A66 Northern Trans-Pennine Project

TR010062

2.2 Case for the Project

APFP Regulations 5(2)(q)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

A66 Northern Trans-Pennine project Development Consent Order 202x

2.2 Case for the Project

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Author: E Robson	A66 Northern Trans-Pennine Project Team, National Highways

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1 Introduction

1.1 Purpose of this document

1.1.1 This Case for the Project ('the case') relates to an application for a Development Consent Order ('DCO') made by National Highways (the 'Applicant') to the Secretary of State for Transport ('SoS') via the Planning Inspectorate (the 'Inspectorate') under section 37 of the Planning Act 2008 ('PA 2008'). If made, the DCO will grant consent for the A66 Northern Trans-Pennine Project ('the Project').

1.1.2 The Infrastructure Planning (Applications: Prescribed Forms and Procedures) Regulations 2009 (as amended) ('APFP Regulations') do not specifically require a 'case for the project' to accompany an application for development consent. However, National Highways considers that this document provides an effective mechanism for summarising the overall justification for the Project and consolidating certain planning information into a single location, to assist the Examining Authority and the SoS in their consideration of the application.

1.1.3 The Project requires a DCO as, for the reasons set out at section 1.5 of this chapter, it is a Nationally Significant Infrastructure Project ('NSIP').

1.1.4 The purpose of this document is to set out the overall need and case for the Project and is split into chapters which provide the necessary background and detail in building and consolidating the overall case for this Project. Following this chapter (Chapter 1 – Introduction) the document is split as follows.

1.1.5 Chapter 2 (Project History) summarises the Project's history, describing the main project stages (with reference to National Highways Project Control Framework (PCF)). Further detail on these stages and the findings of the assessment of any alternatives and options considered during these stages can be found within the Project Development Overview Report ('PDOR') (Application Document 4.1).

1.1.6 Chapter 3 sets out the description of the Project and the schemes that sit within it, as well as introducing the Project's location and its social and environmental benefits - including details on how these benefits will be delivered through the Project's legacy.

1.1.7 Chapter 4 sets out the Transport case for the Project and identifies the benefits that it will bring for users.

1.1.8 Chapter 5 sets out the Project's Economic case which along with the Transport case is considered an important and relevant matter in decision making.

1.1.9 Chapter 6 sets out the case for each scheme within the Project, which are named as follows:

- M6 Junction 40 to Kemplay Bank
- Penrith to Temple Sowerby
- Temple Sowerby to Appleby

- Appleby to Brough
- Bowes Bypass
- Cross Lanes to Rokeby
- Stephen Bank to Carkin Moor
- A1(M) Junction 53 Scotch Corner

1.1.10 For each of these schemes, Chapter 6 considers:

- The existing problems within the scheme boundary.
- How this has been addressed by the proposed design of the scheme.
- The benefits the scheme will deliver.

1.1.11 It also provides:

- An outline of legislation and policy issues, such as Area of Outstanding Natural Beauty ('AONB') incursions and effects on European designated sites, including the findings from the assessment of conformity with policy where national or international designations are potentially affected.
- A table of assessment of each scheme against the overall project objectives.
- A review of consultation responses for each scheme where they result in a design change or reference the specific need for each scheme.

1.1.12 Chapter 7 sets out the legislative context for decision making summarising whether sections s104 (4) – (6) and (8) apply. This chapter also:

- Summarises the Project's conformity with the National Networks National Policy Statement ('NNNPS') drawing on assessment of the NNNPS in the Legislation and Policy Compliance Statement ('LPCS') and in line with s104(3) of the PA 2008.
- Summarises the adverse impacts (drawing from the findings of the environmental impact assessment ('EIA')) and summarises the overall Project benefits, in relation to the original Project objectives set.
- Weighs the adverse impacts of the Project against its benefits (in line with section 104(7) of the PA 2008) and concludes the tests set out in this section of the PA 2008.

1.1.13 Chapter 8 sets out the conclusions to this document and provides a summary of the overall need for the Project and how it has met its original objectives. This is intended to assist the SoS in reaching a decision on the application.

1.1.14 Chapter 8 summarises the Project's alternatives and the overall benefits and opportunities it offers which are defined in Chapter 3 of this case, including:

- That there are no legal reasons, international obligations, prescribed conditions or matters which will prevent the SoS deciding the Project in accordance with the NNNPS.
- That the Project conforms with relevant planning, infrastructure and transport policies.

- How the Project conforms with the details in the NNNPS table.
- That there are no legal reasons that should preclude the acceptability of the Project.

1.1.15 Chapter 8 brings together the case for the Project and its overall conformity with the NNNPS, relevant planning policy and other important and relevant matters outlining the overall planning balance under s104(7) of the PA 2008.

1.2 The Project

1.2.1 The existing A66 is a key national and regional strategic transport corridor. It carries high levels of freight traffic and is an important route for tourism and connectivity for nearby communities. There are no direct rail alternatives for passenger or freight movements along the corridor.

1.2.2 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 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, affects road safety, reliability, resilience, and attractiveness of the route.

1.2.3 If the existing A66 route is not improved, it will constrain national and regional connectivity and may threaten the transformational growth envisaged by the Northern Powerhouse initiative and the achievement of the Government 'Levelling Up' agenda.

1.2.4 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).

1.2.5 The Project proposes dualling of all the remaining single lengths of carriageway to create a continuous 70mph dual carriageway (with the exception of a short length of 50mph dualling between M6 Junction 40 and east of Kemplay Bank) across the North Pennines, between the A1(M) and M6 motorways.

1.2.6 Along with dualling the lengths of single carriageway, junction improvements and other improvements (out with this DCO application) will be made along the route, such as minor improvements to the existing dual carriageway lengths of the A66 within the existing highway boundary (for example, new signs or road markings). Once complete, the Project will lead to the entire 80km route having two lanes in both directions with consistent standard signage and road markings across

the route. The intention is to ensure that the road provides a coherent user experience, improving safety, reliability, journey times and journey quality for all users.

1.3 Road Investment Strategy ('RIS')

1.3.1 The RIS sets out the strategic, long-term vision for the Strategic Road Network ('SRN') in England up to 2050 and the investment plan to achieve this. The strategy is required under the Infrastructure Act 2015.

1.3.2 The RIS1 covered investment in England's SRN during the 2015 to 2020 road period. RIS2 covers a period from 2020 to 2025.

1.3.3 The need for improvements to the A66 corridor was identified in the NTPRSS announced as part of RIS1 in December 2014. A66 corridor improvements were announced during the 2016 Autumn Statement and committed to in RIS2 in March 2020.

1.3.4 The A66 is described as one of three projects which 'can underpin a wider economic transformation' as part of the Levelling Up agenda.

1.3.5 The Project has the potential to add a third more capacity to the strategic road network across the Pennines.

1.3.6 The Project is also considered to support growth, by both improving connections between regions and helping areas meet their growth potential.

1.3.7 As set out in section 3(6) of the Infrastructure Act 2015, the Applicant and SoS 'must comply' with the RIS.

1.4 Project Speed

1.4.1 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.

1.4.2 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'.

1.4.3 In expediting the Project, the following action has been taken:

- A Scoping opinion exercise was sought later in the process and prepared alongside the Preliminary Environmental Impact Report ('PEI Report'). This exercise would normally be completed earlier in the pre-application process, resulting in a longer application lead in time.
- Regular and early engagement with the Planning Inspectorate ('PINs'), Local Authorities ('LA's) and Statutory Environmental Bodies ('SEBs') (with a focus on design and stakeholder issues) – share emerging design and findings from assessments with PINs,

LA's and SEBs prior to statutory consultation. Up front engagement allows for a more focussed and effective statutory consultation period.

- Pro-actively promoting the use of Planning Performance Agreements ('PPAs') – so that LAs can prioritise and provide resource for the DCO Project development during the pre-application stage.
- An optimised LA Engagement Strategy agreed and discussed at the outset with LAs – to ensure their early buy-in to the process – with regular lunch and learn sessions with LAs to ensure a good understanding of the process and the timescales; and
- Develop and discuss with PINs, LAs and SEBs earlier in the process and the preparation of an Environmental Management Plan ('EMP') to embody requirements. This would normally form part of the Pre-Commencement Requirements set out within the DCO to be discharged at a later stage within the Project's development.

1.5 Levelling Up Agenda

1.5.1 The recently published 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.

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

1.6 Legislation and Policy

1.6.1 The relevant legislation and policies which the Project is subject to, and accords with, are outlined in detail within the LPCS (Application Document 3.9) which accompanies this application. This section briefly sets out the legislation and policies the Project is subject to.

1.6.2 Under section 104(3) of the PA 2008, the application for the DCO must be determined in accordance with the relevant NPS, except where the SoS is satisfied that one or more of the sections 104 (4-8) applies. In this case the NNNPS is the primary basis for decision making. The Applicant has also carefully considered the legal obligations as defined within the PA 2008 and which are also further referenced in the NNNPS, including the international obligations under the Habitats Regulations 2017 and Water Framework Directive and the Paris Agreement. These are also examined within the LPCS at Chapter 2 and Appendix A of the document (Application Document 3.9).

1.6.3 Consideration is also given to the National Planning Policy Framework ('NPPF'), and a number of regional strategic policies and plans (including transport), notably those compiled by Transport for the North (TfN), the Tees Valley Combined Authority ('TVCA'), the Cumbria Local Enterprise Partnership ('LEP'), as well as the North East LEP, which encompasses County Durham and York and North Yorkshire LEP.

1.6.4 The Project is located within the administrative boundaries of Durham County Council ('DCC'), Cumbria County Council ('CCC'), North Yorkshire County Council ('NYCC'), Eden District Council ('EDC') and Richmondshire District Council ('RDC'). The Project's conformity with their adopted development plans has therefore been assessed.

1.6.5 The case has also been prepared with regard to the following legislative requirements as outlined in the below table. This legislation is considered in detail within the relevant chapters of the Environmental Statement ('ES') set out below which accompanies this application. (Application Document 3.2-3.4)

Table 1-1: Overview of legislation the Project is subject to.

ES Chapter	Legislative Context
Chapter 5 - Air Quality	Environment Act 2021
	Environmental Protection Act 1990 s79(1)(d)
	Part IV of the Environment Act 1995
	The Air Quality (England) Regulations 2000
	Air Quality Standards Regulations 2010 (as amended)
	The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019
	The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020
Chapter 6 - Biodiversity	The Conservation of Habitats and Species (CHS) Regulations 2017 (as amended)
	Wildlife and Countryside Act (WCA) 1981 (as amended)
	Natural Environment and Rural Communities (NERC) Act 2006
	The Countryside and Rights of Way Act 2000
	The Hedgerow Regulations 1997
	Protection of Badgers Act 1992 (as amended)
	Salmon and Freshwater Fisheries Act 1975 (as amended)
	Water Framework Directive (WFD) 2000/60/EC
	Eels (England and Wales) Regulations 2009
Chapter 7 - Climate	The Kyoto Protocol
	The Paris Agreement
	The Climate Change Act 2008
	Climate Change Act 2008 (2050 Target Amendment) Order
	Carbon Budget Order 2009

ES Chapter	Legislative Context
	Carbon Budget Order 2011
	Carbon Budget Order 2016
	Carbon Budget Order 2021
	Climate Change Act 2008 (Credit Limit) Order 2021
	Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations)
Chapter 8 - Cultural Heritage	Ancient Monuments and Archaeological Areas Act 1979
	Planning (Listed Buildings and Conservation Areas) Act 1990 Infrastructure Planning (Decisions) Regulations 2010 (Reg 3)
Chapter 9 - Geology and Soils	Wildlife and Countryside Act 1981 (as amended)
	National Parks and Access to the Countryside Act 1949 (as amended)
	Contaminated Land (England) (Amendment) Regulations 2012 ('Contaminated Land Regulations')
	Environmental Protection Act 1990 (as amended by the Environmental Act 1995 Part 2A
	Water Resources Act 1991 (WRA 1991) (as amended)
	Town and Country Planning Act 1990 (as amended)
	Building Act 1984 and the Building Regulations 2010 (as amended)
	Water Act 2003 (as amended)
	Environmental Permitting (England and Wales) (Amendment) Regulations 2016/1154
	Highways Act 1980 Section 105A
	Water Framework Directive (2000/60/EC) (as amended)
	The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017
	The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017
Chapter 10 - Landscape and Visual Effects	The European Landscape Convention (ELC) (Council of Europe, 2016)
Chapter 11 - Material Assets and Waste	Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations)
	Waste Framework Directive (WFD) (as amended)
	European Commission Circular Economy Package
	The Environmental Protection Act 1990
	The Hazardous Waste (England and Wales) Regulations 2005 (as amended)
	The Waste (England and Wales) Regulations 2011 (as amended)
	The Waste Electrical and Electronic Equipment Regulations 2013

ES Chapter	Legislative Context
	The Environmental Permitting Regulations 2016
Chapter 12 - Noise and Vibration	The Environmental Noise (England) Regulations 2006 (as amended)
	Control of Pollution Act 1974 (as amended)
	Noise Insulation Regulations 1975
	Environmental Protection Act 1990 (as amended)
Chapter 13 - Population and Human Health	Localism Act 2011
	The Commons Registration Act 1965
	The Countryside and Rights of Way Act 2000
	The Health and Social Care Act 2012
	Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations)
Chapter 14 - Road Drainage and Water Environment	Environmental Permitting (England and Wales) (Amendment) (EU Exit) Regulations 2019
	The Environment Act 2021
	Environment (Amendment etc.) (EU Exit) Regulations 2019
	Environmental Protection Act 1990
	Environment Act 1995
	Environmental Permitting (England and Wales) Regulations 2016
	Water Resources Act 1991
	Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (WFD)
	Land Drainage Act 1991
	Water Act 2014
	Water Resources (Abstraction and Impounding) Regulations 2006
	Water Abstraction and Impounding (Exemptions) Regulations 2017
	Flood Risk Regulations 2009
	Water Supply (Water Quality) Regulations 2018
	Flood and Water Management Act 2010
	Environmental Damage (Prevention and Remediation) (England) Regulations 2015
	Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015
	Groundwater (Water Framework Directive) (England) Direction 2016
	Conservation of Habitats and Species Regulations 2017 (the 'Habitat Regulations 2017')

1.6.6 The LPCS (Application Document 3.9) outlines an analysis of the effects and wide-ranging benefits of the Project and its conformity with relevant policy. The policy conformity tables, within Appendices A-D of the LPCS, demonstrate how the careful selection of the Project from an

assessment of feasible alternatives, and the design work carried out with regard to consultation responses, will minimise adverse impacts such that the benefits of the Project outweigh likely adverse impacts. This is further summarised in Chapter 7 of this document.

1.7 Need for the Project

1.7.1 As outlined in the introductory paragraphs to this document, 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.

1.7.2 Despite several upgrades to the route since the 1970s, the A66 still suffers from congestion, unreliable journey times and a higher-than-average number of accidents in some lengths of the route, with a number of accident cluster sites. This is as a result of varying road standards and areas of single carriageway lengths.

1.7.3 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 'Levelling Up' agenda.

1.7.4 The A66 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).

1.7.5 The current mix of single and dual carriageway standards affects the performance of the A66 and makes the route unattractive. The NTPRSS provides an overview of the issues relating to the A66, which are summarised below.

1.7.6 Issues with the A66 include:

- Regular closures along the route due to planned road works to the single carriageway lengths for maintenance.
- Regular closures along the route due to incidents and weather impacts (high winds, flooding and snow) which could be reduced with dualling of the road with one lane remaining open where the incident permits.
- Lengths of the route where it is single carriageway, where there is a higher number of collisions than the national average, particularly between Greta Bridge and Scotch Corner, and between Temple Sowerby and Brough which are considered to be Accident Cluster spots, as outlined in Chapter 4 of this document.
- Upon road closure, diversionary routes are either poor or involve long detours, particularly for large Heavy Goods Vehicles ('HGVs') which due to the weight and height restrictions cannot use the A685, which is often used as a diversionary route to the M6 from Brough.

- Local severance issues occur where the local road network intersects with the mainline carriageway, causing delays and road safety issues for local people often in slower moving vehicles.
- There is a considerable variability in average speeds along the lengths of this route, making journey times unreliable on all lengths of the route.
- Safety concerns; vehicles overtaking on single carriageway; variation in carriageway width; varying junction layouts create concern where vehicles attempt to join the single carriageway at a higher speed.
- Lack of crossing facilities along the route for walking, cycling and horse-riding ('WCH'), non-motorised users ('NMU'), and farmers. A number of farmers, whose lands are split by the A66, move livestock between fields on either side of the route in certain locations.
- There are a high number of accesses to private properties and land, businesses, and the Ministry of Defence ('MoD') site, for example, along the route which require crossing traffic when turning into the sites. This leaves drivers vulnerable when slowing to leave the carriageway and creating safety concerns.
- Poor vertical geometry along the route with short crest (hills) and sag (valleys) curves resulting in substandard forward visibility for road users.
- Congestion from queuing traffic along single carriageways, exacerbated by right turn movements; vehicles slowing to enter/egress the A66; slow moving agricultural vehicles.

1.7.7 Further detail on the economic and transport issues for the Project are outlined in Chapters 4 and 5 of this document and in the Combined Modelling and Appraisal Report ('ComMA') which includes the Project's economic appraisal (Application Document 3.8). A Transport Assessment ('TA') has also been prepared for the Project (Application Document 3.7).

1.7.8 Reference to the need for upgrades along the A66 are also defined in national and regional policy as set out in the accompanying LPCS (Application Document 3.9) at Chapter 3.

Project Objectives

1.7.9 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.

1.7.10 Table 1-2 Project Objectives below provides a summary of the Project's objectives aligned to those outlined within the RIS 2 Strategy: 2020-2025.

Table 1-2 Project Objectives

Theme	Project Objectives
Economic	Regional: Support the economic growth objectives of the Northern Powerhouse and Government levelling up agenda.

Theme	Project Objectives
	Ensure the improvement and long-term development of the 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.

1.7.11 The Project's conformity with these objectives is outlined in the table below.

Table 1-3 : Project conformity with its objectives

Theme	Project conformity with objectives
Economic	Connectivity
	The existing A66 is a key national and regional strategic transport corridor. It carries high levels of freight traffic and is an important route for tourism and connectivity for nearby communities. If the existing A66 route is not improved, it will continue to constrain national and regional connectivity and may threaten the transformational growth envisaged by the Northern Powerhouse initiative and the achievement of the Government 'Levelling Up' agenda. The Project facilitates improved vehicle movements to the A66 route network, and the journey time savings this results in. This has particular economic implications for freight and other business connectivity.
	Improving strategic, regional and national connectivity- particularly for hauliers. HGVs 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.
	Access
	Improving access to key tourist destinations such as the North Pennines and Lake District.
	The Project, in addition to improving the SRN, also makes improvements to the local road network, with new junctions and 'offline' improvements, removing local traffic from the A66, making local movements more efficient.
Transport	Safety

Theme	Project conformity with objectives
	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. The use of the 'old' A66 as part of the local road network will provide better, safer routes for cyclists and pedestrians.
	Connectivity
	Improving connectivity for people living and working nearby and creating better facilities for cyclists and pedestrians. Reducing congestion and improving the reliability of people's journeys between the M6 at Penrith and the A1(M) Scotch Corner and nationwide. It also improves connectivity between the key employment areas of Cumbria, Tees Valley, Durham and Tyne and Wear
	Capacity
	Reducing delays and queues during busy periods through improved capacity and improving the performance of key junctions such as the A66/A6 and the M6 junction 40.
	Reliability
	Increasing reliability through an improved A66, with consistent speed limits, leading to less accidents which, in turn, makes the road more reliable. Also, having a dual carriageway provides the option to close lanes where required due to accidents or break downs, planned maintenance and still keep traffic moving.
Community	Access
	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
Environment	Amenity and Environmental Improvements
	Minimising noise levels for people living and working near the route and reducing 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

1.8 The Applicant

1.8.1 The Applicant is National Highways Limited ('National Highways'), formerly known as Highways England. National Highways became a government owned company in April 2015 and is the strategic highway company responsible for operating, maintaining and improving the SRN in England. The SRN comprises the motorway and major A-roads network, including the A66.

1.9 Requirement for a Development Consent Order

1.9.1 The Project comprises a series of highway interventions to the remaining single carriageway elements of the A66 between J40 of the M6 and Scotch Corner which have not been subject to dualling.

1.9.2 The Project is an NSIP as it lies wholly within England and involves the construction and alteration of a highway for which the Applicant is the highway authority. It is an NSIP as defined within sections 14(1)(h), 22(1)(a) and 22(1)(b) of the PA 2008 as:

- It comprises the construction and alteration of a highway;
- The highway to be constructed and altered is wholly within England;
- National Highways is the strategic highway authority for the highway;
- The speed limit will be 50mph or more; and
- The area of development exceeds the 12.5 hectares threshold.

1.9.3 While the Project as a whole is an NSIP due to the criteria outlined, each of the schemes which form the Project, as detailed further in Chapter 3 of this document, themselves meets the criteria outlined above, to be an NSIP in their own right. The only exception to this relates to the A1(M) Junction 53 Scotch Corner scheme, where these works would not meet the threshold of an NSIP if considered in isolation but would be required to be considered under other consenting mechanisms.

1.9.4 Pursuant to the PA 2008, the Applicant is required to secure a DCO in order to construct, operate and maintain the Project.

1.10 Requirement for EIA

1.10.1 The Project is an EIA development as defined in the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ('EIA Regulations'). Accordingly, an EIA has been carried out to meet the requirements of legislation and to consider the effect of the Project on the environment as presented in the ES (Application Documents 3.2-3.4) submitted to accompany the application. In conformity with these regulations, Chapter 4 (EIA Methodology) of the ES (Application Documents 3.2-3.4) provides details of the assessment that has been carried out for the Project.

1.10.2 The ES sets out the impacts of the Project, a description of the likely significant effects on the environment and identifies a range of mitigation measures that are proposed to prevent, reduce and offset likely significant adverse effects of the Project on the environment.

1.10.3 Further details on this can be found in the ES which accompanies this application (Application Documents 3.2-3.4).

1.10.4 The EIA Regulations and the NNNPS also require that the DCO application set out the alternatives considered as part of the Project development. Further details of these options can be found in Chapter 3 (Assessment of Alternatives) of the ES (Application Documents 3.2-3.4) and the PDOR (Application Document 4.1).

2 Project Development and Options Considered

2.1 Introduction

2.1.1 This chapter sets out a brief chronology of the development of the Project. A detailed description of the development of the route and individual schemes, the options and alternatives considered and the process that led to the design and alignment of the routes can be found in the PDOR (Application Document 4.1) and Chapter 3 (Assessment of Alternatives) of the ES, (Application Documents 3.2-3.4). The PDOR confirms the route for the DCO application.

2.1.2 In addition, detail of the options considered at PCF Stages 1 and 2 can be found in the Technical Appraisal Report ('TAR') and the Scheme Assessment Report ('SAR'), which are appended to the PDOR (Application Document 4.1).

Project Control Framework

2.1.3 The Project history and any alternatives and options considered is described in relation to the National Highway's PCF. The pre-PCF feasibility stage that is referred to as Stage 0 along with PCF Stages 1 to 3 are described below. The Project is currently at PCF Stage 3 (Preliminary Design), the first stage of the development phase.

2.2 Feasibility Stage – Stage 0

2.2.1 In 2014, as part of National Highways' first RIS; in 2016/17 a feasibility study was carried out, referred to as the NTPRSS. The NTPRSS outlined the strategic benefits of the Project aligned with TfN's aspirations to improve connectivity, and recommendations from the Northern Powerhouse Independent Economic Review to deliver transformational economic growth.

2.2.2 Feasibility work at this stage included reviewing the potential for improvements to the main highway routes within the Northern Trans-Pennine corridor, as well as other non-highway modes of transport within the study area. To facilitate this, PCF Stage 0 was split into three sub-stages:

- Sub-stage 1 - Identification of the issues, establishing the need for intervention and identifying intervention-specific objectives.
- Sub-stage 2 - Generating and evaluating a longlist of options (to identify a shortlist), including review of all transport modes.
- Sub-stage 3 - Assessment of the shortlist of options (and where the findings support the need for improvements, then making a recommendation for a preferred project to move forward).

2.2.3 Based on the emerging business cases at this time (see A66 Schemes Business Case in Appendix 6 and A69 Schemes Business Case in Appendix 7 of the PDOR (Application Document 4.1), a recommendation was made that PCF Stage 1 development of A66 dualling should be undertaken. Strategic benefits highlighted included:

- Journey time savings, particularly for strategic trips (including freight);
- Safety improvements, including a reduction in accidents (due to increased capacity significantly reducing the need for vehicles to overtake others on busy lengths of single carriageway); and
- Improved reliability (dual carriageway lengths would reduce delays, incidents and the need for road closures).

2.3 Options phase - PCF Stage 1 Option identification

2.3.1 National Highways' PCF Stage 1 involves the identification of broad route options to be taken to public consultation.

2.3.2 Options identification began in 2017 when National Highways commissioned their technical consultant for the stage, with a brief to identify viable dualling options for consideration.

2.3.3 This work culminated in the TAR, which is appended to the PDOR (Application Document 4.1) dated November 2018. The TAR identified several options for each of the schemes along the route of the A66 Northern Trans-Pennine Project.

2.3.4 Detail on the assessment criteria employed to arrive at these options can be found in the PCF Stage 1 TAR.

2.4 Options phase - PCF Stage 2 Option selection

2.4.1 During PCF Stage 2, the shortlisted options identified during PCF Stage 1 were subject to a more detailed engineering, traffic, economic, safety, environmental and operational appraisal. Those options that performed satisfactorily against the Project objectives, assessment criteria and relevant policy objectives were presented to and consulted on with the public during a non-statutory consultation in summer 2019. Detail on this process can be found in the SAR as appended to the PDOR (Application Document 4.1) published January 2020.

Public Consultation 2019

2.4.2 Non-statutory public consultation on options was carried out in summer 2019. During this consultation, stakeholders provided feedback that informed the themes for Option selection at PCF Stage 2 and the eventual selection of the Preferred Route.

2.4.3 The responses from these consultation exercises informed the selection of the Preferred Route for each of the schemes that form the Project. Further information on the consultation carried out at this stage can be found in the Consultation Report (Application Document 4.4).

Preferred Route Announcement (PRA)

2.4.4 The PRA for the Project was made in May 2020 following the public consultation and option selection work described above. Public opinion and stakeholder and consultation feedback informed the development of the preferred route, as did the consideration of planning policy,

environmental impacts and opportunities for mitigation for the options considered, carried out as part of the PCF process.

2.5 Design development and consideration of alternatives at PCF Stage 3

2.5.1 The Project is now at PCF Stage 3 Preliminary Design.

2.5.2 The work carried out to date has been based on a number of design principles. Further information on these can be found in the Project Design Principles (Application Document 5.11).

2.5.3 The PDOR at Chapter 5 (Application Document 4.1) describes the design development carried out for each scheme along the route of the Project. This includes a description of where additional assessment and/or appraisal has been required to inform the design of these schemes.

Assessment of Alternatives PCF Stage 3

2.5.4 Whilst designs for all schemes have been refined to account for new information obtained during PCF Stage 3 Preliminary Design, three schemes have also had alternative route or junction assessment and appraisal work carried out. The alternatives considered within these schemes are:

- Scheme-wide route alternatives within the Temple Sowerby to Appleby scheme (the alternatives assessed and the findings are set out in the PDOR) (Application Document 4.1).
- Route alternatives within the Appleby to Brough scheme (see further information in the PDOR).
- Junction alternatives within the Cross Lanes to Rokeby scheme (see further information in the PDOR).

2.5.5 The additional assessment and appraisal work associated with these alternatives was necessary for these schemes to test, check and challenge previous findings and to ensure the Project continued to meet its objectives. Opportunities to further reduce the environmental and ecological impact as well as the impacts on designated areas and features (such as the AONB), Special Area of Conservation ('SAC'), Special Protection Area ('SPA') and Scheduled Monuments ('SMs') present along the route) were also considered as part of the evaluation of the alternatives.

2.5.6 Copies of all the sifting matrices produced to assess alternatives for the three schemes can be found in Appendix 3 of the PDOR (Application Document 4.1).

2.5.7 A preferred alignment was presented at statutory consultation in autumn 2021 for all schemes forming part of the Project and information was provided on all the alternatives considered. As part of the statutory consultation, respondents were invited to provide feedback on the preferred alignment and provide their comments formally through that channel. Consultation responses and feedback received for the

preferred route and the alternatives presented have been considered and how we have had regard to these consultation responses and feedback is set out within the Consultation Report (Application Document 4.4).

Supplementary Consultation

2.5.8 Following Statutory Consultation as discussed above, supplementary consultation has been carried out to present further changes to the Project. These changes include:

- New junctions S0405
- New structures and alignment S06
- New junctions S07
- WCH, Landforms and construction compounds throughout
- Provision of alternative public open space S0102.

2.5.9 Full detail of the supplementary consultation carried out for the Project can be found in the Consultation Report (Application Document 4.4).

3 The Project

3.1.1 The Project applied for is set out in Schedule 1 of the draft DCO (Application Document 5.1) and the works plans and engineering sections (Application Documents 5.16 and 5.18).

3.2 Description of the Project

3.2.1 The Project is identified on the Location Plan (Application Document 5.12) and is located as shown in the plan below (figure 1). A detailed description of the location of the A66 is provided within the ES Chapter 2 (The Project) (Application Document 3.2) and is summarised below.

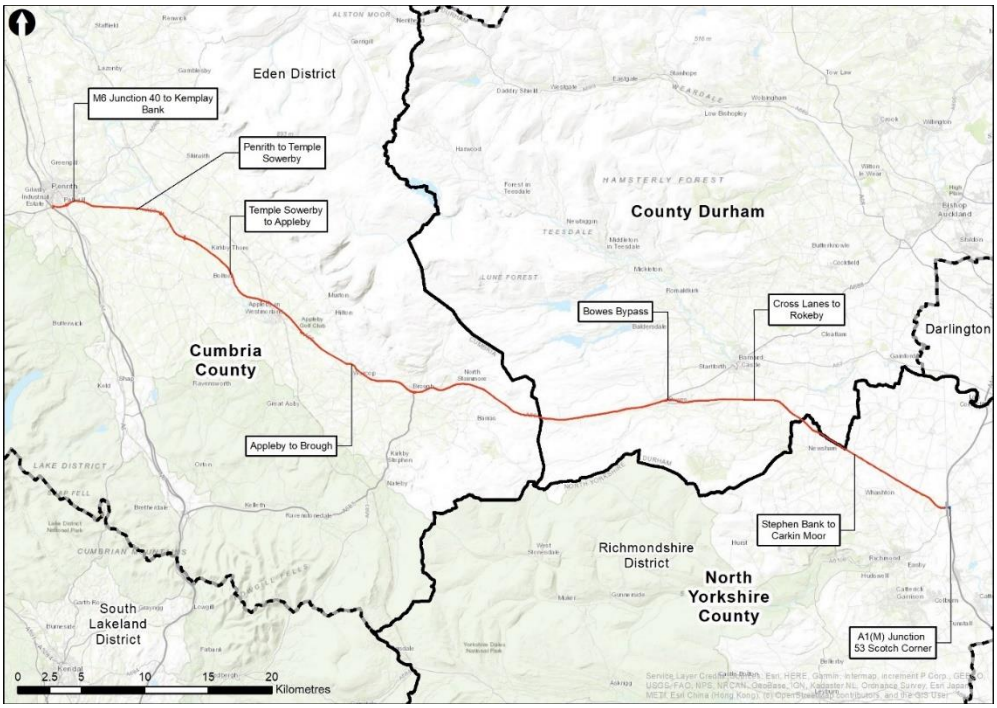

Plate 1: A66 Location and overview of scheme locations (Map not to scale)

3.2.2 The DCO order limits for the Project are presented within the relevant General Arrangement ('GA') Plans relating to this scheme references (Application Document 2.5) which accompany this DCO application.

3.2.3 The Project comprises eight schemes to improve the A66 between M6 J40 at Penrith and A1(M) J53 at Scotch Corner. The Project would involve improving the junctions on the M6 and A1 as well as improving six separate single carriageway lengths of road to dual carriageway standard and making improvements to the junctions within each of those lengths. The nature of the planned improvements includes online widening (adjacent to the existing road) of the carriageway as well as offline construction (new lengths of road following different routes but reconnecting into existing lengths of the A66 that are already dualled).

3.2.4 The eight schemes are identified as follows:

- M6 Junction 40 to Kemplay Bank

- Penrith to Temple Sowerby
- Temple Sowerby to Appleby
- Appleby to Brough
- Bowes Bypass
- Cross Lanes to Rokeby
- Stephen Bank to Carkin Moor
- A1(M) Junction 53 Scotch Corner

3.2.5 Further detail on each scheme is provided below and is shown in GA Drawings (Application Document 2.5). These are illustrative for the purposes for the submission of the DCO application and will be reviewed at the detailed design stage.

3.2.6 The development of the Project was informed by knowledge of environmental, engineering and traffic constraints, as well as the environmental appraisal of emerging design proposals combined with and incorporating feedback from consultation and engagement with landowners and stakeholders. The accompanying ES (Application Documents 3.2-3.4) and the assessments within it are based on the works proposed in the DCO (described principally in Schedule 1 and shown on the works plans (Application Document 5.16), and the engineering section drawings: plan and profiles; cross-sections (Application Documents 5.17 and 5.18).

3.2.7 The preliminary design of the eight schemes that make up the Project is described below.

3.2.8 All schemes (with the exception of the A1(M) Junction 53 Scotch Corner scheme) include lengths of de-trunked A66 as a result of the Project. The detail of any proposed changes to the de-trunked lengths will be agreed with the relevant LA.

3.2.9 Detailed design will consider all aspects of the preliminary design in greater detail. Signage, pavements, signal design and accommodation works are specific aspects that will be defined during detailed design.

M6 Junction 40 to Kemplay Bank

3.2.10 The M6 Junction 40 to Kemplay Bank scheme would provide a three-lane circulatory carriageway with spiral markings, within the footprint of the current roundabout at M6 Junction 40. The A66 eastern arm of the roundabout would be widened to three lanes in each direction between M6 Junction 40 and Kemplay Bank Roundabout to increase capacity for local movements around Penrith. Widening would be required on the following five approach arms to M6 Junction 40 to provide additional lanes and a dedicated left turn facility, each controlled under its own signal phase: M6 North, M6 South, A66 East, A66 West, and A592 Ullswater Road.

3.2.11 All existing local accesses would be accommodated, and it is proposed to relocate the existing access to Skirsgill Depot by approximately 95m to the east of its existing access. This scheme would also include signal-controlled crossings serving the existing shared cycle/footway connection on the western side.

3.2.12 All existing pedestrian and cycle connections would be retained on the Penrith South Bridge western side alongside Skirsgill Business Park. This would also be the case for the Skirsgill North-West pedestrian and cycle connections. The existing cycle/pedestrian route to Skirsgill Depot would be directed through a signal-controlled crossing at the roundabout, to provide a safer replacement for the existing uncontrolled crossing of the A66 Eastern Arm. This would be an improvement to the walking and cycling safety of this route.

3.2.13 The existing police platform located on the Penrith North Bridge to the eastern side, between the M6 off slip and A592, is to be retained in its current location. The existing police platform on the Penrith South Bridge western side would be relocated further into the widened verge to allow for the new dedicated left-hand lane from the M6 off slip.

3.2.14 Further to the east, at Kemplay Bank Roundabout, the scheme would pass beneath the existing roundabout via two underpass structures that would carry the circulatory carriageway. This would comprise a new dual carriageway under Kemplay Bank Roundabout allowing free-flowing east-west traffic, reducing congestion and improving access to Penrith and the A6.

3.2.15 This scheme would include new on-slip and off-slip roads with the A6 and A686 allowing users to safely join and leave the A66 in both directions, serving the local road network with links to Penrith, Eamont Bridge and other local settlements. Minor realignment of the A6 and A686 arms would be required to accommodate the new slip roads serving the local road network.

3.2.16 It is proposed that the speed limit between M6 Junction 40 and Kemplay Bank would be reduced from the National Speed Limit to 50mph in both directions (approximately 2.3km). This 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 (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.

3.2.17 Signalisation of the Kemplay Bank Roundabout would be retained to facilitate safe crossing at all five arms. Cycleways and footways currently located through the centre of the roundabout would be re-routed around the roundabout. The existing emergency exit from the fire station linked with the existing traffic signals would be maintained throughout construction and would remain in place once the works are complete.

3.2.18 A police observation point would be included on the Kemplay Bank overbridges for speed enforcement purposes.

3.2.19 A replacement lay-by would be provided on the eastbound carriageway between the M6 Junction 40 and Kemplay Bank Roundabout. The existing lay-by on the westbound carriageway between Kemplay Bank Roundabout and M6 Junction 40 would be removed and would not be replaced due to the proximity of adjacent junctions.

3.2.20 Replacement land would be provided to compensate the local community for land take from public open space alongside Wetheriggs Park, as a result of widening the existing A66 to the north.

3.2.21 The scheme would include lighting provision, extending and in some locations replacing the current provision.

3.2.22 Three ponds would be required for this scheme for the purpose of drainage of the road network and to manage water quality before the water is discharged into the surrounding watercourses. The western-most of these ponds is proposed to be located to the south of the existing A66 to the east of the West Coast Mainline, the second is proposed to be located to the south of the A66 in the open fields between the M6 and the A6, and the eastern-most pond is situated to the south of the A66 to the east of the fire, police and ambulance site. Access tracks would be constructed to allow vehicular access to facilitate the maintenance of these ponds. The locations of these ponds have been selected to ensure effective drainage, minimise impacts on future proposed development in the area, and minimise environmental impacts.

3.2.23 Utility works would be required for gas, electricity, water and communications services throughout the length of the scheme.

3.2.24 No demolition of property is required as part of this scheme. The scheme would involve minor demolition works, such as roadside features, drainage and kerbing associated with the upgrading of the existing A66.

Penrith to Temple Sowerby

3.2.25 The Penrith to Temple Sowerby scheme would provide full dualling of the existing 5.2km length of single carriageway A66 between Penrith and Temple Sowerby. The scheme would predominantly involve online widening using the existing carriageway to form the westbound half of the dual carriageway. The second carriageway would be constructed to the north of the existing carriageway to form the new eastbound carriageway.

3.2.26 A new grade-separated junction would be constructed to replace the existing junction to Center Parcs to connect the local road network and Center Parcs with the new alignment of the A66. The northern side of this junction would have shallower graded embankment slopes in order to integrate the junction more appropriately into the surrounding landscape. The extent of this grading would allow the land to be returned to agriculture following construction. The junction would cater for all movements on and off the A66, making it easier and safer for users to join the A66 and preventing tailbacks at peak times.

3.2.27 New left-in/left-out junctions would be provided to the B6262 and to St Ninian's Church on the Winderwath Estate, with associated merge and diverge lanes to enable safe access to homes and businesses. Improved parking provision would be provided for access to St Ninian's Church to enhance accessibility to this heritage asset.

3.2.28 An existing access serving Whinfell Holme Wastewater Treatment Works would be converted to left-in/left-out. This access is proposed to be relocated to the east of its current location, to minimise the need for widening over the existing Shell Oil high pressure gas pipeline which crosses the A66 in a north-south direction.

3.2.29 Works to widen the carriageway would reduce the current parking provision at the National Highways A66 Information Hub (formerly the Llama Karma Kafé). It is proposed that this area be converted to an amenity parking area with a new footpath providing access to the Countess Pillar SM to the east of this site, providing enhancement and accessibility for the public to an important heritage feature along the route. Landscape and biodiversity mitigation planting would take the Countess Pillar and its prominence along the A66 route into consideration to ensure it continues to be a known feature.

3.2.30 The scheme removes existing at-grade crossing points of the A66. An overpass and one underpass have been included to facilitate the safe crossing of the A66. The overbridge, which would serve as an agricultural access and as a PRoW, is proposed to be situated approximately 260m to the east of the existing junction with the B6262, and the underpass is proposed to be situated approximately 180m to the east of the existing entrance to Whinfell Park.

3.2.31 An east/west walking and cycling link, connecting Penrith with Temple Sowerby, would be provided along the length of this scheme (predominantly to the north of the A66) which would also be utilised as an access track for pond maintenance as well as serving as a local access route for landowners. All other pedestrian, cyclist and horse-rider facilities that would be severed by the scheme are to be reconnected via grade-separated crossings.

3.2.32 New lay-by facilities would be provided on the proposed A66 mainline in both eastbound (chainage 22400 and 24860) and westbound (chainage 24440) directions to replace existing provision which would be lost due to the implementation of the scheme. Observation platforms will be included in the eastbound lay-by at chainage 22400 and in the westbound lay-by.

3.2.33 No lighting would be provided on the length of the scheme.

3.2.34 Seven ponds are proposed at low points in the scheme to attenuate drainage and run-off from the road in order to manage the water quality before it is discharged into the surrounding watercourses. Shared and dedicated access tracks would be provided to the north and to the south of the road to facilitate access to ponds for maintenance purposes and to accommodate landowner movements.

3.2.35 Utility works would be required for gas, electricity, water and communications services throughout the length of the scheme.

3.2.36 The existing farm buildings at High Barn are proposed to be demolished to accommodate the offline length of the A66 to the east of the new grade-separated junction. The proposals also include the demolition of the Lightwater Cottages to the south of the A66 to facilitate and accommodate a replacement left-in/left-out access to the Winderwarth Estate. The scheme would involve minor demolition works, such as roadside features, drainage and kerbing associated with the existing A66 and other local roads.

Temple Sowerby to Appleby

3.2.37 The Temple Sowerby to Appleby scheme would comprise a new offline bypass around the north of Kirkby Thore, and then pass to the north of Crackenthorpe parallel to the old Roman road before tying into the existing Appleby Bypass. This route would include a number of new junctions and improvements throughout its length to connect the scheme to the existing road network. The existing 8.5km A66 would be de-trunked.

3.2.38 The new A66 diverts from the existing A66 in a north-easterly direction from the end of Temple Sowerby Bypass, crossing over Priest Lane and under Station Road before turning south after passing north of the village. Continuing in a southerly direction, the route would pass under Fell Lane where a new grade separated junction would be provided. Main Street would be stopped up just to the south of the new route with a new link from Main Street to Fell Lane to the north of the route to reconnect the village.

3.2.39 The scheme then continues under the realigned Sleastonhow Lane where a new overbridge would be provided. The realignment of Sleastonhow Lane avoids and runs to the south of the veteran oak tree. The new A66 would then cross the SAC and Site of Special Scientific Interest ('SSSI') designated Trout Beck and its associated floodplain on a new multi-span viaduct before heading in a south-easterly direction towards Crackenthorpe.

3.2.40 A false bund would be created on the south side of the new A66, around the north of Kirkby Thore. The false bund, formed by creating an embankment above existing ground levels, would increase the depth of cutting to visually screen the road and to reduce noise impacts to the village of Kirkby Thore. These embankments would be graded out on the village side to allow them to fit better into the surrounding landscape and to enable the land on which they are constructed to be returned to agricultural use following construction.

3.2.41 A new compact grade-separated junction is proposed to be provided at Long Marton. In order to facilitate this junction, the route of Long Marton Road would require some realignment. This realignment would move the road away from the Roman Camp, 350m to the east of Redlands Bank SM. This route would provide full access to the new A66 and

maintain the existing link between the communities of Bolton and Long Marton. East of Long Marton the route would run in a south-easterly direction and has been designed to follow the line of the Roman Road towards Appleby. The scheme would connect to the existing A66 Appleby Bypass at the eastern end of the scheme.

3.2.42 The existing eastbound diverge slip road linking to the B6542 close to the Appleby Fair field would be maintained to allow access into Appleby. The existing westbound merge slip road at this location would be changed to a two-way road to allow traffic from Appleby to access the de-trunked (old) A66 and head west to the new Long Marton junction and beyond.

3.2.43 In order to improve local connectivity at the western end of the scheme, the existing junction at the eastern end of the Temple Sowerby bypass would be improved. The improved junction would provide connections between the existing A66 and the local road network. A short length of road would connect from Temple Sowerby Bypass junction to the existing A66, allowing access for local traffic and other road users from Temple Sowerby to Crackenthorpe and to wider settlements.

3.2.44 A new grade-separated junction would be provided at Fell Lane to the north of Kirkby Thore. Fell Lane would pass over the proposed A66 alignment on a bridge structure. This junction would maintain the key local connection onto the A66 at Kirkby Thore and also provide access for communities to the north as well as the British Gypsum site. This would contribute to a reduction in the number of HGV movements through Kirkby Thore. New merge and diverge lanes would be incorporated as part of this junction to enable users to safely join and leave the A66 in both directions. A connector road, on the northern side of the new A66, would also be constructed which would provide a link from the new junction to Main Street. The Whinthorn House property, together with an agricultural barn, would need to be demolished to accommodate the route at this location.

3.2.45 Accommodation works would be carried out to ensure that access to properties is suitably maintained. The existing underpass would be widened and undergo redesign to maintain access for Spittals Farm. A new accommodation overbridge would be used to carry an existing bridleway over the new A66 at its north-westernmost extent, and to maintain access for Crossfell House Farm. To the eastern extent of the route, a new accommodation overbridge would maintain access over the new A66 for Rogerhead Farm.

3.2.46 New lay-by facilities would be provided on the proposed A66 mainline in both eastbound (chainage 30560, 34550 and 36500) and westbound (chainage 31350, 33825 and 36900) directions to replace existing provision which would be lost due to the implementation of the scheme.

3.2.47 No lighting would be provided on the length of the scheme.

3.2.48 15 ponds are proposed at low points in the scheme to attenuate drainage and run-off from the road in order to manage the water quality before it is discharged into the surrounding watercourses. Shared and

dedicated access tracks are proposed to be provided to the north and to the south of the road to facilitate access to ponds for maintenance purposes and to accommodate landowner movements.

3.2.49 Utility works would be required for gas, electricity, water and communications services throughout the length of the scheme.

3.2.50 An east to west walking and cycle route is proposed to be provided along the length of the de-trunked existing A66, utilising the verge and adjacent land where necessary, providing connectivity for users between Temple Sowerby and Appleby. All other pedestrian, cyclist and horse-rider facilities that would be severed by the scheme are to be reconnected via grade-separated crossings.

3.2.51 Two residential properties (Winthorn and Dunelm) and two barns located opposite (but not associated with) Spittals Farm and on the north-eastern side of Main Street would require demolition. The scheme would involve minor demolition works, such as roadside features, drainage and kerbing associated with the existing A66 and other local roads.

Appleby to Brough

3.2.52 The Appleby to Brough scheme comprises dualling an 8.3km length of single carriageway between Coupland Beck and Brough. A number of junction improvements are proposed to enable access on and off the A66 to improve user safety and reduce congestion.

3.2.53 The western extent of the scheme comprises 2.6km of online widening with a new eastbound carriageway to the north of the existing carriageway. The westbound carriageway would follow the line of the existing A66. The dualled length includes junction improvements to enable access on and off the A66 to improve user safety and reduce congestion.

3.2.54 An improved left-in/left-out junction from the eastbound carriageway would be provided at Café 66. This would loop to the rear of the building and also serve as access to agricultural land at the western end of the scheme.

3.2.55 A replacement underpass would be provided for New Hall Farm and Far Bank End. A left-in/left-out junction would be provided on the westbound carriageway. Access tracks would link the underpass and each carriageway, providing access to the A66 in all directions for farms, properties and land at this location.

3.2.56 A new compact grade-separated junction would provide a link to the B6259 to Sandford/Warcop as well as providing links for Public Rights of Way. A new underpass is proposed to facilitate access to agricultural land on the south side of the new A66 and for footpath connectivity to be provided adjacent to Wheatsheaf Farm.

3.2.57 From Wheatsheaf Farm the central length of the scheme is proposed to be located approximately 50m to the south of the existing A66. It would follow an alignment utilising the line of the existing A66 as the

eastbound carriageway. A new westbound carriageway would be constructed directly to the south of the line of the existing A66 alignment in order to reduce the extent of construction within the designation of the North Pennines Area of Outstanding Natural Beauty.

3.2.58 New viaducts would be provided to cross over Moor Beck and Cringle Beck together with a new bridge on the Warcop westbound junction. These are being provided to minimise any effects on the becks as they have been found to be functionally linked to the River Eden Special Area of Conservation downstream and support multiple species protected by this designation. Land has also been identified in the area in order for flood compensation areas to be provided.

3.2.59 A new local road would be provided to the north of the new A66 dual carriageway, in this central length, in order to maintain local access and facilitate movement on and off the A66 to both Warcop and the MoD facility.

3.2.60 This scheme encroaches up to 150m into the AONB, and results in the demolition of the MoD tank storage and refuelling compound which would be replaced within an extension to the MoD's existing landscape maintenance compound located approximately 600m further east.

3.2.61 Land from two residential properties on the north side of the existing A66 would be required to facilitate the construction of the new local access road through this length.

3.2.62 The central length of the scheme would pass through the existing Brough Hill Fair site, and this would need to be replaced on a like-for-like basis. A replacement site has been identified adjacent to the current site making use of the MoD bivvy (camping) site. A level of remediation of the bivvy site would be required to facilitate the Brough Hill Fair.

3.2.63 New junctions would be provided at Warcop on the westbound and eastbound carriageways facilitating access to the A66 in both directions and providing access to the village of Warcop and the realigned existing A66. These junctions would maintain access to the village of Warcop, the relocated MoD facility, side roads, properties and land to the north and south of the A66 via a new overbridge located to the east of Moor Beck bridge.

3.2.64 A local road would be provided to the south of the new A66 connecting Flitholme and Langrigg allowing residents a connection to the new westbound carriageway and local roads to the south via Musgrave Lane.

3.2.65 The proposed left-in/left-left out priority junctions would be approximately 0.6km apart and designed to utilise existing side road connections and minimise earthworks.

3.2.66 The eastern length of the scheme would continue to follow an alignment to the south of the existing A66 before tying into the Brough Bypass.

3.2.67 The de-trunked lengths of the existing A66 would enable use for access to the local road network west of Warcop and a new local road would be provided to the north from Turks Head into Brough. This would encroach approximately 130m into the AONB. A left-only T-junction with

appropriate diverge and merge tapers on the westbound carriageway would be provided to maintain access to agricultural land and properties on the south side of the new dual carriageway. Eastbound local movements to Brough would be via the accommodation bridge to join with the local road into Brough.

3.2.68 A new access road and an overbridge for farm traffic, walkers, cyclists and horse-riders would be provided at the eastern end of the scheme near West View Farm, providing access to land on the north side of the A66 from the farm located to the south, as well as providing footpath and bridleway connectivity. This overbridge and access road connection does fall within the AONB and would therefore be designed to minimise the footprint and visual impact. There would be an encroachment of up to 134m into the AONB.

3.2.69 New lay-by facilities would be provided on the proposed mainline in both eastbound (chainage 41300 and 46550) and westbound (chainage 41280) directions to replace existing provision which would be lost due to the implementation of the scheme. Observation platforms will be included in the eastbound lay-by at chainage 41300 and in the westbound lay-by.

3.2.70 No lighting would be provided on the length of the scheme.

3.2.71 18 ponds are proposed at low points in the scheme to attenuate drainage and run-off from the road in order to manage the water quality before it is discharged into the surrounding watercourses. Shared and dedicated access tracks are proposed to be provided to the north and to the south of the road to facilitate access to ponds for maintenance purposes and to accommodate landowner movements.

3.2.72 Utility works would be required for electricity, water and communications services throughout the length of the scheme.

3.2.73 An east to west walking and cycle route is being provided along the length of this scheme, providing connectivity for users between Appleby and Brough. All pedestrian, cyclist and horse-rider facilities that would be severed by the scheme are to be reconnected via grade-separated crossings.

3.2.74 The MoD tank storage and refuelling compound would be demolished and replaced within the MoD's existing landscape compound located 600m to the east. The scheme would involve minor demolition works, such as roadside features, drainage and kerbing associated with the existing A66 and other local roads.

Bowes Bypass

3.2.75 The Bowes Bypass scheme would closely follow the existing A66 alignment to the north of the village of Bowes over a length of 3km. The current line of the existing A66 would form the westbound dual carriageway, with a new adjacent eastbound carriageway constructed to the north.

3.2.76 The existing A66 to the west of Bowes passes through the North Pennines AONB. At the westernmost end of this scheme, the AONB boundary abuts the existing edge of pavement of the westbound A66 (specifically, the existing highway verge falls within the AONB boundary). Work to connect the new dual carriageway with the existing dual carriageway falls approximately 10m within the AONB boundary at this location for a length of approximately 300m.

3.2.77 Clint Lane overbridge would be reconstructed to accommodate the upgraded (wider) A66 dual carriageway. This structure would be replaced like-for-like to ensure all access and existing facilities are maintained.

3.2.78 Lyndale Farm Underpass would be extended under the new carriageway to maintain access to Lyndale Farm.

3.2.79 At the junction with the A67, a bridge would carry the new eastbound carriageway over the A67. The eastbound diverge slip road would be relocated north to make way for the new eastbound A66 carriageway. Two new slip roads would accommodate traffic travelling to and from the east providing access to and from the A67 and Bowes village. The A67 would be widened at the junction to accommodate a new right-turn lane for the eastbound on-slip. The existing westbound on-slip road would have minor improvements made to create a safer merge.

3.2.80 Ruins (former Bowes Railway Station) and a barn structure immediately north-east of the junction would be removed. Black Lodge Farm underpass would be extended to the north under the new eastbound carriageway.

3.2.81 Access from Bowes to the A66 (via the Roman road known as The Street, and locally known as Low Road) would be stopped up. The upgraded grade-separated Bowes junction would provide safer access to the A66 for local traffic.

3.2.82 The existing westbound lay-by to the west of the existing Low Road access would be relocated to the easternmost extent of the scheme (chainage 52735).

3.2.83 East of Bowes an accommodation overbridge would be constructed to allow Low Broats Farm and High Broats Farm to have continued access to the A66 via the improved junction with the A67. Additionally, a parallel accommodation access would be provided to ensure Mid Low Fields Farm, East Low Fields Farm and Bowes Cross Farm have continued access to the A66, again via the improved junction with the A67.

3.2.84 The house at Low Broats Farm and three associated farm buildings are proposed to be demolished to facilitate the new eastbound carriageway.

3.2.85 Access to and from Hulands Quarry would be made safer by closure of the existing central reserve gaps on the A66 and by upgrading the junction geometry. The existing central reserve gap at Bowes Cross Farm would be closed, along with access from the premises onto the A66, in order to improve safety.

3.2.86 The scheme would include lighting provision, extending and (in some locations) replacing the current provision.

3.2.87 Six ponds are proposed at low points in the scheme to attenuate drainage and run-off from the road in order to manage the water quality before it is discharged into the surrounding watercourses. Shared and dedicated access tracks are proposed to be provided to the north and to the south of the road to facilitate access to ponds for maintenance purposes and to accommodate landowner movements.

3.2.88 Utility works would be required for electricity, water and communications services throughout the length of the scheme.

3.2.89 The ruins of the former Bowes Station and Low Broats Farm buildings would be demolished. The scheme would involve minor demolition works, such as roadside features, drainage and kerbing associated with the existing A66 and other local roads.

Cross Lanes to Rokeby

3.2.90 The Cross Lanes to Rokeby scheme would mostly follow the 4.4km existing A66 alignment, with a new adjacent westbound carriageway constructed to the south between the B6277 at Cross Lanes and the existing Tutta Beck Cottage access. Both carriageways would then be routed to the south of the Old Rectory and St Mary's Church, re-joining the existing dualled A66 at Rokeby.

3.2.91 A new compact grade-separated junction would be constructed at Cross Lanes, west of the Organic Farm Shop and Café. An overbridge would carry a new single carriageway link between the B6277 Moorhouse Lane (to the north) and Rutherford Lane (to the south). Traffic would be able to leave and join the A66 via new priority junctions, maintaining all movements. The existing access from the B6277 and Rutherford Lane onto the A66 would be stopped up. Moorhouse Lane (to the south) would be stopped up and realigned to connect the new grade-separated Cross Lanes Junction.

3.2.92 Access to the Cross Lanes Organic Farm Shop and Café, from the Cross Lanes Junction, would be provided via the realigned Moorhouse Lane. An accommodation access would spur from Moorhouse Lane and run parallel to the A66, leading to Birk House Farm.

3.2.93 Access to Ivy and Smithy Cottages, Cross Lanes Farmhouse and Streetside Farm would be provided by a connection to the new junction link road on the north. North Bitts Farm would also connect to the new Cross Lanes Junction via an accommodation access.

3.2.94 The junction at Cross Lanes has been designed to minimise impact upon existing woodland, land parcels and watercourses. Tutta Beck would be realigned through the Cross Lanes Junction.

3.2.95 Access to Poundergill would be maintained via Rutherford Lane.

3.2.96 The new A66 dual carriageway would mostly follow the existing A66 alignment between Cross Lanes and Rokeby junctions. Lay-by provision along this length would be maintained by the construction of new lay-bys

serving the eastbound and westbound carriageways either side of Streetside Farm. Streetside Farm's existing access onto the A66 would be stopped up and an accommodation access parallel to the A66 (to the north), would lead to the Cross Lanes Junction.

3.2.97 The existing access at Tutta Beck Cottages onto the A66 would be stopped up. Here, the new A66 dual carriageway would divert to the south of the Old Rectory before realigning with the existing A66 at Rokeby. A new three arm compact grade-separated junction would be constructed west of the Old Rectory allowing westbound traffic to leave and join the A66, and eastbound traffic to leave the A66. The Rokeby Junction would be constructed in an underbridge arrangement with the westbound loop passing beneath the predominantly at grade A66. The junction has also been located to avoid impacts upon a number of veteran trees where possible, located to the north of the junction.

3.2.98 Accommodation accesses would spur off from the new Rokeby Junction to maintain access to Tutta Beck Cottages and Ewe Bank Farm (to the south) and Rokeby Grange (to the north).

3.2.99 The new Rokeby Junction would maintain HGV access to Barnard Castle via the C165 Barnard Castle Road.

3.2.100 The existing A66 would be de-trunked west of the Grade II* listed Church of St Mary along its length to the C165 Barnard Castle Road. A roundabout would manage traffic movements between the de-trunked A66, C165 and the new eastbound merge local to the Rokeby Park Registered Park and Gardens (RPG). A new eastbound merge would ensure all movements are possible at Rokeby (when the provision at Rokeby Junction is considered).

3.2.101 The existing access from Tack Room Cottage onto the A66 (to the south) would be stopped up. Access would be replaced via an accommodation access to the new Rokeby Junction. The access track has been designed with a 15m offset from Jack Wood Ancient Woodland to minimise impact to the woodland which is located directly to the south. The existing access at Tack Room Cottage to/from Greta Bridge would be maintained. A new cycleway would connect Greta Bridge to the Tack Room Cottage access route, and thus the Rokeby Junction, allowing cyclists to travel to/from Barnard Castle and Greta Bridge more safely.

3.2.102 New lay-by facilities would be provided on the proposed mainline in both eastbound (chainage 60695) and westbound (chainage 61100) directions to replace existing provision which is lost due to the implementation of the scheme. Both lay-bys would include observation platforms.

3.2.103 No lighting would be provided on the length of the scheme.

3.2.104 Six ponds are proposed at low points in the scheme to attenuate drainage and run-off from the road in order to manage the water quality before it is discharged into the surrounding watercourses. Shared and dedicated access tracks are proposed to be provided to the north and to

the south of the road to facilitate access to ponds for maintenance purposes and to accommodate landowner movements.

3.2.105 Utility works would be required for electricity, water and communications services throughout the length of the scheme.

3.2.106 No demolition of property is required as part of this scheme. The scheme would involve minor demolition works, such as roadside features, drainage and kerbing associated with the existing A66 and other local roads.

Stephen Bank to Carkin Moor

3.2.107 The 5km Stephen Bank to Carkin Moor scheme would comprise a new offline dual carriageway length between Stephen Bank and Carkin Moor Farm. The new dual carriageway would pass to the north of the existing A66 and the properties at Fox Hall and Mainsgill Farm, re-joining the existing A66 alignment to the east of Mainsgill Farm. The existing A66 would be de-trunked and would be used in part as a collector road for local access to surrounding villages and properties.

3.2.108 A new accommodation underpass would be provided to the north of Dick Scot Lane to allow access to land to the north of the scheme. This underpass would also allow the existing Hutton Magna 12 bridleway, which currently ends at the A66 to the west, to pass beneath the proposed A66 alignment.

3.2.109 New lay-by facilities would be provided on the proposed mainline in both eastbound (chainage 71315) and westbound (chainage 70880) directions to replace existing provision which would be lost due to the implementation of the scheme. Both lay-bys would include observation platforms.

3.2.110 To maintain access to Collier Lane, a length of the existing A66 to the west of Ravensworth Lodge would be realigned over a distance of approximately 600m to facilitate connection to the new Collier Lane Overbridge. New drainage ponds would be provided to the west of Ravensworth Lodge and to the East of Fox Hall Cottages. The proposed alignment of the A66 in this location has been designed to be in cutting at this location.

3.2.111 Mains Gill Junction (which is a proposed new compact grade-separated junction to the west of Moor Lane) would provide connectivity between the de-trunked A66 and the proposed mainline of the new A66. This new junction is proposed to be placed in a cutting beneath the proposed alignment of the A66 and connects to the de-trunked A66 to the west of Mainsgill Farm.

3.2.112 The southern length of Moor Lane would be stopped up and the highway realigned to connect to the Mains Gill Junction link road. The existing bridleway 20.23/5/1, which currently ends at the A66, would be diverted to the west to allow it to be re-routed along the proposed realigned length of Moor Lane and beneath the A66 via Mains Gill Junction. It would then connect with a realigned bridleway 20.55/6/1 which passes to the south of the de-trunked A66 along the western

boundary of Mainsgill Farm. The existing route of bridleway 20.55/6/1, which proceeds through the busy entrance of Mainsgill Farm, would be extinguished as part of this diversion.

3.2.113 Two new drainage ponds are proposed to be provided in the vicinity of Mainsgill Farm, one to the western boundary and one to the north of the existing A66 alignment.

3.2.114 The proposed alignment passes through the current cutting formed by the existing A66 at the Carkin Moor SM. To minimise the impact on the monument, the vertical alignment of the road is proposed to be lifted within the existing cutting and a retaining structure is proposed to be provided to the southern boundary.

3.2.115 The existing connection between the A66 and to Warrener Lane would be removed, and a new link provided between Warrener Lane and the de-trunked A66, allowing vehicles travelling from Hartforth to access the proposed A66 alignment via Mains Gill Junction. The proposed alignment of this new link road is to avoid the footprint of the scheduled remains of the Roman fort and prehistoric enclosed settlement at Carkin Moor.

