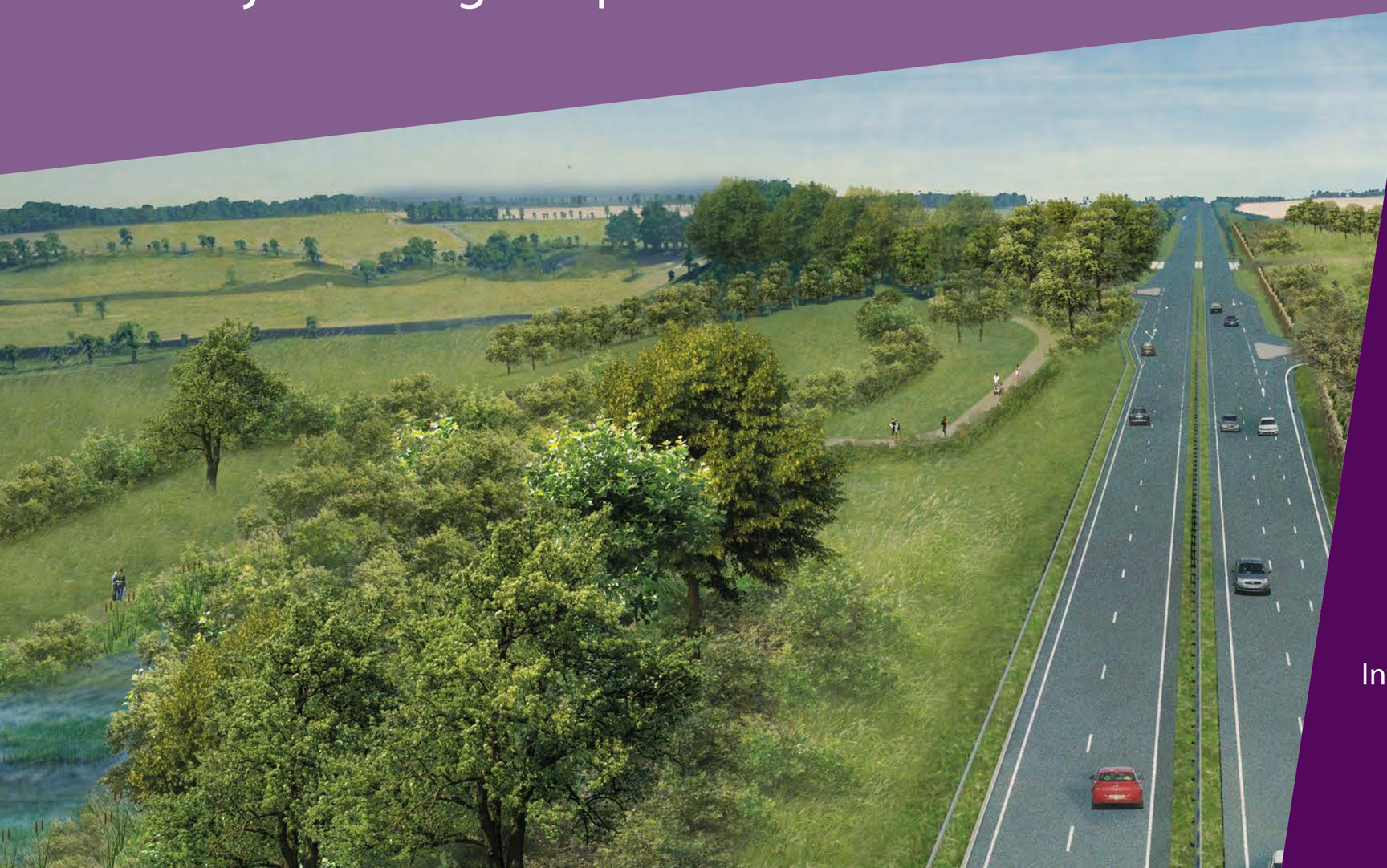
A66 Northern Trans-Pennine Project

TR010062

2.3 Project Design Report



APFP Regulations 5(2)(b)

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

2.3 PROJECT DESIGN REPORT

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Rev 1	16/06/22	DCO Application

Contents

Interactive report

This report includes links for fast access to the different sections for ease of use.

Signposting further information

Throughout the report, the arrow icons are used to signpost sources of further information.

Design study

In Section 5, design studies are included to illustrate detailed design considerations and show how the scheme design could be developed within the framework of the development consent sought.

1

Introduction

Project overview

The A66 is a key local, regional and national route for east-west journeys in the north of England – providing vital connections for freight, tourism and businesses across the UK. It offers the most direct route between the central belt of Scotland and the eastern side of England and connects the North East to the North West and Midlands. The road also plays an important role for tourism, providing access to the North Pennines Area of Outstanding Natural Beauty (AONB), the Yorkshire Dales and the Lake District National Park.

Whilst the A66 has undergone a number of improvements in recent years, over 18 miles of the road remain as single carriageway, resulting in congestion and making the road accident prone and unreliable. The dualling of the remaining 18 miles of single carriageway will ensure the entire route has two lanes in both directions along the full 50-mile route.

The route carries high levels of freight, with 25% of the traffic being heavy goods vehicles (HGVs), more than twice the national average for a road of this nature. Dualling the single carriageway sections between M6 junction 40 at Penrith and the A1(M) at Scotch Corner, along with other key improvements, will enable future growth, supporting the economies of the North East, Yorkshire and Cumbria, as well as improving east /west journeys.

Given the importance of addressing long-standing concerns, in 2014 the Government announced that it intended to examine the case for dualling one of the routes across the Pennines to improve east/west connectivity in the north of England. This examination concluded with National Highway's Road Investment Strategy 2 programme being published in March 2020, which confirmed that the A66 had been selected for dualling between the M6 junction 40 and the A1(M) at Scotch Corner.

The A66 Northern Trans-Pennine Project (referred to as the project) will invest around one billion pounds to dual the remaining single carriageway sections of the A66, making it one of the largest and most important highways investments in the north of England.

Given the exceptional landscapes that the road passes through, it is important that appropriate design standards are applied and that the planned improvements for the road adopt a context-led design approach that will respect the landscape beauty, the needs of adjacent communities and the setting of important historical areas such as the Roman fort at Carkin Moor and Brougham Castle.

Project objectives

As summarised in the table, the project seeks to deliver eleven Objectives, each grouped according to four themes. These have been the key strategic influences in shaping the brief for design proposals.

Objectives	Theme
1. Regional: Support the economic growth objectives of the Northern Powerhouse and Government levelling up agenda.	Economic
2. Ensure the improvement and long-term development of the Strategic Route Network (SRN) through providing better national connectivity including freight.	
3. Maintain and improve access for tourism served by the A66.	
4. Seek to improve access to services and jobs for local road users and the local community.	
5. Improve road safety, during construction, operation and maintenance for all, including road users, Non-Motorised Users (NMU), road workers, local businesses and local residents.	Transport
6. Improve journey time reliability for road users.	
7. Improve and promote the A66 as a strategic connection for all traffic and users.	
8. Improve the resilience of the route to the impact of events such as incidents, roadworks and severe weather events.	
9. Seek to improve NMU provision along the route.	
10. Reduce the impact of the route on severance for local communities.	Community
11. Minimise adverse impacts on the environment and where possible optimise environmental improvement opportunities.	Environment

Purpose of this report

This Project Design Report (PDR):

- Explains how designs have been prepared with sensitivity to their context. This includes contextual design influences that relate to the project itself and the wider geographic, environmental and socio- economic context within which it is set, and how this has been informed by feedback that has been received from local communities and other stakeholders.
- Sets out how the vision and principles have been applied. This ensures preliminary design is based on good practice and provide the basis for high design standards to be attained.
- Describes how the design proposals have evolved. This summarises how feedback and technical studies have informed the project and resulted in the preliminary design and strategic options that were the subject of public consultation.
- Provides an overview of preliminary designs that were consulted upon. This conveys how inter-disciplinary inputs were developed, taking account of consultation feedback, to develop the proposals that are to be submitted for the Development Consent Order (DCO).

Structure of this report

This report begins by describing the overarching contextual factors affecting the project and how these have influenced the proposals, before looking in more detail at each of the schemes in the project and how they have related to their relevant landscape character and urban context at a specific local level. Woven throughout the report is consideration for the way the design responds to the contextual setting whilst also shaping and enhancing the experience of users of the project, whether drivers, cyclists, pedestrians, or horse-riders, and others in local communities who will interact with the project in relation to the visual context and experiences that are shaped by it.

Following this introduction, this report is structured into the chapters outlined opposite.

Chapter 2. Understanding context

- Explains how the project relates to its wider geographic contextual setting.

Chapter 2. Vision and design principles

- Sets out the project vision for the A66 and outlines the project design principles.

Chapter 3. Design evolution and engagement

- Summarises how the design proposals have evolved since the project's inception in response to consultation feedback, technical analysis and design development.

Chapter 5. Scheme design

- Summarises the design proposals for each section of the route and explains the underlying rationale behind proposals.

Appendices. The Road to Good Design

- Summarises how the Road to Good Design, National Highways design principles have been applied to the A66 design proposals.

The value of good design

5.11 Project Design Principles

The PDR focuses on the proposed project and how it has been framed in relation to the qualities and characteristics of the places and spaces along the route that make this part of the UK so special. Good design can change a place for the better, by being sensitive to local context and responsive to the needs of those who use the A66 and the communities through which the project passes.

A profound difference can be made to the experience of road users and adjacent communities. Design decisions have the potential to enhance or erode the experiences of driving through places and impact how we feel and experience these places. Good design goes beyond aesthetic considerations and can act as a means of helping to attain social, economic and environmental sustainability objectives.

The importance of good design is emphasised in the A66 Project Design Principles Report which sets out the route-wide and scheme-specific design principles for the development of the detailed design of the project. The principles focus on driving detailed designs so that they are integrated in context, enhance experience of all users, enhance biodiversity, and are climate resilient. These principles help align the project with National Highways principles of good design as set out in The Road to Good Design (2018) and the National Policy Statement for National Networks requirements of good design. (NPSNN).

The design team

The project has involved a multi-disciplinary design team appointed by National Highways, which combines the experience and technical capabilities of Amey Consulting and Arup, working in close partnership as an integrated project team. It is comprised of appropriately qualified and experienced professionals that include: civils engineers, structural engineers, landscape architects; architects; town planners; highways engineers; drainage engineers; heritage specialists; and a variety of environmental specialists that include acousticians, ecologists and air quality specialists. The contributions from each of these technical specialists has resulted in a balanced, well-integrated design approach to the project.

During design development the project team has worked collaboratively with a variety of stakeholders through working groups, workshops, and one-to-one meetings with landowners and other interested parties. Proposals have also been informed by ongoing consultation with each of the communities along the route, using a variety of engagement techniques to maximise local involvement. This broad-based engagement has provided the project design team with enhanced knowledge and experience of each of the local areas along the road corridor and helped shape the overall vision and design of the project. A summary of the consultation undertaken and how this has informed design evolution is provided in Chapter 3.

Image 1.1 A green bridge crossing the A556 in Cheshire

Image 1.2 Stone walls, and earthworks recently planted with woodland to integrate the A590 in Cumbria into its landscape context

Figure 1.1 Proposed A66 route alignment

Project location

As indicated in Figure 1.1, the geographic scope of the project extends across 18 miles of the current A66, from Junction 40 of the M6 in the west, to Junction 53 of the A1(M), also known as Scotch Corner. The project includes upgrading the existing single lane sections of the A66 to dual two-lane all-purpose roads. It also includes amendments to existing junctions and accesses within these sections. The project has been split into eight schemes. The location of each of these is indicated in Figure 1.1 and summarised in Chapter 5.

The DCO is seeking consent for the overall scheme, however the design of each section has been prepared in relation to the individual character and qualities of the surrounding landscape, urban and heritage setting.

- Existing A66 dual carriageways
- 0102 M6 junction 40 to Kemplay Bank (0102)
- 03 Penrith to Temple Sowerby (03)
- 0405 Temple Sowerby to Appleby (0405)
- 06 Appleby to Brough (06)
- 07 Bowes Bypass (07)
- 08 Cross Lanes to Rokeby (08)
- 09 Stephen Bank to Carkin Moor (09)
- 11 A1(M) junction 53 Scotch Corner (11)

Image 1.3 The context of the A66 includes the North Pennines Area of Outstanding Natural Beauty. View from the B6295 towards the A66 near Warcop.

The coast-to-coast route

This section of the report places the project within the broader context of the existing coast-to-coast route, appreciating how proposals need to be formulated with an understanding of the varying views and experiences that this sets up for the road user. Please note a red rectangle is used on figures to show the approximate extent of the project.

The A66 passes through a series of areas of distinctive urban and landscape character (Figure 1.2), which are influenced by the area's undulating topography (Figure 1.3) and set up sea views at both ends to the route (Figure 2.4).

Starting from the east, the A66 immediately interacts with the industrial and historical townscape of Middlesbrough, with its expansive view over the port-side machinery on the River Tees. These views give way to an elevated carriageway that closely weaves through the fringes of the town, with the river crossing followed by a green ribbon through the suburban landscape.

Views open-out across large agricultural fields as the road enters the rural lowlands of the Tees Valley. A view from the top of a rise precedes the approach to Darlington and, soon, the road has become an integrated part of the town's urban fringe. Passages through open spaces follow, with glimpsed views of passing villages.

The scale of the road builds as it joins the A1 Motorway, at the well known landmark of Scotch Corner. The junction is a major focal point for the entire A66 and marks the end of the Tees Valley section of the route.

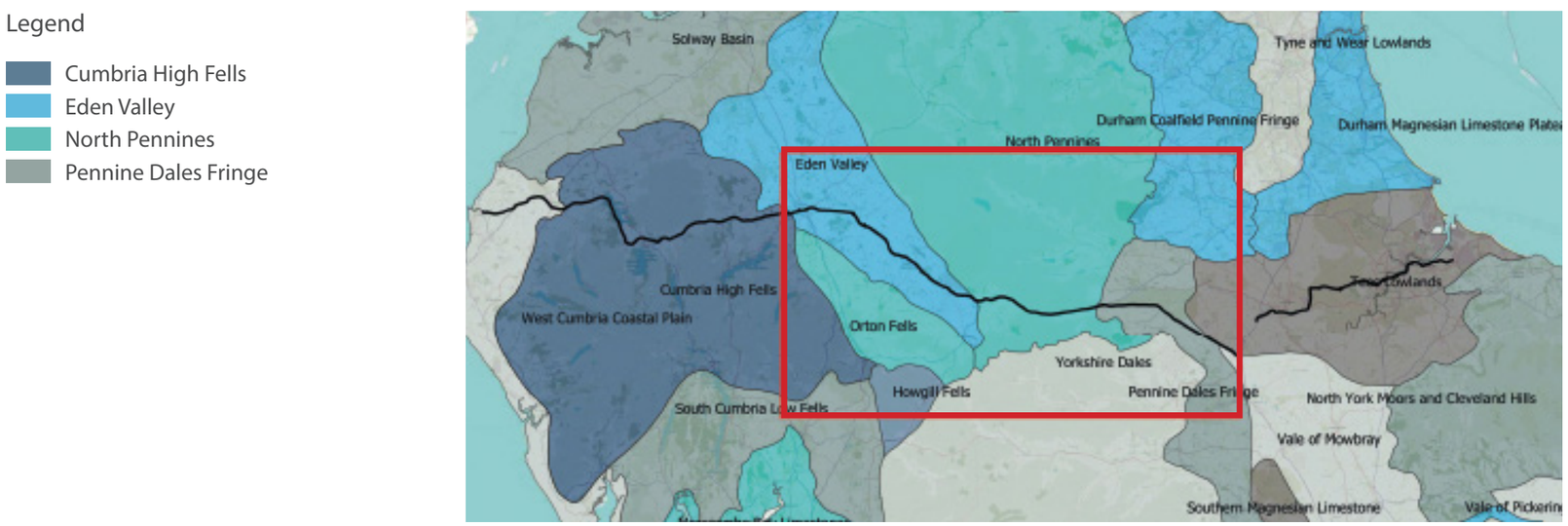


Figure 1.2 The A66 coast-to-coast route passes through a series of highly distinctive National Character areas

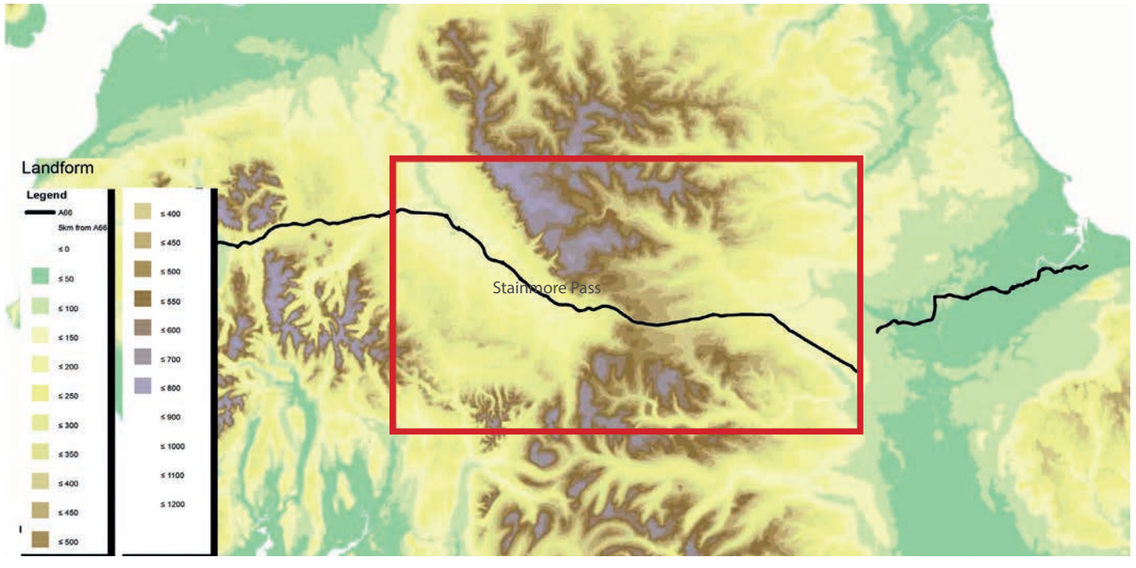


Figure 1.3 The hills and valleys of the North Pennines and Yorkshire Dales shape the drama of the A66 at the mid-point of the coast-to-coast journey character areas

Towards a Corridor Framework, Atkins, 2020

From there the road enters the Pennine landscape, with glimpses of open moorland hinting at the experiences yet to come. The road retraces the Roman passage of the moors, with rolling, yet straight roads accompanied by scattered roadside trees; Rokeby Park at the historic crossing of the River Greta is a particular highlight.

Travelling westwards, the road user enters the Stainmore Pass, flanked by the visually striking North Pennines Area of Outstanding Natural Beauty (AONB). The road reaches its highest elevation as it takes in panoramas of open moorlands and winding river valleys. Brough Castle marks the end of this memorable experience.

As it descends in to the Eden Valley, the A66 takes on a more winding character. As the peaks of the Pennines recede to the north, glimpses of the Lake District to the west begin to appear, as a backdrop to a parkland landscape. The Center Parcs attraction at Whinfell Forest follows, and travelling further westwards Brougham Castle marks the arrival at Penrith. A stop at the Rheged Centre provides cultural experiences before the entry into the landscape of the Lake District. The road skirts around the southern limits of Penrith before meeting the M6, the western-most extent of the project.

Moving further westwards, following a view of the Lake's recognisable silhouette at the top of a rise, the A66 gradually approaches the fells. The steep slopes loom larger until the road begins to interact with the slopes of Blencartha at Threlkeld. The A66 crosses the River Greta at Keswick, over a dramatic modern bridge structure, before descending into the immersive Derwent Valley at Braithwaite.

With the dramatic slopes of Grisedale Pike and Skiddaw on either side, the road runs close along the bank of Bassenthwaite Lake for three miles, providing extensive views across the National Nature Reserve.

The A66 passes through the open landscape of the Western Lake District on its approach to Cockermouth. From there, it interacts with the River Derwent as it leads to the coast. The first view of the Irish Sea precedes a descent into Workington, alongside the parkland of the medieval Workington Hall.

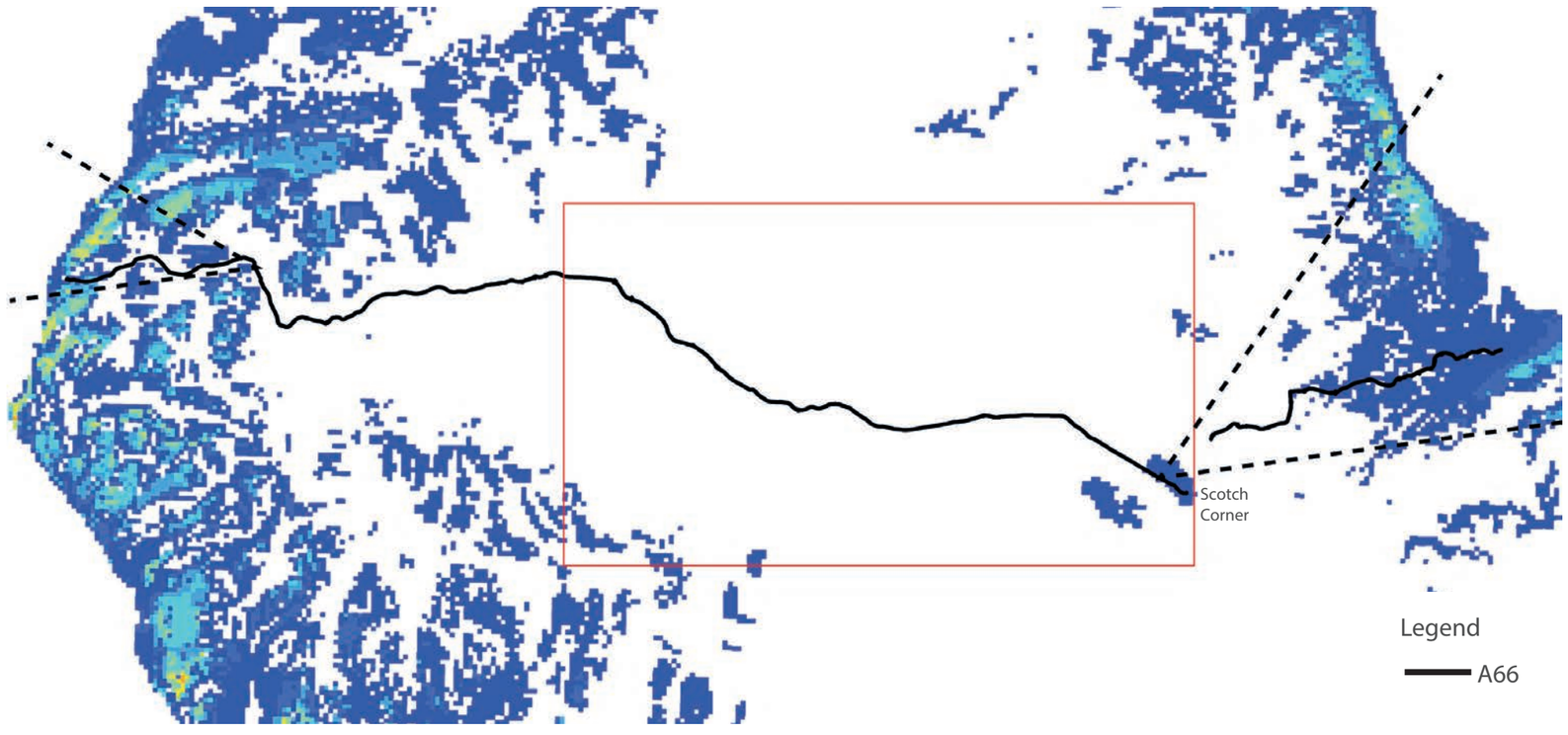


Figure 1.4 Areas where sea views can be gained (shown in shades of blue). At the eastern end of the project, glimpses of the North Sea come into view from the area around Scotch Corner (dashed view cone shown)

2

Understanding context

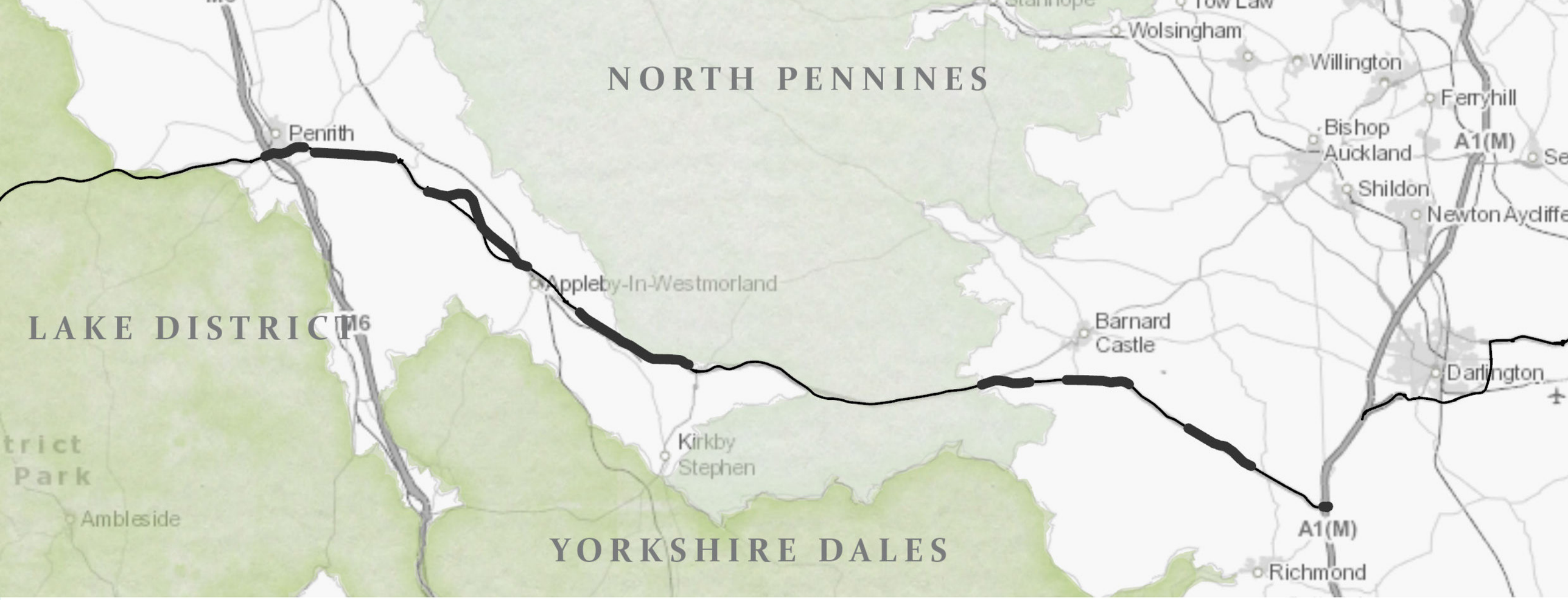


Figure 2.1 The sections of the scheme in the wider landscape context of the North Pennines AONB and the National Parks

Legend

- Scheme section
- Existing A66
- Area of Outstanding Natural Beauty
- National Park

Summary

This chapter outlines the context and characteristics of the A66 project area (from the M6 junction to the west to the A1 junction to the east, combining existing elements with those that are proposed to be improved). This comprehensive contextual appreciation provides the basis for the appropriate design proposals using a context led approach to provide a good and functional road.

The focus of the approach is to avoid or reduce environmental harm, mitigate any adverse effects that the project may cause and to enhance the surrounding context within the constraints of delivering a safe and efficient project.

This context-led approach is an important component of good design, leading to the appropriate use of local materials, sensitively designed highway structures and sensible use of visual screening. It also informs where restraint is required in the installation of highway infrastructure, and conversely, where the highway could become an opportunity to create landmark features.

Chapter 5 includes details of how each scheme has responded to the context of the landscapes and townscapes that interact with the project.

Landscape character and views

National Character Areas

Figure 2.2 identifies the key National Character Areas (NCA) published by Natural England of relevance to the project area. The project lies predominantly within two NCAs, as follows:

- The Eden Valley NCA - encompasses the broad valleys of the River Eden and its tributaries. The valley is characteristic of undulating mixed farmland with significant areas of woodland, farm copses, mature hedgerow trees, stone walls and historic villages.
- The Pennine Dales Fringe NCA - has a varied topography of exposed upland moorland fringes and plateaux dropping to lower foothills, separated by major river valleys.

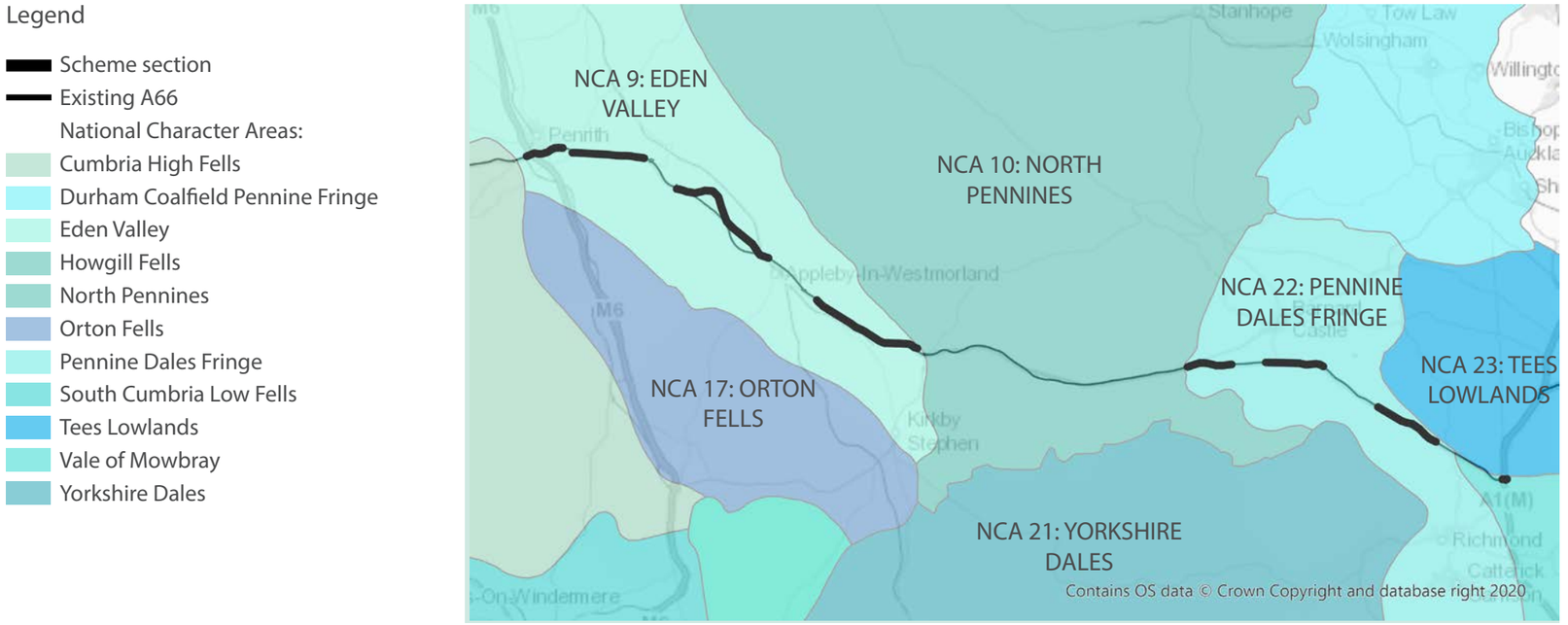


Figure 2.2 National Character Areas, Natural England

Night Sky

Figure 2.3 illustrates the current influence of lighting. With very little lighting along much of the route, dark skies are experienced across significant parts of this project area. Project lighting designs have been prepared with due consideration to the influence of these proposals on the night sky, and in relation to policies governing the need to maintain dark skies.

The majority of the project will be unlit. The two areas where lighting is required are in the M6 Junction 40 to Kemplay Bank (0102) area and at Scotch Corner (11) which are already lit, as labelled on figure 2.3.

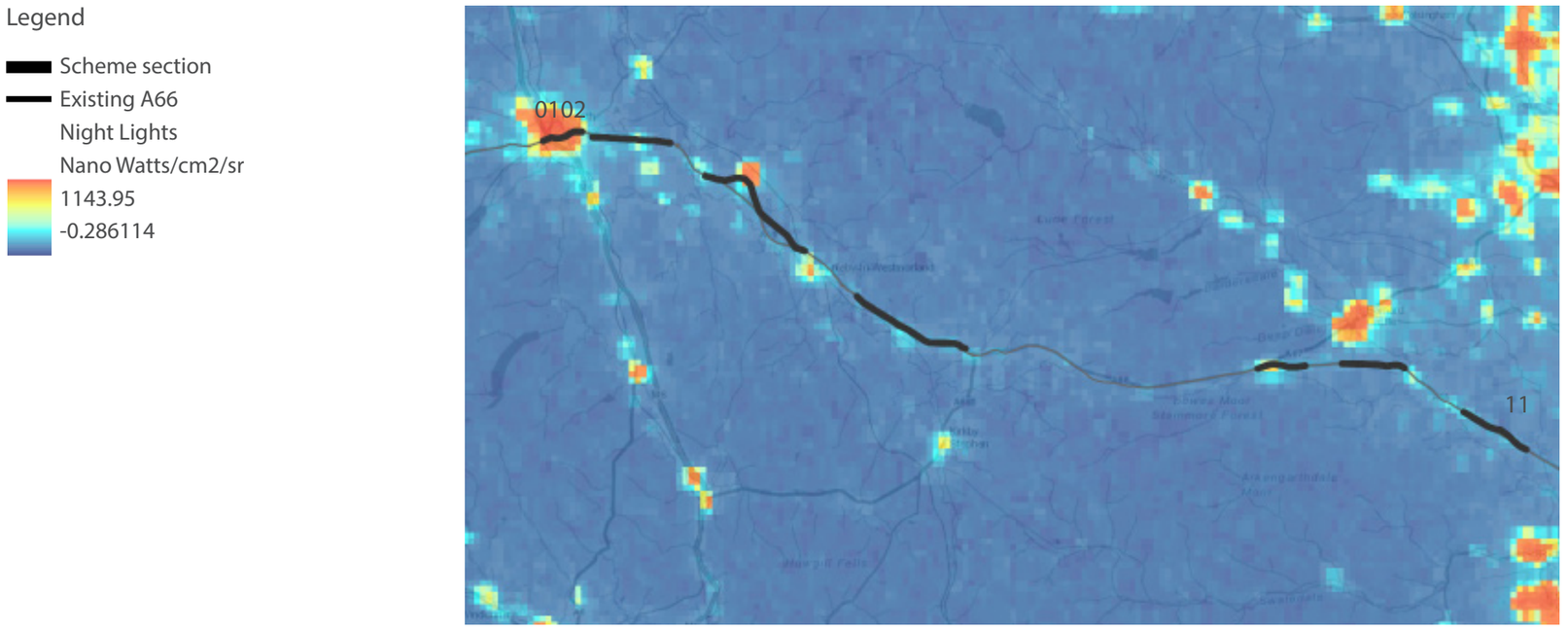


Figure 2.3 Night Sky, CPRE

3.02 Environmental Statement Volume 1 Ch 10 Landscape and Visual

Views from the road

The project area passes through landscapes of a high scenic quality with high inter visibility of the North Pennines. Longer distance views are often possible in the more rural and elevated sections of the route where there is little roadside vegetation.

A high degree of inter-visibility is also experienced along the Eden Valley as the transition between the Lakes and the Pennines; especially where landmarks provide focal points to views of the approaching peaks. These valued views which characterise the experience of the A66 have been retained, avoiding intervening features where appropriate within the constraints of delivering a safe and efficient project.

Views of the scheme are assessed in the Landscape and Visual Chapter of the Environmental Statement.

Legend

- Scheme section
- Existing A66
- Key view from the road

Local landmarks:

1. Skirsgill Hall
2. Mayburgh Henge
3. King Arthurs Round Table
4. Brougham Castle
5. Countess Pillar
6. Kirkby Thore Roman Fort
7. Gypsom Works Landmark
8. Roman Camp
9. Roman Fort
10. Warcop Training Centre
11. Helbeck & Swindale Woods
12. Borough Castle & Roman Fort

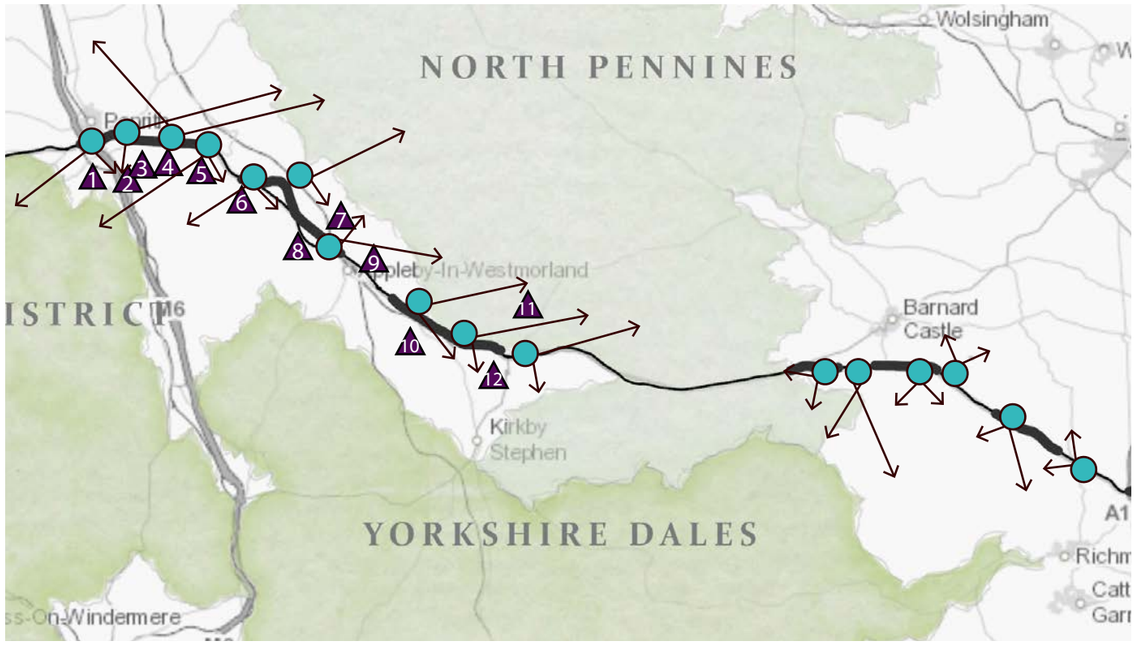


Figure 2.4 Views

Image 2.1 View towards the settlement of Bowes

Built environment

Main urban areas

The project starts in the west within the south-eastern peri-urban environment of Penrith, but otherwise it is predominantly rural in nature with smaller scale settlements along the route.

