennine Moors Survey Map Appleby to Brough to Bowes Bypass
Sheet 1 of 2

Map Number

Project	Originator	Volume	Location	Type	Role	Number
HE565627	AMY	EBD	S00	MP	LB	003354

Suitability	Suitability Description	Revision
S4	FIT FOR STAGE APPROVAL	P02

This Environmental Statement Figure meets the requirements of Regulation 5(2)(g) and 5(2)(l)(i) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure Regulations) 2009.

PINS Reference Number: TR010062/APP/3.6

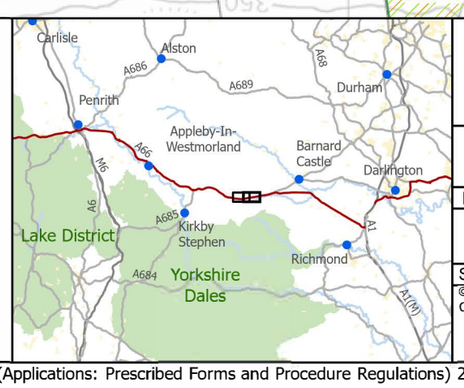
- Existing A66
- Affected Road Network (ARN)
- Area Where a Change in Nitrogen Deposition Exceeds 1% of the Critical Load, as Defined by the Air Quality Modelling Data

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

	First Issue				
P02	CESL	LHAN	THOU	AWAR	KWHA
	12/04/22	19/04/22	20/04/22	21/04/22	21/04/22
Revision	Created	Checked	Reviewed	Approved	Authorised

Kilometres
0 0.25 0.5

Scale @ A3: 1:10,000 | Project Ref No HE565627 | Stage: Stage 3

Project Name
A66 Northern Trans-Pennine Project

Map Title
Figure 1.1
North Pennine Moors Survey Map Appleby to Brough to Bowes Bypass
Sheet 2 of 2

Map Number

Project	Originator	Volume	Location	Type	Role	Number
HE565627	AMY	EBD	S00	MP	LB	003324

Suitability	Suitability Description	Revision
S4	FIT FOR STAGE APPROVAL	P02

This Environmental Statement Figure meets the requirements of Regulation 5(2)(g) and 5(2)(l)(i) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure Regulations) 2009.

PINS Reference Number: TR010062/APP/3.6