3.2.116 A further 3 ponds would be provided at the eastern extent of the scheme in between the existing A66 and the new Warrener Lane link. One of these ponds is a replacement for an existing attenuation pond which is proposed to be removed to accommodate the earthworks needed for the scheme. The other two ponds offer storage for water run-off from both the A66 and also the new Warrener Lane link. Shared and dedicated access tracks are proposed to be provided to the north and to the south of the road to facilitate access to ponds for maintenance purposes and to accommodate landowner movements.

3.2.117 A new bridleway underpass would be provided to allow bridleway 20.30/8/1, which currently crosses the A66 at grade in the vicinity of the junction with Warrener Lane, to be grade-separated.

3.2.118 This new bridleway, which is to be provided alongside the de-trunked A66, would also be linked with the existing Hutton Magna 12 bridleway at the western end of the scheme.

3.2.119 Utility works would be required for electricity, water and communications services throughout the length of the scheme.

3.2.120 No lighting would be provided on the length of the scheme.

3.2.121 No demolition of property is required as part of this scheme. The scheme would involve minor demolition works, such as roadside features, drainage and kerbing associated with the existing A66 and other local roads.

A1(M) Junction 53 Scotch Corner

3.2.122 The A1(M) Junction 53 Scotch Corner scheme would widen the existing Middleton Tyas Lane approach at Scotch Corner roundabout from one lane to two lanes. A length of existing footway and existing signage and lighting columns would be relocated to the edge of the widened

carriageway, and road markings would require amendment to tie in with the existing arrangement.

3.2.123 An additional lane would also be provided on the northern bridge of the circulatory carriageway, increasing the provision in this area to three lanes. No structural amendments are envisaged to be required to the existing structure to accommodate the additional lane. Some amendment to the existing traffic signal arrangement would be required to allow poles to be located in new verges.

3.2.124 Utility works would be required for gas, electricity, water and communications services throughout the length of the scheme.

3.2.125 No demolition of property is required as part of this scheme. The scheme would involve minor demolition works, such as roadside features, drainage and kerbing associated with the existing A66 and other local roads.

3.3 Project Construction and Enabling Works

3.3.1 A description of the proposals for construction of the Project is included in section 2.8 of the ES (Application Document 3.2). The planning of the construction phase of the Project is ongoing, and specific details of methodologies will not be finalised until the detailed design is complete. The ES assumes a worst case for construction, for example assuming that the most disruptive techniques could be used (unless specified otherwise in the EMP). The approach taken and assumptions made for construction and the data that is relied upon for the construction phase for the EIA are set out in each technical chapter of this ES (Chapters 5-15; Application Document 3.2)).

3.3.2 A feature of this Project, developed as part of Project Speed, is to consider what element of the project can be constructed early, prior to the DCO being made (referred to as ‘enabling works’).

3.3.3 Enabling works include establishing site access points, access roads, compounds and utilities diversion or protection measures. Following this, it is likely that work will be carried out to establish mainline diversion routes, traffic management and demolition or ground remediation as required. Ground investigation and archaeology investigation will be carried out early in the project to identify any challenges with respect to the permanent works design and proposed layout. Some of these works will help inform the detailed design process and many of them will contribute to achieving an earlier start of construction and an earlier completion of the project.

3.3.4 Some consents outside of the DCO, could be required for the enabling works, depending on the nature of the works and whether the works are considered to be ‘development’ under section 55 of the Town and Country Planning Act, 1990 (‘TCPA’). There are therefore two main types of enabling works:

- Enabling works that do not require consents. These could be for example utility diversion/protection works within the existing highway

boundary, archaeological investigations, surveys and some early landscape/ habitat creation works. These works are not 'development (s.55)' or they are permitted development and are on National Highways controlled land or in agreement with a landowner

- Enabling works which require a consent in advance of the grant of the DCO. For these works, if a consent is required then a TCPA consent maybe sought from the relevant local planning authority in parallel to the DCO application process. These could be early establishment of construction compounds, utility diversions not associated with the permanent work and relocation of MoD facilities. These works need to be on National Highways controlled land or carried out in agreement with the landowner.

3.3.5 Subject to a DCO being granted by the SoS for the Project, construction works are planned to commence in 2024, with all schemes targeted for completion by the end of 2028 or earlier. Enabling works may commence before 2024, subject to appropriate consent, and would be subject to the same controls and commitments as set out in the EMP, as relevant to the works being carried out.

3.4 Project location and character

The A66 lies within three local authority administrative areas: Eden District, Durham County and Richmondshire District as illustrated in figure 1.

3.4.1 The A66 runs through the North Pennines AONB between Brough and Bowes. The Lake District National Park is approximately 2km south-west of Penrith and the Yorkshire Dales National Park is located approximately 3.5km south of the A66.

3.4.2 The A66 lies within an area of rolling landscape. From Penrith the road corridor generally passes through gentle valleys characterised by large regular fields and areas of deciduous woodland. The road generally follows a similar route to the River Eamont and the River Eden as far as Appleby-in-Westmorland. Moving east the elevation rises rapidly from approximately 170m above ordnance datum (AOD) at Brough to a high point of approximately 440m AOD as it passes over Bowes Moor, before gradually descending again to an elevation of approximately 150m AOD at Scotch Corner.

3.4.3 The A66 roughly follows the line of a Roman road and as a result is straight in alignment for large lengths, but, with notable deviations as it passes around key settlements along the route, including, Penrith, Temple Sowerby, Kirkby Thore, Appleby-in-Westmorland, Brough, Bowes, Greta Bridge and Scotch Corner.

3.4.4 The majority of the surrounding land is agricultural with a number of farms lying adjacent to and having direct accesses onto the A66. Some of this land is classified as being Grade 2 which is defined as 'very good' agricultural land.

3.4.5 There are a number of historic features along the route including conservation areas, SMs and a large number of Grade I, II* and II listed buildings, many of which lie directly adjacent to the A66. These are

presented in Chapter 8 (Cultural Heritage) of the ES (Application Document 3.2-3.4).

3.4.6 The North Pennine Moors SPA and SAC are encompassed within the North Pennines AONB. The River Eden SAC and its tributaries, which run adjacent to and underneath the A66, are also a key consideration. These sites are all important at European level and are presented in Chapter 6 (Biodiversity) of the ES (Application Document 3.2-3.4).

3.4.7 The River Eden (designated a main river) crosses the A66 at Coupland Viaduct and 3km south-east of Appleby-In-Westmorland. Flood Zones 2 and 3 associated with the River Eden, its tributaries and other watercourses are located along the route and are presented in Figures 14.1: Surface Water Features to Figure 14.8: Groundwater Flooding Susceptibility, in Chapter 14 (Road Drainage and the Water Environment) of the ES (Application Document 3.2-3.4).

3.5 Project Benefits and opportunities

3.5.1 The Project will deliver a number of benefits for local communities with faster journey times, improved accessibility and better local connectivity through utilising the 'old' A66 and connecting to the local road network. It will also be good news for all road users who will have greater confidence in getting to their destinations safely and on time. The overarching benefits of the Project are presented below, with specific benefits for each scheme covered in Chapter 6 of this document.

3.5.2 The benefits of the Project include:

- Safety: A consistent standard of dual carriageway, with a speed of 50mph at Kemplay Bank and 70mph in all other lengths, will lead to less accidents. Use of the 'old' A66 as part of the local road network will provide better and safer routes for cyclists and pedestrians. Chapter 4 of this document further provides the safety benefits of the Project.
- Connectivity: Improving connectivity for people living and working nearby and creating better facilities for cyclists and pedestrians. Reducing congestion and improving the reliability of people's journeys between the M6 at Penrith and the A1(M) Scotch Corner and nationwide. It also improves connectivity between the key employment areas of Cumbria, Tees Valley, Durham and Tyne and Wear. Chapter 4 of this document further provides the connectivity benefits of the Project.
- Environmental: Minimising noise levels for people living and working near the route and reducing 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. The ES Chapter 12 (Noise and Vibration) accompanying this application (Application Documents 3.2-3.4) provides the environmental benefits of this Project as summarised in Chapter 7 of this document.

- Economic: Improving strategic regional and national connectivity, particularly for hauliers. HGVs 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. Chapter 5 of this document provides the economic benefits of the Project.
- Tourism: Improving access to key tourist destinations such as the North Pennines and Lake District. There are nearly 16 million visitors to the Lake District National Park each year with nearly 5 million visitors to the Yorkshire Dales National Park. While all journeys are not exclusively served via the A66, a significant portion of these journeys are currently made along this route, and as the road improves, this is expected to increase with perception of the route attracting more users. The ES accompanying this application (Application Documents 3.2-3.4) provides the environmental benefits of this Project and tourism receptors along the route are discussed in more detail at Chapter 13 (Population and Human Health) of the ES (Application Document 3.2).
- Community: 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 ES Chapter 13 (Population and Human Heath) accompanying this application (Application Documents 3.2-3.4) provides the community benefits of this Project and is also outlined on a scheme basis in Chapter 6 of this document.
- Capacity: Reducing delays and queues during busy periods and improving the performance of key junctions such as the A66/A6 and the M6 junction 40. Chapter 4 of this document provides the capacity benefits of the Project.
- Increasing reliability: An improved A66, with consistent speed limits, will lead to fewer accidents which, in turn, makes the road more reliable. Also, having a dual carriageway provides the option to close lanes where required due to accidents or breakdowns and keeps traffic moving. Chapter 4 of this document further provides the reliability benefits of the Project.

Transport - benefits and opportunities

3.5.3 A detailed overview of the transport benefits associated with the Project is provided in Chapter 4. However, an overview is provided below.

Reduced journey times

3.5.4 The Project will replace the existing low-capacity single carriageway lengths of the A66 with a new high performing two lane dual carriageway road. The dualled road will significantly increase capacity and lead to improved journey times, less congestion and fewer delays.

Safety benefits

3.5.5 Dual carriageways are known to have lower accident rates than single carriageway roads. Typically, dual carriageways allow vehicles to

maintain their speed whilst passing slower moving vehicles without causing conflict with opposing traffic.

3.5.6 The new dual carriageway lengths of the A66 and junctions on the Project will be designed to modern safety standards and will provide for safer and quicker journeys for all road users. The improved route will also be more resilient and less susceptible to disruption. Additional lanes will offer resilience in potentially allowing a single lane to remain open and/or allowing emergency services to get to the accident site more quickly, rather than being detained in queuing traffic. This will enable incidents on the road to be cleared more quickly.

Reducing congestion

3.5.7 As journeys on the A66 become more reliable, vehicles which have previously been taking alternative routes will return to the A66 reducing distances travelled, avoiding rat-running within villages and easing congestion for local people and helping to reduce risk of accident.

Economic - benefits and opportunities

3.5.8 The Project improvements represent a significant opportunity to boost east-west connectivity and drive economic growth. Full detail on the economic benefits of the Project is provided in Chapter 5 of this document, with a high-level summary provided below.

3.5.9 In upgrading the A66, the capacity of the A66 will be increased, relieving pressure on both the current and anticipated traffic flows. The improved journey times delivered by the Project will stimulate the local economy as people travel to employment centres and to community, hospitality and retail facilities.

3.5.10 Faster journeys lead to less wasted time idling and waiting for congestion to clear, freeing time for more productive activities that produce economic value, or leisure activities, both of which have a higher value to individuals than traffic delays. All individuals in the economy place a value on their own leisure or labour time, a value that is partly lost on congested highways. For individuals that are seeking employment, the improvements may alter their preference of their travel-to-work radius and provide access to a wider range of employment opportunities.

3.5.11 Likewise, businesses that are dependent on the A66 for east-west connectivity will benefit from direct cost reductions, an improved environment for maintaining contact with their customers and suppliers, and the ability to access larger markets and different geographical areas.

3.5.12 Local journeys will become more reliable, helping to stimulate local economic activity. As transport becomes easier and journey times quicker and more reliable, the settlements surrounding and using the A66 will become more attractive to inward investment from the private sector. At a regional scale, businesses will benefit from the improved

accessibility of key employment areas across Cumbria, Tees Valley and Tyne and Wear.

3.5.13 The Government's Levelling Up agenda is also a strong driver for the Project. Levelling Up is about tackling economic differences (including pay, work opportunities, health and life chances) and driving prosperity through investment in priority places. The recently published Levelling Up White Paper sets out 12 medium-term missions, one of which is to boost productivity, pay, jobs and living standards. The A66 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 as a result of additional capacity and reduced delay, alongside over £62m of wider economic benefits.

Social - benefits and opportunities

Social Value

3.5.14 The Project seeks to deliver in excess of £150m social value, through increasing the social, economic and environmental wellbeing of the people impacted by the Project.

3.5.15 National Highway's overall goal of the Project's social value is as follows:

'We will positively impact the customers and communities of the A66 to leave a tangible lasting legacy that everyone understands, so much so they won't want us to leave'

3.5.16 Social value is embedded into the Project through understanding local community needs from consultations, social value-led design and solution development, smarter delivery and a lasting legacy capture.

3.5.17 The Project incorporates the following social value objectives:

- Customers and communities understand the wider socio-economic benefits the Project will deliver;
- Creation of a pipeline of future skills to equip the industry for the future in the region; and
- Everyone working on the A66 understands their contribution to social value.

3.5.18 In line with the above objectives, the Project commits to a target of £150m in social value across the Project through:

- 15,000 hours of volunteering in the local community;
- Provision of 100 STEM ambassadors, to support school engagement and careers;
- Over 50 apprenticeships supported;
- More than 75 roles for trainees and newly qualified graduates;
- 10 ex-forces personnel recruited into the Project;
- Over 10,000 school and college pupils meaningfully engaged; and

- Over £50,000 invested in local environmental improvement or heritage initiatives.

Provision for walkers, cyclists and horse riders (WCH)

3.5.19 Where public rights of way ('PRoW') 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 have some level of betterment compared with the provision on the existing single carriageway lengths. This is either through full design changes or through upgrades to existing provision where standards require. 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. Detail on the WCH provision for each scheme is provided in Chapter 6 of this document and set out in detail within the WCH Design Proposals (Application Document 2.4).

Environmental Enhancement, Heritage and Archaeological Benefits

3.5.20 The table below outlines the environmental and cultural heritage benefits the Project brings, broken down scheme by scheme.

Table 3-1 : Project Biodiversity, Cultural Heritage and Population & Human Health operational Benefits

Topic	During Operation
Biodiversity	Route wide, several underpasses have been included suitable for badger and located at key crossing points identified by the baseline surveys. The provision of these underpasses, as well as green bridges which have the capacity to also support badger safely crossing the live carriageway, will minimise the likelihood of species mortality or injury caused by road traffic collisions during operation.
Cultural Heritage	**Penrith to Temple Sowerby** The scheme will present significant permanent beneficial effects upon the Scheduled Monument and Grade II* listed Countess Pillar, Grade II* listed Alms Table. This is due to a new amenity parking area and footway access providing better access to the site. The existing car park will be relocated improving accessibility to the Scheduled Monument of St Ninian's and Grade II listed Church of St Ninian.
Population & Human Health	**M6 Junction 40 to Kemplay Bank** The scheme presents significant permanent beneficial effects to 24 community assets and to the Lake District tourism sector The scheme presents significant permanent beneficial effects to one community asset as a result of reductions in noise and vibration
	Penrith to Temple Sowerby **The scheme presents significant permanent beneficial effect** to one community asset as a result of permanent noise and vibration changes

Topic	During Operation
	The scheme presents significant permanent beneficial effect to one business
	Temple Sowerby to Appleby **The scheme presents significant permanent beneficial effects** to four community assets **The scheme presents significant permanent beneficial effect** to one business **The scheme presents significant permanent beneficial effects** to five community assets and four businesses as a result of permanent noise and vibration changes
	Appleby to Brough **The scheme presents significant permanent beneficial effects** to 12 community assets **The scheme presents significant permanent beneficial effect** to one business
	Bowes Bypass **The scheme presents significant permanent beneficial effects** to three community assets **The scheme presents significant permanent beneficial effect** to one business.
	Stephen Bank to Carkin Moor **The scheme presents significant permanent beneficial effect** to two business

Carbon Strategy

3.5.21 The Project will document its approach to carbon management within a Carbon Strategy which is being developed. This document will set out the principles of the carbon management process that will be adopted through the lifetime of the Project.

3.5.22 As such, the strategy will inform:

- The carbon management process
- The carbon reduction target
- The baseline against which to assess the carbon reduction performance
- Carbon emissions quantification methodologies
- Reporting
- Continual improvement of carbon management and performance.

3.5.23 National Highways are committed to net zero and the plan sets out a comprehensive roadmap to rapidly decarbonise the strategic road network.

3.5.24 The Project seeks to work towards net zero ambitions and through a carbon management process that will provide a framework to consider carbon from its inception to end of life on a whole life basis.

Designated Funds

3.5.25 To further support and provide benefit to the local community above and beyond the requirements of the Project, National Highways propose to allocate funds to support a number of community projects. The projects are over and above the traditional focus of road investment and seek to provide local community betterment, rather than being needed to deliver the Project. In RIS2 there are four designated funds to enable community benefit:

- Environment and wellbeing.
- Innovation and Modernisation.
- Users and Communities.
- Safety and Congestion.

3.5.26 Any organisation can bid for designated funds including project teams within National Highways, consultants working on projects and third parties like LA's, community interest groups and members of the public.

3.5.27 On the A66 we have identified several opportunities that may be taken to feasibility stage and at this stage the Applicant is gathering information in order to be able to process these in order to submit an application where viable.

3.5.28 These include:

Table 3-2 : Designated Funds schemes

Environment and Wellbeing	
Sleastonhow River Restoration Scheme	The Eden Rivers Trust are completing a Project to restore the Trout Beck River back to its original course. This will prevent flooding downstream and will also provide habitats for wildlife.
Fish Passage Improvements	A scheme to improve fish passage through watercourses. This would include culvert assessments, surveys and detailed design to improve passage and water quality
Natural Flood Management	Various locations proposed in the M6 Junction 40 to Kemplay Bank scheme, 2 and 6 but could be route wide. These include woodland strip planting, floodplain planting, drainage attenuation, riparian management and creation of ponds/swales on the 1 in 1000 flood plain.
Flood Protection	Following the 2015 floods in Appleby, the Environment Agency undertook an appraisal to reduce flooding to The Sands by increasing the height of existing flood defences. Potential for a contribution if the proposals were progressed.
Habitat Creation and Enhancement	Habitat creation or enhancement as to what already exists at various locations in different schemes. Examples include creation of wetland bog, reduce hard engineering on riverbank, woodland planting.
Removal of weirs	At M6 Junction 40 to Kemplay Bank scheme, removal of weir downstream of Eamont Bridge.

Users and Communities	
Installation of a playground at Kirkby Thore	A playground could be installed in the land between Sanderson Croft and the proposed junction to the north of this land.
Wetheriggs Country Park	Land is being taken at the M6 Junction 40 to Kemplay Bank scheme which will need replaced and incorporated into Wetheriggs Country Park. Ideas are being progressed how we could make improvements to Wetheriggs Country Park with consultation with local residents and groups.
Ravensworth School car park	Extension to the small car park.
Troutbeck Bridge at Kirkby Thore	Exploring on carriageway solutions for the bridge over the Troutbeck at Kirkby Thore as the carriageway is too narrow for a standard shared used facility.
Walking and cycling connection at Coupland Beck	Connecting the Appleby to Brough scheme walking and cycling shared use route to the local roads at Coupland Beck.
Footpath to Warcop Primary School	Local feedback has suggested a route from the village to the primary school as currently there is no footpath to the school.
Walking and cycling connection at Brough	Connecting the Appleby to Brough scheme walking and cycling shared use route to the village of Brough.
Walking, cycling and horse-riding grade separated crossing between Mainsgill Farm and Scotch Corner	To replace an existing at grade walking, cycling and horse-riding crossing facility to improve safety.
Innovation and modernisation	
Roadside solar panels for lighting	This idea may be trialled on another scheme prior to the A66. Small panels to power small scale power requirements like lighting or variable message signs (‘VMS’).

4 Traffic case for the Project

4.1 Introduction

4.1.1 This chapter comprises a high-level overview of the TA that has been produced to support the DCO application. The purpose of this chapter is to provide information about the transport assessment carried out as part of the development of the Project. For further detail on the methodology and detail of this TA (Application Document 3.7).

4.2 Existing situation

4.2.1 As detailed in earlier chapters, the A66 between Penrith and Scotch Corner currently operates as an all-purpose trunk road on the SRN. In reality, the road comprises a series of roads, both single carriageway and dual carriageway in each direction, with varying road standards and speed limits. There is currently around 18 miles of single carriageway in each direction, with speed limits varying between 40 mph and the national speed limit.

4.2.2 The A66 provides an important strategic, regional and local route, providing the most direct connection between the east and west coasts, as well as providing local access. Plate 2: A66 key strategic links illustrates its strategic importance to national and international movements.

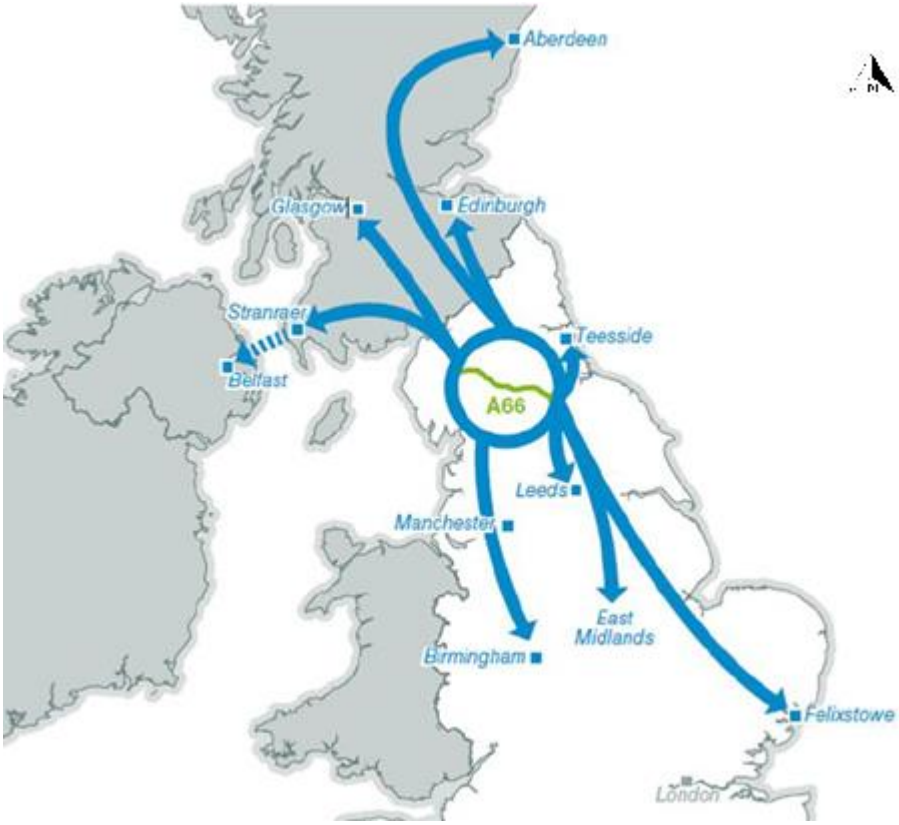

Plate 2: A66 key strategic links (Map not to Scale)

4.2.3 There is a lack of public transport infrastructure on the A66, with minimal bus service provision and no direct east-west rail connections. This emphasises the importance of the A66 in terms of strategic connectivity across the UK.

4.2.4 For key journeys across the UK, such as trips from the east and southeast of England to the northwest of England or Scotland, the A66 is likely to be the most direct route. The only strategic alternative east-west route for road traffic in the north of England is the M62 or the A69.

4.2.5 Typical flows on the road relate to local activity, freight movements and leisure traffic heading to the Lake District and the North Pennines AONB. Traffic going to and coming from Center Parcs on Monday and Friday afternoons is particularly notable along the route.

4.2.6 The flow on the route during August is generally higher than during the rest of the year, particularly at Appleby and Bowes. However, between Kemplay Bank and Junction 40 the flow remains consistent year-round.

4.2.7 The A66 currently experiences significant transport-related issues, primarily related to road safety, journey times and reliability as well as route resilience and local severance. These problems are further detailed in the coming paragraphs of this chapter.

Road Safety

4.2.8 The A66 has a higher-than-average number of accidents across some lengths of the route, with a number of accident cluster sites, as shown in Plate 3. 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. In dualling the A66, and ensuring a consistent road standard along the route, accidents along the route will be reduced. 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. These factors are considered to add complexity to the road and are a factor in increased road accidents.

4.2.9 By improving forward visibility, through the removal of short merges and diverges and by simplifying junction accesses on and off the A66, those complexities which are often a factor in road accidents along this route will be removed, offering an overall improvement to safety for users.

4.2.10 While data covering the period since 2019 has not been included in our analysis of collisions, it should be noted that in the last five months (December 2021 – April 2022) there have been 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)
- Warcop (in two separate incidents)

4.2.11 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 fatalities. There were five fatal accidents in 2015, including three which involved head-on collisions at the Warcop bends and at Crackenthorpe.

4.2.12 There were also three fatal accidents in each of 2017 and 2018, as outlined in the table below.

Table 4-1 : Number of Accidents and Accident Severity by Year

Year	No. of Accidents			
	Fatal	Serious	Slight	Grand 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

4.2.13 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 the table below. The highest number of fatalities over a seven-year period was recorded in 2015 with 12 fatalities.

Table 4-2 : Number of Casualties per Year

Year	No. of Casualties			
	Fatal	Serious	Slight	Grand 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
Grand Total	24	121	357	502

4.2.14 Plate 3: Accident Cluster Sites shows a strong correlation between accident cluster sites and the remaining lengths of single carriageway along the route. Following investigations of lengths of single carriageway with a poor safety record and as a precursor to a dualling scheme, a number of interim safety improvements were introduced along the route, some of which have involved reductions in the speed limit, as described below:

- The speed limit through Kirkby Thore village is 40mph, with average speed enforcement cameras installed in 2016.
- A 50mph speed limit introduced between Appleby and Brough in 2016.
- A scheme to provide a right turn lane at the former Llama Karma Kafé (now the A66 NTP Hub West) was completed in 2016, following several incidents involving eastbound vehicles waiting to turn right into the café.
- A safety improvement scheme implemented at Ravensworth reducing speed limits to 50mph.

4.2.15 The success of these interim safety improvements is being monitored. However, it is considered that in the longer term, more strategic interventions are required to further improve safety overall. As can be demonstrated from the data above, there has been no noticeable improvement in terms of accidents and casualties since 2016 when most of these measures were implemented.

Plate 3: Accident Cluster Sites (Map not to scale)

Journey Times and Journey Time Reliability

4.2.16 Changing standards along the route from dual to single carriageway, and the fact that some lengths of road do not match modern standards, causes significant congestion and delay to users of the A66.[1]

4.2.17 Detail of the journey times along the route is contained within Chapter 2, Local Transport System, of the comMA (Application Document 3.9). The

[1] To evidence how the varying standard of the A66 route and lack of diversionary routes affect journey time variability due to major incidents, various National Highways datasets have been identified and analysed. To assist in the assessment of road closures resulting from accident incidents, Stats 19 and National Incident Liaison Officer (NILO) data was used. Network Occupancy Management System (NOMS) data was used for the assessment of maintenance closures. Command and Control data was used for the assessment of accident, maintenance and weather-related closures. In addition to this 2018 Traffic Master journey time data was used to calculate the standard deviation of journey time for the single and dual carriageway lengths.

data shows that speeds are inconsistent across the entirety of the route throughout the year. Lengths of the A66, which are dualled, generally show speeds approximately 5mph slower than the speed limit. Single carriageway lengths of the A66 consistently show higher levels of relative delay, with average speeds across most lengths and months around 45-50mph. This represents a speed 10-15mph below the speed limit of a standard single carriageway trunk road (60mph) and 15-20mph below that observed on the dual lengths.

4.2.18 Speeds on a Friday and during bank/school holidays show further reductions, with average speeds as low as 21mph experienced at Kemplay Bank eastbound and 27 mph westbound between Carkin Moor and Stephen Bank in July.

4.2.19 The lack of overtaking opportunities, coupled with the high proportion of HGVs and the frequent use of the route by agricultural vehicles, results in slow moving traffic and congestion. This results in longer journey times and unreliable journeys.

4.2.20 The 40mph and 50mph speed limits in certain locations along the route further increase journey times.

4.2.21 The ability to keep the route open during accidents, incidents and other disruptions is significantly affected by the existence of the single carriageway lengths. Generally, traffic movements can be better managed when incidents happen on dual carriageway lengths. This is because:

- Where only one lane is affected by the incident, traffic can continue to flow on the second lane.
- Emergency services can access and clear the incident more quickly.
- The central reserve of the A66 prevents traffic flow in the opposite direction from being affected.
- If necessary, HGVs have space to turn **around and take a different route.**

Figure 4 : A66 Speed Limit Variation (Map not to scale)

Road Closures

4.2.22 The A66 experiences road closures along the route, which are often prolonged within the single carriageway lengths. Single carriageways are 40% more likely to have a closure along the route than dualled lengths. When closures do take place on single carriageway lengths, they are likely to take place for up to 50% longer than dualled lengths.

4.2.23 Furthermore, when closures take place, single carriageway closures are far more likely to be two way - 93% of the time. Along the dual carriageway lengths of the road, two-way closures are significantly less likely, at 56% of the time. The table below provides further detail on significant road closures (over 6 hours) associated with the A66.

Table 4-3: This data is for closures of over six hours for the period 2014-2019

	Single Carriageway		Dual Carriageway	
	Annual Closures per KM	Average Closure Duration (hours)	Annual Closures per KM	Average Closure Duration (hours)
2-way closure	0.076	18.454	0.032	14.981
1 way closure	0.005	6.367	0.025	7.814
All closures	0.081	17.70	0.06	11.85

Local Severance

4.2.24 There are local severance issues where the local road network intersects with the A66 carriageway, where slow moving vehicles interact with the main carriageway traffic, causing delays and road safety issues, such as in Kirkby Thore.

4.2.25 The majority of communities along the route have had bypasses built as part of previous A66 upgrade programmes. Kirkby Thore, which has a population of 753, is the only remaining settlement along the A66 without a bypass. The A66 passes directly through part of the village, causing issues of noise and severance, especially due to the high proportion of HGV traffic.

4.2.26 WCH users who wish to cross over the A66 have poor crossing provision in this location, as is detailed further within the Project Design Report (Application Document 2.3). Where possible, the Project provides both improved WCH connectivity and safer WCH routes removing direct interaction between WCH and motorists through dedicated and segregated routes. Where this is not possible, enhanced safety measures are proposed to better protect vulnerable users from interaction with vehicles. Chapter 6 of this document provides an overview of the WCH improvements for each scheme along the route and areas where severance is addressed.

4.2.27 The A66 also causes ecological severance, with the existing route acting as a barrier to existing habitat. This Project provides opportunities to enhance connectivity and ecological value of habitat through

improved road design. For example, by altered management of retained habitat or providing treelines and hedgerows to provide safe commuting routes for wildlife. Detail on the proposed ecological improvements associated with the Project is further outlined within ES Chapter 6 (Biodiversity) (Application Documents 3.2-3.4).

Business, Freight and Port Operators

4.2.28 As previously outlined, the A66 is an important route for freight traffic, with HGVs comprising on average 25% of total vehicles on most lengths of the route between Scotch Corner and Penrith, significantly higher than on comparable roads of this nature.

4.2.29 The A66 is a key route between the ports of Teesport, Grimsby and Immingham to northwest England, and Scotland. Teesport alone, the nearest port to the A66, accounts for 28.4 million tonnes of cargo per annum with Grimsby and Immingham accounting for 54 million tonnes of cargo annually. The economic impact of this is covered in Chapter 5 of this report. However, the importance of transport improvements to the freight industry both regionally, nationally and internationally cannot be underestimated.

4.2.30 In the event of a closure on the A66, there are limited diversion routes for HGV operators, and this leads to delays, longer journey distances and longer journey times. For a closure of the A66 between Scotch Corner and Bowes (journey distance 24km (15miles)), the diversion route follows the A1(M), A66(M) and the A67, and is 43km (27miles) in length. This route has 30mph speed restrictions through Darlington, weight restrictions at Barnard Castle and is unsuitable for abnormal loads due to the width of the road.

4.2.31 In the event of a closure between Penrith and Brough (journey distance of 34km (21miles)), the diversion route follows the M6 and A685, and is 53km (33miles) in length. This route has a speed limit of 30mph through Kirkby Stephen and 40mph through Brough, and vehicles weighing in excess of 18 tonnes are restricted from using the A685 between Brough and Kirkby Stephen, with the exception of access, permit holders or vehicles moving livestock.

4.2.32 In the event of a full route closure, or due to weight restrictions, the diversion route for heavy goods vehicles is significantly longer than the direct distance of 80km (50miles) as it uses the A1(M), the A69 and the M6 and has a length of 184km (115miles).

4.2.33 Freight traffic will often use the diversion route if delays are likely to be long term, but sometimes will remain on the A66 waiting for the traffic to clear, either because they cannot physically turn back due to lack of turning facilities, or the driver does not have the required driving hours left to reach the nearest truck stop or rest location.

4.2.34 Due to weight restrictions and height restrictions on highways structures, and also the proximity of buildings to the carriageway, it is not always feasible to enable HGV traffic to use the shorter diversion routes.

4.2.35 In light of the above, it is clear that freight and transport businesses will benefit from improvements to journey time reliability across the A66 and coupled with additional capacity on the carriageway, the Project will have positive trade impacts.

4.2.36 Plate 5: Local Diversion Routes and Plate 6: Long Distance Diversion Routes set out below denote how these diversions work geographically and highlight the longer diversion distances which are currently necessary with A66 route closures.

4.2.37 In dualling the remaining lengths of the A66 between Penrith and Scotch Corner, along with other improvements, additional resilience will be built into the road which it is anticipated will result in fewer road closures. By dualling the road, full closures will be less likely, with freight hauliers expected to be the most positively benefitted by this. Currently, there are fewer opportunities for diversion or turning around along this route for large vehicles. Freight and transport businesses will benefit from improvements to journey time reliability across the A66.

4.2.38 Coupled with additional capacity on the carriageway, the Project will have positive trade impacts enabling more freight to be transported, therefore supporting transformational growth envisaged by the Northern Powerhouse initiative and the Government's 'Levelling Up' agenda.

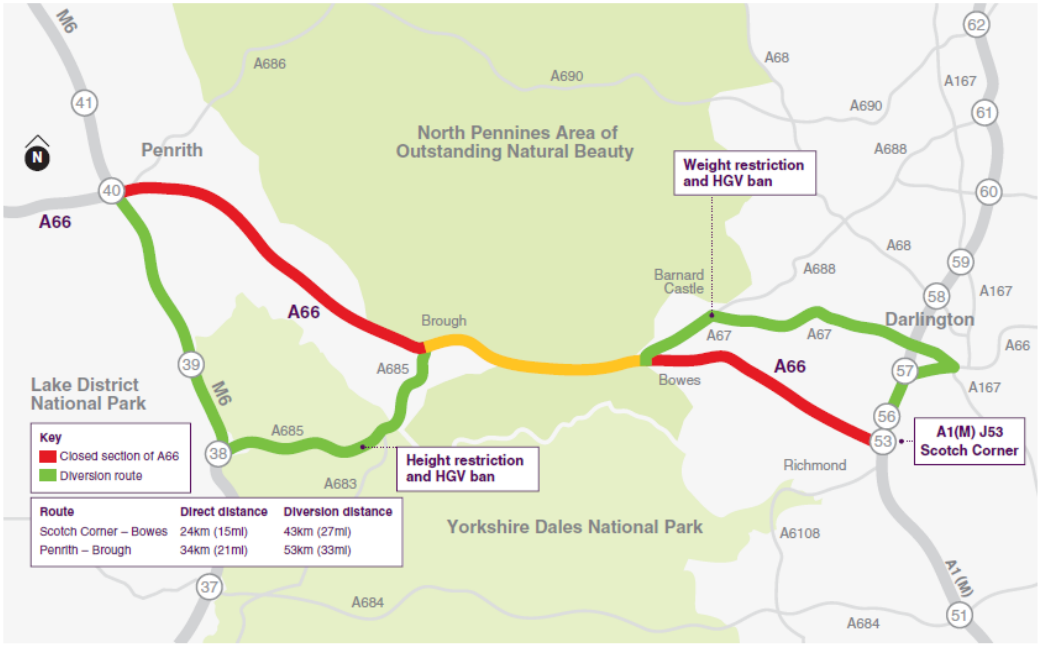

Plate 5: Local Diversion Routes (Map not to scale)

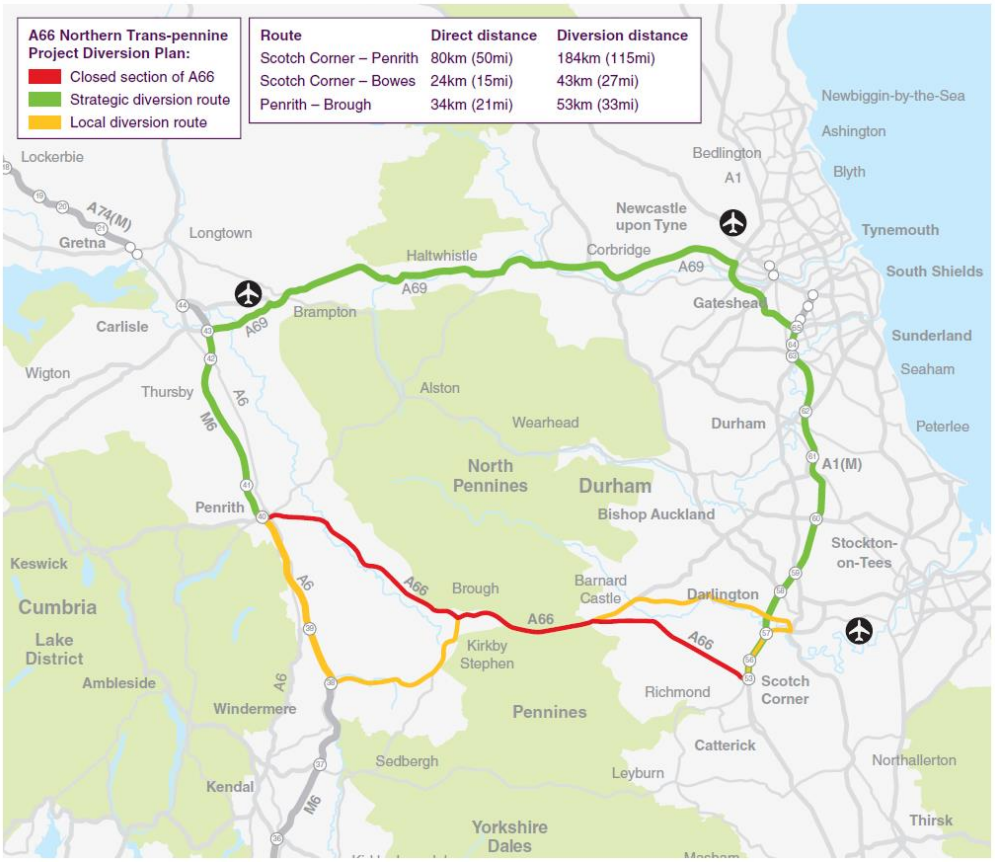

Plate 6: Long Distance Diversion Routes (Map not to scale)

4.3 Future network performance

4.3.1 Traffic modelling has been carried out to understand the future network performance of the road. The current estimated opening year for the scheme is 2029, and the scheme design year is 2044. Two additional forecast years, consisting of an intermediate year of 2051 and a final forecast year of 2088, each used in the economic appraisal, have also been modelled.

4.3.2 The forecast year includes Do-Minimum 'without Project' ('DM') and Do-Something 'with Project' ('DS') models which have been developed for each time period as per the base year traffic model (2019).

4.3.3 These scenarios can be described as follows:

- The DM reflects forecast conditions in the assessment year with all the committed development and forecast year population in place.
- The DS reflects the DM forecast but with the addition of the A66 Northern Trans-Pennine Route Project.

4.3.4 The DM models capture the enhancements made in the 2019 base year traffic model as well as proposed forecast year developments and transport infrastructure based on their level of certainty. Full details of this process can be found in the ComMA Report (Volume 7, Application Document 7.6).

4.3.5 The DS model is the DM model plus the Project.

4.3.6 The key conclusions from the 2044 strategic flow forecasts are:

- The average traffic growth between 2019 and 2044 DM (that is, without the Project) is 41% across all locations considered.
- Typically flows on the A66 in 2044 without the Project are between 21,000 annual average daily traffic ('AADT') (between Appleby and Brough) and 42,000 AADT (between M6 Junction 40 and Kemplay Bank).
- The average additional growth on the A66 due to the Project (that is, DS v DM) is 30%.
- The resultant flows on the A66 in 2044 with the Project are between 29,000 AADT (between Appleby and Brough) and 47,000 AADT (between M6 Junction 40 and Kemplay Bank).

4.3.7 This growth is due to national changes in; population, trip rates, Gross Domestic Product ('GDP') and income, cost of driving, licence holding, and demand for goods, as well as anticipated growth due to the provision of a higher standard route.

4.3.8 In 2044 the traffic increase in the DM on the A66 is primarily associated with car and Light Goods Vehicles ('LGV') traffic, which has increased by 40-44% between the base and the DM, while the HGV traffic has only grown by 4-7%.

4.3.9 These results show a high proportion of HGVs; however, the proportion of HGVs reduces in the DM future year scenario. This reflects the difference in central government projections for these different vehicle classes, as contained in the National Trip End Model ('NTEM') v7.2, Road Traffic Forecasts ('RTF') 18 and the Transport Analysis Guidance ('TAG') databook-reference.

4.3.10 Within the DS scenario, the additional traffic attracted to the route is mostly car traffic, however there is also some additional HGV traffic attracted.

4.3.11 The improved linkage benefits communities within the north of England, who, due to the rural nature of the region, often lack access to key local services for example, General Practice ('GP') surgeries, primary schools and supermarkets. These communities are often required to commute over longer distances to access improved employment opportunities.

4.3.12 The increased flow also reflects more tourists benefiting from improved links to areas such as the Lake District and the North Pennines AONB, thereby improving the economies within this area.

4.4 Overview of journey times and reliability

4.4.1 The forecast journey times along the A66 from the M6 J40 to the A1(M) Scotch Corner without the delivery of the Project show that there will be an increase in journey time of approximately five minutes (9%) along the A66 corridor if the Project is not delivered. This is because the single carriageway lengths are near their capacity throughout the assessment period.

4.4.2 Traffic flows across the A66 corridor are forecast to increase if the Project is delivered, with users who would have otherwise taken longer distance journeys to avoid using the A66, drawn to the route due to improved reliability.

4.4.3 Journey time savings between M6 J40 and A1(M) Scotch Corner with the delivery of the Project, will save between 10 and 13 minutes (19-22%) when travelling along the A66 corridor in future years.

4.4.4 The journey time savings on a scheme basis are provided in the table below.

Table 4-4 : A66 journey times savings (in minutes) by scheme length

	Eastbound			Westbound		
	AM	IP (Interim)	PM	AM	IP (Interim)	PM
	Change	Change	Change	Change	Change	Change
Penrith to Temple Sowerby	-01:24	-01:33	-01:35	-01:33	-01:28	-01:28
Temple Sowerby to Appleby	-03:01	-03:26	-04:01	-03:28	-03:20	-03:19
Appleby to Brough	-02:45	-03:06	-03:06	-02:44	-03:00	-02:55
Bowes Bypass	-00:25	-00:28	-00:30	-00:36	-00:39	-00:37
Cross Lanes to Rokeby	-01:10	-01:15	-01:22	-01:03	-01:08	-01:06
Stephen Bank to Carkin Moor	-02:43	-02:54	-03:00	-02:46	-03:04	-03:11
Total	**-11:22**	**-12:28**	**-13:13**	**-12:02**	**-12:51**	**-12:54**

4.4.5 Journey time impacts for road users are considered as follows:

- Travel time variability on the A66 during normal operating conditions (daily congestion).
- Travel time variability on the A66 during carriageway incident constrictions.
- Travel time delay on the A66 during carriageway incident constrictions shorter than six hours, with some traffic diverting.

4.4.6 Reliability effects on the A66 associated with the Project improvement are assessed in MyRIAD (Motorway Reliability Incidents and Delays) in terms of Travel Time Variability (TTV) and travel time delays during incidents shorter than six hours. The net impact, (equivalent to DS reliability costs subtracted from DM reliability costs), is summed over the 60-year economic appraisal period 2029 – 2088, inclusive and is converted to 2010 present year values and market prices, discounted.

4.4.7 TTV impact is calculated in two respects:

- During normal operating conditions, or daily congestion.
- During incidents (accidents, breakdowns, and other events).

4.4.8 Travel time delays shorter than six hours, during incidents, are calculated for two parts of the road network:

- On the A66 route between Penrith and Scotch Corner.
- On adjacent diversion routes.

4.4.9 The spread of user reliability savings between trip purposes is shown in the table below. The overall 60-year total benefit of £272.204m is proportioned between trip purposes as follows: 46% amongst business users (including HGVs), and 54% amongst commuter and other users.

Table 4-5 : Reliability Benefits by Trip Purpose (Net Outcome DM – DS)

Reliability Aspect	Net Valuation (£m, at 2010 Market Prices, Discounted) by Trip Purpose		
	Business Users	Commuter & Other Users	All Users
TTV (Daily Congestion & Incidents)	71.811	79.348	151.159
Incident Delays (A66 Route)	52.697	67.816	120.513
Incident Delays (Diversion Routes)	0.231	0.301	0.532
All Reliability Aspects	124.739	147.465	272.204

4.4.10 The results of the journey time reliability assessment are discussed in detail in the ComMA (Application Document 3.8).

4.5 Road safety (including accident analysis and expected level of savings)

4.5.1 This section assesses the likely change in the number of road accidents as a result of the scheme improvements. It also predicts the consequent change in the number and severity of casualties in terms of individuals who are killed or injured.

4.5.2 COBALT (Cost and Benefit to Accidents – Light Touch) is the DfT's recommended computer program for undertaking the analysis of the impact of a road scheme on accidents. This programme will be used to appraise the impact of the Project on accidents.

4.5.3 Table 4-6 shows the number of accidents saved by the Project. Negative figures show an increase in the number of accidents forecast. This is due to increased traffic flows on surrounding roads which aren't improved as part of the Project.

Table 4-6 : COBALT Assessment Results – Accidents Saved

Scheme	Personal Injury Accidents Saved	Fatal and Serious Accidents Saved	Monetary Value
M6 Junction 40 to Kemplay Bank	17	2	£0.85m
Penrith to Temple Sowerby	-1	6	£2.36m
Temple Sowerby to Appleby	142	18	£9.03m
Appleby to Brough	86	17	£8.50m
Bowes Bypass	-17	1	£0.30m
Cross Lanes to Rokeby	-23	2	£0.40m

Scheme	Personal Injury Accidents Saved	Fatal and Serious Accidents Saved	Monetary Value
Stephen Bank to Carkin Moor	56	13	£6.40m
A1(M) Junction 53 Scotch Corner	-20	-2	-
All Schemes Total	240	57	£27.84m
Total Study Area (Including local roads)	138	55	£29.646m

4.5.4 Table 4-7 shows the number of casualties saved by the Project. Negative figures show an increase in the number of casualties forecast.

Table 4-7 : Cobalt Assessment Results – Casualties Saved

Scheme	Fatal Casualties Saved	Serious Casualties Saved	Slight Casualties Saved
M6 Junction 40 to Kemplay Bank	0	3	23
Penrith to Temple Sowerby	2	13	9
Temple Sowerby to Appleby	4	39	184
Appleby to Brough	5	36	129
Bowes Bypass	0	3	-17
Cross Lanes to Rokeby	1	4	-23
Stephen Bank to Carkin Moor	4	28	87
A1(M) Junction 53 Scotch Corner	0	-2	-25
All Schemes Total	15	123	368
Total Study Area (Including local roads)	13	127	196
Figures for individual schemes rounded to nearest whole number			

4.5.5 Table 4-8 shows the number accidents saved on the improved lengths and existing dual carriageway lengths. Similarly, Table 4-9 shows savings for casualties.

Table 4-8: Cobalt Assessment Results – Accidents Saved

Scheme	Personal Injury Accidents Saved	Fatal and Serious Accidents Saved
A66 Scheme Total	240	57
A66 Dual Carriageway Lengths	-320	-21
A66 Total	**-80**	**36**

Table 4-9: Cobalt Assessment Results – Casualties Saved

Scheme	Fatal Casualties Saved	Serious Casualties Saved	Slight Casualties Saved
A66 Scheme Total	15	123	368
A66 Dual Carriageway Lengths	-6	-40	-409
A66 Total	**9**	**83**	**-41**

4.5.6 Across the study area, the Project is expected to avoid 138 accidents over the 60-year period, resulting in 336 fewer casualties in the total study area. 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 increase flow on the improved A66 removes traffic from other roads on the surrounding road network (rural links with a poorer safety record). In total 13 fatalities, and 127 serious accidents are saved by the Project.
- Road safety (including accident analysis and expected level of savings)

4.6 Road safety: Walking Cycling and Horse-riding (WCH)

4.6.1 The Project provides improvements to WCH routes across all schemes of the A66 route with some level of betterment compared with the provision of the existing single carriageway lengths. This includes through full design upgrades, or improving existing provision where standards require. Historically, a number of WCH routes have been severed or disconnected as a result of development along the route alignment. The Project seeks to improve upon these existing severed routes as well as reconnecting the routes which would be severed by the proposed A66 alignment. In total, 35 reconnections are proposed, 23 of which are improvements to the existing WCH route network.

4.6.2 Table 4-10 summarises the scheme-by-scheme high-level provision:

Table 4-10 : WCH Proposals

Scheme	Scheme WCH Proposals
M6 Junction 40 to Kemplay Bank	No change as part of design – However, existing Toucan crossings and shared cycle/footway will be retained, and surfaces improved where standards require.
Penrith to Temple Sowerby	Shared cycle/footway parallel to scheme running entire length. Segregated crossings of dual carriageway at Brougham and Center Parcs to reconnect and tie in existing Public Rights of Way with new route. New route ties into existing provision at each end of the scheme.
Temple Sowerby to Appleby	Shared cycle/footway in verge of old de-trunked A66 running entire length. Segregated crossings of dual carriageway at several locations to reconnect and tie in existing Public Rights of Way. New route ties into existing provision at each end of the scheme.
Appleby to Brough	Shared cycle/footway parallel to scheme running entire length. Segregated crossings of dual carriageway at several locations to reconnect and tie in existing Public Rights of Way. New route ties into existing provision at each end of the scheme.

Scheme	Scheme WCH Proposals
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 Lanes to Rokeby	Shared cycle/footway parallel to the scheme from Cross Lanes to Greta Bridge, connecting into existing cycleway at Greta Bridge. Segregated crossings of dual carriageway at Cross Lanes and Rokeby reconnect and tie in existing Public Rights of Way.
Stephen Bank to Carkin Moor	Shared bridle/footway in verge of old de-trunked A66 running entire length. Segregated crossings of dual carriageway at several locations to reconnect and tie in existing Public Rights of Way.
A1(M) Junction 53 Scotch Corner	no change as part of design – However, existing Toucan crossings and shared cycle/footway to be retained and surfaces improved where standards require.

4.6.3 Further details are provided within the WCH Report (Application Document 2.4) with the benefits of these WCH improvements on a scheme-by-scheme basis outlined further in Chapter 6 of this document. It is, however, considered that there is significant betterment across the schemes forming part of the Project route for WCH users either through full design proposals or updating existing provision to the required standards.

5 Economic Case overview

5.1 Introduction

5.1.1 This chapter outlines the high-level economic assessment of the Project. It considers the transport, economic, environmental and social impacts of the Project. It provides a framework and uses TAG guidance to establish how the Project supports its objectives. The economic case is also a tool, using the best available evidence, to assess whether the Project overall presents value for money for public expenditure. Further detail on the methodology and detail of this economic assessment is found within the Combined Modelling and Appraisal Report (Application Document 3.8).

5.1.2 Economic impacts are mainly determined using principles of monetised cost-benefit analysis: an assessment of the benefits and costs that will accrue to society to enable the calculation of a benefit-cost ratio ('BCR'), but indicative, qualitative and distributional impacts are also considered within the economic case. All monetary values are presented as 2010 present value market prices.

5.2 Overview of economic assessment and methodology used

5.2.1 The Project economic assessment follows a monetised cost benefit analysis framework to present a single figure that summarises all of the social costs and benefits that would be expected to occur relative to a state-of-the-world without investment in the Project.

5.2.2 Potential impacts of the Project are split into four categories, A, B, C and D:

- Category 'A' covers the direct impacts on road users, including delays during construction; accidents; and changes in tailpipe, construction, and land use emissions. The appraisal method is recognised and established. User benefits are calculated by taking the difference between the DS impacts and the DM to provide the net effects in user costs (the Present Value Benefits, or PVB)2. Conversely, Public Accounts costs are calculated by subtracting the DM expenditure form DS expenditure items, to give the net increment on expenditure (the Present Value Costs, or PVC). The 'initial' Benefit to Cost Ratio (BCR) is calculated as the ratio of PVB to PVC;
- Category 'B' covers the transport connectivity impacts, journey time reliability and wider economic impacts. They too are quantified using the same methodology as Category 'A', though the impacts are only used to produce an 'adjusted' BCR as there is more uncertainty around the appraisal methods;

[2] The DM forecast reflects forecast conditions in the assessment year with all committed development and forecast year population in place. The DS network reflects the DM forecast but with the addition of the A66 Northern Trans-Pennine Route Project.

- Category ‘C’ covers route resilience and network resilience. Category ‘C’ impacts are quantified and monetised but are even less certain than Category ‘B’ impacts and therefore are not included in the initial or adjusted BCRs;
- Category ‘D’ covers the social and environmental impacts. These impacts are assessed qualitatively using the DfT seven-point scale.

5.2.3 The impact categories and their application in the economic appraisal are summarised in the table below.

Table 5-1 : Application of Category ‘A’ to ‘D’ impacts in the Cost-Benefit Analysis Framework

Impact Category	Application
Category A	Monetised items represent the ‘Initial’ BCR analysis.
Category B	Monetised items inform the incremental adjustment to the ‘Initial’ value for BCR that is, the ‘Adjusted’ BCR
Category C	Items have an indicative valuation but are excluded from the monetised impacts
Category D	Items are not monetised

5.3 Monetised benefits

5.3.1 Table 52 identifies which elements are included in each category of the appraisal. The assessment method for each element can be found within the appendix of the Combined Modelling and Appraisal Report (Application Document 3.8), showing the approach adopted to appraise the monetised impacts of the Project as per DfT’s TAG.

Table 5-2 : Breakdown of Appraisal Elements by Category

Element	Category
Transport economic efficiency (‘TEE’)	A
Wider Public Finance and Public Sector Operator Revenue	A
Scheme construction & maintenance impacts	A
Noise, Air Quality and Greenhouse Gases (including tailpipe, construction and land use emissions)	A
Accidents	A
Journey time reliability	B
Route resilience	C
Network resilience	C
Wider Economic Impacts (‘WEI’)	B
Social Appraisal of Security, Access to Facilities and Services, Affordability and Severance	D
Environmental Appraisal (inc. landscape, townscape, historic environment, biodiversity and water environment)	D

5.3.2 As described in Chapter 4, traffic modelling has been carried out to understand the future network performance of the road. The current

estimated opening year for the scheme is 2029, and the scheme design year is 2044. Two additional forecast years, consisting of an intermediate year of 2051 and a final forecast year of 2088, each used in the economic appraisal, have also been modelled.

5.3.3 Cost estimates for the Project have been prepared by National Highways. Table 53 presents the central estimate of the construction cost.

Table 5-3 : Central Estimate of the Project Construction Cost (2010 prices, discounted, £m)

Cost Element	Scheme Cost
Preparation	56.624
Supervision	14.78
Construction Works	556.502
Land	65.837
Total	693.743

5.3.4 Table 54 presents the monetised benefit and cost streams for the Project economic appraisal (core scenario). In accordance with TAG, all costs and benefits reported below are in 2010 prices, discounted to 2010.

Table 5-4 : Analysis of monetised costs and benefits (£m)

Impact Stream	Project cost / benefits (£m)
CATEGORY 'A' IMPACTS (Established Assessment)	
Transport economic efficiency (TEE)	521.097
Wider Public Finances and Public Sector Operator Revenue	79.129
User Costs During Scheme Construction and Maintenance	-61.067
Noise, Air Quality and Greenhouse Gases (including tailpipe, construction and land use emissions)	-210.546
Accidents	29.646
Present Value of Benefits (PVB)	358.320
Broad transport budget Present Value of Costs (PVC), inc. - *Capital expenditure (Construction)* - *Capital expenditure (Operation & Maintenance)* - *Operator Revenue (Normal Operation)* - *Operator revenue (Construction)*	750.498
Net Present Value (NPV)	-392.178
Initial BCR	0.48

Impact Stream	Project cost / benefits (£m)
CATEGORY 'B' IMPACTS (Evolving Assessment)	
Journey Time Reliability	272.204
Wider Economic Impacts	61.460
Adjusted PVB	691.984
Adjusted NPV	-58.514
Adjusted BCR	0.92
CATEGORY 'C' IMPACTS (Indicative Assessment)	
Resilience	19.485

5.3.5 Combining the core scenario outcomes in Category 'A' together with Category 'B' outcomes provide a PVB of £692.0m over a 60-year appraisal period. The single largest contributor is the travel time savings that will be realised by business users, which is most pertinent provided that the A66 is an important route for freight traffic, 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.

5.3.6 Notably, Table 5-4 provides only the monetised impact streams for any expected effects that are adequately well evidenced to allow for them to be monetised and included in a cost-benefit analysis, as determined by the DfT. As such, Table 5-5 should be considered alongside the key qualitative and indicative benefits that the Project is expected to deliver, as these impacts are often equally critical to the rationale and justification for the scheme. The cost-benefit analysis is augmented by the following additional benefits:

- The A66 is expected to provide wider network resilience benefits, allowing for other routes on the adjacent strategic and local road network to recover to normal operating conditions faster after an incident. The assessment shows small positive travel cost savings, with the A66 improvement, on all local road modelled link lengths and on the overall strategic network (M6 and M62). This is a result of making the A66 an easier and more dependable diversion route.
- Overall access for walking, cycling or horse-riding will be improved with the introduction of approximately 33km of additional WCH route having been brought into the scope of the Project. All schemes have some level of betterment compared with the provision on the existing single 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.
- The overall magnitude of noise reductions outweighs noise uplifts, meaning the A66 will provide a net environmental benefit, in part due to the A66 bypassing properties on the existing route but also encouraging traffic to divert on to the A66 from adjacent minor roads.

Economic Benefits

5.3.7 Table 5-5 demonstrates that 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 total travel cost savings for road users, 92% are gained by business users, 5% by commuters, and 3% by other users.

5.3.8 Table 5-5 shows that the Project is also forecast to achieve significant reliability benefits, valued at £272.2m. This reflects the high levels of travel time variability currently experienced on the A66 route infrastructure. The overall 60-year total benefit of £272.2m is relatively evenly spread amongst business and commuter users, with business users realising a 46% share and a 54% share for commuter and other users.

5.3.9 For the wider economic impacts ('WEI') of the Project, impacts on business output and labour supply (Income Tax Revenue) have been calculated. The total A66 WEI benefit is £61.5m and is chiefly associated with the increased value of business output through travel efficiency and reliability cost savings. The remainder of benefits is derived through tax revenue from releasing inactive labour supply.

5.3.10 The significant economic benefits are summarised in Table 5-5 below.

Table 5-5 : A66 summary of key economic benefits

Item	Project Benefits
Business Users (Travel Time, Vehicle Operation and User Charges)	£477.6m
Reliability Benefits	£124.7m
Wider Economic Impacts	£61.5m

Environmental Benefits

5.3.11 An assessment of the environmental impacts for the Project has been carried out and monetised in accordance with TAG advice Unit A3 Environmental Impact Appraisal (July 2021) and TAG impact-specific workbooks. The monetised air quality, noise and greenhouse gas impacts are presented in Table 5-6, 27 and 28.

Table 5-6 : Monetised air quality impacts (£m)

Item	Project Benefits
PM2.5 damage cost	-£7.0m
NOx damage plus abatement cost	-£2.7m
Total value of change in air quality	-£9.7m

Table 5-7 : Monetised noise impacts (£m)

Item	Project Benefits
Present value of noise (dis)benefits	£1.24m

Table 5-8: Monetised greenhouse gas impacts (£m, positive value represents a cost)

Item	Project Benefits
Value of change in greenhouse gases	£202.1m

Social Benefits

5.3.12 As with business users, the Project is also forecast to achieve journey time benefits for commuters and other users. These consumer benefits are forecast to be £43.5m over the 60-year appraisal period.

5.3.13 Similarly, the Project is also forecast to achieve reliability benefits for commuting and other uses, on top of the benefit to business users. These impacts are forecast to be £147.5m over the same appraisal period.

5.3.14 In terms of accidents and road safety, the Project is forecast to save 281 personal injury accidents and 530 casualties. Taking account of the numbers of accidents and casualties saved by the Project, the total accident saving is £29.6m.

5.3.15 The significant social benefits are summarised in Table 5-9 below.

Table 5-9 : A66 summary of key social benefits

Item	Project Benefits
Commuter and other users (Travel Time, Vehicle Operation and User Charges)	£43.5m
Reliability Benefits	£147.5m
Safety and accidents	£29.6m

5.4 Non-monetised benefits and disbenefits

Assessment of social and environmental non-monetised benefits

5.4.1 Non-monetised benefits have been assessed qualitatively and are informed by the findings of the ES. The results of these assessments are summarised below, where both positive (benefits) and negative (disbenefits) are identified. These impacts are not monetised and are subsequently excluded from the BCR calculations, however they are important to consider in justifying the Project.