As shown in Figure 2.5, the west of the project provides access to Penrith and the M6. Given the peri-urban nature of the surrounding area, it is a denser residential area compared to the rest of the project so the design has responded to this context.

Appelby-in-Westmorland, a market town with a population of approximately 3000, lies adjacent to the A66, and Barnard Castle which is approximately 2.5km to the north of the M6 is the second largest settlement, in proximity to the scheme.

Legend

- Scheme section
- Existing A66
- Larger settlement

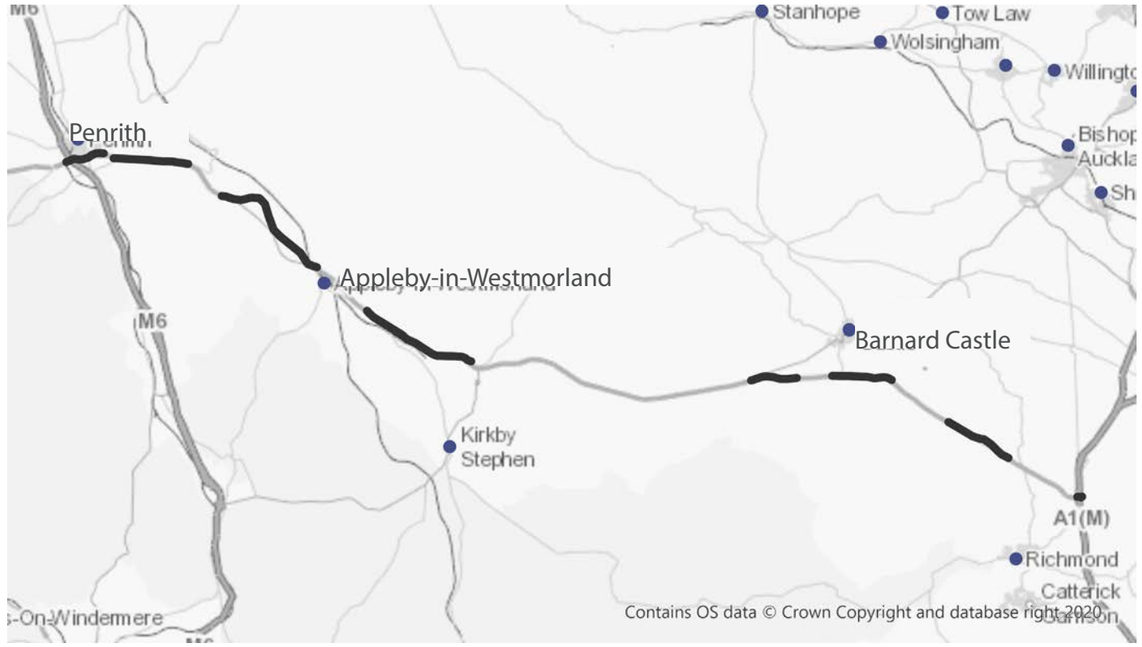


Figure 2.5 Main urban areas

Smaller settlements and communities

Figure 2.6 shows smaller settlements alongside the parts of the A66 included in the project. From the west, the project skirts around the southern boundary of Penrith, and as it travels to the east passes alongside the smaller settlements such as Temple Sowerby, Kirkby Thore, Warcop, Brough and Bowes.

The interaction between the A66 and these settlements has been given careful design consideration. Positive views that are key to wayfinding and local identity are respected and enhanced where appropriate. Other visual and noise impacts are mitigated where necessary. Accessibility for a variety of different transport modes has been facilitated and improvements made where appropriate.

Legend

- Scheme section
- Existing A66
- Medium settlement
- Small settlement

Figure 2.6 Smaller settlements and communities

Physical landscape

3.02 Environmental Statement Volume 1 Ch 08 Geology and Soils

Geology

The geology of the region is one of the key factors influencing the shape of the landscape: stronger, more resistant rocks tend to produce highland areas while weaker rocks tend to form lowlands.

Figure 2.7 outlines the geological influence on the landscape, with the Yorkshire Dales to the south of the route, the relatively simple geology of the North Pennines and the northern edge of the Yorkshire Dales, the Eden Valley west extending to Penrith and the complex geology of the Lake District.

Designs have been informed by a thorough understanding of the area's geology and the role this plays in relation to engineering design and the broader opportunities and influences such as landform and soils.

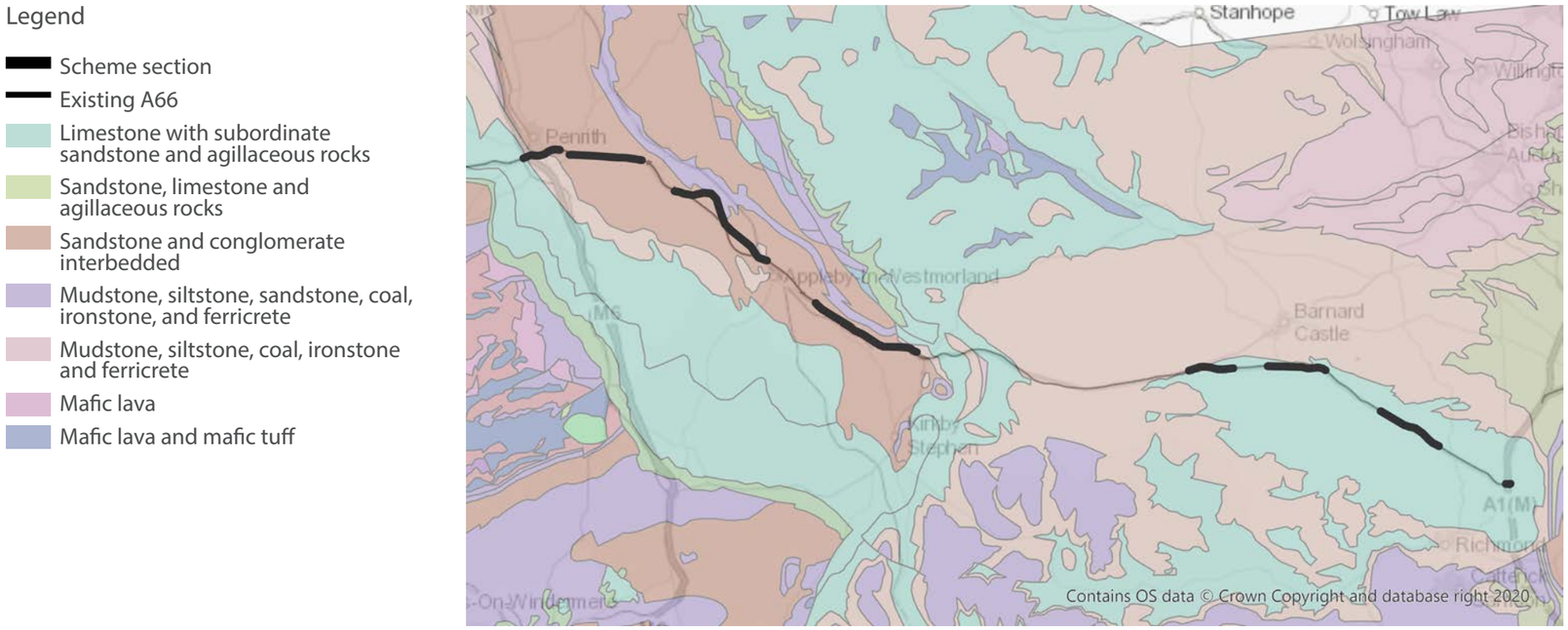


Figure 2.7 Geology

The contrast between the red sandstone of the west and the paler grit stone of the east is a key consideration. This influences building vernacular and walls, for example, which will inform the materiality and finish of scheme components. Through the Project Design Principles, consideration will be given to reinforcing the distinct character areas of the road through the careful use of stone walling and other key features in appropriate locations.

Soils and agriculture

Soils play an important part in defining landscape character along the road, often through the way they influence agriculture. Figure 5.4 shows how the higher value agricultural land relates to the fertile valley bottoms, with the Grade 4 and 5 land corresponding with the higher sloping land forms.

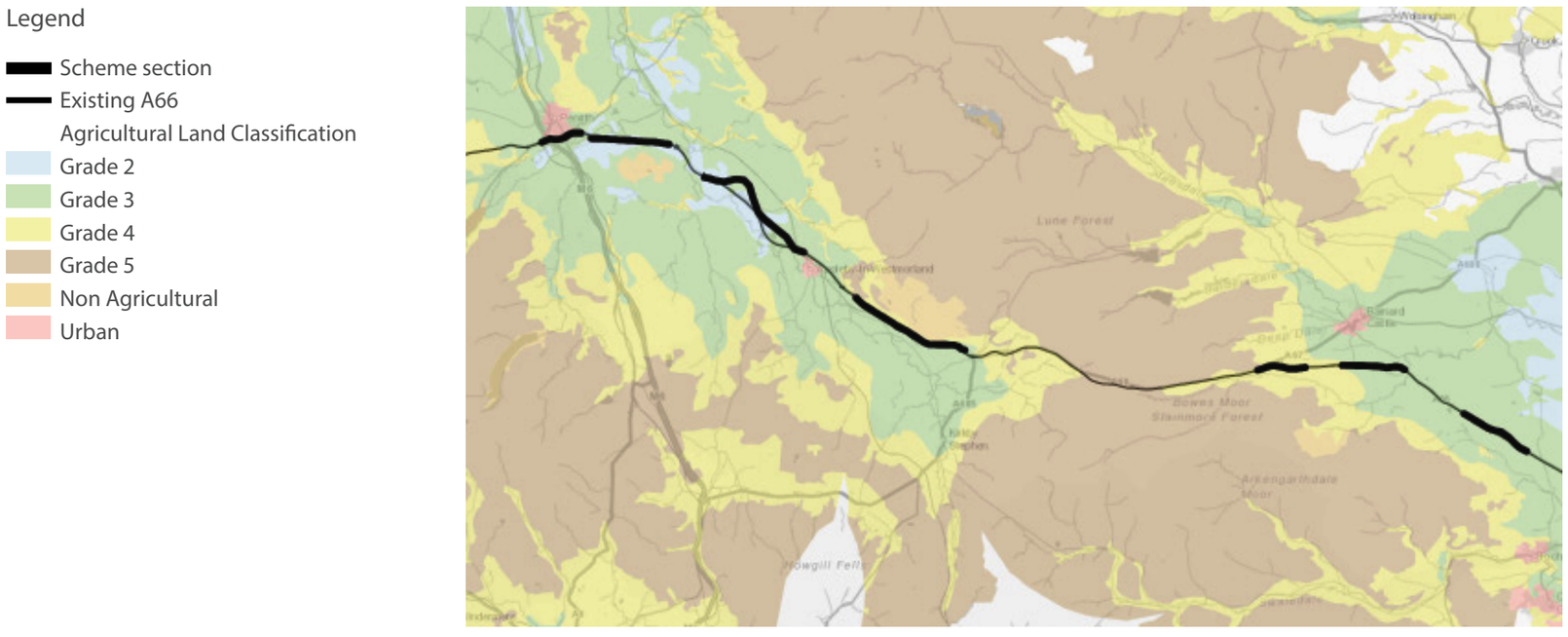


Figure 2.8 Soils and agriculture

Topography

Topography and landform are essential in understanding the road corridor and its design influences, considering the landscape, views from and to the road and experiences of the user. An example of design features using topography is the addition of false cuttings to reduce the visibility of the project and retain visual character.

In Figure 2.9 the Eden Valley defines the western half of the project with the hills of the North Pennines and Yorkshire Dales shaping the geography of the eastern half of this route section. See Chapter 5 for further information on how the design has responded to landform character and influenced the road alignment.

Legend

- Scheme section
- Existing A66
- Elevation DSM (m)
- Value
- 894.769
- -21.577

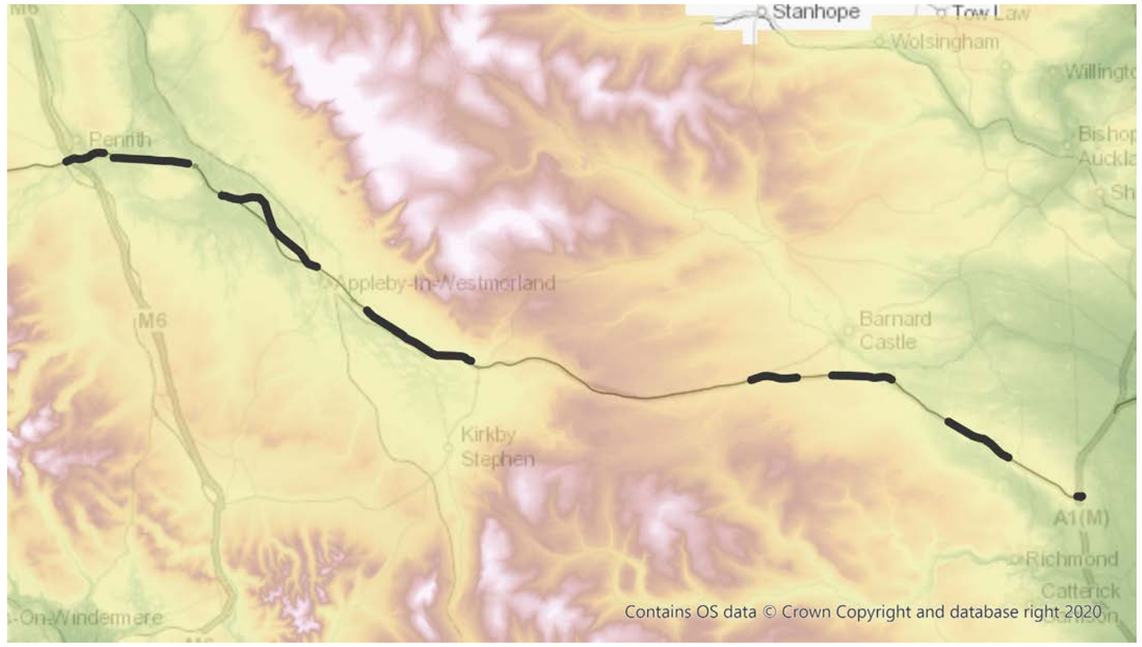


Figure 2.9 Topography

Habitats and vegetation

Figure 2.10 provides a general review of habitats and vegetation across the project area using data from the Priority Habitat Inventory 2021.

The proposed landscape design integrates the project with existing habitats and where appropriate strengthens or enhances existing features such as woodland, trees, hedges, grassland and wetland areas and creates new areas where appropriate. The project aims to achieve no net loss to biodiversity while maximising opportunities for enhancement and maintaining and enhancing wildlife connectivity. Planting required for landscape integration, visual screening or noise and water attenuation provides opportunity to serve a secondary function of supporting biodiversity.

Legend

- Scheme section
- Existing A66
- Priority Habitats
- Blanket Bog
- Coastal and Floodplain Grazing Marsh
- Deciduous Woodland
- Fragmented Heath
- Grass Moorland
- Lowland Calcareous Grassland
- Lowland Fens
- Lowland Heathland
- Lowland Meadows
- Moutain Heaths and Willow Scrub
- Upland Calcareous Grassland
- Upland Flushes, Fens and Swamps
- Upland Heathland

3.02 Environmental Statement Volume 1 Ch 06 Biodiversity

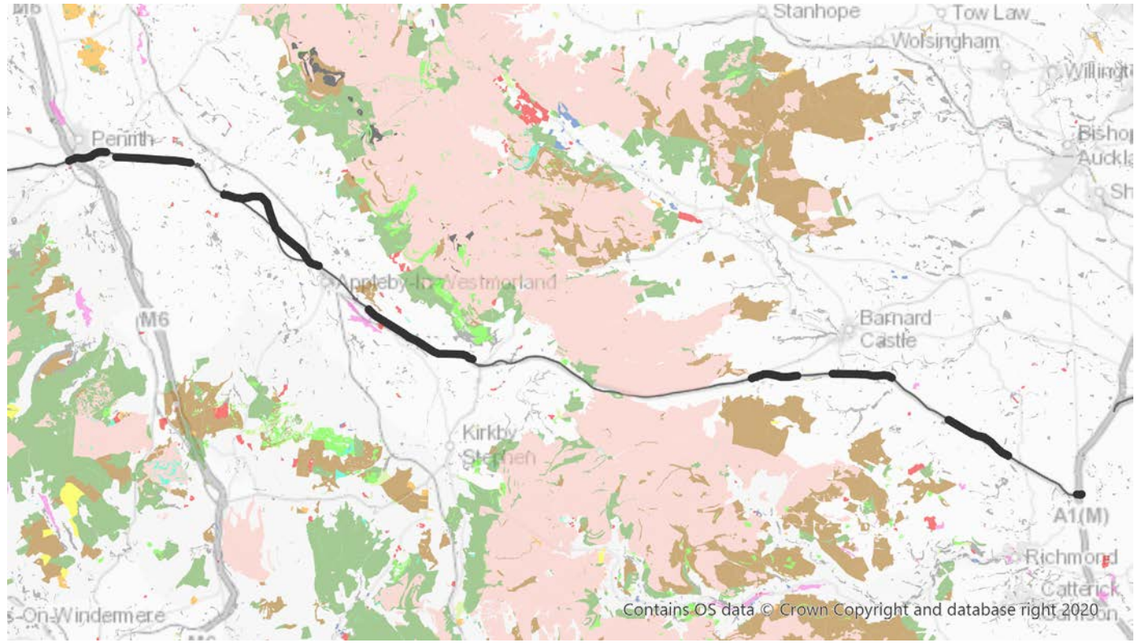


Figure 2.10 Vegetation

Watercourses and flooding

Figure 2.11 provides an overview of the watercourses and the Environment Agency (EA) Flood Zones across the project area. A number of watercourses flow through the study area which eventually flow into the River Eamont to the south west of the existing A66. The watercourses designated as Main Rivers include the River Lowther and River Eamont.

Sections of the study areas are indicated by the EA to be at risk of both fluvial and pluvial flooding. Of note Dog Beck within the Penrith Industrial Estate, Wetherigs Country Park, and to the south of the scheme, flooding related to the River Eamont.

New viaducts are required to cross Trout Beck, Moor Beck and Cringle Beck to reduce impact on the watercourses and their floodplains.

Legend

- Scheme section
- Existing A66
- Main River
- Watercourse Link
- Flood Zone 3 (Environment Agency)
- Flood Zone 2 (Environment Agency)

3.02 Environmental Statement Volume 1 Ch 14 Road drainage and the Water Environment

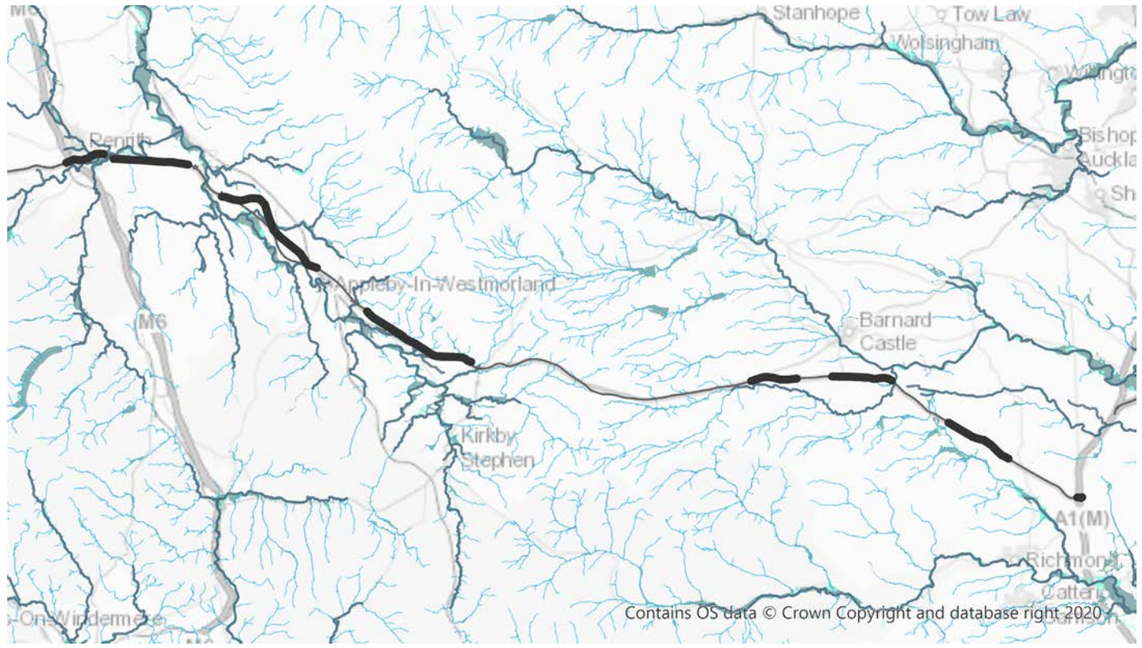


Figure 2.11 Watercourses and flooding

Image 2.2 Pond located to the north east of Temple Sowerby

Environmental designations

Ecological designations

Figure 2.12 shows a range of ecological designations along the corridor. There are three SAC (River Eden, North Pennine Moor and Asby Complex), one SPA (North Pennine Moors), four SSSIs (Argill Woods and Pastures, Augill Valley Pasture, River Eden and Tributaries, and Crosby Ravensworth Fell), which are situated within 200m of the A66 corridor.

Each of these has been a key influence on design proposals in the vicinity of each of these locations.

Legend

- Scheme section
- Existing A66
- National Nature Reserves (NNR)
- Sites of Specific Scientific Interest (SSSI)
- Special Protection Areas (SPA)
- Ancient Woodland
- Special Areas of Conservation (SAC)
- Nature Improvement Areas
- Ramsar
- Local Nature Reserves (LNR)

3.02 Environmental Statement Volume 1 Ch 06 Biodiversity

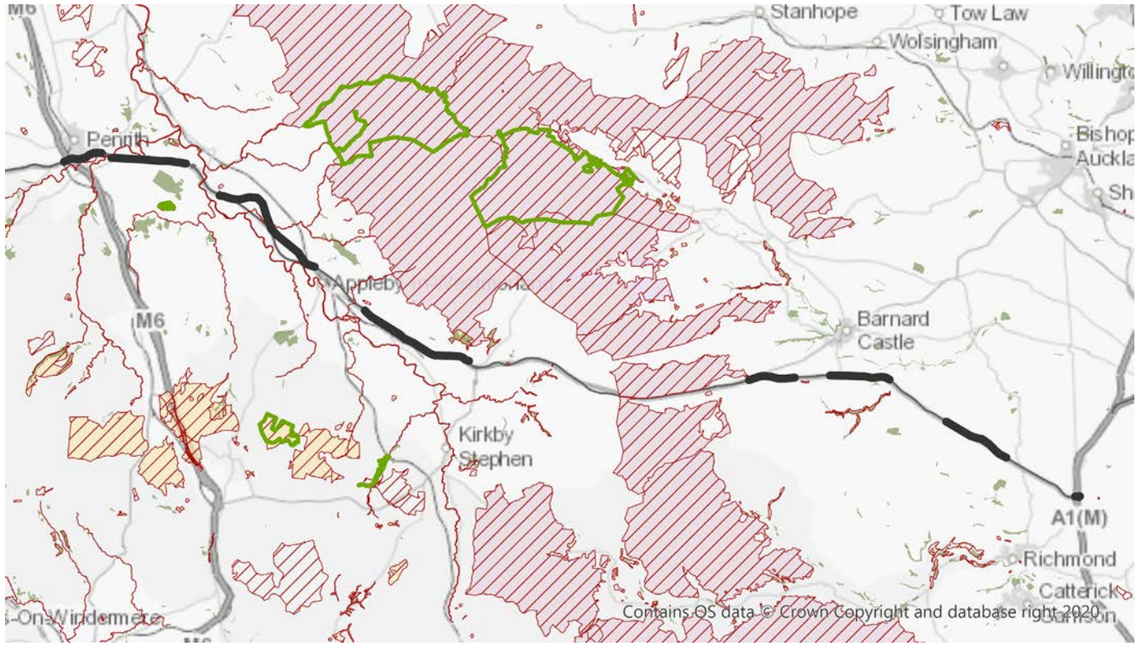


Figure 2.12 Ecological designations

Heritage designations

Figure 2.13 summarises some of the key heritage-related considerations, such as the Scheduled Monuments, Registered parks and Gardens, and Roman Roads along the corridor. Of note are the sections of Roman Roads and the forts and castles in close proximity. These features present significant events in the corridor as assets of heritage value, and contribute to user experience.

Design proposals have carefully respected these settings. The type and nature of planting (including an absence of planting, where appropriate) and screening reduces the visual impact of the A66 near local archaeological sites and historic buildings, including the Countess Pillar, the settlement to the north east of Brougham Castle in Penrith, the Roman Camp in Kirkby Thore, the Greta Bridge Roman Fort, and the Grade II registered parks and gardens in Rokeby.

Legend

- Scheme section
- Existing A66
- Listed Buildings
- Grade:
- I
- II*
- II
- Roman Roads
- World Heritage Sites
- Conservation Areas
- Registered Parks and Gardens
- Scheduled Monuments

3.02 Environmental Statement Volume 1 Ch 08 Cultural Heritage

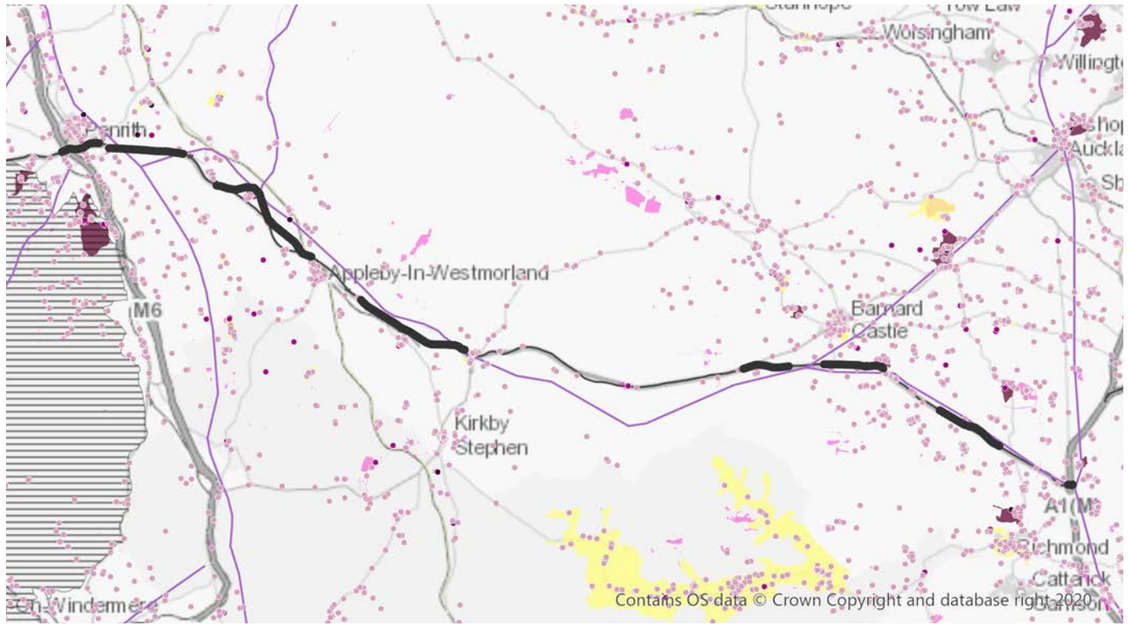


Figure 2.13 Heritage designations

Connectivity

Road network

The A66 is a key local, regional and national route for east-west journeys in the north of England. It offers the most direct route between the central belt of Scotland and the eastern side of England and connects the North East to the North West and Midlands. The road also plays an important role for tourism, providing access to the North Pennines Area of Outstanding Natural Beauty (AONB), the Yorkshire Dales and the Lake District National Park.

Main junctions to the strategic road network include the M6 at Penrith to the west, the A685 at Brough and the A1(M) at Scotch Corner in the east. There are also important connections from the A66 to local communities along the project, including Temple Sowerby, Kirkby Thore, Warcop, Brough and Bowes.

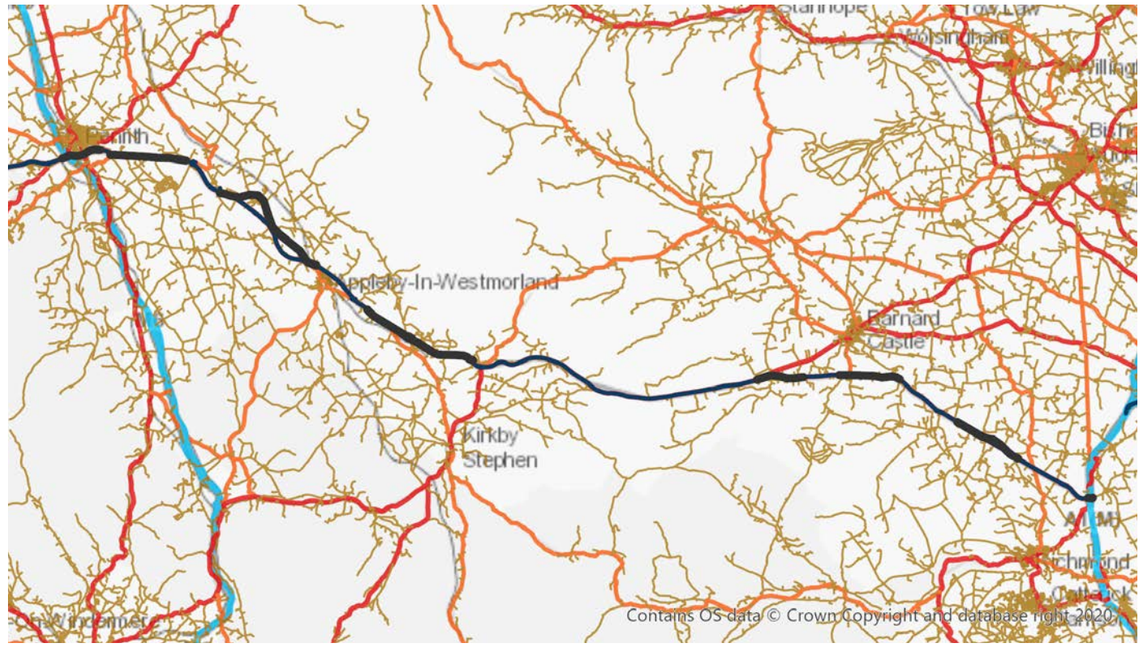


Figure 2.14 Strategic road network

Pedestrian and cycle network

National trails and cycle routes which are close to or intersect the scheme include the Pennines Way and the National Cycle Route 70.

A number of local footpaths, bridleways and cycle routes are within the Order Limits and intersect with the project.

The project has, where appropriate, reinstated and improved existing rights of way that are affected as a result of the proposed works, providing better connectivity and user experiences, improving safety along these routes, whilst connecting into the existing PRoW and bridleways network.

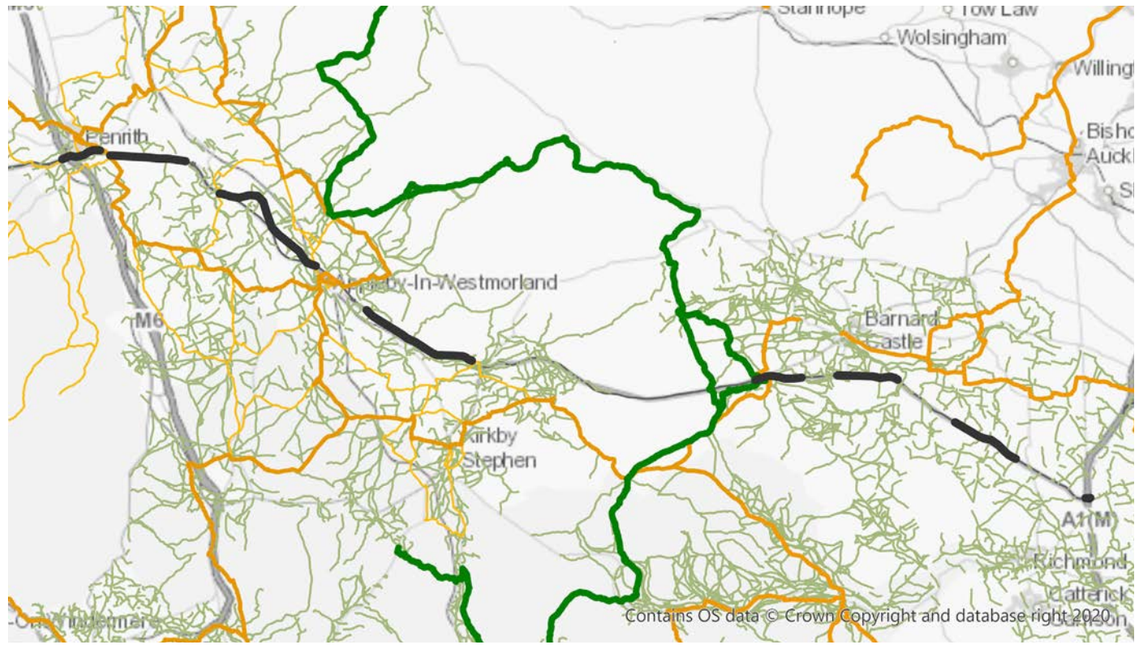


Figure 2.15 Pedestrian and cycle network

Socio- economic context

Case for the project - levelling up

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 value

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.

Summary of socio economic context

The socio economic context of the A66 is illustrated in Figure 2.16. Communities adjacent to and within proximity to the scheme are within the higher levels of income and employment levels in England, though lower levels are experienced within the medium to larger settlements of Penrith, Barnard Castle and Appleby-in-Westmorland. Levels of barriers to housing are within the highest in England in the less developed agricultural and rural areas, though markedly lower within the medium to larger settlements.

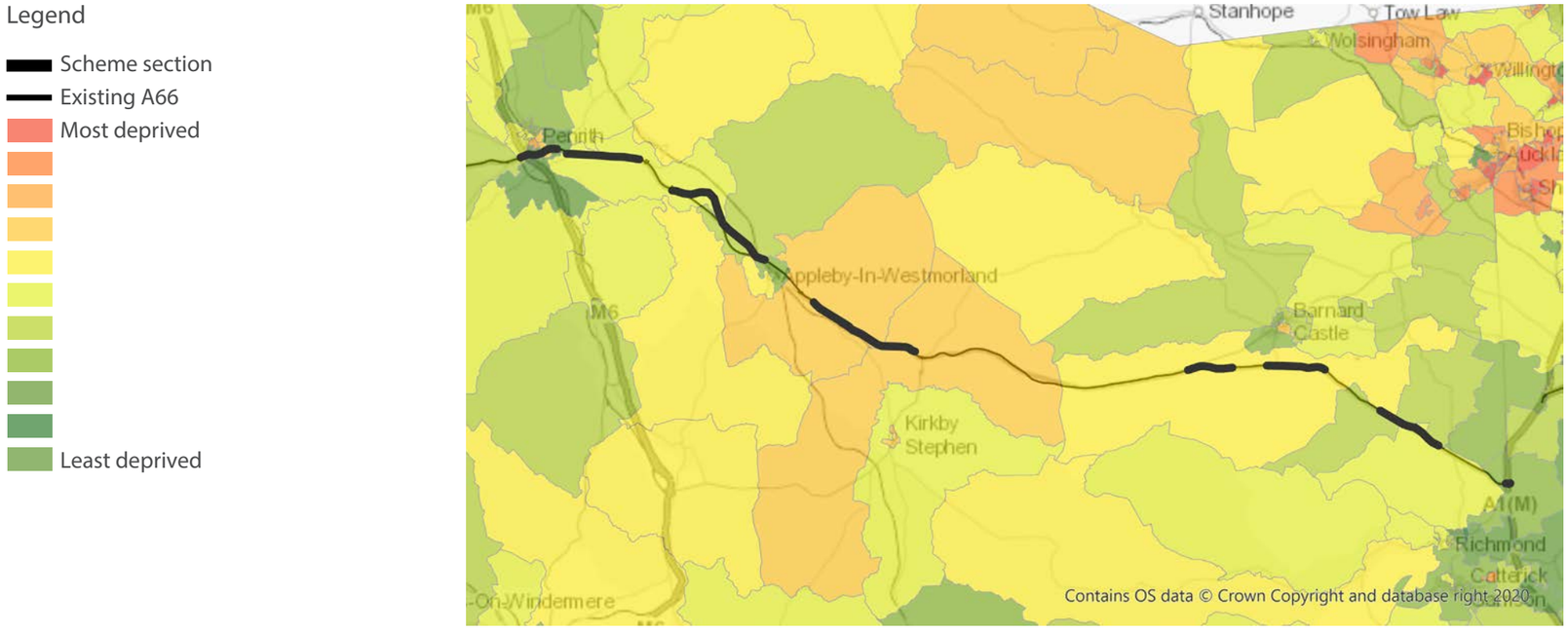


Figure 2.16 Indices of Multiple Deprivation

Figure 2.17 Communities and agriculture

Design considerations

Figure 2.17 provides a summary of the agricultural and community dispersal within and close to the project. The area varies from the urban settlement of Penrith at the western extents of the project, to the predominately rural landscape and communities with vast areas of agricultural land to the east.

The design of the project has been led by the context of the existing landscapes and townscapes through which the Project passes.

During operation of the scheme it is anticipated that there would be an overall reduction in congestion and enhancements to the resilience of the local road network around the A66 (see Application Document 3.7 Transport Assessment).

As such, reduced delays and improved travel conditions and journey times as a result of the project are likely to contribute positively to accessibility to communities, facilities and services, with junctions provided as part of the proposed A66 in order to facilitate greater connectivity across the scheme, for local communities and the wider road network.

Urban

Penrith, at the western end of the project, is the main location for residential, community and business receptors along the length of the Project.

The design of the scheme minimises impact on the surrounding peri urban area where possible, resulting in few direct impacts to the surrounding landscape and no demolitions.

The scheme will impact on Whetheriggs Country Park at Penrith but impacts will be mitigated through replacement land. Areas of high deprivation are not impacted. The extension of the road to three lanes will improve capacity for the local network which will benefit local business and economy.

Local Communities

The study area includes the rural communities of Temple Sowerby, Kirkby Thore, Warcop, Bowes, Cross Lanes, Rokeby, Stephen Bank and Carkin Moor. There are multiple residential, community and businesses within these areas, particularly within Kirkby Thore.

Where the road deviates from the existing alignment, some people will be nearer to traffic and some people will be further away.

New alignments will reduce community severance for some communities. De-trunked sections of the former A66 route will create new routes for non-motorised users.

The implementation of a by-pass at Appleby-in-Westmorland is expected to remove many of the current socio-environmental and safety issues associated with traffic movements through the village.

Agricultural

Impacts on agricultural land are minimised where practiable by reducing land take and ensuring access is maintained or enhanced where possible. There are areas of land required for offline sections of the project which will impact upon the relevant landowners, and is reported in Chapter 13 of the Environmental Statement.

Where temporary land take is returned to the farm holding post construction, the majority of agricultural holdings would continue to operate, particularly given measures such as new overbridges which seek to provide ongoing access between land and key infrastructure.

Tourism

The project will provide some improvement for the tourism sector by improving access to and from the Lake District National Park and Center Parks, particularly during peak seasons when congestion can be higher.

3

Vision and design principles

Overview

5.11 Project Design Principles

This chapter provides an overview of the vision and principles for the project, and a summary of the main factors considered in the experience of the users of the project.

The vision statement and the four project principles are described in further detail within the Project Design Principles report.

The Project Design Principles set out both project-wide principles, which are principles in relation to common and recurring design elements and themes on the project, and scheme specific principles, which are more detailed and locally specific to each of the individual schemes which make up the project.

The Project Design Principles are submitted for approval as part of National Highways' application for development consent for the project and, if granted, would become a document certified under the DCO once made. Subsequent detailed design development must be in accordance with these Project Design Principles.

The Project Design Principles help align the project with the three themes and supporting principles set out within National Highways The Road to Good Design (Highways England, 2018) , specifically:

People

- Good road design makes roads safe and useful
- Good road design is inclusive
- Good road design makes roads understandable

Connecting Places

- Good road design fits in context
- Good road design is restrained
- Good road design is environmentally sustainable

Connecting Processes

- Good road design is thorough
- Good road design is innovative
- Good road design is collaborative
- Good road design is long-lasting

Project vision

Forming part of the coast-to-coast route, the existing A66 largely follows the alignment of the old Roman Road from Penrith to Scotch Corner. A route of great historic strategic significance and linking the various Roman forts on the route such as Brovacum, Bowes and Carkin Moor, and later a series of medieval castles and settlements, the road traverses a route through nationally designated landscapes including the North Pennines and the Yorkshire Dales. Views from the road and memorable passenger experiences are intrinsic to the project, as the route enjoys views towards the Lakeland Fells within the Lake District National Park and English Lakes World Heritage Site.

With the strength of its landscape setting, the A66 is noted both for its dramatic views, and a broad range of noteworthy recreational and historical tourist destinations. The towns and villages along the route exemplify the historic character and identity of the North Pennines, the Yorkshire Dales and the Lake District in each of these respective areas. The vision for the road improvements is therefore to respect, reinforce and where possible further enhance these most valued landscapes and townscapes, and their heritage assets and settings. The project will contribute to the strong sense of place, or inter-linked series of places, experienced by the road's users, as well as by those who live in, work in and visit its wider setting.

> "The vision for the road improvements is to respect, reinforce and where possible further enhance these most valued of landscapes and townscapes, and their heritage assets, and contribute to the strong sense of place, or inter-linked series of places, experienced by the road's users, as well as those who live, work and visit its wider setting."
>
> Project vision statement

This context-led design thinking is applied to both the broad design approach to the proposals, such as the choice and nature of route alignments in relation to existing settlements, and the more detailed design considerations including the response to existing landscape, historic and habitat pattern and the choice of local materials, building techniques and planting types.

The landscape framework and the sense of place created by it is an integral part of the project. Opportunities are sought in the design and management of the landscape elements to promote the conservation, protection and improvement of the physical, natural and historic environment within the project and its setting, and to ensure the project is appropriately softened and integrated within its landscape context.

Closely linked to landscape is ecological value, connectivity and diversity. The design seeks to diversify and maximise ecological value through retention, as far as reasonably practicable, of existing woodlands, trees and hedgerows, and to enhance these and lateral ecological links through creation of a diverse and climate resilient habitat network, offering greater botanical and fauna interest.

A sensitive approach is taken to visual integration of the schemes delivered by the project, and of the experience of individual receptors (people) and groups of receptors in relation to the scheme. This extends to the use of simple design approaches for structures and civil engineering elements, and use of landscape earthworks and, where appropriate, planting to integrate engineering features and features such as acoustic barriers within their surrounding visual context.

Project-wide design themes

5.11 Project Design Principles

Principle A

Designs that are integrated in context and express character and a sense of place

Principle B

Designs to enhance experience for all users and serve the local community

Principle C

Designs to restore and enhance habitats and ecological connectivity

Principle D

Designs that are climate resilient and resource efficient

Shaping the user experience

Overview

The A66 designs have been informed by a desire to shape positive user experience, particularly in consideration of the special landscapes that the project interacts with.

The landscape context provides the experience of the road for its users. The landscape provides both a temporal quality and a spatial quality – it is a sequence of moments or events, which come together to form the perceived route narrative.

A moment within a route narrative can vary by type: it could be a spectacular view or a glimpse of something up-ahead, a crossing of a river, the entry into a woodland, the arrival at a junction, and so on. Each moment of a route narrative has an important relationship with the moment before.

A route narrative consists of individual moments that come together to form the journey. The range of factors influencing the journey experience are summarised, on the following pages.

Image 3.1 View looking north towards Bowes with the North Pennines AONB beyond

Route identity

As indicated in Figure 3.1, the stretch of the A66 that is the focus for the project, offers a series of experiences including:

- Whinfell Park and Forest, interaction with the edges of Penrith and views to the Lake District;
- Views of the Pennine Hills and glimpses of key landmark features such as Murton Pike; and
- The gateway to the Pennines at the eastern end.

The project provides opportunities to strengthen the sense of place and enhance the overall landscape quality in each of these areas.

The Stainmore Pass at the midpoint of the road provides one of the most dramatic sections in shaping the identity of the route. The elevated, bleak moorland landscapes at Stainmore Pass, part of the North Pennines AONB, provide a strong sense of place and a memorable journey experience. East of the Stainmore Pass, the parkland landscapes become more prevalent (such as the Rokeby Estate and Rokeby Park RPG), and provide a striking contrast in scale and place.

The landscape experience

Perceived landscape plays an important role in shaping the user experience. Among the best ways to experience the British landscapes are to navigate the pathways through them. The A66 is a route of national significance – the surrounding landscape is of high scenic value and there are sections where there is high intervisiblity between the road and the open landscape where views and access to a series of landmarks and attractions are possible.

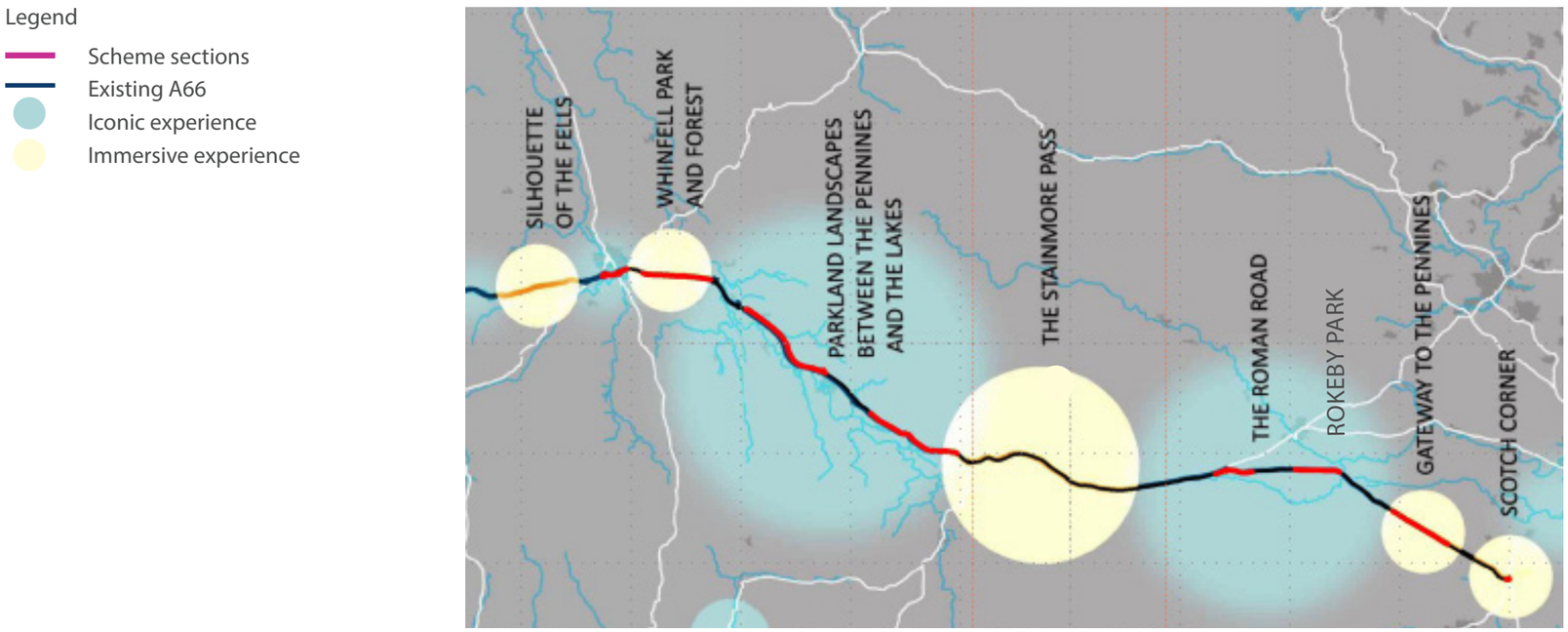


Figure 3.1 Route identity – highlighting the identity of the project area sections within the context of the coast-to-coast journey

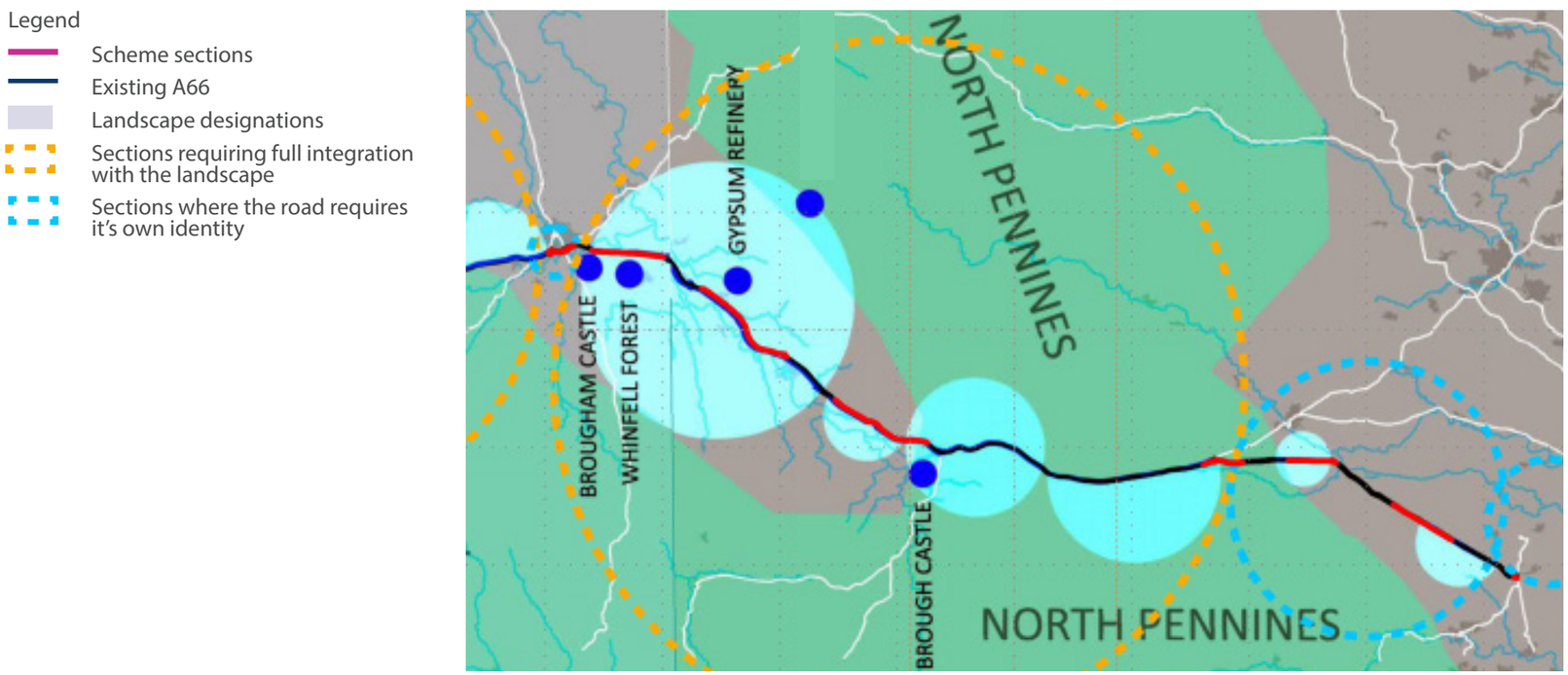


Figure 3.2 Setting and visual landmarks - highlighting key features of the project area section within the wider context of the coast-to-coast journey

Connecting places

The project can be divided into two broad areas; the Eden Valley and the Pennines; as shown in Figure 3.3. The centres of Penrith, Whinfell Park, Brough and Scotch Corner are important as gateways between these areas.

Stainmore is particularly important at the centre-point of the route and a key focal feature of the Pennines.

The Eden Valley acts as a large-scale transition between the Lake District and the Pennines.

Legend

- Scheme sections
- Existing A66
- Centres - sense of proximity
- Areas - the sense of being within
- Transitions

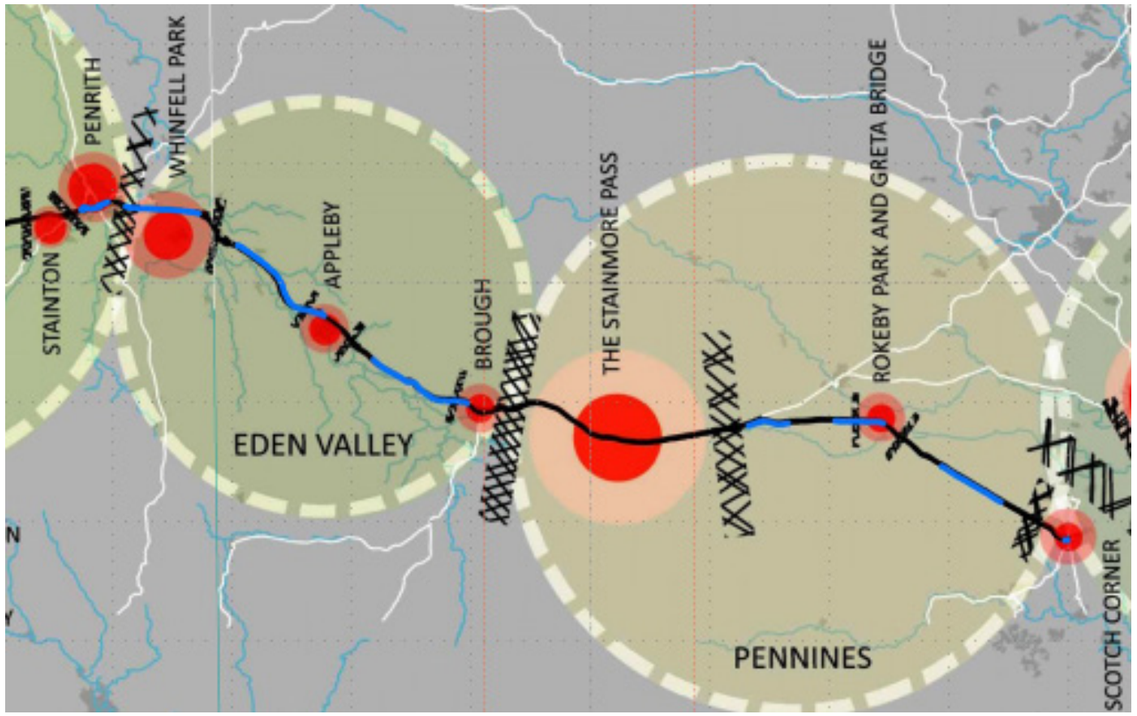


Figure 3.3 Highlighting settlements, their transitions and relationship with broader landscape setting

Cultural attractions

Figure 3.4 illustrates experiences on offer along the route, which helps shape the route's identity. These are divided into two categories:

- Those with imaginability value offer experiences associated with culture and human activity
- Those with restorative value, which offer experiences

There is a strong historical theme running along the A66, reflective of the age of the route. Elements that provide a reminder of the history include the Roman Road, which defines the alignment of the A66, and historic assets such as Brough Castle and Rokeby Park Registered Park and Garden. Views for road users to landmarks provide a valuable sense of orientation and relationship to place and time for travellers using the A66.

Legend

- Scheme sections
- Existing A66
- Attractions with 'Imaginability' value
- Attractions with 'Restorative' value

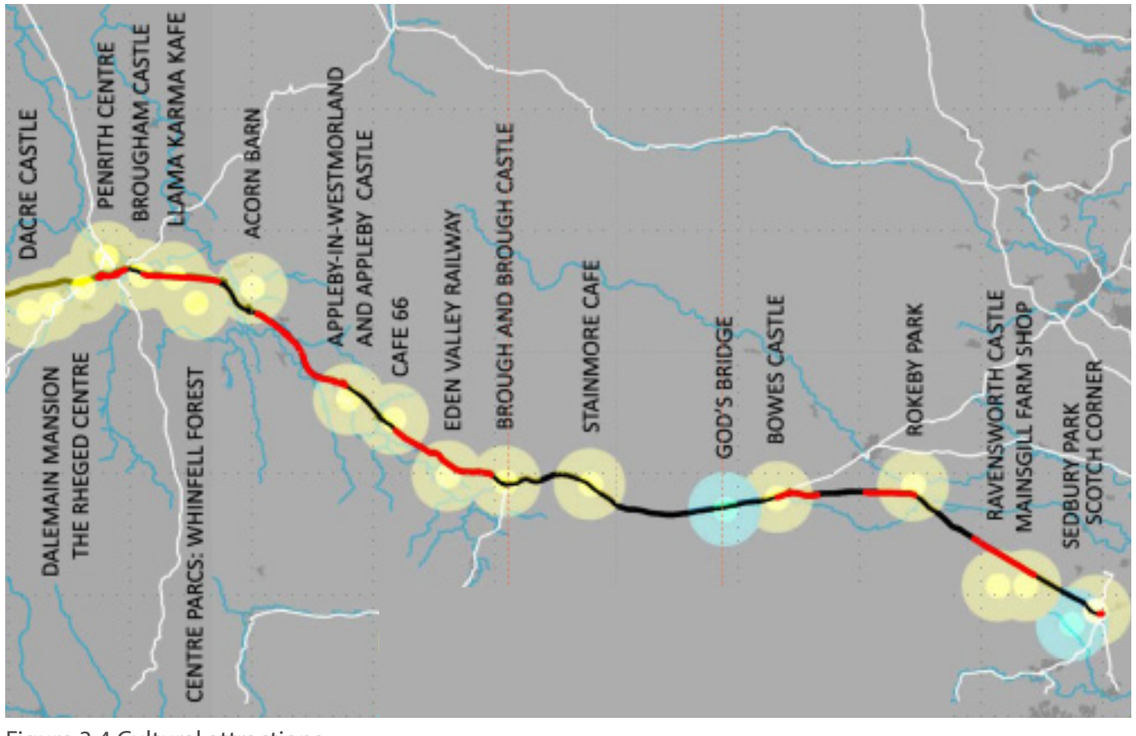


Figure 3.4 Cultural attractions

4

Design evolution and engagement

Image 4.1 Virtual engagement room, part of the engagement process on the PCF Stage 3 Preferred Route took place in 2021

Summary

This chapter summarises how the design has evolved since the inception of the project. An overview of the process for community and statutory stakeholder engagement is also described.

This section includes:

- Design evolution and consultation timeline
- Consultation and engagement
- Independent design review
- Developing the preliminary design

Consultation and engagement

4.01 Project Development Overview Report
4.04 Consultation Report

The project team has consulted with stakeholders and engaged with the public throughout the development of the project. As well as the statutory pre-application consultation required by the Planning Act 2008, National Highways has undertaken a broad range of different consultation and engagement measures and applied a variety of techniques to encourage broad-based participation in the evolution of design proposals. Feedback from stakeholders has informed the design of the scheme to-date and will inform detailed design.

Consultation to-date

Consultation to-date has included engagement with the statutory bodies and other key stakeholders throughout each stage of project development, as demonstrated in the timeline on the following pages.

During the earliest stage of project development, consultation was focussed on progressing the selection of options to take forward. Consultations attended by statutory bodies including the Environment Agency, Natural England and Historic England, local authorities and county councils included initial workshop held in 2018 to present the scheme options, and a follow up workshop to demonstrate how feedback had been incorporated. In addition, a number of consultation workshops were held with non-statutory bodies in February and September 2018 to outline progress and to gain an understanding of their initial views.

Meetings were held in January 2019 to present findings of the option development and shortlisting process and to discuss the scope of the assessment to inform the selection of the Preferred Route.

In March 2019 an Environmental Interest Group meeting was held, which brought together a wide-range of different local and national environmental bodies to discuss the findings from the option development and short-listing process. In parallel with these consultation processes with statutory and non-statutory organisations, in order to inform the selection of the Preferred Route, in 2019 public consultation was undertaken to provide local residents, landowners and stakeholders with an overview of the project and the solutions that were under consideration. These sessions sought to provide a range of opportunities to provide feedback which informed Option Selection of PCF Stage 2 and the eventual selection of the Preferred Route.

Following the Preferred Route Announcement, non statutory and statutory consultations were held. The Statutory consultation in 2021, discussed in detail in the Consultation Report (document reference 4.04), was carried out in a number of different formats, including; public consultation, a virtual consultation room and an engagement van. Responses received raised a wide range of matters, a common concern across all sections was the potential for increased traffic and as a result, increased congestion in local communities. Many respondents were concerned about potential impacts on the climate and the environment including air quality, noise pollution and on wildlife and their habitats. This led to changes in some of the proposals such as the M6 junction 40 to Kemplay Bank, Temple Sowerby to Appleby, Appleby to Brough and Bowes Bypass schemes.

Throughout preliminary design, proposals for each scheme have continued to develop to reflect further survey works undertaken, ongoing assessments and continuing engagement with landowners, Statutory Environmental Bodies, Local Authorities and community focus groups.

The Design Council's National Highways Design Review Panel also provided their advice and feedback on the Project in April 2022, following two reviews on the Project in September 2019 and May 2021. They stated their support for changes made by the design team since the previous review in May 2021. As part of their advice, the Design Review Panel suggested to create a wider masterplan with the host authorities, landowners and businesses to capitalise on opportunities for upskilling, sourcing local materials and communicating the important of the Project for residents. Their other recommendations included scoping for EV charging points, exploring how this project can become a visitor attraction with WCH routes, maximising biodiversity net gain, ensuring the Project responds to climate change and ensure that the design of junctions provides safety for motorcyclists and other road users.

In addition to these developments, a detailed review of feedback received throughout Statutory Consultation was undertaken to further inform preliminary design. Detail on this process and how regard has been given to the feedback can be found in the Consultation Report. As three of the schemes (Temple Sowerby to Appleby, Appleby to Brough and Cross Lanes to Rokeby) presented alignment and junction alternatives at Statutory Consultation, a key focus of design development for those schemes has been reviewing feedback on the proposals as presented in Autumn 2021.

Feedback from consultation was used to help influence the project design, including issues common across all schemes and scheme specific details, including the design of highway geometry and access arrangements; design of structures and earthworks; drainage infrastructure; environmental mitigation (for examples the setting and visual impact of the project); traffic flows and congestion during construction; and accessibility for walkers cyclists and horse-riders (WCH), including provision of parallel east west links through the schemes.

Independent design review

The project sought advice from the National Highways Design Panel, to act as independent expert design advisors, to help inform the emerging preliminary design. The review process included three separate reviews during the development of the preliminary design in 2019, 2021 and 2022.

The project presented in September 2019 helped to inform the early preliminary design proposals. A second presentation was made on the 4th and 5th May 2021. A 'virtual site visit' was undertaken, followed by a presentation of emerging project proposals.

The panel acknowledged that a number of key recommendations from the 2019 review had been accepted and had helped shape design progress. Feedback provided following the May 2021 panel session conveyed an appreciation that the project had made a strong start on the key strategic elements, and that more focus was needed to be directed towards the finer detailed design and associated management arrangements as the project proposals were further developed.

A final review of the preliminary design was carried out on 4th April 2022. The panel supported the changes made by the design team since the review in 2021, which was summarised as the following: 'Enhancing the scheme through conducting rigorous public consultation and selecting sensible route options for bypasses and junctions at Kirkby Thore, Warcop, Kemplay Bank, and Brough Hill Fair. We recognise this is an important moment for the Northern Trans Pennine project, with Development Consent Order (DCO) submission set for May 2022. We also recognise that the design of the scheme is currently fixed ahead of the DCO submission and so recommendations made by the panel are intended for the next stage of design.'

Key points raised by Design Council appointed expert advisors at the Highways England Design Review Panel (May 2021)	How points are being used to help inform the project
The panel acknowledged that as an incredibly important project, of national importance, it is vital that a clear and compelling narrative be developed to highlight landscape sensitivities, understand the context and identify the opportunities for the highest quality design interventions.	This Project Design Report provides this design narrative
Recommendation that further analysis of options at Kirkby Thore were undertaken given the profound and significant implications of each option, on both community and landscape.	Further analysis of alternative route alignments at Kirkby Thore was undertaken and their associated impacts, with mitigation measures integrated into the preliminary design.
Support for the proposal at Warcop involving a minor incursion into the AONB	This constitutes the preferred route alignment for Warcop being submitted for the DCO
Welcome for the positive and extensive engagement and consultation to-date, acknowledging the vital role of stakeholder engagement given the profound impact on communities, and how the process may assist in informing mitigation and management strategies.	The support for the comprehensive approach to engagement and consultation was appreciated. The review highlighted a number of challenges for the design team to respond to, which have been addressed through successive stages of engagement and design iterations.
Commend the strength and breadth of the multi-disciplinary team, but suggest it be expanded further by working with artists.	The potential to incorporate artists to help inform distinctive design solutions will be considered in future design stages.
Emphasise the need for high quality landscape interventions. The panel emphasised that the many ponds need to be carefully sited within the landscape to become features in their own right. They noted other details such as all boundary treatments, including stone walls and hedges need to be considered carefully, respecting the local landscape.	Context- led design forms a core component of design proposals. Consideration is being given to the integration of ponds into the landscape as features with ecological and landscape value whilst maintaining their primary drainage functions.
Further analysis is needed on tree species, recognising this was underway. They flagged this needs to anticipate future management and changes resulting from ash dieback and climate change.	Comprehensive analysis of existing trees has been undertaken and appropriate tree selection is a key aspect of landscape designs.
Encourage a clear strategy and design guidance is prepared for components such as gantries, signage, lighting, boundary treatments and structures.	Each of these considerations will be given further detailed attention as the design process progresses, to serve as the basis for construction contracts.
Welcomed reduced impacts and land-take at Center Parcs and at the two terminals (M6 and A1).	Support for this aspect of the proposals noted.

Design evolution and consultation timeline

4.04 Consultation Report
4.01 Project Development Overview Report

DESIGN EVOLUTION

Pre-project - Northern Trans-Pennine Routes Strategic Study

Options phase - PCF Stage 1 Option Identification

Involves the identification of broad route options to be taken to public consultation

Options phase - PCF Stage 2 Option Selection

Culminates in a Preferred Route selection through the process of options refinement and public consultation

2014 | 2015 | 2016 | 2017 | 2018 | 2019

CONSULTATION & ENGAGEMENT

Initial stakeholder workshops

Options for the scheme introduced to key statutory bodies and initial feedback incorporated

Non-Statutory Consultation

Stakeholders provided feedback that informed the themes for assessment of the options considered.

Preliminary Design

Feedback from the Statutory Consultation confirmed areas for key design development supported by further survey works.

Detailed Design

Commences summer 2022 along with detailed construction planning

Construction

Preferred Route Announcement

It identified eight sections for upgrade to dual carriageway

PCF Stage 3 Preliminary Design

Culminates in a Preferred Route selection through the process of options refinement and public consultation

DCO Application submitted

DCO decision

Site establishment

Construction starts

Construction complete

2020 | 2021 | 2022 | 2023 | 2024 | 2029

Non Statutory Consultation (Sept- Oct 2021)

Further public engagement

Statutory Consultation

To seek feedback on the project generally, including the design of the project and the key findings from technical work

Indicative timeframe

Developing the preliminary design

4.01 Project Development Overview Report

PCF Stage 1& 2 Option Phase, 2016-2018

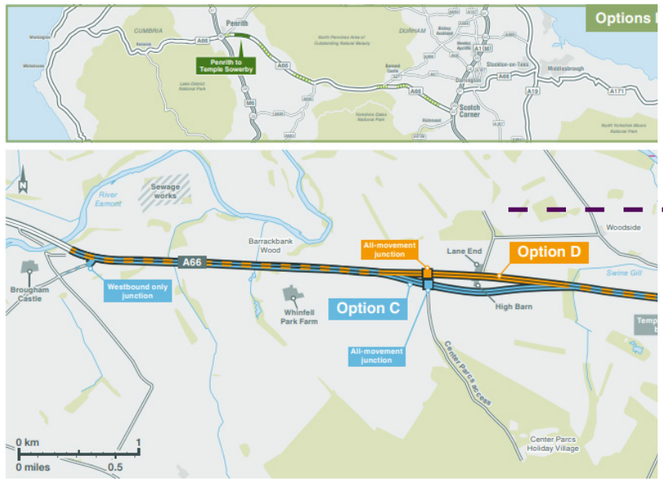


Figure 4.1 Plans developed at the Options Phase

National Highways' PCF Stage 1 involves the identification of broad route options to be taken to public consultation. Work is undertaken at this Stage to assess these options in terms of environmental impact, traffic forecasts and economic benefits, allowing for refinement of the cost estimates of options (including an allowance for risk).

During PCF Stage 2, those shortlisted options identified were subject to more detailed appraisals.

Those options that performed satisfactorily against the project objectives, assessment criteria and relevant policy objectives, were presented to the public during a non-statutory consultation in 2019.

Preferred Route Announcement, 2020

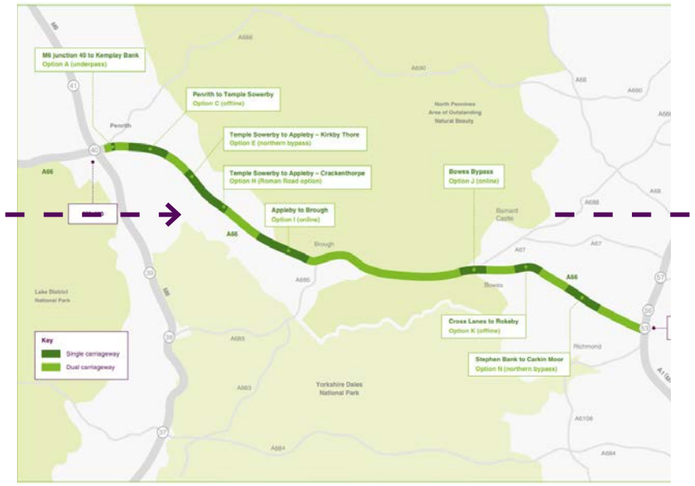


Figure 4.2 Preferred Route as announced in May 2020

A Preferred Route was announced in May 2020 and the design has since been developed through Preliminary Design.

Public opinion and stakeholder feedback was key to developing the Preferred Route, as was the consideration of planning policy, environmental impacts and opportunities for mitigation for the options considered.

The Preferred Route is as shown in Figure 4.2. It identified eight sections (referred to as schemes) of single carriageway for upgrade to dual carriageway standard along the A66.

PCF Stage 3 Preliminary Design, 2021 -2022

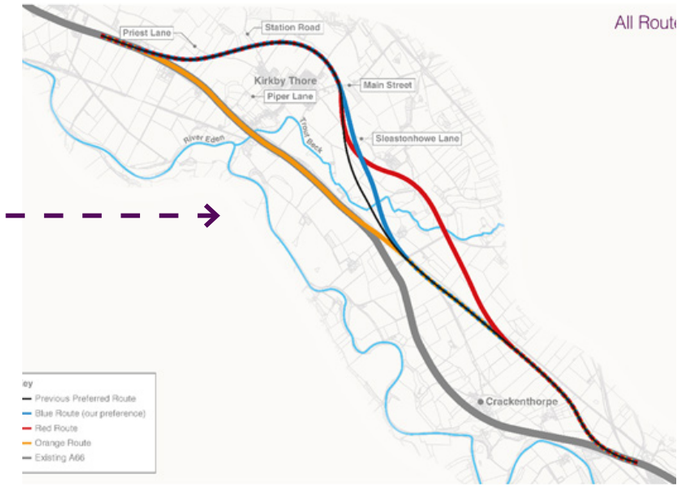


Figure 4.3 Alignment alternatives presented for Temple Sowerby to Appleby at July 2021 stakeholder engagement events

Refinement of the Preliminary Design has taken place following the Preferred Route announcement. The preliminary design stage included:

- Refining the preliminary design of the Preferred Route, including assessment of alignment alternatives;
- Consulting with the community and stakeholders;
- Undertaking surveys, such as topographical, geotechnical and environmental surveys;
- Preparing the DCO application;
- Completing the EIA and preparing the Environmental Statement (ES); and
- Initial construction contractor engagement, including involvement of National Highways' regional Delivery Integration Partners (DIPs).

Figure 4.4 Artsts impression of the scheme submitted for DCO, of the proposed junction at Whinfell Park

5

Scheme design

Introduction

This chapter summarises key elements of the design proposals for the eight different schemes that form the project. For ease of orientation a colour code has been adopted. The eight individual schemes names are shown opposite (noting the aggregation of the original ten schemes) together with their colour codes.

For each of the schemes, key context-related considerations that have influenced design thinking are identified, ensuring that the schemes combine to create a well-coordinated and cohesive route-wide design approach.

This chapter draws upon, but is no substitute for, the full description of the works for which development consent is sought, contained in Schedule 1 to the draft Development Consent Order (Application Document 5.1) and the Project Description contained in Chapter 2 of the Environmental Statement (Application Document 3.2). This section of the Project Design Report also seeks to highlight and summarise the key design principles that National Highways has adopted in the Project Design Principles (Application Document 5.11) together with the Figures, visualisations, artists impressions and design studies to show these could be implemented in the context of each scheme within the parameters of the development consent sought. For full details of the project wide and scheme specific design principles that apply, please refer to the Project Design Principles.

- 0102 M6 Junction 40 to Kemplay Bank (Schemes 1 and 2, considered as one)
- 03 Penrith to Temple Sowerby (Scheme 3)
- 0405 Temple Sowerby to Appleby (Schemes 4 and 5, considered as one)
- 06 Appleby to Brough (Scheme 6)
- 07 Bowes Bypass (Scheme 7)
- 08 Cross Lanes to Rokeby (Scheme 8)
- 09 Stephen Bank to Carkin Moor (Scheme 9)
- 11 A1(M) junction 53 Scotch Corner (Scheme 11. There is no scheme 10 on the Project)

Figure 5.1 Diagram of schemes

M6 junction 40 to Kemplay Bank

Figure 5.2 Key plan of Scheme 0102 - M6 Junction 40 to Kemplay Bank

Image 5.1 View north to the A66 across the Eamont Valley, from the Maybrough Henge scheduled monument

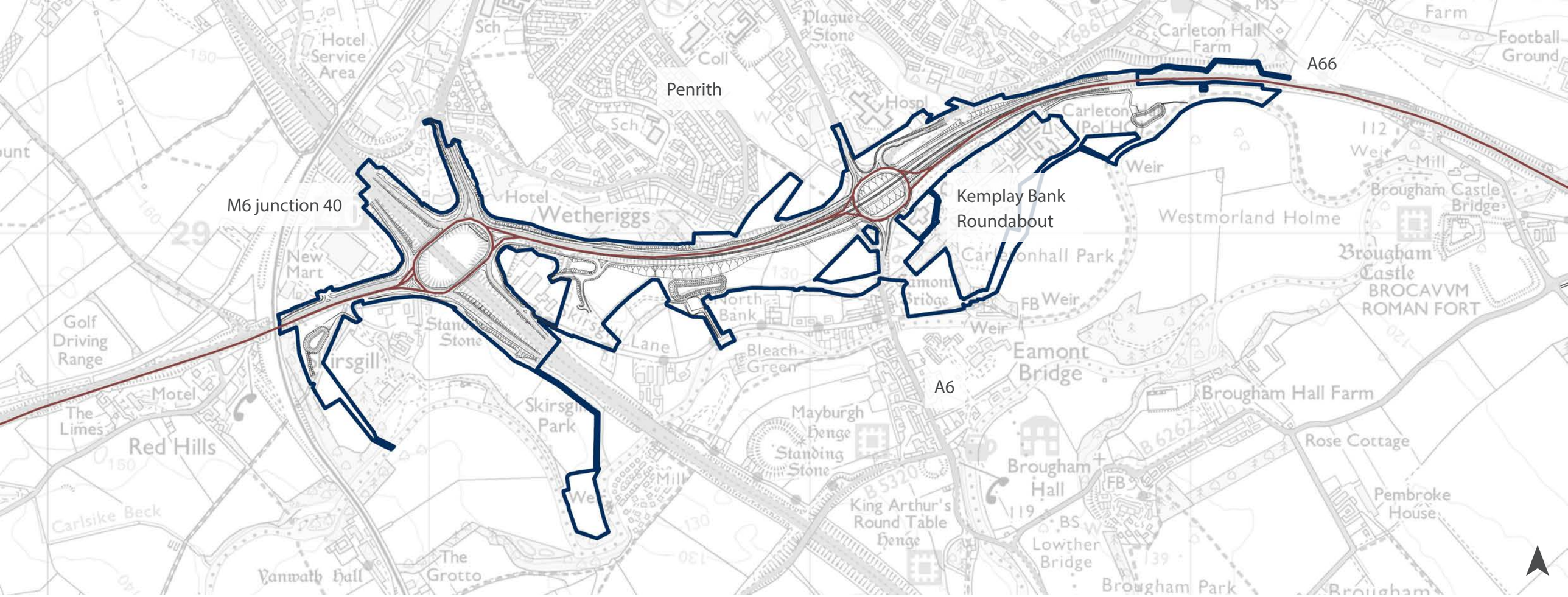


Figure 5.3 Overview Map of Scheme 0102 - M6 Junction 40 to Kemplay Bank

Overview

M6 junction 40 to Kemplay Bank (Schemes 1 and 2 are considered as one) is located at the most westerly point of the proposed A66 project. The scheme is situated adjacent to the urban fringes of Penrith and runs from junction 40 of the M6 to Kemplay Bank Roundabout.