5.4.2 Table 5-10 below contains a summary of the A66 social impacts for road users and communities.

Table 5-10 : A66 Social Impact Assessment

Social Impact Aspect	Summary of A66 Outcomes	Qualitative Score (7-Point Scale)
Physical Activity	The likely outcome is a slight increase in the number of people walking and cycling on bypassed lengths of existing A66, which are retained at Kirkby Thore / Crackenthorpe, Warcop / Langrigg, and Ravensworth / W and E Layton. There is likely to be no change in the number of people crossing the upgraded lengths of A66, using tunnels or bridges, because most existing facilities are retained or substituted with new more user-friendly arrangements.	Slight Beneficial
Journey Quality	The likely outcome is improved journey quality for road users on A66 because the Project provides new dual carriageway lengths where the layout is	Moderate Beneficial

Social Impact Aspect	Summary of A66 Outcomes	Qualitative Score (7-Point Scale)
	faster, safer and enables easier overtaking of heavy vehicles. The improvement offers a more consistent route standard and level of service along the A66 between Penrith and Scotch Corner. The Project also provides safer grade-separated junctions for accessing the A66 and better lay-by facilities. It introduces more technology to assist drivers and allow safer and more secure journeys, in the form of VMS, vehicle / incident detection equipment and CCTV installations	
Security	The Project has no meaningful impact on public transport provision or use, and so it has no effect on the security of passengers.	Neutral
Accessibility of Services & Facilities	The project has no meaningful impact on public transport provision or use, and so has no effect on the access to services and facilities.	Neutral
Affordability	Overall, the vehicle operating costs (VOC) impact of the A66 Project, as assessed in TUBA, is strongly negative, representing a net road user disbenefit. VOC disbenefits are shared fairly evenly, amongst five income deprivation categories (quintiles) of Lower Layer Super Output Area (LSOA), in the region of focus. As the disbenefits are shared evenly, and while users may see the monetary cost, it is on the whole worth the additional expense due to the amount of time saved. It is therefore only judged as 'Slight Adverse'. Masked total vehicle operating charge disbenefits are £98.434m.	Slight Adverse
Severance	The overall severance outcome is neutral. No roads have large adverse or large beneficial severance impacts. 9,058 local residents may be disadvantaged on roads with a moderate adverse severance increase. 12,405 local residents may gain on roads with a moderate beneficial severance reduction.	Neutral
Optional Usage / Non-Usage Value	The Project has no meaningful impact on public transport provision or use, and so it has no effect on people's perception of option value.	Neutral

5.4.3 The effects of the Project on the surrounding environment are summarised in Table 5-11 below.

Table 5-11 : Environmental effects

Environmental Impact Aspect	Summary of A66 Outcomes	Qualitative Score (7-Point Scale)
Landscape	- M6 Junction 40 to Kemplay Bank: Removal / replacement of screen planting (Slight Adverse); - Penrith to Temple Sowerby: Introduction of additional structures (Slight Adverse);	Moderate Adverse

Environmental Impact Aspect	Summary of A66 Outcomes	Qualitative Score (7-Point Scale)
	- Temple Sowerby-Appleby: New overbridges north of Kirkby Thore (Moderate Adverse) - Appleby to Brough: New well-defined boundary to the AONB (Slight Beneficial); - Bowes Bypass: Corridor widening and new overbridge (Slight Adverse); - Cross Lanes to Rokeby: Corridor widening and new Rokeby junction (Moderate Adverse); - Stephen Bank to Carkin Moor: Route through farmland and new junctions (Moderate Adverse); - A1(M) Junction 53 Scotch Corner: No change (Neutral). For all schemes, Tranquillity impacts have been assessed as Moderate Adverse as a result of additional infrastructure intrusion and traffic noise. Impacts on Culture have too been assessed as Moderate Adverse due to the impacts on setting of registered park/garden at Rokeby Park, and on Roman road, Scheduled Monuments, listed buildings and conservation areas. There are Slight Adverse Landcover impacts due to the loss of landmark trees and vegetation, and Moderate Adverse Character impacts resulting from the encroachment on the landscape of North Pennines AONB. The overall Landscape impact is Moderate Adverse.	
Historic Environment	Impacts on four types of heritage in the historic environment are assessed: Scheduled Monuments, listed buildings, registered park and garden (Rokeby), and non-designated heritage. The effects on each type of heritage are measured in respect of six aspects: form, survival, condition, complexity, context and period. The impacts on each type of heritage are appraised both inside and outside the A66 project boundary, with the following results: Inside A66 boundary – • Scheduled monuments (Moderate Adverse) • Listed buildings (Neutral) • Registered Park and garden (Neutral) • Non-designated heritage (Moderate Adverse) Outside A66 boundary (within area of focus) –	Moderate Adverse

Environmental Impact Aspect	Summary of A66 Outcomes	Qualitative Score (7-Point Scale)
	• All heritage types (Neutral) Overall Impact (inside and outside A66 boundary) is Slight Adverse	
Biodiversity	The majority of potential impacts affecting biodiversity features will arise during the construction phase, resulting in permanent and temporary adverse effects on biodiversity features. These include habitat loss, fragmentation of habitats and populations, disturbance to species, habitat degradation and species injury and mortality. Operational impacts of the Project on biodiversity features will largely be limited to species injury and mortality and permanent fragmentation. A significant adverse effect on swamp habitat is likely as a result of construction of the Project, specifically in the Stephen Bank to Carkin Moor scheme. No significant adverse effects are likely during operation. Biodiversity units would be substantially higher as a result of the Project. This represents a total net change of 38.41%. The majority of this is from provision of other neutral grassland within the permanent acquisition of land. Biodiversity units for hedgerows would be higher as a result of the Project. This represents a total net change of 11.74%. The overall impact is Slight Adverse.	Slight Adverse
Water Environment	The assessment considers the Project's impacts upon the quality and quantity of surface watercourses, ponds, groundwater, groundwater to surface water interactions, abstractions and changes in flood risk and road drainage within the Order Limits and a 1km buffer of the Order Limits. The construction phase of the Project may result in permanent and temporary losses of quality and quantity of surface watercourses, groundwater and ponds, groundwater terrestrial ecosystems (GWDTEs) or changes to flood risk. With appropriate mitigation measures in place to prevent pollution from construction sources (including hydrocarbons, concrete and sediment) in normal and flood conditions, and embedded mitigation to manage surface water and dewatering activities, the residual impacts upon the water environment are slight adverse.	Slight Adverse

Environmental Impact Aspect	Summary of A66 Outcomes	Qualitative Score (7-Point Scale)
	During the operational phase of the Project, permanent losses to the quality or quantity of surface watercourses, groundwater and ponds, GWDTEs or changes to flood risk may occur. With embedded mitigation such as the design and installation of open span watercourse crossings or viaducts, design and installation of a drainage system and flood risk management measures (such as flood compensatory storage) and the avoiding of sensitive GWDTE habitats, residual impacts upon the water environment are slight adverse.	

5.5 Performance against Project objectives

5.5.1 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. The scope of the appraisal covers the full range of economic, environmental and social impacts of the Project.

5.5.2 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.

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

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

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

- 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 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.

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

- 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.
- 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.

5.5.6 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.

5.5.7 Similarly, the social impacts (assessed qualitatively) are largely positive with only one negative impact: affordability. The environmental assessment demonstrates that, on the whole, effects are likely to be negative with two slight adverse effects (Historic Environment and Biodiversity), a moderate adverse effect (Landscape) and one insignificant effect.

6 Case for each scheme

6.1 Overview

6.1.1 The Project is made up of a number of schemes which together form the Project and deliver against the overall objectives. However, it is recognised that each scheme comes with its own challenges, opportunities and benefits. Each scheme itself performs and delivers a 'case' as to why the proposed work is necessary to improve the A66, and meet the wider project objectives, as well as collectively forming the Project and the overall case to be made for the improvements to the A66.

6.1.2 This section sets out the following in relation to each of the individual schemes:

- The existing problems within the scheme boundary;
- How this has been addressed by the proposed design of the scheme.
- The benefits the scheme will deliver;
- Outline of legislation and policy issues, such as AONB incursions, European designated sites;
- A table of assessment of each scheme against the overall project objectives; and
- A review of consultation responses for each scheme where they result in a design change or reference the specific need for each scheme.

6.1.3 As outlined in Chapter 3, the Project includes upgrading the remaining single lane lengths of the A66 between Penrith and Scotch Corner which have not been subject to previous dualling, to dual two-lane all-purpose roads with a speed limit between 50mph and 70mph.

6.1.4 The Project also includes alterations to existing junctions and accesses within these lengths of single carriageway.

6.1.5 The sections below outline the scheme specific issues, solutions and benefits for each of the schemes presented.

6.2 M6 Junction 40 to Kemplay Bank Roundabout

Description of the problems within the scheme boundary

6.2.1 This scheme runs from M6 Junction 40 at Penrith through to east of Kemplay Bank Roundabout; an at-grade five-arm roundabout immediately south of Penrith which operates under full signal control. Currently, the A66 at this location is two lanes in each direction, eastbound and westbound. A further two arms serve the A6 with single carriageway flared entries and exits towards Penrith in the north and Shap in the south. The fifth arm of Kemplay Bank Roundabout serves the A686 Carleton Avenue, to the north-east of the junction.

6.2.2 Emergency services also have direct access onto Kemplay Bank Roundabout from the south-east, between the A66 westbound arm and the A6 southbound arm.

6.2.3 Kemplay Bank Roundabout serves as a primary means of access to Penrith as well as a hub for local services. Penrith Community Hospital is to the north, and Penrith Community Fire Station to the south. Cumbria Constabulary and the Fire Service access the A66 via an underpass on the A686 (Carleton Avenue) to the East of Kemplay Bank Roundabout.

6.2.4 Kemplay Bank Roundabout often suffers from high levels of congestion at peak times but also throughout the day, affecting the flow of traffic along the A66 and for north and southbound traffic using the A6. This interaction of local and strategic traffic creates a bottleneck that can also have an impact on Junction 40 of the M6 leading to vehicles queueing in this location.

6.2.5 Vehicles slowing down as they approach Kemplay Bank Roundabout, due to queuing traffic, can lead to potential safety issues, creating problems for both east/west and north/south traffic as it passes through the roundabout. This length of the road forms an 'Accident Cluster Site' as outlined within Chapter 4 of this document and detailed further in the TA which accompanies this application (Application Document 3.7)

6.2.6 Feedback gathered from consultation and engagement events has consistently included comments that the local community tend to avoid driving in the Penrith area at peak hours and on Fridays, due to the traffic congestion, which impacts on local businesses and the economy. Alternative routes into Penrith on minor roads are preferred as they are perceived to be more reliable than travelling on the A66.

Description of the proposed scheme and how it will address the problems identified

6.2.7 As described in Chapter 3 of this document and summarised below, the proposed scheme will:

- provide a three-lane circulatory carriageway on the current roundabout at Kemplay Bank. The A66 eastern arm of the roundabout will be widened to three lanes in each direction. Widening will be required on all five approach arms to provide additional lanes and a dedicated left turn facility.
- relocate the existing access to Skirsgill Depot.
- ensure that all existing pedestrian and cycle connections will be retained and, where possible, enhanced.
- retain the existing police platform located on the Penrith North Bridge to the eastern side, between the M6 off slip and A592, in its current location.
- allow for the new dedicated left-hand lane from the M6 off slip.
- provide a new underpass beneath the existing roundabout facilitating a new dual carriageway under Kemplay Bank Roundabout.
- include upgraded, replacement new on-slip and off-slip roads.

- result in reduced speeds limit from the National Speed Limit to 50mph in both directions.
- require three ponds for the purpose of drainage of the road network and to maintain water quality.

6.2.8 The introduction of an underpass for the A66 through Kemplay Bank will provide an uninterrupted route for the A66 eastbound and westbound. This option was chosen as it meets the current and future capacity and congestion alleviation requirements while removing the need to acquire a large area of the local recreation ground to the north of Kemplay Bank roundabout. The improvements to this junction will remove issues of tailbacks and congestion, resulting in wider journey time savings for onward travel along the A66 and other routes. The removal of bottlenecks and queuing traffic in this location will also remove potential safety hazards along this stretch of the route. This option is also expected to reduce visual amenity and noise impact in comparison to the overpass option, which has previously been discounted.

6.2.9 Widening of the A66 between M6 Junction 40 and Kemplay Bank Roundabout on the five approach arms will provide additional lanes and dedicated left-turn capability with each controlled under its own signal phase. This will enable free flowing traffic and reduce congestion, ensuring the capacity of the junction is maximised where possible and that potential negative impacts on the surrounding areas such as Penrith town centre can be mitigated.

6.2.10 Free flowing traffic in this location will also reduce bottlenecks from queuing traffic at the junction, improving safety.

6.2.11 The speed limit will be reduced to 50mph along this length of the route. This enables the retention of the existing underpass from Carleton Avenue to the Cumbria Constabulary and Cumbria Fire and Rescue Service - a key emergency services route.

6.2.12 Widening the A66 in this location will require acquisition of land to the north of the A66, an area that is used by local people for recreation and is designated as public open space.

6.2.13 A new area of compensatory public open space will be provided through the acquisition of a nearby field from a local landowner. This new area of open space will be better connected to the Wetheriggs Country Park through to Bridge Lane. This new area will be enhanced with landscaping, planting and habitat creation.

6.2.14 Existing provision for WCH users and other NMUs has been retained and improved with the new scheme although the alignment has been altered in places to facilitate the new development. Cycleways and footways currently located through the centre of the roundabout will be re-routed around the roundabout. These minor changes to the alignment do not result in any negative change to the overall functionality and operation of the WCH network.

6.2.15 The relevant GA Plans relating to this scheme are available to view at (Application Document 2.5).

Benefits the scheme will deliver

6.2.16 As identified above, in addition to the immediate issues of congestion and the wider journey time savings this has for journeys along the A66, the scheme also delivers localised benefits for communities such as improved accessibility and better local connectivity.

6.2.17 The table below provides an overview of the location-specific benefits of this scheme considered against the wider project objectives.

Table 6-1 : M6 Junction 40 to Kemplay Bank Project objectives and scheme response

Theme	Project Objectives	Scheme Response
Transport	- Improve road safety, during construction, operation and maintenance for all, including road users, WCH, NMU, road workers, local businesses and local residents. - Improve journey time reliability for road users across the route. - 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 NMU provision along the route.	- The scheme increases capacity on the road network enabling more consistent journey times, with less congestion, making it easier to reliably plan journeys and reducing road user frustration. - The road will be designed to modern standards and perform as part of a consistent, high quality dual carriageway route, reducing risk of accidents. This length of the road forms an 'Accident Cluster Site' as outlined within Chapter 4 of this document and detailed further in the TA which accompanies this application (Application Document 3.7) - The A66 and subsequently the M6 will become a less congested, more efficient and a perceived more attractive route. - The improved road will be better able to cope with incidents and unexpected demands, such as road works and severe weather, leading to improved network resilience. - The inclusion of a local traffic lane in this location will be of benefit to local traffic movements in and around this area, addressing the issues of local road congestion and the potential for rat-running without the scheme, as raised during the consultation process. This is to the benefit of local road users. - The scheme will maintain, and, where required, make improvements through resurfacing provision for NMUs, helping encourage the use of more sustainable modes of transport for local journeys and encourage

Theme	Project Objectives	Scheme Response
		local people to explore their local area safely on foot, bicycle or horse back.
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 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.	- The existing A66 is a key national and regional strategic transport corridor. It carries high levels of freight traffic and is an important route for tourism and connectivity for nearby communities. If the existing A66 route is not improved, it will continue to constrain national and regional connectivity and may threaten the transformational growth envisaged by the Northern Powerhouse initiative and the achievement of the Government 'Levelling Up' agenda. This scheme forms part of a wider project which facilitates improved vehicle movements to the A66 route network and the journey time savings this results in. This has particular economic implications for freight and other business connectivity, improving strategic regional and national connectivity, particularly for hauliers. HGVs 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. - Improving access to key tourist destinations such as the North Pennines and Lake District. - The Project, in addition to improving the strategic route network, also makes improvements to the local road network, with new junctions and 'offline' improvements, removing local traffic from the A66, making local movements more efficient. - Improving congestion in the area, will also improve access issues for the local community, encouraging local communities to use local businesses and thereby boosting the economy. The proposed improvements to the junction will ease congestion for those travelling to Penrith town centre, offering potential for economic growth.
Environment	- Minimise adverse impacts on the environment and where possible	- The reduction in speed limit in this location, reduced congestion and fewer vehicles idling will reduce

Theme	Project Objectives	Scheme Response
	optimise environmental improvement opportunities.	emissions, helping to improve localised air quality as outlined in Chapter 5 Air Quality of the ES (Application Documents 3.2-3.4). - The provision of an underpass for east and west A66 movements will result in improved visual amenity and reduce noise in this location. For further details on the environmental benefits of this scheme see the ES Chapters 5-14, with Chapter 12 covering noise and vibration (Application Documents 3.2-3.4).
Community	- Reduce the impact of the route on severance for local communities.	- New access roads and pedestrian routes will make it easier for people such as pedestrians, walkers, cyclists and horse riders to navigate Kemplay Bank roundabout. - Signal-controlled crossings have been added to the scheme design to better facilitate WCH opportunities. - New public open space is proposed to replace that lost to facilitate the development, located to the east of Wetheriggs Park. It is considered that this new public space provides better connectivity to existing green space which may be considered of greater benefit to the community than the space lost. - The Chapter 13 (Population and Human Health) of the ES (Application Document 3.2-3.4) outlines that there will be significant permanent beneficial effects to 24 community assets and to the Lake District tourism sector. - Significant permanent beneficial effects are expected for one community asset as a result of reductions in noise and vibration as outlined in Chapter 12 (Noise and Vibration) of the ES.

Outline of legislation and policy issues, such as AONB incursions and European designated sites

6.2.18 This section considers the impact on historic, ecological, landscape and environmental designations.

The Historic Environment

6.2.19 There are two listed buildings within the zone of influence of the proposed scheme, the Grade II* listed Carleton Hall, now the Cumbria Police Headquarters and the Grade II Toll Bar Cottage. These buildings will be subject to temporary impacts to their setting during the construction of the proposed scheme.

6.2.20 Once operational, no significant effects are expected to any heritage assets because of the new A66.

6.2.21 The proposed scheme would not result in any detriment to the historic environment in this location.

6.2.22 To view the full heritage assessment for this scheme, see section 8.9 of Chapter 8 (Cultural Heritage) of the ES (Application Documents 3.2-3.4).

Biodiversity and ecological conservation

6.2.23 The River Eden SAC and River Eden and Tributaries SSSI are within the Order Limits of this scheme. Cowraik Quarry SSSI and Local Nature Reserve (‘LNR’) is 1.6km north of the Order Limits. Minimising the proposed route’s interaction with the SAC designation has been an important consideration in setting the route alignment and in the design of the scheme.

6.2.24 Skirsgill Wood Local Wildlife Site (‘LWS’) and Eamont Bridge and Banks of River Eamont Site of Invertebrate Significance (‘SIS’) are within the Order Limits of this scheme. The following designated sites are outside Order Limits but within 1km: Myers Beck LWS (444m north), Lowther Bridge SIS (393m south) and Yanwath Wood LWS (53m south).

6.2.25 No areas of ancient woodland listed on the Ancient Tree Inventory are located within 1km of this scheme; however, Skirsgill Wood LWS and Yanwath Wood LWS have been identified as having the potential presence of ancient woodland habitat.

6.2.26 Six veteran trees and four notable trees are outside of, but within 1km of, the Order Limits for this scheme.

6.2.27 Two priority habitat types within 250m of Order Limits - deciduous woodland (13.83ha), and lowland fen (0.19ha).

6.2.28 Multiple protected species including, but not limited to reptiles, terrestrial invertebrates, badgers, red squirrel, foraging and roosting bats, small mustelids (assumed polecat), otter, barn owl, breeding and wintering birds, fish and aquatic invertebrates.

6.2.29 Small areas of habitats within this scheme were identified as having potential to support reptile and will be subject to reptile surveys to determine presence or absence.

6.2.30 The majority of potential impacts affecting biodiversity features will occur during the construction phase. These impacts can be broadly summarised into the following:

- Habitat loss permanently or temporarily under the road itself or where it is removed as a result of working area and compounds;
- Fragmentation of populations and habitats where changes to noise, air quality, hydrological regimes and human presence may change the movement of mobile species;
- Disturbance to species by changes to noise, light and human activity that may affect the behaviour of sensitive species, particular breeding or wintering birds;
- Habitat damage or degradation that might arise from changes to water quality or air quality; and
- Incidental species mortality as a result of construction activities such as vegetation clearance, tree felling, vehicle movements and top soil stripping.

6.2.31 Operational impacts of the Project on biodiversity features can be summarised into the following:

- Fragmentation of populations and habitats as a result of the east-west alignment of the Project resulting in severance of north-south movement;
- Disturbance as a result of changes to operational traffic flows and resulting changes to noise, air quality, light and human disturbance;
- Habitat damage can occur as a result of changes to hydrological regimes, or long term changes to nitrogen content affecting plant life; and
- Incidental species mortality due to animals having to cross the road and being hit by vehicles.

6.2.32 Considering the impacts of the scheme on the site:

- No significant effects are anticipated in construction
- No significant effects are anticipated in operation.

6.2.33 Avoidance and minimisation of impacts on important biodiversity features has been incorporated throughout the development of the design of the Project and at individual scheme level. Details of relevant elements which have been incorporated into this assessment are described in section 3.4 of the Project Design Principles (Application Document 5.11).

6.2.34 In addition, the Project Design Principles (Application Document 5.11) outlines measures to reduce impacts in relation to habitats, including (but not limited to):

- Use of ecologically sensitive lighting where possible
- Improved ecological connectivity to Trout Beck through provision of woodland planting
- The structure crossing Trout Beck must allow for full functionality of supporting river processes.

6.2.35 The assessment of impacts on biodiversity also assumes the implementation of the following embedded measures, which are secured through the EMP to be in accordance with DMRB LA120 (Application Document 2.7) and associated management plans.

6.2.36 To view the full ecological assessment for this scheme, see section 6.10 of Chapter 6 (Biodiversity) of the ES (Application Documents 3.2-3.4).

Landscape and Visual Impact

6.2.37 The scheme location considers the following land designations:

- The English Lake District World Heritage Site boundary – approximately 2.5km to the south-west of the Order Limits
- The Lake District National Park boundary – approximately 2.5km to the south-west of the Order Limits
- National Landscape Character, the Order Limit for the scheme lies within NCA9 Eden valley, and NCA8 Cumbria High Fells within the south-western fringes of the study area.
- The scheme also sits within a series of landscape character types as defined in the Cumbria County Council Landscape Character Assessment and Lake District National Park Landscape Character Assessment and Guidelines.

6.2.38 During construction, this scheme is expected to result in significant adverse effects to residences, users of recreational sites and public rights of way and road users.

6.2.39 By year 15 of operation, when mitigation planting is expected to reach maturity, no significant effects are expected. The planting will be sufficiently established to contain the road corridor to a similar extent as the existing situation.

6.2.40 To view the full landscape assessment for this scheme, see section 10.10 of Chapter 10 (Landscape and Visual) of the ES (Application Documents 3.2-3.4).

Other environmental impacts

6.2.41 In accordance with the EIA regulations, the proposed scheme has been assessed for environmental impacts relating to:

- Air quality
- Biodiversity
- Climate
- Cultural heritage
- Geology and soils
- Landscape and visual
- Material assets and vibration
- Population and human health
- Road drainage and the water environment.

6.2.42 Full details of environmental assessments carried out for each of these topics are provided within the ES which accompanies this application (Application Documents 3.2-3.4).

6.2.43 The proposed scheme has been assessed for environmental impacts in accordance with the EIA regulations, as outlined within earlier chapters of this document and detailed within the ES of Chapter 5-14 which accompanies this application (Application Documents 3.2-3.4). These topics include:

- Air Quality
- Climate
- Geology and Soils
- Materials and Waste
- Noise and Vibration
- Population and Human Health
- Road Drainage and the Water Environment

6.2.44 The proposed scheme is not considered to result in any likely significant, long lasting environmental effects.

Public consultation

6.2.45 The scheme development was informed by extensive public and stakeholder consultation and engagement. During statutory consultation, a total of 258 individual responses related to this scheme. The key consultation responses for the scheme are set out at Table 7, Chapter 6 of the Consultation Report (Application Document 4.4) within Annex N. The PDOR (Application Document 4.1) describes the design development carried out for each scheme along the route of the Project and how it has been informed by consultation.

6.2.46 In response to concerns raised regarding future operational capacity of the M6 Junction 40, further traffic modelling was carried out and refined including the projected increase in traffic flows resulting from the junction and project improvements. Capacity of the junction is maximised, within the footprint of the existing structures, and potential negative impacts on the surrounding areas such as Penrith town centre have been minimised, particularly during peak hours.

6.2.47 In response to suggestions for the provision of safer connections for walkers, cyclists and horse riders between Penrith and Temple Sowerby measures have been taken to further improve safety along this length of the route. Signal-controlled crossings have been added to the scheme design. These upgrades relate to the existing shared cycle and footway connection on the western side and retention of existing pedestrian and cycle connections on the western side of Penrith South Bridge alongside Skirsgill Business Park, and those to the north-west of Skirsgill. The existing cycle and pedestrian route to Skirsgill Depot will be directed through a controlled crossing at the roundabout, to address safety concerns with the existing uncontrolled crossing which would be worsened by the widening of the A66 eastern arm to three lanes.

6.2.48 In response to concerns raised about the proposal to remove the existing access to Skirsgill Depot to/from the M6 southbound on-slip the original junction arrangement has been reintroduced. The new proposal maintains the current flexibility of access for users such as HGVs and

reduces traffic volumes and associated impacts on routes that would have been used for alternative access.

6.2.49 In response to concerns raised about the land take from the football pitch adjacent to North Lakes Hotel, land take for environmental mitigation has been reviewed and revised. The revised scheme no longer involves land take from the football pitch.

6.2.50 Design changes have been made in response to concerns that the acquisition of land on the north of A66 to accommodate the widening of the A66 between M6 Junction 40 and Kemplay Bank Roundabout would impact land designated for public open space and used by local people for recreation. The amount of land needed for the works has been reduced with land acquired from a local landowner offering replacement public open space. It is proposed that this new area be connected through to Wetheriggs Country Park, be unfenced and be available for community use.

6.2.51 Concerns were raised about driver conformity with the 50mph speed limit to be implemented throughout this scheme. These were addressed through reinstatement of parking facilities for Police vehicles to enable mobile speed enforcement in both directions.

6.2.52 Concerns were raised about the disturbance of mature trees due to the proposed drainage pond towards the east of the scheme. In response the proposed drainage pond has been reconfigured to minimise disturbance to mature trees.

6.2.53 Several responses to the consultation questioned the need for the scheme. Respondents cited favourable personal experience of using this length of road. Respondents say that they commute via Eamont Bridge or the two A66 roundabouts, for example, and have rarely found the traffic to be a problem. Respondents add that any disruption from upgrade construction may therefore not be warranted.

6.2.54 In response to the above, whilst this perception is valid for some users, traffic modelling of the existing junction, as outlined within the TA which accompanies this application (Application Document 3.7) as well as the accident data outlined in Chapter 4 of this document outlines the considerable issues with this junction. Furthermore, as the overall resilience of the A66 improves overtime, following the other scheme upgrades proposed as part of this Project, usage of the road is expected to grow, as detailed within the traffic modelling carried out for this Project and outlined in the TA (Application Document 3.7). Undertaking capacity improvements as part of the Project addresses these modelled congestion issues before they occur, while also removing the need for further road works along the A66, following completion of this Project. On this basis, the scheme continues to be progressed taking all of these factors fully into account.

6.2.55 Full details and a review of issues raised at statutory consultation can be found at Chapter 6 of the Consultation Report (Application Document 4.4).

Summary case for the scheme

6.2.56 In summarising the case outlined above, it has been demonstrated that the proposed scheme will increase capacity on the A66 route, alleviating congestion in this location whilst also providing significant improvements to the local traffic network, including for NMUs. The site is currently an Accident Cluster Site with the proposed scheme improving safety at this junction. The proposed road upgrades in this location promote journey time savings through improvements to access to the A66 route network, while futureproofing the junction for the expected growth in users of the road resulting from improved resilience along the route.

6.2.57 Environmental impacts have been avoided and minimised through sensitive design and the scheme will not result in any significant environmental effects. The proposed scheme will not result in any detrimental impact upon designated sites. Improved public open space facilities and WCH routes have been incorporated into the scheme design.

6.2.58 This scheme has been designed with reference to the national, regional, county and local level planning policy context, as demonstrated within the LPCS accompanying this application (Application Document 3.9). For this scheme, the relevant county level policy is set out in the local plan for Cumbria County Council. The relevant local level policy is set out in the local plan for Eden District Council. The proposed scheme is considered to be in accordance with planning policy as outlined within Appendices C and D of the document.

6.3 Penrith to Temple Sowerby

Description of the problems within the scheme boundary

6.3.1 The A66 between its junction with the B6262 at Brougham and the Temple Sowerby Bypass is single carriageway and follows the route of the old Roman road. This length of the A66 carries approximately 19,500 vehicles per day, 24% of which are HGVs.

6.3.2 Between Brougham and the junction at Center Parcs the existing alignment is an acceptable standard, however, beyond Center Parcs to the Temple Sowerby Bypass, standards are poor.

6.3.3 Variations in carriageway width and the road's horizontal and vertical alignment make for an inconsistent driving experience, resulting in safety issues for road users.

6.3.4 There are several junctions and direct private accesses along this length of the route. Slower moving vehicles, both private passenger vehicles and commercial vehicles such as farm vehicles and goods vehicles, join the A66 directly into fast moving traffic. This further impacts upon the safety, congestion and journey times of users of the road.

6.3.5 Three accesses have right turn filter lanes to facilitate movements leaving the A66. While these facilities improve traffic flows on the A66 itself, they can present an obstacle for traffic making a right-hand turn to

join the A66 at this junction and also result in delays to journeys for users. Additionally, slow moving traffic joining the A66 or crossing fast moving roads to leave the A66 in this manner creates a potential safety issue. Busy roads, with limited gaps to allow adequate time for slow moving vehicles to join safely has the potential to result in drivers making unsafe manoeuvres whilst also increasing journey times and making trips more unreliable.

6.3.6 Junctions affected by these problems along this length are:

- The B6262 junction.
- The access to the United Utilities sewage treatment plant (Whinfell Holme Wastewater Treatment Works).
- The access to Center Parcs.
- The access to the former Llama Karma Kafé (although this is shared with an adjacent gated field access).

6.3.7 Considering the Center Parcs access, this junction arrangement is particularly problematic during twice-weekly changeover days, where patron arrivals and departures interact at one junction. This can result in significant delays to journeys, unpredictable journey times (up to 50 minutes during morning changeover periods), driver frustration and the potential for accidents through unsafe vehicle manoeuvres.

6.3.8 There are a further four priority direct accesses, serving Whinfell Park, Whinfell Cottage and two at the Hamlet of Lane End, as well as at least fifteen field accesses between Brougham and the length of dual carriageway at Temple Sowerby. Each of these accesses' experiences safety issues similar to those outlined above.

6.3.9 Other features of this length of the road include the provision of an unsegregated lay-by on the eastbound carriageway. This lay-by generally displays several sub-standard features, such as short merge and diverge taper lengths and a short stacking length, each with the potential to result in safety issues as a result of short acceleration and deceleration lengths, resulting in safety issues.

6.3.10 There are no significant WCH facilities in these lengths of the A66, although an on-road cycle lane is marked at the commencement of the Temple Sowerby Bypass which diverts users to the local highway network. This cycle lane promotes bicycle use alongside fast moving vehicles and large freight vehicles, presenting significant safety issues for users. Facilities in this location terminate at the existing A66.

6.3.11 There are no facilities to enable access to the Countess Pillar historic monument to the east of this route. Currently to view this monument, vehicles are required to set down in unofficial parking areas (lay-bys) with visitors walking alongside the road, unsegregated from fast moving vehicles, creating safety issues for visitors.

Description of the proposed scheme and how it will address the problems identified

6.3.12 As described in Chapter 3 of this document and summarised below, the proposed scheme will provide:

- Full dualling of the existing A66 single carriageway lengths between Penrith and Temple Sowerby to allow resilience on the network, to facilitate overtaking slower moving vehicles, or continued access in the event of road closures due to accident or breakdown.
- Online (parallel to the existing route alignment) widening using the existing carriageway to form one side of the new dual carriageway. The second carriageway will be constructed to the north of the existing carriageway.
- A new grade-separated junction to replace the existing Center Parcs junction. This will provide improved access to Center Parcs and the local road network, to overcome the problems associated with the current junction as outlined in the previous section of this document.
- New left-in/left-out junctions will be provided to the B6262 and to St Ninians's Church on the Winderwath Estate, with associated acceleration and deceleration lanes to enable safer access to homes and businesses in this location.
- Improved parking provision will be provided at St Ninian's Church to enhance accessibility to this heritage asset.
- An existing access serving Whinfell Holme Wastewater Treatment Works will be converted to left-in/left-out improving safety in this location.
- A new parking and amenity area with footway access is proposed to the Countess Pillar historic monument to the east of this site. These new facilities will provide safe public accessibility to an important heritage feature along the route.
- The existing farm buildings at High Barn will be demolished to accommodate the offline lengths of the A66 east of the new Center Parcs junction. It is also intended to demolish Lightwater cottages to the south of the A66 to facilitate and accommodate a replacement left-in/left-out access.
- The existing A66 crossing points will be removed. One new accommodation overpass and one new accommodation underpass (private access) have been included to facilitate the safe crossing of the A66 for agricultural vehicles where its alignment divides land. This would remove slow moving vehicles from the road in this location.
- An off-route east/west WCH link will be provided along the length of this scheme (predominantly to the north of the A66). This provides significant WCH enhancement for the local community and visitors to the area.
- Segregated crossings of dual carriageway at Brougham and Center Parcs are proposed to reconnect and tie in to existing PRoW, also connecting into further WCH routes at each end.
- Drainage ponds are proposed along the route to attenuate surface water runoff and manage the water quality.

6.3.13 Widening of the A66 in this location will enable free flowing traffic, reducing congestion and ensuring the capacity of the road is maximised. Resilience will be provided in the event of accidents or other lane closure, ensuring a further lane for overtaking and to maintain traffic flows.

6.3.14 The proposed upgrades to the A66 in this location result in journey time savings of approximately 1 minute 30 seconds for users of the road. For users of Center Parcs, these time savings are expected to be significant, in the region of 50-minute savings during the morning changeover, as described in the earlier section.

6.3.15 The introduction of facilities to enable safe and convenient access to heritage assets along the route will provide significant benefit to tourists and the local population, ensuring these assets can be enjoyed. This provides both community and tourism benefits in this location.

6.3.16 The introduction of new underpasses will remove on-route crossing points to provide an uninterrupted route for the A66 eastbound and westbound. The removal of slow-moving agricultural machinery and other large industrial vehicles from the main route in this location will also remove potential safety hazards along this stretch of the route resulting from slow moving vehicles attempting right hand turn manoeuvres, crossing fast moving traffic lanes.

6.3.17 Provision for WCH users and other NMUs has been significantly enhanced with the proposed scheme. A new network of off-route WCH routes are provided east/west with previously segregated PRoW connected to this network. Safer crossing points over main roads ensure that WCH routes offer greater and safer opportunities to move around this area, to the benefit of the local community and tourists.

6.3.18 New drainage attenuation ponds will better manage water quality along the route, preventing polluted surface water from running off into the land. These environmental improvements will enhance the water quality of the surrounding area.

6.3.19 The relevant GA Plans relating to this scheme are HE565627-AMY-HAC-S03-DR-CH-200001 to HE565627-AMY-HAC-S03-DR-CH-200004 (Application Document 2.5).

Benefits the scheme will deliver

6.3.20 In addition to the Project wider issues of congestion, due to lack of resilience on the single carriageways, and the journey time savings in addressing these issues, the scheme also delivers localised benefits for communities, such as improved accessibility and better local connectivity.

6.3.21 The table below provides an overview of the location specific benefits of this scheme considered against the wider Project objectives.

Table 6-2 : Review of scheme against Project objectives

Theme	Project objectives	Scheme Response
Economic	-Regional: Support the economic growth objectives of the Northern Powerhouse and Government Levelling Up agenda	-The A66 will become less congested, allow more efficient traffic movements and overall, provide a more attractive route for visitors accessing local tourist attractions including the Yorkshire Dales National Park, Lake District National Park and Center Parcs Whinfell Forest. -Circa 15,000 vehicle movements per week are associated with Center Parcs, with these movements overwhelmingly made by private car. -The Eden Local Plan (Center Parcs lies within this administrative area) outlines that £240m was spent by 4.1m visitors in the borough in 2012/13, a significant portion of which could be attributed to the Center Parcs site. -Improved access to Center Parcs and removal of obstacles which could 'put off' visitors, such as long journey times, is likely to attract further visitors to the attraction, resulting in potential for significant benefits to the tourism economy. There are also likely to be benefits for occupiers of Center parcs when visiting other facilities such as tourist attractions and shops as the junction will be easier to access.
	-Ensure the improvement and long-term development of the 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, NMU, road workers, local businesses and local residents.	-The proposed upgrades to the A66 in this location result in journey time savings of approximately 1 minute 30 seconds for users passing along this length of the A66. -The scheme provides a much safer route with consistent speed limits and safer access to the A66 via re-routed local roads. -The new dual carriageway means incidents on one lane would not result in the closure of the road, therefore improving resilience. -The proposed scheme seeks to remove agricultural and heavy goods vehicles from crossing the A66 in two specific farm locations. Not only does this result in safer vehicle movements for these farm operations, but it also removes potential hazards from the A66 by removing obstacles associated with slow moving vehicles in this location. -The proposed new grade separated junction at Center Parcs and the other junction improvements highlighted within the scheme description will seek to bring these junctions up to modern standards, allowing vehicles joining and leaving the A66 to do so more safely. The scheme will result in fewer
	-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 NMU provision along the route.	

Theme	Project objectives	Scheme Response
		potential obstacles along the route and more consistent speed limits. -The existing road provides limited opportunity for dedicated non-motorised user facilities, with the only specified cycle route providing opportunity for cyclist interactions with large, fast-moving vehicles. The scheme incorporates a segregated shared cycle/footway which runs off-route of the A66, parallel to its entire length, providing safe and connected WCH routes for visitors and local people alike. -Segregated crossings of dual carriageway at Brougham and Center Parcs are proposed to reconnect and tie into existing Public Rights of Way, also connecting into further WCH routes at each end. The scheme will introduce genuine NMU opportunities both for commuters and leisure activity. Those using these new facilities will be able to move around in a pleasant and safe environment and it is considered that the new facilities may result in increased uptake in sustainable travel modes.
Community	-Reduce the impact of the route on severance for local communities.	-Improved facilities will be provided to support visitor access to local heritage assets, the Countess Pillar and St Ninians Church. Providing safe, dedicated set down space for vehicles and segregated walkways to these facilities will provide significant benefit to existing users, whilst also providing the opportunity to increase patronage of these facilities. This results in increased tourism opportunities for the area. -Junction upgrades as outlined will provide benefit to the local community in ensuring improved and separate local accesses for both business and the local road network, allowing local traffic movements to avoid the A66. Chapter 13 (Population and Human Heath) of the ES (Application Document 3.2-3.4) outlines that there will be significant permanent beneficial effects to 24 community assets and to the Lake District tourism sector. Further detail on this is provided within the ES Chapter 13 (Population and Human Health).

Theme	Project objectives	Scheme Response
Environment	-Minimise adverse impacts on the environment and where possible optimise environmental improvement opportunities.	-Tree planting and screening around the new route alignment of the scheme will be carried out to mitigate impacts on the settings of surrounding archaeological sites, historic buildings, and the immediate landscape. This includes Countess Pillar and the settlement to the northeast of Brougham Castle. The proposed improved access to these facilities also enables greater opportunity to utilise these heritage assets. -A new drainage system along this scheme alignment will capture surface water runoff, passing it through a filtration system before it is released into the watercourse. It is considered that this will improve existing water quality in the local area. The ES Chapter 14 (Road Drainage and Water Environment) (Application Documents 3.2-3.4) provides further detail on the environmental benefits of the scheme. -Reduced congestion and fewer vehicles idling will reduce emissions, helping to improve localised air quality, as evidenced in Chapter 5 of the ES Air

Outline of legislation and policy issues, such as AONB incursions and European designated sites

6.3.22 This section provides an overview and consideration of historic, ecological and environmental designations which are located within relevant proximity to the site.

The Historic Environment

6.3.23 There are three listed heritage assets within proximity to the scheme which will be impacted by the proposed scheme. These are:

- SM and Grade II* listed Countess Pillar
- Associated Alms Table Grade II* listed.
- Grade II listed Milestone East of Whinfell Park.

6.3.24 These assets will be subject to temporary moderate adverse effects to their setting during the construction phase. The effects to these heritage assets will be limited to the construction phase and will therefore be temporary.

6.3.25 Five assets will also be subject to large and moderate adverse effects during the construction phase. This is as a result of the loss of physical evidence and as such the effects will be permanent.

6.3.26 The SM of Brougham Roman fort (Brocavum) and civil settlement and Brougham Castle lies partially within the Order Limits. Temporary construction works would not impact upon the setting of these heritage assets. However, the northern part of the easternmost scheduled area is located within the Order Limits. The works overall (above and below ground) and the necessary essential mitigation incorporated means that the operational impacts of these assets are anticipated to be comparable to the baseline and would not result in a significant effect.

6.3.27 There will be a moderate adverse physical impact upon Brougham Vicus Roman settlement site where the southern length of the scheduled area falls within the Order limits albeit a Light Detection and Ranging ('LIDAR') assessment suggests the area could extend further into the Order Limits.

6.3.28 Archaeological remains associated with the Brougham Vicus Roman settlement must be treated as undesignated resources of schedulable quality and importance. Although some of the works will be within previously disturbed areas, any works with below ground impacts in previously undisturbed areas will result in the removal of any archaeological remains to formation levels. As the site is of high value, this will result in a large adverse effect, resulting in a moderate adverse effect with essential mitigation.

6.3.29 There are a number of areas of archaeological interest situated within the Order Limits. In references to the ring ditches at Brougham, these are of medium value, causing a major adverse impact and a large adverse effect, resulting in a moderate adverse effect with essential mitigation. In reference to the peat deposits likely associated with nearby paleochannels, groundworks will remove archaeological or geoarchaeological remains associated with these medium value features to formation levels, which will result in major adverse impacts and a moderate adverse effect with essential mitigation.

6.3.30 Once the A66 dualling and associated works are operational, a new amenity parking area and footway access for the SM and Grade II* listed Countess Pillar and the associated Grade II* listed Alms table will offer better access to these assets. This results in a moderate beneficial effect to these assets overall. A new footway to the site of the Countess Pillar and associated Alms Table is proposed on the site of the former Llama Kama Kafe, as a new amenity parking area. This will provide better access to the site for visitors, representing a beneficial effect to both resources.

6.3.31 The SM of St Ninian's and the Grade II listed Church of St Ninian are situated beyond the scheme Order Limits to the North. A new accommodation overbridge will be constructed at the eastern end of this scheme, but at a far distance from the Ninekirks site and it would not alter the contribution of the setting towards the significance of these heritage assets. Accessibility will be improved to the St Ninian's site which will result in a moderate beneficial effect on both heritage assets. New parking facilities are proposed, and this will be made more accessible via the creation of a new left-in / left-out junction, which will also make the turn-in easier to find.

6.3.32 In summary of the assessment outlined above, this scheme is expected to result in significant temporary adverse effects to three heritage assets and significant permanent adverse effects to five heritage assets during construction.

6.3.33 The scheme is expected to result in significant permanent beneficial effects to four heritage assets during operation.

6.3.34 The overall impact of the scheme on heritage assets is considered to result in less than substantial harm to the significance of designated heritage assets and is outweighed by the public benefits of the scheme as evidenced throughout this document.

6.3.35 For full details see section 8.9 of Chapter 8 (Cultural Heritage) of the ES (Application Documents 3.2-3.4).

Biodiversity and ecological conservation

6.3.36 The River Eden SAC and River Eden and Tributaries SSSI are within the Order Limits of this scheme. Udford Low Moss SSSI is 923m north of this scheme and Cowraik Quarry SSSI and LNR is 1.7km north.

6.3.37 The following designated sites are outside of the Order Limits of this scheme: Eamont Bridge, Banks of River Eamont SIS (396m west), Whinfell Forest LWS (200m south) and Watersmeet (Eamont & Eden) LWS (1km north).

6.3.38 The Ancient Woodland Site Tiperary and Dudford Woods is 658m north of this scheme. There are two veteran trees and three notable trees within 1km of this scheme.

6.3.39 Two ponds to the south of the existing A66 were found to support Great Crested Newts ('GCN').

6.3.40 Large areas of habitats within this scheme were identified as having potential to support reptile and will be subject to reptile surveys to determine presence or absence.

6.3.41 Two priority habitat types within 250m of Order Limits - deciduous woodland (4.75ha) and traditional orchard (0.03ha).

6.3.42 Multiple protected species including, but not limited to: great crested newts, terrestrial invertebrates, badgers, red squirrel, foraging and roosting bats, small mustelids (assumed polecat), otter, barn owl, breeding and wintering birds, fish and aquatic invertebrates.

6.3.43 The majority of potential impacts affecting biodiversity features will occur during the construction phase. These impacts can be broadly summarised into the following:

- Habitat loss permanently or temporarily under the road itself or where it is removed as a result of working area and compounds
- Fragmentation of populations and habitats where changes to noise, air quality, hydrological regimes and human presence may change the movement of mobile species
- Disturbance to species by changes to noise, light and human activity that may affect the behaviour of sensitive species, particular breeding or wintering birds
- Habitat damage or degradation that might arise from changes to water quality or air quality
- Incidental species mortality as a result of construction activities such as vegetation clearance, tree felling, vehicle movements and top soil stripping

6.3.44 Operational impacts of the scheme on biodiversity features can be summarised into the following:

- Fragmentation of populations and habitats as a result of the east-west alignment of the Project resulting in severance of north-south movement
- Disturbance as a result of changes to operational traffic flows and resulting changes to noise, air quality, light and human disturbance
- Habitat damage can occur as a result of changes to hydrological regimes, or long term changes to nitrogen content affecting plant life
- Incidental species mortality due to animals having to cross the road and being hit by vehicles.

6.3.45 Considering the impact of the scheme along the route with regard to biodiversity (including the SAC):

- No significant effects are anticipated in construction.
- No significant effects are anticipated in operation.

6.3.46 Avoidance and minimisation of impacts on important biodiversity features has been incorporated throughout the development of the design of the Project and at individual scheme level. Details of relevant elements which have been incorporated into this assessment are described in section 3 of the Project Design Principles (Application Document 5.11).

6.3.47 In addition, the Project Design Principles (Application Document 5.11) outlines measures to reduce impacts in relation to habitats, including (but not limited to):

- Use of ecologically sensitive lighting where possible
- Improved ecological connectivity to Trout Beck through provision of woodland planting
- The structure crossing Trout Beck must allow for full functionality of supporting river processes

6.3.48 The assessment of impacts on biodiversity also assumes the implementation of the following embedded measures, which are secured through the EMP to be in accordance with DMRB LA120 (Application Document 2.7) and associated management plans.

6.3.49 To view the full ecological assessment for this scheme, see section 6.10 Chapter 6 (Biodiversity) of the ES (Application Documents 3.2-3.4)

Landscape and Visual Impact

6.3.50 The scheme location considers the following landscape designations:

- The English Lake District World Heritage Site (‘WHS’) boundary – approximately 3.5km southwest of the Order Limits
- The Lake District National Park boundary – approximately 5km to the northeast of the scheme Order Limits
- The North Pennines AONB - approximately 5km to the northeast of the Order Limits
- National Landscape Character Area NCA9 Eden Valley.

- The scheme also sits within a series of landscape character types as defined in the Cumbria County Council Landscape Character Assessment and Lake District National Park Landscape Character Assessment and Guidelines.

6.3.51 During construction, this scheme is expected to result in significant adverse effects to local character areas, residences, users of recreational sites and public rights of way and road users.

6.3.52 By year 15 of operation, no significant effects are expected as planting will reach a level of maturity to mitigate the impacts.

6.3.53 Full details are able to be viewed within section 10.10 of Chapter 10 (Landscape and Visual) of the ES (Application Documents 3.2-3.4).

Other environmental Impacts

6.3.54 In accordance with the EIA regulations, the proposed scheme has been assessed for environmental impacts relating to:

- Air quality
- Biodiversity
- Climate
- Cultural heritage
- Geology and soils
- Landscape and visual
- Material assets and vibration
- Population and human health
- Road drainage and the water environment.

6.3.55 Full details of environmental assessments carried out for each of these topics are provided within the ES which accompanies this application (Application Documents 3.2-3.4).

6.3.56 The proposed scheme has been assessed for environmental impacts in accordance with the EIA regulations, as outlined within earlier chapters of this document and detailed within Chapter 5-14 of the ES which accompanies this application (Application Documents 3.2-3.4).

6.3.57 Whilst localised significant adverse effects upon receptors at Residential dwellings at Whinfell Park are expected, the proposed scheme is not considered to result in any other likely significant, long lasting environmental effects.

Public consultation

6.3.58 The scheme development was informed by extensive public and stakeholder engagement. During statutory consultation, a total of 222 individuals responded in relation to this scheme. The key consultation responses for the scheme are set out at Table 7, Chapter 6 of the Consultation Report (Application Document 4.4) within Annex N. The PDOR (Application Document 4.1) describes the design development carried out for each scheme along the route of the Project and how it has been informed by consultation.

6.3.59 There was support for the upgrades proposed along this length of the route, improvement in safety for road users including HGVs along this length and at junctions was a key factor in this support.

6.3.60 In response, suggested scheme improvements related to the provision of a dedicated route for walkers and cyclists adjacent to the A66, providing access to Center Parcs and/or St Ninians, the scheme alignment has been refined. Plans now include a shared, continuous cycle and footway parallel to the A66, which will supply a missing east-west link from Temple Sowerby to Penrith. Dedicated accesses and new/improved vehicle setting down areas for heritage assets in this location are now included within the scheme design in response to this feedback.

6.3.61 In response to concern raised about the potentially significant adverse impact on the SMs in the area (particularly Brougham Castle and Brougham Roman fort and civil settlement) carriageway levels have been reviewed and confirmed to have minimal impact on these sites on account of being maintained as existing.

6.3.62 A number of respondents made specific reference and raised questions regarding the need for the scheme itself. Respondents expressed support for the need for the scheme, including requests that the Project should be completed as soon as possible, that it would improve the route and that the plans were straight forward and intuitive.

6.3.63 In questioning the need and opposition for the scheme, those respondents expressed opposition for the proposals in this area, in general terms. These include opposition to the principle of road building, and to the project in general. Respondents also state that the route should remain as it is.

6.3.64 In response to the above, it was communicated that there is no viable alternative mode solution (such as rail) to address the challenges the A66 currently experiences, as demonstrated in the feasibility work carried out between 2014-16 (as part of the NTPRSS).

6.3.65 The A66 dualling delivers the greatest level of strategic benefits (compared with alternative highway interventions), with particularly strong benefits in terms of strategic connectivity and journey time reliability, as well as making a significant contribution to the Northern Powerhouse economic growth agenda and Levelling Up agenda. It makes a significant contribution to achieving the specific objectives around economic growth and strategic connectivity in terms of it economic, transport, social and environmental benefits in relation to cost. On this basis the scheme continues to be progressed.

6.3.66 Full details and a review of issues raised at statutory consultation and supplementary consultation can be found at Chapter 6 of the Consultation Report (Application Document 4.4).

Summary case for the scheme

6.3.67 In summarising the case outlined above, it has been demonstrated that the proposed scheme will increase the capacity of the A66, improve

resilience along the route in case of accidents or slow-moving vehicles while also providing a suite of safety improvements along the route in this location. Improvements for users of the local traffic network are expected including significant new WCH infrastructure benefits.

6.3.68 Environmental impacts have been avoided and minimised through sensitive design and it is not considered that the scheme will result in any significant environmental effects.

6.3.69 Access provision to existing heritage assets has been included within the scheme design, providing significant local benefit and tourism opportunities. The Center Parcs junction improvements will also result in significant improvement to tourism opportunities along this route.

6.3.70 This scheme has been designed with reference to the national, regional, county and local level planning policy context, as demonstrated within the LPCS accompanying this application (Application Document 3.9). For this scheme, the relevant county level policy is set out in the local plan for Cumbria County Council. The relevant local level policy is set out in the local plan for Eden District Council. The proposed scheme is considered to be in accordance with planning policy.

6.3.71 The proposed scheme is considered to be in accordance with planning policy as demonstrated within the LPCS accompanying this application (Application Document 3.9) at Appendices C and D of the document.

6.4 Temple Sowerby to Appleby

Description of the problems within the scheme boundary

6.4.1 The A66 between the Temple Sowerby and Appleby bypasses includes more than 8km of single carriageway. The carriageway along this length of the A66 is generally inconsistent, with narrow verges, poor alignment and substandard hardstrips. The A66 alignment in this length is constrained on all sides due to residential properties, farms and businesses, as well as a number of heritage assets.

6.4.2 The route generally follows the route of the old Roman road in a south-easterly direction. The route then diverges from the Roman road and passes through the Roman Camp located directly on the A66 east of Redlands Bank Farm.

6.4.3 This Roman Camp is one of two SMs in the vicinity of the scheme, the other being Kirkby Thore Roman Fort and Associated Vicus surrounding Kirkby Thore village to the south. These heritage assets present significant constraints to any dualling of the road in this location.

6.4.4 From the Roman Camp at Redlands Bank, the existing A66 continues southwards to pass Crackenthorpe before connecting to the Appleby Bypass.

6.4.5 During the Appleby Fair there are problems with the capacity of the road, in terms of the volume of visitors, but also the varied nature of vehicles, including non-motorised users, larger horse drawn vehicles and trucks, which slows down the road network.

6.4.6 There are several priority junctions along this length of the existing A66 on the eastbound carriageway.

6.4.7 On the diverge taper (left turning) lane leaving the A66 to travel into Kirkby Thore, there is a bus lay-by. This junction design restricts visibility and increases potential for vehicles to come into conflict with buses when making manoeuvres.

6.4.8 Records show this length of the A66 suffers from high accident rates (likely to be associated with the poor horizontal and vertical geometry outlined above) to the extent that speed limits have been reduced in this location from 60mph to 40mph.

6.4.9 There have been three fatal collisions between 2012 and 2018. One collision occurred in daylight hours, and two occurred in hours of darkness. All three fatalities involved HGVs. Two of the fatalities were head on collisions, where vehicles drifted across the centre line into oncoming traffic. The third fatality was a result of a poor overtaking manoeuvre.

6.4.10 Three further collisions involved riders on motorbikes, all of which occurred in daylight hours, on fine dry days. All three collisions occurred at junctions. Two collisions resulted in rear end shuts, and one was a result of excessive speed and following too closely behind another vehicle.

6.4.11 At Kirkby Thore village, there is winding single carriageway typical of a small rural village. This carriageway varies in width and there are several connections to local roads and private access points. A high number of HGVs leave the A66 here and pass through the village to access businesses to the north. This brings significant safety issue with pedestrians and NMU's coming into conflict with large vehicles. Severance of the village occurs, with road crossing particularly problematic at times. Environmental impacts associated with these activities are also significant, in terms of noise and air quality.

6.4.12 At Crackenthorpe, the A66 runs immediately adjacent to the village, with single carriageway for approximately 4km. The carriageway here also varies in width, with narrow verges and poor alignment presenting visibility issues for users. There are also several connections with local roads and private access points where accidents could potentially occur.

6.4.13 In addition to the SMs noted earlier in this section, the A66 between Temple Sowerby and Appleby also passes alongside the River Eden SAC and crosses it where the road passes over Trout Beck, north-east of its confluence with the River Eden.

6.4.14 Along the length of the A66 between Temple Sowerby and Appleby, the existing A66 severs a number of PRoW. There are also a limited number of WCH routes which run parallel to, adjoin or pass over or under the A66 in this location. Access to the field which hosts the annual Appleby Horse Fair is a notable example.

6.4.15 This length of the A66 is highly congested, carrying approximately 16,500 vehicles per day, 27% of which are heavy goods vehicles.

Description of the proposed scheme and how it will address the problems identified

6.4.16 As described in Chapter 3 of this document and summarised below:

- a new offline bypass north of Kirkby Thore, will be required passing to the north of Crackenthorpe adjacent to the old Roman road before tying into the existing Appleby Bypass. This will reduce congestion on the road through improved capacity and improve road standards, thereby increasing safety along the road and removing the need for speed restriction in this location.
- Where the proposed A66 passes around the north of Kirkby Thore, it is proposed to be in cutting, with embankment to visually screen the road and to reduce noise impacts to the village. One key reason for the introduction of the bypass relates to constraints along the existing route alignment. Existing business, properties and heritage assets along this route prevent widening or dualling.

6.4.17 A number of new junctions and existing junction improvements are required to raise road standards, improve visibility, safety and to remove local traffic and slower moving vehicles from the A66 network. These include:

- a new overbridge will be provided with some minor realignment of Sleastonhow Lane
- a new compact grade separated junction is to be provided at Long Marton
- a new junction will be provided at Fell Lane to the north of Kirkby Thore. Fell Lane will pass over the proposed A66 alignment.
- new accommodation overbridge will be used to carry an existing bridleway over the new A66 at its north-western extent in order to maintain access for Crossfell House Farm.

6.4.18 To facilitate the new bypass a number of new connections will be required, in order to ensure accesses are not severed by the new route:

- to the eastern extent of the route, a new accommodation overbridge will be required to maintain access over the new A66 for Rogerhead Farm.
- the existing underpass access adjacent to Spittals Farm will be redesigned, including widening to maintain access to the farm.
- the existing eastbound off slip to the B6542 close to the Appleby Fair field will be maintained to allow access into Appleby. The existing westbound slip road at this location will be changed to a two-way road to allow traffic from Appleby to access the old A66.
- the provision of a link from the new junction to Main Street as it runs north of the village. The property of Whinthorn House together with an agricultural barn will need to be demolished to accommodate the route at this location.
- crossing at Trout Beck and its associated flood plain on a new 400m long viaduct in order reduce the scheme impact on the SAC and SSSI designation of Trout Beck and its floodplain.

6.4.19 Provision of 15 ponds for the purpose of drainage of the road network and to manage water quality.

6.4.20 Existing WCH routes impacted by the proposed scheme will be reconnected. In addition to this, benefit will be provided by ensuring that these new connections meet the existing PRoW, providing overall benefit to its users.

6.4.21 The dedicated open space used for the annual Appleby Horse Fair will be retained in situ, with the scheme design providing traffic management enhancements during the fair, which is important to the traveller community.

6.4.22 Implementing a bypass along this route is expected to remove many of the current socio-environmental and safety issues associated with traffic movements through the village. Issues of air quality, noise and severance are also expected to be significantly reduced by removing the need for HGVs to access the village, while also significantly reducing the need for many vehicle movements through the village when travelling north.

6.4.23 The relevant GA Plans relating to this scheme are HE565627-AMY-HAC-S0405-DR-CH-300001 to HE565627-AMY-HAC-S0405-DR-CH-300007 (Application Document 2.5).

Benefits the scheme will deliver

6.4.24 In addition to the immediate issues of congestion and journey time savings as identified in the previous chapters of this document, the scheme also delivers localised benefits for communities such as improved accessibility and better local connectivity.

6.4.25 The table below provides an overview of the location specific benefits of this scheme considered against the wide Project objectives.

Table 6-3 : Review of scheme against Project objectives

Theme	Project objectives	Scheme Response
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 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.	-The proposed road upgrades in this location facilitate improved vehicles movements to the A66 route network and the journey time savings this results in. This has economic implications for freight and other business connectivity. -Low Moor Caravan Park lies immediately adjacent to the A66 at Temple Sowerby. The removal of traffic along this road is likely to improve amenity for the occupiers of the caravan park and may make it a more attractive environment, increasing patronage, thereby

Theme	Project objectives	Scheme Response
		increasing tourism opportunities for the area. -In providing a bypass, the existing 'old A66' alignment will be retained. Farm and other business accesses as well as residential property accesses will be retained, however, the significant reduction in traffic along this road will result in far easier traffic movements for occupiers and workers accessing these locations improving access to services and jobs for the local community.
Transport	-Improve road safety, during construction, operation and maintenance for all, including road users, NMU, 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 NMU provision along the route.	-The proposed dualled bypass will remove many of the current below standard road alignments along the current A66 route, outlined in the preceding lengths of this document. The proposed bypass will therefore result in significant safety improvements along this length of the route to the benefit of all road users. -While the potential for accidents is expected to be reduced overall because of the proposed road standard improvements, in the event of accidents, breakdowns or slow-moving vehicles, the second lane of the road will provide resilience along the route. The additional lane will enable passing or turn back facilities, ensuring the route remains open. -In improving resilience along the road and improving capacity more generally, to better accommodate the circa 16,500 vehicles using this route daily, journey time savings are expected to be between 3 and 4 minutes across the day. The 4-minute savings occur in the PM peak. -To the north of Kirkby Thore, relocating the junction to Fell Lane removes a narrow stretch of road and redirects HGVs to a wider route more suitable for two-way traffic. This will result in a reduction in the overall

Theme	Project objectives	Scheme Response
		level of HGV and LGV traffic travelling through the village to British Gypsum and other businesses to the north of Kirkby Thore. -Existing bus services are likely to see improved reliability of service as a result of the scheme, with freer flowing traffic along the A66 and fewer vehicles on the local road network. -Additional horse and pedestrian pathways are proposed along the de-trunked A66. This reconnects and upgrades WCH routes north and south which are severed by the proposed dual carriageway, improving connectivity and accessibility for users. -Crossings segregated by the dual carriageway are reconnected and tied in existing PRoW, improving facilities along this route.
Community	-Reduce the impact of the route on severance for local communities.	-The implementation of a northern bypass removes HGV's and other traffic travelling through Kirkby Thore village to businesses to the north of the village. This removes significant safety issues with pedestrians and NMU's coming into conflict with large vehicles and improves current village severance issues. -Environmental impacts associated with these activities are also significant, in terms of noise and air quality. The bypass will improve amenity for villagers overall. -The dedicated open space used for the annual Appleby Horse Fair will be retained in situ. The scheme design protects this land and provides traffic management enhancements during the fair of huge importance to the community. -The bypass itself is proposed to be constructed in cutting, with embankment to further protect amenity of nearby communities.
Environment	-Minimise adverse impacts on the environment and where possible	-A new 400m viaduct has been introduced to avoid the flood plain and minimise any impacts to the SAC

Theme	Project objectives	Scheme Response
	optimise environmental improvement opportunities.	in this location as outlined in Chapters 6 (Biodiversity) and 14 (Road Drainage and Water Environment) of the ES. -At Kirkby Thore northern junction, the new junction is closer to Sandersons Croft, and mitigation will be required, including the use of landscaping bunds to reduce noise and visibility impacts as outlined in Chapter 12 (Noise and Vibration) of the ES. Measures such as bunding or fencing will be implemented to mitigate potential glare from the new junction location to affected properties in Sandersons Croft. -The northern alignment of the road prevents detrimental impact on buried heritage assets associated with the Roman road and a nearby Roman fort as outlined in Chapter 8 (Cultural Heritage) of the ES. -Reduced congestion and fewer vehicles idling will reduce emissions, helping to improve localised air quality as outlined in Chapter 5 (Air Quality) of the ES.

Outline of legislation and policy issues, such as AONB incursions and European designated sites

6.4.26 This section provides an overview and consideration of historic, ecological, landscape and environmental designations which are located within relevant proximity to the site.

The Historic Environment

6.4.27 There are four listed buildings within relevant proximity to the proposed scheme which will be subject to moderate adverse effects during the construction phase, but these effects will only be temporary.