As the main point of access to Penrith, M6 junction 40 accommodates high volumes of traffic from the north via the M6 and the A66 to the west.

The M6 junction 40 has high levels of congestion which cause bottlenecks at the Kemplay Bank Roundabout which affects the flow of traffic along the A66 and for north and southbound traffic using the A6.

To address these issues, improvements are proposed to both M6 junction 40 and the Kemplay Bank Roundabout, and their respective approach roads.

- Scheme boundary
- Existing A66
- Route alignment

Understanding context

Landscape character and views

Scheme 0102 marks the transition between the National Character Area (NCA) of the Cumbria High Fells and the NCA of the Eden Valley. Approaching from the east, Brougham Castle symbolises the entry point to Penrith, following which the road skirts around the southern limits of the town, fringed by Wetheriggs Country Park, before meeting the M6. Continuing west, glimpses of the Lake District begin to be revealed as the entry into this landscape setting begins to open up.

Approaching from the west along the valley, distant glimpsed views of the Pennine Fells begin to be revealed.

Legend

- Intermediate farmland
- Urban area
- Rolling fringe
- Broad valleys
- View travelling east
- View travelling west
- View constrained

3.02 Environmental Statement Volume 1 Ch 10 Landscape and Visual

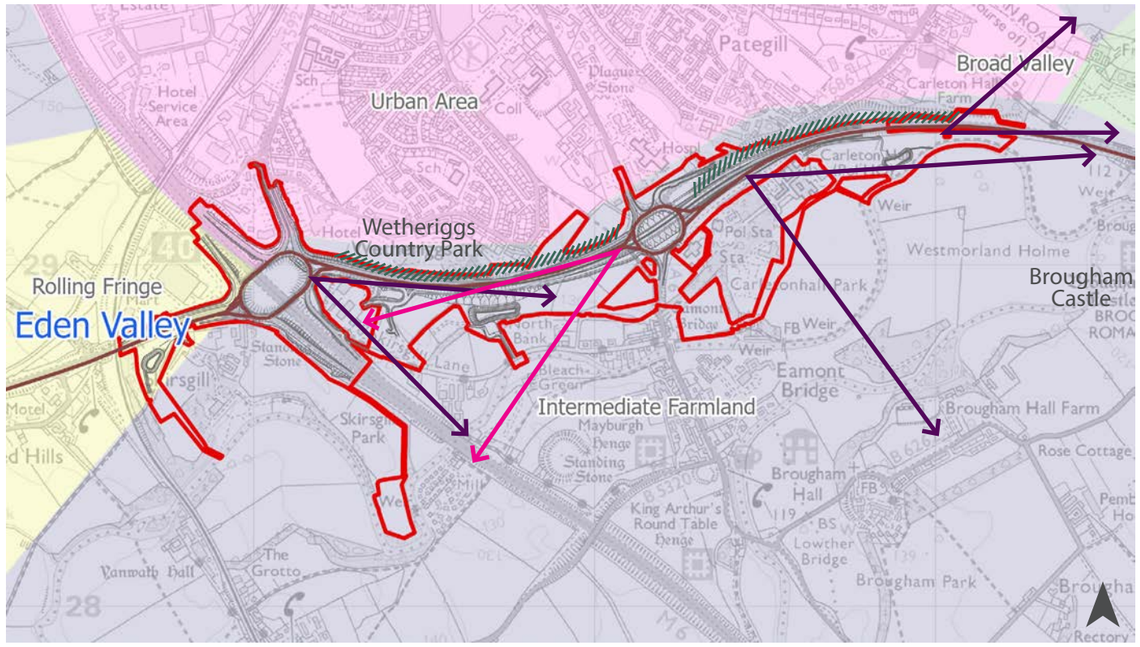


Figure 5.4 Scheme 0102 - Landscape character and views

Topography and vegetation

Landform across the study area comprises a typical valley character, with higher elevated land providing some extensive views south whilst foreshortening views north from within Penrith, coupled with the flatter valley floor south of the existing A66.

The immediate road-side environment is characterised by dense urban fringe, roadside planting and improved and semi-improved grassland. The riparian woodland which follows the Rivers Eamont and Lowther to the south of Penrith are also notable. Within the Order Limits roadside tree belts generally feature along the A66 corridor, with woodland blocks within the roundabouts.

Legend

- Broadleaved woodland
- Mixed semi natural woodland
- Scrub
- Semi improved grassland
- Improved grassland
- Amenity grassland
- Other habitat
- Buildings
- Other habitat

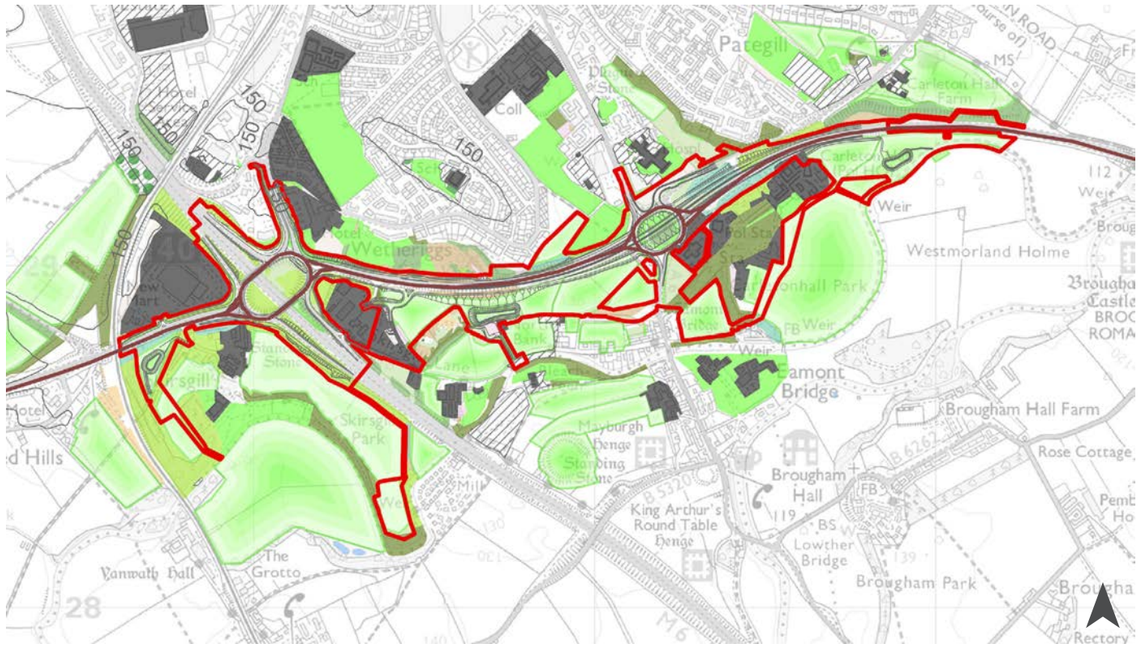


Figure 5.5 Scheme 0102 - Topography and vegetation

Designations

The rivers Eamont and Lowther have both Site of Special Scientific Interest (SSSI) and Special Areas of Conservation (SAC) status. Key heritage assets within the wider area include Penrith Castle and Yanwath Hall, both examples of medieval defended residences, and the historically high status country houses of Carleton Hall, Skirsgill and Lowther Lodge. There are four designated Twentieth Century heritage assets within the study area: Eamont Lodge, a K6 Telephone Kiosk and two Boer war memorials. The former ice house at Carleton Hall is also a non-designated heritage resource within the area.

Legend

- Listed buildings Grade I
- Listed buildings Grade II*
- Listed buildings Grade II
- Scheduled monuments
- County wildlife sites
- Site of Special Scientific Interest (SSSI)
- Sites of Invertebrate Significance
- Special Area of Conservation (SAC)

3.02 Environmental Statement Volume 1 Ch 06 Biodiversity, Ch 08 Cultural Heritage and Ch 08 Cultural Heritage

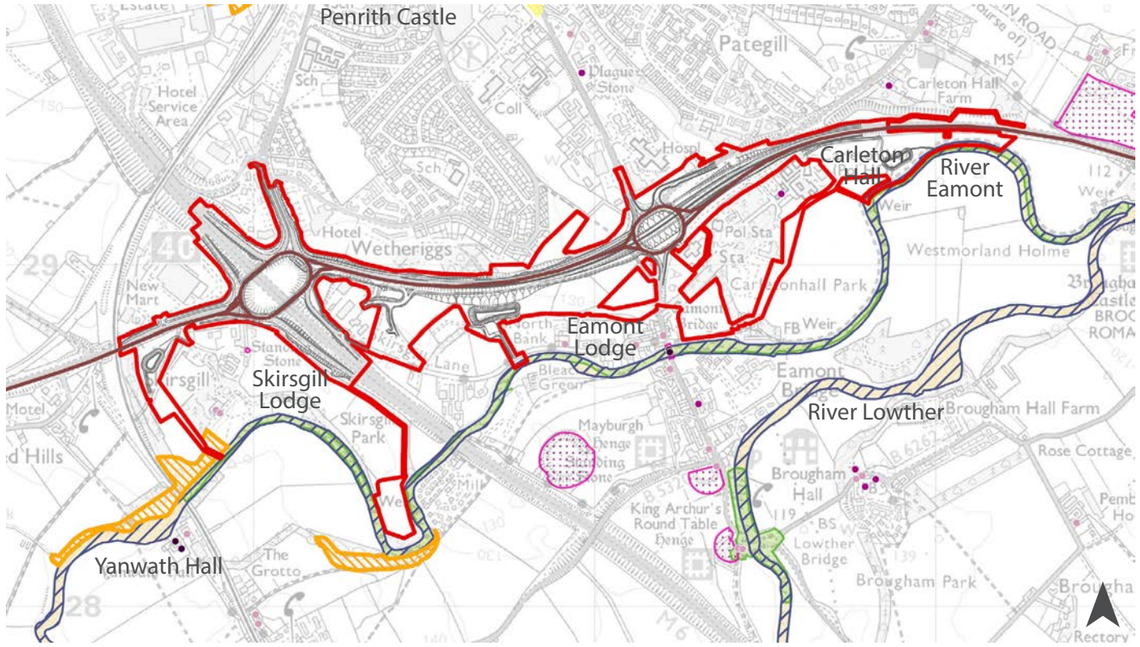


Figure 5.6 Scheme 0102 - Designations

Connectivity

The A66 defines the southern boundary of Penrith, and therefore does not cause urban severance.

The National Cycle Route (NCR) 71 makes up the western third of the Coast to Coast (C2C) route between Whitehaven and Penrith. Locally, the cycle route links to the NCR 68 at Appleby.

Legend

- Public Rights of Way
- Cycle Routes
- National Cycle Network

2.04 Walking Cycling Horse Riding Proposals

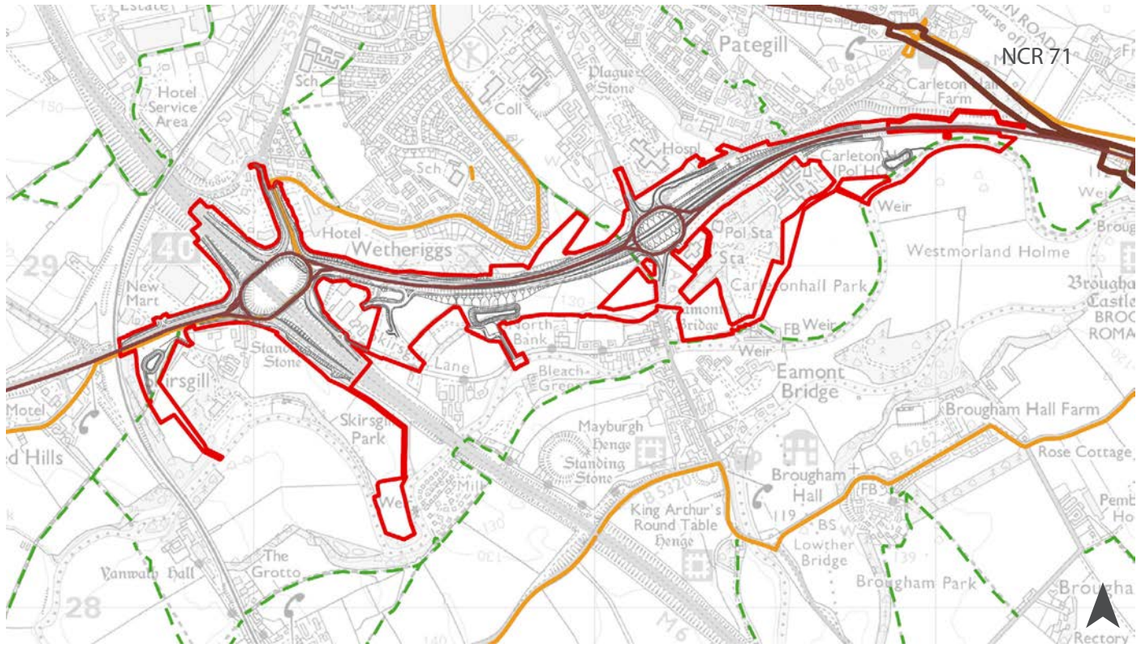


Figure 5.7 Scheme 0102 - Connectivity

Highways proposals

Key elements of the highway improvements for Scheme 0102 M6 Junction 40 to Kemplay Bank include the following:

- Widen each of the slip roads approaching the M6 junction 40 roundabout to provide additional southbound access.
- Widen the existing dual carriageway between M6 junction 40 and Kemplay Bank.
- Widen the A66 along the existing alignment.
- Construct a new dual-carriageway underpass below the existing Kemplay Bank roundabout. This will enable free-flowing traffic eastbound and westbound along the A66 and improve access to Penrith on the A6.
- Create new slip roads to the A6 and A686 at Kemplay Bank Roundabout, allowing users to safely join and leave the A66 in both directions. This will also serve the local road network with links to Penrith, Eamont Bridge, and other local settlements.
- Widens slip roads to J40 will facilitate both northbound and southbound access to/from the M6.
- Extend the existing Carleton Avenue underpass which serves the emergency services facilities to the south east of the Kemplay Bank Roundabout.

2.08 Environmental Mitigation Maps
2.09 Mitigation Schedule
5.11 Project Design Principles

Site-specific design principles

A summary of some the key site-specific design principles that apply to the detailed design of Scheme 0102 M6 Junction 40 to Kemplay Bank are summarised below. For full details of the applicable project-wide and site-specific design principles, please refer to the Project Design Principles (Application Document 5.11).

Structures and road design

03 Retaining walls are to use local materials sensitive to local character, including that relating to the new Kemplay Bank Underpass, unless safety and maintenance access critical finishes are considered to be necessary by National Highways in consultation with the Local Highway Authority. (CH9290-9325)

Local roads, PRoWs and accommodation works

08 Existing shared walking/cyclist crossings are to be retained on Kemplay Bank Roundabout (CH10750-10910). The crossings are a mix of controlled (traffic signals) and uncontrolled provision. An existing shared use cycle/footway running along the north side of the scheme and around all arms of the junction is to be retained as far as reasonably practicable.

Landscape design and environmental mitigation

01 Tree removal must be kept to a minimum at Skirsgill Park (CH9400-10000) having regard to the requirements of the Project. Any trees removed within the scheme are to be replaced in as close to the original position as reasonably practicable to ensure visual continuity and ecological connectivity and are to be replaced at a planting ratio of two trees planted for each one removed.

02 Should it need to be implemented in line with the provisions of the Environmental Management Plan, the acoustic barrier providing mitigation for receptors at Skirsgill Lodge (CH9325-9350) must tie in with existing boundary treatments using the same material to reflect the character and heritage of the receptor and its locale as far as reasonably practicable.

04 Minimise impacts on mature tree canopy cover at Wetheriggs Country Park to maintain setting and landscape experience as far as reasonably practicable. Opportunities should be explored for the enhancement of Wetheriggs Country Park (CH10000) through woodland management and sensitive replanting.

Please note the site-specific design principles for each of the schemes, throughout Section 5, are numbered and correspond to the numbering in the Project Design Principles (Application Document 5.11).

01 The ones in circles corresponded to the location shown on the accompanying figures.

01 The numbers on their own did not relate to a specific identified location.

Penrith

A592 Ullswater Road

A6 Bridge Lane

A686 Carleton Avenue

Kemplay Bank Roundabout

Clifford Road

Wetheriggs Country Park

M6 junction 40

A66

Carleton Hall Park

River Eamont

Skirsgill Park

M6

A6

Mayburgh Henge

01

02

03

04

05

06

07

08

0 50 100 200 500 Metres

Location and direction for the view included in Figure 5.9

Figure 5.8 Scheme 0102 - M6 Junction 40 to Kemplay Bank

05 Planting at Carleton Park and Hall (Blue Light Zone) south of the A66 must reflect the existing parkland environment (with single specimen trees and coppice form of planting, soft engineered slopes and appropriate native ecological planting at the attenuation pond).

06 Siting and profiling of the attenuation pond at the Carleton Hall Park (CH11600) designed landscape is to ensure that there is no adverse effect on the existing parkland landscape setting. The pond is to be located away from existing parkland trees and close to the River Eamont as far as reasonably practicable.

07 As this section is existing on line carriageway widening, the detailed design must retain existing open views to Skirsgill Hall, Brougham Castle, the Pennines and Whinfell Forest (CH10300 and CH11500).

09 Respond positively to the existing local townscape character around the Penrith gateway by seeking to integrate the Project with existing landscape features such as strong linear belts of vegetation which reinforce the urban highway landscape in this location.

10 Lighting is to tie in with the existing junction lighting and to create a consistent environment to ensure the safety of road users.

Figure 5.9 Artist's impression of the A66 at Wetheriggs Country Park in Penrith.

Penrith to Temple Sowerby

Figure 5.10 Key plan of Scheme 03 - Penrith to Temple Sowerby

Image 5.2 View to the junction at Center Parks on Lane End and Lakeland Fells

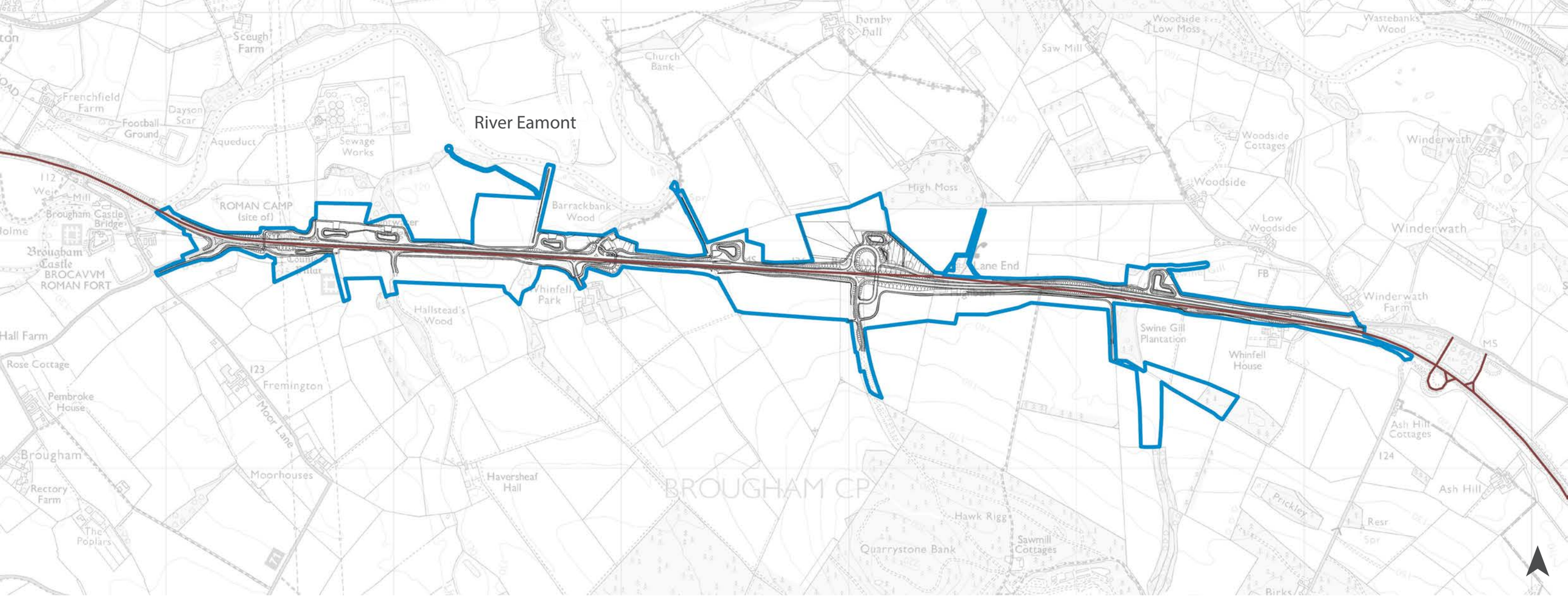


Figure 5.11 Overview Map of Scheme 03 - Penrith to Temple Sowerby

Overview

Currently this three mile stretch of the A66 has varying widths, causing an inconsistent driving experience, and creating safety issues. There are several private access points, including one for Center Parcs, where it is difficult and unsafe for cars to turn right onto the main road. Full dualling of this section is therefore proposed, together with associated access improvements.

Since the preferred route announcement, working closely with landowners and associated businesses has resulted in a proposal that represents a significant reduction in the land-take required to achieve expansion of the A66 on its northern side and improve access, including a new junction to replace the existing junction at Center Parcs.

Understanding context

Landscape character and views

Scheme 03 continues along the NCA of Eden Valley, on the alignment of the former Roman Road. Approaching from the west, easterly views open to a pastoral landscape, with the splendour of Brougham Castle positioned proudly at the confluence of the Rivers Eamont and Lowther.

Legend

- Intermediate farmland
- Sandstone ridge
- Broad valleys
- View travelling east
- View travelling west
- View constrained

3.02 Environmental Statement Volume 1 Ch 10 Landscape and Visual

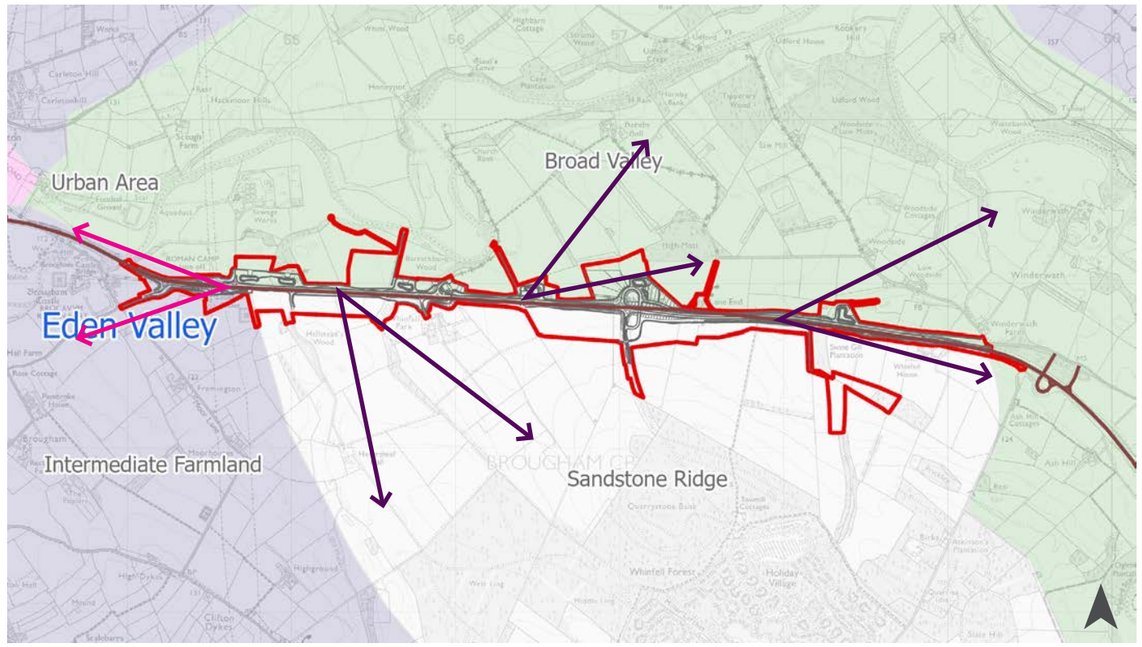


Figure 5.12 Scheme 03 - Landscape character and views

Topography and land use

Aside from the urban influence of Penrith and other smaller settlements, land across the study area is broadly characterised by agriculture, although there are significant areas of woodland which are often ancient.

The various watercourses feature belts of riparian woodland which in turn form enclosed valleys.

Within the Order Limits there are belts of strong roadside trees and shrubs on both sides and stretches of road where there is no vegetation, allowing views towards the North Pennines to the north and at times views south west towards the Lake District fells.

Legend

- Broadleaved woodland
- Mixed semi natural woodland
- Scrub
- Semi improved grassland
- Improved grassland
- Arable
- Buildings
- Other habitat

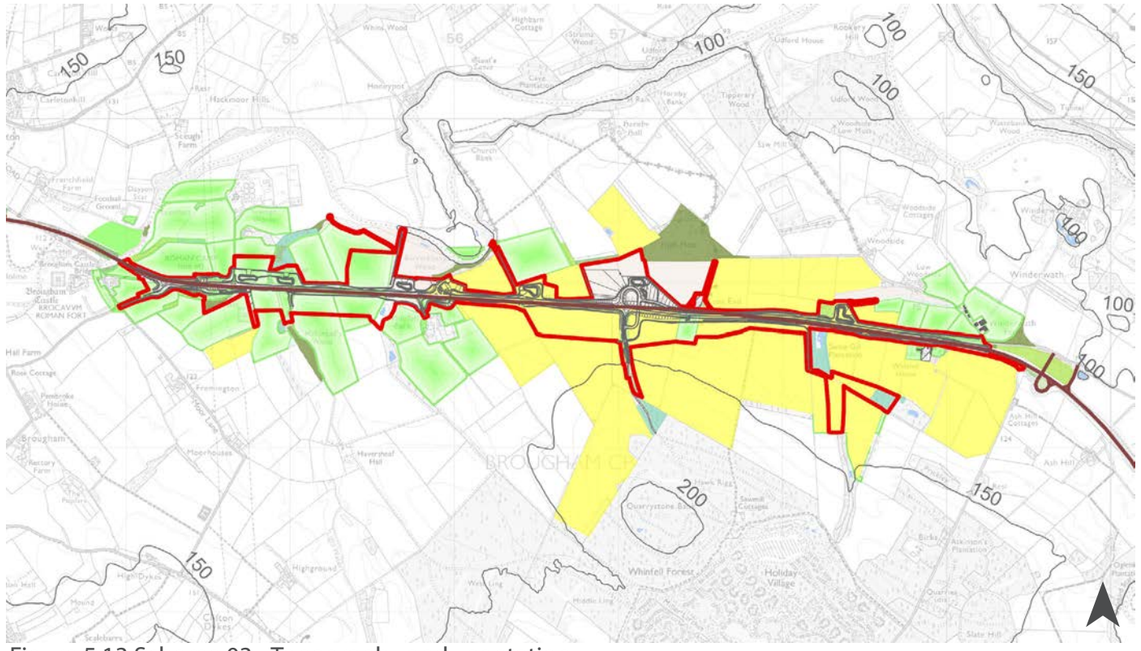


Figure 5.13 Scheme 03 - Topography and vegetation

Designations

The River Eamont has both Site of Special Scientific Interest (SSSI) and Special Areas of Conservation (SAC) status.

Whinfell Forest is designated as an Ancient Woodland and a County Wildlife Site, and is also the site of Centre Parcs.

Key heritage assets within the wider area include the site of the Roman Marching Camp northeast of Brougham fort, identified as Brocavum. Brougham fort was constructed on the south bank of the River Eamont near its confluence with the River Lowther possibly as early as AD78-84. Brougham Castle was built between 1203 and 1214 by Robert de Vieuxpont. The St Ninian's monastic site to the north has medieval origins, with the present church built in 1660 to replace an older group of buildings.

Legend

- Listed buildings Grade I
- Listed buildings Grade II*
- Listed buildings Grade II
- Roman Roads
- Scheduled monuments
- County wildlife sites
- Site of Special Scientific Interest (SSSI)
- Special Area of Conservation (SAC)
- Ancient Woodland

3.02 Environmental Statement Volume 1 Ch 06 Biodiversity, Ch 08 Cultural Heritage and Ch 08 Cultural Heritage

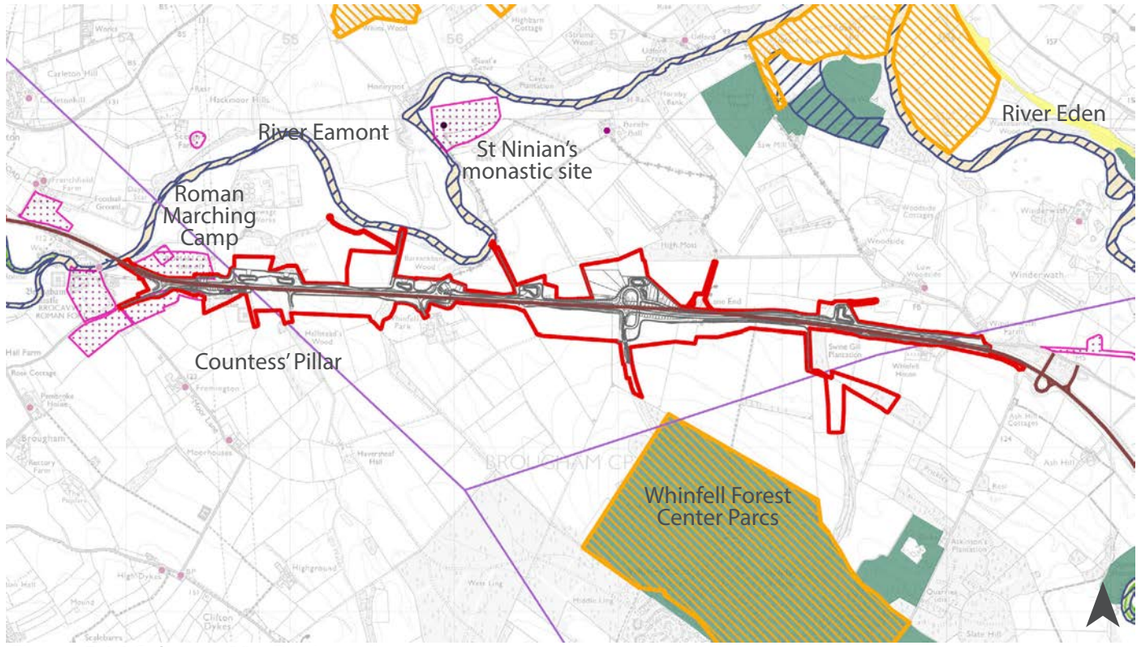


Figure 5.14 Scheme 03 - Designations

Connectivity

There is one footpath and one byway open to all traffic (BOAT) which terminate at the existing A66.

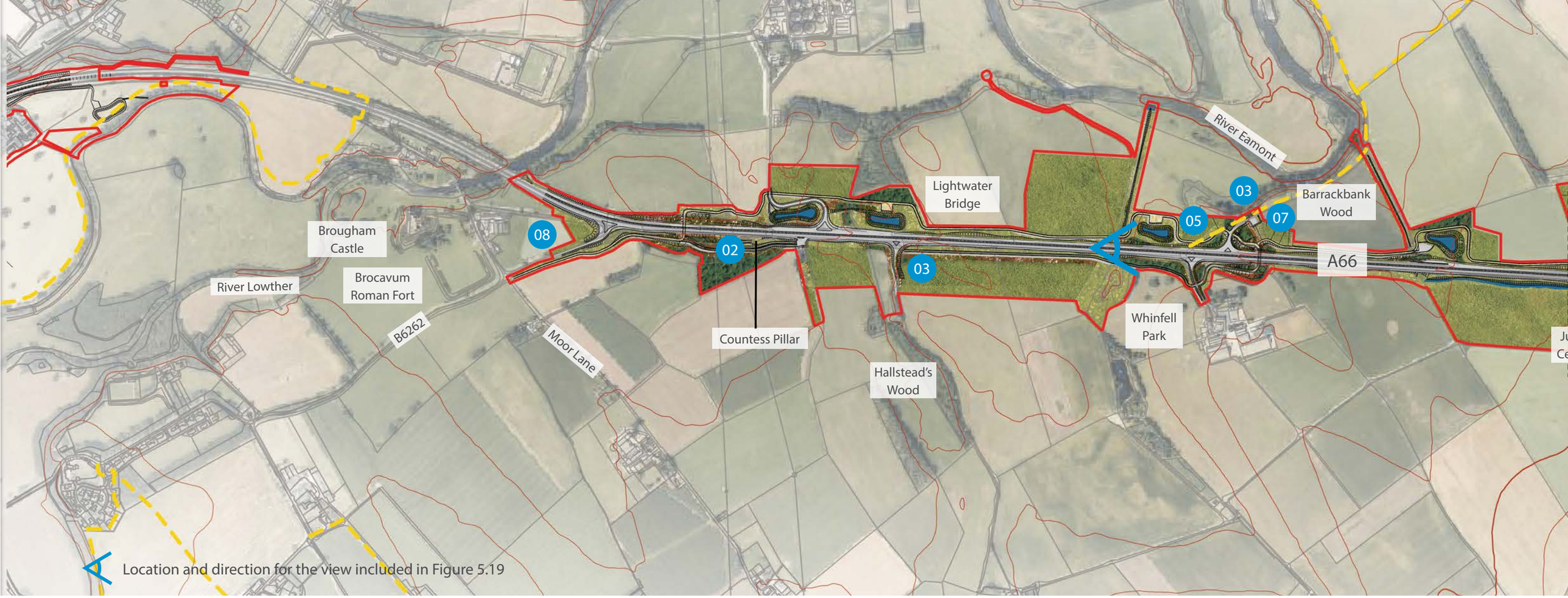
The National Cycle Route (NCR) 71 makes up the western third of the C2C route between Whitehaven and Penrith. Locally, the cycle route links Penrith to the NCR 68 at Appleby.

Legend

- Public Rights of Way
- Cycle Routes
- National Cycle Network

2.04 Walking Cycling Horse Riding Proposals

Figure 5.15 Scheme 03 - Connectivity



Highways proposals

Key elements of the highway improvements for Scheme 03 Penrith to Temple Sowerby include the following:

- Widening the route to dual carriageway between Penrith and Temple Sowerby on this scheme, providing more capacity. The scheme predominantly follows the existing route, widening the existing carriageway and constructing a second carriageway to the north of the existing route.
- Diverting the route to the south from Whinfell Park Farm to avoid the hamlet of Lane End. The road will then rejoin the A66 at Swine Gill before tying into the Temple Sowerby Bypass.
- Providing a new major junction to connect the new A66 route with Center Parcs, providing access to the holiday park and local roads. The junction will cater for all movements on and off the A66, making it easier for users to join the main highway and preventing tailbacks at peak times. This two-level junction will provide a left-in left-out arrangement and an underpass below it while also allowing local access to the existing A66.
- Introducing a new left-in, left-out arrangement on the B6262 for access to the local road network.
- Maintaining and improving access to St Ninian's Church on the Winderwath estate.
- Providing an east/west walking and cycling link, connecting Penrith with Temple Sowerby, along the length of this scheme (predominantly to the north of the A66). Reconnecting all other pedestrian, cyclist and horse-rider facilities that would be severed by the scheme with grade-separated crossings.

Figure 5.16 Scheme 03 - Penrith to Temple Sowerby

Design study

Junction at Center Parcs

This design study considers how the earthworks at the junction could be slackened and new areas of planting included to lessen the visual impact of the slopes, improving the integration of the new junction, and the adjacent balancing pond.