6.4.28 The Grade II listed Milestone to the north-east of Crackenthorpe Hall is located within the Order Limits. The completed road will slightly alter the baseline appearance of the milestone's setting but would not alter the contribution of the milestone's setting to its value, and it would retain its important roadside connection.

6.4.29 The Grade II listed Spital Farmhouse group is located immediately adjacent to the scheme Order Limits, including Spital Farmhouse with adjoining Stables, Byre and Gin Gang, Threshing Barn and Byre to the

east of Spital Farmhouse and Coach House, Barns, Byres and Entrance Arch to the north of Spital Farmhouse. Temporary impacts to these assets will be limited to the duration of the construction phase and will result in a temporary moderate adverse effect. Whilst the Project will move the A66 alignment slightly closer to the Spital Farmhouse group, the permanent and operation effects are anticipated to be comparable to that of the present baseline.

6.4.30 Two assets will be subject to moderate adverse effects resulting from the construction of the scheme. These effects are the result of the loss of physical evidence arising from the construction of the scheme and will be permanent.

6.4.31 The 2021 archaeological trial trench evaluation identified archaeological features located entirely within the Order Limits. The non-designated assets features include an enclosure and other features north-west of Kirkby Thore and a Prehistoric round house drip gully and associated features.

6.4.32 These features are located within the footprint of where a new offline length of dual carriageway road will be constructed. Groundworks will remove archaeological or geoarchaeological remains, associated with these medium value features, to formation levels. There would be major adverse impacts on medium value assets resulting large adverse effects. There would be moderate adverse effects with essential mitigation.

6.4.33 No additional significant effects expected on any heritage asset during operation of this scheme.

6.4.34 The overall impact of the scheme on heritage assets is considered to result in less than substantial harm to the significance of designated heritage assets and is outweighed by the public benefits of the scheme as evidenced throughout this document.

6.4.35 Full details can be viewed at section 8.9 of Chapter 8 (Cultural Heritage) of the ES (Application Documents 3.2-3.4).

Biodiversity and Ecological Conservation

6.4.36 The River Eden SAC and River Eden and Tributaries SSSI are within the Order Limits of this scheme. Temple Sowerby Moss SSSI is 143m north-west of this scheme. The interaction of the proposed route within the SAC designation has been an important consideration in confirming the route and the design of the proposals in this location in order to ensure conformity with national planning policy (NN NPS) and the Habitats Regulations 2017.

6.4.37 Chapel Wood LWS is within the Order Limits of this scheme. The following non-statutory designated sites are within 1km of this scheme but outside the Order Limits: Ross Wood LWS (208m south); Dowpits Wood LWS (948m south); Acorn Bank Woods and Garden LWS (957m north); Bolton Shingle Bank SIS (237 south west); R. Eden, Oglebird Scar Ers SIS (455m west); Temple Sowerby Shingle Bank SIS (615m north-west) and Roadside Verges C2L (8A and 8B) (843m south-west).

6.4.38 Chapel Wood Ancient Woodland lies immediately south of the Order Limits. The following Ancient Woodland Sites are within 1km of this scheme but outside the Order Limits: Oglebird Plantation (451m north-west); Ross Wood (208m south); and Dowpits Wood (941m south-east).

6.4.39 There are four veteran trees, four notable trees and three potential veteran or ancient trees within 1km of this scheme but outside of the Order Limits.

6.4.40 Two priority habitat types within 250m of Order Limits - deciduous woodland (20.26ha) and traditional orchard (0.7ha).

6.4.41 Multiple protected species including, but not limited to: great crested newts, reptiles, terrestrial invertebrates, badgers, red squirrel, foraging and roosting bats, small mustelids (assumed polecat), otter, barn owl, breeding and wintering birds, fish, aquatic invertebrates and white-clawed crayfish.

6.4.42 The majority of potential impacts affecting biodiversity features will occur during the construction phase. These impacts can be broadly summarised into the following:

- Habitat loss permanently or temporarily under the road itself or where it is removed as a result of working area and compounds
- Fragmentation of populations and habitats where changes to noise, air quality, hydrological regimes and human presence may change the movement of mobile species
- Disturbance to species by changes to noise, light and human activity that may affect the behaviour of sensitive species, particular breeding or wintering birds
- Habitat damage or degradation that might arise from changes to water quality or air quality
- Incidental species mortality as a result of construction activities such as vegetation clearance, tree felling, vehicle movements and top soil stripping

6.4.43 Operational impacts of the Project on biodiversity features can be summarised into the following:

- Fragmentation of populations and habitats as a result of the east-west alignment of the Project resulting in severance of north-south movement
- Disturbance as a result of changes to operational traffic flows and resulting changes to noise, air quality, light and human disturbance
- Habitat damage can occur as a result of changes to hydrological regimes, or long term changes to nitrogen content affecting plant life
- Incidental species mortality due to animals having to cross the road and being hit by vehicles.

6.4.44 Considering the impact of the scheme on biodiversity (including the SAC):

- No significant effects are anticipated in construction.
- No significant effects are anticipated in operation.

6.4.45 Avoidance and minimisation of impacts on important biodiversity features has been incorporated throughout the development of the design of the Project and at individual scheme level. Details of relevant elements which have been incorporated into this assessment are described in section 3 of the Project Design Principles (Application Document 5.11).

6.4.46 In addition, the Project Design Principles (Application Document 5.11) outlines measures to reduce impacts in relation to habitats, including (but not limited to):

- Use of ecologically sensitive lighting where possible
- Improved ecological connectivity to Trout Beck through provision of woodland planting
- The structure crossing Trout Beck must allow for full functionality of supporting river processes

6.4.47 The assessment of impacts on biodiversity also assumes the implementation of the following embedded measures, which are secured through the EMP to be in accordance with DMRB LA120 (Application Document 2.7) and associated management plans.

6.4.48 To view the full ecological assessment for this scheme, see section 6.10 of Chapter 6 (Biodiversity) of the ES (Application Documents 3.2-3.4).

Landscape and Visual Impact

6.4.49 The scheme location considers the following land designations:

- The Yorkshire Dales National Park – approximately 4.5km to the south of the Order Limits
- The North Pennines AONB – approximately 2km to the north of the Order Limits. A small section of the AONB lies within the northern extents of the Order Limits, north of Kirkby Thore.
- National Landscape Character level, the Order Limit for the scheme lies within NCA9 Eden valley.
- The scheme also sits within a series of landscape character types as defined in the Cumbria County Council Landscape Character Assessment.

6.4.50 During construction, this scheme is expected to result in significant adverse effects to local character areas, residences, users of recreational sites and public rights of way and road users.

6.4.51 Once operational, at year 15 the proposed planting would have established across the Order Limits and would be in leaf. This would provide some restoration of localised landscape character.

6.4.52 This would incur a slight reduction in significance, however still resulting in moderate and significant landscape effects. This is due to the introduction of additional infrastructure across a predominantly rural landscape, albeit considered alongside the conspicuous presence of the British Gypsum Works, existing A66 and built form.

6.4.53 Across the western end of the scheme, proposed grassland would form a continuous sward, providing some return to character, whilst woodland would provide context with woodland along the existing carriageway.

6.4.54 Across the central length of the scheme, where changes in landscape character are more pronounced, at year 15 land would have returned to agriculture and proposed grassland would provide a continuous sward. Woodland and woodland edge planting will have matured, providing a backdrop more in keeping with its surroundings, and whilst the scheme will still incur a change in character it will appear less pronounced.

6.4.55 Considering Year 15 Visual Effects:

- visual effects would be reduced for the majority of receptors as a result of mitigation proposals maturing, including woodland which would provide screening of views towards parts of the scheme.
- Within the central length of the scheme, woodland planting has been designed to ensure screening of moving traffic along the mainline length of the scheme, whilst simultaneously retaining long distance views towards the AONB.
- The integration of woodland edge and species-rich grassland at the Trout Beck viaduct would ensure visual integration of the structure as far as possible, whilst retaining the visual context of the beck's riparian woodland.

6.4.56 The following visual receptors would experience significant effects during year 15 of operation:

- Road users along Priest Lane (Viewpoint 4.2) who would experience moderate significant effects.
- Recreational users of PRoW 341017 (footpath) (Viewpoint 4.10a) who would experience moderate significant effects.
- Recreational users of PRoW 317012 (bridleway) (Viewpoint 4.13) who would experience moderate significant effects.
- Recreational users of PRoW 317004 (footpath) (Viewpoint 4.14) would experience large significant effects.

6.4.57 Full details are able to be viewed within section 10.10 of Chapter 10 (Landscape and Visual) of the ES (Application Documents 3.2-3.4).

Other environmental Impacts

6.4.58 In accordance with the EIA regulations, the proposed scheme has been assessed for environmental impacts relating to:

- Air quality
- Biodiversity
- Climate
- Cultural heritage
- Geology and soils
- Landscape and visual
- Material assets and vibration
- Population and human health
- Road drainage and the water environment.

6.4.59 Full details of environmental assessments carried out for each of these topics are provided within the ES which accompanies this application (Application Documents 3.2-3.4).

6.4.60 The proposed scheme has been assessed for environmental impacts in accordance with the EIA regulations, as outlined within earlier chapters of this document and detailed within Chapters 5-14 the ES which accompanies this application (Application Documents 3.2-3.4).

6.4.61 Localised issues of noise to receptors experiencing significant adverse effects at residential dwellings to the north of Kirkby Thore by Sandersons Croft, Spitals Farm, Halefield Farm, Sleastonhow, Powls House, Catrigg Hill and Roger Head and a non-residential receptor at Spital Farm are likely. Taking onto account the environmental assessment and reported impacts, the proposed scheme is not considered to result in any long-lasting environmental effects.

Public consultation

6.4.62 The scheme development was informed by extensive public and stakeholder engagement. During statutory consultation, a total of 213 individual responses related to this scheme. The key consultation responses for the scheme are set out at Table 7, Chapter 6 of the Consultation Report (Application Document 4.4) within Annex N. The PDOR (Application Document 4.1) describes the design development carried out for each scheme along the route of the Project and how it has been informed by consultation.

6.4.63 Design changes and design verification resulting from the consultation are outlined in the following paragraphs.

6.4.64 In response to concerns relating to potential impacts on Roman forts during construction and operation of the new A66, the route alignment north of Kirkby Thore is now in cutting with additional noise barriers and landscaping to help integrate the new road into the existing environment and remove any impact on the Roman forts in this location.

6.4.65 In response to concerns raised about the design proposed in autumn 2021, to construct a new junction to the north-east of Kirkby Thore connecting Main Street to the new A66, it is now proposed to reposition this junction from Main Street to Fell Lane. This new junction provides better highway geometry, a safer route with improved visibility and connectivity and allows several previously affected businesses to remain in situ.

6.4.66 In response to concerns about the length of road in the flood plain and SAC, a new 400m viaduct has been introduced into plans to go over the flood plain and minimise any impacts to the SAC.

6.4.67 Concerns about potential impacts on the ancient Sleastonhowe Oak tree due to the proposed carriageway have resulted in a change in the scheme design to avoid this tree. The new proposal avoids this significant tree and its Root Protection Area. Supporting infrastructure, such as drainage ponds and access routes to them have also been moved to accommodate the Oak.

6.4.68 In response to concerns raised about the proposed removal of a junction off the A66 at Long Marton End Lane and its replacement with an overbridge which could affect a nearby Roman camp. It is now proposed to realign both the new A66 dual carriageway and Long Marton Lane End to avoid potential negative impacts on the nearby Roman camp. This realignment also allows for earlier visibility and safety concerns to be addressed. The new proposal includes a compact, all-movement, grade-separated junction at Long Marton Lane End to serve villages to the north and south with an underpass.

6.4.69 A number of respondents questioned the need for the scheme itself. These have been referenced at Appendix N of the Consultation Report (Application Document 4.4). These impacts are addressed in the following paragraphs.

6.4.70 Friends of the Lake District, at statutory consultation, suggested that an assessment should be carried out of a non-dual carriageway option. This membership organisation suggested that there could be other do-minimum solutions, such as creating new local roads to join at one of the existing junctions on the A66 and connecting to British Gypsum to the north of Kirkby Thore. They suggested these proposals would meet the objective of removing a significant volume of HGV traffic from British Gypsum and other businesses from the village to the north.

6.4.71 A landowner, that would be affected by the A66 proposals, also responded to statutory consultation suggesting that dualling is not the only solution and there could be other interventions carried out, such as controls to the speed of vehicles, which would have benefits, such as reducing noise and air pollution and reducing Greenhouse Gas ('GHG') emissions.

6.4.72 Alternative solutions for improving the routes across the Northern Pennines, including non-dualling and safety case options, have been thoroughly evaluated as part of a comprehensive process of option assessments and route selection carried out, over an eight-year period.

6.4.73 From the initial feasibility work for the NTPRSS (2014-15) to more recent work in assessing alternative routes for the A66 dualling (2020-21) a wide range of options (including non-dualling improvements to address safety issues and other problems with the current A66) have been investigated. Some of the options assessed as part of the NTPRSS within the Temple Sowerby to Appleby length were local junction improvements including options for fewer junctions and/or provision of local access roads, review of right turn lanes, improvement of key junctions and realigning the carriageway north of Kirkby Thore with improved access to the Gypsum works as suggested by Friends of the Lake District.

6.4.74 Collaboration between the environmental disciplines and design engineers and engagement and consultation has been and continues to be an integral part of this evaluation of alternative options for improving the A66. Engagement throughout has also informed the Project development, with statutory and non-statutory bodies involved

throughout the progress of the NTPRSS and at options public consultation in Stage 2, as well as informal ongoing engagement with a wider range of stakeholders and residents. This has formed part of the work at each PCF Stage in order to improve the design and alignment of the route and to ensure we address wherever possible stakeholder and local community concerns.

6.4.75 Safety, which cannot be achieved through speed limits on the existing road or exploring solutions to ensure HGV traffic does not impact on local communities, was an important part National Highway's decision making for this scheme and for the project as whole. National Highways in addition to these important considerations took into account a variety of other matters when assessing and selecting different option for improvements to the route. The options for the A66 have been assessed against a range of engineering (including safety), economic, financial and environmental criteria. The alternatives and options assessed and the criteria that formed part of the assessments that formed part of the NTPRSS or were part of National Highway's PCF are described within the PDOR (Application Document 4.1). One of the principal findings of these assessments, as outlined in the Route Development Report (Appendix 3 to the PDOR), was that:

'full dualling options were expected to deliver the greatest level of strategic benefits, with the A66 full dualling option delivering particularly strong benefits in terms of strategic connectivity and journey time reliability, as well as making a significant contribution to the Northern Powerhouse economic growth agenda and supporting access to key tourist sites'

6.4.76 Full details and a review of issues raised at statutory consultation can be found at Chapter 6 of the Consultation Report (Application Document 4.4).

Summary case for the scheme

6.4.77 In summarising the case outlined above, it has been demonstrated that the proposed scheme will increase the capacity of the A66, improve resilience along the route in case of accidents or slow-moving vehicles while also providing a suite of safety improvements along the route in this location. The introduction of a proposed bypass will bring significant improvement in amenity for the community of Kirkby Thore and will improve connections within the village, currently severed by the volume of traffic running through the village. Improvements for users of the local traffic network are expected including significant new WCH infrastructure benefits.

6.4.78 Environmental impacts have been minimised through sensitive design and it is not considered that the scheme will result in any significant environmental effects.

6.4.79 This scheme has been designed with reference to the national, regional, county and local level planning policy context, as demonstrated within the LPCS accompanying this application (Application Document 3.9).

For this scheme, the relevant county level policy is set out in the local plan for Cumbria County Council. The relevant local level policy is set out in the local plan for Eden District Council. The proposed scheme is considered to be in accordance with planning policy.

6.4.80 The proposed scheme is considered to be in accordance with planning policy as demonstrated within the LPCS accompanying this application (Application Document 3.9) at Appendices C and D of the document.

6.5 Appleby to Brough

Description of the problems within the scheme boundary

6.5.1 As described within the PDOR (Application Document 4.1), the A66 between Appleby and Brough includes an approximately 8km length of single carriageway with local access junctions at Sandford, Moor House Lane, Hayber Lane, Warcop, Toddygill, Flitholme and Great Musgrave.

6.5.2 This length of the route follows the alignment of the Roman Road, with a varying carriageway width. This variation in carriageway makes for an inconsistent driving experience and thus creates safety issues.

6.5.3 This length of the A66 carries approximately 14,600 vehicles per day, 30% of which are heavy goods vehicles. The single carriageway in this location results in significant capacity constraints along the route.

6.5.4 The route length is subject to accidents with three fatal collisions in the period from 2012 to 2018. Two occurred in hours of daylight, and one in hours of darkness. All three fatalities were head on collisions, where vehicles drifted across the centre line into oncoming traffic.

6.5.5 Two further non-fatal collisions were caused by cars making poor turning or overtaking manoeuvres.

6.5.6 The junctions along this length of the route vary in layout and present safety issues, with vehicles attempting to join the main highway which is a single lane operating at a higher speed. Sandford and Warcop junctions comprise ghost islands, and there are no specific facilities provided at Moor House Lane, Hayber Lane, Toddygill, Flitholme and Langrigg junctions. Here drivers can also find themselves in a vulnerable position when attempting to slow and leave the A66, especially when turning right.

6.5.7 This length of road has limited resilience in the event of accidents, with few opportunities for diversions. When accidents occur, road closures take place until the road is cleared and able to be reopened. This results in significant delays along the A66, significantly impacting upon the journey times along the A66.

6.5.8 Existing WCH facilities are limited along this length of the route and do not provide connectivity to the wider WCH and PRoW network.

6.5.9 Changes in speed limits also create potential accident spots and as such the speed limit has already been locally lowered from 60mph to 50mph to mitigate this.

6.5.10 The route of the A66 between Appleby and Brough is generally located within agricultural land bounded by a MoD training camp and firing range to the north. The MoD also retains its headquarters in the village of Warcop and as such requires frequent access across the A66 between these two sites. A P-Loop on the A66 assists with MoD access to the site for westbound articulated vehicles accessing the firing range access at Fell Lane.

6.5.11 Access arrangements for the MoD are poor at present. For vehicles accessing the MoD site, the current situation is for MoD staff to stop the traffic to allow vehicles to turn into the site.

6.5.12 The A66 along this route follows the southern edge of the North Pennines AONB from Moor House Lane all the way to Brough in the east. The AONB also contains the North Pennines UNESCO Global Geopark, an internationally recognised site of outstanding geological heritage.

6.5.13 In this location there is also anecdotal evidence that farmers temporarily stop traffic on the length to move livestock from fields on either side of the A66. This poses a serious risk to the safety of the farmers, road users and livestock.

6.5.14 The Brough Hill Fair facilitates horses and horse-drawn vehicles which currently have parking and setting down facilities immediately adjacent to the A66.

Description of the proposed scheme and how it will address the problems identified

6.5.15 As described in Chapter 3 of this document and summarised below, the proposed scheme comprises:

- dualling a length of single carriageway between Coupland Beck and Brough to increase capacity and provide resilience to the road in the event of accidents. To the west, 2.6km of online widening with a new eastbound carriageway to the north of the existing carriageway. The westbound carriageway will use the existing A66.
- a number of junction improvements are proposed to enable safer access on and off the A66.
- a left-in/left-out junction at Café Sixty-Six enabling access to the eastbound carriageway to replicate the current access.
- a replacement underpass for New Hall Farm and Far Bank End and a left in/left out junction will be provided on the westbound carriageway will remove slower moving agricultural vehicles from the route.
- a new compact grade separated junction providing a link to the B6259 to Sandford/Warcop.
- a new underpass is proposed to facilitate access to agricultural land on the south side of the new A66 to remove slower moving agricultural vehicles from crossing the route, preventing severance of the land and for footpath connectivity
- new viaducts will be provided to cross over Moor Beck and Cringle Beck together with a new bridge on the Warcop westbound junction.

- new junctions at Warcop on the westbound and eastbound carriageways facilitating access to the A66 in both directions and providing access to the village of Warcop and the de-trunked A66.
- a local road to the south of the new A66 connecting Flitholme and Langrigg allows residents connection to the new westbound carriageway and local roads to the south via Musgrave Lane improving the local road network in this location.
- de-trunked lengths of the A66 which will enable use for access to the local road network west of Warcop and a new local road will be provided to the north from Turks Head into Brough. Eastbound local movements to Brough would be via the accommodation bridge to join with the local road into Brough. This will facilitate easier movement around the local road network and provide improved WCH facilities in this location.
- requires 18 proposed ponds for the purposes of drainage of the road network and to maintain water quality.
- a full east to west WCH route along this length of road, with segregated crossings of dual carriageway at several locations to reconnect and tie in existing PRoW.

6.5.16 The proposed dualling of the A66 allows for increased capacity while upgrading the substandard road features and improving alignment to ensure that safety improves across the route.

6.5.17 The existing single access junctions will be removed and replaced with offline local accesses. This will remove slower moving and local traffic making short journeys along the route. Not only will this result in improved capacity it will improve safety for all road users.

6.5.18 A full east to west WCH connection is provided along the route, connecting into existing PRoW routes at both ends. This will significantly improve facilities in this location, which are currently lacking. This provides betterment for local people and encourages sustainable travel.

6.5.19 In seeking to upgrade the A66 in this location to provide the required safety, resilience and capacity upgrades, there are a number of site constraints, which will be further outlined in the coming lengths of this document. Primarily these relate to environmental, ecological and landscape designations.

6.5.20 The relevant GA Plans relating to this scheme are HE565627-AMY-HAC-S06-DR-CH-400001 to HE565627-AMY-HAC-S06-DR-CH-400006 (Application Document 2.5).

Benefits the scheme will deliver

6.5.21 In addition to the immediate issues of congestion and journey time savings as identified in the previous chapters of this document, the scheme also delivers localised benefits for communities, such as improved accessibility and better local connectivity.

6.5.22 The table below provides an overview of the location specific benefits of this scheme considered against the wide Project objectives.

Table 6-4: Review of scheme against Project objectives

Theme	Project objectives	Scheme Response
Economic	-Regional: Support the economic growth objectives of the Northern Powerhouse and Government Levelling Up agenda	-The proposed road upgrades in this location facilitate improved access to the A66 strategic route network. -This has economic implications for freight and other business connectivity. If the existing A66 route is not improved, it will continue to constrain national and regional connectivity and may threaten the transformational growth envisaged by the Northern Powerhouse initiative and the achievement of the Government 'Levelling Up' agenda. -The Project improves access to key tourist destinations such as the North Pennines and Lake District. -In delivering the proposed scheme in this location a number of existing farms and businesses (West View Farm, Eastfield Farm, Taylors and Braithwaite) will be provided with improved and upgraded accesses facilitating easier movement of machinery and HGV's accessing and egressing the sites. This is considered to result in economic benefit to these businesses through journey time savings.
	-Ensure the improvement and long-term development of the 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, NMU, road workers, local businesses and local residents.	-The proposed dualled scheme will remove many of the current below standard road alignments along the current A66 route improving safety for all. -The current accidents hazards will be moved from the route through road standard improvements in the event of accidents, breakdowns or slow-moving vehicles. The second lane of the road will provide resilience along the route. The additional lane will enable passing or turn back facilities, ensuring the route remains open. -The scheme upgrades will result in safer access for MoD vehicles, removing their interaction with the A66. -New and improved farm accesses also result in slower moving agricultural vehicles being removed from the main trunk road. -In improving resilience along the road and also improving capacity more generally, to better accommodate the circa 14,600 vehicles using this route daily, journey time savings are expected to be between 2
	-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 NMU provision along the route.	

Theme	Project objectives	Scheme Response
		minutes 45 seconds and 3 minutes across the day. -The 'old' lengths of A66 will be retained to provide improved village to village connectivity, with segregated WCH routes incorporated along the entirety of the route improving sustainable transport facilities for local people. -Segregated crossings of dual carriageway are reconnected and tied in existing Public Rights of Way, improving facilities along this route.
Community	-Reduce the impact of the route on severance for local communities.	-It is proposed for the scheme to incorporate a shared cycle/footway parallel to and running entire length of the scheme. Key crossing points over or under the proposed dual carriageway are proposed at Café Sixty-Six, Warcop, Great Musgrave and Brough. -A new eastbound northern route is proposed to reduce impact on residents at Dyke Nook, with further landscaping and the retention of existing tree belts mitigating the scheme. -An alternative site will be provided for Brough Hill Fair, situated to the south of the A66, approximately 1.6 miles east of the current site. It has an access from Musgrave Lane which would allow access for horses and horse-drawn vehicles and would allow users of the site to park caravans further from the road. -It is anticipated that the proposed farm access improvements will better link farmland together, currently severed by the A66. This removes the need for any livestock to cross the main carriageway significantly improving safety along this length of the route.
Environment	-Minimise adverse impacts on the environment and where possible optimise environmental improvement opportunities.	-The potential negative impacts on properties at Sandford, has been reduced as the trees will be retained and screen the properties from the carriageway. -Reduced congestion and fewer vehicles idling will reduce emissions, helping to improve localised air quality as outlined in Chapter 5 (Air Quality) of the ES.

Outline of legislation and policy issues, such as AONB incursions and European designated sites

6.5.23 This length considers the scheme impact on historic, ecological, landscape and environmental designations.

The Historic Environment

6.5.24 As set out at section 8.9 of Chapter 8 (Cultural Heritage) of the ES (Application Documents 3.2-3.4), one asset will be subject to moderate adverse effects during the construction period. However, these effects will be limited to the construction phase and are therefore temporary.

6.5.25 The Grade II listed Boundary Stone to North of Bullistone Cottage is located within the Order Limits. The asset will be required to be removed whilst works are being carried out for its protection from construction activities. Provided it is restored to as close a location to its original site as practicable with the construction of the new left-only T-junction at the current location of the boundary stone, this would be a temporary minor adverse impact resulting in a moderate adverse effect. The completed road will slightly alter the baseline appearance of the boundary stone's setting but would not alter the contribution of the boundary stone's setting to its value, and it would retain its important roadside connection.

6.5.26 Five assets will be subject to large and moderate adverse effects resulting from the construction of the scheme. These effects are the result of the loss of physical evidence arising from the construction of the scheme and will be permanent.

6.5.27 The SM of Warcop Roman Camp is located within the Zone of Visual Influence ('ZVI') and partially within the Order Limits. Any below ground works will result in the loss of associated physical evidence in the area within the Order Limits and a moderate adverse impact to the overall SM resulting in a large adverse effect. This would be a moderate adverse effect with essential mitigation.

6.5.28 The Sandford Moor Barrows group is located within the Order Limits, consisting of Sandford Moor Barrow, Sandford Ring Cairn Site, Sandford Moor Barrow Flint Find and Sandford Moor Barrow. The survival of the barrow and associated features is currently uncertain, and the sites may already have been subject to extensive truncation and removal as a result of antiquarian investigation as well as the construction of the modern A66. As a result, there may be no impact from the scheme on the prehistoric features at Sandford; however, should any medium value buried archaeological remains survive they would experience a major adverse impact resulting in a large adverse effect, resulting in a moderate adverse effect with essential mitigation.

6.5.29 In summary of the above assessment, this scheme is expected to result in significant temporary adverse effects to one heritage asset and significant permanent adverse effects to two heritage assets. No additional significant effects are expected on any heritage asset during operation.

6.5.30 The overall impact of the scheme on heritage assets is considered to result in less than substantial harm to the significance of designated heritage assets and is outweighed by the public benefits of the scheme as evidenced throughout this document.

Biodiversity and Ecological Conservation

6.5.31 The following designations are situated in proximity to the Order Limits:

- The River Eden SAC (675m southwest),
- Helbeck and Swindale Woods SAC (550m northeast)
- Moor House – Upper Teesdale SAC (1.04km northeast)
- North Pennine Moors SPA (1.04km northeast)
- River Eden and Tributaries SSSI (675m southwest)
- Helbeck wood SSSI (550m southwest)
- Appleby Fells SSSI (1.04km northeast)
- Kiln Hill Ancient Woodland (965m northeast)
- Yosgill Wood Ancient Woodland (550 northeast)
- Lowgill Beck, Woodend Sike and Yosgill Sike flow under the eastern extent of the scheme.

6.5.32 The interaction of the proposed route with the three SAC designations and SPA designation has been an important consideration in confirming the route and the design of the proposals in this location in order to ensure conformity with national planning policy (NN NPS) and Habitats Regulations 2017.

6.5.33 There are no statutory designated sites within the Order Limits of this scheme. There are nine statutory designated sites within 2km of this scheme: River Eden SAC (377m south); Moor House Upper Teesdale SAC (902m north); Helbeck and Swindale Woods SAC (427m north); North Pennine Moors SPA (902m north); River Eden and Tributaries SSSI (377m south); Helbeck Wood SSSI (428m north); Swindale SSSI (1.3km north-east); Appleby Fells SSSI (902m north); and George Gill SSSI (395m north-west).

6.5.34 There are no non-statutory designated sites within the Order Limits for this scheme. There are seven non-statutory designated sites within 1km of this scheme: Sandford Mire LWS (7m south); Swindale Woodland LWS (515m south); Helbeck Wood SIS (428m north) and Roadside verges C2P (10A and 10B) (14m south); C25 (7A and 7B) (15m south); C25 (4A and 4B) (917m south-east) and C25 (6A and 6B) (585m south).

6.5.35 There are no Ancient Woodland Sites within the Order Limits of this scheme. There are two Ancient Woodland Sites within 1km of this scheme: Kiln Hill Wood (623m north) and Yosgill Wood (429m north).

6.5.36 There are no ancient, veteran or notable trees within the Order Limits for this scheme. There is one ancient tree, five veteran trees and one notable tree within 1km of this scheme.

6.5.37 New viaducts will be provided to cross over Moor Beck and Cringle Beck together with a new bridge on the Warcop westbound junction. These are being provided to minimise any effects on the Becks as they have

been found to be functionally linked to the River Eden SAC downstream of them and support multiple species protected by this designation. Land has also been identified in the area in order for Flood Compensation areas to be provided as required.

6.5.38 GCN were confirmed in five ponds, all located on MoD land to the north of the existing A66 and three of which form part of a cluster within an extensive area of wetland habitat.

6.5.39 Large areas of habitats within this scheme were identified as having potential to support reptiles and will be subject to reptile surveys to determine presence or absence.

6.5.40 Six priority habitat types within 250m of Order Limits - coastal and floodplain grazing marsh (15.02 hectares (ha)), deciduous woodland (10.54ha), traditional orchard (0.05 ha), lowland fen (6.35ha), purple moor grass and rush pasture (2.7ha) and upland heathland (4.44ha).

6.5.41 Multiple protected species including, but not limited to: great crested newts, reptiles, terrestrial invertebrates, badgers, red squirrel, foraging and roosting bats, small mustelids (assumed polecat), otter, barn owl, breeding and wintering birds, fish, aquatic invertebrates and white-clawed crayfish.

6.5.42 The majority of potential impacts affecting biodiversity features will occur during the construction phase. These impacts can be broadly summarised into the following:

- Habitat loss permanently or temporarily under the road itself or where it is removed as a result of working area and compounds
- Fragmentation of populations and habitats where changes to noise, air quality, hydrological regimes and human presence may change the movement of mobile species
- Disturbance to species by changes to noise, light and human activity that may affect the behaviour of sensitive species, particular breeding or wintering birds
- Habitat damage or degradation that might arise from changes to water quality or air quality
- Incidental species mortality as a result of construction activities such as vegetation clearance, tree felling, vehicle movements and top soil stripping

6.5.43 Operational impacts of the Project on biodiversity features can be summarised into the following:

- Fragmentation of populations and habitats as a result of the east-west alignment of the Project resulting in severance of north-south movement
- Disturbance as a result of changes to operational traffic flows and resulting changes to noise, air quality, light and human disturbance
- Habitat damage can occur as a result of changes to hydrological regimes, or long term changes to nitrogen content affecting plant life
- Incidental species mortality due to animals having to cross the road and being hit by vehicles.

- Considering the impact of the scheme on the site:
- No significant effects are anticipated in construction.
- No significant effects are anticipated in operation.

6.5.44 Avoidance and minimisation of impacts on important biodiversity features has been incorporated throughout the development of the design of the Project and at individual scheme level. Details of relevant elements which have been incorporated into this assessment are described in section 3 of the Project Design Principles (Application Document 5.11).

6.5.45 In addition, the Project Design Principles (Application Document 5.11) outlines measures to reduce impacts in relation to habitats, including (but not limited to):

- Use of ecologically sensitive lighting where possible
- Improved ecological connectivity to Trout Beck through provision of woodland planting
- The structure crossing Trout Beck must allow for full functionality of supporting river processes

6.5.46 The assessment of impacts on biodiversity also assumes the implementation of the following embedded measures, which are secured through the EMP to be in accordance with DMRB LA120 (Application Document 2.7) and associated management plans.

6.5.47 To view the full ecological assessment for this scheme, see section 6.10 Chapter 6 (Biodiversity) of the ES (Application Document 3.2-3.4).

Landscape and Visual Impact

6.5.48 The scheme considers the following landscape designations:

- The Yorkshire Dales National Park – approximately 4km to the south of the Order Limits.
- The North Pennines AONB boundary for parts of the scheme falls within the northern part of the Order Limits (involving minor incursions into the AONB along its boundary)
- At a National Landscape Character level, the Order Limits lies within NCA9 Eden valley. The remainder of the study area is within NCA10 North Pennines.
- The scheme also sits within a series of landscape character types as defined in the Durham County Council and North Pennines AONB Landscape Character Assessments.

6.5.49 During construction, this scheme is expected to result in significant adverse effects to local character areas, residences, users of recreational sites and public rights of way and road users.

6.5.50 By year 15 of operation summer the proposed mitigation planting would have allowed the scheme to integrate within its surroundings to a large degree.

6.5.51 Prevailing landscape character would be reinstated locally to a degree where there would no longer have significant effects.

6.5.52 No significant effects are predicted across the AONB as a result of the scheme. This is, however, considered in greater detail in the coming paragraphs.

6.5.53 Extensive woodland planting north-west of the grade separated junction off the B6259 would provide additional wooded context adding to its key characteristic of semi natural woodland and extensive conifer plantations.

6.5.54 Similarly, blocks of woodland to the north and east of Warcop, north-east of Flitholme and west of West View Farm would enhance the key characteristics of LCA 8b Broad Valleys, which includes pockets of scrub, woodland and coniferous plantations.

6.5.55 Considering Year 15 Visual Effects:

- views towards the scheme would generally be enhanced by mitigation proposals in full leaf. Areas of woodland such as those around Warcop and Flitholme would provide screening or enhancement in views towards the scheme for receptors.
- With reference to ES Appendix 10.6: Schedule of Visual Effects (Application Document 3.4), one visual receptor is predicted to experience significant effects as a result of the scheme. Recreational visitors to Warcop Railway Station (Viewpoint 6.8) are predicted to experience a moderate adverse magnitude of impact as a result of close views towards the balancing pond and views towards the overbridge to the north-west for a highly sensitive receptor. This results in a moderate (significant) effect.
- All other identified visual receptors within ES Appendix 10.6: Schedule of Visual Effects (Application Document 3.4) are not predicted to experience significant visual effects by year 15 summer.

6.5.56 Full details are able to be viewed within section 10.10 of Chapter 10 (Landscape and Visual) of the ES (Application Documents 3.2-3.4).

Development proposed within nationally designated areas

6.5.57 The scheme sits on the southern boundary of the North Pennines AONB and is partially within the AONB or located outside but with potential to affect the setting of the AONB.

6.5.58 As provided within the NNNPS (paragraph 5.151):

'The SoS should refuse development consent in these areas except in exceptional circumstances and where it can be demonstrated that it is in the public interest.

Consideration of such applications should include an assessment of:

· the need for the development, including in terms of any national considerations, and the impact of consenting, or not consenting it, upon the local economy;

· the cost of, and scope for, developing elsewhere, outside the designated area, or meeting the need for it in some other way; and

· *any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated'.*

6.5.59 Paragraph 5.152 goes on to state:

'There is a strong presumption against any significant road widening or the building of new roads…in…Areas of Outstanding Natural Beauty, unless it can be shown that there are compelling reasons for the new or enhanced capacity and with any benefits outweighing the costs vary significantly. Planning of the Strategic Road Network should encourage routes that avoid…Areas of Outstanding Natural Beauty.'

6.5.60 Equally at Paragraph 5.153, where consent is given in these areas:

'the SoS should be satisfied that the Applicant has ensured that the project will be carried out to high environmental standards and where possible includes measures to enhance other aspects of the environment. Where necessary, the SoS should consider the imposition of appropriate requirements to ensure these standards are delivered'

6.5.61 For development proposed outside nationally designated areas which might affect them, paragraphs 5.154 and 5.155 of the NNNPS apply. Paragraph 5.154 states:

'The duty to have regard to the purposes of nationally designated areas also applies when considering applications for projects outside the boundaries of these areas which may have impacts within them. The aim should be to avoid compromising the purposes of designation and such projects should be designed sensitively given the various siting, operational and other relevant constraints…'

6.5.62 Paragraph 5.155 goes on to state:

'The fact that a proposed project will be visible from within a designated area should not in itself be a reason for refusing consent.'

6.5.63 The Appleby to Brough scheme is located, in part, within, and potentially impacting upon the setting of the AONB. The schemes have therefore been assessed first against paragraphs 5.151 to 5.153 of the NNNPS, as described above, with respect to the development proposed within the AONB and then assessed against paragraph 5.154 to 5.155 for development outside the AONB.

Development within the AONB

6.5.64 The Appleby to Brough scheme is partially located within the AONB in a length to the north of Warcop (referred to in this report as the central length) and in a length to the east of Warcop (referred to in this document as the eastern length). For the central length the total length of the route within the AONB is 2,570 metres and for eastern length the total length of the route within the AONB is 1,205 metres. This can be compared with a total length of this Scheme of 8,130 metres and a total

length of the route for the Project of 37 km. Details on the limited extent of the incursions are set out in the tables below.

Table 6-5: AONB Incursion Details

AONB Incursion	Length (m)	Area (m^2)	Maximum Incursion (m)	Average Incursion (m)
Central	2570	224,000	280	87
Eastern	1205	95,000	135	79

6.5.65 The proposals in these lengths therefore require an assessment against the policies for development located in a nationally designated AONB as set out within Paragraphs 5.151 to 5.153 of the NNNPS, as set out above.

NNNPS Policy 1(i) (paragraph 5.151(i) of the NNNPS)

6.5.66 Paragraph 5.151(i) states that:

- 'SoS should refuse development consent in these areas except in exceptional circumstances and where it can be demonstrated that it is in the public interest. Consideration of such applications should include an assessment of:
- i) The need for the development, including in terms of any national considerations, and the impact of consenting, or not consenting it, upon the local economy.'

6.5.67 Need is considered ***at a Project level*** within this report at:

- Section 1.7 in relation to the project objectives;
- Section 3.4 in terms of benefits and opportunities;
- Section 4 in terms of the traffic case;
- Section 5 in terms of the economic case;
- Section 7 in terms of satisfying national, regional and local policy objectives;
- Section 8 through summarising the overall needs case.

6.5.68 The principal conclusions on the **need for the development in terms of any national considerations,** are that the project, which this scheme is an integral part:

- Fully meets the economic objectives at a regional and national level, which include:
  - At a regional level supporting the economic growth objectives of the Northern Powerhouse and Government Levelling Up agenda[3]. The Project supports and delivers against the aspirations and objectives of plans and strategies, including transport and economic strategies at a regional level, such as the TfN Strategic

[3] The Northern Powerhouse is a vision for joining up the North's great towns, cities and counties, pooling their strengths, and tackling major barriers to productivity to unleash the full economic potential of the North.
1.1 The Northern Powerhouse's objective is to achieve a sustained increase in productivity across the whole of the North. It is at the heart of the government's ambition for an economy that works for everyone. (Northern Powerhouse Strategy – November 2016, HM Government)

Transport Plan 2019, The Tees Valley Combined Authority's Strategic Economic Plan: The Industrial Strategy for Tees Valley 2016-2026, and the Tees Valley Strategic Transport Plan 2020-2030 and the Cumbria Strategic Economic Plan 2014-2024. Section 3.7 of the LPCS (Application Document 3.9) contains a detailed review of regional and county policy and an assessment of how the Project accords with this policy.

- Improving strategic regional and national connectivity, particularly for hauliers and for freight. Heavy goods vehicles account for around 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.
- Ensuring the improvement and long-term development of the SRN through providing better national connectivity including freight (see table 6-4 above).
- Maintaining and improving access for tourism served by the A66.
- Improving access to services and jobs for local road users and the local community.
- Improving access to key tourist destinations such as the North Pennines and Lake District.

6.5.69 In addition, this Project is identified by Government as one of the key investments in the north of England to help achieve the Government's Levelling Up agenda (see paragraph 3.4.14). Levelling Up is about tackling economic differences (including pay, work opportunities, health and life chances) and driving prosperity through investment in priority places.

6.5.70 The monetised economic impact of delivering the Project (see Chapter 5, The Economic Case) also supports the needs case at a national level in terms of:

- Road safety and reduction in accidents. Forecast accident and road safety benefits are valued at £29.6m across the 60-year appraisal period (at 2010 prices4), with reductions in fatal, serious and slight accidents. The Project is forecast to save 281 personal injury accidents and lead to an overall reduction of 530 casualties (see paragraph 5.3.14)
- Connectivity, Capacity and Economic' growth: the Project is forecast to achieve total transport economic efficiency benefits for road users of £521.1m. This is a result of the additional capacity and reduced delay provided by the project. Of the overall masked 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

4All prices are presented in the Department for Transports price base year, which is currently 2010. (See TAG Unit 1.1 Cost-Benefit Analysis July 2021 Department for Transport)

achieve significant wider economic benefits, valued at £61.5m (see paragraph 5.3.7)

- Increasing reliability: 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 (see paragraph 5.3.8).

6.5.71 The assessment of monetised benefits gives an adjusted NPV of -£44.4m and an adjusted BCR of 0.94, meaning the Project would provide £0.94 of societal benefits for each £1 of public expenditure (see paragraph 5.3.5). Omitting the scheme from the Project would undermine the achievement of these national and regional benefits.

6.5.72 ***The need for the development, in terms of the impact of consenting, or not consenting it, upon the local economy*** is considered in relation to addressing the project objectives at a local level. This is set out at table 34 at paragraph 6.5.22 above and summarised below.

6.5.73 The impact of consenting the scheme in terms of achieving these economic objectives include:

- journey time savings and minimising disruption and delays for example through use of a second lane to avoid disruption (when one lane is closed) providing a safer and more reliable means of access by reducing the number of accesses along the length and provision of safe junctions and improved and upgraded accesses. This will facilitate easier and safer movement of machinery and HGVs accessing and egressing premises and employment sites. This includes improved access for one of the key employers in the area (the MoD), that frequently needs to manoevre large vehicles along the route.
- improving access to key tourist and recreation destinations including the AONB to the north of Warcop, encouraging more visits to these destinations and more tourist related income for local busineses.
- better local connectivity for business and local travel to work journeys provided via the former (de-trunked) A66.
- improving connectivity for people living and working nearby through reducing congestion and improving the reliability of people's local journeys to work.
- incorporating a shared cycle/footway parallel to the route and running the entire length of the scheme to benefit local people and visitors for active travel to work as well as recreational use.

6.5.74 ***The impact of not consenting the project on the local economy*** would be that these local benefits could not be delivered to the same level, and that the objectives, for this project would not be achieved, to the same degree. The importance of the A66 dualling project in delivering local economic benefits, that are set out in strategies and plans at a local authority and regional level, was recognised at a very early stage of the project's development, as reported in the PDOR (Application Document 4.1). The NTPRSS, specifically identified the

implications of not undertaking the improvements on the A66, as follows: '*if the route is not improved the performance will inhibit improvements to links between cities and global connectivity, and threaten the transformational growth envisaged by the Northern Powerhouse agenda.' (NTPSS Stage 3 Report, November 2016).*

6.5.75 Having regard to sub-paragraph (i) of paragraph 5.151, there is clear and well evidenced benefits of consenting the project at a national, regional and local level in terms of the economic benefits that would be delivered, as set out above. The impact of not consenting it, upon the economy is that these benefits would not be achieved and this in turn may *'threaten the transformational growth envisaged by the Northern Powerhouse agenda'.* These national and local benefits are considered to be 'exceptional circumstances' and have been demonstrated above to be in the public interest.

Policy 1(ii) (para 5.151(ii) of the NNNPS)

6.5.76 Paragraph 5.151(ii) states that an assessment should be made of 'ii) The cost of, and scope for, developing elsewhere, outside the designated area, or meeting the need for it in some other way.'

6.5.77 The two questions of (A), the cost and scope of developing elsewhere outside the designated area, and (B), meeting the need for it in some other way, are addressed separately below.

(A) <u>The Cost of, and scope for, developing elsewhere outside the designated area</u>

6.5.78 This section describes the work carried out in assessing route alignments outside the AONB for both the central and eastern length within this scheme. This work demonstrates that although there is some scope to develop outside the designated area the route alignments outside the AONB are not preferred given the findings from the assessment with regard to a range of cost and engineering, environmental and stakeholder/ public interest related criteria. It goes on to describe the exceptional circumstances for taking forward the preferred route alignments (partially within the AONB compared with the routes wholly outside given the comparative harm and impact associated with the alternatives (outside the AONB compared to the preferred route alignments (within the AONB).

6.5.79 As part of the development of the route alignment and its design, further alternative route or junction assessment and appraisal work were undertaken carried out as part of the development of the DCO preliminary design. These alternative routes and junctions were considered for three schemes, including the Appleby to Brough scheme and the work carried out and the findings from this assessment are reported in the Project Development Overview Report (Application Document 4.1).

6.5.80 The additional assessment and appraisal work associated with these alternatives was necessary for these schemes to:

- further test, check and challenge previous findings

- to ensure the project continued to meet its objectives
- to explore opportunities to further reduce the environmental and ecological impacts
- explore solutions which would minimise impacts on designated areas and features (such as the Area of Outstanding Natural Beauty), and
- to ensure that the project conforms with national policy.

6.5.81 These considerations led to an assessment of two route alignments (one within the AONB and one outside the AONB) for two lengths of the route within the Appleby to Brough scheme. These two lengths are referred to as the central and eastern length and the two alternatives considered within these lengths are shown in figures 7 and 8 below. These were referred to during the assessment and when presented to stakeholders as part of engagement and at statutory consultation as:

- For the central length - the blue preferred route within the AONB and the black route outside the AONB. The black route was a development of the route that formed part of the route announcement in May 2020.
- For the eastern length - the black preferred route within the AONB (similar in alignment and design to the route that formed part of the route announcement in May 2020) and an alternative orange route outside the AONB

6.5.82 The blue preferred route (central length) and the black preferred route (eastern length) are referred to throughout this report as the promoted routes.

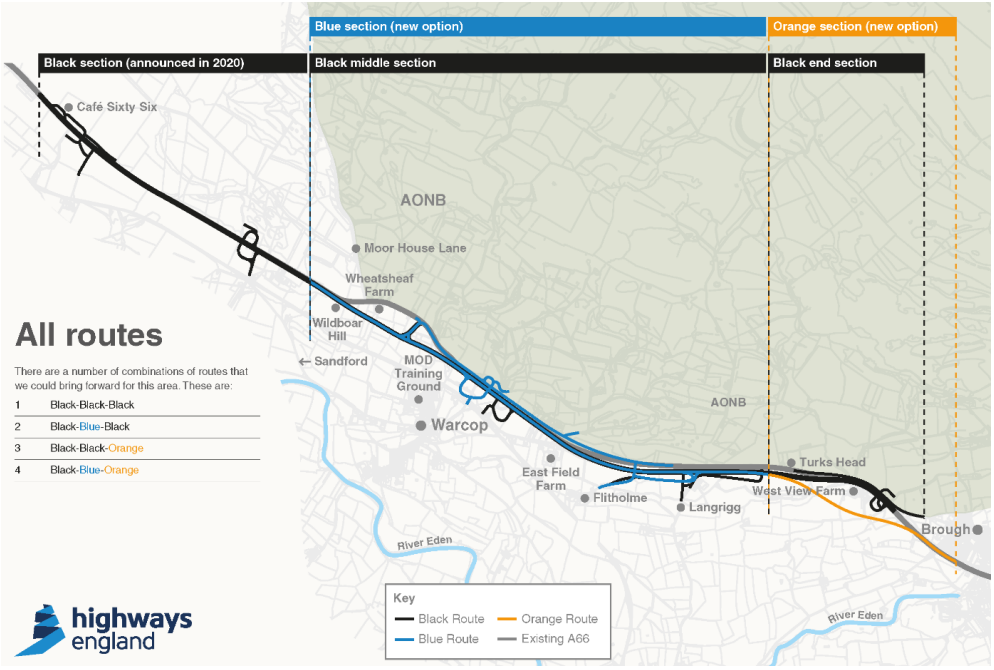

Plate 7 : Alternative Routes considered (outside and within AONB) in the central and eastern length (Map not to scale)

6.5.83 The two alternative routes within both the central and eastern length were the subject of local engagement and were presented and consulted on as part of the statutory consultation in autumn 2021. At statutory consultation information was provided on why the two routes

(blue central and black eastern) within the AONB were preferred including details of the findings from the assessment carried out against the alternative routes considered outside the AONB. These findings were presented in a Route Development Report ('RDR') which is attached as an appendix to the PDOR (Application Document 4.1).

6.5.84 Since the statutory consultation, the alternatives assessment in relation to these two lengths of the route within the AONB has been updated. The findings required updating due to design changes; the outputs from the environmental impact assessment work (as reported in the ES Chapter 3 (Assessment of Alternatives) and in response to statutory consultation. With these updates the overall findings and conclusions, as originally set out in the RDR, have not changed from those reported at statutory consultation. The conclusions are that for both the central length and eastern length the route alignments within the AONB are preferred to the alternatives outside the AONB, for the reasons set out below.

6.5.85 The consideration of alternative routes as described above demonstrates that there is 'scope for, developing elsewhere, outside the designated area' although the evaluation of these alternatives has demonstrated that there are additional costs and engineering complexities as well as significant environmental, landscape and other impacts on local communities which contribute to the exceptional circumstances for the development of the promoted routes over the alternative routes, as described below for each route length.

Assessment of the Alternative outside the AONB (Central Length)

6.5.86 For the central length of the Appleby to Brough scheme an alternative route has been assessed outside of the AONB to the south of the promoted route. This alternative route (referred to as the black route at statutory consultation) was a development of the preferred route that was announced in May 2020.

6.5.87 The promoted route and the alternative route in this central length have common features, in that both incorporate:

- a new junction at Warcop to provide access to and from the new A66 for the village and the nearby MoD facilities
- a new local road connection between Flitholme and Langrigg with a new westbound junction providing left on/left off access to the new A66.
- A network of local roads, connected with underpasses and underbridges where necessary to cross the proposed new dual carriageway.

6.5.88 The promoted route in relation to the AONB designation is shown in Plate 8: Central length within AONB (AONB is cross hatched with blue line boundary) above.

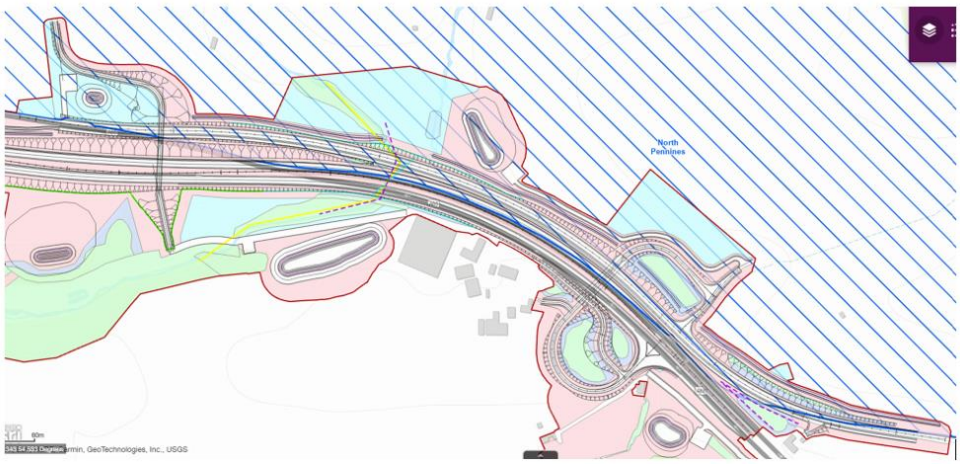

Plate 8: Central length within AONB (AONB is cross hatched with blue line boundary) (Map not to scale)

6.5.89 The promoted route differs to the alternative as it is further north away from Warcop village and existing properties to the south of the A66. This results in a minor encroachment into the AONB up to approximately 30m over a length of 1.1km, requiring 9.23 hectares of land within the AONB. The promoted route would have a direct effect on MoD operations, through taking buildings, a fuelling station and hard standing areas, being previously developed land. The minor encroachment into the AONB for the promoted route is required in order to accommodate a local access road and would allow for the provision of an underpass at Flitholme which would give residents there, access to the local road network. The promoted route is principally at grade requiring some embankment and structures (at a lower level than the alternative outside the AONB) to cross the water courses associated with the SAC.

6.5.90 In comparison, the alternative route outside the AONB is within a valley on undeveloped agricultural land, which is has been assessed to be predominately Grade 3a classification (Best and Most Versatile land). The alternative route also requires a much higher embankment and structure compared to the promoted route to cross the SAC water courses.

6.5.91 The height of the new structures and the potential impact on the landscape were key factors for the assessment carried out of the alternatives in the central length, as reported initially in the Route Development Report. These aspects of the assessment have been the subject of ongoing design iteration, adaptation and development, following statutory consultation, particularly given changes to the design required in order that the road can span watercourses that are functionally linked to an SAC (see biodiversity issues at paragraphs 6.5.79 – 6.5.82 below). The outcome from this assessment was that the design for the promoted route needed to be adapted in order to incorporate an embankment with structures to cross the watercourses, raising the level of the route by 3 to 4 metres (compared with the level shown for the road at statutory consultation).

6.5.92 The alternative to the south of the existing A66 would also require an embankment and structures and its location within a valley crossing a greater number of watercourses would require a much longer and higher embankment and structures (between 9 to 11 metres high) when compared with the updated design for the promoted route. As a consequence, with the updated design (from that presented at statutory consultation) of the promoted route there is still a preference for this route, with respect to landscape, as well as other criteria that form part of the assessment. The key findings from the assessment of the updated design for the promoted route and the alternative are set out below.

Engineering and Cost Criteria (Central Length)

6.5.93 The promoted route is preferred to the alternative outside the AONB in relation to some engineering criteria. There would be reduced earthworks and material import, which would contribute to cost savings, carbon reductions and vehicle movements and associated congestion during construction of the promoted route when compared to the alternative. This is as a consequence of a circa 9m to 11m high embankment that is required for the alternative route. The promoted route also has a lower impact on the floodplain in the vicinity of Warcop village, although there is some associated impact on agricultural land take for provision of drainage ponds.

6.5.94 From a geo-environmental perspective there is a risk of increased contamination in soil and groundwater with the promoted route, given its proximity to the Warcop depot and other MoD and agricultural land uses to the north of the existing A66. However, this would be mitigated through remediation of any contaminated ground prior to works starting. The approach to remediation is set out within the Environmental Management Plan (EMP) (Application Document 2.7). An outline of the approach to the mitigation of contaminated land is also set out in length 9.9 of ES Chapter 9 (Geology and Soil) (Application Document 3.2).

6.5.95 The majority of other engineering criteria show no clear differentiation between the two routes and overall, there is no major differentiation in costs. Taking all the engineering and cost criteria into account there is no clear preference between the promoted route and the alternative (as shown in the assessment summary table below).

Table 6-6: Updated summary assessment of the promoted and the alternative for engineering and cost criteria

Criteria	**Assessment Findings: Promoted Route (within the AONB) performs better, worse or similar compared to the Alternative (outside the AONB) in relation to each of the criteria**
Engineering and Cost	
Highways - Standards Conformity	Similar
Utilities	Similar

Criteria	Assessment Findings: Promoted Route (within the AONB) performs better, worse or similar compared to the Alternative (outside the AONB) in relation to each of the criteria
Engineering and Cost	
Geotechnics and Earthworks	Better
Geo-Environmental	Similar
Structures	Worse
Drainage and Hydrology	Better
Construction Design Management (CDM)	Similar
Construction Cost	Similar
Buildability	Similar
OVERALL FINDINGS IN RELATION TO ALL THE CRITERIA	**NO CLEAR DIFFERENCE BETWEEN PROMOTED ROUTE AND ALTERNATIVE**

Environmental Criteria (Central Length)

6.5.96 For most of the environmental criteria there is a neutral outcome from the assessment as there are not sufficient differentiators between the routes. However, there is a clear preference for the promoted route in terms of its visual impact and impact on the **landscape of the AONB**, as described below.

6.5.97 The principal characteristics of the promoted route and the alternative, with respect to potential landscape and visual effects are set out below:

- The height of the embankment required for the new road for the alternative route through the central length is substantial and could lead to a significant impact on the setting of the AONB despite not requiring direct land take within the area. The promoted route is principally at grade requiring some embankment and structures (at a lower level compared to the alternative) to cross the water courses associated with the SAC. Because of the lower level of the crossing there is lower landscape effect. The ES reported no significant landscape effects for the promoted route on the AONB (see paragraphs 10.10.139 to 10.10.146 of Chapter 10 (Landscape and Visual) of the ES.
- The minor encroachment into the AONB for the promoted route is required to maintain the local access road. There is potential to design this local road in a way that it can be sensitively incorporated and embedded into the landscape with a design appropriate to the AONB. The opportunities to mitigate and integrate to ensure that the spatial relationship between the A66, the local road and the AONB would remain are set out in Chapter 10 (Landscape and Visual) of the ES (paragraph 10.10.144 of Chapter 10 of the ES). The approach to the design of the infrastructure in this length of the route is also confirmed in the Project Design Principles (Application Document 5.11). These opportunities to integrate and mitigate do not exist to the

same extent for the alternative route given that a new dualled highway corridor would be created to the south of the existing A66, at height, in open countryside near the AONB.

- The new improved highway for the promoted route has been designed sensitively to reflect the existing alignment and vegetated character of the A66 in proximity to the AONB boundary (paragraph 10.10.146 of Chapter 10 (Landscape and Visual) of the ES) compared with the alternative route which would result in the creation of a new road corridor within open countryside.
- The land required for the improved promoted route is already partly disturbed and previously developed (characterised in part by MoD infrastructure). The tranquillity of this part of the AONB across the study area is also characterised by the existing road corridor and associated infrastructure. This part of the AONB associated with the promoted route is therefore not considered to be fully representative of the stated special qualities of the AONB. (See paragraph 10.10.142 of Chapter 10 of the ES). This contrasts with the alternative route which would be in open countryside on undisturbed green field land, although outside the defined boundary of the AONB.

6.5.98 This assessment of landscape effects within the AONB for the promoted route are set out in length 10.10 of Chapter 10 of the ES, Landscape and Visual Chapter (Application Document 3.2). The ES found that the route infringes slightly on the southern border of the AONB, although with no significant physical change to the landscape features across the designated landscape. The ES provided an explanation for this finding with respect to how designated areas are defined, as follows:

'While it is important to define designated areas, often the line on a plan suggests the special qualities begin at that point. In this case, appreciation of the special qualities of the AONB can only be realised when the receptor leaves the influence of the existing road corridor.' (Para 10.10.139 of Chapter 10 (Landscape and Visual) of the ES (Application Document 3.2)

6.5.99 As a consequence, it has been assessed, within the ES, that the alignment of the promoted route would reflect that of the existing A66, such that the spatial relationship between the A66 and the AONB would remain. It was also concluded that the special qualities of the AONB would remain and the effect to the Foothills character area would be slight adverse (not significant) (paragraph 10.10.139 - 144 of Chapter 10 (Landscape and Visual) of the ES (Application Document 3.2)).

6.5.100 With respect to **biodiversity** for the promoted route the land required for construction to the north is currently an established woodland and the junction arrangement impacts on an area of priority fen that will require mitigation. (Table 3.13 Chapter 3 (Alternatives) of the ES (Application Document 3.2). These ecological resources would not be the subject of impact with the alternative route.

6.5.101 As set out above this part of the route has been the subject of ongoing design iteration, adaptation and development, following statutory

consultation, particularly given changes to the design required in order that the road can span watercourses that are functionally linked to an SAC. This was in light of environmental survey findings and assessment associated with priority species utilising the watercourses (which contribute to the SAC designation) that are impacted by both routes (the promoted route and the alternative). The outcome from this assessment was that the design would need to be adapted in order to incorporate an embankment with structures to cross the watercourses. For the promoted route this results in raising the level of the route by 3 to 4 metres (compared with the level shown for the road at statutory consultation). Despite the increase in level the reassessment concluded, that as the alternative route would result in a greater number of and size (including height) of crossings, the impact of spanning the SAC watercourses is likely to be greater with this alternative, compared with the promoted route.

6.5.102 Given the potential for greater impact on the SAC for the alternative route and the opportunity to maintain the natural functioning of the SAC-related watercourses with the promoted route weighed against additional adverse impacts, that can be mitigated, for the promoted route (as set out in paragraph 6.5.77 above) it is concluded overall in relation to the biodiversity that the promoted route is preferred.

6.5.103 The promoted route does impact on additional **heritage features** when compared to the alternative route, as there are a number of large to moderate adverse effects on heritage assets as a consequence of construction of the promoted route, although there is potential for mitigation for these impact (as reported in paragraphs 8.9.26 to 8.9.30 of the ES Chapter 8).

6.5.104 With respect to **air quality and noise** the promoted route is preferred as the construction and operation of the route would be situated further from the village of Warcop compared to the alternative route. (Table 3.13 Chapter 3 (Alternatives) ES (Application Document 3.2).

6.5.105 In relation to other environmental criteria there is little distinction between the routes.

6.5.106 Taking all the environmental criteria into account there is a preference (as shown in the assessment summary table below) for the promoted route compared with the alternative. This is largely due to a design approach and mitigation measures which can reduce the level of impact and create opportunities for enhancement, particularly with respect to landscape, visual impacts and biodiversity. These design, mitigation measures and enhancement opportunities are not possible to the same extent with the alternative route.