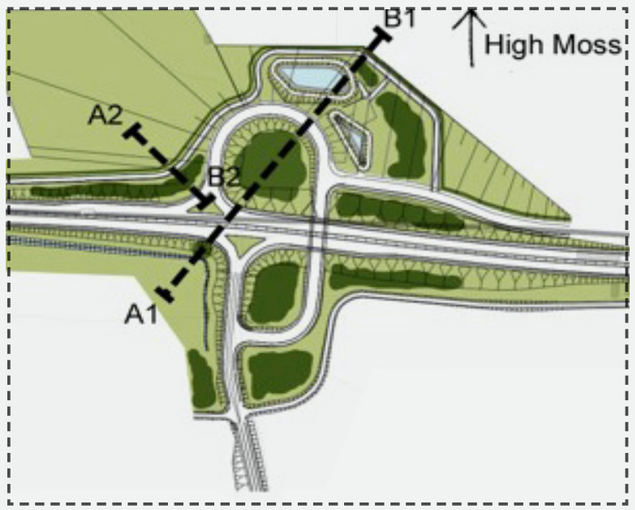


Figure 5.17 Sketch plan of Junction at Center Parcs

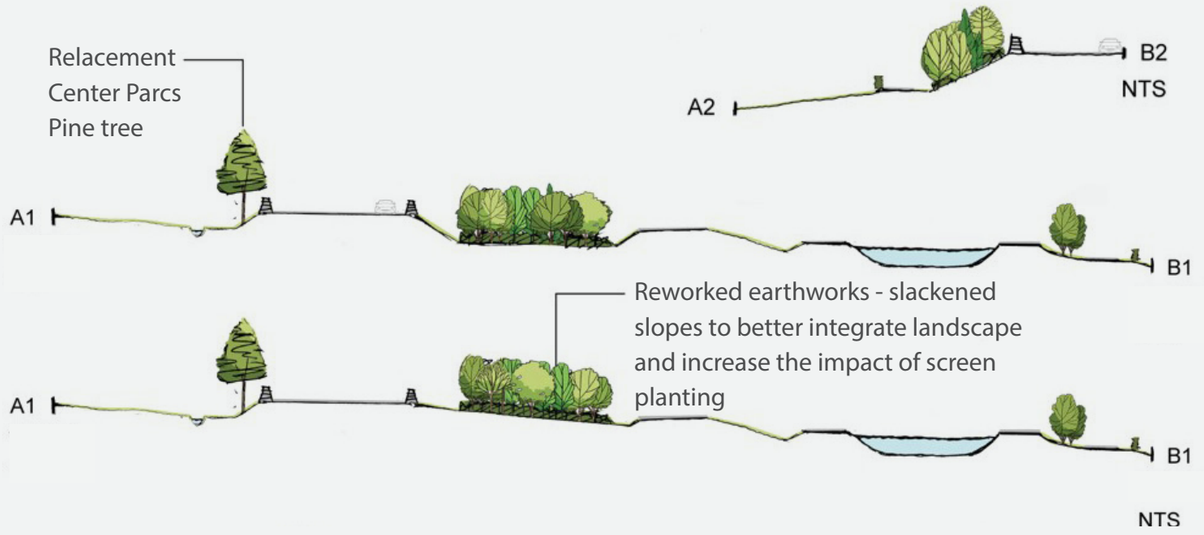


Figure 5.18 Sketch sections through Junction at Center Parcs to resolve design of earthworks

Site-specific design principles

A summary of some the key site-specific design principles that apply to the detailed design of Scheme 03 Penrith to Temple Sowerby are summarised below. For full details of the applicable project-wide and site-specific design principles, please refer to the Project Design Principles (Application Document 5.11).

Local roads, PRoWs and accommodation works

07 Ensure the settings of key heritage assets are conserved and connect the heritage assets in the area through Walking, Cycling and Horseriding (WCH) provision in accordance with the Rights of Way and Access Plans (Application Document 5.19). Detailed design must retain and, where reasonably practicable, improve connection between the historic assets of Brougham Castle, the Countess Pillar and St Ninians Church (CH21900). New car park (CH21900) to be located north of Whinfell Junction adjacent to Barrackbank Wood.

08 Brougham Castle (CH20200): Design of the overbridge and cycleway must minimise encroachment into the boundary of the Scheduled Monument as far as reasonably practicable.

2.08 Environmental Mitigation Maps
2.09 Mitigation Schedule
5.11 Project Design Principles

Landscape design and environmental mitigation

01 Slackening of slopes on new junctions is to integrate within the receiving landscape, allowing land to be returned to agriculture where reasonably practicable. For example, the slackening (1:12 to 1:20 slope) of the northern slopes at the junction at Center Parcs (CH22800-23300) to reduce visual impact of the engineering design for receptors to the north and impacts on the setting of the heritage asset at St Ninians Church.

02 As this section is existing on line widening, existing open views to the Countess Pillar, the Pennines and Whinfell Forest must be retained. The design is to include vegetation clearance at the Countess Pillar (CH20585) to enhance the setting of the Scheduled Monument and open up views of this historic landmark from the road.

03 Provide connectivity to existing green infrastructure assets at the Rivers Eamont and Lowther (CH21850 and 22300). Connect vegetation such as Hallstead's Wood (CH20900) with Lightwater Bridge, Whinfell Park (CH21800) with Barrackbank Wood, High Moss with Whinfell Forest and Swine Gill Plantation (CH24300) with adjacent vegetation.

04 Compensation planting must be provided for the loss of the landmark pine tree at the Center Parcs junction (CH23000), with the new junction at Center Parcs realigned internally to be level with the top of the embankments and this area then to be planted with replacement semi-mature landmark pine tree/s. This will create a distinctive orientation feature in the long term.

05 Whinfell Junction (CH20900 to 21550): Slacken slopes where reasonably practicable and appropriate at a grade ranging from 1:12-1:20 (depending on local context) to provide better landscape integration. Delineate the junction with drystone walls which are characteristic of the local environment, using local stone. Plant slopes with native woodland to replace the woodland lost to the scheme.

06 Respond positively to the existing local rural landscape character, through sympathetic use of native hedgerows and woodland planting as well as drystone walling, helping to integrate the scheme into the landscape.

Figure 5.19 Artist's impression of the junction at Whinfell Park, demonstrating the proposed integration of the junction. The landscape design includes new planting, stone walls and the opportunity to integrate the balancing pond to provide wider benefits including biodiversity and visual interest.

Temple Sowerby to Appleby

Figure 5.20 Key plan of Scheme 0405 - Temple Sowerby to Appleby

Image 5.3 View to the AONB to north of Kirkby Thore

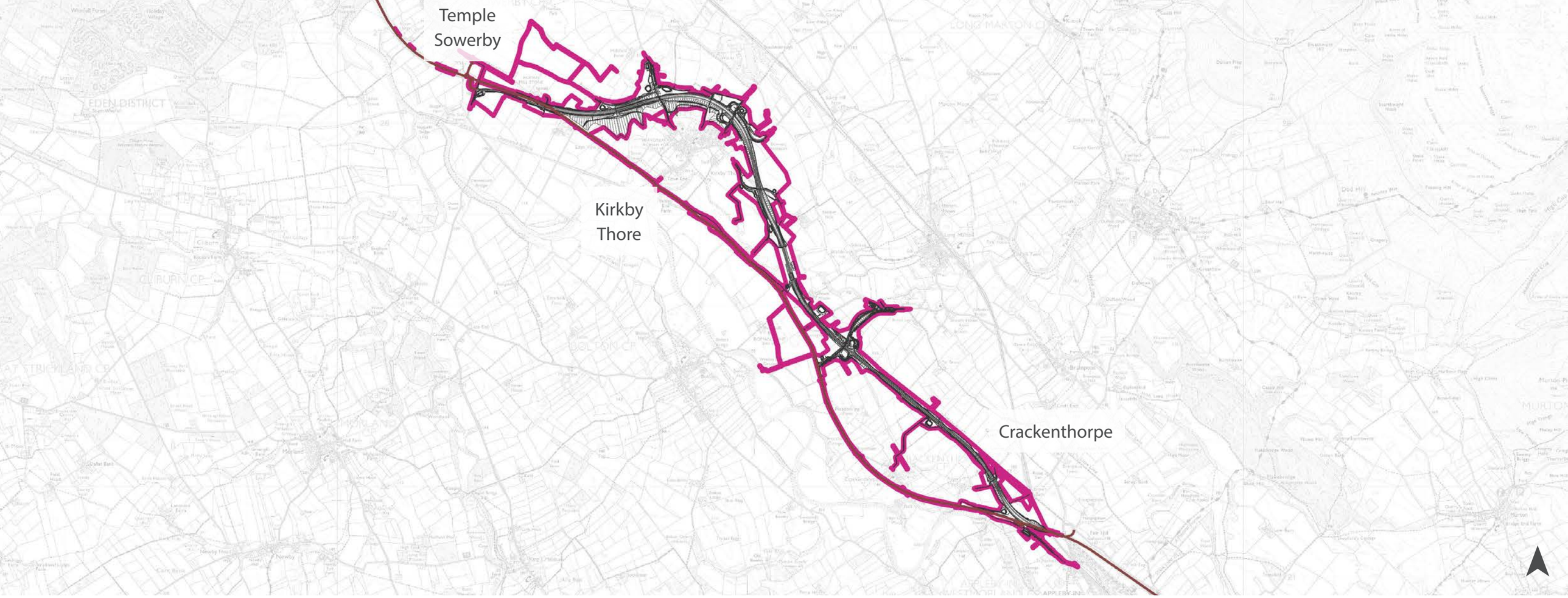


Figure 5.21 Overview Map of Scheme 03 - Penrith to Temple Sowerby

Overview

This scheme involves dualling of the road between Temple Sowerby and Appleby, via Kirkby Thore and Crackenthorpe.

Since the preferred route announcement, preliminary design refinement has progressed to determine the best way to minimise the potential impact on the Trout Beck watercourse, which is a part of the River Eden Special Area of Conservation designation, and to achieve positive integration with Kirkby Thore.

Scheme boundary

Existing A66

Route alignment

Understanding context

Landscape character and views

Travelling eastwards this scheme continues to run along the Eden Valley, before entering the foothills of the North Pennines, continuing to follow the alignment of the former Roman Road. Approaching from the west, this character area transition is evident from the way the existing road begins to subtly cut into the hill-side slopes.

On the western approach to Kirkby Thore, long views to the Pennines provide a sense of context and geographical orientation.

Legend

- Intermediate farmland
- Urban area
- Rolling fringe
- Broad valleys
- View travelling east
- View travelling west
- View constrained

3.02 Environmental Statement Volume 1 Ch 10 Landscape and Visual

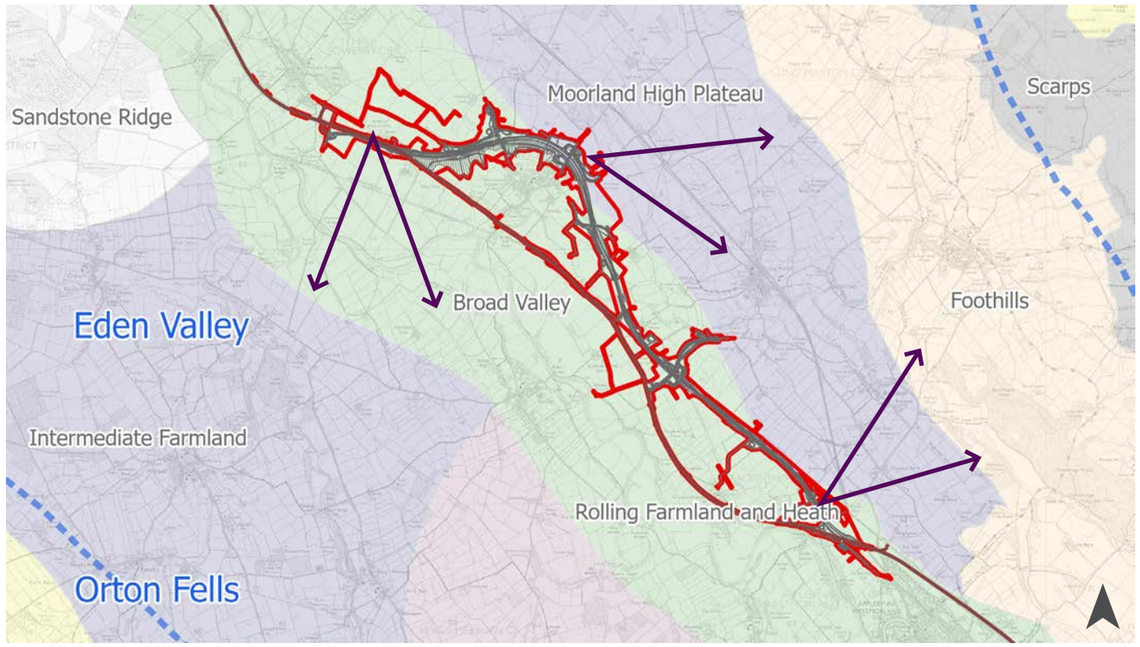


Figure 5.22 Scheme 0405 - Landscape character and views

Topography and vegetation

The scheme lies to the foothills of the North Pennines in the Eden Valley which is characterised by higher ground to the north of the River Eden and lower less undulating land to the south.

Land to the north of the existing A66 is relatively undulating, gradually increasing in elevation towards local landmarks such as Murton Pike, Dufton Pike, Knock Pike and the North Pennines fells.

Overall vegetation patterns are typically influenced by the riverine and agricultural nature of the landscape within the study area. The River Eden is generally lined with riparian woodland belts, often forming enclosure, whilst agricultural fields are often bound by hedgerows with hedgerow trees, particularly south of Bolton.

Legend

- Broadleaved woodland
- Mixed semi natural woodland
- Scrub
- Semi improved grassland
- Improved grassland
- Arable

Figure 5.23 Scheme 0405 - Topography and vegetation

Designations

The River Eden has both SSSI and SAC status, with Trout Beck designated as an SAC. These designations lie within 840m of the scheme.

Key heritage assets within the Kirkby Thore area include four Roman military sites – two temporary camps at Eden View and east of Redlands Bank.

Other Roman structures in the area include a scheduled mile stone located on the parish boundary between Temple Sowerby and Kirkby Thore near Spitals Farm. The churches of St Margaret and St James, and St Michael, Kirkby Thore are largely medieval in date.

The Roman Road at Crackenthorpe, though not a national designation, provides an opportunity for understanding of historic features of the landscape and the origins of the A66 route.

Legend

- Listed buildings Grade I
- Listed buildings Grade II*
- Listed buildings Grade II
- Scheduled monuments
- Conservation area
- County wildlife sites
- Site of Special Scientific Interest (SSSI)
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- Area of Outstanding Natural Beauty (AONB)

3.02 Environmental Statement Volume 1 Ch 06 Biodiversity, Ch 08 Cultural Heritage and Ch 08 Cultural Heritage

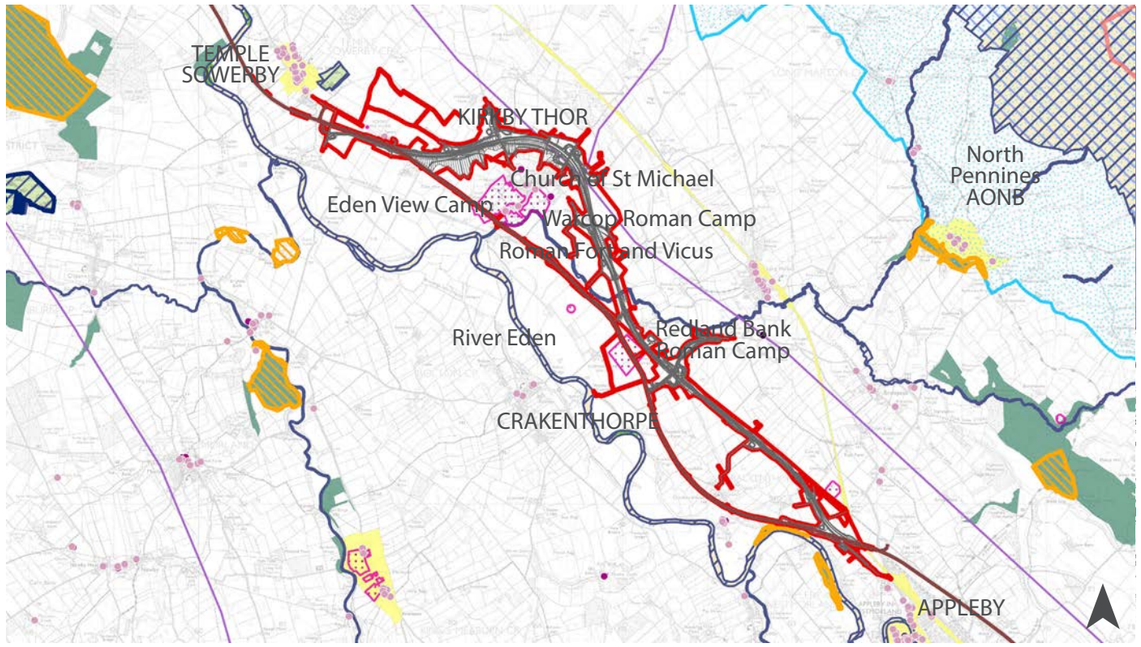


Figure 5.24 Scheme 0405 - Designations

Connectivity

The National Cycle Route (NCR) 71 makes up the western third of the C2C route between Whitehaven and Penrith. Locally, the cycle route links Penrith to the NCR 68 at Appleby. The NCR68 known as the Pennine Cycleway runs up the spine of England and through three National Parks between Derby and Berwick-upon-Tweed.

A Pennine Journey is a 247 mile Long Distance Walking Route starting in Settle in North Yorkshire, traverses through the Yorkshire Dates, the Pennines and Northumberland National Park.

Legend

- Public Rights of Way
- National Trails
- Cycle Routes
- National Cycle Network

2.04 Walking Cycling Horse Riding Proposals

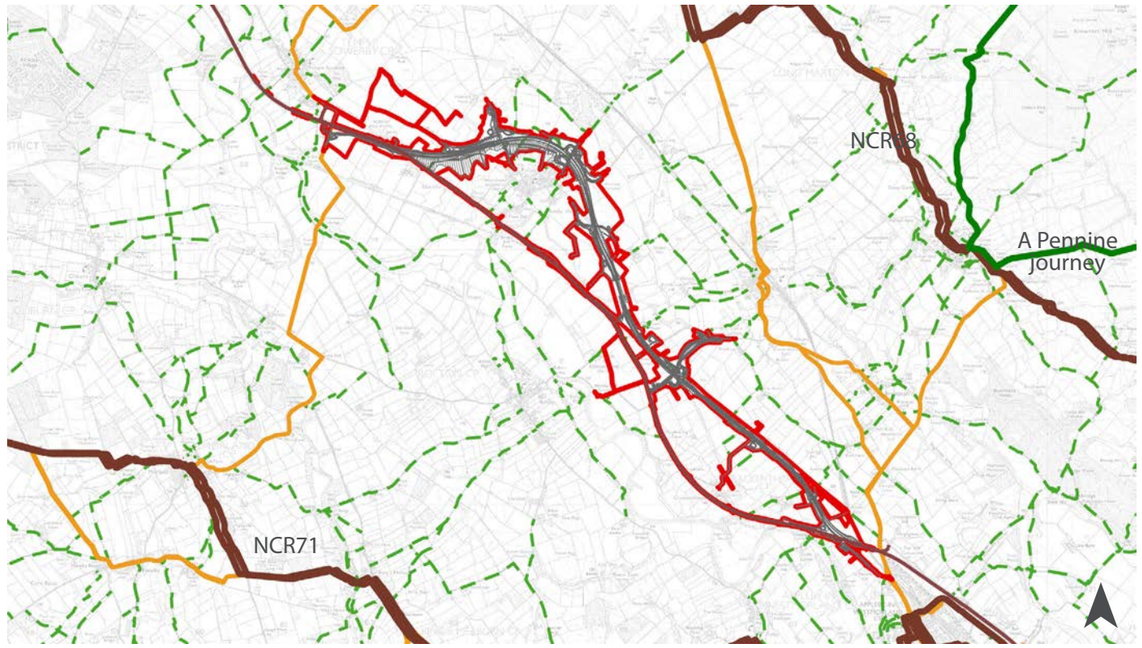
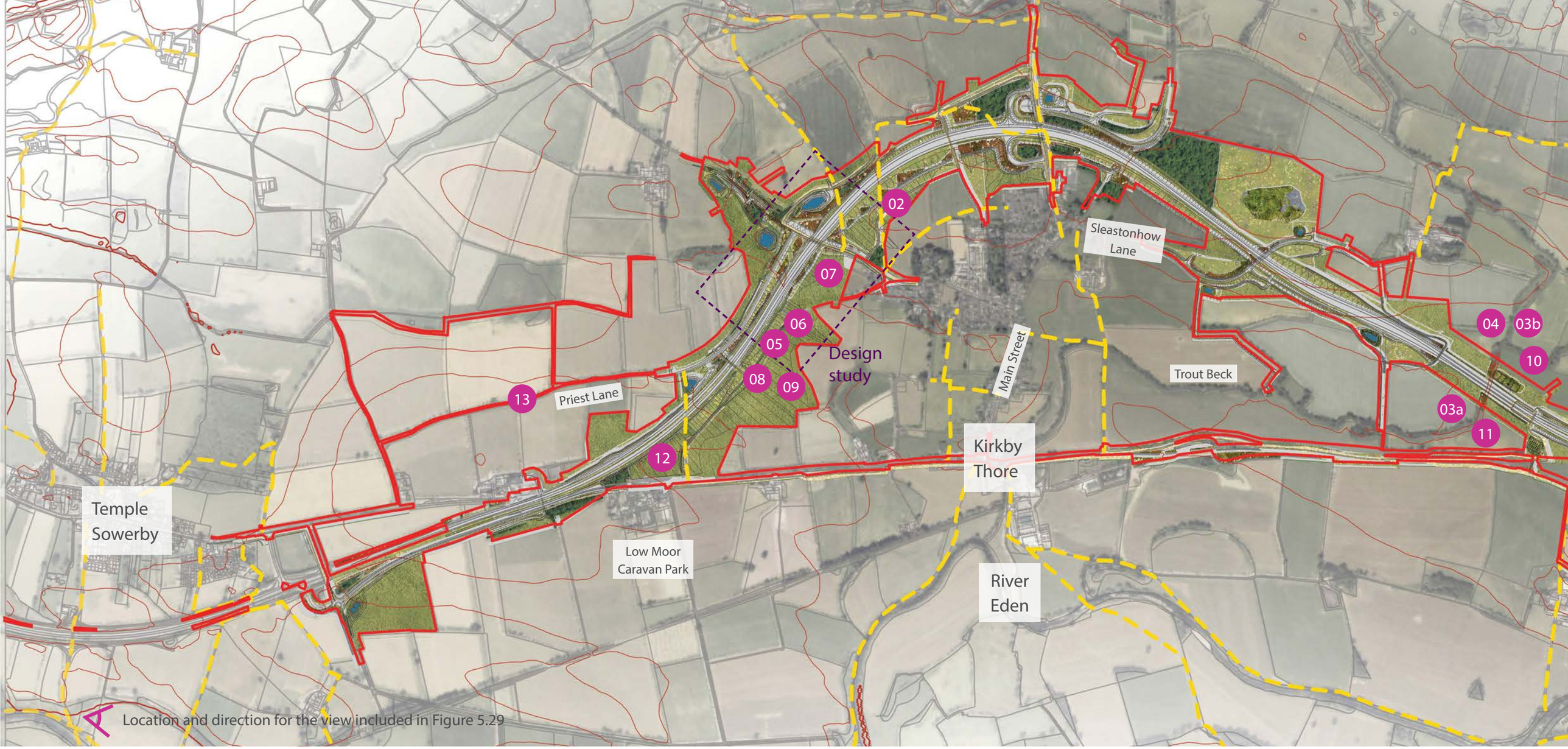


Figure 5.25 Scheme 0405 - Connectivity


02
07
06
05
08
09
Design study
13
Priest Lane
12
Temple Sowerby
Low Moor Caravan Park
Kirkby Thore
Main Street
Sleastonhow Lane
Trout Beck
River Eden
04
03b
10
03a
11
Location and direction for the view included in Figure 5.29

Long Marston

Roman Road

14

Long Marton Road

B6542

Appleby-in-Westmorland

Crackenthorpe

0 50 100 200 500 Metres

Figure 5.26 Scheme 0405 - Temple Sowerby to Appleby

Design study

Kirkby Thore North West

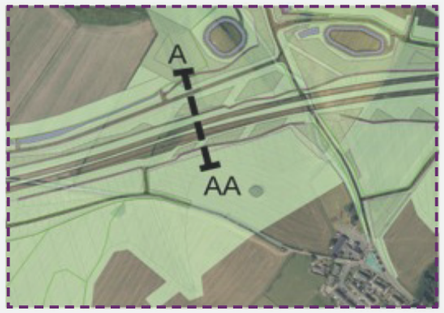


Figure 5.27 Sketch plan

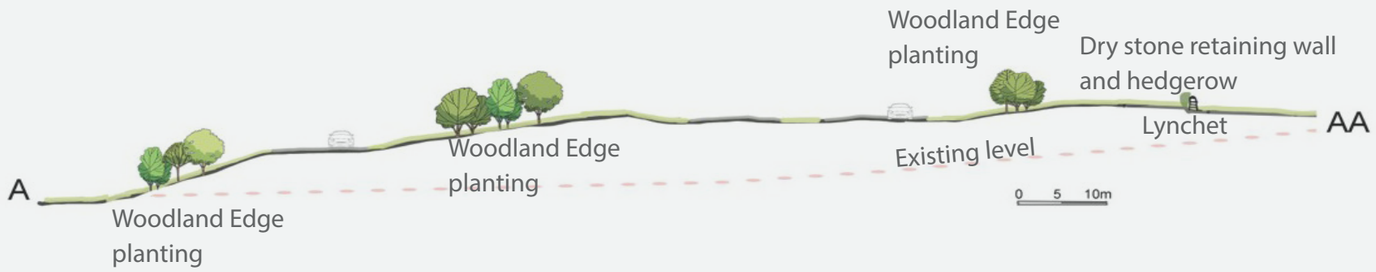


Figure 5.28 Sketch section showing integration of the road with earthworks and planting

Highways proposals

Key elements of the highway improvements for Scheme 0405 Temple Sowerby to Appleby include the following:

- This comprises a new offline bypass around the north of Kirkby Thore, continuing to a new bypass to the north of Crackenthorpe. This route will include a number of new junctions and improvements throughout its alignment. The detrunked A66 will become a quieter local road, improving the environment at the heart of the village.
- The route bypasses Kirkby Thore, in cutting to the north. There is a new junction on the access road to the British Gypsum plant allowing heavy traffic to avoid the village centre. Passing the village the road aligns south before emerging from the undulating landscape at Sleastonhow and crossing the Trout Beck on a simple viaduct. The length of this crossing of the Trout Beck and its floodplain is about 400m, which is being minimised to reduce the impact on connectivity and shading of the watercourse.
- A new junction at realigned Long Marton will provide safe access to the local road network, linking Crackenthorpe and Appleby via the de-trunked section of the A66.
- The new multi-span viaduct over Trout Beck will be a key design feature, informed by design review, flood modelling and the Habitats Regulations Assessment.
- A new junction, referred to as the Temple Sowerby Bypass Junction, will provide connections between the existing A66 and the local road network. A short section of road will 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.
- A new junction will be provided north of Sanderons Croft on the access road to British Gypsum. The access road will pass over the proposed A66 alignment on a bridge structure. This junction will maintain the key local connection onto the A66 and also provide access to the British Gypsum plant via a private access road. This will contribute to a reduction in the number of Heavy Goods Vehicle movements through Kirkby Thore. New merge and diverge lanes will be incorporated as part of this junction to enable users to safely join and leave the A66 in both directions.
- New bridge structures for both Cross Street and Sleastonhowe Lane will enable access over the A66 for local traffic, representing design opportunities. These have been designed to be simple and non-intrusive. Priest Lane is diverted to maintain local traffic access.
- Ponds are proposed along this route located at various points, which provide drainage and run-off attenuation, and manage water quality.

2.08 Environmental Mitigation Maps
2.09 Mitigation Schedule
5.11 Project Design Principles

Site-specific design principles

A summary of some the key site-specific design principles that apply to the detailed design of Scheme 0405 Temple Sowerby to Appleby are summarised below. For full details of the applicable project-wide and site-specific design principles, please refer to the Project Design Principles (Application Document 5.11).

Structures and road design

03a The detailed design of the crossing of the Trout Beck must support ecological and landscape connectivity, with a clean and simple, open structure which is economical with use of piers and uprights. The structure must be low key in this rural landscape, i.e. it is not intended to be a 'landmark'. Wherever reasonably practicable there must be a consistent and unified approach to the appearance of the structure and its material components, in particular the most visible aspects such as materials, soffits, parapets, piers and abutments.

04 The structure crossing the Trout Beck must allow for full functionality of normal supporting river processes including flood flows and associated erosion/sediment regime, and the migration of the channel across its floodplain (these are important functions of its role as part of the River Eden Special Area of Conservation or SAC). This is to be achieved using an open multi-span structure, across the entire floodplain of the watercourse, unless otherwise agreed with the Environment Agency and Natural England. The span arrangements for the Trout Beck viaduct are to be designed such that the vertical clearance from the watercourse (in normal conditions) is a minimum of 2.5m.

With the Trout Beck viaduct, the orientation of the piers must be informed by detailed flood modelling so that they do not influence the migratory nature of the river. All piers are to be designed as in-channel structures (even if they are not currently in-channel in the DCO scheme design), to allow for the movement of the river and avoid the need to add scour protection in future.

The same Design Principles as for the Trout Beck crossing above must be applied to all watercourses which are functionally linked to the SAC – Moor Beck, Cringle Beck – and all crossings of such watercourses are to be open span structures.

16 Greening of overbridges must be implemented to maintain habitat connectivity on the following overbridges – Cross Street (CH31590), Fell Lane (CH34470), Sleastonhow Lane (CH33320) and Rogerhead Farm (CH37550).

Landscape design and environmental mitigation

01 The landscape integration design must respond positively to the existing local landscape character of gently undulating fields, trimmed hedges, occasional hedgerow trees and drystone walls. (CH29550-38700)

02 Planting design is to reflect and reinstate aspects of the historic landscape pattern around Kirkby Thore by creating a finer grain of biaxial fields enclosed by hedgerows and woodland edge planting, seeking to restore and reinstate historic field boundaries where appropriate. Use the new landform created by the false cutting and landscape earthworks as a positive opportunity to restore the currently degraded landscape character. (CH30750-31300)

03b Improve ecological habitat connectivity to the Trout Beck through provision of woodland planting, along with the wider planting of the A66 embankments.

05 Creation of a Ha-Ha or false cutting to sensitively integrate the bypass (CH30550-32750) into the landscape and maintain views of the Pennines to the north from Kirkby Thore. The additional height of the false cutting will also provide noise attenuation from the A66.

The false cutting is to be sensitively graded to tie into the wider rural landscape and is not to exceed 3 metres in height above existing local levels, in order to conserve views of the Pennines skyline. The noise barrier is a combination of cutting and earth bund, at its tallest it will be 10m from the road level in order to operate as a suitable acoustic barrier, the detailed heights will be confirmed within these parameters during detailed design and taking into account the operational noise modelling.

06 Use locally characteristic drystone walls to create lynchets (terracing) at the boundary between the A66 and farmland, as part of the approach to the earthworks design for the cutting. (CH30450-32100).

07 Use planting sparingly to integrate earthworks and structures without adversely affecting views of the Pennines, and to respond positively to the relatively open character of the local landscape. (CH30550-32750)

08 To the deep cutting north of Kirkby Thore use locally characteristic drystone walls to create lynchet (terraced) landform to reference historic landscape character. Bespoke planting mix to reflect local landscape character, with planting to be rectilinear in form to reflect the historic field pattern. Planting design interventions are to be appropriately scaled to be legible in relation to the speed of road users and highway design speed. (CH30450-32150)

09 Ensure the detailed design for the cutting earthworks follows a subtly undulating vertical alignment to positively respond to the existing topographical variations, and to enable the 'externally facing' landscape earthworks of the false cutting above and behind to sensitively tie into existing topography. (CH30550-32150)

10 Works to the existing A66 adjacent to the River Eden SAC are to be kept to a minimum (having regard to the requirements of the Project) to avoid disturbance of vegetation and known areas of geotechnical risk.

11 Design of flood compensation at the Trout Beck will be blended into the landscape and designed to tie into existing topographic pattern where reasonably practicable. Flood compensation is to be located as close to the Trout Beck crossing as reasonably practicable in order to reduce the footprint and visual impact of the proposals and is to be designed sensitively with regard to existing ground levels/profiles and local landscape characteristics. Viaduct piers will be designed and constructed to withstand river erosion in order that no additional bank protection would be required under a future scenario where the river channel has migrated (laterally) and interacts with the piers.

12 Provide appropriate visual screening to Low Moor Caravan Park, using suitable native planting species (locally found species where reasonably practicable) along with earthwork bunding between the old A66 and the new alignment at a gradient between 1:12 to 1:20. Woodland planting with dense understorey planting (to avoid strobing effect) must be provided along CH30500-30600 as well as drystone walling along CH29950-30550, to help reduce headlight glare from the A66.

13 Native hedgerow planting must be provided along Priest Lane to reinstate the rural character of the road. The existing hedgerow along Priest Lane is in a poor condition, replanting is required to fill in gaps as well as replace any hedgerow that is in poor condition.

14 The avenue of mature trees adjacent to the A66 and along the Roman Road at CH35450-37900 must be retained to conserve the setting and character of this historic feature (and of the associated bridleway) within the landscape. The landscape design in this area is to use species rich grassland to proposed earthworks to reinforce the landscape character and pattern, and to accentuate the prominence of the mature tree line along the Roman Road as a feature within the landscape.

15 The mature oak tree along Sleastonhow Lane must be retained.

Figure 5.29 Artist's impression of the proposed simple landscape and earthworks design in proximity to the Roman Road to ensure the setting of this heritage feature is retained.

Appleby to Brough

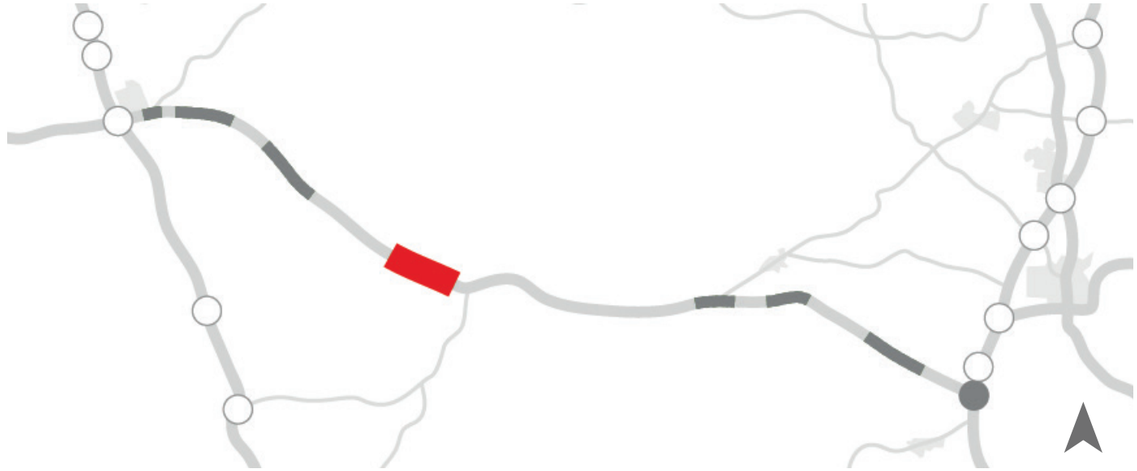


Figure 5.30 Key plan of Scheme 06 - Appleby to Brough

Image 5.4 View to AONB

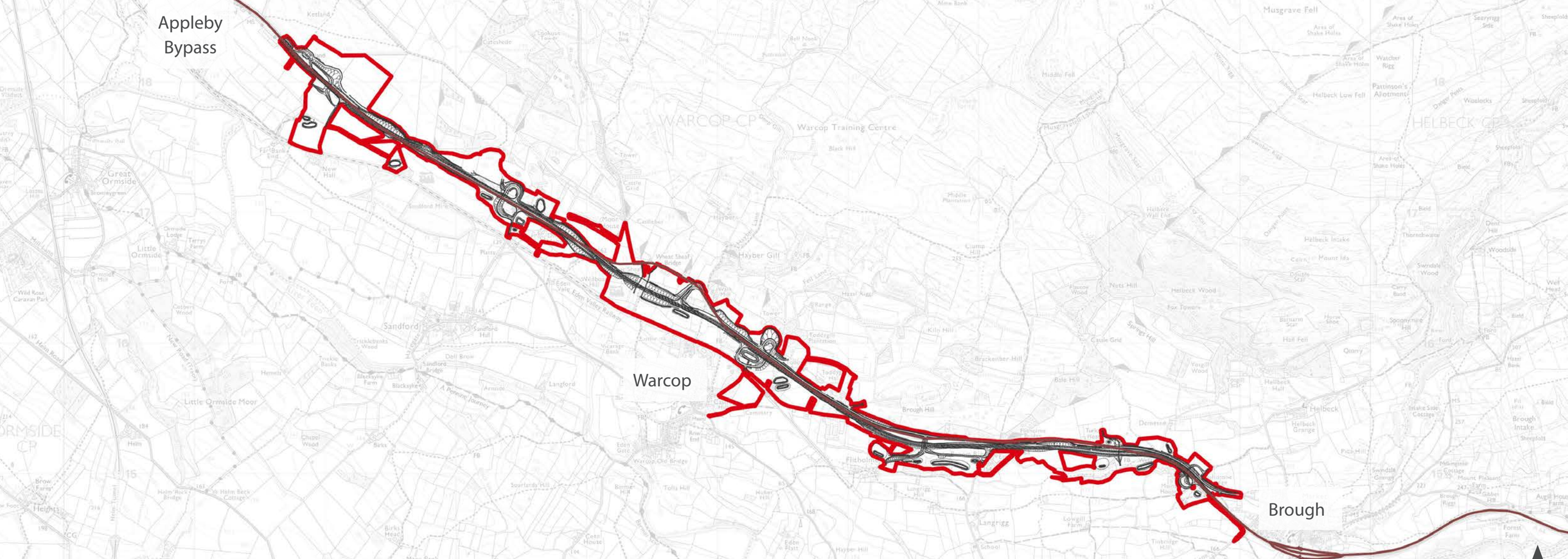


Figure 5.31 Overview Map of Scheme 06 - Appleby to Brough

Scheme boundary

Existing A66

Route alignment

Overview

This scheme comprises dualling of a section of the route that is currently single carriageway between Coupland Beck (south-east of the Appleby Bypass) and Brough, via Warcop. Junction improvements are proposed that will enable access on and off the A66 to improve user safety and reduce congestion.

Following the Preferred Route Announcement, feedback was received from stakeholders requesting that measures were taken to further minimise the potential impact on the North Pennines Area of Outstanding Natural Beauty (AONB), located to the north of the existing A66. An alternative alignment route has subsequently been incorporated to further mitigate the impact.

Understanding context

Landscape character and views

This scheme continues to extend along the broad open reaches of the Eden Valley, with the North Pennine foothill slopes running along the A66 corridor to the north.

Large parts of the scheme 6 stretch of the route are in a relatively open landscape with long views across to the Pennines.

The road provides a recurring sequence of views to the peaks within the Yorkshire Dales, the Lake District and the Pennines.

Legend

- Rolling farmland and heath
- Broad valley
- Moorland High Plateau
- Scarps
- ???
- View travelling east
- View travelling west
- View constrained

3.02 Environmental Statement Volume 1 Ch 10 Landscape and Visual

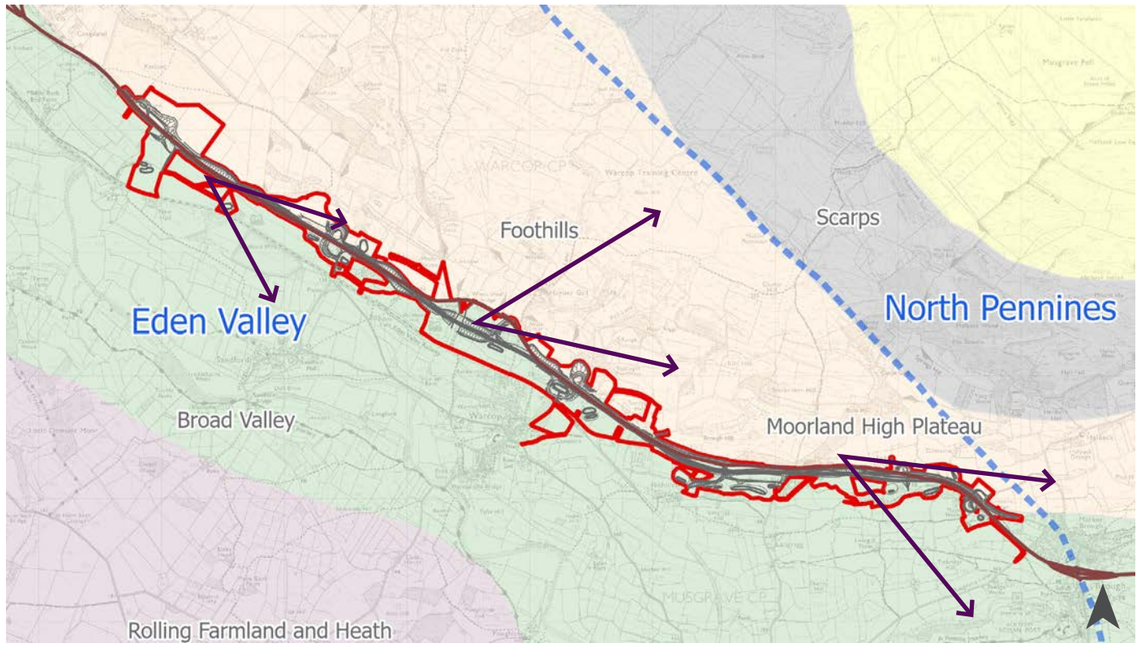


Figure 5.32 Scheme 06 - Landscape character and views

Topography and vegetation

The overall pattern of landform across the study area is that of a valley, with lower ground around the River Eden rising consistently towards the A66 before rising rapidly north of Warcop at the North Pennines.

Vegetation patterns retain a similar character across the majority of the study area, aside from the northern part within the North Pennines AONB which retains a sparser, less vegetated character. In general, given the agricultural nature across much of the study area, vegetation patterns are dictated by field boundaries and river corridors in addition to the A66.

The road-side environment is characterised by improved grassland and cultivated arable land along most of this stretch of the corridor.

Legend

- Broadleaved woodland
- Mixed semi natural woodland
- Scrub
- Semi improved grassland
- Improved grassland
- Arable

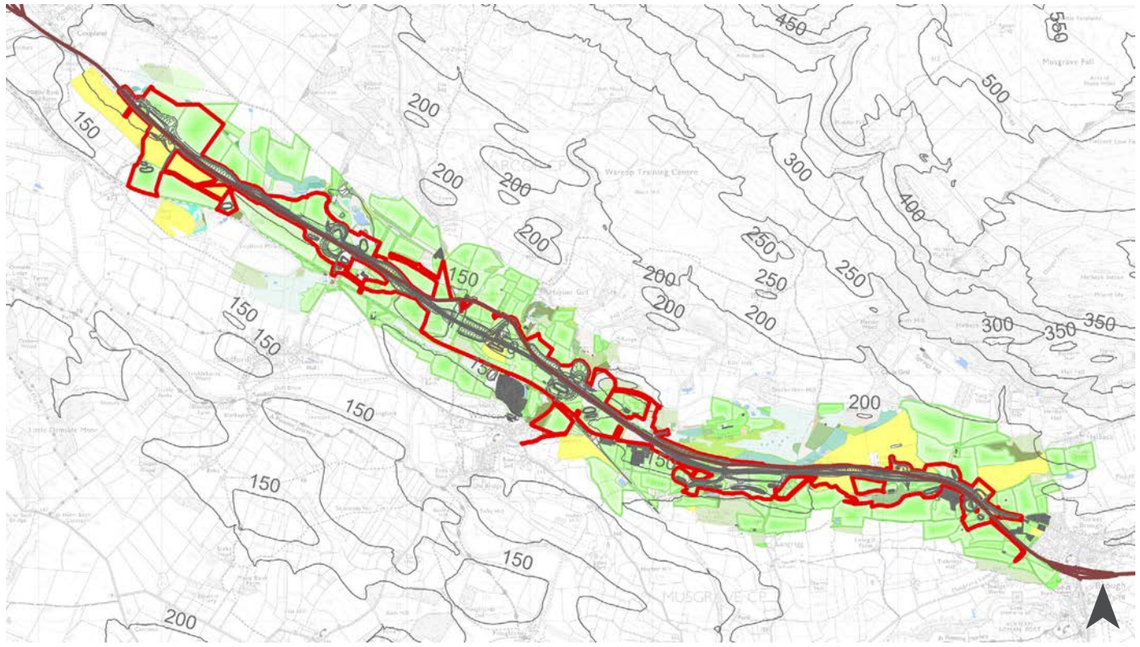


Figure 5.33 Scheme 06 - Topography and vegetation

Designations

The North Pennines AONB lies adjacent to the northern part of the scheme. The River Eden, located 500m south-west of the scheme has both SSSI and SAC status.

In terms of the heritage features, north of Warcop, where the A66 moves northwards, the Roman road continues straight across what are now fields. Evidence of a further 200m length of the Roman road is recorded on the southern side of the scheduled site of the Warcop Roman camp. Warcop Roman camp is located on northern side of the current A66. The Roman fort at Brough, identified as Verteris, and its associated civil settlement, is located to the east. Brough Castle was built on the site of the Roman fort and civil settlement.

Legend

- Listed buildings Grade I
- Listed buildings Grade II*
- Listed buildings Grade II
- Scheduled monuments
- Conservation area
- County wildlife sites
- Site of Special Scientific Interest (SSSI)
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- Ancient Woodland
- Area of Outstanding Natural Beauty (AONB)

3.02 Environmental Statement Volume 1 Ch 06 Biodiversity, Ch 08 Cultural Heritage and Ch 08 Cultural Heritage

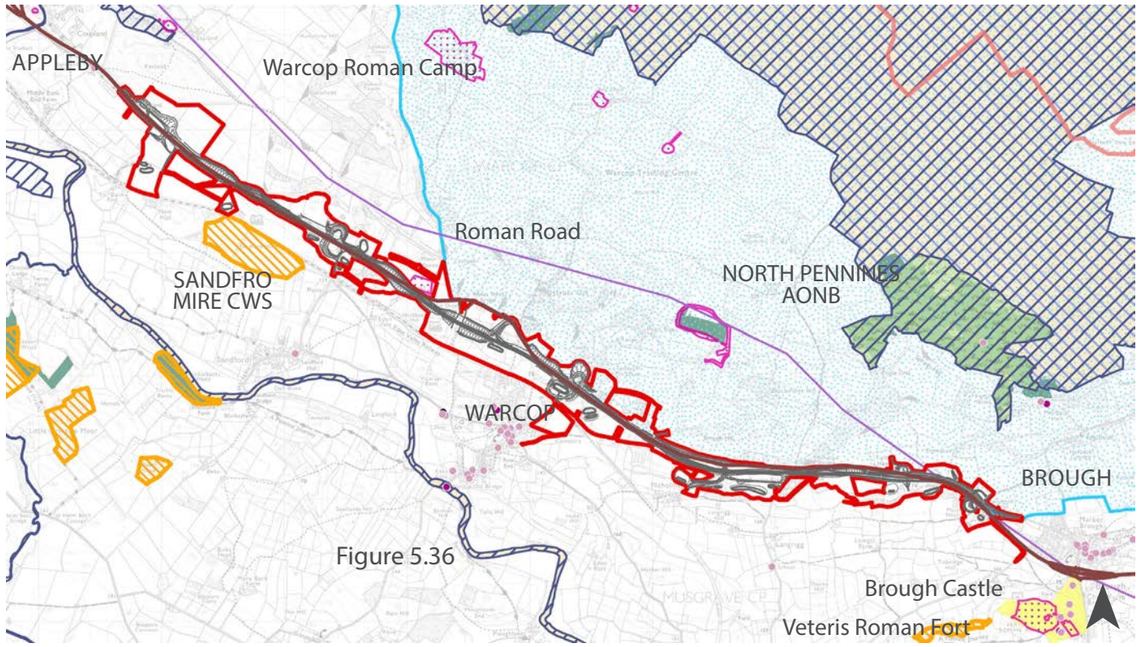


Figure 5.34 Scheme 06 - Designations

Connectivity

There are several footpaths and bridleways that terminate at the existing A66. Footpaths 336013 and 317004 intersect with the proposed scheme.

Legend

- Public Rights of Way
- Cycle Routes

2.04 Walking Cycling Horse Riding Proposals

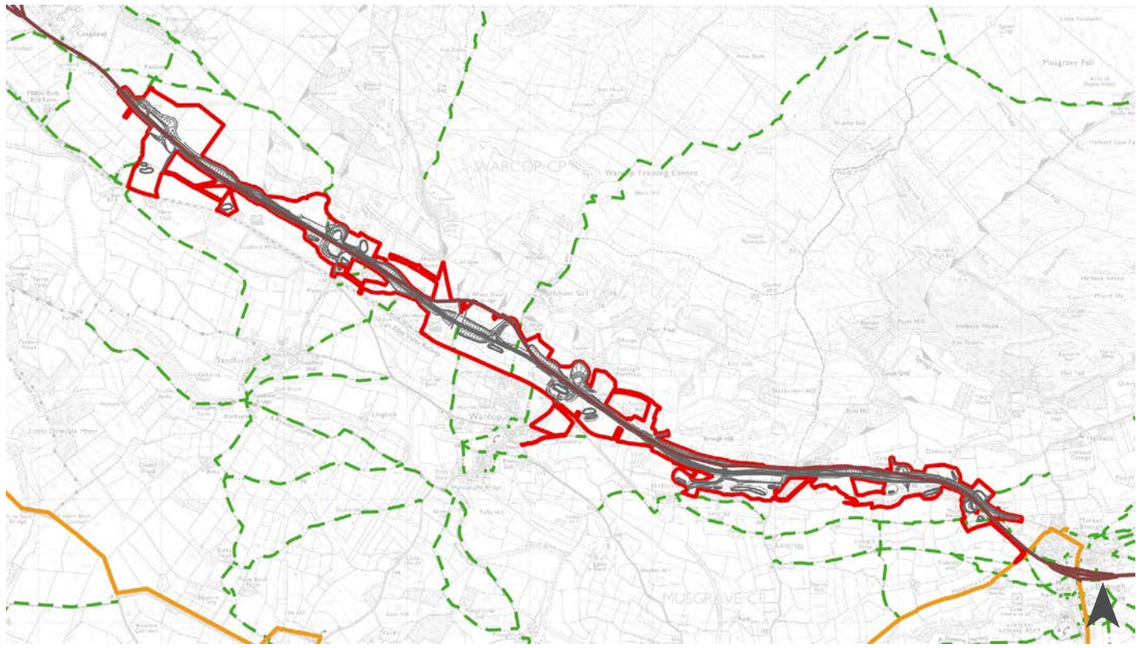


Figure 5.35 Scheme 06 - Connectivity

Highways proposals

Key elements of the highway improvements for Scheme 06 Appleby to Brough include the following:

- From the end of the existing Appleby Bypass (near Café Sixty Six) to a point west of Wildboar Hill, it is proposed to use the existing A66 as the eastbound carriageway and build a new westbound carriageway to the south. A new junction will be provided at the B6259 at Sandford to provide access to and from both the eastbound and westbound carriageways.
- The new dual carriageway will continue in a south-easterly direction, deviating from the line of the existing A66 near Moor House Lane, running through Wheatsheaf Farm. The route will be predominantly elevated through this section. From East Field Farm, the new A66 will continue to follow a line to the south of the old A66 to tie in to Brough Bypass, near West View Farm.
- The old existing A66 will be used for local journeys between Moor House Lane and Turks Head. To provide a connection to Brough and the eastern end of the scheme, it is proposed to build a new section of local road that runs parallel to the north of the new A66 to connect to Brough Main Street.
- A new local road will provide connection between Flitholme and Langrigg, with a westbound-only junction at Langrigg. Another new local road is proposed at Turks Head to connect Langrigg to the old A66 via a new over bridge.
- Between Wildboar Hill and Flitholme, the route will follow the line of the existing A66, by using the old A66 as the new eastbound carriageway and building the new westbound carriageway to the south. It is also proposed that a new road for local journeys will be constructed to the north of the new A66. Part of this new local road will result in minor encroachment into the boundary of the AONB.
- Around Warcop the new A66 will be lowered to be on a smaller embankment closer to existing ground levels, with access to the MoD training camp and local road to the north crossing over the top of the new road. Constructing this part of the scheme closer to the existing ground level will significantly reduce its visual impact. The A66 will be moved further north away from Warcop village, but the new local road will encroach into the AONB and will require the demolition and relocation of some MoD facilities.
- New track connections will include an over bridge to cross the new A66, for local access to Brough for land and property owners at the eastern end of the scheme.
- As a whole, this route is proposed to minimise incursion of the new A66 alignment into the AONB that runs to the north of the existing A66 between Moorhouse Lane and Brough. However, minimal incursions are required for local access connections and at the eastern end to provide the local road connection to Brough.

Site-specific design principles

A summary of some the key site-specific design principles that apply to the detailed design of Scheme 06 Appleby to Brough are summarised below. For full details of the applicable project-wide and site-specific design principles, please refer to the Project Design Principles (Application Document 5.11).

Structures and road design

09 Any barrier required between the A66 and local roads to prevent headlight glare is to be designed to be sympathetic to the AONB, with planting to soften the visual impact over time.

10 Boundary treatments on large structures and earthworks need to avoid skylining (i.e. defining the skyline) e.g. at Warcop overbridge where boundary treatments are required on top of associated earthworks, they must be softened by integrating native hedgerows or woodland planting. Appropriate boundary treatments are to reflect the rural nature of the scheme e.g. hedgerow and drystone walls. (CH43100-43600).

07 Crossings of the sensitive watercourses (CH42900-44300) are to be open structures, ensuring no significant change to the fluvial geomorphological function of the watercourses. This is to retain their function as habitat supporting qualifying features of the River Eden SAC (fish, lamprey species, white-clawed crayfish and otter) and to maintain supporting river processes including flood flows and associated erosion/sediment regime, unless otherwise agreed with Natural England and the Environment Agency.

12 At Warcop Roman Camp (CH42800), encroachment of any proposals will be minimised as far as reasonably practicable, having regard to the requirements of the Project.. This must be refined and further reduced through the detailed design.

15 Greening of overbridge must be implemented to maintain habitat connectivity on Warcop overbridge (CH44340).

Figure 5.36 Artist's impression of the road corridor at Warcop, illustrating the landscape treatment including the replacement of trees and vegetation to improve the boundary of the AONB.

Local roads, PRoWs and accommodation works

08 Road infrastructure within the North Pennines AONB is to be designed sympathetically in relation to the AONB and its relevant Special Qualities, and consultation must be sought with the joint advisory committee. (CH45100-47100)

2.08 Environmental Mitigation Maps
2.09 Mitigation Schedule
5.11 Project Design Principles

Landscape design and environmental mitigation

01 Define the transition between the Foothills landscape character to the north and the Broad Valleys landscape character to the south, maintaining views out from the carriageway to the south and restricting larger swathes of planting to the north of the A66.

02 Planting to the south of the A66 - Where there is landscape integration, ecological mitigation and visual screening at the Warcop junction, the design of proposed planting needs to avoid negatively affecting the Eden Valley landscape character to the south of the road by retaining uninterrupted views from the road for road users to the local landmarks and orientation features in this scheme (including Brough Castle) where reasonably practicable. Tree planting will be implemented at the Warcop junction (CH44300) to enhance the local character and tie in with existing local parkland character.

03 Retain views and enhance driver and passenger experience from the Cringle Beck and Wheat Sheaf Farm where reasonably practicable and particularly where there are panoramic views taking in the Yorkshire Dales and the North Pennines (CH43300 and 42900). This is to be achieved through retaining key views experienced from the new A66 at vantage points along the route e.g. at Cringle Beck and Wheat Sheaf Farm.

04 The design must reflect the unique open character of the Foothills and Broad Valleys around Warcop whilst providing an improved gateway experience from the A66 into the settlement (including the crossings of the Moor Beck, Crooks Beck and Mill Leat watercourses, and underbridge to Eden Valley Railway). (CH43800- CH44200)

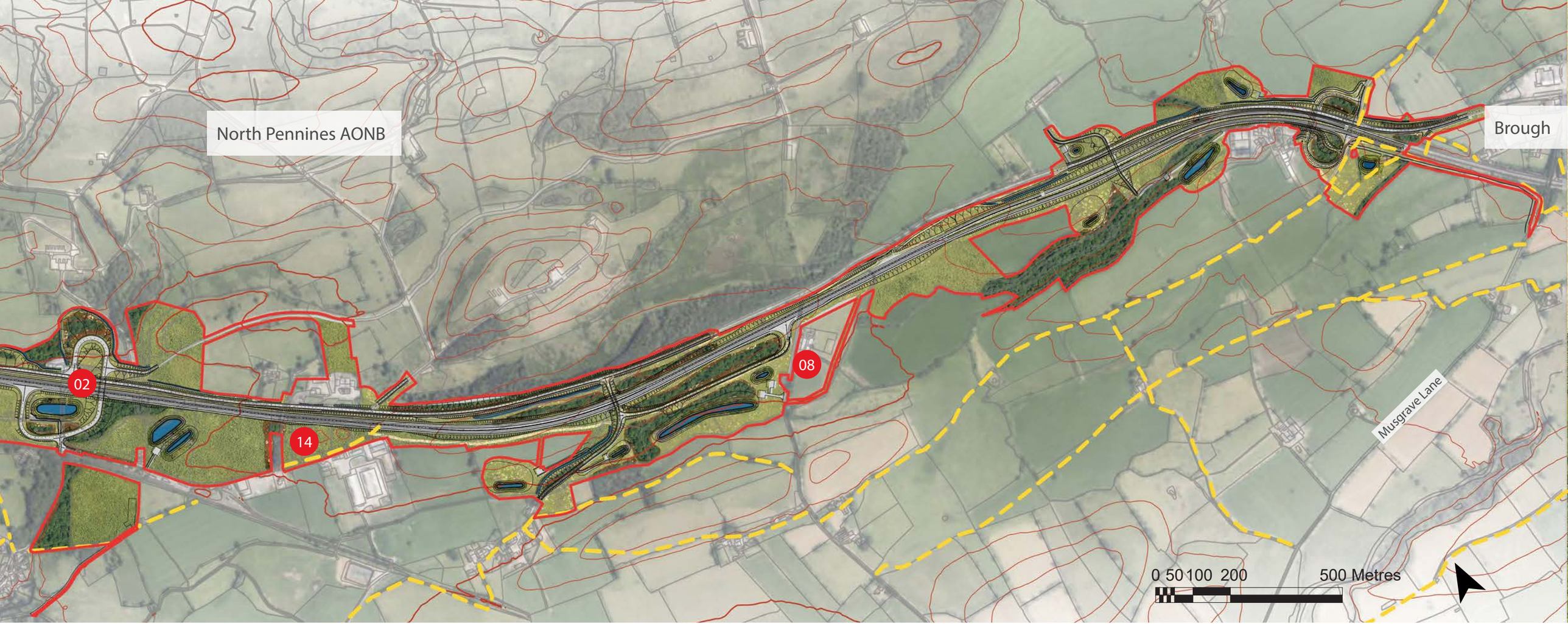


Figure 5.37 Scheme 06 - Appleby to Brough

05 Woodland planting design must include a mosaic of habitats and incorporate ponds, rides etc where appropriate to maximise biodiversity and ecological value. New woodland planting must provide connectivity with existing green infrastructure where reasonably practicable. Where reasonably practicable proposed planting must follow existing / historic field boundaries especially if these are fossilised (remnants of early Enclosure and earlier field systems) and therefore historically valuable. The design of new woodland must also be sensitive to existing woodland edge conditions and ecological environments, both with reference to conserving existing woodland edge conditions and through the scale, shape and density of new woodland planting. (CH41300-CH41900)

06 Planting design to be irregular woodland edge/ blended and 'mosaic27' landscape interface with the North Pennines AONB to integrate junctions, the MOD replacement facility and the scheme with the nationally designated landscape context and its setting.

11 The group of trees to the north of the Dyke Nook properties is to be retained, and any losses to be further reduced through detailed design refinement of proposals. (CH42400)

13 Detailed design of the attenuation pond and cutting at Sandford Junction (Ch 42100) must aim to avoid direct impact on Dyke Nook fen habitat to the north. The design, including required mitigation, must be informed by further detailed groundwater survey and assessment to ensure that the hydrology of the fen is not affected. If necessary, the location of the junction must be moved within the Limits of Deviation to avoid impact on the fen habitat.

14 The relocated Brough Hill Fair site is to be graded as an even surface where reasonably practicable and integrated into the landscape through use of appropriately designed bunding and planting to screen the site from the A66 and adjacent farm business and to reduce headlight glare.

Bowes Bypass

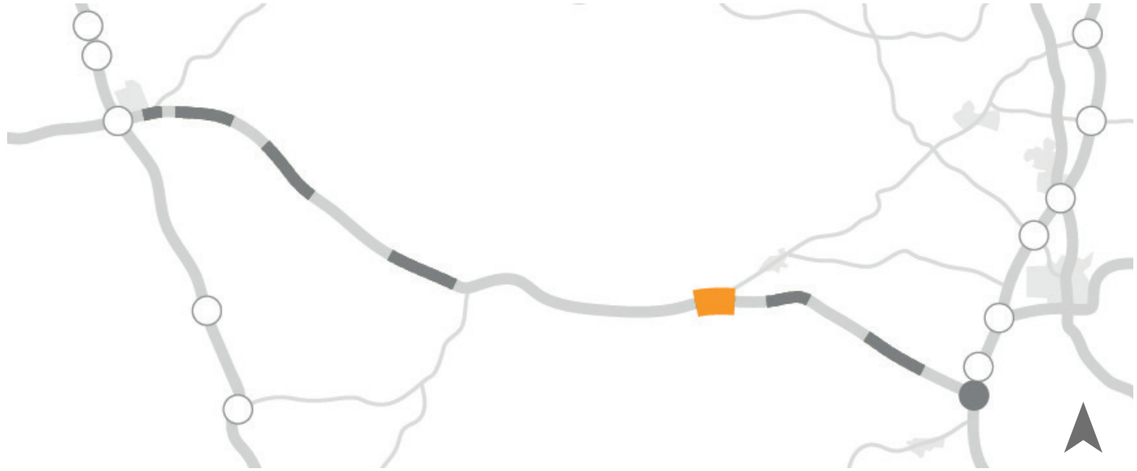


Figure 5.38 Key plan of Scheme 07 - Bowes Bypass

Image 5.5 View at Bowes

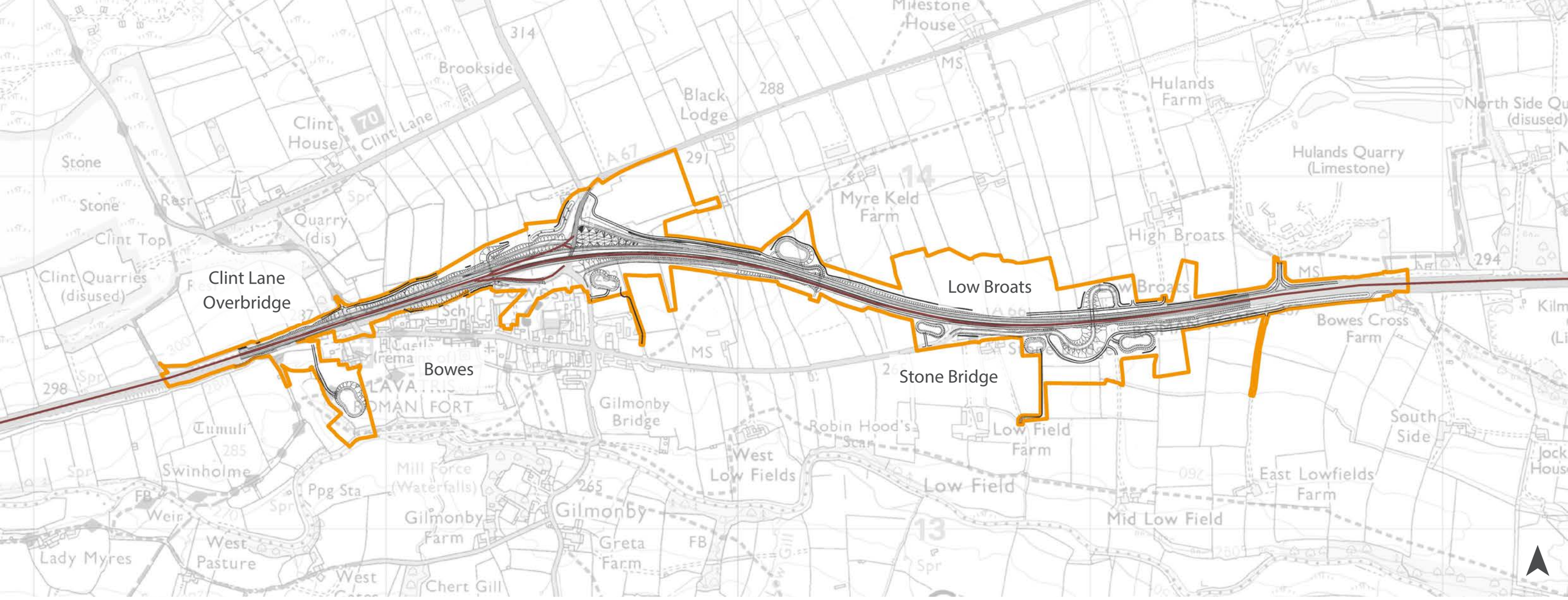


Figure 5.39 Overview Map of Scheme 07 - Bowes Bypass

Overview

This scheme focuses on upgrading the Bowes Bypass, as the road passes to the north of the village of Bowes.

The scheme is proposed to closely follow the existing road, with a new adjacent eastbound carriageway constructed to the north. The existing carriageway will be changed to carry westbound traffic. The new carriageway will begin east of Clint Lane Over bridge that connects the Pennine Way (also known as the Bowes Loop), and extends to the eastern extent of the bypass.

- Scheme boundary
- Existing A66
- Route alignment

Understanding context

Landscape character and views

Travelling eastwards, this section of the route represents a transition point between eastern end of the Eden Valley and the area characterised as the Pennine – Dales Fringe.

Views are afforded from the west of Bowes to the Pennines AONB. Views to the south of the road are possible towards the Greta Valley and the AONB, and to the east of the scheme section, views toward the Kilmond Scars.

Legend

- Cothersome Moor
- Deepdale moorland fringe
- Lower Greta
- Boldron & Lartington
- Bowes
- View travelling east
- View travelling west
- View constrained

3.02 Environmental Statement Volume 1 Ch 10 Landscape and Visual

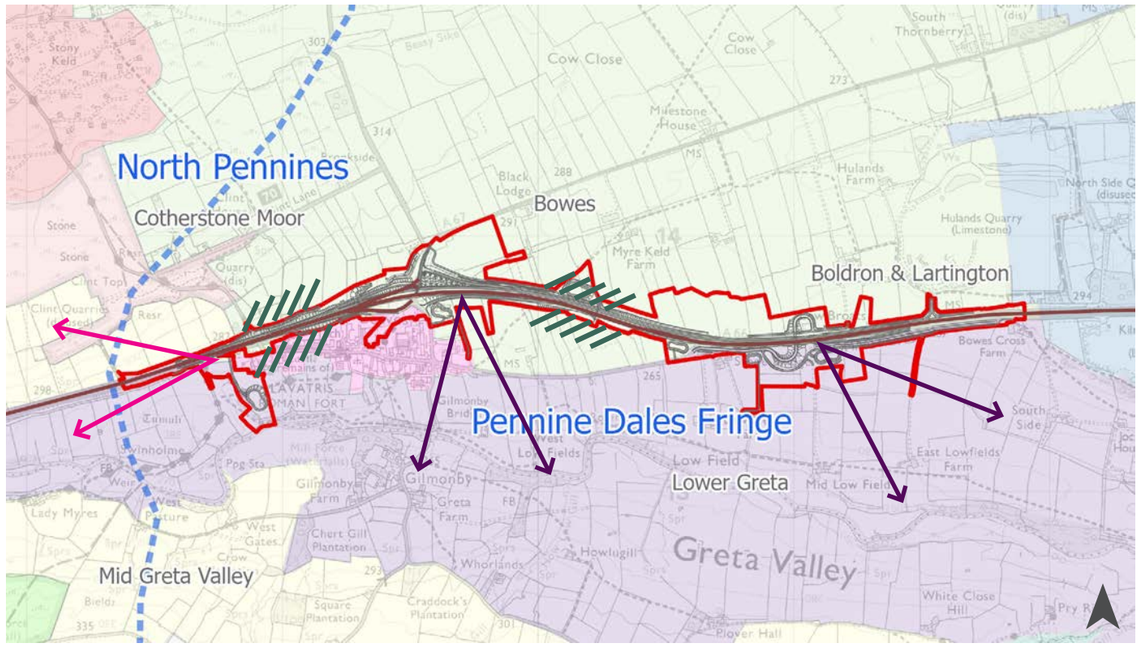


Figure 5.40 Scheme 07 - Landscape character and views

Topography and vegetation

The scheme is located within the mid Greta Valley, which is characterised by rising undulating landform to the north and south of the River Greta.

The land forms a series of localised ridgelines which limit the extent of visibility across the northern parts of the study area.

The combination of the arable land use and moorland across most of the study area results in a generally open landscape, such that the main areas of vegetation are concentrated adjacent to the River Greta.

The road-side environment is dominated by grassland pastures, with some scattered trees and hedges, with some small arable fields east of the village.

Legend

- Broadleaved woodland
- Mixed semi natural woodland
- Scrub
- Semi improved grassland
- Improved grassland
- Arable

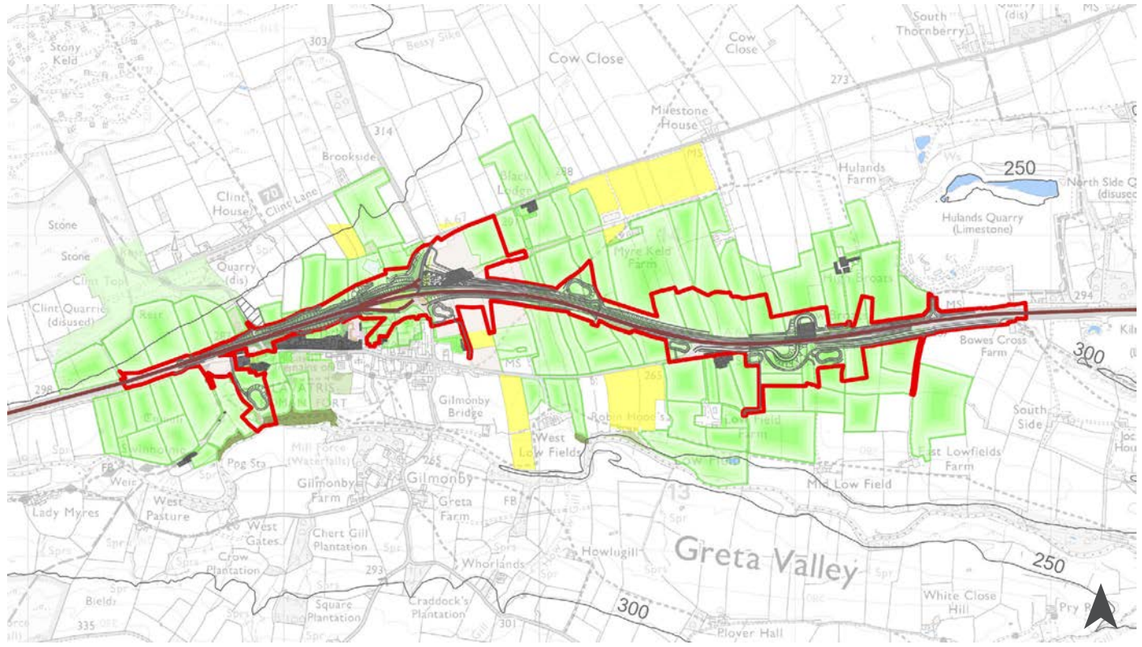


Figure 5.41 Scheme 07 - Topography and land use

Designations

The North Pennines AONB covers the south-west part of the study area and borders the western part of the scheme. The AONB is also a UNESCO Global Geopark.

The North Pennine Moors SAC/ SPA and the Bowes Moor SSSI are located approximately 280m north of the scheme.

The Roman fort at Bowes and Bowes Castle are scheduled monuments within the settlement of Bowes. The Church of St. Giles lies a short distance east of the castle.

Legend

- Listed buildings Grade I
- Listed buildings Grade II*
- Listed buildings Grade II
- Scheduled monuments
- Conservation Area
- County wildlife sites
- Site of Special Scientific Interest (SSSI)
- Sites of Invertebrate Significance
- Special Area of Conservation (SAC)
- Special Protection Area
- Area of Outstanding Natural Beauty (AONB)

3.02 Environmental Statement Volume 1 Ch 06 Biodiversity, Ch 08 Cultural Heritage and Ch 08 Cultural Heritage

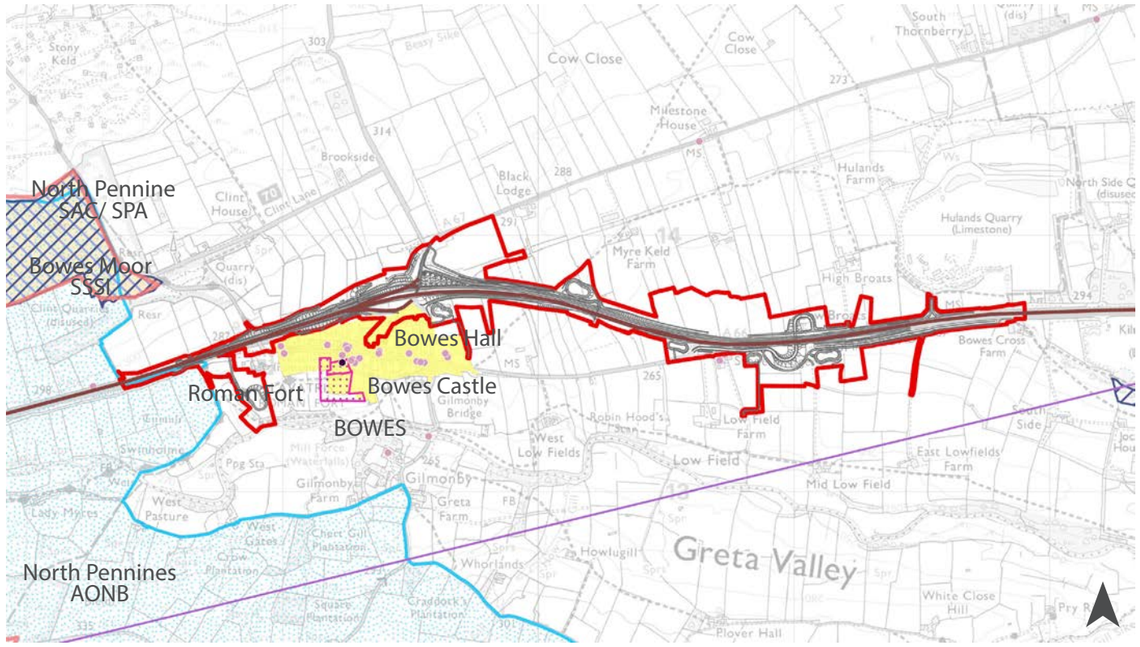


Figure 5.42 Scheme 07 - Designations

Connectivity

There are two existing footpaths within the vicinity of the scheme, and National Cycle Network Route 70 crossed the scheme via Clint Lane Bridge to the west of Bowes. The existing grade-separated junction provides for pedestrians to cross the A66 safely, and footways are retained in the proposed scheme.

National Cycle Route 70 forms the principal route of the Walney to Wear (W2W) long-distance coast to coast cycle route. Locally the route provides access between Barnard Castle, Bowes and links to the NCR 71 to the south

A Pennine Journey and the Pennine Way Long Distance Walking Routes both cross the A66 and provide access to Bowes.

Legend

- Public Rights of Way
- National Trails
- National Cycle Network

2.04 Walking Cycling Horse Riding Proposals

Figure 5.43 Scheme 07 - Connectivity

Highways proposals

Upgrading the Bowes Bypass to dual this whole section will entail widening the road on its northern side. Key elements of the highway alterations for Scheme 07 Bowes Bypass include the following:

- At the junction with the A67, a bridge will carry the new eastbound carriageway of the A66 over the A67. Two new slip roads will accommodate traffic travelling to and from the east. These will provide access to and from the A67 and Bowes. Some derelict buildings at the junction and a barn structure will need to be demolished.
- The A67 will be widened to the east to create a staggered junction and a right turn lane for the eastbound slip road. The existing eastbound slip carrying traffic from the east will be realigned to the north to make way for the new eastbound A66 carriageway. The existing westbound slip road will have minor improvements made to create a safer merge.
- Access from Bowes to the A66 (via the Roman road known as The Street, and locally known as Low Road) will be stopped up and the road diverted to provide local access. The upgraded grade-separated Bowes Junction will provide safer access to the A66 for local traffic.
- The existing westbound layby to the west of Stone Bridge Farm will be relocated to make way for the new westbound off-slip.
- Balancing ponds will be required on adjacent land to store water, control pollution and provide acceptable outfall flow rates into nearby watercourses, whilst also representing a design and ecological opportunity. Accesses will be provided to facilitate maintenance.