Table 6-7: Updated summary assessment of the promoted and the alternative for environment criteria

Criteria		Assessment Findings: Promoted Route (within the AONB) performs better, worse or similar compared to the Alternative (outside the AONB) in relation to each of the criteria
Environment		
Biodiversity	Construction	Better
	Operation	Better
Road Drainage and Water Environment	Construction	Better
	Operation	Similar
Geology, Soils, Contaminated Land and Groundwater	Construction	Similar
	Operation	Similar
Noise and Vibration	Construction	Similar
	Operation	Better
Landscape and Visual	Construction	Better
	Operation	Better
Population and Human Health	Construction	Similar
	Operation	Similar
Air Quality	Construction	Similar
	Operation	Better
Material Assets and Waste	Construction	Similar
	Operation	Similar
Cultural Heritage	Construction	Worse
	Operation	Similar
Climate	Construction	Similar
	Operation	Similar
OVERALL FINDINGS IN RELATION TO ALL THE CRITERIA	Construction Operation	**Promoted Route is Preferred to Alternative**

Stakeholder and Public (Central Length)

6.5.107 Stakeholder benefits of the promoted route over the alternative route include commercial benefits for farmers and business owners, and provision of replacement facilities for both the MoD and the Brough Hill Fair. It was clear through engagement and consultation that the promoted route was preferred by the local community to the alternative, principally due to the potential for less impact on the amenity of local residents given that the route will be situated further away from the village of Warcop and would be at a lower level compared to the alternative. However, it should be noted that the promoted route does have a greater impact on a small number of residents compared with the alternative route, although overall it is expected that fewer residential

receptors will be at risk of experiencing adverse environmental impacts with the promoted route.

6.5.108 Before statutory consultation, the preferred (promoted) route and the alternative were presented to the local community. There was also engagement with the Statutory Environmental Bodies and the AONB Partnership. The feedback from this engagement was principally positive with respect to the promoted route with an appreciation of the benefits associated with this route compared with the alternative route. This positive feedback from engagement informed the decision to take the promoted route (as a preferred route) into statutory consultation.5

6.5.109 Taking into account this stakeholder and community feedback and the other findings from our assessment, as set out in in the Table below, the promoted route is preferred to the alternative

Table 6-8: Updated summary assessment of the promoted and the alternative for stakeholder and public interest criteria.

Criteria	**Assessment Findings: Promoted Route (within the AONB) performs Better, worse or similar compared to the Alternative (outside the AONB) in relation to each of the criteria**
Stakeholder and Public	
Land Take	Similar
Residential	Similar
Commercial	Better
Recreation and Leisure	Similar
Wider Community Issues	Better
OVERALL FINDINGS IN RELATION TO ALL THE CRITERIA	**PROMOTED ROUTE PREFERRED TO THE ALTERNATIVE**

6.5.110 **Conclusions for '*The cost of, and scope for, developing elsewhere, outside the designated area' (central length).*** Although there is some scope to develop a route outside the AONB within the central length the development of this route would have significant disadvantages compared to the promoted route in relation to environmental criteria and stakeholder and public interest considerations. The drawbacks of this alternative, the limited incursion into the AONB associated with the preferred route (approximately 9ha), taken with the benefits of the scheme and the Project as a whole, are considered to be 'exceptional circumstances' in favour of the promoted route and in addition it has been demonstrated that the promoted route is clearly in the public interest.

[5] Alternatives further to the north substantially or wholly within the AONB were promoted by members of the Warcop community and local businesses. These alternatives have been considered and are reported on in the Consultation Report (Application Document 4.4)

Assessment of the Alternative outside the AONB (Eastern Length)

6.5.111 For the eastern length of the Appleby to Brough scheme, an alternative was assessed outside of the AONB to the south of the promoted route. This alternative route was referred to as the orange route at statutory consultation.

6.5.112 The promoted route requires an overbridge at Gate House, from which the route would continue to follow an alignment to the south of the existing A66 before tying into Brough Bypass near West View Farm. New accommodation structures would be provided for agricultural use, walkers, cyclists and horse-riders to provide access to land on the north side of the A66 and maintain footpath and bridleway connectivity. To the north of the new dual carriageway, the old A66 would be used for access to the local road network, west to Warcop or east to Brough and a new local road would be provided to the north from Turks Head into Brough. The land take within the AONB (of 21.56 ha) is principally required in order to connect the local road access for Brough, and to provide accommodation access for the landowner and walkers, cyclists and horse riders in this location.

6.5.113 The alternative route (wholly outside of the AONB) followed a south-easterly direction from a point near Turks Head on an alternative alignment to the south of West View Dairy Farm to connect back into the old A66 dual carriageway near to Musgrave Lane overbridge further east than the promoted route.

6.5.114 The key differences between the promoted route and the alternative route for this eastern length principally relate to connectivity, the potential negative impacts of construction and environmental impact as set out below. The alternative route would not encroach directly into the AONB; however, it would require a completely new stretch of road. It would also require an extensive network of local roads to be constructed to provide the level of connectivity offered by the promoted route. The key findings from the assessment of the alternative and the promoted route are set out below.

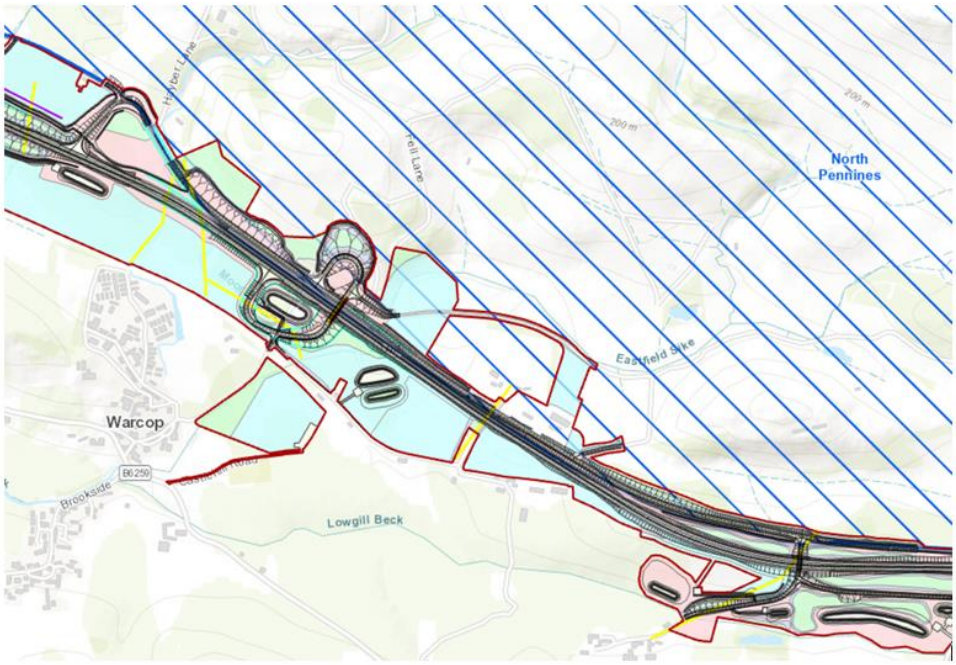

Plate 9 : Eastern length within AONB (AONB is cross hatched with blue line boundary) (Map not to scale)

Engineering and Cost Criteria (Eastern Length)

6.5.115 For the engineering and cost criteria, the alternative route (outside the AONB) generally performs worse than the promoted route. This is particularly due to the alternative route requiring a large structure over Low Gill Beck to span both the Beck and its floodplain, whereas a culvert extension would be required for the promoted route. There are also increased costs associated with the alternative route, primarily for the reasons below

- Increased earthworks, increased land take and the need to import fill
- A larger structure required over Low Gill Beck to span the beck and floodplain compared to culvert extension for the promoted route
- Increased length of new dual carriageway construction of approximately 500m to tie back into Brough Bypass by Musgrave Lane Overbridge
- Costs including social and business impacts associated with acquiring Mains House and impacts on West View Dairy Farm

6.5.116 Highways standards conformity, utilities, drainage and hydrology and CDM criteria were considered as having little to differentiate the promoted route and the alternative. However, it is considered that the alternative route would likely be easier to build despite the increased structures complexity over the Low Gill Beck as it could be built ‘offline’, keeping the existing A66 open during works and only impacting road users to complete the tie-in to Brough Bypass.

6.5.117 Taking all the engineering and cost criteria into account there is a clear preference for the promoted route compared with the alternative (as shown in the assessment summary table below).

Table 6-9: Updated summary assessment of the promoted and the alternative for engineering and cost criteria

Criteria	Assessment Findings: Promoted Route (within the AONB) performs Better, worse or similar compared to the Alternative (outside the AONB) in relation to each of the criteria
Engineering and Cost	
Highways - Standards Conformity	Similar
Utilities	Similar
Geotechnics and Earthworks	Better
Structures	Better
Drainage and Hydrology	Similar
Construction Design Management (CDM)	Similar
Construction cost	Better
Buildability	Worse
OVERALL FINDINGS IN RELATION TO ALL THE CRITERIA	PROMOTED ROUTE PREFERRED TO THE ALTERNATIVE

Environmental Criteria (Eastern Length)

6.5.118 The alternative route presents significant environmental challenges, with the majority of criteria assessed returning a worse result for the alternative route (wholly outside the AONB) than the promoted route (partially within the AONB).

6.5.119 In relation to **landscape and visual impacts** although the alternative route avoids the requirement for land take within the AONB designated area, it does require construction offline from the existing alignment with a substantial feature cutting across an open valley. This is in contrast with the promoted route where the route infringes slightly on the southern border of the AONB with no significant physical change to the landscape features across the designated landscape. The ES provided an explanation for this finding with respect to how designated areas are defined, as follows

'While it is important to define designated areas, often the line on a plan suggests the special qualities begin at that point. In this case, appreciation of the special qualities of the AONB can only be realised when the receptor leaves the influence of the existing road corridor.'(Para 10.10.139 of Chapter 10 (Landscape and Visual) of the ES (Application Document 3.2)

6.5.120 Consequently, the ES has assessed that the alignment of the promoted route would reflect that of the existing A66, such that the spatial relationship between the A66 and the AONB would remain. It was also concluded that the special qualities of the AONB would remain and the effect to the Foothills character area would be slight adverse (not significant). (paragraph 10.10.139 - 144 of Chapter 10 (Landscape and Visual) of the ES (Application Document 3.2)).

6.5.121 Comparing the potential landscape and visual effects there is the potential for greater landscape and visual effects overall as a result of changes to landscape and visual amenity and potential impacts on the setting of the AONB with the alternative route compared with the promoted route (Table 3.13 Chapter 3 (Alternatives) of the ES (Application Document 3.2).

6.5.122 In relation to **biodiversity** the greater number of watercourse crossings proposed for the alternative route would adversely affect the biodiversity of these features and increase habitat fragmentation. Lowgill Beck is hydrologically linked to the River Eden so there is an inherent risk to species present in the watercourse; this may also have a resultant effect on the SAC designation.

6.5.123 With respect to **air quality** there is the potential for lower level of impact for the promoted route as the works required for the alternative route once operational is closer to Brough in order to tie-in to existing A66 (Table 3.13 Chapter 3 (Alternatives) of the ES (Application Document 3.2).

6.5.124 With respect to the **water environment** the promoted route is preferred as the alternative route requires an additional watercourse crossing of Lowgill Beck offline of the A66's existing alignment (see Table 3.13 Chapter 3 (Alternatives) of the ES (Application Document 3.2)).

6.5.125 Taking all the environmental criteria into account there is a clear preference for the promoted route compared with the alternative (as shown in the assessment summary table below).

Table 6-10: Updated summary assessment of the promoted and the alternative for environment criteria

Criteria		Assessment Findings: Promoted Route (within the AONB) performs Better, Worse, or Similar compared to the Alternative (outside the AONB) in relation to each of the criteria
Environment		
Biodiversity	Construction	Similar
	Operation	Similar
Road drainage and water environment	Construction	Better
	Operation	Similar
Geology, soils, contaminated land and groundwater	Construction	Worse
	Operation	Similar
Noise and vibration	Construction	Similar
	Operation	Better
Landscape & Visual	Construction	Similar
	Operation	Better
Population & Human Health	Construction	Better
	Operation	Similar
Air quality	Construction	Better
	Operation	Better
Material assets and waste	Construction	Similar
	Operation	Similar
Cultural Heritage	Construction	Similar
	Operation	Similar
Climate	Construction	Similar
	Operation	Similar
OVERALL FINDINGS IN RELATION TO ALL THE CRITERIA	Construction Operation	**Promoted Route preferred to the Alternative**

Stakeholder and Public (Eastern Length)

6.5.126 The conclusions from the population and health assessment of alternatives, within the ES (see Table 3.13 Chapter 3 (Alternatives) of the ES (Application Document 3.2)).is that the promoted route is preferred as:

6.5.127 The alignment of the alternative route would bring it close to the buildings associated with a farm, including its farmhouse potentially leading to increased impacts on residents because of changes to noise and air quality

6.5.128 Additional agricultural land take would be required to facilitate offline construction of the alternative route

6.5.129 Before statutory consultation, the preferred (promoted) route and the alternative were presented to the local community. There was also engagement with the Statutory Environmental Bodies and the AONB Partnership. The feedback from this engagement was principally positive with respect to the promoted route with an appreciation of the benefits associated with this route compared with the alternative route. This positive feedback from engagement informed the decision to take the promoted route (as a preferred route) into statutory consultation.

6.5.130 Taking into account this stakeholder and community feedback and the other findings from our assessment as set out in in the table below, the promoted route is preferred to the alternative.

Table 6-11: Updated summary assessment of the promoted and the alternative for stakeholder and public interest criteria

Criteria	**Assessment Findings: Promoted Route (within the AONB) performs Better, worse or similar compared to the Alternative (outside the AONB) in relation to each of the criteria**
Stakeholder and Public	
Land take	Worse
Residential	Better
Commercial	Better
Recreation and leisure	Similar
Wider community issues	Better
OVERALL FINDINGS IN RELATION TO ALL THE CRITERIA	Promoted Route preferred to the Alternative

6.5.131 **Conclusions in respect of *the cost of, and scope for, developing elsewhere, outside the designated area* (eastern length).** Although there is scope to develop a route wholly outside the AONB within the eastern length, the development of this route would have significant disadvantages compared to the promoted route in relation to cost, environmental criteria and stakeholder and public considerations. The drawbacks of this alternative, the limited incursion into the AONB associated with the preferred route (approx. 22 ha), taken with the benefits of the scheme and the Project as a whole, are considered to be 'exceptional circumstances' in favour of the promoted route and in addition it has been demonstrated that the promoted route is clearly in the public interest.

Meeting the Need in Some Other Way

6.5.132 The other consideration in the second part of paragraph 5.151 is 'addressing the need for the Project in some other way'. Other options and alternatives have been considered in earlier stages of the work (PCF Stage 0, Stage 1 and Stage 2), as set out within the Project

Development Overview Report (PDOR) – (Application Document 4.1). The alternative solutions to meet the need considered were:

- Alternative highway and non-highway solutions (such as the A69 and the rail link between Carlisle and Newcastle) (as part of the Northern Trans-Pennine Routes Strategic Study (NTPRSS) at Stage 0)
- Route long interventions and dualling, individual improvement interventions, partial dualling options for some lengths of the route and weather resilience measures (as part of the NTPRSS at Stage 0)
- Different dualling route alignment options (as part of the optioneering work carried out at stages 1, 2 and 3), which included the route alignment alternatives outside of the AONB for this scheme, as described above.

6.5.133 The overall conclusion from the consideration of these alternatives was that the full dualling options were expected to deliver the greatest level of strategic benefits, with the A66 full dualling option delivering particularly strong benefits in terms of strategic connectivity and journey time reliability, as well as making a significant contribution to the Northern Powerhouse economic growth agenda, Levelling Up agenda and supporting access to key tourist sites.

6.5.134 With respect to alternative public transport solutions, it was concluded (as part of the NTPRSS at stage 0) that there is no rail line to provide an alternative public transport route to the A66 between Darlington and Penrith and that there is low bus service provision. For the other cross Pennine highway that was considered as part of the NTPRSS (the A69) there was a public transport alternative evaluated: the Carlisle to Newcastle rail line. Improvements to this rail line and park and ride options were therefore evaluated as part of the NTPRSS.

6.5.135 Other highway options which represented a lower level of intervention, such as the junction improvement and bypass options, would provide some localised journey time reliability and environmental benefits; however, the scale of these benefits would understandably be much smaller than more extensive interventions, and the contribution made towards achieving the intervention-specific objectives around economic growth and strategic connectivity at the regional level would be much less significant. In addition, other non-highway alternatives, such as rail, would require other funding and investment initiatives outside of the remit of National Highways.

6.5.136 ***Conclusions in respect of 'Meeting the Need in Some Other Way'.*** It has been demonstrated that the need for the project, in terms of delivering the greatest level of strategic benefits as well as making a significant contribution to the Northern Powerhouse economic growth agenda and Levelling Up agenda could only be delivered through the A66 dualling and not in 'some other way'. The clear demonstration that need cannot be met in some other way, along with the drawbacks of the alternatives (wholly outside the AONB), the limited incursion into the AONB associated with the preferred routes (totalling approx. 31 ha), taken with the benefits of the scheme and the Project as a whole, are

considered to be ‘exceptional circumstances’ in favour of the promoted route and is clearly in the public interest.

Paragraph 5.151(iii) of the NNNPS

6.5.137 Paragraph 5.151(iii) states that:

- ‘The SoS should refuse development consent in these areas except in exceptional circumstances and where it can be demonstrated that it is in the public interest.
- Consideration of such applications should include an assessment of
- iii) Any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated’

6.5.138 Each aspect of this paragraph:

- Detrimental effects on the environment and the Extent to which they could be moderated
- Detrimental effects on the landscape and the Extent to which they could be moderated
- Detrimental effects on recreational opportunities and the Extent to which they could be moderated
- is considered in turn below.
- (A) Assessment of detrimental effects on the environment and the extent to which they could be moderated

6.5.139 The effects on the environment, compared to the alternative route assessed (wholly outside of the AONB) are set out above for the central length (at paragraphs 6.5.73-6.5.85) and for the eastern length ((at paragraphs 6.5.94-6.5.100). Further details on the environmental impacts of the scheme and the mitigation proposed to address the effects are reported in the ES (Application Document 3.2). The ES considers the environmental impacts at a project level and also at a scheme level and also considers the effects on the landscape of the AONB of both the central and eastern length combined. The ES identifies the likely effects of the scheme on the environment and sets out mitigation and enhancement measures proposed within the scheme to moderate any detrimental effect.

6.5.140 It also provides an overview of the significant effects of the scheme as reported in the ES topic Chapters. It identifies that no significant effects – beneficial or adverse – are likely in relation to air quality, climate, geology and soils, material assets and waste, road drainage and water environment and cumulative effects. In addition, it identifies that there are five topic areas in which significant adverse effects are only likely during the construction of the scheme: cultural heritage, landscape and visuals, noise and vibration and population and human health. Likely significant adverse effects are identified during operation (additional to those identified during construction) in relation to cultural heritage (for one scheme only); landscape and visual effects and noise and vibration. However, it should be noted that significant beneficial effects are also identified in relation to population and human health and cultural heritage in operation.

6.5.141 It should be recognised that the principal residual construction effects will be temporary in nature, which is characteristic of construction activities. Mitigation as identified in the ES would ensure that the adverse effects are controlled where feasible and practicable during the construction stage. An EMP (Application Document 2.7) sets out the measures to control and manage the construction effects. The quantity of adverse effects of the scheme on the environment therefore reduce as the scheme progresses from construction to operation, such that at Year 15 of operation, some effects would be removed entirely due to the maturation of mitigation measures, such as planting for visual screening and habitat creation.

6.5.142 In contrast to the majority of adverse effects occurring on a short-term basis during construction, the significant beneficial effects of the scheme are most numerous during the operation stage of the scheme, creating permanent benefit. This includes permanent beneficial effects to users of PRoW; health, social and economic benefits and reduced road noise to residential properties. A full assessment of how the scheme conforms with the requirements of the NNNPS in relation to specific environmental topics associated with policies of the NNNPS is set out in the Legislation and Policy Compliance Statement (LPCS) (Application Document 3.9).

6.5.143 Furthermore, National Highways has taken a landscape-led approach to the scheme design which has sought to minimise or avoid adverse effects on the North Pennines AONB landscape and its special qualities and where possible, sought to identify opportunities for enhancement. This includes blending mitigation planting to match mosaic of woodland, copse and moorland to integrate with the character of the AONB. This landscape approach to the design is set out within the Project Design Report (Application Document 2.3) and the Project Design Principles (Application Document 5.11).

6.5.144 As demonstrated in ES Chapter 3 (Assessment of Alternatives) (Application Document 3.2) and the Project Development Overview Report (Application Document 4.1) National Highways has sought to make changes to the scheme design throughout its development in order to decrease its detrimental effects on the environment and take opportunities for enhancement. These changes have been informed by environmental assessment and survey information; feedback from stakeholders during statutory and non-statutory consultation and engagement; and engineering design refinement. This has included a thorough assessment of alternatives for those parts of this scheme that are within the AONB, as reported above.

6.5.145 The Consultation Report (Application Document 4.4) sets out the changes to the scheme design, including changes following the 2021 statutory consultation which sought to reduce the detrimental effects of the scheme on the environment and address concerns raised in response to the consultation. For example, this included changes to the design required in order that the road can span watercourses that are functionally linked to an SAC. This was in light of environmental survey findings and assessment associated with priority species utilising the

watercourses (which contribute to the SAC designation) (as described further in paragraph 6.5.91 above).

6.5.146 Furthermore, it is noted that the findings from the assessment of the alternative routes (for the central and eastern length) is that for the majority of environmental criteria assessed the alternative route (wholly outside the AONB) there was a worse result compared to the promoted route (partially within the AONB). Also, for some of the key impacts on designated environmental areas, such as the AONB and SAC, there is potential for moderation and sensitive design, which cannot be delivered in the same way or to the same level with the alternative outside the AONB.

6.5.147 ***Conclusions –on assessment of detrimental effects on the environment and extent to which they could be moderated.*** It has been evidenced that, whilst there are residual significant adverse effects on the environment as a result of the scheme, National Highways has sought to avoid such effects in the first instance and moderate them wherever feasible, including through making changes to the design where appropriate. In response to those part of the route that effect designated environmental areas, such as the AONB and SAC, a sensitive design of the route is proposed (as set out in the Project Design Report (Application Document 2.3) and the Project Design Principles (Application Document 5.11) to respect the character and quality of these designations and their purpose. The findings from the assessment of environmental effects, the potential for moderation of effects and the commitment to a sensitive design, are considered alongside the findings from the other policy criteria out above (including the limited incursion into the AONB of approx. 31 ha) to be 'exceptional circumstance' in favour of the promoted route and are in the public interest.

(B) Assessment of detrimental effects on the Landscape and extent to which they could be moderated

6.5.148 The landscape and visual assessment of the effects on the AONB has been carried out for the two lengths (central and eastern) combined (see paragraphs 10.10.139 – 10.10.149 of Chapter 10 (Landscape and Visual) of the ES (Application Document 3.2)). The ES describes the relationship of this part of the project to the AONB at paragraphs 10.10.39 – 10.10.140 as follows:

- The scheme infringes slightly on the southern border of the North Pennines (NP) AONB but there would be no significant physical change to the landscape features across the designated landscape. While it is important to define designated areas, often the line on a plan suggests the special qualities begin at that point. In this case, appreciation of the special qualities of the North Pennines AONB can only be realised when the receptor leaves the influence of the existing road corridor (paragraph 10.10.139)
- The existing A66 forms the southern border of the AONB in this location but this road corridor does not represent any of the special qualities of the AONB. The experience of the AONB at this point is

diluted by the significant presence of traffic, the roadside buildings and signage. The landscape is typical roadside verge with scrubby trees and untidy grass strips (paragraph 10.10.140)

6.5.149 The assessment of the Effects on the AONB were considered with reference to the stated special qualities of the AONB as set out in the AONB Management Plan. These special qualities (as reproduced at paragraph 10.10.140 of the ES) are:

- Scenic beauty.
- Strong sense of relative wildness.
- Remoteness and tranquillity.
- Wide-open moorlands.
- Species-rich grasslands.
- Truly dark night skies.
- World class mining and geological heritage.
- Breeding wading birds

6.5.150 In relation to these special qualities the ES highlights how the special qualities of the AONB would be affected by the Project (at table 10-10 at paragraph 10.10.141 as reproduced below):

Table 6-12: Impact on AONB Special Qualities (reproduced table 10-10 of ES)

Special Quality	Impact	Narrative
Scenic beauty	No change	The area affected by the Project does not represent this special quality.
Strong sense of relative wildness	No change	The wild areas are found within the NP AONB, not at the boundary and not along the existing A66 corridor.
Remoteness and Tranquillity	No change	The existing A66 already affects this special quality in the area of the Project.
Wide open moorlands	No change	The wide-open moorlands are found within the NP AONB, not at the boundary and not along the existing A66 corridor.
Species rich grasslands	No change	Any species rich grassland lost will be reinstated.
Truly dark night skies	No change	There will be no change to the lighting levels within the NP AONB caused by the Project.
World class mining and geological heritage	No change	There will be no impact on this special quality due to the Project.
Breeding wading birds	No change	Habitats will be protected.

6.5.151 The assessment in the ES concludes that ‘there are no significant impacts on the stated special qualities of the NP AONB by the Project.’ (paragraph 10.10.142)

6.5.152 In addition to this finding the assessment also concluded that:

- In addition to the above, the presence of Warcop, Warcop Army Training Centre and the existing A66 negate any sense of relative

wildness or remoteness from across the NP AONB within the study area (paragraph 10.10.143)

6.5.153 The tranquillity within the AONB across the study area is also affected by the existing road corridor and associated infrastructure. The study area is therefore considered not to be fully representative of the stated special qualities of the NP AONB (paragraph 10.10.144)

- *With reference to Appendix 10.5: Schedule of Landscape Effects, the construction activity would be perceived from the Foothills character area, which covers the NP AONB within the Order Limits. The construction activity would result in additional movement and activity in comparison to the existing A66; however, as there would be no physical change and the special qualities of the NP AONB would remain, the effect is assessed as a slight (not significant) (paragraph 10.10.145)*
- In operation, the alignment of the scheme would reflect that of the existing A66, such that the spatial relationship between the A66 and the AONB would remain. There would be a greater perception of vehicles and buildings at year 1 of operation, due to the reduction of the intervening vegetation. The stated special qualities of the NP AONB would remain and the effect to Foothills character area would be slight (not significant) (paragraph 10.10.1476
- By year 15 of operation, the perception of the scheme would reflect that of the existing A66 and the effect to the Foothills character area would be neutral (no change) due to the maturing replacement roadside screen planting and intervening topography and woodland. (paragraph 10.10.147)

6.5.154 The overall conclusion from the ES landscape and visual assessment of this scheme (of the two lengths within the AONB) is:

'From the above and with reference to NNNPS paragraph 5.154, the scheme avoids compromising the purpose of the NP AONB designation and has been designed sensitively to reflect the existing alignment and vegetated character of the A66 in proximity to the NP AONB boundary. (paragraph 10.10.148)'

Conclusions on detrimental effects on the landscape and extent to which they could be moderated. *It has been demonstrated there are no significant impacts on the stated special qualities of the AONB by the Project. The assessment of detrimental effects on the AONB are assessed as slight both during construction and operation. The effects are moderated through a sensitive design to 'reflect the existing alignment and vegetated character of the A66 in proximity to the AONB boundary'. As a consequence, the ES has concluded that by year 15 of operation 'the perception of the scheme would reflect that of the existing A66 and the effect to the Foothills character area would be neutral (no change) due to the maturing replacement roadside screen planting and intervening topography and woodland'. These findings from the ES on the landscape effects and the extent to which they could be moderated*

are considered to be 'exceptional circumstances' in favour of the promoted route within the AONB and are also in the public interest.

(C) Assessment of Detrimental Effect on Recreational Opportunities and the Extent to which they can be moderated

6.5.155 Across the project, the pedestrian, cyclist and horse-rider facilities that would be severed by the dualling works are proposed to be reconnected via grade-separated crossings. A grade-separated crossing is one whereby the route of the path used by those crossing the A66 dual carriageway is either above or below the A66. The crossings are proposed to be provided either at grade-separated junctions, or at stand-alone bridges and underpasses. Full details of Walking, Cycling and Horse-Riding opportunities are set out in the Walking, Cycling and Horse Riding Design Proposals (Application Document 2.4).

6.5.156 There are specific impact and recreational opportunities associated with public rights of way to the north of Warcop, including:

- Three footpaths (372013 and 372022 to the south of the A66 and 372027 to the north of the A66) currently terminate at the existing A66. The proposals provide a grade-separated junction which connect the footpath to the north to the southern footpaths and will allow pedestrians to have a safe, segregated crossing of the new dual carriageway.
- A shared cycleway/footway is proposed on the north side of the dual carriageway, which is proposed for the full extent of the new dual carriageway within the Appleby to Brough scheme.

6.5.157 These new routes and mitigation measures would provide a significant enhancement of provision for cycling and walking resulting in improved connectivity for local residents and for visitors to the area.

6.5.158 **Conclusions on any detrimental effects on recreational opportunities and extent to which they could be moderated.** It has been demonstrated that although there are some adverse (or detrimental) effects on the recreational assets such as severance of footpaths there is the potential to mitigate these effects (as reported in the Walking, Cycling and Horse-Riding Design Proposals (Application Document 2.4). There is also the potential for enhancement of recreational walking and cycling routes, through new provision of a shared cycleway/footway on the north side of the dual carriageway. The proposed mitigation and opportunities for enhancement are considered to be 'exceptional circumstances' in favour of the promoted route and are in the public interest.

Conclusions on paragraph 5.151 of the NNNPS

6.5.159 The table below summarises the assessment of proposals for that part of the Appleby to Brough route within the AONB in relation to paragraph 5.151. Individually for each element of the policy and in combination the findings from the assessment provide exceptional circumstances for the promoted route within the AONB and are in the public interest.

Table 6-13: Summary assessment of proposals within the AONB relating to paragraph 5.151 of the NNNPS

Limb of Para 5.151	Central Length	Eastern Length
i) *The need for the development, including in terms of any national considerations, and the impact of consenting, or not consenting it, upon the local economy*	It fully meets the economic objectives at a local, regional and national level and therefore the need for the development is demonstrated. At a regional level, the Project supports the economic growth objectives of the Northern Powerhouse and Government Levelling Up agenda[6].The Project supports the aspirations and objectives of other plans and strategies, including transport and economic strategies at a regional level, such as Transport for North (TfN) Strategic Transport Plan 2019. Improving strategic regional and national connectivity, particularly for hauliers Other Project wide economic, connectivity and safety benefits, including monetarised benefits as summarised I paragraphs 6.1.12 – 6.1.13. Scheme level needs in relation to local economic, transport and community benefits as set out in paragraphs 6.1.14 to 6.1.19. If the existing A66 route is not improved, it will continue to constrain national and regional connectivity and impede and even potentially threaten the transformational growth envisaged by the Northern Powerhouse initiative and the achievement of the Government 'Levelling Up' agenda.	
ii a) *The cost of, and scope for, developing elsewhere, outside the designated area*		
Engineering and Cost assessment of an alternative alignment (outside the AONB)	Taking all the engineering and cost criteria into account there was no clear preference between the promoted route and the alternative	Taking all the engineering and cost criteria into account there is a clear preference for the promoted route compared with the alternative
Assessment of alternative alignment (outside the AONB)	Taking into all the environmental criteria into account and given that there is a greater potential to mitigate the impacts and for sensitive design, particularly for landscape and visual impacts, the promoted route is preferred in comparison with the alternative. A key consideration that led to this preference is that the promoted route allows	Taking all the environmental criteria into account there is a clear preference for the promoted route compared with the alternative. The alternative outside the AONB requires construction offline from the existing alignment with a substantial feature cutting across an open valley and the potential for greater landscape and visual effects overall and potential impacts on the setting of the AONB. Feedback from consultation and engagement was principally positive

[6] The Northern Powerhouse is a vision for joining up the North's great towns, cities and counties, pooling their strengths, and tackling major barriers to productivity to unleash the full economic potential of the North.
1.1 The Northern Powerhouse's objective is to achieve a sustained increase in productivity across the whole of the North. It is at the heart of the government's ambition for an economy that works for everyone. (Northern Powerhouse Strategy – November 2016, HM Government)

Limb of Para 5.151	Central Length	Eastern Length
	greater potential to maintain the natural functioning of the SAC and the impact of spanning the SAC watercourses is potentially greater with the alternative route. Feedback from consultation and engagement was principally positive with respect to the promoted route compared with the alternative.	with respect to the promoted compared with the alternative.
ii b) meeting the need for it in some other way	Compared with other alternative interventions (non-highway and highway options which represented a lower level of intervention) the A66 full dualling option delivered particularly strong benefits in terms of strategic connectivity and journey time reliability, as well as making a significant contribution to the Northern Powerhouse economic growth agenda and supporting access to key tourist sites. The scale of the benefits associated with the alternatives to the full dualling interventions was much smaller and the contribution made towards achieving the intervention-specific objectives around economic growth and strategic connectivity was found to be less significant	
iii a) detrimental effect on the environment and the extent to which that could be moderated	It has been demonstrated that although there are adverse (or detrimental) effects on the environment there is the potential for moderation (as reported in the Environmental Statement). For designated environmental areas, such as the AONB and SAC, there is potential for a sensitive design of the route to respect the character and quality of these designation.	
iii b) detrimental effect on the landscape and the extent to which that could be moderated	The assessment of detrimental effects on the AONB are assessed as slight both during construction and operation. The effects are moderated through a sensitive design to *reflect the existing alignment and vegetated character of the A66 in proximity to the AONB boundary'.* As a consequence, the ES has concluded that by year 15 of operation '*the perception of the scheme would reflect that of the existing A66 and the effect to the Foothills character area would be neutral (no change) due to the maturing replacement roadside screen planting and intervening topography and woodland'.*	
iii c) detrimental effect on recreational opportunities, and the extent to which that could be moderated	it has been demonstrated that although there are some adverse (or detrimental) effects on the recreational assets such as severance of footpaths there is the potential to mitigate these effects (as reported in the Walking, Cycling and Horse-riding Design Proposals (Application Document 2.4)). There is also the potential for enhancement of recreational walking and cycling routes, through new provision of a shared cycleway/footway on the north side of the dual carriageway.	

Key:

Positive outcome from the assessment (taking into account the comparison with the alternative within the AONB and the potential for environmental enhancements and mitigation)
Overall neutral outcome from the assessment
Negative outcome from the assessment and alternative outside the AONB has a more positive effect

6.5.160 It is concluded from the assessment set out above that there are **exceptional circumstances** in favour of the scheme being partially within the AONB and that the scheme is **in the public interest**. For those lengths within the AONB (central and eastern), following consideration of the potential for moderation (through incorporation of mitigation) and compared to the alternative outside the AONB it has been demonstrated that this route satisfies the policy set out in paragraph 1.151, as summarised below.

6.5.161 **Exceptional circumstances** are demonstrated by the limited incursions of both the central and eastern lengths within the AONB on the boundary of the designated area, with slight (non-significant) adverse effects on the landscape during construction and slight (non-significant) adverse effects on the landscape at year one of operation. As the tranquillity within the AONB across the study area is also affected by the existing road corridor and associated infrastructure the landscape assessment concludes that the study area is not fully representative of the stated special qualities of the AONB. Therefore, the landscape assessment finds that for the limited incursions within the two lengths of the AONB within this scheme that 'the special qualities of the AONB would remain'.

6.5.162 These **Exceptional Circumstances** are also demonstrated through the opportunity with the promoted route (compared with the alternative wholly outside the AONB) for a design that would ensure that the special qualities of the AONB (as set out in the AONB Management Plan) would remain. Conservation and enhancement of the landscape of this part of the AONB will be delivered through adherence to design principles (as set out in the Project Design Principles ((Application Document 5.11) and also set out in paragraph 6.1.73 below)).

6.5.163 These opportunities for enhancement and conservation are possible due to:

- the nature and character of the AONB in the areas, including land partly disturbed and previously developed (characterised in part by MoD infrastructure)
- the layout and alignment of the route following the existing A66 corridor, which is the southern boundary of the AONB

6.5.164 It is also concluded that given the nature and limited characteristics of the incursions into the AONB, with no change to the special qualities of the AONB there would be no adverse impact on the primary purpose for the designation of the AONB, for 'conserving and enhancing the natural

beauty of the area', as set out in the Section 82 of the Countryside and Rights of Ways Act (CROW Act, 2000).

6.5.165 **Exceptional circumstances** are also demonstrated through the project's achievement of economic objectives at a local, regional and national level. At a regional level, the project supports the economic growth objectives of the Northern Powerhouse and Government Levelling Up agenda. The project supports the aspirations and objectives of other plans and strategies, including transport and economic strategies at a regional level, such as Transport for North (TfN) Strategic Transport Plan 2019.

6.5.166 The exceptional circumstances are also factors that demonstrate that these limited incursions into the AONB are also in the **public interest**. The positive feedback from consultation and engagement on the promoted routes (both central and eastern) with an appreciation of the benefits associated with these routes compared with the alternative routes (wholly outside of the AONB) also contribute to these incursions being in the public interest.

6.5.167 In conclusion for the proposed incursions into the AONB for the central and eastern lengths of the Appleby to Brough scheme the resulting overall effect on the landscape of the AONB has been assessed to be 'slight adverse'. This presents a potential conflict with policy at paragraph 5.151 of the NNNPS, although this potential conflict with policy is resolved as the exceptional circumstances and public interest aspects of policy 5.151 are met, given the combined and cumulative factors in support or the limited incursion, including:

- the limited nature of the incursions within two lengths of the scheme within the AONB, which are not fully representative of the stated special qualities of the AONB, The experience of the AONB at this point of incursion is diluted by the significant presence of traffic, the roadside buildings and signage associated with the current A66 route corridor
- the landscape assessment findings that the special qualities of the AONB would remain
- the conservation and enhancement of the landscape for these parts of the AONB, to be delivered through adherence to design principles
- that there would be no impact on the primary purpose of the AONB for conserving and enhancing the landscape (as set out in the CROW Act, 2000)
- the achievement of economic objectives at a local, regional and national level
- the positive feedback from consultation and engagement with respect to the promoted (central and eastern length) routes, and
- the findings from the environmental impact assessment, as reported in the ES (Application Document 3.2) and the assessment of alternatives, including route alignments outside the AONB, as set out in this document, the ES (Chapter 3) and in the Project Development Overview Report (Application Document 4.1)

Paragraph 5.152 of the NNNPS

6.5.168 This policy requires *'compelling reasons for the new or enhanced capacity and with any benefits outweighing the costs vary significantly'* for development within the AONB.

6.5.169 Therefore, in considering whether a scheme within an AONB should be developed, the SoS is required to have regard to the overall balance of benefits and costs of the Project, as well as whether there are compelling reasons for the Project.

6.5.170 The NNNPS also requires that the overall benefits of the Project outweigh the costs very significantly. In terms of economic assessment, this is established in the Benefit Cost Ratio (BCR). However, the BCR assessment does not take account of the qualitative assessment of environmental effects. Given that it is established that the Project would result in residual significant adverse effects on some aspects of the environment, as well as some significant beneficial effects, it should be evidenced that these 'costs' are very significantly outweighed by the benefits of the scheme.

6.5.171 A key part of the reason for an improved A66 is the national, regional and local need, as set out above (paragraphs 6.1.12- 6.1.18) that is supported by policies and strategies at a regional and local level. Furthermore, at a project level it has been demonstrated in Chapter 7 through the planning balance that the benefits very significantly outweigh costs. The planning balance findings are not duplicated in detail in this section although the findings from the balancing of benefits and costs at a Project level are considered to be a key part of the compelling reason for new and enhanced capacity for this scheme.

6.5.172 As the incursions to the AONB are contained within one scheme (other than the minor incursion reported in the section below for Bowes) a similar planning balance exercise has been carried out (as set out in Chapter 7) to compare the benefits and costs at a scheme level. This assessment draws from the findings of costs and benefits of the scheme set out above within this section (6.5) of the report and from the Non-Technical Summary of the ES (Application Document 3.1)

Table 6-14: Summary of Benefits and Cost (scheme level)

Theme	Cost	Benefit
Economic	Minor disruption and delay faced to local businesses and the local community due to construction activity Overall construction cost of the scheme	- improved access to the A66 strategic route network for local communities and businesses and allowing improved access to jobs and services. - improved access to key tourist destinations such as the North Pennines and Lake District. - improved and upgraded accesses for businesses and farms
Transport	Minor disruption and delay faced to local businesses and the local community due to construction activity	- removing below standard road alignments and current accident hazards improving safety for all.

Theme	Cost	Benefit
		- second lane of the road will provide resilience enabling passing or turn back of vehicles - safer access for MoD vehicles, removing their interaction with the A66. -New and improved farm accesses - slower moving agricultural vehicles removed from the main trunk road. -Improving resilience and capacity, with journey time savings between 2 minutes 45 seconds and 3 minutes across the day. -The 'old' lengths of A66 retained to provide improved village to village connectivity, - segregated WCH routes incorporated along the entirety of the route for local people. -Improvement of existing PRoW though segregated crossings of dual carriageway
Community	. Minor disruption and delay to local businesses and the local community due to construction activity - Significant temporary adverse effects to local community, public rights of way, businesses and community assets, and significant permanent adverse effect to two private properties	- shared cycle/footway parallel to and running entire length of the scheme to encourage greater walking and cycling -A new eastbound northern route is proposed to reduce impact on residents at Dyke Nook, -An alternative site will be provided for Brough Hill Fair, with an access which would allow users of the site to park caravans further from the road. -farm access improvements which will better link farmland together, improving safety for farmers and the local community - Significant permanent beneficial effects to 12 community assets - Significant permanent beneficial effect to one business
Environment	Cultural Heritage: significant temporary adverse effects relating to a list boundary stone and upon archaeology Landscape and Visual: temporary adverse effects relating to Local Character Areas of Broad Valleys and Foothills, recreational users of five public rights of way and motorists and pedestrians of the minor road leading to Moor House Farm and of the B6259. Temporary and permanent adverse effect to recreational users of Warcop Railway Station	-The potential negative impacts on properties at Sandford, has been reduced. -Reduced congestion and fewer vehicles idling will reduce emissions, helping to improve localised air quality.

Theme	Cost	Benefit
	Noise and Vibration: Significant temporary adverse effects upon receptors at Brough, Warcop, Sandford, Coupland Beck and operational significant adverse effects on residential dwellings by West View and Foxtower (Mains House) and at Warcop and non-residential at Apple Tree Farm.	

6.5.173 It is considered that there are compelling reasons for increasing capacity and improving road safety from the full dualling of the A66. As set out in the preceding section and in the planning balance (at section 7.4) this is based not only on the existing evidence of delays and accidents, but also the forecast journey time savings and casualty reductions as a result of the scheme, to benefit local communities and local and regional businesses.

6.5.174 The current non-dualled lengths of the A66 are of a design that does not align with modern highways standards. The resulting issues of congestion, unreliable journey times, lack of resilience during adverse weather conditions and poor road safety have an effect on local communities and also non-motorised users who rely on using the current A66 for local journeys. These problems with the existing A66 also have a wider effect on the local and regional economy, stifling growth and preventing the region – and its population – from fulfilling its economic and strategic growth potential which are the key factors of the Government's objectives for the Northern Powerhouse and the 'Levelling Up agenda'. It is therefore considered that there are compelling reasons to enhance and improve the A66 to address these problems. Furthermore, it is considered that the alternative, to do nothing, would be unacceptable due to the 'costs' associated with the continuation or worsening of these issues with the existing non dualled lengths of the road.

6.5.175 It is recognised that there are costs at the scheme level (as summarised at table 43 above) and at the Project level (as summarised at section 7.4), primarily relating to adverse environmental effects, mainly during its construction in relation to cultural heritage; landscape and visual effects; biodiversity; and noise and vibration. However, it should be noted that significant beneficial effects are also identified in relation to some of these topics, many of which are assessed as beneficial effects during operation (as summarised in the Population and Health section of the ES NTS (Application Document 3.1) and reproduced in the table above and in the planning balance at section 7.4.

6.5.176 Weighing against the identified costs set out above in table 43, along with the planning balance set out in section 7.4, has demonstrated the wider range, scale and number of benefits that this scheme and the Project would provide, when compared with the costs. The quantity of adverse effects at a scheme and Project level on the environment would

reduce as the scheme progresses from construction to operation, such that at Year 15 of operation, some effects would be removed entirely due to the maturation of mitigation measures, such as planting for visual screening and habitat creation. In contrast to the majority of adverse effects occurring on a short-term basis during construction, the significant beneficial effects of the scheme are most numerous during the operation stage of the scheme, creating permanent benefit.

6.5.177 It would, as a highways scheme, provide fundamental benefits to the road network through improving road safety; upgrading infrastructure in line with modern standards; increasing road capacity; and considerably improving the resilience of the route. These benefits of the scheme extend beyond addressing the immediate issues facing road users, by providing the infrastructure identified as being necessary to support economic growth and meet strategic growth ambitions.

6.5.178 Finally, through high quality embedded mitigation and enhancement measures, there would be some benefits of the scheme to the surrounding environment which would represent an improvement compared to the existing conditions. This includes permanent beneficial effects to non-road users and local communities through the provision of a dedicated walking and cycling route to benefit local communities as well as visitors to the area. Furthermore, the Project will maximise biodiversity through the environmental mitigation proposed.

6.5.179 Given the permanent nature of the suite of benefits identified, and the demonstrable need for the scheme, it is considered that the benefits of the scheme significantly outweigh both the costs of the scheme and the costs of no intervention, at both a scheme and Project level. It is therefore concluded that there is conformity with Paragraph 5.152 of the NPS.

Paragraph 5.153 of the NNNPS

6.5.180 This policy states that the Applicant must ensure *'that the project will be carried out to high environmental standards and where possible includes measures to enhance other aspects of the environment.'*

6.5.181 National Highways will ensure that the project will be carried out to high environmental standards though a commitment to a set of design principles, as set out in the Project Design Principles (Application Document 5.11) and reproduced below in 44.

Table 6-15: Design Principles relevant to the AONB for the Appleby to Brough scheme (taken from the Project Design Principles (Application Document 5.11)

APPBR.04	Respect the unique local character around Warcop by providing an improved gateway experience from the A66 into the settlement (including river crossing and underbridge to Eden Valley Railway).
APPBR.05	The design should make positive response to the local landmarks in this scheme (including Brough Castle) by providing uninterrupted views of these features wherever possible.
APPBR.06	Woodland design to incorporate ponds and rides to maximise biodiversity and ecological value, potential to structure woodland to follow existing / historic field boundaries especially if these are fossilised and therefore historically valuable.

	The design of new woodland should also be sensitive to existing woodland edge the conditions and ecological environments.
APPBR.08	Irregular woodland edge/ blended and mosaic interface with the North Pennines AONB to integrate junctions and the scheme with the nationally designated landscape context and its setting.
APPBR.10	Crossings of the sensitive watercourses are to be open structures, ensuring no significant change to the geomorphological function of the watercourses. This is to retain their function as habitat supporting qualifying fish of the River Eden SAC and to maintain supporting river processes including flood flows and associated erosion/sediment regime, and the migration of the channel across its floodplain.
APPBR.11	Infrastructure within the North Pennines AONB (namely the private means of access, and where feasible, the local access road) shall be designed sympathetically to the AONB. Where possible these roads should be designed as rural lanes or tracks.
APPBR.12	Any barrier required between the A66 and local road to prevent glare is to be designed to be sympathetic to the AONB, with planting to soften the influence over time.
APPBR.13	Careful consideration to boundary treatments on large structures and earthworks to avoid sky lining, for example at Warcop overbridge where boundary treatments are required on earthworks, soften treatments through integrating native species rich hedgerow or planting. Appropriate boundary treatments are to reflect the rural nature of the scheme, such as hedgerow and drystone walls. VRS should only be used where necessary at bends, junctions and central reservation.

6.5.182 There is also a commitment to high environmental standards including measures to enhance the environment through adherence to the requirements set out within the Environmental Management Plan (Application Document 2.7)

6.5.183 Through adherence to the commitments and requirements set out within the Project Design Principles and the Environmental Management Plan ensure conformity with the requirements of policy 5.153 *'for high environmental standards, including measures to enhance other aspects of the environment'.*

Development Outside the AONB

6.5.184 For development outside the AONB the findings from the assessments against paragraphs 5.154 and 5.155 of the NNNPS are as set out below.

Paragraph 5.154 of the NNNPS

6.5.185 Paragraph 5.154 states that:

'The duty to have regard to the purposes of nationally designated areas also applies when considering applications for projects outside the boundaries of these areas which may have impacts within them. The aim should be to avoid compromising the purposes of designation and such projects should be designed sensitively given the various siting, operational, and other relevant constraints.'

6.5.186 As set out above it has been concluded in the landscape chapter of the ES that:

- there are no significant impacts on the stated special qualities of the AONB by the Project, and
- at year 15 of operation '*the perception of the scheme would reflect that of the existing A66 and the effect to the Foothills character area would be neutral (no change) due to the maturing replacement roadside screen planting and intervening topography and woodland'.*

6.5.187 It is therefore concluded within the landscape chapter of the ES, with specific reference to NNNPS paragraph 5.154, that

'the scheme avoids compromising the purpose of the AONB designation and has been designed sensitively to reflect the existing alignment and vegetated character of the A66 in proximity to the AONB boundary.' (paragraph 10.10.149)

6.5.188 For these reasons, the scheme conforms with paragraph 5.154 of the NNNPS.

Paragraph 5.155 of the NNNPS

6.5.189 Paragraph 5.155 states that:

'The fact that a proposed project will be visible from within a designated area should not in itself be a reason for refusing consent.'

6.5.190 The route will be visible from the AONB, although 'the scheme avoids compromising the purpose of the AONB designation and has been designed sensitively to reflect the existing alignment and vegetated character of the A66 in proximity to the AONB boundary' (paragraph 10.10.149 of the ES)

6.5.191 Given this conclusion from the ES it is demonstrated that the visibility of the project from within the AONB should not in itself be a reason for refusal, to conform with paragraph 5.155 of the NNNPS.

Other environmental Impacts

6.5.192 In accordance with the EIA regulations, the proposed scheme has been assessed for environmental impacts relating to:

- Air quality
- Biodiversity
- Climate
- Cultural heritage
- Geology and soils
- Landscape and visual
- Material assets and vibration
- Population and human health
- Road drainage and the water environment.

6.5.193 Full details of environmental assessments carried out for each of these topics are provided within the ES which accompanies this application (Application Documents 3.2-3.4).

6.5.194 The proposed scheme has been assessed for environmental impacts in accordance with the EIA regulations, as outlined within earlier chapters of this document and detailed within Chapters 5-14 of the ES which accompanies this application (Application Documents 3.2-3.4).

6.5.195 In relation to noise and vibration, localised Significant adverse effects upon receptors at Residential dwellings by West View and Foxtower (Mains House), and residential dwellings at Warcop and at non-residential receptor at Apple Tree Farm are expected. These environmental impacts considered; the proposed scheme is not expected to result in any significant, long lasting environmental effects.

Public consultation

6.5.196 The scheme development was informed by extensive public and stakeholder engagement. A total of 221 individual responses related to the scheme.

6.5.197 An alternative route alignment, further north, crossing the Area of Outstanding Natural Beauty was suggested. The support for this alternative route alignment was associated with perceived potential benefits for local communities due to its physical distance from residential areas and environmental impact on agricultural land and the environment, such as the impact on the landscape and visual amenity of the Eden Valley.

6.5.198 The key consultation responses for the scheme are set out at Table 7, Chapter 6 of the Consultation Report (Application Document 4.4) within Annex N. The PDOR (Application Document 4.1) describes the design development carried out for each scheme along the route of the Project and how it has been informed by consultation.

6.5.199 Design changes and design verification resulting from this consultation are outlined in the following paragraphs.

6.5.200 In response to concerns relating to routes for walkers, cyclists, and horse-riders, including suggesting a cycle track from the A66 Café Sixty-Six to the Coupland track, focus has been centred around providing a safe east-west route between Appleby and Brough for walkers and cyclists as part of a wider piece of work to improve connectivity between these communities. Measures proposed include a shared cycle and footway parallel to the scheme, connecting existing infrastructure and completing the route from Appleby to Brough. Key crossing points over or under the proposed dual carriageway are proposed at Café Sixty-Six, Warcop, Great Musgrave and Brough.

6.5.201 Full details and a review of issues raised at statutory consultation can be found at Chapter 6 of the Consultation Report (Application Document 4.4).

Summary case for the scheme

6.5.202 In summarising the case outlined above, the principal conclusions on the need for the development are that the project, which this scheme is an integral part, fully meets the economic objectives at a regional and national level, including:

- Supporting the economic growth objectives of the Northern Powerhouse and Government Levelling Up agenda[7], including transport and economic strategies at a regional level, such as Transport for North (TfN) Strategic Transport Plan 2019, The Tees Valley Combined Authority's Strategic Economic Plan: The Industrial Strategy for Tees Valley 2016-2026, and the Tees Valley Strategic Transport Plan 2020-2030 and the Cumbria Strategic Economic Plan 2014-2024.
- Improving strategic regional and national connectivity, particularly for hauliers and for freight.
- Ensuring the improvement and long-term development of the Strategic Road Network through providing better national connectivity.

6.5.203 It has been demonstrated that the proposed scheme will increase the capacity of the A66, improve resilience along the route in case of accidents or slow-moving vehicles while also providing a suite of safety improvements along the route in this location.

6.5.204 As set out in the preceding sections, there are exceptional circumstances in favour of the scheme being partially within the AONB and the scheme is considered to be in the public interest. The scheme design and developed mitigation is proposed to ensure that the special qualities of the AONB remain.

6.5.205 The environmental 'costs' associated with the implementation of the scheme will need to be outweighed by the benefits for the scheme. These 'costs' are identified in the paragraphs above and in detail within the ES (Chapters 3.2-3.4). The planning balance for this Project considered within Chapter 7 of this document.

6.6 Bowes Bypass

Description of the problems within the scheme boundary

6.6.1 As described within the PDOR (Application Document 4.1), Bowes Bypass is an approximately 3km single carriageway length of the A66 between dual carriageway lengths to the west and east.

[7] The Northern Powerhouse is a vision for joining up the North's great towns, cities and counties, pooling their strengths, and tackling major barriers to productivity to unleash the full economic potential of the North.
1.1 The Northern Powerhouse's objective is to achieve a sustained increase in productivity across the whole of the North. It is at the heart of the government's ambition for an economy that works for everyone. (Northern Powerhouse Strategy – November 2016, HM Government)

6.6.2 This length of the A66 carries approximately 16,300 vehicles per day, 24% of which are heavy goods vehicles.

6.6.3 A number of collisions have been reported over this stretch of road as a result of overtaking manoeuvres, and all reported collisions occurred in daylight hours. In the event of accidents, the single carriageway nature of the road often results in road closures due to lane blockages, until accidents are cleared. The road currently does not have any resilience to re-route traffic around accidents when they occur.

6.6.4 The road standards along this stretch of the road are variable, with a number of carriageway features which fall below current standards and provide safety risks to users.

6.6.5 A key feature of this length is the junction with the A67 which is currently only accessible to traffic to and from the west. Eastbound traffic approaching is often not aware that one lane at this junction is utilised for the A67, which reduces capacity along this length of the route. It also leads to dangerous lane changes and slowing traffic on the A66, which both present significant safety issues. The westbound carriageway is a single lane with a taper merge from the A67 merging just before Clint Lane overbridge.

6.6.6 Hulands Quarry is accessed directly from the A66 with HGV's required to make right hand turn manoeuvres, crossing the road into oncoming traffic. The queuing of waiting vehicles to access this turn along with the manoeuvre of large slow-moving vehicles crossing fast moving traffic lanes presents a safety issue to users.

6.6.7 Between the A67 and Stone Bridge Farm, the A66 is two-lane single carriageway. A short system of double white lines exists to prohibit overtaking through the length of Bowes Interchange where the carriageway alignment curves to the right. At the end of the double white lines the carriageway has a length of broken central hatched marking through to the dual carriageway length east of the Bowes Bypass. The existing road features a Vehicle Restraint System, traffic signs and parapet fences in the verges.

6.6.8 In addition to variable road standards, this length of the A66 includes a series of private accesses which directly interact with the main carriageway. Between Bowes Interchange and the at-grade junction to Bowes village, Bowes Hall Underpass and Mirekeld Underpass provide grade-separated access for farm traffic and livestock across the A66. Slow moving agricultural vehicles utilise these accesses.

6.6.9 Other features along this length of the A66 include a lay-by on the westbound carriageway which has several substandard features such as short merge and diverge taper lengths and a short stacking length which present safety issues to users.

6.6.10 There is one crossing route for WCH across the A66 at this length of the route, which takes the form of an at-grade PRoW crossing located midway between Bowes Interchange and Bowes Junction. This crossing facility currently has a flag-post sign in the south verge only; the verge to

the north is overgrown and consequently no flag-post is visible, suggesting there is no significant use of this WCH route. It is likely that its close proximity to the Pennine Way and Walney to Wear WCH routes, which pass through Bowes village and over the A66 via Clint Lane bridge at Bowes, make this a less attractive route for long-distance walking. There is one bus-stop lay-by westbound on the A66 near Clint Lane Bridge, and another eastbound on the Bowes Interchange eastbound off-slip. No footways or paved WCH facilities exist throughout this length of the A66.

Description of the proposed scheme and how it will address the problems identified

6.6.11 As described at Chapter 3 of this document and summarised below, the proposed scheme:

- closely follows the existing A66 alignment to the north of the village of Bowes, with a new adjacent eastbound carriageway constructed to the north. The existing carriageway will carry westbound traffic.
- interacts with the AONB. The existing western carriageway passes through the AONB. At the westernmost end of this scheme, the AONB boundary abuts the existing edge of pavement of the westbound A66 (specifically, the highway verge falls within the AONB boundary). Work to tie in the new dual carriageway with the existing dual carriageway therefore falls within the AONB boundary at this location.
- at the junction with the A67, a bridge will carry the new eastbound carriageway over the A67. The eastbound diverge slip road will be relocated north to make way for the new eastbound A66 carriageway.
- two new slip roads will accommodate traffic travelling to and from the east providing access to and from the A67 and Bowes village.
- access from Bowes to the A66 (via the Roman road known as The Street, and locally known as Low Road) will be stopped up. The upgraded grade-separated Bowes Junction will provide safer access to the A66 for local traffic.
- access to and from Hulands Quarry will be made safer by closure of the existing central reserve gaps and upgrading the junction geometry improving safety for users.
- the existing central reserve gap at Bowes Cross Farm will be closed, along with their direct access onto the A66 to improve safety; access is maintained by the accommodation access.
- six drainage ponds are required for this scheme.

6.6.12 The proposed dualling of the A66 allows for increased capacity while upgrading the substandard road features and improving alignment to ensure that safety improves across the route.

6.6.13 The A67 will be provided with a new bridge overpass to remove local road traffic from the strategic road network. This further removes hazardous road obstacles along this length of the route, improving safety for users.

6.6.14 The variable road standards along the route will be upgraded to a single standard, providing greater clarity along the road for users, creating an overall safer driving environment for users.

6.6.15 The removal of existing field access which directly interact with the A66, and the creation of overpasses, underpasses or alternative access points, will remove slow moving and large agricultural vehicles from the A66 onto the local road network, further improving the overall safety of the road.

6.6.16 The revised access to Hulands Quarry will remove a significant safety risk to the carriageway, where traffic queues in the right turn lane and HGVs are required to make right hand turns across fast moving traffic travelling east. The new traffic arrangement provides a left hand turn in and out junction arrangement with HGV's utilising a new, safer junction arrangement, which is far safer for all users of the A66.

6.6.17 The relevant GA Plan relating to this scheme are HE565627-AMY-HAC-S07-DR-CH-500000-003 (Application Document 2.5.

Benefits the scheme will deliver

6.6.18 In addition to the immediate issues of congestion and journey time savings as identified in the previous chapters of this document, the scheme also delivers localised benefits for communities such as improved accessibility and better local connectivity.

6.6.19 The table below provides an overview of the location specific benefits of this scheme considered against the wide Project objectives.

Table 6-16: Review of scheme against Project objectives

Theme	Project objectives	Scheme Response
Economic	-Regional: Support the economic growth objectives of the Northern Powerhouse and Government Levelling Up agenda	-The existing A66 is a key national and regional strategic transport corridor. It carries high levels of freight traffic and is an important route for tourism and connectivity for nearby communities. If the existing A66 route is not improved, it will continue to constrain national and regional connectivity and may threaten the transformational growth envisaged by the Northern Powerhouse initiative and the achievement of the Government 'Levelling Up' agenda. -The project facilitates improved vehicles movements to the A66 route network. and the journey time savings this results in. This has economic implications for freight and other business connectivity. -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
	-Ensure the improvement and long-term development of the 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.	

Theme	Project objectives	Scheme Response
		commerce, including lost working time and missed shipment slots. Improving access to key tourist destinations such as the North Pennines and Lake District. -The project, in addition to improving the strategic route network, also makes improvements to the local road network, with new junctions and 'offline' improvements, removing local traffic from the A66, making local movements more efficient. -A new overpass bridge will be constructed to ensure Stone Bridge Farm, Mid Low Fields Farm and High Broats Farm have continued access to the A66 via the improved junction at the A67. -The closure of the central reserve gap currently there to provide westbound access to the Hulands Quarry, thereby removing the right-turn required for vehicles accessing from that direction. A new left-in/left-out access will be provided for the site. -These measures will retain and improve access to employment uses at the site and make it easier for large goods vehicles to access the A66, offering significant time saving improvements.
Transport	-Improve road safety, during construction, operation, and maintenance for all, including road users, NMU, road workers, local businesses and local residents.	-The proposed dualled scheme will remove many of the current below standard road alignments along the current A66 route. In reducing the number of accesses along this length of the A66, and with the addition of safe junctions there is potential to reduce accidents in this location. -The current accidents hazards will be moved from the route through road standard improvements in the event of accidents, breakdowns, or slow-moving vehicles. The second lane of the road will provide resilience along the route. The additional lane will enable passing or turn back facilities, ensuring the route remains open. Whilst it is expected they may not be needed as frequently the new Bowes Junction arrangement allows for diversionary turn offs, further building resilience into the route network.
	-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.	

Theme	Project objectives	Scheme Response
	-Seek to improve NMU provision along the route.	-An extension to the westbound carriageway will provide an access track from Bowes junction to Bowes Cross Farm. This will provide safer access to the farm and the resulting closure of the existing direct access and central reserve gap on the A66 will bring safety benefits for all road users -Further new and improved farm accesses also result in slower moving agricultural vehicles being removed from the main trunk road. -In improving resilience along the road and improving capacity more generally, to better accommodate the circa 16,300 vehicles using this route daily, journey time savings are expected to be between 25 and 37 seconds across the day. -Segregated crossings of dual carriageway are reconnected and tied in existing Public Rights of Way, improving facilities along this route.
Community	Reduce the impact of the route on severance for local communities.	-Segregated crossing of the dual carriageway for PRoW is proposed at Bowes Cross Farm to Hulands Quarry. The footway will be retained and improved under Bowes junction, with a signed National Cycle Route to be provided over the new Clint Lane bridge. -All other existing crossing points will be maintained.
Environment	Minimise adverse impacts on the environment and where possible optimise environmental improvement opportunities.	-Opportunities have been identified to utilise excess material in landscaping to provide improved visual screening. Two such locations are Low Broats, where there is potential to bund north of the access track and at the campsite by the A67, where a planted bund could be provided for additional screening. -Reduced congestion and fewer vehicles idling will reduce emissions, helping to improve localised air quality. Further details on the environmental benefits of the scheme are outlined within the ES (Application Document 3.2-3.4)

Outline of legislation and policy issues, such as AONB incursions and European designated sites

6.6.20 This section provides an overview and consideration of historic, ecological, landscape and environmental designations which are located within relevant proximity to the site.