2.08 Environmental Mitigation Maps
2.09 Mitigation Schedule
5.11 Project Design Principles

Site-specific design principles

A summary of some the key site-specific design principles that apply to the detailed design of Scheme 07 Bowes Bypass are summarised below. For full details of the applicable project-wide and site-specific design principles, please refer to the Project Design Principles (Application Document 5.11).

Landscape design and environmental mitigation

01 The landscape integration planting design and planting pattern must, as far as reasonably practicable, respect the prevailing small scale field pattern of fossilised ridge and furrow fields and early Enclosures around the village of Bowes, to assist in ensuring that the sense of time depth and setting of Bowes are retained for the long term.

02 Retain the open aspect of this landscape with minimal introduction of woodlands, instead seeking to reinforce existing tree/vegetation belts and layers. Where woodland planting is required to mitigate the loss of existing vegetation on this scheme, it is to be implemented on the closest viable scheme .

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 where appropriate. Where vehicle restraint systems (VRS) are required for safety purposes, these are to be designed and sited sensitively in the context of such historic and rural boundary features, whilst having regard to their operational/functional requirements.

04 Retain and reinstate drystone walls that contribute to the landscape character, using as much retained local stone as achievable and reflect local variations in construction specific to stone walls around Bowes.CH50400-50600, CH51000-51500, CH52000 and CH52600-53400.

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. CH51000.

06 Retain the views to Bowes Castle, from the A66, as this is an important landmark and orientation feature. CH50200.

07 Provide appropriate visual screening from The Old Armoury Campsite and tie this in with existing field patterns, using suitable locally specific native planting species planted onto bunding, using excavated material (from the scheme). Woodland planting with dense understorey planting (to avoid strobing effect) must be provided along CH50800 – 51100 to help reduce headlight glare from the A66 and screen the junction.

Figure 5.44 Scheme 07 - Bowes Bypass

08 Retain the distinctive double tree belts which mark the historic alignment of the disused Bowes Railway Line (CH51200).

09 Ensure a sensitive, context-appropriate detailed design for the attenuation ponds, through integration within the surrounding landscape by reflecting the local topography where reasonably practicable and using locally appropriate planting to integrate such features in their context (such as species rich grassland).

10 Use a sensitive approach to landform grading to accommodate structures and to tie into the gently undulating wider landscape around Bowes, as opposed to a standard 1:3 slope. Use species rich grassland to tie the feature in, rather than structure planting, which could otherwise visually accentuate the feature within the landscape. CH52500.

11 Lighting is to tie in with the existing lighting and to create a consistent environment to ensure the safety of road users.

12 Greening of access bridge must be implemented to maintain habitat connectivity on East Bowes accommodation access bridge (CH52490).

Design study

Overbridge at Low Broats

Design study exploring use of limestone boulders to create rock ledges/terraces and potential for short scree slopes.

Reinforcing historic field boundary pattern with stone walls, trees and hedges, in particular to the south of the A66, where they are partially lost.

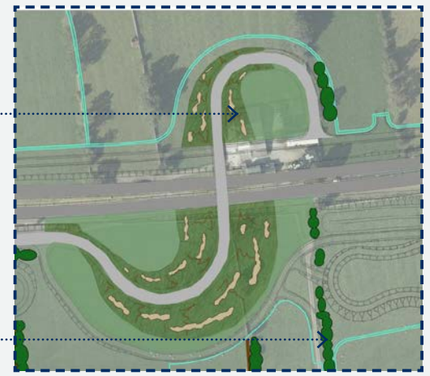


Figure 5.45 Sketch plan

Cross Lanes to Rokeby

Figure 5.46 Key plan of Scheme 08 - Cross Lanes to Rokeby

Image 5.6 View at St Mary's Church

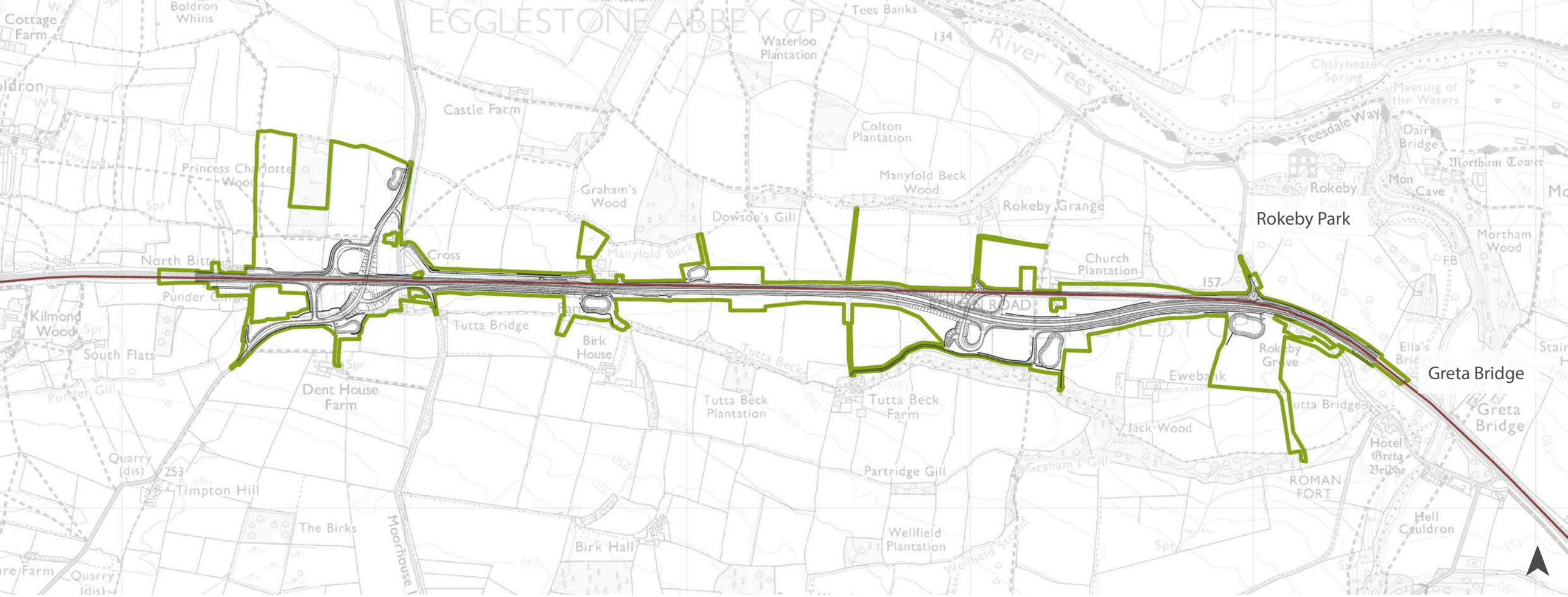


Figure 5.47 Overview Map of Scheme 08 - Cross Lanes to Rokeby

Overview

This section relates to the Cross Lanes to Rokeby scheme, which has been prepared to improve traffic movements in the area, whilst minimising impacts upon landowners and heritage assets.

The design of the Scheme reflects that published for the Preferred Route Announcement, but this has been combined with further developed junction options to produce the presented route.

Understanding context

Landscape character and views

This section of the road affords views across traditional farmland both to the north and south of the roads, with views to the north including distant hills on the horizon.

To the east short glimpses are afforded into Rokeby Park and the country house.

Legend

- Boldron & Lartington
- Moorhouse & Gillbeck
- Barnighham, Brignall & Rokeby
- Newsham & Cleatlam
- View travelling east
- View travelling west
- View constrained

3.02 Environmental Statement Volume 1 Ch 10 Landscape and Visual

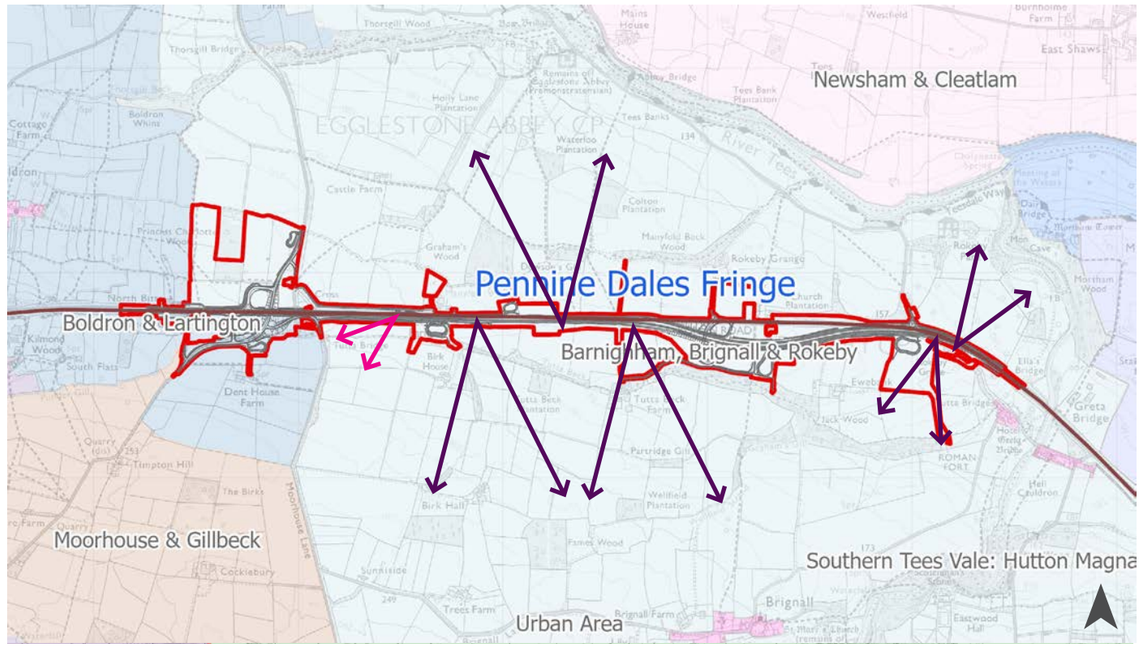


Figure 5.48 Scheme 08 - Landscape character and views

Topography and vegetation

The scheme is located across an area of undulating landform, due to the conflux of several watercourses, resulting in a consistent pattern of lower lying valleys and elevated ridgelines.

The agricultural land use across the study area results in a consistent pattern of fields which are open in character and divided by narrow belts of trees or hedgerows.

There is also extensive vegetation, including broadleaved parkland trees. Across Rokeby Park (RPG), and the woodland adjacent to the River Greta,

The road-side environment is characterised by arable farmland, grasslands and parkland with scattered trees.

Legend

- Broadleaved woodland
- Mixed semi natural woodland
- Broadleaved parkland trees
- Coniferous plantation woodland
- Scrub
- Semi improved grassland
- Improved grassland
- Arable

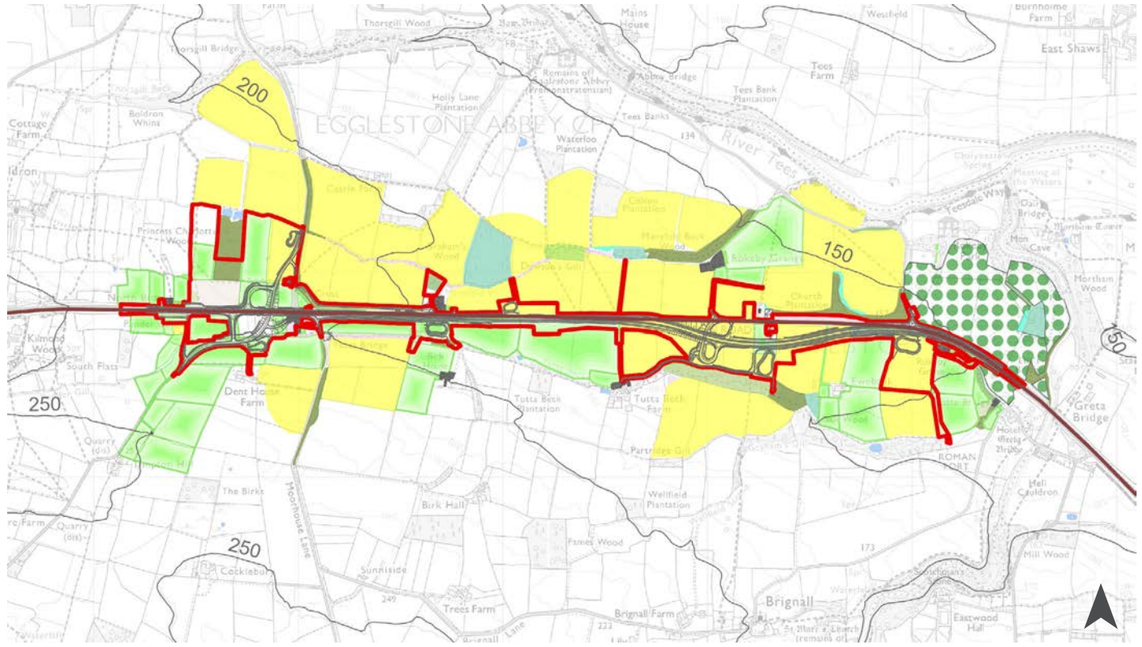


Figure 5.49 Scheme 08 - Topography and vegetation

Designations

Brignall Banks SSSI and Kilmond SSS are within 1.5km of the study area.

The scheme is in proximity to Scheduled Monuments including Barnard Castle in the southern part of the town and Greta Bride Roman Fort and a section of Roman road at Greta Bridge.

Rokeby Park is a Grade II* Registered Historic Park and Garden, which extends between the River Greta and the River Tees, via part of the existing A66. Within the Park is the area's principal building, Rokeby Hall. The Church of St Mary at Rokeby (consecrated 1778) lies adjacent to the existing A6 and is connected to Rokeby Park by what may have originally been a dedicated tree-lined walkway.

Legend

- Listed buildings Grade I
- Listed buildings Grade II*
- Listed buildings Grade II
- Scheduled monuments
- Conservation area
- Registered Park and Garden
- County wildlife site
- Local wildlife site
- Site of Special Scientific Interest (SSSI)
- Sites of Invertebrate Significance
- Special Area of Conservation (SAC)

3.02 Environmental Statement Volume 1 Ch 06 Biodiversity, Ch 08 Cultural Heritage and Ch 08 Cultural Heritage

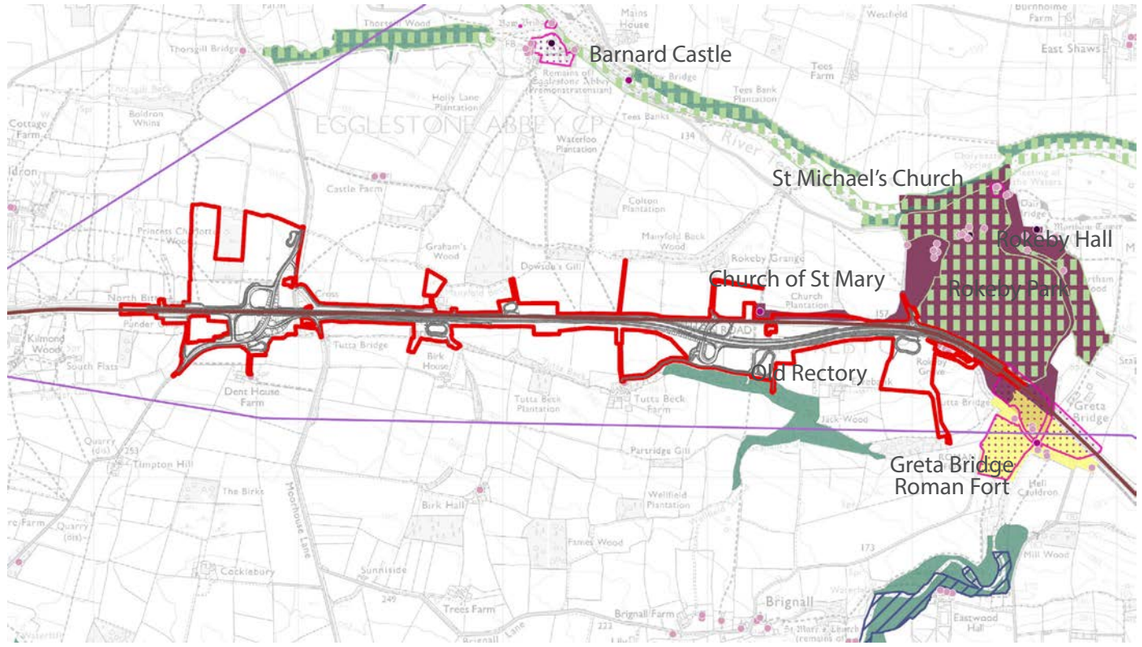


Figure 5.50 Scheme 08 - Designations

Connectivity

There are six footways within this location which currently terminate at the existing A66. Two are close to Rutherford Lane, two lead down from Tutta Beck, and two are near to Rokeby Chapel and the Old Rectory.

The proposed grade-separated junctions will allow walkers and cyclists to cross the new dual carriageway safely. New footways will link the ends of the existing footways together, with walkers being able to continue their journey north or south of the A66, including potential circular routes, without having to cross the A66.

Legend

- Public Right of Way
- National Cycle Network

2.04 Walking Cycling Horse Riding Proposals

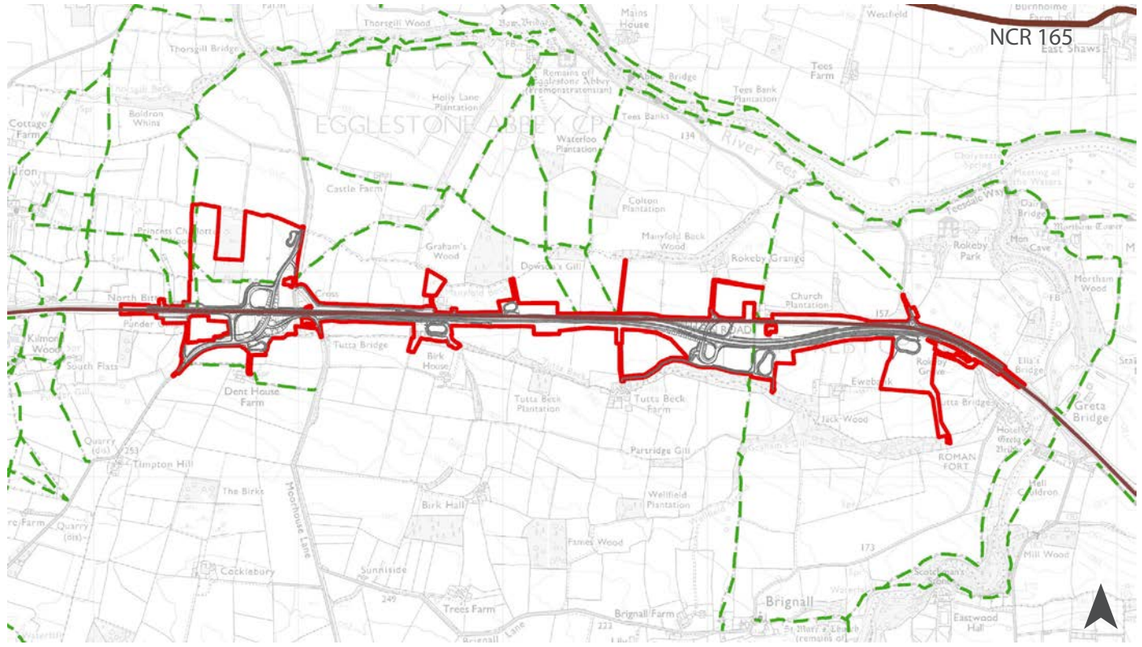


Figure 5.51 Scheme 08 - Connectivity

Highway proposals

Key elements of the highway improvements for Scheme 08 Cross Lanes to Rokeby include the following:

- This route will mostly follow the existing alignment, with a new adjacent westbound carriageway constructed to the south between the B6277 junction at Cross Lanes and the existing Tutta Beck Cottage access. 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.
- At Cross Lanes, the existing junctions will be removed which provide access to the B6277 Moorhouse Lane and Cross Lanes Organic Farm and Café, which will remove the need for right-turn manoeuvres.
- A compact grade-separated junction on the A66 will replace the previous arrangements referred to in the bullet above. Moorhouse Lane (B6277) and Rutherford Lane will be linked via a structure over the A66. This will help to maintain and improve access to the B6277 for Barnard Castle, Cross Lanes Organic Farm Shop and Café, the Grade II listed Cross Lanes Farmhouse, and other local farms and residential properties.
- At Rokeby, the existing junction will be removed and replaced with a compact grade-separated junction west of St Mary's Church and the Old Rectory. This junction will be an underpass arrangement and will avoid direct impact on the RPG and the Old Rectory.
- The Rokeby junction will provide access to Barnard Castle Road for all westbound traffic and diverging eastbound traffic via the old A66, which will form part of the local road network. Eastbound merging traffic will join the A66 via a slip road at the existing Rokeby Junction with the C165 Barnard Castle Road. This junction will maintain HGV access to Barnard Castle.
- A new culvert will be constructed to accommodate Tutta Beck.

2.08 Environmental Mitigation Maps
2.09 Mitigation Schedule
5.11 Project Design Principles

Site-specific design principles

A summary of some the key site-specific design principles that apply to the detailed design of Scheme 08 Cross Lanes to Rokeby are summarised below. For full details of the applicable project-wide and site-specific design principles, please refer to the Project Design Principles (Application Document 5.11).

Structures and road design

01 If implemented in accordance with the provisions of the Environmental Management Plan, the acoustic barrier at North Bitts Farm is to be sensitively designed and to tie in with the existing drystone wall, and to have a maximum height parameter of 4m. Use of local materials to reflect the vernacular of the farm buildings (where reasonably practicable). CH59500.

03 Cross Lanes junction: Provide new native woodland drawn from a locally appropriate species palette for the islands and slip roads, using appropriate grades of planting stock to promote establishment of the new planting. This is to integrate the new junction in the landscape and to provide visual screening, as well as to reflect the scale of the engineering design structures at the Cross Lanes Junction (overbridge, abutments, embankments and slip roads) in the landscape design. CH60000.

04 Cross Lanes junction – visual impact of the proposals: The detailed design is to be carried out sensitively with regard to existing ground levels/profiles and local landscape characteristics. The footprint of the junction must be reduced as far as reasonably practicable so that it minimises encroachment into the Carboniferous Limestone Mineral Safeguarding Area.

05 Cross Lanes Junction Overbridge: The design of this structure must be sensitive to the landscape context, enabling the visual continuity of highway earthworks and using a simple, unobtrusive design for the structure. CH60000.

16 Greta Bridge: Works within the Scheduled Monument at Greta Bridge are to be restricted to the highway boundary only and are to be non-intrusive with no excavation outside the highways boundary.

17 Greening of overbridge must be implemented to maintain habitat connectivity on Cross Lanes junction overbridge (CH60050).

Local roads, PRoWs and accommodation works

06 In relation to the part of the existing A66 that is to be de-trunked to the west of Rokeby Grange junction (CH61950-62200) rationalise and restore field patterns, and where the road is to be removed, restore, reinforce and replant the hedgerow (as a double tree line) to reflect the line of the historic (Roman) road alignment in this location.

07 Rokeby Grange drive/approach road: The detailed design must not require the removal of the large pollard sycamores. CH62200.

08 Rokeby Chapel and Rectory: Open up views of the Old Rectory by removing dense, inappropriate modern coniferous planting. This will enable the Rectory to relate visually once again to Rokeby Chapel on the northern side of the A66 to be de-trunked, enabling aspects of the original design intent for this part of Rokeby Park to be appreciated. Replace

Figure 5.52 Scheme 08 - Cross Lanes to Rokeby

firs with a 'boulevard' or loose avenue of larger grade parkland species trees (planting spacing to be at 10m centres) and reinforce historic planted character of the de-trunked road with appropriate larger grade parkland species tree planting. CH62500.

Landscape design and environmental mitigation

02 Cross Lanes junction: Enhance Princess Charlotte woodland to the north of the junction extending the existing stand of woodland and connecting the green infrastructure north to south at the junction. CH60000.

09 Plant native woodland along the northern verge east of the Old Rectory between the existing and proposed alignment to enhance the existing character of Rokeby Park, and to provide visual screening in relation to the new A66 alignment. (CH62500-62850)

10 At the Tutta Beck, the outfall is to tie in with the existing outfall as far upstream as reasonably practicable in order to avoid or minimise disturbance of ancient woodland. The area of land within the Order limits directly adjacent to the Ancient Woodland and within 15m of the Ancient Woodland is for planting only, with no excavation or below ground works to take place in this area. CH60900 and 60100.

11 Rokeby Park: Replant Church Plantation to the north of the de-trunked road with the same location and species of tree planting, so that the original design and pattern of the loose axial vista in the Church Plantation is mapped and replicated. To the south of the de-trunked road opposite Church Plantation, use larger species tree planting of locally appropriate species, with irregular spacing.

12 Alongside the new alignment of the A66 plant larger species trees in a row with irregular spacing and a scalloped edge to aid landscape integration and create a more naturalistic appearance. CH62600.

13 Use species rich grassland for the verges, central reservation and roundabout approaches to the new junction with Barnard Castle Road, to visually break up the expanse of hardstanding to the foreground of the historic gates and railings to Rokeby Park. The historic gates, piers and railings must not be disturbed, and the trees associated with this feature must be retained wherever reasonably practicable if overhead utilities works are required in this location. CH62100.

14 Reinforce existing tree belts to the south of the A66 east of the Barnard Castle junction with appropriate native parkland tree species. This will help maintain the historic integrity of the small section of the Registered Park and Garden (RPG) south of the 1960s bypass and contain visual impacts of the road upon it.

15 Boundary treatments are to tie in with the rural character comprising largely of drystone walling and post and rail fencing. Drystone walls are to be retained/reinstated at the existing police patrol layby, Boldron and Rokeby (CH63350). Where VRS is required it must be integrated with boundary treatments. Any barriers required to prevent headlight glare must be planted up, to soften the visual impact over time with appropriate understorey planting so as to avoid strobing effect.

Stephen Bank to Carkin Moor

Figure 5.53 Key plan of Scheme 09 - Stephen Bank to Carkin Moor

Image 5.7 View at West Layton

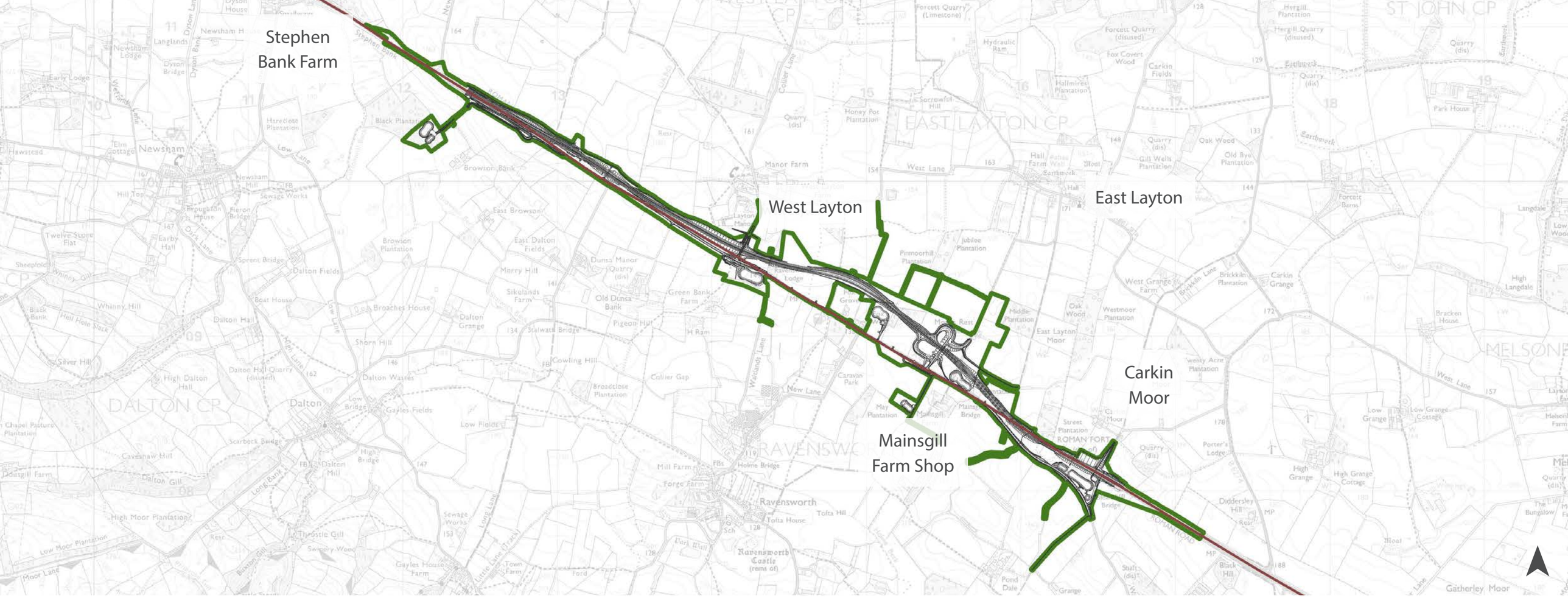


Figure 5.54 Overview Map of Scheme 09 - Stephen Bank to Carkin Moor

Overview

This section of the A66 is located in the vicinity of the villages of East Layton and West Layton, with 17,100 vehicles using it every day. Mainsgill Farm Shop is also located alongside it adjacent to Moor Lane which receives heavy footfall from tourists and passing traffic. A new dual carriageway is proposed between Stephen Bank and Carkin Moor Farm.

Understanding context

Landscape character and views

This section of the route forms a transition between the area characterised as the Pennine Dales Fringe and the beginning of the Tees Uplands to the north-east. Within these broad character area designations, this local area is referred to as the Moors Fringe, with the area extending north of Smallways regarded as the Hutton Magna landscape character area.

Along much of the scheme sections, views to the south west are afforded towards distant moorland landscape. To the east of the scheme, those travelling to the west will have a short distance view of the Roman Fort adjacent to the road corridor.

Legend

- Moors Fringe
- Narrow Valley
- Southern Tees Vale
- View travelling east
- View travelling west
- View constrained

3.02 Environmental Statement Volume 1 Ch 10 Landscape and Visual

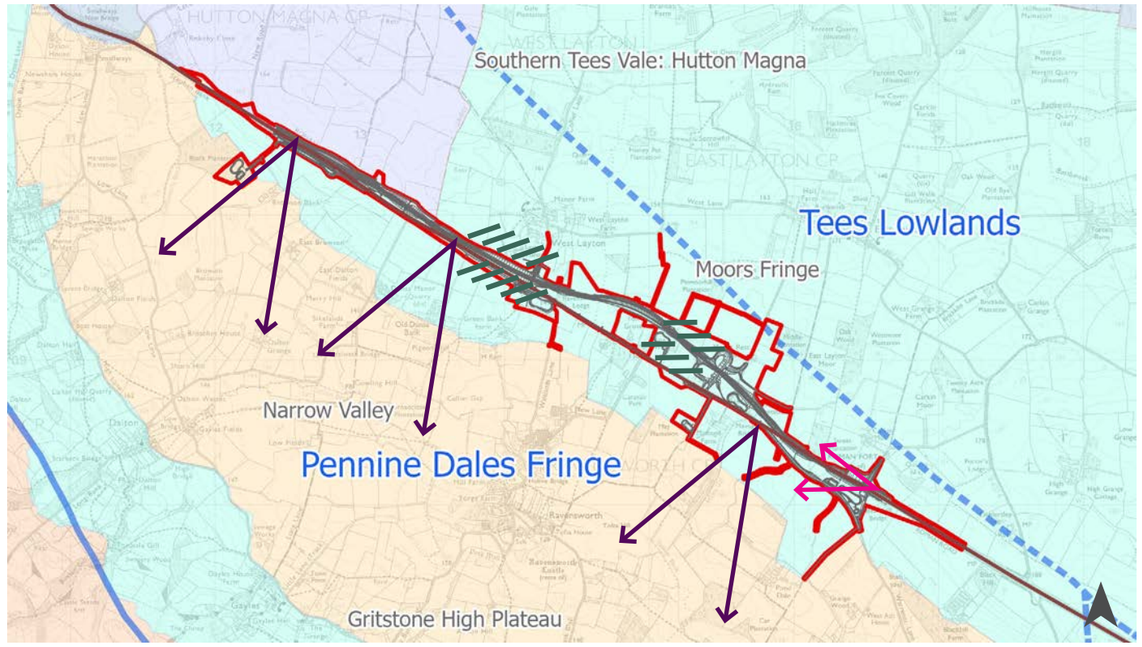


Figure 5.55 Scheme 09 - Landscape character and views

Topography and vegetation

The study area is characterised by several valleys, due to the several becks and their associated tributaries.

The main valley is located across the central part of the study area, in a north-west to south-east orientation, between Newsham, at 170m AOD and Gilling West, at 100m AOD.

The main vegetation patterns across the study area are field boundary hedgerows and trees dividing fields, roadside hedgerows bordering the lanes and minor roads and tree belts bordering settlements, including at West Layton.

The road-side environment is characterised by predominantly arable farmland and grassland with a scattering of hedges and trees.

Legend

- Broadleaved woodland
- Mixed semi natural woodland
- Broadleaved parkland trees
- Coniferous plantation woodland
- Scrub
- Semi improved grassland
- Improved grassland
- Arable
- Standing water

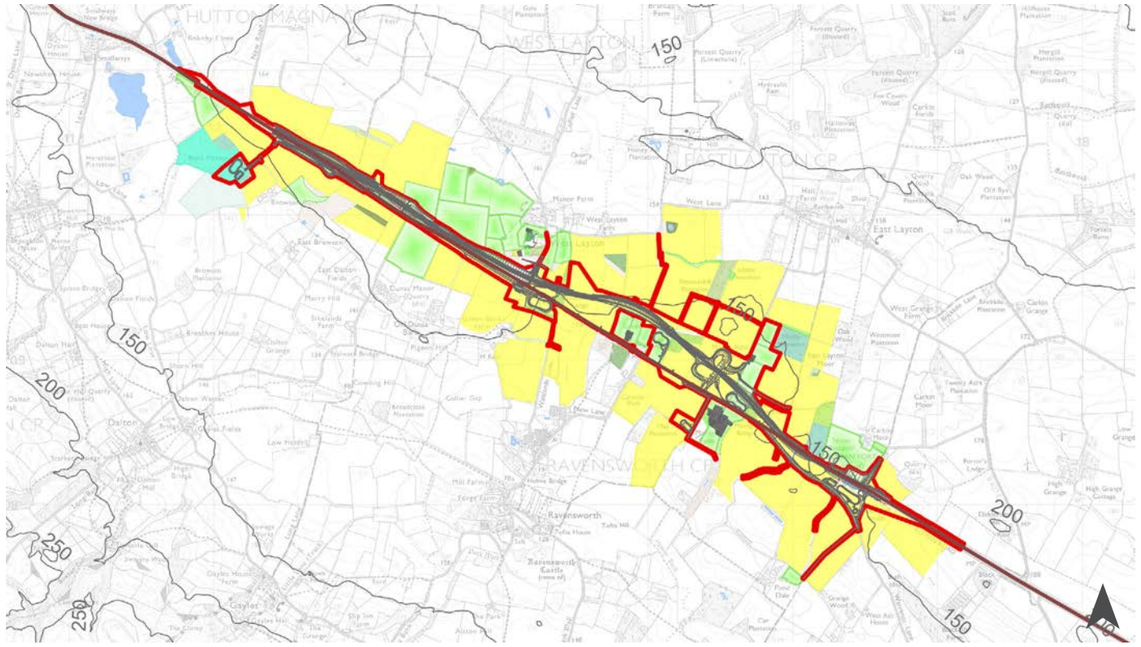


Figure 5.56 Scheme 09 - Topography and vegetation

Designations

Relevant ecological designations within the study area include numerous areas of broadleaved woodland priority habitats.

The Roman fort at Carkin Moorlies adjacent to the existing A66. Clearly visible as earthworks, the north-eastern corner is the most well preserved and survives as a raised platform that extends up to 2m high in places.

Besides the route of the road itself, the only surviving remains of the original post-medieval road network found within the study area are two milestones: one located beside the A66 close to Carkin Moor Roman Fort while the second can be found to the north-west of Fox Hall cottage.