The Historic Environment

6.6.21 As set out at section 8.9 of Chapter 8 (Cultural Heritage) of the ES (Application Documents 3.2-3.4), a group of three Grade II listed buildings (high value), Stone Bridge Farmhouse; Loose boxes, 5 metres east of Stone Bridge Farmhouse; and linked farm buildings and a gin-gang attached to south of Stonebridge Farmhouse, will be subject to changes to their setting during the construction period as a result of the construction of Mid Low Farm Access and proposed East Bowes Accommodation Access Overpass.

6.6.22 Construction works will result in temporary moderate adverse impacts during the construction phase, including associated noise, lighting and traffic resulting in a moderate adverse effect.

6.6.23 The construction of the access and overpass would also involve the permanent addition of a new junction and slip road embankment to the setting of the farmhouse group. This upstanding industrial structure will result in a greater sense of enclosure surrounding the resources and a partial disconnection of the farm group from its farmland setting, as well as a change in the historic topography and character of the area, resulting in a permanent, moderate adverse impact to these high value assets, resulting in a moderate adverse effect.

6.6.24 In addition to the construction impacts outlined above, the construction of the Access and Overpass will result in an increase in traffic passing immediately in front of the farmhouse group in addition to that along the main road corridor, increasing the noise and general busyness of its environment. This will generate a moderate adverse impact to these high value assets, resulting in a moderate adverse effect.

6.6.25 In summary of the assessment above, this scheme is expected to result in significant temporary adverse effects to three heritage assets and significant permanent adverse effects to three heritage assets. This scheme is expected to result in significant permanent adverse effects to three heritage assets during operation.

6.6.26 The overall impact of the scheme on heritage assets is considered to result in less than substantial harm to the significance of designated heritage assets and is outweighed by the public benefits of the scheme as evidenced throughout this document.

6.6.27 Full details regarding the above are available in section 8.9 of Chapter 8 (Cultural Heritage) of the ES (Application Documents 3.2-3.4).

Biodiversity and ecological conservation

6.6.28 There are no statutory designated sites within the Order Limits for this scheme. There are four statutory designated sites within 2km of this scheme: North Pennine Moors SAC (255m north-west); North Pennine Moors SPA (255m north-west); Bowes Moor SSSI (255m north-west); and Kilmond Scar SSSI (410m southeast).

6.6.29 There are no non-statutory sites or Ancient Woodland Sites within 1km of this scheme.

6.6.30 There is one veteran tree within 1km of this scheme, but this is outside Order Limits.

6.6.31 The interaction of the proposed route with the SAC and SPA designations has been an important consideration in confirming the route and the design of the proposals in this location in order to ensure conformity with national planning policy (NNNPS) and Habitat Regulations.

6.6.32 Four priority habitat types within 250m of Order Limits – blanket bog (<0.01ha), deciduous woodland (1.38ha), upland heathland (1.09ha) and good quality semi-improved grassland.

6.6.33 Multiple protected species including, but not limited to: terrestrial invertebrates, foraging and roosting bats, otter, barn owl, breeding and wintering birds and aquatic invertebrates.

6.6.34 The majority of potential impacts affecting biodiversity features will occur during the construction phase. These impacts can be broadly summarised into the following:

- Habitat loss permanently or temporarily under the road itself or where it is removed as a result of working area and compounds
- Fragmentation of populations and habitats where changes to noise, air quality, hydrological regimes and human presence may change the movement of mobile species
- Disturbance to species by changes to noise, light and human activity that may affect the behaviour of sensitive species, particular breeding or wintering birds
- Habitat damage or degradation that might arise from changes to water quality or air quality
- Incidental species mortality as a result of construction activities such as vegetation clearance, tree felling, vehicle movements and top soil stripping

6.6.35 Operational impacts of the Project on biodiversity features can be summarised into the following:

- Fragmentation of populations and habitats as a result of the east-west alignment of the Project resulting in severance of north-south movement
- Disturbance as a result of changes to operational traffic flows and resulting changes to noise, air quality, light and human disturbance
- Habitat damage can occur as a result of changes to hydrological regimes, or long term changes to nitrogen content affecting plant life
- Incidental species mortality due to animals having to cross the road and being hit by vehicles.

6.6.36 Considering the impact of the scheme on the site:

- No significant effects are anticipated in construction.
- No significant effects are anticipated in operation.

6.6.37 Avoidance and minimisation of impacts on important biodiversity features has been incorporated throughout the development of the design of the Project and at individual scheme level. Details of relevant

elements which have been incorporated into this assessment are described in section 2 of the ES (Application Document 3.2-3.4).

6.6.38 In addition, the Project Design Principles (Application Document 5.11) outlines measures to reduce impacts in relation to habitats, including (but not limited to):

- Use of ecologically sensitive lighting where possible
- Improved ecological connectivity to Trout Beck through provision of woodland planting
- The structure crossing Trout Beck must allow for full functionality of supporting river processes

6.6.39 The assessment of impacts on biodiversity also assumes the implementation of the following embedded measures, which are secured through the EMP to be in accordance with DMRB LA120 (Application Document 2.7) and associated management plans.

6.6.40 Sixty-eight terrestrial invertebrate species were recorded within the survey area of the Bowes Bypass scheme.

6.6.41 To view the full ecological assessment for this scheme, see section 6.9 of Chapter 6 (Biodiversity) of the ES (Application Documents 3.2-3.4).

Landscape and Visual Impact

6.6.42 The scheme considers the following land designations:

- The North Pennines AONB and UNESCO Global Geopark covers the south-west part of the study area and borders the western part of the Order Limits.
- Most of the central and all the eastern parts of the study area are covered by an AHLV under Policy 39 of the Durham Local Plan.
- National Landscape Character: the eastern part of scheme is situated within NCA22 Pennine Dales Fringe. The remainder of the study area is within NCA10 North Pennines.
- The scheme also sits within a series of landscape character types as defined in the Durham County Council and North Pennines AONB and Landscape Character Assessments.

6.6.43 During construction, this scheme is expected to result in significant adverse effects to broad character areas, residences, users of recreational sites and public rights of way and road users.

6.6.44 By year 15 of operation, no significant effects are expected as planting will reach a level of maturity to contain the road corridor to a similar extent as the existing situation.

6.6.45 Compared to the arable land cover adjacent to the existing A66, there would be species rich grassland, to provide a more diverse vegetation cover and improve the opportunities for biodiversity, which would have established to form an integrated sward.

6.6.46 There would be a retained reduction in the vegetation between Stone Bridge Cottages and the proposed slip road and dual carriageway, with the existing trees replaced with mixed scrub and species rich grassland.

6.6.47 The species rich grassland would continue across the proposed embankments of the overbridge in the eastern part of the Order Limits, which as an established sward would reduce the perception of the engineered gradients. The scale and mass of the overbridge would remain, with vehicles in an elevated position in relation to the existing alignment of the A66.

6.6.48 The scheme would result in an impact of no change and the effect, due to reflecting the character of the existing A66 and highways infrastructure, results in an effect across these NCA's that would be neutral (not significant).

6.6.49 Similarly, there would be no significant landscape character effects. This is due to the proposed planting reducing the perception of the A66.

6.6.50 In close range views from Clint Lane, the proposed planting would reflect the existing composition of vegetation adjacent to the A66 and the varying visibility of buildings in Bowes. The proposed junction with the A67 (at the location of the existing large barn) would not be visible due to the establishment of the proposed woodland.

6.6.51 From locations across the southern part of the study area, with the existing intervening vegetation in leaf, the visibility of the overbridge and associated vehicles at the eastern end of the scheme would be reduced. The establishment of the proposed planting would also soften the engineered slopes of the embankment.

6.6.52 For residents at Stone Bridge Farm, the establishment of the proposed woodland would soften views of vehicles on part of the slip road and A66, but there would be an increased visibility of the vehicles in comparison to the existing view. Similarly, views of the overbridge would also remain.

6.6.53 With reference to Appendix 10.6: Schedule of Visual Effects, significant visual effects are predicted for the following receptors at year 15 of operation.

- Residents and motorists adjacent to The Street, due to the moderate impact, which in relation to the moderate sensitivity of the receptor would result in a moderate (significant) effect.
- Recreational users on PRoW (footpath) no.6, due to the moderate impact, which in relation to the high sensitivity of the receptor would result in a moderate (significant) effect.

6.6.54 There would be no significant effects the remaining visual receptors at year 15.

6.6.55 Full details are able to be viewed within section 10.10 of Chapter 10 (Landscape and Visual) of the ES (Application Documents 3.2-3.4).

Development proposed within nationally designated areas

6.6.56 As set out above, the scheme at its western part borders the North Pennines AONB.

6.6.57 The Bowes Bypass scheme will closely follow the existing A66 alignment to the north of the village of Bowes, with a new adjacent eastbound carriageway constructed to the north.

6.6.58 The existing A66 from the west passes through the North Pennines AONB. At the westernmost end of this scheme, the AONB boundary overlaps the existing edge of pavement of the westbound A66, with the highway verge sitting within the AONB boundary.

6.6.59 In seeking to 'tie in' the new dualled carriageway to the existing, works will result in a minor encroachment into the AONB in this location. The extent of incursion is modest. In total 0.47 hectares of AONB land is directly impacted in this location. The land subject to development in this location is considered to be operational land associated with the A66, providing grass verge to the main carriageway. The quality and value of this land is assessed within the Landscape and Visual Assessment which accompanies this application as provided in Chapter 10 of the ES (Application Documents 3.2-3.4).

6.6.60 The scheme will present a minor incursion into the western extents of the AONB at the western entrance to Bowes and therefore physical change to the landscape features within the designated landscape will be very limited. The total length of the route within the AONB is 333 metres, which can be compared with a total length of this Scheme of 3,100 metres and a total length of the route for the Project of 37 km. Furthermore, the distance of the incursion into the AONB (from the boundary) is a maximum of 32 metres and an average of 15 metres along its length. The area of land associated with the incursion is 5,000 $m^{2.}$

6.6.61 In operation, the alignment of the scheme would reflect that of the existing A66, such that the spatial relationship between the A66 and the AONB would remain.

6.6.62 By year 15 of operation, the perception of the scheme would reflect that of the existing A66 and the effect to the Moor and Fringe character area would be neutral (no change), in addition to no change to the special qualities.

6.6.63 From the above and with reference to NNNPS paragraph 5.154, the scheme avoids compromising the purpose of the AONB designation and has been designed sensitively to reflect the existing alignment and vegetated character of the A66 in proximity to the AONB boundary.

6.6.64 As defined within the NNNPS and outlined fully earlier within this chapter, for any development proposed within nationally designated areas, such as the North Pennines Area of Outstanding Natural Beauty, the SoS should refuse development consent in these areas except in exceptional circumstances and where it can be demonstrated that it is in the public interest. Consideration of such applications should include an assessment of paragraph 5.151 of the NNNPS, outlining the need for the development; the cost of developing elsewhere; and any detrimental effects on the environment.

6.6.65 Paragraphs 5.152, 5.153, 5.154 and 5.155, as outlined, also require consideration ensuring that there are compelling reasons for the new or enhanced road capacity with the SoS satisfied that the Project will be carried out to high environmental standards. For development proposed outside nationally designated areas regard must be had for nationally designated areas to avoid compromising the purposes of designation.

6.6.66 The Bowes Bypass scheme is partially located within the AONB. The development therefore requires to be assessed against the exceptional circumstances defined within Paragraph 5.151 of the NNNPS to demonstrated that the proposed development is in the public interest. An assessment of the aforementioned paragraphs of the NNNPS has therefore been completed.

Paragraph 5.151 (limb 1) of the NNNPS

6.6.67 Paragraph 5.151 states that:

The SoS should refuse development consent in these areas except in exceptional circumstances and where it can be demonstrated that it is in the public **interest. Consideration of such applications should include an assessment of:**

i) **The need for the development, including in terms of any national considerations, and the impact of consenting, or not consenting it, upon the local economy**

6.6.68 As referenced in the earlier sections of this document, need is set out ***at a Project level*** within this report at:

- Section 1.7 in relation to the project objectives
- Section 3.4 in terms of benefits and opportunities
- Section 4 in terms of the traffic case
- Section 5 in terms of the economic case
- Section 7 in terms of satisfying national, regional and local policy objectives
- Section 8 through summarising the overall needs case.

6.6.69 As outlined within the previous section of this document, at a regional and national level the Project:

- supports the economic growth objectives of the Northern Powerhouse and Government Levelling Up agenda.
- supports and delivers against the aspirations and objectives of plans and strategies, including transport and economic strategies at a regional level, such as Transport for North (TfN) Strategic Transport Plan 2019, The Tees Valley Combined Authority's Strategic Economic Plan: The Industrial Strategy for Tees Valley 2016-2026, and the Tees Valley Strategic Transport Plan 2020-2030 and the Cumbria Strategic Economic Plan 2014-2024.
- Section 3.7 of the Legislation and Policy Compliance Statement (Application Document 3.9) contains a detailed review of regional and county policy and an assessment of how the Project accords with this policy.

- Improving strategic regional and national connectivity, particularly for hauliers and for freight. Heavy goods vehicles account for around 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 (see table 2 at paragraph 1.7.9 and table 44 above).
- Ensuring the improvement and long-term development of the Strategic Road Network through providing better national connectivity including freight (see table 2 at paragraph 1.7.9).
- Maintaining and improving access for tourism served by the A66 (see table 2 at paragraph 1.7.9).
- Improving access to services and jobs for local road users and the local community (see table 2 at paragraph 1.7.9 and table 44 above).
- Improving access to key tourist destinations such as the North Pennines and Lake District (see table 2 at paragraph 1.7.9 and table 44 above).

6.6.70 As previously outlined, this project is also identified by Government as one of the key investments in the north of England to help achieve the Government's Levelling Up agenda (see paragraph 3.4.14).

6.6.71 The monetised economic impact of delivering the Project (see Chapter 5, The Economic Case) also supports the needs case at a national level in terms of:

- Road safety and reduction in accidents. Forecast accident and road safety benefits are valued at £29.6m across the 60-year appraisal period (at 2010 Prices), with reductions in fatal, serious and slight accidents. The Project is forecast to save 281 personal injury accidents and lead to an overall reduction of 530 casualties (see paragraph 5.5.3)
- Connectivity, Capacity and Economic' growth: the Project is forecast to achieve total transport economic efficiency benefits for road users of £521.1m. This is a result of the additional capacity and reduced delay provided by the project. Of the overall masked 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 (see paragraphs 5.3.7 and 5.3.9)
- Increasing reliability: 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 (see paragraph 5.5.5).

6.6.72 *The need for the development, in terms of the impact of consenting, or not consenting it, upon the local economy* is considered in relation to addressing the project objectives at a local level. This is set out at table 44 earlier in this section and summarised below.

6.6.73 The impact of consenting the scheme in terms of achieving these local economic objectives include:

- journey time savings and minimising disruption and delays (for example associated with road closure on one lane, through use of the second lane to avoid disruption). This will benefit local farmers and local business, such as Hulands Quarry.
- providing a safer and more reliable means of access by reducing the number of accesses along the length and provision of safe junctions and improved and upgraded accesses. This will facilitate easier and safer movement of machinery and HGV's accessing and egressing farms and employment sites. This includes improved access for Stone Bridge Farm, Mid Low Fields Farm and High Broats Farm.
- improving access to key tourist and recreation destinations including the AONB and Bowes heritage assets, encouraging more visits to these destinations and more tourist related income for local business
- better local connectivity for businesses and local travel to work journeys provided via improved junction access and offline local route connections.
- improving connectivity for people living and working nearby through reducing congestion and improving the reliability of people's local journeys to work
- incorporating a shared cycle/footway parallel to the route and running the entire length of the scheme to benefit local people for travel to work as well as recreational use.

6.6.74 Transport objectives are met through:

- removing many of the current below standard road alignments along the current A66 route
- reducing the number of accesses along this length of the A66,
- the addition of safe junctions there is potential to reduce accidents in this location.
- minimising disruption and delays associated with road closure on one lane. With the dualling an incident on one lane will not necessarily result in the closure of the road and therefore disruption and increased journey times for local residents and businesses can be reduced;
- the new Bowes Junction arrangement allows for diversionary turn offs, further building resilience into the route network.

6.6.75 Community objectives are met through:

- Improving connectivity for people living and working nearby through reducing congestion and improving the reliability of people's local journeys.
- reconnecting segregated crossings of dual carriageway and tying in to the existing Public Rights of Way, improving facilities along this route. Segregated crossing of dual carriageway for PRoW is proposed at Bowes Cross Farm to Hulands Quarry. Existing footway will be retained under Bowes junction, and a signed National Cycle Route to be retained over new Clint Lane bridge.

6.6.76 Environmental objectives are met through:

- Use of excess material in landscaping to provide improved visual screening, such as at Low Broats, where there is potential to bund north of the access track; and at the campsite by the A67, where a planted bund could be provided for additional screening.
- Reduced congestion and fewer vehicles idling will reduce emissions, helping to improve localised air quality.

6.6.77 The impact of not consenting the project on the local economy would be that these local benefits could not be delivered to the same level, and that the objectives, for this project would not be achieved, to the same degree.

The importance of the A66 dualling project in delivering local Paragraph 5.151 (limb 2) of the NNNPS: The cost of, and scope for, developing elsewhere, outside the designated area, or meeting the need for it in some other way NNNPS

6.6.78 The economic benefits, that are set out in strategies and plans at a local authority and regional level, were recognised at a very early stage of the project's development, as documented in the Project Development Overview Report (Application Document 4.1). The Northern Trans Pennine Strategic Study, specifically identified the implications of not undertaking the improvements on the A66, as follows: 'This study concluded that if the existing A66 route is not improved, it will constrain national and regional connectivity and may threaten the transformational growth envisaged by the Northern Powerhouse initiative.'

6.6.79 Paragraph 5.151 (limb 2) of the NNNPS: The cost of, and scope for, developing elsewhere, outside the designated area, or meeting the need for it in some other way NNNPS

6.6.80 This policy requires consideration of 'the cost of, and scope for, developing elsewhere, outside the designated area, or meeting the need for it in some other way'.

6.6.81 As part of the review carried out during the earlier stages of the preliminary design (for PCF stage 3) it was confirmed that the announced Preferred Route alignment for the Bowes Bypass scheme had a minor encroachment into the North Pennines Area of Outstanding Natural Beauty at the western tie-in. Given this slight incursion into the AONB and the need to conform with policies of the NNNPS, an alternative outside the AONB was developed and assessed. The comparison between the alternative outside the AONB and the preferred alignment within the AONB (now referred to as the promoted route alignment) was presented in the Route Development Report (Appendix to the PDOR (Application Document 4.1) which was one of the technical documents available for statutory consultation. The assessment findings have not changed since statutory consultation, as presented below.

6.6.82 It was concluded that the route alignment outside the AONB was likely to be more costly and more complex, due to the requirement for approximately 3,500m³ of additional earthworks compared to the

promoted route alignment. Additional costs and complexity would also be associated with the requirement to divert existing utilities out with the proposed road construction. The shift in horizontal alignment would require additional land and increase negative environmental impacts including those on deciduous woodlands. There would also be additional impacts, compared to the promoted alignment, due to the need for more traffic management phases to complete the works, potentially adding several weeks to the construction programme. This increase in complexity and programme would increase operative time on the road network and cause more disruption to road users.

6.6.83 There are minimal highway works within the AONB for the proposed route and the works largely affect land within the existing highways boundary. There would also be greater environmental effects and costs associated with an alternative route alignment (the original preferred route which was announced) located out with the AONB.

Paragraph 5.151 (limb 3) of the NNNPS: Any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated NNNPS

6.6.84 This limb of the policy requires consideration of 'any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated'

Detrimental Effect on the Environment and Potential for Moderation

6.6.85 The design and assessment of the scheme has been informed by environmental assessments, as outlined within the ES which accompanies this DCO application (Application Document 3.2-3.4).

6.6.86 The scheme has been designed carefully to remain along or within close proximity to the existing A66 alignment, so that the impacts of the scheme are confined to the existing road infrastructure corridor.

6.6.87 Despite the design approach taken and potential mitigation proposed, there are significant permanent adverse effects upon a small number of listed heritage assets and a small number of residential and non-residential properties in relation to noise and vibration. It is, however, considered that these impacts are localised, with the overall environmental impacts of the scheme considered to be able to be mitigated and not therefore be considered as significant.

Detrimental Effect on the Landscape and Potential for Moderation

6.6.88 The design and assessment of the scheme has been based upon the areas and landscape guidance within the published landscape character assessments which cover this local landscape designation.

6.6.89 The scheme has been designed carefully to remain along or within close proximity to the existing A66 alignment, so that the siting of the scheme reflects the character of the existing road infrastructure. In combination with the substantial new planting in accordance with the published landscape character assessments, to integrate the scheme and provide

additional opportunities for biodiversity, the scheme has avoided and minimised harm to the landscape via reasonable mitigation.

6.6.90 The scheme is assessed in landscape terms as responding positively to the requirements of the Durham Local Plan Policy 39, via conserving the special qualities of the designated landscape.

Detrimental Effect on Recreational Opportunities and Potential for Moderation

6.6.91 The proposed scheme seeks to reconnect crossings which have been segregated by the dual carriageway. The new crossing will tie into the existing Public Rights of Way, improving facilities along this route.

6.6.92 These new routes and mitigation measures would provide an enhancement of provision for cycling and walking resulting in improved connectivity for local residents and for visitors to the area.

Conclusions for paragraph 5.151 of the NNNPS)

6.6.93 The table below summarises the assessment of the proposal for the length of the route within the AONB in relation to paragraph 5.151.

Table 6-17: Assessment of the scheme within the AONB against paragraph 5.151 of the NNNPS

Limb of Para 5.151	The proposed route alignment
i) The need for the development, including in terms of any national considerations, and the impact of consenting, or not consenting it, upon the local economy	It fully meets the economic objectives at a local, regional and national level. At a regional level, the Project supports the economic growth objectives of the Northern Powerhouse and Government Levelling Up agenda[4].The Project supports the aspirations and objectives of other plans and strategies, including transport and economic strategies at a regional level, such as Transport for North (TfN) Strategic Transport Plan 2019. Improving strategic regional and national connectivity, particularly for hauliers Other Project wide economic, connectivity and safety benefits, including monetarised benefits as summarised I paragraphs 6.1.12 – 6.1.13. Scheme level needs in relation to local economic, transport and community benefits as set out in paragraphs 6.1.14 to 6.1.19. If the existing A66 route is not improved, it will constrain national and regional connectivity and may threaten the transformational growth envisaged by the Northern Powerhouse initiative and the achievement of the Government 'Levelling Up' agenda
ii a) The cost of, and scope for, developing elsewhere, outside the designated area	
Engineering and Cost assessment of an alternative alignment (outside the AONB)	Taking all the engineering and cost criteria into account there is a clear preference for the promoted route compared with an alternative scheme outside of the AONB.
Environmental Assessment of alternative alignment (outside the AONB)	Taking all the environmental criteria into account there is a clear preference for the promoted route compared with an alternative outside of the AONB. The alternative outside the AONB requires construction offline from the existing alignment and the potential for greater landscape and visual effects overall and potential impacts on the setting of the AONB.

Limb of Para 5.151	The proposed route alignment
ii b) meeting the need for it in some other way	Compared with other alternative interventions (non-highway and highway options which represented a lower level of intervention) the A66 full dualling option delivered particularly strong benefits in terms of strategic connectivity and journey time reliability, as well as making a significant contribution to the Northern Powerhouse economic growth agenda and supporting access to key tourist sites. The scale of the benefits associated with the alternatives to the full dualling interventions was much smaller and the contribution made towards achieving the intervention-specific objectives around economic growth and strategic connectivity was found to be less significant
iii a) detrimental effect on the environment and the extent to which that could be moderated	It has been demonstrated that although there are adverse (or detrimental) effects on the environment there is the potential for moderation (as reported in the Environmental Statement). For designated environmental areas, such as the AONB, there is potential for a sensitive design of the route to respect the character and quality of these designation.
iii b) detrimental effect on the landscape and the extent to which that could be moderated	The scheme will present a minor incursion into the western extents of the AONB at the western entrance to Bowes and therefore physical change to the landscape features within the designated landscape will be very limited. In operation, the alignment of the scheme would reflect that of the existing A66, such that the spatial relationship between the A66 and the AONB would remain. By year 15 of operation, the perception of the scheme would reflect that of the existing A66 and the effect to the Moor and Fringe character area would be neutral (no change), in addition to no change to the special qualities. The scheme avoids compromising the purpose of the AONB designation and has been designed sensitively to reflect the existing alignment and vegetated character of the A66 in proximity to the AONB boundary.
	New WCH routes and mitigation measures would provide a significant enhancement of provision for cycling and walking resulting in improved connectivity for local residents and for visitors to the area

Key:

Positive outcome from the assessment
Positive outcome taking into account potential for environmental enhancements and mitigation
Overall negative outcome from the assessment although the alternative outside the AONB has a greater level of negative effect
Overall neutral outcome from the assessment
Negative outcome from the assessment and alternative outside the AONB has a more positive effect

Conclusions for Paragraph 5.151

6.6.94 There are clear and well evidenced benefits of consenting the project at a national level and at a local level in terms of the economic benefits that would be delivered, as set out above. The impact of not consenting it, upon the local economy is that these benefits would not be achieved and this in turn may 'threaten the transformational growth envisaged by the Northern Powerhouse initiative'. These national and local benefits are considered to be 'exceptional circumstances' and have been demonstrated above to be in the public interest.

Paragraph 5.152 of the NNNPS

6.6.95 This policy requires '*compelling reasons for the new or enhanced capacity and with any benefits outweighing the costs vary significantly'* for development within the AONB. The benefits of the route have been set out above relating to the location of the new infrastructure on the boundary of the AONB, the nature of the new infrastructure and the potential for sensitive design to fit with the character of the landscape in this location alongside opportunities for enhancement.

6.6.96 These benefits should be considered in relation to the alternative outside the AONB.

6.6.97 The alternative does not have the same potential for sensitive design and would result in new infrastructure corridors within open countryside with the potential for adverse effects on the setting of the AONB.

6.6.98 As outlined earlier in Chapter 6, a key part of the compelling reason for an improved A66 is the national, regional and local need, as set out in paragraph 6.6.63 of this document supported by policies and strategies at a regional and local level. Furthermore, at a Project level it is demonstrated in Chapter 7 through the planning balance that the benefits outweigh costs.

Paragraph 5.153 of the NNNPS

6.6.99 This policy 'requires the Project to be carried out to high environmental standards and where possible includes measures to enhance other aspects of the environment.'

6.6.100 The potential for sensitive design which respects the character of the AONB is set out above. In addition, there are opportunities for conservation and enhancement of the environment in this location such as through woodland planting of native species at greater levels than those lost. The site-specific design principles outlined below provide further detail on the conservation and enhancement opportunities for the scheme. National Highways commitment to the high standards of design for this scheme is set out in the Project Design Principles (Application Document 5.11) with table 46 of this document: Bowes Bypass Site Specific Design Principles reproduced below.

Table 6-18: Site Specific design Principles-Bowes Bypass

Reference	Site-specific design principles
BOWBY.01	Retain and ensure protection for fossilised field systems during construction activities to protect ridge and furrow field systems and earthworks, ensuring that these historically significant features which contribute to the sense of time depth and setting of Bowes are retained for the long term.
BOWBY.02	Retain the open aspect of this landscape with minimal introduction of woodlands, instead seeking to reinforce existing tree/vegetation belts and layers. With agreement from the LPA, woodland and woodland edge mitigation required for Bowes Bypass shall be accommodated within the Cross Lanes to Rokeby scheme.
BOWBY.03	Boundary treatments are to reflect the rural character of the Scheme with existing treatments comprising of post and rail/wire fencing with some native hedgerows and drystone walling. VRS to be used where required.

Reference	Site-specific design principles
BOWBY.04	Retain and reinstate drystone walls that contribute to the landscape character, using as much retained local stone as possible and reflecting local variations in construction specific to stone walls around Bowes.
BOWBY.05	Use native tree and scrub planting on the new bridge's embankment to screen and soften the structure and its abutments in the wider landscape and from the approach from Bowes village.
BOWBY.06	Retain the setting of Bowes Castle and views to it / from it, from the A66, as this is an important landmark and orientation feature.
BOWBY.07	Provide appropriate visual screening from The Old Armoury Campsite and seek to tie this in with existing field patterns, using suitable locally specific native planting species.
BOWBY.08	Retain the distinctive double tree belts which mark the historic alignment of the disused Bowes Railway Line.
BOWBY.09	Ensure a sensitive, context-appropriate detailed design for the attenuation ponds, through integration within the surrounding landscape by reflecting the local topography where possible and using locally appropriate planting to integrate such features in their context (such as species rich grassland).
BOWBY.10	Use a sensitive approach to landform grading to the easternmost junction/slip to tie this into the gently undulating wider landscape around Bowes, as opposed to a standard 1:3 batter. Use species rich grassland to tie the feature in, rather than structure planting which could otherwise visually accentuate the feature within the landscape.
BOWBY.11	Use of ecologically sensitive lighting at Bowes junction. Subject to maintaining safety for road users, lighting is to use full cut-off fixtures to direct light where it is needed as well as keeping it at a low intensity, a lighting schedule should be in place to reduce light pollution and energy wastage, blue light should be minimised as well as the reduction of light reflection.

6.6.101 There is also a commitment to high environmental standards including measures to enhance the environment through adherence to the requirements set out within the EMP (Application Document 2.7)

6.6.102 Through adherence to the commitments and requirements set out within the Project Design Principles and the EMP ensure conformity with the requirements of policy 5.153 *'for high environmental standards, including measures to enhance other aspects of the environment'.*

Development Outside the AONB

6.6.103 For development outside the AONB the findings from the assessments against paragraphs 5.154 and 5.155 of the NNNPS are as set out below.

Paragraph 5.154 of the NNNPS

6.6.104 Paragraph 5.154 states that:

'The duty to have regard to the purposes of nationally designated areas also applies when considering applications for projects outside the boundaries of these areas which may have impacts within them. The aim should be to avoid compromising the purposes of designation and

such projects should be designed sensitively given the various siting, operational, and other relevant constraints.'

6.6.105 As set out above it has been concluded in the landscape Chapter of the ES that:

- there are no significant impacts on the stated special qualities of the AONB by the Project, and

6.6.106 Given this conclusion from the ES it is demonstrated that the visibility of the project from within the AONB should not in itself be a reason for refusal, to conform with paragraph 5.155 of the NNNPS.

6.6.107 For these reasons, the scheme conforms with paragraph 5.154 of the NNNPS.

Paragraph 5.155 of the NNNPS

6.6.108 Paragraph 5.155 states that:

'The fact that a proposed project will be visible from within a designated area should not in itself be a reason for refusing consent.'

6.6.109 The route will be visible from the AONB, although 'the scheme avoids compromising the purpose of the AONB designation and has been designed sensitively to reflect the existing alignment and vegetated character of the A66 in proximity to the AONB boundary' (paragraph 10.10.149 of the ES)

6.6.110 Given this conclusion from the ES it is demonstrated that the visibility of the project from within the AONB should not in itself be a reason for refusal, to conform with paragraph 5.155 of the NNNPS.

Other environmental Impacts

6.6.111 In accordance with the EIA regulations, the proposed scheme has been assessed for environmental impacts relating to:

- Air quality
- Biodiversity
- Climate
- Cultural heritage
- Geology and soils
- Landscape and visual
- Material assets and vibration
- Population and human health
- Road drainage and the water environment.

6.6.112 Full details of environmental assessments carried out for each of these topics are provided within the ES which accompanies this application (Application Documents 3.2-3.4).

6.6.113 Localised noise and vibration Significant adverse effects upon receptors at residential dwellings at Stone Bridge Farm and at a non-residential receptor by A66 (western outskirts of Bowes) are expected. These

impacts considered; the proposed scheme is not expected to result in any significant, long lasting environmental effects.

Public consultation

6.6.114 The scheme development was informed by extensive public and stakeholder engagement. During statutory consultation 158 individual responses related to this scheme. The key consultation responses for the scheme are set out at Table 7, Chapter 6 of the Consultation Report (Application Document 4.4) within Annex N. The PDOR (Application Document 4.1) describes the design development carried out for each scheme along the route of the Project and how it has been informed by consultation.

6.6.115 In response to requests made for more landscaping near the Bowes Bypass, opportunities for screening and environmental mitigation have been identified to utilise excess material in landscaping to supply improved visual screening and planting.

6.6.116 In response to requests for increased provision for walkers, cyclists and horse riders, work has been carried out to supply north-south connectivity for walkers, cyclists and horse riders to ensure the current severance presented by the A66 is not worsened once it is dualled through the Bowes Bypass scheme. Where north south connective currently required a dog-legged crossing directly over the A66, the proposed off route local accesses also provide WCH opportunities, and also connectivity into the existing PRoW network, improving opportunity for sustainable travel in this location.

6.6.117 Full details and a review of issues raised at statutory consultation can be found at Chapter 6 of the Consultation Report (Application Document 4.4).

Summary case for the scheme

6.6.118 In summarising the case outlined above, the principal conclusions on the need for the development are that the project, which this scheme is an integral part, fully meets the economic objectives at a regional and national level, including:

- Supporting the economic growth objectives of the Northern Powerhouse and Government Levelling Up agenda, including transport and economic strategies at a regional level, such as TfN Strategic Transport Plan 2019, The Tees Valley Combined Authority's Strategic Economic Plan: The Industrial Strategy for Tees Valley 2016-2026, and the Tees Valley Strategic Transport Plan 2020-2030 and the Cumbria Strategic Economic Plan 2014-2024.
- Improving strategic regional and national connectivity, particularly for hauliers and for freight.
- Ensuring the improvement and long-term development of the Strategic Road Network through providing better national connectivity.

6.6.119 It has been demonstrated that the proposed scheme will increase the capacity of the A66, improve resilience along the route in case of accidents or slow-moving vehicles while also providing a suite of safety improvements along the route in this location.

6.6.120 As set out in the preceding sections, there are exceptional circumstances in favour of the scheme being partially within the AONB and the scheme is considered to be in the public interest. The scheme design and developed mitigation is proposed to ensure that the special qualities of the AONB remain.

6.6.121 The environmental 'costs' associated with the implementation of the scheme will need to be outweighed by the benefits for the scheme. These 'costs' are identified in the paragraphs above and in detail within the ES (Chapters 3.2-3.4). The planning balance for this Project considered within Chapter 7 of this document.

6.7 Cross Lanes to Rokeby

Description of the problems within the scheme boundary

6.7.1 As described within the PDOR (Application Document 4.1), between Cross Lanes and Rokeby, there is a length of single carriageway approximately 3km long, which sits between dual carriageway to the west and east. The carriageway is generally straight throughout with the exception of the right-hand curve at the eastern extents, where the link transitions into the dual carriageway length at Rokeby Junction. The carriageway generally has narrow lanes throughout.

6.7.2 This length of the A66 carries approximately 16,900 vehicles per day, 27% of which are HGVs.

6.7.3 As outlined in Chapter 4 of this document, seven reported collisions (over the survey period between 2012-2018) were a result of slowing and turning into side roads across oncoming traffic on the A66.

6.7.4 There are two at-grade junctions at each end of this length, and several private means of access directly onto the A66. These numerous access points present considerable safety risks due to the resultant mix of fast- and slow-moving vehicles. This can be a contributing factor to road accidents along this length of the route. To mitigate this, it is proposed to dual this length and provide a consistent road standard throughout the scheme. Further detail on these accesses is provided below.

6.7.5 The staggered nature of the junction connecting Moorhouse Lane north and south results in predominantly local movement vehicles, non-motorised vehicles and pedestrians walking along and waiting within the central reservation of the A66 attempting to cross. This has significant safety implications for users crossing in this location.

6.7.6 As well as several private means of access along this length of the route, there are both used and disused gated field accesses located in the north and south verges. Seven gated field accesses exist along this

short length of single carriageway alone enabling access for agricultural vehicles.

6.7.7 Local movements to Rutherford Lane, Boldron and other minor roads are currently severed by the A66, with informal crossing of the A66 required to move local traffic from farms in this locality. This introduces slow moving agricultural vehicles to the main carriageway, creating safety issues as outlined in the paragraphs above.

6.7.8 Other features along this length of the A66 include lay-bys. They are immediately west of Street Side Farm and between Tutta Beck and Rokeby Grange access junctions. Lay-bys exist in the north and south verges for eastbound and westbound users respectively. These lay-bys generally display several substandard features such as short merge and diverge taper lengths and short stacking lengths creating safety issues for users.

6.7.9 There are three routes for WCH which take the form of PRoW. Only one of these crosses the A66. Two public footpaths are associated with the Tutta Beck Farm Junction; both start in the northern verge and head north towards Dowson's Gill. One crosses the A66 at Church Plantation in a north/south orientation. Currently, all three PRoW have flag-post signs in one verge only, likely due to the opposite verge being overgrown making finding the access difficult. There is no evidence to suggest significant use of the WCH routes near Tutta Beck Farm. However, the cross-carriageway route at Church Plantation is accessed through the churchyard gates and heads north to the Teesdale Way WCH route. No footways, paved WCH facilities or bus-stop lay-bys exist within the scheme extents.

6.7.10 The Rokeby Park RPG and the Grade II* listed Church of St Mary are located within the order area.

Description of the proposed scheme and how it will address the problems identified

6.7.11 As described at Chapter 3 of the of this document and summarised below, the proposed scheme:

- Predominantly follow the existing A66 alignment, with a new adjacent westbound carriageway constructed to the south. Both carriageways will then be routed to the south of the Old Rectory and St Mary's Church, re-joining the existing A66 at Rokeby.
- Provides a new compact grade-separated junction at Cross Lanes, west of the Organic Farm Shop and Café; an overbridge will carry a new single carriageway link.
- The new Cross Lanes junction will remove the staggered Moorhouse Lane Crossing and introduce much safer crossing for local traffic, and WCH users.
- The Cross Lanes junction also provides a link from Rutherford Lane to the B6277 creating a more direct, shorter and safer crossing of the A66 which reduces severance created by the A66 and significantly improves connectivity for vulnerable non-vehicular users.

- Provides access to the Cross Lanes Organic Farm Shop and Café from the Cross Lanes Junction via the realigned Moorhouse Lane. Here an accommodation access will spur from Moorhouse Lane and run parallel to the A66, will lead to Birk House Farm.
- Provides access to Ivy and Smithy Cottages, Cross Lanes Farmhouse and Streetside Farm via a connection to the new junction link road on the north. North Bitts Farm will also connect to the new Cross Lanes Junction via an accommodation access.
- The junction at Cross Lanes has been designed to minimise impact upon existing woodland, land parcels and watercourses.
- Provides a new three arm compact grade-separated junction constructed west of the Old Rectory allowing westbound traffic to leave and join the A66, and eastbound traffic to leave the A66.
- Require six ponds for the purpose of drainage of the road network and to maintain water quality.

6.7.12 The introduction of dual carriageway along this length of the route provides improved capacity and resilience against road closures due to accidents and improves journey times. The removal of many local accesses in this location, further removes slower moving vehicles and local traffic from the route, improving journey times, as explained further in the length below.

6.7.13 This stretch of the road contains a significant number of local traffic accesses, both farm and local business accesses, as well as field accesses and local traffic road connections, which historically have been severed as the A66 has grown in status to form the strategic road network. Each of these accesses introduces slower moving vehicles, pedestrians, walkers and cyclists to the strategic road network, creating interactions with fast moving traffic and HGV's.

6.7.14 These interactions create inherent safety issues for more vulnerable users. The proposed scheme improvements seek to remove many of the existing on network accesses, providing off-route alternatives, removing these vehicles and vulnerable WCH users from the network in this location.

6.7.15 Alternative off-route accesses and connections are provided, with designated WCH facilities creating significant improvements in facilities in this location.

6.7.16 Rokeby Junction will be constructed in an underbridge arrangement to reduce landscape and visual impact upon Rokeby Park RPG and the Grade II* listed Church of St Mary, therefore westbound traffic using the junction will travel under the A66, reducing its visual impact. The junction has also been located to avoid impacts upon a number of veteran trees where possible, located to the north of the junction.

6.7.17 The new Rokeby Junction will maintain HGV access to Barnard Castle. The existing A66 will be de-trunked west of St Mary's Church to the C165 Barnard Castle Road. A roundabout will manage traffic movements between the de-trunked A66, C165 and the new eastbound

merge. A new eastbound merge will ensure all movements are possible at Rokeby.

6.7.18 The relevant GA Plan relating to this scheme is HE565627-AMY-HAC-S08-DR-CH-600000-03 (Application Document 2.5).

Benefits the scheme will deliver

6.7.19 In addition to the immediate issues of congestion and journey time savings as identified in the previous chapters of this document, the scheme also delivers localised benefits for communities such as improved accessibility and better local connectivity.

6.7.20 The table below provides an overview of the location specific benefits of this scheme considered against the wide Project objectives.

Table 6-19: Review of scheme against Project objectives

Theme	Project objectives	Scheme Response
Economic	-Regional: Support the economic growth objectives of the Northern Powerhouse and Government Levelling Up agenda	-The existing A66 is a key national and regional strategic transport corridor. It carries high levels of freight traffic and is an important route for tourism and connectivity for nearby communities. -If the existing A66 route is not improved, it will continue to constrain national and regional connectivity and may threaten the transformational growth envisaged by the Northern Powerhouse initiative and the achievement of the Government 'Levelling Up' agenda. -The project facilitates improved vehicles movements to the A66 route network. and the journey time savings this results in. This has particular economic implications for freight and other business connectivity. -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. Improving access to key tourist destinations such as the North Pennines and Lake District. -The Project, in addition to improving the strategic route network, also makes improvements to the local road network, with new junctions and 'offline' improvements, removing local traffic from the A66, making local movements more efficient. -The Scargill Road link from Moorhouse Lane to Rutherford Lane to the north of Cross Lanes Organic Farm Shop allows
	-Ensure the improvement and long-term development of the 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.	

Theme	Project objectives	Scheme Response
		views to south from the restaurant to be maintained ensuring visitor amenity is maintained. -Land take for the scheme has been reduced around the organic farm. This is to retain as much viable land for the existing business as possible.
Transport	-Improve road safety, during construction, operation and maintenance for all, including road users, NMU, road workers, local businesses and local residents.	-The proposed scheme seeks to remove the existing substandard road features, improving safety overall. -By relocating existing online farm accesses to the local road network, slow moving vehicles accessing the main carriageway will be reduced, further improving safety along the route. -Introducing dual carriageway provides further resilience in the event of an accident, enabling localised lane closure and traffic management. -The proposed scheme would result in journey time savings of between 1 minute and 3 seconds and 1 minute and 22 seconds across the day. -The Cross Lanes junction provides a more direct link between Rutherford Lane and the B6277 Moorhouse Lane, which is a busy local route that connects Moorhouse Lane north and south. From a safety perspective the junction removes the existing at-grade right-left stagger across the A66 which is the predominant local movement (for both vehicular traffic and walkers, cyclists and horse-riders) and is inherently unsafe. -The link from Rutherford Lane to the B6277 provides a more direct, shorter and safer crossing of the A66 which reduces severance created by the A66 and significantly improves connectivity for vulnerable non-vehicular users. -The Rokeby Junction sits closer to the site of the existing at-grade crossing, which better maintains current traffic distribution between the C165 Barnard Castle Road and B6277 Moorhouse Lane. This removes the need for westbound vehicles travelling to or from Barnard Castle to undertake an additional 2.5km U-turn route, which increases the journey time into Barnard Castle.
	-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 NMU provision along the route.	

Theme	Project objectives	Scheme Response
		-The Rokeby junction improves journey times and minimises change at The Sills and Barnard Castle Bridge.
Community	-Reduce the impact of the route on severance for local communities.	-A shared cycle/footway parallel to the scheme from Cross Lanes to Greta Bridge is proposed, connecting into existing cycleway at Greta Bridge. -Segregated crossings of dual carriageway at Cross Lanes and Rokeby reconnect and tie in existing Public Rights of Way. -The Rokeby junction is considered better for walkers and cyclists travelling to and from Greta Bridge when compared to the current junction as it provides a more direct route on the likely preferred onward route.
Environment	-Minimise adverse impacts on the environment and where possible optimise environmental improvement opportunities.	-Reduced congestion and fewer vehicles idling will reduce emissions, helping to improve localised air quality. Further details on the environmental benefits of the scheme are outlined within the ES (Application Document 3.2-3.4)

Outline of legislation and policy issues, such as AONB incursions and European designated sites

6.7.21 This section provides an overview and consideration of historic, ecological and environmental designations which are located within relevant proximity to the site.

The Historic Environment

6.7.22 As set out as Chapter 8 (Cultural Heritage) of the ES (Application Documents 3.2-3.4), Rokeby Park RPG is located adjacent to the western edge of the scheme. Rokeby Chapel (Grade II*) is also located adjacent to the northern Order limits. Greta Bridge Roman fort SM is also situated 200m from the draft DCO boundary.

6.7.23 Close consultation with stakeholders and the relevant statutory authorities has been carried out throughout the design development for the scheme to minimise any impacts of the project on the cultural heritage resource.

6.7.24 Details of the relevant design development can be found in Chapter 3 (Alternatives) and the PDOR (Application Document 4.1). As a result of this iterative process and the embedded mitigation measures outlined in Chapter 8 (Cultural Heritage) of the ES (Application Documents 3.2-3.4), there will be no significant construction effects generated as a result of the scheme.

6.7.25 As a result of the measures outlined above no significant effects expected on any heritage asset present within this scheme. No

additional significant effects expected on any heritage asset during operation.

6.7.26 The overall impact of the scheme on heritage assets is considered to result in less than substantial harm to the significance of designated heritage assets and is outweighed by the public benefits of the scheme as evidenced throughout this document.

6.7.27 Full details are available to view at Chapter 8 (Cultural Heritage) of the ES (Application Documents 3.2-3.4).

Biodiversity and ecological conservation

6.7.28 There are no statutory designated sites within the Order Limits of this scheme. There are two statutory designated sites within 2km: Brignall Banks SSSI (571m southeast) and Kilmond Scar SSSI (1.4km northeast).

6.7.29 Rokeby Park and Mortham Wood LWS is immediately north of the Order Limits for this scheme. There are two additional non-statutory sites within 1km of this scheme: Teesbank Woods, Rokeby LWS (328m north); and Thorsgill Wood LWS (734m north).

6.7.30 Graham's Gill /Jack Wood Ancient Woodland Site is within the Order Limits of this scheme. There are three Ancient Woodlands within 1km of this scheme: Mill Wood (470m south); Tees Bank Plantation (617m north); and Waterfall Wood (495m north).

6.7.31 Within 1km of this scheme but outside the Order Limit are eight ancient trees, 22 veteran trees and 11 notable trees.

6.7.32 Small areas of habitats within this scheme were identified as having potential to support reptile and will be subject to reptile surveys to determine presence or absence.

6.7.33 One priority habitat type within 250m of Order Limits - deciduous woodland (19.52ha).

6.7.34 Multiple protected species including, but not limited to: reptiles, terrestrial invertebrates, badgers, foraging and roosting bats, small mustelids (assumed polecat), otter, barn owl, breeding and wintering birds and aquatic invertebrates.

6.7.35 The majority of potential impacts affecting biodiversity features will occur during the construction phase. These impacts can be broadly summarised into the following:

- Habitat loss permanently or temporarily under the road itself or where it is removed as a result of working area and compounds
- Fragmentation of populations and habitats where changes to noise, air quality, hydrological regimes and human presence may change the movement of mobile species
- Disturbance to species by changes to noise, light and human activity that may affect the behaviour of sensitive species, particular breeding or wintering birds

- Habitat damage or degradation that might arise from changes to water quality or air quality
- Incidental species mortality as a result of construction activities such as vegetation clearance, tree felling, vehicle movements and top soil stripping

6.7.36 Operational impacts of the Project on biodiversity features can be summarised into the following:

- Fragmentation of populations and habitats as a result of the east-west alignment of the Project resulting in severance of north-south movement
- Disturbance as a result of changes to operational traffic flows and resulting changes to noise, air quality, light and human disturbance
- Habitat damage can occur as a result of changes to hydrological regimes, or long term changes to nitrogen content affecting plant life
- Incidental species mortality due to animals having to cross the road and being hit by vehicles.

6.7.37 Considering the impact of the scheme on the site:

- No significant effects are anticipated in construction.
- No significant effects are anticipated in operation.

6.7.38 Avoidance and minimisation of impacts on important biodiversity features has been incorporated throughout the development of the design of the Project and at individual scheme level. Details of relevant elements which have been incorporated into this assessment are described in Section 2 of the ES (Application Document 3.2-3.4).

6.7.39 Two-hundred and ninety-five terrestrial invertebrate species were recorded from Cross Lanes to Rokeby.

6.7.40 A subsidiary sett and two outliers were identified to the north of existing A66.

6.7.41 In addition, the Project Design Principles (Application Document 5.11) outlines measures to reduce impacts in relation to habitats, including (but not limited to):

- Use of ecologically sensitive lighting where possible
- Improved ecological connectivity to Trout Beck through provision of woodland planting
- The structure crossing Trout Beck must allow for full functionality of supporting river processes

6.7.42 The assessment of impacts on biodiversity also assumes the implementation of the following embedded measures, which are secured through the EMP to be in accordance with DMRB LA120 (Application Document 2.7) and associated management plans.

6.7.43 To view the full ecological assessment for this scheme, see Chapter 6 (Biodiversity) of the ES (Application Documents 3.2-3.4).

Landscape and Visual Impact

6.7.44 The scheme location considers the following land designations:

- The North Pennines AONB and UNESCO Global Geopark – approximately 2.3km from the Order Limits.
- Most of the study area is covered by an AHLV under Policy 39 of the Durham Local Plan.
- At a National Landscape Character level, the scheme is situated within NCA22 Pennine Dales Fringe.
- The scheme also sits within a series of landscape character types as defined in the Durham County Council and Richmond Borough Landscape Character Assessments.

6.7.45 During construction, this scheme is expected to result in significant adverse effects to broad character areas, residences, users of recreational sites and public rights of way and road users.

6.7.46 By year 15 of operation, no significant effects are expected as planting will reach a level of maturity to contain the road corridor to a similar extent as the existing situation.

6.7.47 The woodland around the overbridge at the Cross Lanes would reduce the perception of its scale and mass.

6.7.48 The perception of the alterations to the landform associated with the proposed junction to the south-west of the Church of St Mary would also be reduced by the proposed planting.

6.7.49 The establishment of the proposed species rich grassland would also integrate the changes to landform to a greater degree than at year 1, increase the tonal and textural qualities and opportunities for biodiversity in relation to the agricultural land cover across the Order Limits.

6.7.50 With reference to Appendix 10.5: Schedule of Landscape Effects, due to the increased integration of the scheme within the landscape and the establishment of the proposed planting, the impacts would be reduced at Barningham, Brignall and Rokeby.

6.7.51 With the scheme remaining across a part of the landscape already characterised by the A66, there would not be significant effects to the published landscape characters at year 15 of operation.

6.7.52 Considering Year 15 Visual Effects:

- The visibility of the scheme would reduce due to the combination of the existing vegetation being in leaf and the establishment of the proposed planting, which would also be in leaf.
- For recreational receptors and residents in close proximity to the western part of the scheme, the proposed woodland would have established across the overbridge embankments and adjacent to Rutherford Lane. This would reduce the visibility of vehicles on these roads, as well as aid in softening the form of the overbridge and reflect the woodland across the ridgeline in the middle ground of the view within the view. In relation to the undulating landform across the foreground and middle ground of the view, the wooded embankments

of the overbridge would remain an apparent change in relation to the underlying pattern of landform within the view, extending above the alignment of the A66.

- For visitors and recreational users at the Church of St Mary, the proposed woodland and scrub adjacent to the alignment of the proposed A66, including around the junction to the south-west of the Church, would be taller in height and in leaf. This would screen vehicles on the proposed A66 to the south of the receptor and reduce the perception of the remainder of the proposed alignment. Close range views of vehicles on the retained A66 would remain, although the smaller number of vehicles is assessed as beneficial to the view.
- From Rokeby Park House, with the intervening vegetation in leaf, there would be no change to the composition of the view. For visitors and recreational users within the park, in close proximity to the scheme, with the parkland vegetation in leaf, there would be some softening of views of vehicles on Abbey Road and the A66, but the reduction in background vegetation would remain due to the alignment of the proposed scheme.
- With reference to Appendix 10.6: Schedule of Visual Effects, for receptors across the wider northern, southern and eastern parts of the study area, including at Barnard Castle, Brignall and Greta Bridge, the distance and intervening rising and wooded landform would screen the scheme, such that there would be no significant effects.

6.7.53 With reference to Appendix 10.6: Schedule of Visual Effects, significant visual effects are predicted for the following receptors at year 15 of operation:

- Recreational users on PRoW (footpath) no.8, due to the major magnitude of impact, which in relation to the moderate sensitivity of the receptor would result in a large (significant) effect.
- Residents in Dent House Farm and recreational users of PRoW (footpath) no.5, due to the major magnitude of impact, which in relation to the moderate sensitivity of the receptor would result in a large (significant) effect.
- Visitors and recreational users within the grounds of the Church of St Mary, due to the major magnitude of impact, which in relation to the moderate sensitivity of the receptor would result in a large (significant) effect.
- Recreational receptors on PRoW (footpath) no.6, due to the major magnitude of impact, which in relation to the moderate sensitivity of the receptor would result in a large (significant) effect.

6.7.54 Full details are able to be viewed within Chapter 10 (Landscape and Visual) of the ES (Application Documents 3.2-3.4).

Other environmental Impacts

6.7.55 In accordance with the EIA regulations, the proposed scheme has been assessed for environmental impacts relating to:

- Air quality.

- Biodiversity.
- Climate.
- Cultural heritage.
- Geology and soils.
- Landscape and visual.
- Material assets and vibration.
- Population and human health.
- Road drainage and the water environment.

6.7.56 Full details of environmental assessments carried out for each of these topics are provided within the ES which accompanies this application (Application Documents 3.2-3.4).

6.7.57 Localised noise and vibration significant adverse effects upon receptors at residential dwellings located at Cross Lanes and Rokeby, North Bitts Farm, on residential dwellings near Tutta Beck and Birk House and at non-residential receptor at Cross Lanes Organic Farm Shop, are expected. These localised impacts considered; the proposed scheme is not expected to result in any significant, long lasting environmental effects.

Public consultation

6.7.58 The scheme development was informed by extensive public and stakeholder engagement. During statutory consultation 272 people provided general comments about this scheme.

6.7.59 The key consultation responses for the scheme are set out at Table 7, Chapter 6 of the Consultation Report (Application Document 4.4) within Annex N. The PDOR (Application Document 4.1) describes the design development carried out for each scheme along the route of the project and how it has been informed by consultation. Design changes and design verification resulting from the consultation are outlined in the following paragraphs.

6.7.60 In response to a request to reduce land take for the Cross Lanes junction. The footprint for Cross Lanes junction has been reduced avoiding more useful agricultural land as identified by local stakeholders. Connectivity is also improved to Rutherford and Moor House Lanes.

6.7.61 In response to concerns about increased traffic flow into Barnard Castle as a result of the upgrade works and vehicle speeds at the junction of the de-trunked A66 with the C165 Barnard Castle Road, this junction has been replaced with a roundabout. This infrastructure will ensure that potential negative impacts on surrounding areas resulting from increased traffic flows can be identified and mitigated.

6.7.62 In response to concerns that the new road links would negatively impact Cross Lanes Organic Farm Shop due to being surrounded by roads on four sides, the proposed Scargill Road link from Moorhouse Lane to Rutherford Lane has been rerouted to the north of Cross Lanes Organic Farm Shop, the update also allows views to the south from the restaurant to be maintained and minimises disruption to adjacent

farming businesses through reducing the amount of productive farmland required for construction.

6.7.63 In response to safety concerns raised regarding vehicle speeds and the number of accidents at the Rokeby Park junction, including crashes into the Grade II listed wall at Rokeby Park, the design has changed to make this new access a roundabout rather than a junction. This will help to reduce vehicle speeds on approach whilst also improving the layout of the C165 Barnard Castle Road.

6.7.64 Full details and a review of issues raised at statutory consultation can be found at Chapter 6 of the Consultation Report (Application Document 4.4).

Summary case for the scheme

6.7.65 In summarising the case outlined above, it has been demonstrated that the proposed scheme will increase capacity on the A66 route, alleviating congestion in this location whilst providing improved safety features along the route. Environmental and detrimental impacts to specific property and business have been minimised through sensitive design and it is not considered that the proposed scheme would result in any detrimental impact upon designated site. Improved WCH facilities have been incorporated into the scheme design.

6.7.66 The proposed scheme is considered to be in accordance with planning policy as demonstrated within the LPCS accompanying this application (Application Document 3.9)

6.8 Stephen Bank to Carkin Moor

Description of the problems within the scheme boundary

6.8.1 This length of the A66 extends from Browson Bank Farm in the west to Carkin Moor in the east, where the next length of dual carriageway is introduced. The single carriageway along this route presents capacity issues to the A66.

6.8.2 This length of the route contains just over 6km of single carriageway, and whilst it closely follows the alignment of the Roman Road and is therefore relatively straight, the road rises and falls in areas causing visibility issues and forcing HGVs to accelerate to navigate steep inclines creating a safety issue for road users.

6.8.3 The site is an accident cluster site, as outlined in Chapter 4 of this document. There was one fatality on this segment of the A66 in the period from 2012-2018. This collision occurred when a vehicle swerved to avoid a stationary vehicle who was waiting to turn right onto Collier Lane and hit a third vehicle head on.

6.8.4 The clusters of collisions at the junctions along this route are mainly caused by slowing or turning traffic. Several of these collisions resulted in rear end shunts.

6.8.5 There are multiple access points along this length of the route, where vehicles are attempting to join a single lane carriageway on which traffic is travelling at high speeds.

6.8.6 Many of these access points serve local farms or businesses with larger slow-moving vehicles accessing the sites. The A66 severs farms in this location with the A66 used as the main road connection between the farm and the farmed land.

6.8.7 Drivers can also find themselves in a vulnerable position when attempting to slow and leave the A66, particularly during right hand manoeuvres.

6.8.8 Of these access points, five are major-to-minor junctions and seven are private residential or commercial accesses. Two of the major-to-minor junctions have been provided with ghost island right turns to improve safety for vehicles leaving the A66. However, these features result in frequent vehicle manoeuvres to and from the A66, presenting significant accident risk.

6.8.9 This single carriageway length of the A66 is generally narrow in cross section, with narrow edge strips and verges. This results in insufficient run-off areas, should a vehicle leave the carriageway.

6.8.10 Other features along this length of the A66 include lay-bys which generally display several substandard features such as short merge and diverge taper lengths and short stacking lengths.

6.8.11 Constraints on the carriageway include passing through the site of a SM, a Roman Fort and prehistoric enclosed settlement approximately 400m west of Carkin Moor Farm.

6.8.12 There are three WCH routes crossing the A66 along this length of the route. An unsegregated bridleway is located on the north verge near Browson Bank Farm, crossing the A66 in the vicinity of Dick Scot Lane. Currently, this crossing facility has no flag-post signs or corral. Two further WCH routes cross the A66, one being a public footpath in the vicinity of Fox Hall Junction and the other a bridleway near Mainsgill Farm. No footways, paved WCH facilities or bus-stop lay-bys exist throughout this length of the A66.

6.8.13 Drainage along the road is limited.

Description of the proposed scheme and how it will address the problems identified

6.8.14 As described in Chapter 3 of this document and summarised below, the scheme:

- Comprises a new offline dual carriageway length between Stephen Bank and Carkin Moor Farm.
- De-trunks the existing A66 to be used as a local access to surrounding villages and properties.
- Introduces Mainsgill Junction, which is a new compact grade-separated junction to the west of Moor Lane, will provide connectivity

between the de-trunked A66 and the proposed mainline of the new A66.
- Provides 5 ponds for the purposes of drainage of the road network and to maintain water quality.
- Provides new WCH facilities segregated from the main carriage way providing safer, more pleasant amenity spaces.
- Provides new underpasses to preserve land linkages and prevent severance as a result of the proposed new road alignment.

6.8.15 The introduction of dual carriageway along this length of the route provides improved capacity and resilience against road closures due to accidents and improved journey times. The provision of new offline carriageway removes local accesses from the strategic route network, removing slower moving vehicles and local traffic from the route, improving journey times.

6.8.16 The new road alignment will remove the existing smaller single access points, re-routing this traffic to the local road network. This will result in significant safety improvements along the route, removing the substandard road alignment and the unsafe features which present safety obstacles along the route. This results in a safer route overall for all road users.

6.8.17 Issues of severance caused by the A66, with farmland being separated from farms will be reinstated through the provision of new local road networks through underpasses and use of the old A66 alignment to form the local road network.

6.8.18 The de-trunked road will serve as a local access road, providing off-route WCH alternatives and local traffic accesses. These designated off-route accesses and WCH facilities create significant improvements in facilities in this location.

6.8.19 The existing drainage along this route is substandard and could result in pollution into the nearby watercourse. The proposed new drainage ponds better manage surface water runoff and provide pollution controls to improve water quality in this location.

6.8.20 The relevant GA Plan relating to this scheme is HE565627-AMY-HAC-S09-DR-CH-700000-04 (Application Document 2.5).

Benefits the scheme will deliver

6.8.21 In addition to the immediate issues of congestion and journey time savings as identified in the previous chapters of this document, the scheme also delivers localised benefits for communities such as improved accessibility and better local connectivity.

6.8.22 The table below provides an overview of the location specific benefits of this scheme considered against the wide Project objectives.

Table 6-20: Review of scheme against Project objectives

Theme	Project objectives	Scheme response
Economic	Regional: Support the economic growth objectives of the Northern Powerhouse and Government Levelling Up agenda	The existing A66 is a key national and regional strategic transport corridor. It carries high levels of freight traffic and is an important route for tourism and connectivity for nearby communities. If the existing A66 route is not improved, it will continue to constrain national and regional connectivity and may threaten the transformational growth envisaged by the Northern Powerhouse initiative and the achievement of the Government 'Levelling Up' agenda. The project facilitates improved vehicles movements to the A66 route network. and the journey time savings this results in. This has economic implications for freight and other business connectivity. 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. Improving access to key tourist destinations such as the North Pennines and Lake District. The Project, in addition to improving the strategic route network, also makes improvements to the local road network, with new junctions and 'offline' improvements, removing local traffic from the A66, making local movements more efficient. In providing an off-route alignment, the existing 'old A66' alignment will be retained. Business accesses as well as residential property accesses will be retained, however, the significant reduction in traffic along this road will result in far easier traffic movements for occupiers and workers accessing these locations. The Fox Hill Inn may benefit from patronage due to improvement environmental conditions and through increased use of WCH facilities along this old A66 road.
	Ensure the improvement and long-term development of the 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.	

Theme	Project objectives	Scheme response
Transport	Improve road safety, during construction, operation, and maintenance for all, including road users, NMU, road workers, local businesses, and local residents.	The proposed new road alignment will remove many of the current below standard road alignments along the current A66 route, outlined in the preceding sections of this document. The proposed road will therefore result in significant safety improvements along this length of the route.
	Improve journey time reliability for road users.	While the potential for accidents is expected to be reduced overall because of the proposed road standard improvements in the event of accidents, breakdowns, or slow-moving vehicles, the second lane of the road will provide resilience along the route. The additional lane will enable passing or turn back facilities, ensuring the route remains open. In improving resilience along the road and improving capacity more generally, to better accommodate the circa 16,500 vehicles using this route daily, journey time savings are expected to be between 2 minutes 45 seconds and 3 minutes 11 seconds across the day. Additional horse and pedestrian pathways are proposed including along the de-trunked A66. This improves connectivity and accessibility for 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 NMU provision along the route.	
Community	Reduce the impact of the route on severance for local communities.	A new underpass will be provided to the north of Dick Scot Lane to allow for access to land north of the proposed A66 preventing severance of the land with the new road alignment. A shared bridle/footway in verge of old de-trunked A66 is proposed to run the entire length of the scheme. There will be segregated crossings of dual carriageway at several locations to reconnect and tie in existing Public Rights of Way. This and the introduction of east/west cycling/ horse riding linkages will significantly improve safety of WCH facilities and may encourage increased patronage of sustainable travel methods in the locality.

Theme	Project objectives	Scheme response
Environment	Minimise adverse impacts on the environment and where possible optimise environmental improvement opportunities.	The existing drainage along this route is substandard and could result in pollution into the nearby watercourse. The proposed new drainage ponds better manage surface water run-off and provide pollution controls to improve water quality in this location. Further details on the environmental benefits of the scheme are outlined within the ES (Application Document 3.2-3.4)

Outline of legislation and policy issues, such as AONB incursions and European designated sites

6.8.23 This section considers the impacts of the scheme on historic, ecological and environmental designations.

The Historic Environment

6.8.24 The Roman Fort and Prehistoric enclosed settlement 400m west of Carin Moor Farm is bisected by the course of the A66 which runs in cutting through the centre of the Roman fort, following the approximate line of the Roman road. The resource lies partially within the Order Limits and will experience permanent, physical construction impacts as a result of the scheme. To the south of the current road corridor, a small length of the resource will be removed to enable the construction of the retaining wall, which will form the southern side of the improved road corridor. The scheme will result in permanent changes to its setting, as a result of the new, offline, length curving north immediately to the west.

6.8.25 The SM is intrinsically linked to the course of the A66; a road of at least Roman date which passed directly through the Roman fort. The retention of the road as it passes through the fort enables that historic connection to continue. The original line of the road to the west will be retained as a local access road, however, the new offline length will alter the setting of the fort and change the course of the road as the primary route through the landscape surrounding the resource, a position it has maintained for nearly two millennia. A new access road will be constructed to the south of the resource, extending the route of Warrener Lane to the north-west, past the SM, intersecting with the original route of the A66 to the south of the new offline length.

6.8.26 The combination of physical impacts from the construction of the scheme and the changes to the asset's setting would, without mitigation, result in a moderate adverse impact, resulting in a moderate adverse significance of effect.

6.8.27 A probable Roman roadside settlement has been identified to the west of Carkin Moor Roman fort, lying to the south of remains of the Roman Road. It is possible that these remains may be of schedulable quality and, as a result, it has been assessed as being of high value.

6.8.28 Following the implementation of the mitigation, the high value of the resource means that the scheme will still result in a moderate adverse effect, generating a moderate adverse significance of effect. The significance of effect may be lower if the site is subsequently demonstrated to be of moderate or lower heritage value, however as the extent of the settlement has yet to be fully defined it must be assumed to be of high value until shown to be otherwise.

6.8.29 No additional significant effects will occur once the scheme is operational.

6.8.30 The overall impact of the scheme on heritage assets is considered to result in less than substantial harm to the significance of designated heritage assets and is outweighed by the public benefits of the scheme as evidenced throughout this document.

6.8.31 Full details can be viewed at Chapter 8 (Cultural Heritage) of the ES (Application Document 3.2-3.4).

Biodiversity and ecological considerations

6.8.32 There are no statutory designated sites within 2km of this scheme.

6.8.33 There are no non-statutory designated sites within the Order Limits of this scheme. There is one non-statutory designated site within 1km of this scheme: Aske Estate Woodlands LWS (938m south-west).

6.8.34 There are no Ancient Woodland Sites within the Order Limits of this scheme. There is one Ancient Woodland Site within 1km of this scheme: Hartforth Wood (937m south-east).

6.8.35 There is one ancient tree within 1km of this scheme, but this is outside Order Limits.

6.8.36 One priority habitat type within 250m of Order Limits - deciduous woodland (11.27ha).

6.8.37 Multiple protected species including, but not limited to, great crested newts, reptiles, terrestrial invertebrates, badgers, foraging and roosting bats, small mustelids (assumed polecat), barn owl, breeding and wintering birds and aquatic invertebrates.

6.8.38 The majority of potential impacts affecting biodiversity features will occur during the construction phase. These impacts can be broadly summarised into the following:

- Habitat loss permanently or temporarily under the road itself or where it is removed as a result of working area and compounds.
- Fragmentation of populations and habitats where changes to noise, air quality, hydrological regimes and human presence may change the movement of mobile species.
- Disturbance to species by changes to noise, light and human activity that may affect the behaviour of sensitive species, particular breeding or wintering birds.
- Habitat damage or degradation that might arise from changes to water quality or air quality.

- Incidental species mortality as a result of construction activities such as vegetation clearance, tree felling, vehicle movements and top soil stripping.
- Operational impacts of the Project on biodiversity features can be summarised into the following:
- Fragmentation of populations and habitats as a result of the east-west alignment of the Project resulting in severance of north-south movement.
- Disturbance as a result of changes to operational traffic flows and resulting changes to noise, air quality, light and human disturbance.
- Habitat damage can occur as a result of changes to hydrological regimes, or long term changes to nitrogen content affecting plant life.
- Incidental species mortality due to animals having to cross the road and being hit by vehicles.

6.8.39 Considering the impact of the scheme on the site:

- No significant effects are anticipated in construction.
- No significant effects are anticipated in operation.

6.8.40 Avoidance and minimisation of impacts on important biodiversity features has been incorporated throughout the development of the design of the Project and at individual scheme level. Details of relevant elements which have been incorporated into this assessment are described in Section 2 of the ES (Application Document 3.2-3.4).

6.8.41 In addition, the Project Design Principles (Application Document 5.11) outlines measures to reduce impacts in relation to habitats, including but not limited to:

- Use of ecologically sensitive lighting where possible.
- Improved ecological connectivity to Trout Beck through provision of woodland planting.
- The structure crossing Trout Beck must allow for full functionality of supporting river processes.

6.8.42 The assessment of impacts on biodiversity also assumes the implementation of the following embedded measures, which are secured through the EMP to be in accordance with DMRB LA120 (Application Document 2.7) and associated management plans.

6.8.43 To view the full ecological assessment for this scheme, see Chapter 6 (Biodiversity) of the ES (Application Documents 3.2-3.4).

Landscape and Visual Impact

6.8.44 The scheme location considers the following landscape designations:

- An AHLV lies to the west of the site under Policy 39 of the Durham Local Plan.
- National Landscape Character; NCA22 Pennine Dales Fringe; NCA23 Tees Lowlands (covering the north-east part of the study area) NCA24 Vale of Mowbray (covering the eastern part of the study area).

- The scheme also sits within a series of landscape character types as defined in the Durham County Council and Richmond Borough Landscape Character Assessments.

6.8.45 During construction, this scheme is expected to result in significant adverse effects to local character areas, residences, users of recreational sites and public rights of way and road users.

6.8.46 By year 15 of operation, the proposed planting will be established across the Order Limits, including woodland adjacent to the embankment lengths of the road and cutting to the north of the existing A66, at the junction to the north of Mainsgill Farm and at the interface with the existing dualled length of the retained A66.

6.8.47 With the establishment of this woodland, the scheme area will reflect the vegetated character of its surroundings and the perception of the scheme, including the cuttings, embankments and the scale and mass of the overbridge would be reduced.

6.8.48 The reduction in the vegetation cover within several of the plantations will remain due to the alignment of the scheme, however the new planting adjacent to the road alignment will provide new linkages between existing woodland.

6.8.49 Due to the reduced perception of the scheme, through planting, there would be no significant landscape effects from year 15 onwards.

6.8.50 For recreational receptors in proximity to the overbridge to the West Layton, the establishment of the proposed woodland will reduce the visibility of vehicles on the former A66 (and its associated re-alignment) as well as softening views of the overbridge and associated vehicles, although the mass and height of the structure would still be evident to the receptor.

6.8.51 For recreational users to the north of the scheme, the planting would screen views of vehicles on the proposed A66 but also truncate views across the foreground and middle ground of the view, such that the extent of longer distance views would be reduced.

6.8.52 From locations along the valley floor the visibility of the scheme would also reduce due to the combination of the intervening vegetation being in leaf and the establishment of the proposed planting adjacent to the re-aligned A66 and Warrener Lane.

6.8.53 From elevated locations across the southern part of the study area, the visibility of the overbridge to the south of West Layton, the junction to the north of Mainsgill and vehicles on the scheme would reduce overall. Views of vehicles on the re-aligned A66 at the eastern end of the Order Limits which remain visible would reflect existing views of vehicles on the dualled length.

6.8.54 With reference to Appendix 10.6: Schedule of Visual Effects of Chapter 10 of the ES (Application Document 3.2-3.4), significant visual effects are predicted to the following visual receptors at year 15:

- Recreational users of PRoW (footpath) no.20.55/1/1, due to the moderate impact, which in relation to the moderate sensitivity of the receptor would result in a moderate (significant) effect.
- Recreational users of PRoW no.20.23/8/1 due to moderate impact, which in relation to the high sensitivity of the receptor would result in a moderate (significant) effect.

6.8.55 Full details are able to be viewed at Chapter 10 (Landscape and Visual) of the ES (Application Documents 3.2-3.4).

Other environmental Impacts

6.8.56 In accordance with the EIA regulations, the scheme has been assessed for environmental impacts relating to:

- Air quality.
- Biodiversity.
- Climate.
- Cultural heritage.
- Geology and soils.
- Landscape and visual.
- Material assets and vibration.
- Population and human health.
- Road drainage and the water environment.

6.8.57 Full details of environmental assessments carried out for each of these topics are provided within the ES which accompanies this application (Application Documents 3.2-3.4).

6.8.58 Localised noise and vibration significant adverse effects upon residential receptors near West Layton and Carkin Moor Farm are expected. These impacts considered; the proposed scheme is not expected to result in any significant, long lasting environmental effects.

Public consultation

6.8.59 The scheme development was informed by extensive public and stakeholder engagement. During statutory consultation, a total of 171 individual responses were received in relation to the scheme. The key consultation responses for the scheme are set out at Table 7, Chapter 6 of the Consultation Report (Application Document 4.4) within Annex N. The PDOR (Application Document 4.1) describes the design development carried out for each scheme along the route of the Project and how it has been informed by consultation.

6.8.60 Design changes and design verification resulting from the consultation are outlined in the following paragraphs.

6.8.61 In response to concerns regarding the lack of connection of the de-trunked A66 to the proposed new carriageway at the western scheme extent in the vicinity of Browson Bank the design team have carried out further refinements and are now proposing that a new westbound slip road be constructed to supply access from surrounding villages to the new westbound A66 dual carriageway. The impacted farm access has

also been redesigned to suit this new arrangement, supplying reduced journey times for those accessing the A66 in this area. This proposal avoids local detours to Moor Lane Junction for access to the A66 and prevents the de-trunked road from becoming a dead-end with the potential to be misused, for example, for fly-tipping or overnight stays.

6.8.62 In response to concerns about speeding vehicles police observation platforms have now been included in both the proposed east and westbound lay-bys.

6.8.63 In response to requests for safer, dedicated routes and road crossing points for walkers, cyclists, and horse-riders, design updates now provide safer bridleway connections along the length of the A66 between Stephen Bank and Carkin Moor. The existing A66 severs several PRoWs. It is therefore proposed to connect these terminated routes to supply more useable routes for walkers, cyclists and horse riders.

6.8.64 In response to feedback that horse riders often prefer underpasses to overbridges to cross the dual carriageway, the design has accommodated this where possible. This includes the proposals to connect bridleways at Hutton Magna, West Layton, Mainsgill and Carkin Moor via accommodation underpasses.

6.8.65 It is also proposed to supply an additional horse and pedestrian path in the verge of the de-trunked A66 along the length of this scheme from Collier Lane overbridge along to Warrener Lane. This reconnects severed routes between the north and south of the proposed dual carriageway, improving connectivity and accessibility.

6.8.66 Full details and a review of issues raised at statutory consultation can be found at Chapter 6 of the Consultation Report (Application Document 4.4).

Summary case for the scheme

6.8.67 In summarising the case outlined above, it has been demonstrated that the proposed scheme will increase capacity on the A66 route, alleviating congestion in this location whilst providing improved safety features along the route. Environmental and detrimental impacts to specific properties and business have been minimised through sensitive design and it is not considered that the proposed scheme would result in any detrimental impact upon designated site. Improved WCH facilities have been incorporated into the scheme design.

6.8.68 This scheme has been designed with reference to the national, regional, county and local level planning policy context, as demonstrated within the LPCS accompanying this application (Application Document 3.9). For this scheme, the relevant county level policy is set out in the local plans for North Yorkshire County Council. The relevant local level policy is set out in the local plan for Richmondshire District Council and Durham County Council. The proposed scheme is considered to be in accordance with planning policy.

6.9 A1(M) Junction 53 Scotch Corner

Description of the problems within the scheme boundary

6.9.1 As described within the PDOR (Application Document 4.1), the A1(M) Junction 53 at Scotch Corner is an existing grade-separated roundabout junction to the south of Darlington. It is a signalised roundabout serving the A1(M), A66, A6055 and Middleton Tyas Lane, which provides access to the Scotch Corner Motorway Services area.

6.9.2 The A1(M) passes under the roundabout with southbound access via on- and off-slip-roads to the roundabout. Northbound access to the A1(M) is via an off-slip to the roundabout with the northbound on-slip located off a new roundabout on the A6055 to the north.

6.9.3 Eight of the recorded collisions occurred due to rear end shuts caused by failing to observe traffic ahead beginning to slow down or stop at the give way line. Five of these occurred on the approach to Scotch Corner junction, from the A66.

6.9.4 The operational capacity of the existing junction would be exceeded following full dualling of the A66 as it became a more attractive route for users due to the issues of unreliable journey times and congestion being removed. This increase in traffic would lead to greater congestion and tailbacks on the junction approaches if circulation is not improved.

6.9.5 A review was carried out and concluded that there would be a significant increase in traffic flows on the A66 approach to A1(M) Junction 53 as a result of the proposed upgrades to the A66. Although this increase can be accommodated, potential issues have been identified at the Middleton Tyas arm of the junction.

6.9.6 It is anticipated that traffic from the Middleton Tyas arm, including from the existing motorway services, will be unable to easily gain access to the roundabout at the priority approach.

Description of the proposed scheme and how it will address the problems identified

6.9.7 As described in Chapter 3 of this document and summarised below, the proposed scheme:

- Widens the existing Middleton Tyas Lane approach at Scotch Corner roundabout from one lane to two lanes.
- Adds an additional lane on the northern bridge of the circulatory carriageway, increasing the provision in this area to three lanes.

6.9.8 The existing Middleton Tyas Lane approach to the A1(M) Junction 53 at Scotch Corner roundabout will be widened from one lane to two lanes. In addition, three lanes will be provided on the circulatory carriageway on the existing northern bridge structure to improve operational capacity. Reconfiguration of the lane markings on the eastern side of the roundabout is also proposed to improve the interaction of the A1(M) southbound off-ramp, the roundabout circulatory and Middleton Tyas Lane.

6.9.9 A length of footway, a bus stop, some signage, and lighting columns would require relocation to the back of the widened carriageway to accommodate these works, and road markings would be required to tie in with existing WCH network.

6.9.10 Traffic modelling carried out has confirmed that with the proposed upgrades, the junction will operate within capacity.

6.9.11 The relevant GA Plan relating to this scheme is HE565627-AMY-HAC-S011-DR-CH-900001 (Application Document 2.5).

Benefits the scheme will deliver

6.9.12 In addition to the immediate issues of congestion and journey time savings as identified in the previous chapters of this document, the scheme also delivers localised benefits for communities such as improved accessibility and better local connectivity.

6.9.13 The table below provides an overview of the location specific benefits of this scheme considered against the wide Project objectives.

Table 6-21: Review of scheme against Project Objectives

Theme	Project objectives	Scheme response
Economic	Regional: Support the economic growth objectives of the Northern Powerhouse and Government Levelling Up agenda	The existing A66 is a key national and regional strategic transport corridor. It carries high levels of freight traffic and is an important route for tourism and connectivity for nearby communities. If the existing A66 route is not improved, it will continue to constrain national and regional connectivity and may threaten the transformational growth envisaged by the Northern Powerhouse initiative and the achievement of the Government 'Levelling Up' agenda. The project facilitates improved vehicles movements to the A66 route network. and the journey time savings this results in. This has economic implications for freight and other business connectivity. 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. Improving access to key tourist destinations such as the North Pennines and Lake District. The project, in addition to improving the strategic route network, also makes improvements to the local road network, with new junctions and 'offline' improvements, removing local traffic from the A66, making local movements more efficient. The proposed upgrades would result in improved traffic movements on Middle Tyas Lane, allowing the local road network to better accommodate local traffic not joining the strategic road network.
	Ensure the improvement and long-term development of the 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.	

Theme	Project objectives	Scheme response
Transport	Improve road safety, during construction, operation and maintenance for all, including road users, NMU, road workers, local businesses and local residents.	-Three lanes will be provided on the circulatory carriageway on the existing northern bridge structure to improve operational capacity. -These upgrades will ensure improved journey time savings and connectivity to the strategic road network. -Existing NMU and WCH provision will be retained, with severed route reinstated as part of the scheme.
	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 NMU provision along the route.	
Community	-Reduce the impact of the route on severance for local communities.	-Existing WCH provision will be retained, with routes reinstated following completion of the proposed scheme works.
Environment	-Minimise adverse impacts on the environment and where possible optimise environmental improvement opportunities.	-Reduced congestion and fewer vehicles idling will reduce emissions, helping to improve localised air quality. -Further details on the environmental benefits of the scheme are outlined within the ES (Application Document 3.2-3.4)

Outline of legislation and policy issues, such as AONB incursions and European designated sites

6.9.14 This section provides an overview and consideration of historic, ecological and environmental designations which are located within relevant proximity to the site.

The Historic Environment

6.9.15 Due to the limited nature of the works proposed in this scheme, no significant effects will occur on any heritage asset in this location during the construction or operation phase of the Project.

6.9.16 The overall impact of the scheme on heritage assets is considered to result in less than substantial harm to the significance of designated heritage assets and is outweighed by the public benefits of the scheme as evidenced throughout this document.

6.9.17 Full details are available in Chapter 8 (Cultural Heritage) of the ES (Application Documents 3.2-3.4)

Biodiversity and ecological considerations

6.9.18 There are no statutory designated sites within the Order Limits of this scheme. There is one statutory designated site within 2km of this scheme: Black Scar Quarry SSSI (1.2km east).

6.9.19 There are no non-statutory designated sites within 1km of this scheme.

6.9.20 There are no Ancient Woodland Sites within 1km of this scheme.

6.9.21 There is one veteran tree within 1km of this scheme.

6.9.22 One priority habitat type within 250m of Order Limits - deciduous woodland (0.85ha).

6.9.23 Multiple protected species including, but not limited to: terrestrial invertebrates and breeding and wintering birds.

6.9.24 The majority of potential impacts affecting biodiversity features will occur during the construction phase. These impacts can be broadly summarised into the following:

- Habitat loss permanently or temporarily under the road itself or where it is removed as a result of working area and compounds
- Fragmentation of populations and habitats where changes to noise, air quality, hydrological regimes and human presence may change the movement of mobile species
- Disturbance to species by changes to noise, light and human activity that may affect the behaviour of sensitive species, particular breeding or wintering birds
- Habitat damage or degradation that might arise from changes to water quality or air quality
- Incidental species mortality as a result of construction activities such as vegetation clearance, tree felling, vehicle movements and top soil stripping

6.9.25 Operational impacts of the Project on biodiversity features can be summarised into the following:

- Fragmentation of populations and habitats as a result of the east-west alignment of the Project resulting in severance of north-south movement
- Disturbance as a result of changes to operational traffic flows and resulting changes to noise, air quality, light and human disturbance
- Habitat damage can occur as a result of changes to hydrological regimes, or long term changes to nitrogen content affecting plant life
- Incidental species mortality due to animals having to cross the road and being hit by vehicles.

6.9.26 Considering the impact of the scheme on the site:

- No significant effects are anticipated in construction.
- No significant effects are anticipated in operation.

6.9.27 Avoidance and minimisation of impacts on important biodiversity features has been incorporated throughout the development of the design of the Project and at individual scheme level. Details of relevant elements which have been incorporated into this assessment are described in Section 2 of the ES (Application Document 3.2-3.4).

6.9.28 In addition, the Project Design Principles (Application Document 5.11) outlines measures to reduce impacts in relation to habitats, including (but not limited to):

- Use of ecologically sensitive lighting where possible
- Improved ecological connectivity to Trout Beck through provision of woodland planting
- The structure crossing Trout Beck must allow for full functionality of supporting river processes

6.9.29 The assessment of impacts on biodiversity also assumes the implementation of the following embedded measures, which are secured through the EMP to be in accordance with DMRB LA120 (Application Document 2.7) and associated management plans.

6.9.30 To view the full ecological assessment for this scheme, see Chapter 6 (Biodiversity) of the ES (Application Documents 3.2-3.4)

Landscape and Visual Impact

6.9.31 Due to the very localised and small-scale changes required to facilitate these upgrades no adverse landscape or visual effects are anticipated during the construction or operational of the scheme.

6.9.32 Full details are available at Chapter 10 (Landscape and Visual) of the ES (Application Documents 3.2-3.4).

Other environmental Impacts

6.9.33 In accordance with the EIA regulations, the proposed scheme has been assessed for environmental impacts relating to:

- Air quality
- Biodiversity
- Climate
- Cultural heritage
- Geology and soils
- Landscape and visual
- Material assets and vibration
- Population and human health
- Road drainage and the water environment.

6.9.34 Full details of environmental assessments carried out for each of these topics are provided within the ES which accompanies this application (Application Documents 3.2-3.4).

6.9.35 The proposed scheme is not considered to result in any significant, long lasting environmental effects.

Public consultation

6.9.36 The scheme development was informed by extensive public and stakeholder engagement. During statutory consultation, a total of 123 individual responses related to this scheme. The key consultation responses for the scheme are set out at Table 7, Chapter 6 of the Consultation Report (Application Document 4.4) within Annex N. The PDOR (Application Document 4.1) describes the design development carried out for each scheme along the route of the Project and how it has been informed by consultation.

6.9.37 No design changes took place following the consultation.

6.9.38 Full details and a review of issues raised at statutory consultation can be found at Chapter 6 of the Consultation Report (Application Document 4.4).

Summary case for the scheme

6.9.39 In summarising the case outlined above, it has been demonstrated that the scheme will increase capacity on the A66 route, alleviating congestion in this location expected to be caused by the other A66 improvements.

6.9.40 Safety along the route will be maintained and improved through the introduction of additional capacity, removing obstacles from queuing traffic at this junction.

6.9.41 There are no anticipated adverse environmental impacts as a result of the scheme.

6.9.42 This scheme has been designed with reference to the national, regional, county and local level planning policy context, as demonstrated within the LPCS accompanying this application (Application Document 3.9). For this scheme, the relevant county level policy is set out in the local plan for North Yorkshire County Council. The relevant local level policy is set out in the local plan for Richmondshire District Council. The proposed scheme is considered to be in accordance with planning policy.

7 Consideration of the DCO Application

7.1 Introduction

7.1.1 The PA 2008 requires that the DCO application is determined in accordance with the relevant NPS except to the extent that the SoS is satisfied that one or more of the matters set out within sub-sections 104 (4)-(8) applies. In this case the NN NPS is the primary basis for decision making. This section considers the DCO application in this context.

7.2 Alignment of the Project with strategic objectives of the National Policy Statement for National Networks (NNNPS)

7.2.1 The NN NPS was published by DfT in December 2014 and sets out the need and Government's policies, for delivering NSIP developments on the national road network.

7.2.2 The conformity of the Project with the NN NPS is considered in detail in the NN NPS Accordance Table which is provided as an appendix to the LPCS (Application Document 3.9). This section of the case sets out how the Project is consistent with the aims of the NN NPS at a strategic level.

7.2.3 The Government's vision and strategic objectives for national networks are to ensure they meet the country's long-term needs; supporting a prosperous and competitive economy and improving overall quality of life, as part of a wider transport system through networks:

- With the capacity and connectivity and resilience to support national and local economic activity and facilitate growth and create jobs.
- Which support and improve journey quality, reliability, and safety.
- Which support the delivery of environmental goals and the move to a low carbon economy.
- Which join up our communities and link effectively to each other.

7.2.4 The NN NPS (paragraph 2.2) recognises that there is a 'critical need' to improve the national road and rail networks to address road congestion to provide safe, expeditious and resilience networks that better support social and economic activity; and to provide a transport network that is capable of stimulating and supporting economic growth.

7.2.5 Paragraph 2.6 confirms "a need for development on the national networks to support national and local economic growth and regeneration particularly in the most disadvantaged areas. Improved and new transport links can facilitate economic growth by bringing businesses closer to their workers, their markets and each other". The Project addresses this objective through improving the economic connectivity between Teesside and west Cumbria and supporting the regeneration of disadvantaged areas within these locations.

7.2.6 The Government has concluded that at a strategic level there is a 'compelling need' for development on the national networks (paragraph 2.10). 'The Examining Authority and the SoS should therefore start their

assessment of applications for infrastructure covered by this NPS on that basis'.

7.2.7 Identifying the need for development on the national road network, paragraph 2.13 confirms that the SRN provides critical links between cities and joins up communities, playing a vital role in people's journeys and driving prosperity by supporting new and existing development, encouraging trade and attracting investment. It confirms that a well-functioning SRN is 'critical in enabling safe and reliable journeys and the movement of goods in support of national and regional economies.'

7.2.8 The NN NPS (paragraph 2.22) confirms the importance of improving the road network as without doing so 'it will be difficult to support further economic development, employment and housing and this will impede economic growth and reduce people's quality of life. The Government has therefore concluded that at a strategic level there is a compelling need for development of the national road networks.'

7.2.9 The Government's wider policy of making improvements and enhancements to the existing national road network is set out in paragraph 2.23 as including:

i. junction improvements, new slip roads and upgraded technology to address congestion and improve performance and resilience at junctions which are a major source of congestion
ii. implementing 'smart motorways' to increase capacity and improve performance
iii. improvements to trunk roads dualling of single carriageway strategic trunk roads and additional lanes on existing dual carriageways to increase capacity and to improve performance and resilience.

7.2.10 The NN NPS sets out (paragraph 4.2) that, subject to the detailed policies and protections contained in the NPS and the legal constraints set out in the PA 2008, there is a 'presumption in favour' of granting development consent for national network NSIPs that fall within the need for infrastructure established in the NN NPS.

7.2.11 The paragraphs of the NN NPS as set out above therefore provide the compelling need for development of the national road networks, at a strategic level. The strategic need for the project is also informed by the work carried out at the feasibility stage which confirmed the A66 dualling as the most appropriate solution, that aligns with the strategic objectives for an improved trans-Pennine route (see the PDOR, Application Document 4.1)

7.2.12 Paragraph 3.16 outlines Government's commitment to sustainable travel in developing a high-quality cycling and walking environment to bring about a step change in cycling and walking across the country. The project has addressed this policy objective through providing a low-speed, low-traffic route parallel to the A66 for pedestrians and cyclists, where possible. This has responded to issues raised through ongoing engagement with stakeholders and at statutory consultation for the need for improved east-west WCH provision. For the majority of schemes, east-west provision has been provided, either parallel to the new dual

carriageway, or in the verge along the de-trunked A66, where it will remain. Details of the proposals for east-west WCH provision is set out in the Walking, Cycling, and Horse-riding Proposals (Application Document 2.4)

7.2.13 The Government also expects Applicants to identify opportunities to invest in infrastructure in locations where the national road network severs communities and acts as a barrier to cycling and walking, by correcting historic problems, retrofitting the latest solutions and ensuring that it is easy and safe for cyclists to use junctions (paragraphs 3.16 and 3.17). As set out above the A66 addresses this policy objective through providing a new east-west cycling and pedestrian route for the proposed new dualled sections of the A66, where possible. To address paragraph 3.17 of the NPS, National Highways has committed as part of the DCO, to re-establish any WCH routes severed by the proposed works and, where PRoW converge at the upgraded A66 carriageway, divert them to the nearest grade separated crossing.

7.2.14 The overall objective to conform with this policy is that 'all facilities for WCH users should be a betterment, where practicable, to those available prior to the improvement project 'Design Proposals – Application Document 2.4).

7.2.15 Paragraph 4.3 of the NN NPS states that: 'in considering any proposed development, and in particular, when weighing its adverse impacts against its benefits, the Examining Authority and SoS should take into account:

- its potential benefits including the facilitation of economic development, including job creation, housing, environmental improvements, and any long-term or wider benefits; and
- its potential adverse impacts, including any longer-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts'.

7.2.16 The consideration of the benefits and adverse impacts of the project and the conclusions reached on the planning balance, to accord with paragraph 4.3 are set out in the sections below (sections 7.4 and 7.6). These sections draw from the findings from the NN NPS Accordance table, which forms part of the appendices of the LPCS (Application Document 3.9).

7.3 Assessment of S104 (4) – (6) and (8) of the PA 2008

7.3.1 Under Section 104(3) of the PA 2008, the application for the DCO is required to be determined in accordance with the relevant National Policy Statement, except to the extent that the SoS is satisfied that one or more of the following applies (sections 104 (4)-(8)) (emphasis added):

a) deciding the application in accordance with any relevant national policy statement would lead to the United Kingdom being in breach of any of its international obligations (section 104(4))

b) deciding the application in accordance with any relevant national policy statement would lead to the SoS, being in breach of any duty imposed on the SoS by or under any enactment (section 104(5))

c) deciding the application in accordance with any relevant national policy statement would be unlawful by virtue of any enactment (section 104 (6))

d) the adverse impact of the proposed development would outweigh its benefits (section 104(7))

e) any condition prescribed for deciding an application otherwise than in accordance with a national policy statement is met (section 104 (8))'

7.3.2 In accordance with section 104(2) of PA 2008 the SoS for Transport is required to have regard to the following in deciding the DCO Application (emphasis added, and as relevant to the Project):[8]

a) any national policy statement which has effect in relation to development of the description to which the application relates (a 'relevant national policy statement')

b) any local impact report (within the meaning given by section 60(3)) submitted to the SoS before the deadline specified in a notice under section 60(2)

c) any matters prescribed in relation to development of the description to which the application relates

d) any other matters which the SoS thinks are both important and relevant to its decision.

7.3.3 The LPCS considers whether any matters under section 104 (4-6 & 8) would apply which may affect determination of the application in accordance with the relevant NPS. The findings from the LPCS are that deciding the application in accordance with any relevant national policy statement would not lead:

a) to the United Kingdom being in breach of any of its international obligations (section 104(4))

b) the SoS, being in breach of any duty imposed on the SoS by or under any enactment (section 104(5))

c) to anything being unlawful by virtue of any enactment (section 104 (6))

In addition, there are no conditions prescribed for deciding an application otherwise than in accordance with a national policy statement (section 104 (8))'

7.3.4 It follows having met the requirements of section 104 (4-6 & 8) that this DCO application is required to be determined in accordance with the relevant NPS, if section 104(7) can also be satisfied, that the adverse

[8] section 104(2) also states that the SoS should have regard to any Marine Plans – for this Project marine plans are not relevant as there is no marine environment within the order limits or within the impact assessments scope so these Plans are therefore not relevant or applicable to the project

impact of the proposed development would not outweigh its benefits. The consideration of the planning balance, weighing up the benefits and the adverse impacts of the project, are set out in the sections below. These sections of this document address section 104(7) of the PA 2008 and respond to the requirements of paragraph 4.3 of the NNNPS. The conclusion is that section 104(7) is not triggered as the benefits of the project clearly outweigh the adverse impacts. Having met all the requirements of section 104 of the PA 2008 this DCO application is to be determined in accordance with the NNNPS. Conformity with the NN NPS and the findings from the assessment of benefits in relation to adverse impacts are set out in the sections below.

Conformity with the NNNPS (Sections 2-4)

7.3.5 The NNNPS Accordance Table set out within the LPCS (Appendix A of Application Document 3.9) demonstrates how the application is in conformity with the NNNPS, providing evidence to allow the SoS to grant development consent for the Project. It also serves as a record of the Project's strategic alignment and conformity with the NNNPS.

7.3.6 The following paragraphs summarise the most important areas of conformity with policy, taken from the relevant policies of the NNNPS Accordance Table of the LPCS (Application Document 3.9).

7.3.7 Section 2 of the NNNPS sets out the strategic need for development of the national networks, the Government's policy and strategic vision and objectives as well as the processes of the National Highways RIS programme and the Project being a RIS 2 scheme. The key policies of section 2 are set out above and the LPCS NNNPS Accordance Table (Application Document 3.9). provides an assessment of conformity with section 2 of the NNNPS.

7.3.8 **How the Project conforms:** The compelling need for development of the national road networks is already established through these policies of the NPS at a strategic level. The strategic need for the project is also informed by the work carried out at the feasibility stage (through the NTPRSS) which confirmed the A66 dualling as the most appropriate solution, that aligns with the strategic objectives for an improved trans-Pennine route (see the PDOR, Application Document 4.1). Furthermore, the need for the Project has been established through a series of documents (such as RIS2) and further details are set out in section 1.3 of this document. Chapter 4 and 5 of this document demonstrate the Project will provide considerable improvements to the road network and provide increased safety; improved connectivity and capacity; improved reliability; and support economic growth. The Project will improve accessibility in the region and therefore supports further economic growth and productivity to accord with policies of section 2.

7.3.9 The LPCS NNNPS (Application Document 3.9). demonstrates conformity with other aspects of section 2 of the NNNPS through the Project's significant contribution towards a safe and reliable SRN which will in turn support national and regional economies and the aspiration and policies of government and local authorities.

7.3.10 Section 3 of the NNNPS sets out the wider government policy on the National Networks. Paragraph 3.1 of the NNNPS states that the need for development of the national networks, and the Government's policy for addressing that need, must be seen in the context of the Government's wider policies on economic performance, environment, safety, technology, sustainable transport and accessibility, as well as journey reliability and the experience of road users.

7.3.11 **How the Project conforms:** The Project directly addresses the Government's wider strategic policy objectives, whilst specifically addressing the historic problems in the Project area. A description of these problems, strategic Government policy and the need for the Project is provided in Chapter 1 of this document. In summary the project addresses the Government strategic policy objectives through:

i) Economic performance: The existing A66 is a key national and regional strategic transport corridor. It carries high levels of freight traffic and is an important route for tourism and connectivity for nearby communities. If the existing A66 route is not improved, it will continue to constrain national and regional connectivity and may threaten the transformational growth envisaged by the Northern Powerhouse initiative and the achievement of the Government 'Levelling Up' agenda.

ii) Environment: The design and alignment of the route responds to the objective to minimise the noise levels for people living and working near the route and reducing the congestion currently occurring in the single carriageway sections. 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. The project also delivers environmental enhancement, heritage and archaeological benefits, as reported in the Environmental Statement and as summarised in section 3.4.20-21 above. In addition, the Project A route-wide Biodiversity Net Gain ('BNG') assessment has been completed. Whilst it is not currently a policy obligation for a NSIP to achieve 10% net gain, the objective of maximising biodiversity along the route has been core to the environmental design.

iii) Safety: 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 less accidents. Use of the de-trunked sections of the A66 as part of the local road network will provide better, safer routes for cyclists and pedestrians. In terms of accidents and road safety, the Project is forecast to save 538 personal injury accidents. Taking account of the numbers of accidents and casualties saved by the Project, the total accident savings is £29.6m.

iv) Technology: The project introduces more appropriate applied technology to assist drivers and allow safer and more secure

journeys, in the form of VMS, vehicle / incident detection equipment and CCTV installations.

v) Sustainable transport: The project will maintain, and, where required, make improvements through new provision of WCH routes (principally east-west) and enhancement of existing WCH routes affected by the project (for example, through resurfacing). This will help encourage the use of more sustainable modes of transport for local journeys and encourage local people to explore their local area safely on foot or cycle or horse back.

vi) Accessibility: At a local level there will be improved accessibility and better local connectivity through utilising the 'old' A66 and connecting the new improved A66 into the local road network which will in turn provide enhanced access to services and jobs for local communities. At a regional scale, businesses will benefit from the improved accessibility, through a more resilient, reliable and safer strategic road connecting the key employment areas across Cumbria, Tees Valley and Tyne and Wear.

vii) Journey Reliability: The increasing reliability through an improved A66, with consistent speed limits, leading to less accidents which, in turn, makes the road more reliable. Also, having a dual carriageway provides the option to close lanes where required due to accidents or break downs, planned maintenance and still keep traffic moving. Chapter 4 of this document provides further detail on the reliability benefits of the Project. The economic assessment found that the Project is also forecast to achieve significant reliability benefits, valued at £272.2m. This reflects the high levels of travel time variability currently experienced on the A66 route infrastructure. The overall 60-year total benefit of £272.2m is relatively evenly spread amongst business and commuter users, with business users realising a 46% share and a 54% share for commuter and other users.

viii) Experience of Road Users: One of the key outcomes from the full dualling of the A66 will be improved journey quality for road users on A66, because the new dual carriageway sections will allow for faster, safer manoeuvring and will enable easier overtaking of heavy and slow moving vehicles. The improvement will also offer a more consistent route standard along the A66 between Penrith and Scotch Corner, provide safer grade-separated junctions for accessing the A66 and better lay-by facilities. Road users will also benefit from more appropriate applied technology to assist drivers and allow safer and more secure journeys, in the form of VMS, vehicle incident detection equipment and CCTV installations.

7.3.12 The LPCS (Application Document 3.9) provides an assessment of conformity with other aspects of section 3 of the NNNPS

7.3.13 Section 4 of the NNNPS sets out the General Principles of Assessment. Paragraph 4.2 states that there is a presumption in favour of granting development consent for national networks, subject to the detailed

policies and protections of the NNNPS and the legal constraints set out in the PA 2008.

7.3.14 How the Project conforms: NNNPS conformity with the legal constraints of the PA 2008 are set out in paragraphs 7.3.1-7.3.4 above and also in the LPCS. The LPCS (Application Document 3.9) also provides an assessment of conformity with other aspects of section 4 of the NNNPS.

7.3.15 Paragraph 4.3 of the NNNPS states that, in considering any proposed development and in weighing its adverse impacts against its benefits, the Examining Authority and the SoS should take into account:

i. potential benefits, including the facilitation of economic development, including job creation, housing and environmental improvement, and any long-term or wider benefits; and
ii. its potential adverse impacts, including any longer-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts.

7.3.16 How the Project conforms: The findings of the planning balance taking into account the considerations set out in paragraph 4.3 is set out in section 7.4 below. The overall conclusion is that the potential benefits of the project outweigh the adverse impacts to accord with the policies of the NNNPS.

Conformity with Generic Impact Policies of the NNNPS (Section 5)

7.3.17 Section 5 of the NNNPS sets out detailed policies in relation to generic impacts of national network projects. The detailed findings, drawing from the assessment of the project as set out in the Es (Application Document 3.2), of the project in relation to these policies are set out the NNNPS accordance table at Appendix A of the LPCS (Application Document 3.9). The main findings in relation to each policy topic of NNNPS Section 5 (Generic Impacts) from the LPCS are set out below.

Air Quality (paragraphs 5.6 – 5.16)

7.3.18 To conform with these policies of the NNNPS the ES (Chapter 5 (Air Quality) (Application Document; 3.2)) has concluded that there are no significant air quality effects and the Project would not be at risk of effecting the UK's ability to be in conformity with the Air Quality Directive. Air Quality Management Areas (AQMAs) given their distance from the Project (two AQMAs in Durham County Council are over 30km away) are unlikely to be affected by the Project. Best practice mitigation measures to reduce effects from construction effects are included in the EMP (Application Document 2.7), including measures (included in the EMP Annex B13 Construction Traffic Management Plan (Application Document 2.7), to ensure construction vehicles avoid areas, where there is the potential for the movement of construction-related vehicles to cause a deterioration in air quality at designated ecological receptors.

Carbon Emissions (paragraphs 5.17- 5.21)

7.3.19 To conform with these policies of the NNNPS and the requirement of *DMRB LA 114* the Applicant has assessed GHG emissions associated with the construction and operation of the Project as part of the GHG emissions assessment (section 7.7 of Chapter 7 (Climate) of the ES (Application Document 3.2)). The findings from the assesment are that there are 'no likely significant effects', based on the approach set out in *DMRB LA 114* that states: '*assessment of Projects on climate shall only report significant effects where increases in GHG emissions will have a material impact on the ability of Government to meet its carbon reduction targets'*. The Applicant has evidenced the appropriate adequate mitigation measures required in bringing the Project forward, which will ensure that the carbon footprint of the project is not unnecessarily high. (section 7.9 Essential Mitigation and Enhancement Measures of Chapter 7 (Climate) and within the EMP (Appendix 4.1 (Application Document 2.7)).

Biodiversity and ecological conservation (paragraphs 5.22 – 5.27)

7.3.20 To conform with these policies of the NNNPS and the Habitats Regulations, the Applicant has fully considered biodiversity matters to determine likely significant effects on internationally, nationally and locally designated sites and all potential ecological receptors (Chapter 6 (Biodiversity) of the ES (Application Document 3.2-3.4). The assessment concluded that following implementation of mitigation measures, there are no significant effects during the construction phase or operational stage on any designated sites or sites of geological conservation importance. Significant adverse impacts on habitats have been assessed during construction. Potential adverse impacts on habitats and ecological receptors have been avoided in the first instance and where avoidance is not possible, adverse impacts have been appropriately mitigated

7.3.21 Where avoidance of potential impacts is not possible, enhancement and conservation measures have also been identified to ensure any potential impact is appropriately mitigated. Amongst the these measures will be the creation of new replacement habitats that will establish through the operational phase resulting in significant residual effects being unlikely. Full details are set out section 9.9 (Essential mitigation and enhancement measures) at Chapter 9 (Geology and Soils) of the ES. The Applicant, in accordance with the Habitats Regulations has screened the relevant SPAs and SACs at Stage 1 of the assessment and has completed an appropriate assessment where relevant, as set out in the Habitat Regulations Assessment ('HRA')(Application Document 3.5 and 3.6). The HRA Stage 2 Report (Application Document 3.6) concludes (at paragraph 6.7.34) that the Project:

- Will not, in view of the relevant site conservation objectives, have a significant adverse effect on any qualifying feature of the River Eden SAC, North Pennine Moors SAC or North Pennine Moors SPA, either alone or in combination with other plans and projects;

- Will not have adverse implications for the River Eden SAC, North Pennine Moors SAC or North Pennine Moors SPA site conservation objectives and will not delay or interrupt progress towards achieving the site objectives;
- Will not adversely affect the integrity of the River Eden SAC, North Pennine Moors SAC or North Pennine Moors SPA, beyond reasonable scientific doubt.

Biodiversity SSSIs (paragraphs 5.28-5.31)

7.3.22 To conform with these policies of the NNNPS the EIA has considered the potential effects to the 12 SSSIs within 2km arising during the construction and operation phase (reported in Chapter 6 (Biodiversity) of the ES (Application Document 3.2-3.4)). This chapter has also given full consideration to all other designated sites of regional and local biodiversity and geological interest, located within the defined study areas surrounding the Order Limits. Through an iterative design process all potential adverse impacts on SSSI, other designated sites and ecological receptors have been avoided in the first instance and where avoidance is not possible, adverse impacts have been appropriately minimised or. Following this staged process of design and assessment the ES concludes that. there will be no significant effect on the SSSI's during the construction or operation phase of the Project, as set out in section 6.8 of Chapter 6 (Biodiversity) of the ES. The substantial, long lasting and comprehensive set of benefits of the Project and individual schemes as set out in this report outweigh any slight adverse residual effects on SSSIs and other designated sites that remain, following the approach to avoidance, minimisation of impact and implementation of mitigation.

Biodiversity – irreplaceable habitats including ancient woodland and veteran trees and opportunities for building in beneficial biodiversity (paragraphs 5.32-5.33)

7.3.23 To conform with these policies of the NNNPS the ES sets out the findings of the assessment during the construction and operation phase on ancient woodland sites, including five woodlands within the affected route network (ARN) and a futher 15 woodlands withn 200m of the ARN. The Project has been designed to avoid all impact on ancient woodland except where this has been unavoidable. The ES considered the potential effects to ancient woodland, veteran trees and irreplaceable habitats, and found that there would be no lo loss of ancient woodland or known significant/ veteran trees. The ES did identify the potential for pullant pathways to Skirsgill Wood, Chapel Wood and Graham's Gill/Jack Wood. .

7.3.24 These potential adverse impacts associated with pollutant pathways on Ancient Woodland have been appropriately mitigated. Furthermore the substantial, long lasting and comprehensive set of benefits of the Project and individual schemes as set out in this document outweigh any slight adverse residual effects that remain on ancient woodland, veteran trees and irreplaceable habitats, following the implementaton of mitigation.

Opportunities for enhancement, biodiversity net gain and other biodversity opportunities as a result of the Project have been considered where appropriate as part of the design of the Project. Section 6.89 of Chapter 6 (Biodiversity) of the ES (Application Documents 3.2-3.4 and 2.7) sets out design mitigation and enhancement measures that are considered essential in order to minimise potential impacts of the Project. Such mitigation is also delivered through the EMP (Application Document 2.7).

Biodiversity – protection of other habitats and species (paragraphs 5.34 – 5.35)

7.3.25 To conform with these policies of the NNNPS species and 'habitats of principal importance' have been considered and measures to ensure these species and habitats are protected from adverse impacts have been included, where appropriate. Biodiversity and nature conservation has been assessed in accordance with the DMRB LA 108 and the mitigation measures will form part of the EMP (Application Document 2.7) which will be secured as part of the DCO application or secured through the DCO and certified documents. Where harm on habitats and species is unavoidable though the construction or operation of the Project, it has been demonstrated through careful and comprehensive assessment (as set out within the preseding sections of this document) that the substantial, long lasting and comprehensive set of benefits outweigh any harm.

Biodiversity mitigation (paragraph 5.36)

7.3.26 To conform with these policies of the NNNPS section 6.9 of Chapter 6 (Biodiversity) of the ES presents the essential mitigation and enhancement measures for both the construction and operation phase to ensure habitats being disturbed by the Project have been fully considered to reduce impact. Habitats lost to the Project will be replaced on a like-for-like or better basis. Whilst biodiversity net gain is not currently a requirement within the policy set out in the NNNPS, the principles of net gain have been applied to the Project mitigation in order to maximise biodiversity within the footprint of the Project (it is noted that additional mitigation for specific impacts on protected species will likely lead to an overall net gain).

7.3.27 Mitigation measures will be delivered and adhered to through the use of management plans within the EMP (Application Document 2.7), including the approach to securing the relevant protected species mitigation licences which may be required as a result of the Project. The Consents and Agreements Position Statement (Application Document 5.4) indicates that the necessary discussions are underway in relation to protected species licensing under the Habitats Regulations or the Wildlife and Countryside Act 1981 and are also reported in the relevant SoCG (such as the SoCG with Natural England (Application Document 4.6)

Waste Management (paragraphs 5.41-5.43)

7.3.28 To conform with these policies of the NNNPS section 11.8 of Chapter 11 (Materials and Waste) of the ES (Application Document 3.2) sets out the approach to the waste hierarchy and essential mitigation and enhancement measures embedded into the design to avoid and reduce the potential impacts relating to material assets and waste. This includes design for re-use and recovery, materials optimisation, off-site construction and waste efficient procurement, which in combination present opportunities to avoid and reduce waste and incorporate waste recovery. The necessary arrangements for managing any waste produced are set out in Chapter 11 (Material and Waste) of the ES and the Site Waste Management Plan and Materials Management Plan in the EMP (Application Document 2.7). Furthermore, to conform with policies of the NNNPS the assessment of materials and waste has illustrated there will be no significant impacts on the waste infrastructure capacity in the study area.

Civil and military aviation and defence interests – assessment (paragraph 5.55 – 5.62)

7.3.29 To conform with these policies of the NNNPS an assessment of the impacts of the proposed development on defence interests has been undertaken and the Project has been designed to minimise and mitigate any adverse impact on these interests. The principal MoD interest affected are defence infrastructure contained within the Warcop Training Area ('WTA'), which is a long-term core defence site of the MoD, used for small arms, artillery and dry training purposes. National Highways has consulted with the MoD and the extent of land required from the WTA for the construction of scheme 6 (within which the MoD land is located) and the replacement of infrastructure has been agreed between the Defence Infrastructure Organisation ('DIO') of the MoD and National Highways. The discussions and areas of agreement to date between the Applicant and the MoD are set out in the Statement of Commonality and Statements of Common Ground between the DIO (MoD) and National Highways (Application Document 4.5).

Dust, odour, artificial light, smoke, steam (paragraphs 5.82 – 5.89)

7.3.30 To conform with these policies of the NNNPS an assessment has been undertaken of the likely significant effects on amenity from emissions of dust, steam, smoke and artificial light as reported in Chapter 5 (Air Quality), Chapters 11 (Landscape and Visual) and 8 (Cultural Heritage) of the ES (Application Document 3.2). As no potential construction impacts are identified in relation to odour this has been scoped out of the assessment. The EMP at Annex B4: Air Quality and Dust Management Plan (Application Document 2.7) sets out the procedures to be followed to ensure that impacts from these emissions, that have been assessed in the ES, are reduced as far as reasonably practicable, to minimise impacts on local communities and other potential receptors during the construction phase.

Flood Risk (paragraphs 5.90-5.104)

7.3.31 To conform with these policies of the NNNPS a Flood Risk Assessment ('FRA') has been undertaken (Appendix 14.2 of the ES (Application Documents 3.2-3.4)), taking the necessary steps to engage with the Environment Agency and Lead Local Flood Authorities ('LLFAs') (CCC, NYCC and DCC) as early in the process as possible. The FRA presents a full assessment of the flooding risks posed by/to each scheme of the Project and demonstrates how those risks will be avoided and managed, allowing for climate change scenarios. The need to adapt to climate change has been taken into consideration in the FRA as well as the design, through consideration of a range of weather conditions which might arise, including increased temperatures and increased precipitation (section 14.9 of Chapter 14 (Road Drainage and Water Environment).

7.3.32 The FRA addressing both the Sequential and Exception Tests demonstrates that the development remains safe from flooding through its lifetime (taking climate change into account) and that flood risk will not be increased beyond existing conditions. In addition, with embedded mitigation the residual risk which the temporary and permanent features of the Project would generate for other receptors is considered to be low, The FRA indicates that for elements of the Project in Flood Zone 3 (scheme 1/2, 3, 4/5 and 6) the Project will not have a detrimental impact on flooding and in some cases will provide wider sustainability benefits to the community that outweigh the flood risk posed, which meet the Exception Test. This is achieved for example through any flood storage lost due to the new road infrastructure being compensated for by the construction of new compensatory storage areas. In addition surface water run-off will be attenuated, and proposed flow rates restricted to ensure that there is no increased flood risk as a result of the scheme.

Flood Risk Mitigation (paragraphs 5.110 – 5.115)

7.3.33 To conform with these policies of the NNNPS good design principles, such as the use of sustainable drainage systems, have been incorporated into the Project design in order to manage flood risk. The drainage systems for the Project are designed to avoid and minimise the risk of flooding elsewhere by incorporating current design standards and future climate change allowances. The sequential approach has been taken to the layout and design of the Project and is referenced in the FRA. The FRA also sets out specific design and mitigation measures for each scheme relating to drainage as set out under each scheme heading. On this basis, the Projects' surface water drainage arrangements ensure that there will be no increase to runoff rates as a result of the proposals. Attenuation and drainage design is considered in Chapter 14 (Road Drainage and the Water Environment) of the ES (Application Document 3.2) and ES Appendix 14.2: Flood Risk Assessment and Outline Drainage Strategy (Application Document 3.4.

Land instability (paragraphs 5.117 – 5.118)

7.3.34 To conform with these policies of the NNNPS the Project has considered land stability, as set out in the NNNPS, NPPF and supporting planning guidance. In conformity with *DMRB LA 109*, geotechnical risk associated with land stability is assessed within Appendix 9.4 (Ground investigation reports) ('GIRs') of Chapter 9 (Geology and Soils) of the ES (Application Document 3.2) and the associated Preliminary Sources Study Report ('PSSR') (National Highways, 2019. Where considered necessary, stability assessments will be undertaken at relevant points along each scheme and further surveys will take place during the detailed design phase to ensure that land stability does not cause a risk to the Project.

Historic Environment (5.124 – 5.137)

7.3.35 To conform with these policies of the NNNPS an assessment on heritage assets has been undertaken. Section 8.4 of Chapter 8 (Cultural Heritage) of the ES describes the approach taken to assessing effects on heritage within the EIA using appropriate expertise. This ES chapter reports the Project impacts and effects upon heritage assets, including all designated and non-designated heritage assets and also describes the considerable levels of stakeholder engagement undertaken as part of the assessment, as detailed in paragraph 8.4.38 of Chapter 8. The Project assessment and design has responded to the sensitivity and the value of designated and non-designated heritage assets, particularly during the construction and operation phases.

7.3.36 The assessment has concluded that the majority of impacts on heritage assets are temporary and will not extend beyond the construction phase itself. Exceptions to this, are where there are permanent adverse effects after mitigation arising from the construction phase through direct loss or permanent setting changes. There will be no substantial harm or total loss of designated heritage assets. In accordance with paragraph 5.130 the desirability of sustaining and, where appropriate, enhancing the significance of heritage assets, the contribution of their settings and the positive contribution of conservation to communities has been considered as a part of the assessment.

7.3.37 Although the assessment has found that there would be some adverse impacts of the Project on heritage during the construction, the operational phase of the Project, overall, it would lead to beneficial effects on the setting of cultural heritage assets, including for example a new amenity parking areas and footway access for a scheduled monument and improved accessibility to other heritage assets. Section 8.8 of Chapter 8 (Cultural Heritage) of the ES presents mitigation and enhancement measures and describes how these measures would reduce direct impacts (physical damage), and indirect impacts (changes to setting that affect the significance of the resources). Mitigation for archaeological remains includes an investigation prior to construction and the analysis of artefacts and publication of results following the construction to minimise the direct impacts on archaeological remains.

7.3.38 To conform with paragraph 5.134 the assessment of heritage assets has found that impacts equate to less than substantial harm. As outlined in earlier sections of this document where harm does exist it is outweighed by the public benefits.

Landscape and Visual Impacts (paragraph 5.144 – 5.161)

7.3.39 To conform with these policies of the NNNPS Section 10.6 of Chapter 10 (Landscape and Visual Impact Assessment) of the ES (Application Document 3.2) includes an assessment of the existing baseline conditions and section 10.10 assesses the likely significant landscape and visual impacts of the Project both during construction and operation. The approach to this assessment follows the Scoping Report (June 2021) and the methodology set out in *DMRB LA 107, Landscape and Visual Effects* (National Highways, 2020). The ES outlines the consideration given to The National Parks and Access to Countryside Act 1949 and refers to the Countryside and Rights of Way Act 2000 and confirms compliance with these acts, through for example improving access to tourist and recreational destinations, including the AONB and incorporating shared cycle/footways to benefit local people and visitors to the AONB.

7.3.40 To meet the aims of paragraph 5.149 account has been taken of the receiving environment and the landscape and visual impacts of the Project and reasonable mitigation has been proposed where possible and appropriate to the existing nature of the landscape.

7.3.41 The Appleby to Brough scheme requires limited incursions within the AONB in lengths of the route to the north and east of Warcop and the Bowes Bypass scheme involves very minor incursions of the carriageway and verges along the AONB boundary. The proposals in these lengths therefore require an assessment against the policies for development located in a nationally designated AONB as set out in paragraphs 5.151 to 5.153 of the NNNPS. Section 6.5 and 6.6 of this document set out the findings from this assessment and demonstrate, with reference to paragraph 5.151, that exceptional circumstances do exist and are met for development of the Project partially within an AONB and that the proposed development is in the public interest. Also, these sections demonstrate that to conform with paragraph 5.153 the Project will be carried out to high environmental standards through a commitment to a set of design principles, as set out in the Project Design Principles (Application Document 5.11).

7.3.42 With respect to those parts of the route that are outside the AONB but will be visible from the AONB, the Project conforms with paragraphs 5.154-55 as the Project '*avoids compromising the purpose of the AONB designation and has been designed sensitively to reflect the existing alignment and vegetated character of the A66 in proximity to the AONB boundary'* (paragraph 10.10.149 of Chapter 10 of the ES).

7.3.43 The Project has been designed carefully, taking account of environmental effects to avoid adverse effects on the landscape. Including taking up opportunities to minimise these effects through

appropriate siting of infrastructure, design (including materials), and indicative landscaping schemes. The Project design has been responsive to site context and surroundings and where required reasonable mitigation has been proposed to avoid adverse impacts from the Project on the environment. Mitigation is embedded in the design of each scheme through considered alignment and associated earthworks to achieve the best fit with topography and sensitive landscape features. Additional mitigation is described in Appendix 10.7 of the ES (Landscape Mitigation Schedule) (Application Document 3.3).

Land use open space, green infrastructure and green belt (paragraphs 5.165 – 5.184)

7.3.44 To conform with these policies of the NNNPS a review has been undertaken of existing and proposed land uses along the Project's route. It has then assessed any effects of replacing an existing development or use of the site with the proposed Project and whether the Project would prevent a neighbouring use from continuing.

7.3.45 Where potential impacts have been identified on soil quality during construction and operation phases, design, mitigation and enhancement measures have been established to minimise these impacts. Mitigation and enhancement measures are outlined at section 9.9: Essential mitigation and enhancement measures of Chapter 9 (Geology and Soils) of the ES (Application Document 3.2-3.4). Where online widening is feasible it utilises the previously developed and highway land, but where it is not feasible routes have been selected to avoid and minimise negative impacts to the environment. Furthermore, design, mitigation and enhancement measures have been put in place to address any impacts identified arising from potential contamination sources, ensuring they are appropriately mitigated. This is set out at section 9.9 of Chapter 9 of the ES.

7.3.46 An assessment of the Project's accordance with relevant county and local plan policies has been completed at Appendices C and D of the LPCS (Application Document 3.9) which demonstrates conformity with the relevant policies.

7.3.47 The assessment within Chapter 13 (Population and Human Health) of the ES (Application Document 3.2-3.4) considers the Project's likely significant effects on green space and community sports facilities. Areas of replacement land for open space and Common Land are proposed in order to conform with the section 131 of the PA 2008. Given the compensatory (replacement) land, and the wider transport, economic and environmental benefits arising from the Project and set out in the CftP at Chapter 3 (Application Document 2.2), it is considered that the loss and replacement of the small amount of open space would be outweighed by the benefits which the Project would deliver.

7.3.48 The ES has identified areas where it encroaches into areas to be classed as best and most versatile ('BMV') agricultural land, as set out in Table 9.2 of Chapter 9 (Geology and Soils) of the ES (Application Document 3.2). For areas of temporary development, BMV is to be

returned to the same quality as far as reasonably practicable to minimise BMV losses and limit permanent impacts. On a Project-wide basis, with temporary land take returned to the farm holdings post construction, it is considered that the majority of agricultural holdings would continue to operate, particularly given mitigation measures such as new overbridges which seek to provide ongoing access between land and key infrastructure. Overall, during operation it is therefore considered that there would be neutral effects on agricultural holdings.

7.3.49 The Applicant has considered the Project's possible effects on any existing PRoW, National Trails, and other right of access to land which are used by WCH and relevant mitigation measures have been incorporated into the Project design to address any adverse effects. Where the Project proposals could affect existing PRoWs, appropriate mitigation measures are being integrated into designs, including safe crossing points where necessary. Full details are set out within the Walking, Cycling and Horse Riding Proposals (Application Document 2.4).

Noise and Vibration (paragraphs 5.186 – 5.200)

7.3.50 To conform with these policies of the NNNPS an assessment of potential impacts of noise and vibration has been undertaken, as set out at Chapter 12 (Noise and Vibration) of the ES (Application Document 3.2-3.4). This assessment in addition to considering impact on people also considers noise effects on wildlife and ecology and meets the requirements for the assessment as set out at paragraph 5.189 to 5.193 of the NNNPS.

7.3.51 The noise assessment has found that during the construction phase, there are expected to be significant temporary adverse effects to residents along the entire route. During the operational phase, there will be a range of significant beneficial effects alongside some significant permanent adverse effects. Where possible, mitigation measures such as noise barriers will be implemented to mitigate and minimise these effects, as set out in section 12.9 essential mitigation and enhancement measures of Chapter 12 (Noise and Vibration). The mitigation measures and the approach to the design to minimise noise emissions are proportate and reasonable and conform with paragraphs 5.194 – 5.199 of the NNNPS. The measures will be delivered through adherence to the EMP (Application Document 2.7) which also sets out the measures to avoid, minimise and mitigate the noise effects of construction on biodiversity features.

Impact on Transport Network (paragraphs 5.203 – 5.216)

7.3.52 To conform with these policies of the NNNPS regard has been had to the policies set out in the relevant host authorities local plans and the design has been developed through regular engagement with the relevant highways authorities. The application is supported by a TA (Application Document 3.7), which considers the transport impacts of the Project on other networks. The TA (at chapter 3 and 10) also has regard to DfT Circular 02/2013 in delivering sustainable development

and local models have been taken into account at section 7 (Forecast local network performance) of the TA.

7.3.53 The Project's design has incorporated all reasonable opportunities to support other transport modes in developing its infrastructure. This includes public transport users and WCH users with. Details regarding WCH provision for each scheme set out in the Walking, Cycling and Horse Riding Proposals report (Application Document 2.4).

7.3.54 Traffic Management Plans ('TMPs') that will be part of the EMP (Application Document 2.7) will be developed as detailed design progresses and include travel plans to meet the requirements of paragraph 5.208 of the NNNPS.

7.3.55 Where PRoW are severed by or converge at the upgraded A66 carriageway, 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 have some level of betterment for WCH compared with the provision on the existing single carriageway lengths. 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.

Water Quality and Resources (paragraphs 5.220 – 5.231)

7.3.56 To conform with these policies of the NNNPS an assessment has been undertaken, taking account of relevant Government guidance on water quality, wastewater and water quality, as set out in Chapter 14 (Road Drainage and Water Environment) of the ES (Application Document 3.2). Essential mitigation and enhancement measures relating to pollution are set out within chapter 14 of the ES to ensure that water pollution is prevented. This includes pollution mitigation measures to be incorporated within the drainage design. These measures are intended to ensure that both new and existing development does not contribute to or is put at unacceptable risk from water pollution. Some of these measures represent opportunities to improve upon the quality of discharge, such as new drainage outfalls to appropriately manage surface water and sediment run off prior to discharge to the watercourse, to conform with paragraph 5.222 of the NNNPS.

7.3.57 Activities that discharge into the water environment have been fully assessed and the Consents and Agreements Position Statement (Application Document 5.4) identifies the separate water related consents that will be pursued separate from and subsequent to the DCO application and as reported in the SoCG with the EA (Application Document 4.6).

7.3.58 The WFD Compliance Statement (Appendix 14.1 of the ES) (Application Document 3.4) concludes that the Project has the potential to have an adverse effect on 9 surface waterbodies with the potential to cause a

deterioration in the current status of those waterbodies. Therefore, additional mitigation has been identified with the aim to ensure no residual risk of status deterioration within the surface water bodies identified at section 14.1.17 of the WFD Compliance Statement. Through implementing this mitigation the potential for residual adverse overall effects associated with the risk of preventing the future achievement of status objectives of these surface water bodies is not considered to remain, as reported in the SoCG with the EA (Application Document 4.6).

Overall Conclusions on Conformity with the NN NNNPS

7.3.59 In terms of assessment and evaluation against national policy requirements, the Project demonstrates conformity with the Government's strategic vision for the development of the national road network, the Government's wider policies for economic performance, environment, safety, technology, sustainable transport and accessibility, journey reliability and the experience of road users as well as all the generic and specific policy requirements set out in section 5 of the NNNPS.

7.4 Balance of effects

7.4.1 Section 104(7) of the PA 2008 requires that the application should be determined in accordance with any relevant National Policy Statement unless the adverse impact of the proposed development would outweigh its benefits.

7.4.2 The NNNPS also requires that the overall benefits of the scheme outweigh the costs very significantly. It should be evidenced that these 'costs' of the Project are very significantly outweighed by the benefits of the scheme.

7.4.3 While it is established that the scheme would result in residual significant adverse effects on some aspects of the environment across some schemes within the Project, as well as some significant beneficial effects, it is considered that the wider benefits of the Project, in terms of the Government Transport for the North and Levelling Up agendas as outlined throughout this case, significantly outweigh the impacts of the Project as a whole.

7.4.4 This document provides an overview of the economic, social and environmental benefits of the Project as detailed in section 3.4. In addition, details on the traffic benefits (journey time, reliability and safety) are provided in Chapter 4; the economic benefits, both monetised and non-monetised in Chapter 5 and the benefits of individual schemes in Chapter 6.

7.4.5 The balance of benefits and adverse impacts considered as part of the environmental assessment process is reported topic by topic in the chapters of the ES (Application Documents 3.2-3.4). The ES has considered each impact assessment topic according to whether there are likely to be significant environmental effects in line with the EIA

Regulations. The ES reports both adverse impacts and benefits for each topic as well as cumulatively and for potential adverse impacts the ES has comprehensively addressed these, where appropriate through the identification of management and mitigation measures, as described in the ES (Application Documents 3.2-3.4) and in the EMP (Application Document 2.7). These findings from the ES have been reviewed in order to consider the conformity of the Project with the NNNPS, the NPPF, the development plan, plus other infrastructure and transport plans and strategies as set out in the LPCS (Application Document 3.9). The assessment of these plans has demonstrated that the Project conforms with policy at national, regional and local level.

Costs of no full dualling and enhanced capacity on the A66

7.4.6 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.

Summary of Costs of the Project

7.4.7 As set out in the preceding sections, there are environmental 'costs' associated with the implementation of the Project and these will need to be outweighed by the benefits in order to make a compelling case for the Project and for conformity with the PA 2008 and the NNNPS. These 'costs' are identified as residual adverse effects as summarised in the Non-Technical Summary of the ES (Application Document 3.1), and these are described below, with a focus on those that have been assessed to be significant, during the construction and operational stages.

Air Quality

7.4.8 **Construction:** Potential air quality effects may arise from emissions from site plant equipment and HGVs and also from changes in traffic flows along the Project and wider road network with traffic management in place. There is also the potential for dust nuisance on receptors within 200m of construction and haulage routes associated with the Project, although the mitigation measures set out in the EMP (Application Document 2.7) will minimise these temporary impacts to a negligible level. No significant construction related air quality effects have been assessed, following the implementation of mitigation for human health or ecological receptors.

7.4.9 **Operation:** Once the Project is operational, traffic flows and speeds are likely to rise due to the improved desirability of the route, improved capacity, and reduced congestion. These changes will impact emissions of the main traffic related pollutants, NO_X and $PM_{10,}$ resulting in a combination of improvements and deteriorations in air quality. Modelling has predicted there will be no exceedances of the respective NO_2, PM_{10} and $PM_{2.5}$ Air Quality Objectives at human receptor locations. No significant operation or construction related air quality effects on human health or ecological receptors have been assessed.

Biodiversity

7.4.10 **Construction:** These impacts broadly relate to habitat loss, temporarily removed or damaged through construction activity and associated deterioration in the quality of the environment; fragmentation of populations and habitats where changes to the environment from construction activities affect the movement of mobile species and disturbance to species by changes to activity, such as to breeding or

wintering birds. In addition, there is the potential for species mortality as a result of construction activities such as vegetation clearance, tree felling, vehicle movements and topsoil stripping. Although there are likely to be significant adverse impacts on habitats throughout the Project in construction, these will be mitigated through replacement planting that will be established through the operation phase. With mitigation measures to reduce and manage impacts, through the implementation of the EMP (Application Document 2.7) no significant effects on biodiversity during construction have been assessed on any designations or any protected species.

7.4.11 **Operation:** These impacts on habitats and populations broadly relate to fragmentation from severance of north-south movement; disturbance as a result of changes to operational traffic flows and damage that can occur as a result of changes to hydrological regimes, or long-term changes to nitrogen content affecting plant life. Through mitigation measures, such as the provision of safe crossing points for species and structures to facilitate species movement in addition to the opportunities to enhance biodiversity, such as the extensive habitat creation proposed, there is only one type of residual significant effects assessed, at two locations. This is a significant permanent moderate adverse effect on barn owl mortality in areas known to be used by foraging barn owl, within the Temple Sowerby to Appleby scheme and the Stephen Bank to Carkin Moor scheme.

7.4.12 The assessment concluded that following implementation of mitigation measures, there are no significant effects during the construction phase or operational stage on any designated sites or sites of geological conservation importance. Where potential impacts have been identified from the desk-based information, enhancement and conservation measures have also been established to ensure any potential impact is appropriately mitigated. Full details are set out in section 9.9 (Essential mitigation and enhancement measures) at Chapter 9 (Geology and Soils) of the ES. The Applicant, in accordance with the Habitats Regulations has screened the relevant SPAs and SACs at Stage 1 of the assessment and has completed an appropriate assessment where relevant, as set out in the Habitat Regulations Assessment (Application Document 3.5 and 3.6).

Climate

7.4.13 **Construction:** Total route wide emissions associated with construction are estimated to be 502,219 tCO_2e. The largest source of emissions during the construction phase of the Project is expected to arise from construction materials, including sourcing, processing and manufacture. These estimated construction emissions will represent 0.029% of the Fourth Carbon Budget and 0.026% of the Fifth Carbon budget and so are not considered significant as the Project in isolation will not have a material impact on the ability of the government to meet its carbon budgets. GHG emissions have been minimised where possible through design and will continue to be minimised during construction through measures, such as use of low-emission fuels and maximising

opportunities for renewable energy within compounds, as set out within the EMP (Application Document 2.7).

7.4.14 **Operation:** Total 'net' route wide emissions associated with operation over the 60-year appraisal period are estimated to be 34,139,594 tCO_2e, with the largest source of emissions arising from vehicles using the highways. These estimated operational emissions will represent 0.015% of the Sixth Carbon Budget and so are not considered significant as the Project in isolation will not have a material impact on the ability of the government to meet its carbon budgets. The Project has been designed to limit operational GHG emissions through the use of appropriate design standards, embedded mitigation, biodiversity and landscape planting and appropriate asset management procedures during operation. Following the inclusion of additional mitigation measures, the likelihood and consequence of all climate change risks on the Project are considered to be sufficiently reduced to be assessed as not significant.

Cultural Heritage

7.4.15 **Construction:** Construction activities could lead to temporary adverse effects on the setting of a number of heritage assets, including partial or total removal of heritage assets, compaction of archaeological deposits by construction traffic and structures, impacts upon the settings of the heritage resources and changes to key views and sightlines. The majority of impacts though are temporary and will not extend beyond the construction phase itself. The assessment has identified 12 significant temporary adverse effects on heritage assets associated with the setting of Grade II listing buildings and structures. In addition, there are ten permanent significant adverse effects after mitigation arising from the construction phase through direct loss (of archaeological features) or permanent setting changes to a Grade II listed building.

7.4.16 **Operation:** The operational phase of the Project could lead to beneficial and adverse effects on the setting of cultural heritage assets through traffic noise and the visibility of moving vehicles on the road. The assessment has reported one significant adverse effect associated with increases in noise and traffic volumes for a group of three Grade II listed buildings. The beneficial effects are reported in the section below.

Geology and Soils

7.4.17 **Construction:** there is potential for impacts to arise from the encountering of contaminated material, impacts to geodiversity and to agricultural soils. The measures contained within the EMP (Application Document; 2.7) are designed to limit the possibility for dispersal and accidental releases of potential contaminants, soil derived dusts, uncontrolled run-off to occur during construction and unexpected soil or groundwater contamination**.** Following the implementation of these mitigation measures the assessment has identified the potential for one significant adverse effect on very high sensitivity soils that is likely during construction on a route wide scale. This significant effect results

from the permanent loss of approximately140 ha of Best and Most Versatile agricultural land (very good (ALC Grade 2) and good (ALC Grade 3a)). The mitigation for this effect is reliant on EMP Annex B9 Soil Management Plan, which requires the contractors to comply with the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites and to produce a Soil Resource Plan (SRP) as part of the Soil Management Plan (SMP).

7.4.18 **Operation:** Without mitigation, operation of the road could lead to pollution impacts on surface water and groundwater from road run-off and potentially impact on soil quality. The design of the Project includes measures that will contain and control any releases of contaminants along the highway and its associated infrastructure such as drainage control. The drainage proposals for the Project include measures to contain and control surface water run-off from the highway as set out in the EMP and ES Appendix 14.2 Flood Risk Assessment and Outline Drainage Strategy (Application Document 3.4). With these mitigation measures in place no residual operation adverse effects have been reported**.**

Landscape and Visual

7.4.19 **Construction:** The ES has reported the likelihood of significant adverse visual impacts associated with the presence of construction vehicles, traffic control, movement and stockpiling of materials and the effects of temporary lighting and changes in lane markings and diversions. All of these impacts are temporary but are likely to result in significant adverse effects for a number of locations, including five Local Character Areas, three Broad Character Areas, residents and recreational users (using PRoW, cycle routes and visitor attractions) in proximity to the construction (within most schemes), heritage assets (Rokeby Historic Park and Garden and associated Church of St Mary) and motorists and pedestrian users of the A66 and nearby local roads. Measures to mitigate these temporary landscape and visual impacts of the construction activities include limiting construction activity to within the existing perception of the existing A66 road corridor, minimal removal of vegetation and stone walls where practicable, careful consideration of landforms and planting to retain important views, and other mitigation measures set out in the EMP (Application Document; 2.7).

7.4.20 As set out in section 6.5 above it has been concluded (as reported in the landscape chapter of the ES) that there are no significant impacts on the stated special qualities of the AONB by the Project. The construction activity would result in additional movement and activity in comparison to the existing A66; however as there would be no physical change and the special qualities of the AONB would remain. The landscape and visual effect on the AONB during construction is assessed as slight adverse.

7.4.21 **Operation:** During operation, the visual screening from mature vegetation will eventually be restored along the road corridor to a similar extent as the existing conditions before construction. The landscape will

be fully vegetated and the surfaces of structures will have weathered. However, significant effects are still predicted for some receptors at year 15 of operation due to the change relative to the baseline, particularly where the alignment is offline. Long term (15 years into the operation) significant adverse landscape and visual effects across the Project are likely in two Local Character Areas, for recreational users of nine public rights of way, motorists and pedestrians on a small number of roads, recreational users at two tourist attractions and at Rokeby Park and the Church of St Mary and residents, occupiers and visitors of and to one farmhouse**.**

7.4.22 It has been concluded (as reported in the Landscape and Visual Chapter 10 ,section 10 of the ES) (Application Document 3.2-3.4) that there are no significant impacts on the stated special qualities of the AONB by the Project, and at year 15 of operation '*the perception of the scheme would reflect that of the existing A66 and the effect to the Foothills character area would be neutral (no change) due to the maturing replacement roadside screen planting and intervening topography and woodland'.*

Material Assets and Waste

7.4.23 **Construction:** One potential significant effect has been reported in the Chapter 11 of the ES (Application Document 3.2-3.4) due to the potential to substantially constrain or prevent existing and potential future extraction of materials within a mineral safeguarding site during construction. The ES has confirmed that there will be no likely significant effects on the future inert, non-hazardous and hazardous landfill capacity in the Northeast, the Northwest and Yorkshire and the Humber and no likely significant effects related to materials assets or waste during construction or operation.

7.4.24 **Operation:** Materials and Waste Material use and waste generation is expected to be very small during operation of the Project, with no significant effects expected.

Noise and Vibration

7.4.25 **Construction:** During construction, the Project has the potential to cause likely significant temporary noise and vibration impacts on the closest receptors to the development. Over 320 significant adverse effects on individual receptors (mostly on residential receptors) are reported in the ES for the construction phase. The number of significant adverse effects reported varies for schemes depending on the construction activities being undertaken within that scheme and when the assessment has assessed construction to be at is busiest and closest to each receptor. The highest number (196) significant adverse temporary noise effects are assessed within the M6 Junction to Kemplay Bank scheme, given its length and location within a largely urbanised area. In other schemes there are substantially smaller numbers of significant effects reported, with up to five in the Stephen Bank to Carkin Moor scheme and up to two in the A1(M) Junction 53 scheme.

7.4.26 The EMP includes a Noise and Vibration Management Plan ('NVMP') which would manage and reduce noise and vibration impacts, including implementation of Best Practicable Means ('BPM') and consultation with Local Authorities. BPM includes the selection of quiet and low vibration equipment, optimal location of equipment on site to minimise noise disturbance, the use of enclosures for stationary equipment, no start-up or shut down of vibratory equipment within 50m of close receptors, and the use of less intrusive vehicle reversing warnings.

7.4.27 **Operation:** Once operational, changes in the noise climate will arise from physical changes to the road layout and changes in the traffic volume using the Project's nearby road network. It has been assessed that 128 residential and 6 non-residential receptors are predicted to experience significant adverse effects as a result of noise increase arising from the Project. Although the adverse effects are significantly outnumbered by the beneficial effects (which totals over 408 residential and 46 non residential) as described in the benefits section below.

7.4.28 The number of adverse and beneficial operation noise effects varies between scheme, dependent on a range of factors including traffic flow, percentage of HGVs, speed, road surface, ground topography, the presence of intervening buildings and structures and distance from the road of receptors for these schemes. The highest number (67 residential and 12 non residential) of receptors subject to significant adverse temporary noise effects are assessed to be within the Temple Sowerby to Appleby scheme. These effects are associated with the proposed route alignment around the north of Kirkby Thore, effecting residents who will be in proximity to the new route, living within Sandersons Croft, Spitals Farm, Halefield, Sleastonhow, Powis House, Castrigg Hill and Roger Head. Overall, for the Temple Sowerby to Appleby scheme the number of dwellings that will benefit from the route alignment (280 dwellings) is substantially greater than those that will be adversely affected. Within the Appleby to Brough scheme. Thirty-three dwellings have been assessed to be adversely affected, although with the implementation of a noise barrier this number can be more than halved. Within other schemes there are substantially smaller numbers of significant adverse effects reported, with less than 12 dwellings assessed to be adversely affected within each of the remaining schemes.

Population and Human Health

7.4.29 The population and health assessment considers the implications to the health and well-being of the population associated with temporary or permanent loss of land or from combined environmental factors such as noise, dust, visual and lighting, the presence of construction traffic and accessibility to key facilities and services.

7.4.30 **Construction:** During construction, there will be impacts on residential, commercial and community receptors due to the demolition of properties, temporary land take and access restrictions. Walkers, cyclists and horse-riders will potentially be impacted by temporary land

take, closure or diversion of walking/cycling routes and bridleways. Agricultural land holdings will largely be impacted as a result of temporary land take required for the Project. The Project has been designed to minimise disruption to property and land take where possible. Mitigation measures during construction will include temporary diversions and signage to limit the impacts of any temporary closures of WCH routes. Access to residential, commercial and community receptors will be maintained where possible. Where there are impacts on these receptors these will be managed to minimise disruption through measures set out in the PRoW Management Plan, Employment Strategy and Business Support Strategy and other management processes included in the EMP (Application Document 2.7).

7.4.31 **Operation:** During operation, the Project is likely to bring beneficial impacts to population and human health receptors as set out in the Benefit's section below.

Road Drainage and the Water Environment

7.4.32 **Construction:** During construction, before mitigation, there is potential for significant impacts on surface water, groundwater and flood risk receptors. Surface water and groundwater quality may be impacted by increased pollution from mobilised suspended solids and spillages of fuel and other hazardous substances. Construction activities within or within close proximity to surface water features have the potential to impact the movement and distribution of the watercourses as well as their ecological quality. Mitigation measures to protect the water environment have been set out in Chapter 14 (Road Drainage and Water Environment) of the ES; (Application Document 3.2)). For example, where land drainage from agriculture is encountered during construction, actions will be taken to divert the flow to an appropriate location and field drains will be reinstated to the original locations, where practically possible, or diverted to an appropriate discharge location.

7.4.33 The assessment, with the recommended mitigation measures implemented, has concluded that no significant effects during construction are likely and that no construction or operation activity will cause deterioration of the WFD status of any waterbody or prevent them from achieving either 'Good Ecological Status' or 'Good Ecological Potential'.

7.4.34 **Operation:** Before mitigation, there is potential for significant effects on surface water, groundwater and flood risk. Surface water and groundwater quality could potentially be impacted by polluted surface water runoff that may migrate or be discharged to surface water features or groundwater via the proposed highway drainage system. No significant effects on the water environment are determined during operation with appropriate mitigation in place. Mitigation measures are set out within a Ground and Surface Water Management Plan (Annex B7 of the EMP (Application Document 2.7)) and include installing green bank protection measures; carrying out the naturalisation of culvert beds with appropriate riverbed substrate; using planting to introduce natural

source of woody material to watercourses and introducing measures to dissipate flow velocity at culvert outfalls.

Benefits of the Project

7.4.35 It is considered that the following are the main benefits of the Project, that will be balanced against the costs of developing the Project, as set out above.

7.4.36 The principal benefits and opportunities of the Project are set out in section 3.4 above and these have been re-categorised in this section in the table below in relation to the project objective to which they relate. The definition of objectives took place early in the scheme development, at the feasibility stage (PCF Stage 0). The objectives set out the ambition of National Highways to maximise opportunities to provide benefits through the project and to have regard, in making design decisions, to the conservation and enhancement of the environment, including the environmental designations (such as AONB and SAC) that would be affected.

Table 7-1: Principal Benefits and Opportunities in Relation to Project Objectives

Theme	Project Objectives	Project Benefits and Opportunities
Transport	Improve road safety, during construction, operation, and maintenance for all, including road users, NMU, road workers, local businesses and local residents.	A consistent standard of dual carriageway, with a speed of 50mph at Kemplay Bank and 70mph in all other lengths will lead to less accidents. Use of the 'old' A66 as part of the local road network will provide better, safer routes for cyclists and pedestrians. Chapter 4 of this document further provides the safety benefits of the Project.
	Improve journey time reliability for road users across the route.	The Project will reduce congestion and improve the reliability of people's journeys between the M6 at Penrith and the A1(M) Scotch Corner and nationwide. Freight and transport businesses will benefit from improvements to journey time reliability across the A66.
	Improve and promote the A66 as a strategic connection for all traffic and users.	The project will Improve connectivity for people living and working nearby and create better facilities and east-west connectivity for cyclists and pedestrians. It also improves connectivity between the key employment areas of Cumbria, Tees Valley, Durham and Tyne and Wear. Chapter 4 of this document further provides the connectivity benefits of the Project.
	Improve the resilience of the route to the impact of events such as incidents,	In dualling the remaining lengths of the A66, along with other improvements, additional resilience will be built into the road, which it is anticipated will result in fewer road closures. By dualling the road, full closures will be less likely, with freight hauliers likely to be most positively

Theme	Project Objectives	Project Benefits and Opportunities
	roadworks and severe weather events. Seek to improve NMU provision along the route.	benefitted by this, as currently there are fewer opportunities for diversion or turning around along this route for large vehicles All the schemes proposed to be dualled will have some level of betterment for WCH (formerly described as NMUs) compared with the provision on the existing single carriageway lengths. 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. Detail on the WCH provision for each scheme is provided in Chapter 6 of this document and set out in detail within the WCH Design Proposals (Application Document 2.4).
Economic	Regional: Supporting the economic growth objectives of the Northern Powerhouse and Government Levelling Up agenda	The Project improvements represent a significant opportunity to boost east-west connectivity and drive economic growth. Full detail on the economic benefits of the Project is provided in Chapter 5 of this document and in summary are: - increased capacity of the A66 and improved journey times will stimulate the local economy as people travel to employment centres and to community, hospitality and retail facilities. - faster journeys lead to less wasted time idling and waiting for congestion to clear, freeing time for more productive activities that produce economic value, or leisure activities. - businesses that are dependent on the A66 for east-west connectivity will benefit from direct cost reductions, an improved environment for maintaining contact with their customers and suppliers, and the ability to access larger markets and different geographical areas. - As transport becomes easier and journey times quicker and more reliable, the settlements surrounding and using the A66 will become more attractive to inward investment from the private sector. At a regional scale, businesses will benefit from the improved accessibility of key employment areas across Cumbria, Tees Valley and Tyne and Wear. - an improved A66 will also provide 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 as a result of additional capacity and

Theme	Project Objectives	Project Benefits and Opportunities
		reduced delay, alongside over £62m of wider economic benefits. Freight and transport businesses will benefit from improvements to journey time reliability across the A66 and the dualling will improve connectivity between the key employment areas of Cumbria, Tees Valley, Durham and Tyne and Wear.
	Ensure the improvement and long-term development of the 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.	Journeys will become more reliable, and access will be improved to key tourist destinations, such as the North Pennines and Lake District and tourism facilities such as Centre Parks. While all journeys to these destinations and facilities are not exclusively served via the A66, a significant portion of these journeys are currently made along this route, and as the road improves, this is expected to increase with perception of the improved route attracting more users Local journeys will become more reliable and access will be improved to local services, helping to stimulate local economic activity. For individuals that are seeking employment, the improvements may alter their preference of their travel-to-work radius and provide access to a wider range of employment opportunities.
Environment	Minimise adverse impacts on the environment and where possible optimise environmental improvement opportunities.	Whilst there are residual significant adverse effects on the environment, as reported above as a result of the Project, National Highways has sought to avoid such effects in the first instance and moderate them wherever feasible, including through making changes to the design or the route alignment where appropriate. For those part of the route that effect designated environmental areas, such as the AONB and SAC, a route alignment and sensitive design is proposed which respects the character and quality of these designations and their purpose. Environmental benefits are principally delivered during the operational phase and are summarised in the table below on a scheme-by-scheme basis.

Table 7-2: Summary of Benefits (as set out in the Non-Technical Summary of the ES (section 4.14) (Application Document 3.1)

M6 Junction 40 to Kemplay Bank	Significant permanent beneficial noise effects for one dwelling located to the south of Kemplay Bank roundabout, three commercial receptors located east of the Kemplay Bank roundabout and one commercial property to the north of Skirsgill roundabout. Significant permanent beneficial population and health effects to 24 community assets, to the Lake District tourism sector and to one community asset as a result of reductions in noise and vibration.
Penrith to Temple Sowerby	Significant permanent beneficial noise effects for four dwellings, one located near Whinfell (north of the existing A66) and three located off Moor Lane (Fremington); four dwellings located near Whinfell Park and alongside Moor Lane and Brougham Institute at Whinfell. Significant permanent beneficial effects to four heritage assets during operation**.** Significant permanent beneficial population and health effect to one community asset as a result of permanent noise and vibration changes and to one business.
Temple Sowerby to Appleby	Significant permanent beneficial noise effects for 280 dwellings within Kirkby Thore, near or within Crackenthorpe, near to Long Marton Road and along the existing A66: one NIA, 12 non-residential receptors, including Kirkby Thore primary school. Significant permanent beneficial population and health effects to four community assets, to one business and in addition to five community assets and four businesses as a result of permanent noise and vibration changes.
Appleby to Brough	Significant permanent beneficial noise effects for five dwellings near Turks Head and Wheatsheaf Cottage, one NIA and one non-residential receptor (Apple Tree Farm Hotel). Significant permanent beneficial population and health effects to 12 community assets and to one business.
Bowes Bypass	Significant permanent adverse effects to three heritage assets during operation. Significant permanent beneficial population and health effects to three community assets and one business.
Cross Lanes to Rokeby	Significant permanent beneficial noise effects for one residential receptor at Rokeby and two non-residential receptors in Rokeby.
Stephen Bank to Carkin Moor	Significant permanent beneficial noise effects for eight dwellings, located at Ravensworth Lodge, Foxwell, Foxgrove Farm and Foxhall and one NIA. Significant permanent beneficial population and health effect to two business.

7.4.37 **Route Wide Benefits (in-between schemes):** Route wide there are 109 receptors located in-between schemes or close to roads predicted to experience a significant permanent beneficial noise 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 south-east of Penrith), Barnard Castle (alongside A67 and Newgate), Ravensworth (alongside Waitlands Lane and Stonygate Bank) and Richmond (alongside Gallowgate). In addition, 28 non-residential receptors are predicted to experience a significant permanent beneficial

noise effect, route wide (in between schemes) as a result of the operation of the Project.

7.4.38 **Overall Noise Benefits:** In total Project wide (in proximity to the schemes and in-between schemes) the operation of the Project is predicted to give rise to beneficial noise 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. In addition, there are two NIAs predicted to be subject to significant beneficial effects.

7.5 Balancing Impacts and Benefits

7.5.1 There are significant construction related adverse environmental effects for most topics assessed through the EIA but these would largely be temporary in nature and would be mitigated during the construction period as much as possible through the implementation of measures set out and secured in the EMP (Application Document 2.7). The operational, permanent 'costs' of the scheme are fewer than those occurring through construction, with the harmful effects on the environment reducing during the operational period as long-term mitigation measures such as planting establish and mature. This section weighs these costs against the benefits, as reported in the ES and summarised above and as evidenced elsewhere in this document with respect to wider national and regional strategic benefits.

7.5.2 The population and health assessment considers the implications to the health and well-being of the population within local communities in proximity to the route, drawing from the findings of the ES (such as noise, dust, visual and lighting and the impacts of construction traffic) and from direct impacts on local accessibility and land-take. The table below compares the significant beneficial effects with the significant adverse effects for population and human health.

Table 7-3 Significant Population and Human Health Effects.

Type of Receptor	Stage of Effect Construction or Operation	Number of Receptors subject to a Significant Permanent Effect	Number of Receptors subject to a Significant Temporary Effect
Private Property	Construction	11	0
	Operation	0	0
Community Assets/ Tourism Sector	Construction	1	22
	Operation	50	0
Business	Construction	3	4
	Operation	10	0
Agricultural Land Holdings	Construction	44	0
	Operation	0	0
PROW	Construction	1	0
	Operation	0	0
Total Adverse Construction		**60**	**26**
Total Beneficial Operation		**60**	**0**
Total Adverse Operation		**0**	**0**

Key: Beneficial Effects in Red

7.5.3 The table above shows that there are 26 temporary adverse human and health effects during construction and none for operation. These effects are temporary in nature and as described above would be mitigated during the construction period as much as possible through the implementation of measures set out and secured in the EMP. During operation the number of receptors that will significantly benefit in terms of their well-being (as reported in the Population and Human Health chapter) is the same as the number of receptors that will be significantly adversely affected.

7.5.4 For noise effects there are also a large number of significant beneficial effects that are assessed during the operation stage. The table below compares the significant adverse effects with the beneficial effects for noise for both construction and operation, as reported in the ES (Application Document 3.2-3.4).

Table 7-4 Significant Noise Effects

Residential and Non-Residential Receptors Significantly Effected	
Construction (Temp Adverse Effects)	328
Operation (Permanent Adverse Effects)	118
Operation (Permanent Beneficial Effects)	454
NIA Effected in Operation (Permanent) Beneficial Effects)	3

Key: Beneficial Effects in Red

7.5.5 The table above shows that there are 328 temporary adverse noise effects during construction. These effects are temporary in nature and as described above would be mitigated during the construction period as much as possible through the implementation of measures set out and secured in the EMP. In operation the permanent beneficial significant noise effects of the project outweigh the adverse significant effects, in terms of the number of receptors effected, with an overall net benefit of 336 residential and non-residential receptors.

7.5.6 The Population and Human Health and Noise assessments of the ES do not consider the wider strategic benefits of the Project. These wider economic and transport related strategic benefits are summarised in table 7.1 above and can be regarded to benefit both the local population (in addition to benefits reported in the population and human health and noise chapters of the ES) as well as the wider regional populations that rely on the A66 for work journeys, business, recreation and other reasons to travel.

7.5.7 These wider strategic benefits arise from addressing the current problems with the existing A66. These problems are due to the current non-dualled lengths of the A66 being of a design that does not align with modern highways standards. The resulting issues of congestion, unreliable journey times, lack of resilience during adverse weather conditions and poor road safety have an effect on local communities and also non-motorised users who rely on using the current A66 for local journeys.

7.5.8 These issues in combination have a significant effect on the local and regional economy, stifling growth and preventing the region – and its

population – from fulfilling its economic and strategic growth potential which are the key factors of the Government's objectives for the Northern Powerhouse and the 'Levelling Up agenda'. These are the principal reasons that justify the need to enhance and improve the A66 and are factors that weigh heavily in the balance against the costs. The alternative, to do nothing, would be unacceptable and would have far reaching and damaging economic and social 'costs' associated with the continuation or worsening of these issues associated with the existing road.

7.5.9 It is recognised that there are environmental costs (as summarised above), primarily relating to adverse effects during the Project's construction in relation to cultural heritage; landscape and visual effects; biodiversity; population and human health and noise. Many of these adverse effects of the Project on the environment would reduce as the Project progresses from construction to operation, such that at Year 15 of operation, some effects would be removed entirely due to the maturation of mitigation measures, such as planting for visual screening and habitat creation. In contrast to the majority of adverse effects occurring on a short-term basis during construction, the significant beneficial effects of the Project are most numerous during the operation stage, creating permanent benefit. This EIA has demonstrated that this would clearly be the case for noise effects, as summarised above, where there are numerous benefits for both residential and non-residential receptors, that significantly outweighing the adverse noise effects during operation.

7.5.10 In addition, through high quality embedded mitigation and enhancement measures, there would be some benefits of the Project to the surrounding environment which would represent an improvement compared to the existing conditions. This includes permanent beneficial effects to non-road users and local communities through the provision of a dedicated walking and cycling route to benefit local communities as well as visitors to the area. Furthermore, whilst it is not currently a policy obligation for a Nationally Significant Infrastructure project to achieve 10% net gain, the objective of maximising biodiversity has been core to the environmental design.

7.5.11 Finally, this document has demonstrated in this section, in chapter 6 and in the LPCS (Application Document 3.9) that the project and individual schemes conform with national policy. The conformity with policy demonstrates how the Project meets objectives and realises opportunities, which are both important considerations for national policy. Conformity with policy also demonstrates that the benefits of the project and individual schemes outweigh any adverse impacts on designated areas that would arise from the construction and operation of the Project. The EIA has concluded that there are no significant adverse environmental effects on designated sites at international, European or national level. With respect to the AONB (as described in section 6.5 and 6.6) there are exceptional circumstances and benefits in the public interest for the slight adverse impacts on the AONB from the limited incursions along the boundary of the AONB in three location.

7.5.12 Given the permanent nature of the suite of benefits identified, and the demonstrable need for the scheme and its wide-reaching transport and economic benefits (aligning with the aspirations and objectives of Government and authorities at national through to local level), it has been concluded that the benefits of the Project significantly outweigh both the costs of the Project and the costs of no intervention.

7.6 fs

7.6.1 Section 104(7) of the PA 2008 requires that the application should be determined in accordance with any relevant NPS unless the adverse impact of the proposed development would outweigh its benefits. This document provides an overview of the economic, social and environmental benefits of the Project as detailed in section 3.

7.6.2 The potential adverse impacts of the Project have also been comprehensively considered and addressed through the management and mitigation measures described in the ES (Application Documents 3.2-3.4). The balance of benefits and adverse impacts is also considered through the Applicant's response to the balancing exercises for relevant topic areas expressed within the NNNPS, set out within the LPCS Policy Conformity Table (Appendix A of the LPCS (Application Document 3.9)).

7.6.3 The ES (Application Documents 3.2-3.4) has considered each impact assessment topic according to whether there are likely to be significant environmental effects, in line with the EIA Regulations (as amended).

7.6.4 The conclusions from the ES have been reviewed in order to consider the conformity of the Project with the NNNPS, the NPPF, the development plans, plus other infrastructure and transport plans and strategies as set out in the LPCS (Application Document 3.9).

7.6.5 The NNNPS Conformity Table, an appendix of the LPCS (Application Document 3.9) provides an analysis of these effects and the wide-ranging benefits of the Project. In each case, it can be concluded that the careful selection of the Project from reasonable alternatives and the proposed mitigation will minimise adverse impacts such that the benefits of the Project outweigh likely adverse impacts.

8 Conclusions: The Case for the Project

8.1 Need and Project objectives

8.1.1 This Case for the Project identifies the existing conditions of the A66 and describes the need for the Project. It identifies traffic problems that affect the local and regional economy, local and regional transportation, local communities and internationally and nationally designated environments. These problems and the consequent need for the Project are articulated in existing Government strategies which confirm a long-standing Government commitment to improving the A66 and confirmation in RIS2 and designation under project speed. The DfT has

set objectives to ensure that the proposed Project resolves these problems and delivers substantive and wide-ranging benefits.

8.2 Alternatives, the Project and its benefits

8.2.1 Alternative options to address these problems have been under consideration since the 1940s. A wide ranging and detailed optioneering process, involving extensive study and consultation, has considered reasonable alternatives, ultimately resulting in the announcement of the preferred route by the SoS.

8.2.2 The Project has been developed since the preferred route and further public consultation has been carried out. Taking on board feedback received and through ongoing stakeholder engagement the design of the Project has been developed to that now set out within the DCO application.

8.2.3 The Project has been identified as the best option to meet the defined need and objectives, including the delivery of a comprehensive set of benefits. It offers an effective and deliverable solution to the key challenges of the A66 and delivers real benefits as outlined:

- Safety – 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 less accidents. Use of the 'old' A66 as part of the local road network will provide better, safer routes for cyclists and pedestrians.
- Connectivity – Improving connectivity for people living and working nearby and creating better facilities for cyclists and pedestrians. Reducing congestion and improving the reliability of people's journeys between the M6 Junction 40 at Penrith and the A1(M) Junction 53 at Scotch Corner and nationwide. It also improves connectivity between the key employment areas of Cumbria, Tees Valley and Tyne and Wear.
- Environmental – Minimising noise levels for people living and working near the route and reducing 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.
- Economic – 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.
- Tourism – Improving access to key tourist destinations such as the North Pennines and Lake District.
- Community – Re-connecting communities and providing better links between settlements along the route as well as improving access to services such as healthcare, employment areas, active travel and education.

- Capacity – Reducing delays and queues during busy periods and improving the performance of key junctions such as the A66/A6 and the M6 Junction 40.
- Increasing reliability – An improved A66, with consistent speed limits, will lead to less accidents which, in turn, makes the road more reliable. Also, having a dual carriageway provides the option to close lanes where required due to accidents or break downs and still keep traffic moving.

8.3 NNNPS conformity

8.3.1 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. Where harm is generated by the construction or operation of the Project, it has been demonstrated through careful and comprehensive assessment that there are substantial and long-lasting benefits and outcomes as previously referenced.

8.4 Determination of the application

8.4.1 The PA 2008 requires that, in determining DCO applications, the SoS must have regard to the relevant NPS, the Local Impact Reports, any prescribed matters and any other matters the SoS thinks are both important and relevant. Paragraph 4.2 of the NNNPS confirms that there is a presumption in favour of granting development consent for national networks.

8.4.2 The PA 2008 also states that DCO applications should be determined in accordance with the relevant NPS except in certain circumstances including where adverse impacts would outweigh benefits, or where to do so would be unlawful, in breach of duty or condition, or in breach of international obligations.

8.4.3 Deciding the DCO application in accordance with the NNNPS would be lawful as outlined in section 104(7) of the PA 2008.

8.4.4 The Applicant has carefully considered legal obligations set out in the NNNPS, including those under the Habitats Regulations and Water Framework Directive, and wider legal obligations associated with promoting a nationally significant highways project of this type.

8.4.5 Relevant prescribed matters which the SoS must have regard to include the preservation of heritage assets and biological diversity.

8.4.6 The Project has been designed to minimise any potential negative impacts on the natural environment and landscapes of the North Pennines and Lake District and has regard, in making design decisions, to the conservation and enhancement of the environment, including the environmental designations (such as AONB and SAC) that would be affected. It has been demonstrated that any harm to such assets has

been minimised and mitigated and is significantly outweighed by the benefits of the Project.

8.4.7 A review of other relevant national and local planning policy has been carried out to identify and address any other relevant and important matters. The Project has also had regard to the consultation and engagement feedback received throughout the Project development. This review demonstrates that the Project is in conformity with national and local planning policy.

8.4.8 There are no legal reasons, international obligations, prescribed conditions or important and relevant matters which would require the SoS for Transport to refuse this DCO Project.

8.4.9 The Project also conforms with all other relevant national planning, infrastructure and transport policies. Similarly, the Project accords with all other relevant and important matters that the SoS might need to take into consideration, including the adopted development plans for the local area and the NPPF.

8.4.10 The NNNPS Accordance Table demonstrates the conformity of the Project with the NNNPS. Overall, it is considered that the public benefits provided by the Project are clear, founded in factual evidence and outweigh any adverse effects. This document has shown that, where the NNNPS requires a balancing judgement between harm and benefits, the evidence demonstrates that the Project fully conforms with the NPS and that the benefits significantly outweigh adverse impacts.

8.4.11 There is no policy or legislative reason that should preclude the acceptability of the Project. There is a clearly established and strong need to deliver this Project, which will result in extensive benefits to the local area and the wider regional and national economy, and the Applicant considers that there is a clear and justified case for the development consent order for the Project to be made.

8.5 Glossary

Term	Definition
Above Ordnance Datum (AOD)	Above the mean sea level at Newlyn in Cornwall calculated between 1915 and 1921, taken as a reference point for the height data on Ordnance Survey maps.
Accommodation overpass/underpass /structure	A bridge under or over the A66 that serves an affected area of land or property, not considered a public highway.
Accommodation/access road or track	A new or altered access road or track serving an affected area of land or property, not considered a public highway.
(The) Act	The PA 2008
Air quality standard	Air quality limit values and objectives.
Amenity	The relative pleasantness of a journey, or the ability of communities to achieve enjoyment and/or quality of life.
Ancient Trees	One that has passed beyond maturity and is old, or aged, in comparison with other trees of the same species
Ancient woodland (AW)	Land that has been continually wooded since at least 1600 AD.
Annual average daily traffic (AADT)	The total volume of vehicle traffic of a motorway or road for a year divided by 365 days.
Appleby Horse Fair	Appleby Horse Fair is a historic gathering of Gypsies and Travellers which takes place annually at Appleby-in-Westmorland.
Applicant	National Highways
Application	This refers to an application for a Development Consent Order. An application consists of a series of documents and plans which are submitted to the Planning Inspectorate and published on its website.
Appraisal	A process that looks at the worth of a course of action.
Area of Outstanding Natural Beauty (AONB)	An area designated under Section 82(1) of the Countryside and Rights of Way Act 2000 for the purpose of conserving and enhancing its natural beauty.
Assessment	A process by which information about effects of a proposed plan, project or intervention is collected, assessed, and used to inform decision-making.
Attenuation	The term used in drainage design to indicate a reduction in the rate of flow or flooding risk, for example, by means of a pond to hold back water.
Balancing pond	Part of a drainage system that is used to temporarily store, and thereby attenuate, the flow of surface water run-off.
Baseline	Existing environmental conditions present on, or near a site, against which future changes can be measured or predicted.
Benefit Cost Ratio (BCR)	The benefit cost ratio is a presentation of the amount of benefit being bought for every £1 of cost to the public purse – the higher the BCR the greater the benefit for every £1 spent.
Biodiversity	Biological diversity: The variety of life forms in a given area, includes all species of plants and animals, their genetic variation and the complex ecosystems of which they are part.
Brough Hill Fair	Brough Hill Fair is an historic gathering of Gypsies and Travellers which takes place annually at a site approximately 1.2km to the east of Warcop and adjacent to the southern edge of the A66.
Bund	An embankment structure
Compensation	Measures taken to offset or compensate for residual adverse effects that cannot be mitigated, or for which mitigation cannot eliminate.
Consent	A statutory permission given to an applicant by a statutory authority, such as the local planning authority or the SoS, that

Term	Definition
	allows a development to be carried out within a specific area of land.
Conservation Area	Defined at Section 69 of the Planning (Listed Buildings and Conservation Areas) Act 1990 as those parts of a local planning authority area of special architectural or historic interest the character or appearance of which it is desirable to preserve or enhance.
Construction Materials	Primary, recycled / secondary, and renewable sources of materials required for constructing a project
Consultation	A process by which regulatory authorities, statutory and non-statutory bodies, local authorities, local communities, and those with an interest in the land are approached for information and opinions regarding a development proposal.
County	England is divided into 48 ceremonial counties, which are also known as geographic counties, used for the purposes of administrative, geographical and political demarcation.
Cumulative effects	The combined residual effects of a project in its entirety (all schemes), and the combined effects with other projects.
Cutting	A length of road where the surrounding land is at a higher level and the ground has been dug away to put in the road.
Designated Funds	A series of ring-fenced funds designated to Highways England to address a range of issues beyond the traditional focus of road investment.
Design Manual for Roads and Bridges (DMRB)	A set of documents that provide a comprehensive manual system which accommodates all current standards, advice notes and other published documents relating to the design, assessment, and operation of trunk roads.
Design Year	In the case of this scheme, 15 years after assumed opening.
Detailed Design	The process of taking on and developing the preliminary design.
Development Consent Order (DCO)	The means of obtaining permission for developments categorised as nationally significant infrastructure projects.
Do-Minimum (DM)	Future situation assuming no scheme is provided, but that maintenance is on-going.
Do-Nothing	The existing network without modification in the Opening Year/Design Year.
Do-Something (DS)	The road project under consideration in the Opening Year /Design Year
Draft DCO boundary	The site boundary used for the purpose of consultation. It includes the land anticipated at this stage likely to be required temporarily and/or permanently for the construction, operation and maintenance of the project.
Earthworks	The process of excavating or increasing level of soil.
Effect	Term used to express the consequence of an impact (expressed as the 'significance of effect'), which is determined by correlating the magnitude of the impact to the importance, or sensitivity, of the receptor or resource in accordance with defined significance criteria. For example, land clearing during construction results in habitat loss (impact), the effect of which is the significance of the habitat loss on the ecological resource.
Embankment	Artificially raised ground, commonly made of earth material, such as stone.
Embedded mitigation	Design measures which are integrated into a project for the purpose of minimising environmental effects.
Enhancement	A measure that is over and above what is required to mitigate the adverse effects of a project.

Term	Definition
Environment Agency	The Environment Agency is responsible for environmental protection and regulation in England and plays a central role in implementing the government's environmental strategy. The Environment Agency is the main body responsible for managing the regulation of major industry and waste, treatment of contaminated land, water quality and resources, fisheries, inland river, estuary and harbour navigations and conservation and ecology. They are also responsible for managing the risk of flooding from main rivers, reservoirs, estuaries, and the sea.
Environmental assessment	A method and a process by which information about environmental effects is collected, assessed, and used to inform decision-making.
Environmental Assessment Report	Documents the findings of an Environmental Assessment.
Environmental designation	A defined area which is protected by legislation that is threatened by change from manmade and natural influences (for example Ramsar sites, Sites of Special Scientific Interest and Special Areas of Conservation).
Environmental Impact	Any change to the environment, whether adverse or beneficial
Environmental Impact Assessment (EIA)	DMRB LA 104 Environmental assessment and monitoring (DMRB LA 104) (Highways England, 2020)9 defines EIA as: Statutory process consisting of: 1) preparation of an Environmental Statement 2) consultation 3) examination by the competent authority of the information contained within the Environmental Statement 4) the reasoned (justified or evidenced) conclusion by the competent authority on the significant effects of the project on the environment 5) the reasoned (justified or evidenced) decision by the competent authority to grant or refuse development consent
Environmental Management Plan (EMP)	Provides the framework for recording environmental risks, commitments and other environmental constraints and clearly identifies the structures and processes that will be used to manage and control these aspects. The EMP also seeks to ensure compliance with relevant environmental legislation, government policy objectives and scheme specific environmental objectives. It also provides the mechanism for monitoring, reviewing, and auditing environmental performance and compliance.
ES	A statutory report produced by the applicant including: 1) a description of the project 2) a description of the likely significant effects of the project on the environment 3) a description of the features of the project and/or measures envisaged to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment 4) a description of the reasonable alternatives 5) a non-technical summary 6) any additional information relevant to the characteristics of a project.
Essential mitigation	Mitigation critical for the delivery of a project which can be acquired through statutory powers. These are measures

[9] Highways England (2020) Design Manual for Roads and Bridges LA 104 Environmental assessment and monitoring, available at: https://www.standardsforhighways.co.uk/prod/attachments/0f6e0b6a-d08e-4673-8691-cab564d4a60a?inline=true [accessed 9 September 2021]

Term	Definition
	required to reduce and if possible offset likely significant environmental effects, in support of the reported significance of effects in the environmental assessment.
Examining authority	The person(s) appointed by the SoS to examine the DCO application and make a recommendation to the SoS.
Floodplain	A floodplain or flood plain is an area of land adjacent to a stream or river which stretches from the banks of its channel to the base of the enclosing valley walls and which experiences flooding during periods of high discharge.
Flood zones	Flood Zones refer to the probability of river and sea flooding. They are available to view on the Environment Agency's website.
Flood Zone 1	Land having a less than 1 in 1,000 annual probability of river or sea flooding.
Flood Zone 2	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.
Flood Zone 3	Land having a 1 in 100 or greater annual probability of river flooding; or land having a 1 in 200 or greater annual probability of sea flooding.
Greenhouse Gas (GHG)	A gas that contributes towards global warming by trapping heat given off from the earth's surface. Under the United Nations' Kyoto Protocol, the 6 GHG gases are carbon dioxide, methane, nitrous oxide, perfluorocarbons, hydrofluorocarbons and sulphur hexafluoride.
Groundwater	Groundwater is the water present beneath Earth's surface in soil pore spaces and in the fractures of rock formations.
Grade-separated junction	Roads crossing the carriageway pass at a different level, so as not to disrupt the flow of traffic. Slip roads connect the carriageway to the junction.
Gypsies and Travellers	Persons of nomadic habit of life whatever their race or origin, including such persons who on grounds only of their own or their family's or dependants' educational or health needs or old age have ceased to travel temporarily, but excluding members of an organised group of travelling showpeople or circus people travelling together as such.
Habitat Regulations Assessment (HRA)	A HRA is required where a project may have significant effects on a site by affecting its function to support protected habitats or species. Its purpose is to assess the implications of the proposal in respect of the site's conservation objective. The assessment is carried out by the competent authority, in this case the SoS.
Heavy Goods Vehicle (HGV)	A goods vehicle over 3.5 tonnes, including rigid and articulated lorries.
Historic Environment	All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora.
Impact	Change that is caused by an action (for example land clearing (action) during construction which results in habitat loss (impact)).
Informal Scoping	The process of identifying the issues to be addressed by the EIA process. It is a method of ensuring that an assessment focuses on the important issues and avoids those that are not significant.
Key characteristics (landscape)	The combination of elements that are particularly important to the current character of the landscape and help to give an area its particularly distinctive sense of place.

Term	Definition
Landscape character area (LCA)	Distinct, recognisable, and consistent patterns of elements and activity that make one landscape different from another. Note these can be a combination of landscape, biodiversity, geodiversity, and economic activity that follow natural, rather than administrative boundaries.
Land Use	What land is used for, based on broad categories of functional land cover, such as urban and industrial use and the different types of agriculture and forestry.
Legislation	A law or set of laws proposed by a government and given force/made official by a parliament.
Listed Building	A structure which has been placed on the Statutory List of Buildings of Special Architectural or Historic Interest to protect its architectural and historic interest.
Light Detection and Ranging (LIDAR)	A remote sensing method that uses light in the form of a pulsed laser to measure ranges (variable distances) to the Earth.
Local Authority	An administrative body of local government.
Local Impact Report	A report produced by a local authority which gives details of the likely impact of the proposed development on the local authority's area (or any part of that area). As part of the examination process, the Planning Inspectorate will invite relevant local authorities to submit local impact reports by a given deadline.
Mainline	The carriageway carrying the main flow of traffic, generally traffic passing straight through a junction or interchange.
Mitigation	Measures including any process, activity, or design to avoid, reduce, remedy, or compensate for negative environmental impacts or effects of a development.
Mitigation measures	Methods employed to avoid, reduce, remedy or compensate for significant adverse impacts of development proposals.
National Character Area (NCA)	Areas of England defined by their unique combination of landscape, biodiversity, geodiversity, history, and cultural and economic activity.
National Planning Policy Framework (NPPF)	The National Planning Policy Framework sets out the Government's planning policies for England and how these should be applied.
Nationally Significant Infrastructure Project (NSIP)	Large scale developments which require a type of consent known as 'development consent' under procedures governed by the PA 2008.
National Networks National Policy Statement 2014 (NNNPS)	A national policy document issued by the government which sets out the need for and the government's policies for the development of nationally significant infrastructure projects on road and rail networks in England. The NNNPS. It is the basis for the examination of a Development Consent Order application by the Planning Inspectorate and decisions by the SoS. It was adopted designated as national policy by the UK Parliament SoS in March January 2015.
Net present value	Net present value (NPV) is simply calculated as the sum of future discounted benefits minus the sum of future discounted costs.
Noise Barrier	A solid construction that reduces unwanted sound. It may take many forms including: engineering cutting; retaining wall; noise fence barrier; landscape earthworks; a 'low-level' barrier on a viaduct; a parapet barrier on a viaduct; or any combination of these measures. Also called an attenuation barrier.
NOX	Oxides of Nitrogen – which encompasses all nitrogen species although mainly NO and NO2.
Opening Year	In the case of the A66 project, assumed to be 2029.
Operational	The functioning of a project on completion of construction.

Term	Definition
Order limits	The extent of land required for the Project
PA 2008 (PA 2008)	The Planning Act 2008 (as amended). Act of Parliament which sets out the statutory requirements and planning application process for nationally significant infrastructure projects, such as energy, water, transport, and waste. Applications for Development Consent Order are submitted following the processes set out in the Planning Act. The Act has subsequently been amended.
Planning Inspectorate (PINS)	The government agency responsible for operating the planning process for nationally significant infrastructure projects under the PA 2008, on behalf of the SoS.
Pre-commencement Requirements	A Requirement imposed on the DCO which must be complied with before any building or other operation comprised in the development is begun.
Preliminary design	The design on which the application for development consent is based.
Preliminary Environmental Information (PEI)	PEI is defined in the EIA Regulations as 'information referred to in Part 1 of Schedule 4 (information for inclusion in environmental statements) which – (a) has been compiled by the applicant; and (b) is reasonably required to assess the environmental effects of the development (and of any associated development).'
Programme	A series of steps that have been identified or series of projects that are linked by dependency.
Project	This Project comprises of eight individual schemes. Scheme names are (west to east): • M6 Junction 40 to Kemplay Bank • Penrith to Temple Sowerby • Temple Sowerby to Appleby • Appleby to Brough • Bowes Bypass • Cross Lanes to Rokeby • Stephen Bank to Carkin Moor • A1(M) Junction 53 Scotch Corner
Public Rights of Way (PRoW)	A way over which the public have a right to pass and repass. The route may be used on foot, on (or leading) a horse, on a pedal cycle or with a motor vehicle, depending on its status. Although the land may be owned by a private individual, the public may still gain access across that land along a specific route
Receptor	A defined individual environmental feature usually associated with population, fauna and flora that has potential to be affected by a project.
Registered Parks and Gardens (RPG)	Parks and gardens listed on a register that includes sites of historic importance and of special historic interest in England. The main purposes of the register is to celebrate designed landscapes of note and to encourage appropriate protection.
Regulations	Official rules or acts to control something, generally made in relation to legislation.
Residual impact	Effects on the environment that occur after mitigation of potential impacts has been implemented.
Resource	A defined but generally collective environmental feature usually associated with soil, water, air, climatic factors, landscape, material assets, including the architectural and archaeological heritage that has potential to be affected by a project
Riparian	Relating to or situated on the banks of a river.

Term	Definition
Road Investment Strategy (RIS)	The Road Investment Strategy outlines a long-term programme for England's motorways and major roads supported by stable funding needed to plan ahead.
Scheduled Monument (SM)	Historic building or site included in the Schedule of Monuments kept by the SoS for Culture, Media and Sport under the regime set out in the Ancient Monuments and Archaeological Areas Act 1979.
Scheme	This project comprises of eight schemes. Scheme names are (west to east): • M6 Junction 40 to Kemplay Bank • Penrith to Temple Sowerby • Temple Sowerby to Appleby • Appleby to Brough • Bowes Bypass • Cross Lanes to Rokeby • Stephen Bank to Carkin Moor • A1(M) Junction 53 Scotch Corner
Scheme Assessment Report (SAR)	The main aims of the assessment reporting process are to permit consideration of the likely environmental, economic and traffic effects of alternative proposals, and to allow the public and statutory bodies to comment on proposals taking account of their environmental, economic and traffic implications
Scoping Opinion	A written opinion of the relevant consenting authority, following a request from the applicant, as to the information to be provided in the Environmental Statement.
Secretary of State (SoS)	The Secretary of State for Transport.
Sensitivity	The extent to which the receiving environment can accept and accommodate change without experiencing adverse effects.
Setting	DMRB LA 106 defines setting as the surroundings in which a cultural heritage resource is experienced.
Significance (of effect)	A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic.
Site of Special Scientific Interest (SSSI)	A conservation designation denoting a protected area in the UK, designated due to special interest in its flora, fauna, geological or physiographical features. They are protected by law to conserve their wildlife or geology.
Special Area of Conservation (SAC)	A site designated under the Habitats Directive as internationally important sites for threatened habitats and species. Following the UK's exit from the European Union, SACs now form part of the UK's National Site Network.
Special Protection Area (SPA)	A site designated under the European Union Directive on the Conservation of Wild Birds. Following the UK's exit from the European Union, SACs now form part of the UK's National Site Network.
Stakeholder	An organisation or individual with an interest in the project.
Statutory	Related to legislation or prescribed in law or regulation.
Statutory consultees	Organisations that must be consulted on relevant projects. Statutory Consultees are listed in Schedule 1 of The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009.
Statutory Environmental Bodies (SEB)	Environment Agency, Historic England and Natural England.
Study Area	The spatial area within which environmental effects are assessed, extending a distance from the DCO boundary in which significant environmental effects could occur (this may vary between the topic areas).

Term	Definition
Traffic modelling or forecasting	The process used to estimate the number of vehicles using a specific length of road or defined network of roads.
Veteran Trees	All ancient trees are veteran trees, but not all veteran trees are ancient. A veteran tree may not be very old, but it has decay features, such as branch death and hollowing. These features contribute to its biodiversity, cultural and heritage value.
Viewpoint	A place from which something can be viewed
Visual Amenity	The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area.
Visual Receptor	People who may have a view of a proposed development during construction or operation.
Walkers, cyclists and horse riders	Walkers, cyclists and horse-riders using the network.
Waste (general)	Any substance or object which the holder disposes or intends / is required to dispose.
Water Framework Directive (WFD)	The Water Framework Directive (2000/60/EC) (WFD) is a wide-ranging piece of European environmental legislation for the protection of water resources that is being transposed into UK Law.
World Heritage Site (WHS)	A World Heritage Site is a landmark or area with legal protection by an international convention administered by the United Nations Educational, Scientific and Cultural Organization (UNESCO). World Heritage Sites are designated by UNESCO for having cultural, historical, scientific, or other form of significance.
Zone of Visual Influence (ZVI)	The area within which a project may be visible and may influence the quality of views. The ‘zone of visual influence’ approximately covers all land from which the project is visible. It is limited by topographic features such as hill and valleys and by visual barriers such as woodland and buildings.

8.6 Abbreviations

Abbreviation	In full
AADT	Annual Average Daily Traffic
AD	Anno Domini (in the year of our Lord)
AHLV	Areas of High Landscape Value
AM	Ante meridiem (morning)
AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
APFP	Infrastructure Planning (Applications: Prescribed Forms and Procedures) Regulations 2009 (as amended)
AQMA	Air Quality Management Area
BCR	Benefit Cost Ratio
BNG	Biodiversity Net Gain
CCC	Cumbria County Council
CCTV	Closed Circuit Television
CDM	Construction Design and Management
CHS	The Conservation of Habitats and Species Regulations 2017 (as amended)
COBALT	Cost and Benefit to Accidents – Light Touch
ComMA	Combined Modelling and Appraisal
BMV	Best and Most Versatile Land
BPM	Best Practicable Means
DCC	Durham County Council
DCO	Development Consent Order
DfT	Department for Transport
DIO	Defence Infrastructure Organisation
DM	Do-Minimum
DMRB	Design Manual for Roads and Bridges
DS	Do-Something
EDC	Eden District Council
EIA	Environmental Impact Assessment
ELC	European Landscape Convention
EMP	Environmental Management Plan
ES	Environmental Statement
EU	European Union
FRA	Flood Risk Assessment
GA	General Arrangement
GCN	Great Crested Newt
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIR	Ground Investigation Report
GVA	Gross Value Added
ha	Hectare
HAR	Heritage at Risk
HGV	Heavy Goods Vehicle
HM	Her Majesty's
HRA	Habitat Regulations Assessment
IPT	Integrated Project Team
km	Kilometre (Unit of Measurement)
LA	Local Authorities
LCA	Landscape Character Assessment
LEP	Local Enterprise Partnership
LLFA	Lead Local Flood Authority
LGV	Light Goods Vehicle
LiDAR	Light Detection and Ranging
LNR	Local Nature Reserve
LoD	Limits of Deviation

Abbreviation	In full
LPA	Local Planning Authority
LPCS	Legislation and Policy Compliance Statement
LSOA	Lower-layer Super Output Area
LWS	Local Wildlife Site
m	Metres (Unit of Measurement)
MoD	Ministry of Defence
mph	Miles per hour
MyRIAD	Motorway Reliability Incidents and Delays
N/A	Not Applicable
NCA	National Character Areas
NERC	Natural Environment and Rural Communities Act 2006
NMU	Non-Motorised Users
NNNPS	National Networks National Policy Statement
NOx	Oxides of Nitrogen
NP	North Pennines
NPPF	National Planning Policy Framework
NPS	National Policy Statements
NPV	Net Present Value
NSIP	Nationally Significant Infrastructure Project
NTEM	National Trip End Model
NTP	Northern Trans-Pennine
NTPR	Northern Trans-Pennine Routes
NTPRSS	Northern Trans-Pennine Routes Strategic Study
NTS	Non-Technical Summary
NVMP	Noise and Vibration Management Plan
NYCC	North Yorkshire County Council
PA 2008	The Planning Act 2008 (as amended)
PCF	Project Control Framework
PDOR	Project Development Overview Report
PEI Report	Preliminary Environmental Information Report
PINS	Planning Inspectorate
PM2.5	Particulate Matter 2.5 micrometres or less in diameter
PPA	Planning Performance Agreement
PPG	Planning Practice Guidance
PRA	Preferred Route Announcement
PRoW	Public Rights of Way
PSSR	Preliminary Sources Study Report
PVB	Present Value of Benefits
PVC	Present Value of Costs
RDC	Richmondshire District Council
RDR	Route Development Report
RIS	Road Investment Strategy
RIS1	Road Investment Strategy Period 1
RIS2	Road Investment Strategy Period 2
RPG	Registered Park and Gardens
RTF	Road Traffic Forecasts (Published by the Department for Transport)
SAC	Special Area of Conservation
SM	Scheduled monument
SAR	Scheme Assessment Report
SEB	Statutory Environmental Bodies
SIS	Site of Invertebrate Importance
SoS	Secretary of State
SPA	Special Protection Area
SRN	Strategic Road Network
SSSI	Site of Special Scientific Interest
TA	Transport Assessment

Abbreviation	In full
TAG	Transport Analysis Guidance
TAR	Technical Appraisal Report
TCPA	Town and Country Planning Act 1990 (as amended)
TEE	Transport Economic Efficiency
TfN	Transport for North
TMP	Traffic Management Plan
TTV	Travel Time Variability
TVCA	Tees Valley Combined Authority
UK	United Kingdom
UNESCO	United National Educational, Scientific and Cultural Organization
VMS	Variable Message signs
VOC	Value of Operating Cost
VRS	Vehicle Restraint System
WEI	Wider Economic Impact
WCA	Wildlife and Countryside Act 1981
WCH	Walkers, Cyclists and Horse-riders
WEI	Wider Economic Impact
WFD	Water Framework Directive
WHS	World Heritage Site
WRA	Water Resources Act 1991 (as amended)
WTA	Warcop Training Area
ZVI	Zone of Visual Influence