Legend

- Listed buildings Grade I
- Listed buildings Grade II*
- Listed buildings Grade II
- Scheduled monuments
- Conservation area
- County wildlife sites
- Local wildlife site
- Sites of Invertebrate Significance
- Special Area of Conservation (SAC)
- Biodiversity Opportunity Areas
- Ancient woodland

3.02 Environmental Statement Volume 1 Ch 06 Biodiversity, Ch 08 Cultural Heritage and Ch 08 Cultural Heritage

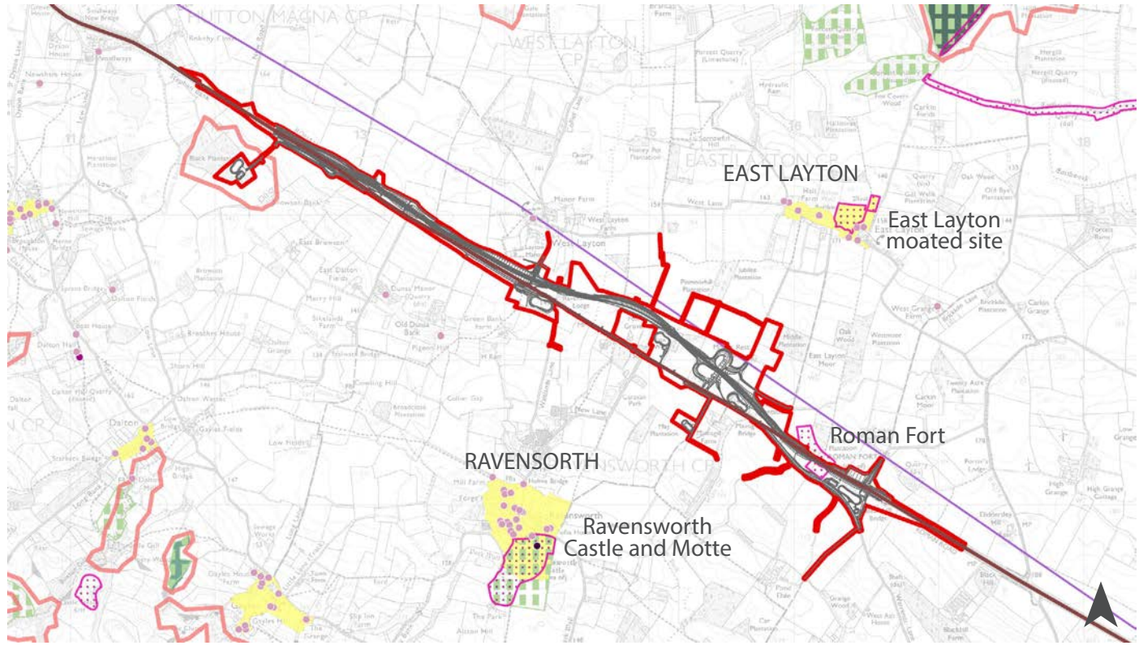


Figure 5.57 Scheme 09 - Designations

Connectivity

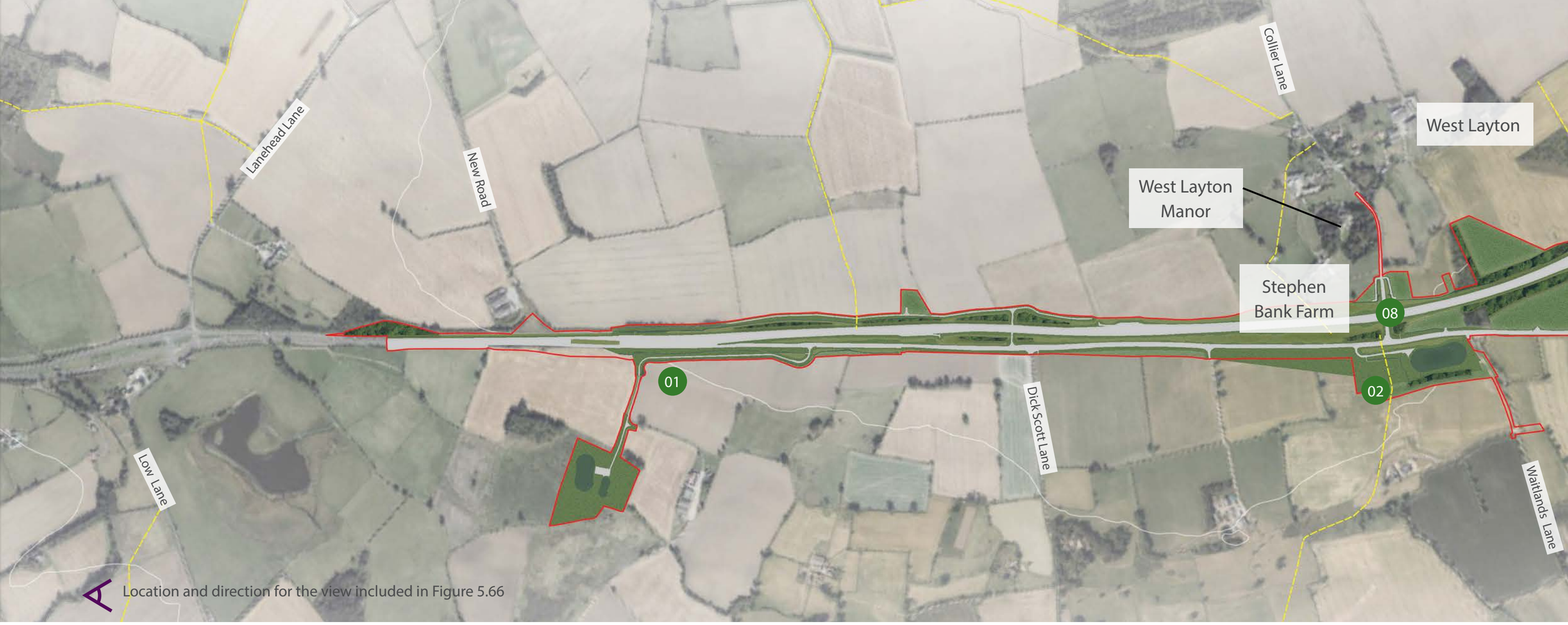
There are five Walking, Cycling and Horse-riding (WCH) locations where WCH routes either terminate or cross the A66, which incorporate four bridleways and four footpaths. Currently pedestrians must walk along the verge in order to continue onwards to connect with the next footpath.

Legend

- Public Rights of Way

2.04 Walking Cycling Horse Riding Proposals

Figure 5.58 Scheme 09 - Connectivity



A Location and direction for the view included in Figure 5.66

Highways proposals

Key elements of the highway improvements for Scheme 09 Stephen Bank to Carkin Moor include the following:

- New section of dual carriageway located to the north of the existing A66
- A new two-level junction and bridge will be built on Moor Lane, providing access to the old A66 towards the villages of East and West Layton, Ravensworth and the Mainsgill Farm shop.
- Widening the road through the Roman fort and settlement at Carkin Moor.

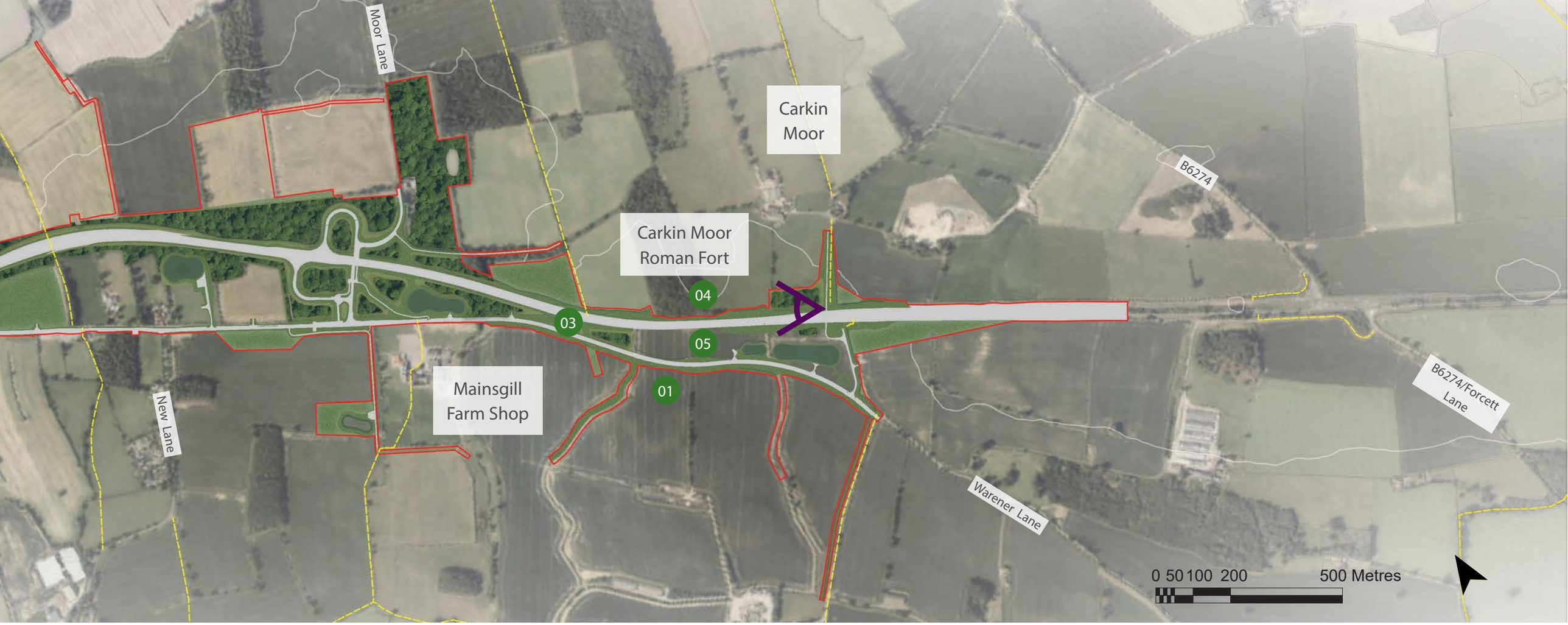


Figure 5.59 Scheme 09 - Stephen Bank to Carkin Moor

Site-specific design principles

A summary of some the key site-specific design principles that apply to the detailed design of Scheme 09 Stephen Bank to Carkin Moor are summarised below. For full details of the applicable project-wide and site-specific design principles, please refer to the Project Design Principles (Application Document 5.11).

Structures and road design

05 Ensure that any structures and design interventions near and adjacent to Carkin Moor Roman Fort Scheduled Monument (CH74500) are minimal and that the new retaining structure to the southern side of the road, to build up the highway to enable the required dualling, minimises any impact on the Scheduled Monument. Any planting must be open grassland or species rich grassland and non-intrusive e.g. no tree or shrub planting. The adjacent new attenuation ponds must have a compact and minimum footprint to reduce impacts on the archaeology and its setting, by having the minimum number and size of balancing ponds required (having regard to functional requirements of the ponds), as well as locating them as far away from the Scheduled Monument as reasonably practicable.

08 Greening of overbridge must be implemented to maintain habitat connectivity on Collier Lane, West Layton (CH72080).

Landscape design and environmental mitigation

01 Retain open views to the south from the A66, over the open moorland landscape (CH 70000-70400 & CH74300-75050), with no woodland or woodland edge to be planted, except for landscape integration and ecological connectivity purposes.

02 West Layton Manor: Reinstate and restore the sections of dressed stone estate wall and cappings lost to the scheme, construction to match the existing and maintain the historic feature, re-using the reclaimed material from the wall. Ensure that engineering earthworks are designed to avoid and protect the root protection area of the prominent lone parkland tree at West Layton, and that new planting maintains the dominance of this as a feature. CH72000.

03 Conserve and, where reasonably practicable, enhance the channelled views eastwards local to Mainsgill Farm along the A66 towards the Carkin Moor Roman Fort (Scheduled Monument) and associated earthworks/deep cutting. CH73700-73800.

04 Retain open views of Carkin Moor Roman Fort from the A66, enhance the experience by clearance of naturalised scrub on the road side approaches to better present the cutting and surviving earthworks of the Scheduled Monument. CH74500.

06 Carefully consider new woodland planting sites with new field boundaries that integrate with and reflect the existing landscape and pattern – a landscape of vegetation 'layers', with low perception of woodland cover.

07 Boundary treatments are to reflect rural character and existing boundary treatments through the scheme. These include hedgerow with post and rail fencing predominantly in agricultural areas, and use of post and rail, hedgerow and drystone walls near Layton Nurseries and Mainsgill Farm. Close board fencing must be used at residential properties along Waitlands Lane.

2.08 Environmental Mitigation Maps
2.09 Mitigation Schedule
5.11 Project Design Principles

Figure 5.60 Artist's impression of the road corridor at Carkin Moor, illustrating the cutting and a proposed retaining wall to reduce intrusion of the Roman Fort, and the simple planting treatment to improve visibility of the Scheduled Monument

A1(M) Junction 53 Scotch Corner

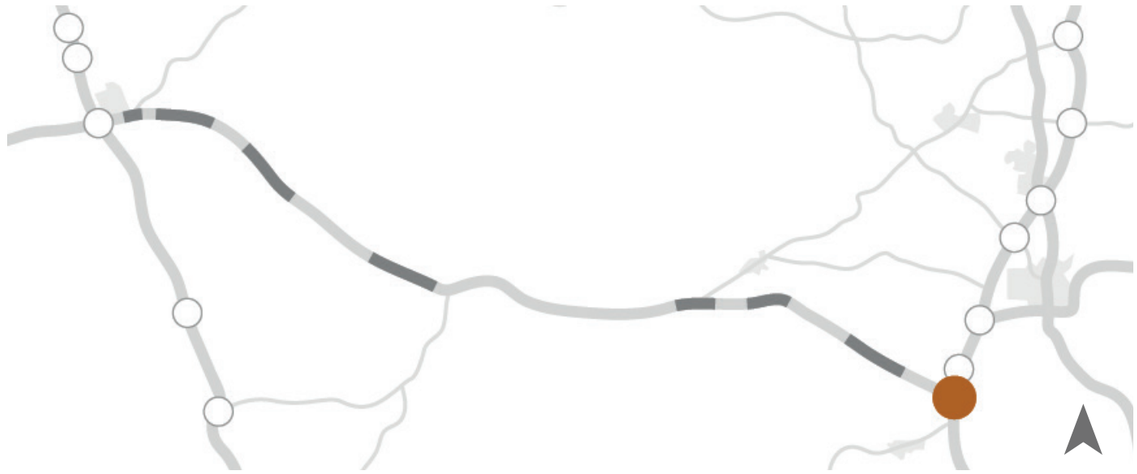


Figure 5.61 Key plan of Scheme 11 - A1(M) Junction 53 Scotch Corner

Overview

Unlike the more extensive schemes presented earlier in this report, the design proposals for the A1(M) junction 53 Scotch Corner are of a more limited scope. The only component of the proposals at this location is the widening of the Middleton Tyas Lane approach to the A1(M) junction 53 at Scotch Corner roundabout, from one lane to two lanes.

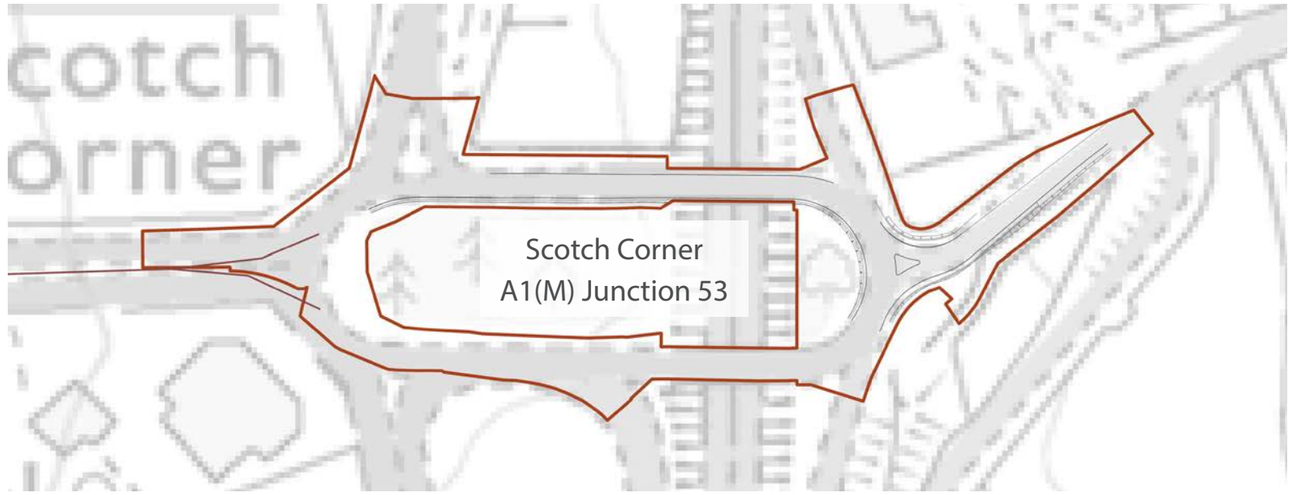


Figure 5.62 Overview Map of Scheme 11 - A1(M) Junction 53 Scotch Corner

Figure 5.63 Scheme 11 - A1(M) Junction 53 Scotch Corner

Highways proposals

A section of footway, a number of signs and lighting columns will require relocation to the back of the widened carriageway and road markings will be required to tie in with those existing, accompanied by limited landscape-related proposals.

2.08 Environmental Mitigation Maps
2.09 Mitigation Schedule
5.11 Project Design Principles

Site-specific design principles

A summary of some the key site-specific design principles that apply to the detailed design of Scheme 11 A1(M) Junction 53 Scotch Corner are summarised below. For full details of the applicable project-wide and site-specific design principles, please refer to the Project Design Principles (Application Document 5.11).

Landscape design and environmental mitigation

01 Lighting is to tie in with the existing junction lighting and to create a consistent environment to ensure the safety of road users.

02 Retain the tree line to the south of Middleton Tyas Lane where reasonably practicable. If the tree line is retained, replacement tree planting will not be required. If it cannot be retained, the trees must be replaced in a similar position within Order limits, where reasonably practicable, with suitable native tree species including larger growing species, using an appropriate grade of nursery stock (balancing integration and visual screening with establishment).

Image references

Figure number	Caption	Source
1.1	A green bridge crossing the A556 in Cheshire	On the road to good design: Design review at National Highway 2017-2021
1.2	Stone walls, and earthworks recently planted with woodland to integrate the A590 in Cumbria into its landscape context	Highways England (2018) The road to good design
1.3	View from the B6295 towards the A66 near Warcop	Site photograph. 2021
2.1	View towards the settlement of Bowes	Site photograph. 2021
2.2	Pond located to the north east of Temple Sowerby	Site photograph. 2021
3.1	Views north towards Bowes and North Pennines AONB	Site photograph. 2021
4.1	Virtual engagement room, part of the engagement process on the PCF Stage 3 Preferred Route took place in 2021	A66 Northern Trans-Pennine Consultation (https://a66ntp.virtual-engage.com/)
5.1	View north across Eamont Valley from Maybrough Henge Scheduled Monument	Site photograph. 2021

Bibliography

Development Consent Order documents

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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.
Abutment	A point where two structures meet, which support or anchor the end of a bridge.
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.
Agricultural Land Classification (ALC)	A relative measure of agricultural land quality in England and Wales. In practice, the ALC grades are defined by reference to the land's physical characteristics. The most productive and flexible land falls into Grades 1 & 2 and Subgrade, 3a and collectively comprises about one-third of the agricultural land in England and Wales. About half the land is of moderate quality in Subgrade 3b or poor quality in Grade 4. The remainder is very poor-quality land in Grade 5, which mostly occurs in the uplands.
Alluvial deposits	Natural materials deposited within and adjacent to rivers.
Alluvium	Loose, unconsolidated material comprising clay, silt, sand, gravel deposited by flowing water, typically in floodplain areas, which can contain layers of peat.
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.
Ancient Woodland Inventory (AWI)	A map-based record of all ancient woodland in England and Wales over 2ha in area.
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.
Baseline environment	The environment as it appears (or would appear)

Term	Definition
	immediately prior to the implementation of the project together with any known or foreseeable future changes that will take place before completion of the project.
Bedrock	A term used for the main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water. Formerly known as 'solid' geology by British Geological Survey.
Best and most versatile (BMV) land	Land defined as grade 1, 2 or 3a of the Agricultural Land Classification. This land is considered the most flexible, productive and efficient and is most capable of delivering crops for food and non-food uses.
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.
Biodiversity Action Plan (BAP)	A nationally established programme that seeks to protect and restore threatened species, habitats and biological systems.
Bund	An embankment structure
Compensation	Measures taken to offset or compensate for residual adverse effects that cannot be mitigated, or for which mitigation cannot entirely eliminate.
Consent	A statutory permission given to an applicant by a statutory authority, such as the local planning authority or the Secretary of State, that 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.
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.
Cutting	A section 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.
Designer	The organisation commissioned to undertake the various stages of scheme preparation and supervision of construction. This includes specialise subconsultants brought in to advise on specific areas of assessment and mitigation.
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.
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.
Draft Environmental Management Plan (dEMP)	A plan to manage the environmental effects of the project prepared in accordance with the Design Manual for Roads and Bridges (DMRB) LA 120

Term	Definition
	Environmental Management Plans (DMRB LA 120) (Highways (now National Highways) England, 2020a)1 and incorporates additional requirements to meet the needs 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.
Engineering boundary	Land likely to be subject to some form of earthworks (as a minimum, removal of vegetation and topsoil) – shown using a blue boundary.
Enhancement	A measure that is over and above what is required to mitigate the adverse effects of a project.
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)2 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.
Environmental Masterplan	The plans which illustrate the mitigation measures integrated into the design of the scheme.
Environmental Statement (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 in order 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 required to reduce and if possible offset likely significant environmental effects, in support of the reported significance of effects in the environmental assessment.
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 Risk Assessment	An assessment of the likelihood of flooding in a particular area so that development needs and mitigation measures can be considered
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.
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

Term	Definition
	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.
Heavy Goods Vehicle (HGV)	A goods vehicle over 3.5 tonnes, including rigid and articulated lorries.
Heritage Resources	Heritage Resources are those resources, both human and natural, created by activities from the past that remain to inform present and future societies of that past
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.
Historic Environment Record (HER)	Information services that provide access to comprehensive and dynamic resources relating to the archaeology and historic built environment of a defined geographic area.
Historic Landscape Characterisation (HLC)	A method of identification and interpretation of the varying historic character within an area that looks beyond individual heritage assets.
Historic Landscape Character Area (HLCA)	A unit of landscape defined by particular features such as field patterns, hedgerows, parkland, which when considered together can demonstrate the development of land-use over time.
Impact	Change that is caused by an action (for example land clearing (action) during construction which results in habitat loss (impact)).
Important Hedgerow	A hedgerow that is at least 30 years old and which meets certain criteria relating to its particular archaeological, historical, wildlife and landscape value.
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.
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.
Landscape Elements	Broad classification types of component parts of the landscape with specific requirements or management needs to achieve their longer-term objectives. These can be subdivided according to their detailed design or management needs relating to their function.
Landscape character units (LCU)	General terminology applied to local authority level landscape character types throughout the document.
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.
Local Authority	An administrative body of local government.

Term	Definition
Local Development Plan	The set of documents and plans that sets out the local authority's policies and proposals for the development and use of land in their area.
Mainline	The carriageway carrying the main flow of traffic, generally traffic passing straight through a junction or interchange.
Materials Management Plan (MMP)	A Materials Management Plan is a mechanism by which those who are developing a site can comply with Environment Agency regulations for excavated ground materials.
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 Cycle Network (NCN)	The National Cycle Network is a series of safe, traffic-free paths and quiet on-road cycling and walking routes that connect to every major town and city.
National Infrastructure Delivery Plan (NIDP)	A national policy document issued by the government which describes how the government will support the delivery of key infrastructure projects and programmes to the end of this Parliament.
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 Planning Act 2008.
National Networks National Networks National Policy Statement 2014 (NN NPS)	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 NN NPS. It is the basis for the examination of a Development Consent Order application by the Planning Inspectorate and decisions by the Secretary of State. It was adopted designated as national policy by the UK Parliament Secretary of State in March January 2015.
Natural England	Natural England was established by the Natural Environment and Rural Communities Act 2006. Their purpose is to help conserve, enhance and manage the natural environment for the benefit of present and future generations, thereby contributing to sustainable development.
Nature Improvement Area	Nature Improvement Areas are areas of the country where partnerships have been set up to enhance the natural environment. Nature Improvement Areas embody an integrated, holistic approach that was signalled in Natural Environment White Paper (Department for Environment Food & Rural Affairs, 2014)3 and England Biodiversity Strategy(Department for Environment Food & Rural Affairs,

Term	Definition
	2020)4, joining up objectives for biodiversity, water, so farming and the low-carbon economy to improve the functioning of ecosystems.
Noise Barrier	A solid construction that reduces unwanted sound. It n take many forms including: engineering cutting; retaini noise fence barrier; landscape earthworks; a 'low-level barrier on a viaduct; a parapet barrier on a viaduct; or combination of these measures. Also called an attenua barrier.
Opening Year	In the case of the A66 project, assumed to be 2029.
Operational	The functioning of a project on completion of construct
Order limits	The extent of land required for the Project
Outline Environment Management Plan	An EMP at outline stage which will later be refined and expanded into a full EMP as more information become available and there is more certainty in terms of the pr layout, construction methods, programme and the likel environmental effects.
Parish Council	A civil local authority in England, the lowest tier of loca government. They are elected corporate bodies, have variable tax raising powers, and are responsible for ar known as civil parishes, serving in total 16 million peop
Photomontage	Inserting an image of a proposed development onto a photograph for the purposes of creating an illustrative representation of potential changes to existing views.
Planning Inspectorate (PINS)	The government agency responsible for operating the planning process for nationally significant infrastructur projects and for examining applications for developme consent under the Planning Act 2008, on behalf of the Secretary of State.
Preliminary design	The design on which the application for development consent is based.
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. Sc 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 r The route may be used on foot, on (or leading) a horse pedal cycle or with a motor vehicle, depending on its s Although the land may be owned by a private individua public may still gain access across that land along a sp route
Receptor	A defined individual environmental feature usually ass with population, fauna and flora that has potential to be affected by a project.

Term	Definition
Registered Parks and Gardens (RPG)	Parks and gardens listed on a register that includes sites of particular 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.
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	Historic building or site included in the Schedule of Monuments kept by the Secretary of State 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 Applebye • Appleby to Brough • Bowes Bypass • Cross Lanes to Rokeby • Stephen Bank to Carkin Moor • A1(M) Junction 53 Scotch Corner
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

Term	Definition
	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 i.e. extending a distance from the DCO boundary in which significant environmental effects could occur (this may vary between the topic areas).
Superficial Deposits	The youngest geological deposits formed during the most recent period of geological time, the Quaternary, which extends back about 2.6 million years from the present. They rest on older deposits or rocks referred to as bedrock.
Sustainable drainage systems (SuDS)	Drainage solutions that provide an alternative to the direct channelling of surface water through networks of pipes and sewers to nearby watercourses.
Unitary Authority	A unitary authority is a local authority responsible for all local government functions within its area or performing additional functions that elsewhere are usually performed by a higher level of sub-national government or the national government.
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.
Written Scheme of Investigation (WSI)	A WSI is a planning document usually required by Planning Authorities as part of a pre-application process or as part of an archaeological planning condition. The WSI outlines the proposed archaeological works required to satisfy a particular planning condition.
Zone of Theoretical Visibility (ZTV)	The zone from which the project is theoretically visible over 'bare earth.'

Abbreviations

Abbreviation	In full
ALC	Agricultural Land Classification
AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
AW	Ancient Woodland
AWI	Ancient Woodland Inventory
BAP	Biodiversity Action Plan
BNG	Biodiversity Net Gain
BS	British Standard
CCC	Cumbria County Council
ch	Chainage
cm	Centimetre
CMLI	Chartered Members of the Landscape Institute
CoCP	Code of Construction Practice
CWS	County Wildlife Site
DCC	Durham County Council
DCO	Development Consent Order
Defra	Department for Environment Food and Rural Affairs
dEMP	Draft Environmental Management Plan
DfT	Department for Transport
EDC	Eden District Council
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EqIA	Equality Impact Assessment
GA	General Arrangement
GIS	Geographical Information Systems
GLVIA3	Guideline for Landscape and Visual Impacts Assessment 3rd Edition
HEMP	Handover Environmental Management Plan
IMD	Index of Multiple Deprivation
IoD	Indices of Deprivation
LA	Local Authorities
LCA	Landscape Character Assessment
LCT	Landscape Character Type
LEMP	Landscape and Ecological Management Plan
LNR	Local Nature Reserve
LPA	Local Planning Authority
LVIA	Landscape and Visual Impact Assessment
LWS	Local Wildlife Site
m	Metres (Unit of Measurement)
m2	Metres squared
m3	Cubic metres
MD	Multiple Deprivation
mm	Millimetres
NCA	National Character Areas
NCN	National Cycle Network
NTS	Non-Technical Summary
NYCC	North Yorkshire County Council
OS	Ordnance Survey
PCF	Project Control Framework
PDD	Programme Delivery Director
PDOR	Project Development Overview Report
PDP	Project Design Principles
PINS	Planning Inspectorate
PINS	Planning Inspectorate
PRA	Preferred Route Announcement
PRoW	Public Rights of Way
RDC	Richmondshire District Council
RPA	Root Protection Area
RPG	Registered Park and Gardens
SAC	Special Area of Conservation
SINC	Site of Importance for Nature Conservation
SLR	Single Lens Reflex
SM	Scheduled Monument
SoCC	Statement of Community Consultation
SoS	Secretary of State
SPA	Special Protection Area
SRN	Strategic Road Network
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Strategy
TPO	Tree Preservation Order
UK	United Kingdom
WCH	Walkers, Cyclists and Horse-Riders
WCHAR	Walking, Cycling Horse Riding Assessment and Review
WebTRIS	National Highways Web based Traffic count Information System
WEI	Wider Economic Impact
WFD	Water Framework Directive
WHO	World Health Organisation
WHS	World Heritage Site
ZTV	Zone of Theoretical Visibility

A

Appendices

The Road to Good Design

National Highways Design Principles

Overview

The Road to Good Design sets out ten design principles, grouped under three themes. These serve as prompts to improve design quality and outcomes, meeting National Highways license requirements for good design.

This appendix summarises how each of these principles has been applied to the A66 design proposals to date.

National Highways is committed to ensuring that the Project proposals place good design at its heart through applying these general principles in a way that makes the most of the unique character, local identity and 'specialness' of the areas the road passes through.

Design generally combines utilitarian, technical, environmental and economic considerations with aspects of place and culture. Road design is bound to both place and function, with specific demands of technical design and safety that must be met, combined with design features that are tailored to locally appropriate solutions. Good design is thus a balance and coordination of aesthetic, functional and technological considerations.

The aesthetics of the A66 road design is also influenced by the character of each of the places it interacts with. A design approach has been applied that is essentially conservative, particularly in rural areas, with a focus on preserving and where possible, with sensitive interventions, enhancing existing natural beauty.

This append conveys how each of the ten design principles is reflected in National Highways proposals for the Project.

The Road to Good Design: Themes and Principles

Connecting People

1. Good road design makes roads safe and useful
2. Good road design is inclusive
3. Good road design makes roads understandable

Connecting Places

4. Good road design fits in context
5. Good road design is restrained
6. Good road design is environmentally sustainable

Connecting Processes

7. Good road design thorough
8. Good road design is innovative
9. Good road design is collaborative
10. Good road design is long-lasting

Good road design makes roads safe and useful

'Safety is fundamental to good road design; it is integral to both the usefulness of its function and the confidence of road users and their well-being. Good design creates safe roads which support and link to other wider policy objectives that apply both nationally and locally that seek to meet users' need for mobility effectively.'

Examples of how this principle is being applied to the A66

- Introducing a more consistent speed dual carriageway to reduce accidents on the road.
- Reducing congestion and improving journey reliability between the M6 at Penrith and the A1(M) Scotch Corner.
- Improving the performance of key junctions such as the A66/A6 and the M6 junction 40.
- Providing space to keep traffic moving if there are lane closures due to accidents or breakdowns to keep traffic moving.

Sample design features

- In conformity to modern safety standards, typically, each carriageway would comprise two standard 3.65m wide lanes in each direction, 1 metre hard strips and a central reserve. A minimum verge width of 2.5m would be provided, which would be increased as required to provide adequate visibility splays, highway drainage, communication ducts and street furniture. Where sections of the existing route are to be replaced on a new alignment, the intention is that the replaced section of road ceases to be a part of the trunk road network.
- New central reserve gaps for right turning traffic will not be proposed, to eliminate unsafe turning movements, and all side roads will be designed as left in/left out junctions, if a replacement provision, to promote safe practice.
- Side roads and private means of access will be gathered where appropriate to minimise the number of direct accesses onto the A66 and minimise safety risks.
- Vehicle Restraint System (VRS) barriers are proposed in the central reserve between the two carriageways and in the verges to protect traffic from potential hazards.
- At grade crossings within the scheme will be replaced with grade-separated crossings, providing vulnerable road users with a safe alternative, away from the dual carriageway environment.

Good road design is inclusive

'Inclusive environments facilitate dignified and equal use by all. An inter-disciplinary design process involves people, placing their needs and places people's needs and views at its heart, nurturing well-being and creating a shared sense of ownership of the road. All users and communities are considered carefully to reduce barriers to access and participation, particularly mindful of the most vulnerable.'

Examples of how this principle is being applied to the A66

- Holding independent design reviews and Technical Working Group (TWG) sessions to inform the design process, allowing a diverse range of views to be considered.
- Integrating the needs of walkers, cyclists and horse-riders within designs, incorporating the network of Public Rights of Way (PRoW) around the A66 that designs tie in with. The network comprises mainly of footpaths and a small number of bridleways and restricted byways. Where the Project proposals could affect the existing PRoW, appropriate mitigation measures are being integrated into designs, including safe crossing points where necessary.
- Applying a design approach that aims to ensure routes remain accessible for the community and visitors to the area.

Sample design features

- Connectivity into the existing PRoW and bridgeways network including the Pennine Way to facilitate leisure activity.
- A network of off-route roads and private means of access will be utilised where appropriate to ensure local connectivity surrounding the A66.

Good road design makes roads understandable

'Easy to read, a good road is intuitive to use so as to be safe and efficient for all. 'Self-explaining roads' focus on the essentials and eliminate unnecessary and confusing clutter to make them legible, while responding to place and enhancing both environmental and economic outcomes.'

Examples of how this principle is being applied to the A66

- Incorporating a number of 'all movement' junctions in the form of compact grade separated junctions that facilitate easily understood road user decision-making.
- Providing large Advanced Direction Signs and Local Direction Signs (ADS/LDS) in advance of the junctions on the mainline and associated side roads, within the junctions, and at isolated locations along the mainline for destination information.

Sample design features

- No right turn junction designs to ensure free flowing traffic.
- Rationalise signage to ensure clarity and consistency across the route.

Good road design fits in context

'The aesthetic quality of a road and its design in relation to the places through which it passes, is integral to its function and the experience of those that use it. Whereas highway safety and other technical requirements place certain limitations on potential design outcomes, good road design demonstrates sensitivity to the landscape, heritage and local community. It seeks to enhance a place while being true to functional necessities. It builds a legacy for the future.'

Examples of how this principle is being applied to the A66

- Ensuring that the preliminary Project design is being developed to be responsive to local context. Where possible it reflects local requirements, including those related to walking, cycling and horse riding provision that is provided close to existing key networks and tourist and community leisure facilities.
- Utilising planting and grading techniques that integrate development with natural landforms and ecological features – connecting and restoring landscape elements.
- Giving careful consideration to the choice of boundary treatment around the highway. In general, modest fencing around the highway boundary will comprise of timber post and wire fencing, along with stone walls and hedging. At certain locations, noise fencing or stockproof treatments may be required to mitigate noise impacts or prevent local fauna crossing the fence line. This may include mammal-proof fencing. Landscape-led elements such as hedgerows and dry-stone walling is being considered for key locations where appropriate.

Sample design features

- Specimen tree planting to replicate the surrounding landscape where appropriate.
- Drainage systems designed to complement existing natural waterways and be planted to enhance local ecology and biodiversity.
- Use of local stone in structures and building techniques such as County Durham dry stone walling in stone wall boundary treatments where appropriate.
- Appearance of proposed structures such as retaining walls, viaducts, abutments and bridges, with careful consideration to form, colour and materiality.

Good road design is restrained

'Functional, but responding positively and elegantly to the context, good road design allows for the expression of the character and identity of the places and communities through which a road passes. Good road design can enhance a sense of place and add to what we have inherited, particularly through the use of appropriate materials and traditions, but does not make unnecessary superficial or superfluous visual statements.'

Examples of how this principle is being applied to the A66

Given the beauty and importance of the various landscape and heritage contexts, and their respective statutory designations, this is an important principle for the A66 Project – where the natural landscape should be predominant and the highway-related interventions as recessive as possible. With this in mind:

- Ensuring that the landscape design approach utilises native and specimen planting to soften the impact of the development, helping it to integrate into its surroundings.
- Ensuring lighting design is restrained to protect the area's night-time tranquillity and biodiversity, whilst meeting road safety requirements and also having regard to environmental considerations including sensitive human and ecological receptors.
- Utilising local materials appropriately to ensure that new development is respectful of its surroundings and integrates into the existing landscape as much as possible.
- Seeking to ensure that the highway design achieves a full standard rural cross-section where possible, whilst recognising that in certain situations it may be necessary to propose narrow verges or retaining structures to minimise impacts on adjacent land. This will be determined on a scheme-by-scheme basis.

Sample design features

- Non structural elements of overbridges faced with local stone.
- Specimen planting to replicate the species used within parkland and estate settings.

Good road design is environmentally sustainable

'Making an important contribution to the conservation and enhancement of the natural, built and historic environment, good road design seeks to achieve net environmental gain. It is multi-functional, resilient and sustainable, allowing for future adaptation and technical requirements, while minimising waste and the need for new materials.'

Examples of how this principle is being applied to the A66

- Ensuring the environmental sustainability of the project is appropriately assessed and mitigation measures integrated into designs. The DCO application will be accompanied by an Environmental Statement, establishing the significant effects of the proposed development on the environment and how they could be mitigated.
- Integrating drainage design as a key contributor to the project's overall environmental sustainability. Highway drainage is designed in accordance with appropriate standards, with:
- vegetated central reserves where appropriate, with provision for surface water channels and barriers.
- large areas of hardstanding within the central reserve avoided where possible.
- drainage managed via the incorporation of a series of attenuation basins designed as attractive landscape features.
- Consideration given to flood risk and appropriate mitigation measures. These are set out in the Road Drainage and Water Environment chapter of the ES for the DCO application, which will include a Flood Risk Assessment as an appendix. The Project will be designed to manage a 1 in 100-year return period event plus an allowance for climate change.
- Recognising opportunities for biodiversity net gain as a result of the Project.

Sample design features

- Ponds are proposed to be utilised through the Project as part of SuDS (Sustainable Drainage Systems) and, where possible, will be designed to also improve ecological habitats as well as managing drainage.

Good road design is thorough

'The result of robust processes that create a continual cycle of improvement, good road design starts with an in-depth understanding of people, place and context, learning from best practice worldwide. The design of all elements of the road environment are considered together and integrated into a responsive design.'

Examples of how this principle is being applied to the A66

- Taking account of local and site specific social, environmental and economic issues. Local geographical context and topography has been assessed to seek to retain existing viewpoints, setting and sense of arrival. Assessments undertaken as part of the PEIR stage have been developed further into a full Environmental Statement to accompany the DCO application.
- Applying a rigorous inter-disciplinary design process, involving periodic design reviews undertaken by the National Highays Design review Panel and independently appointed Design Council experts. Recommendations have helped to inform designs, as summarised in Chapter 4 of this document.

Sample design features

- Design rationalisation through working group presentations and independent design critique and check back processes.
- Strong emphasis on landscape led design throughout the project and use of local materials and planting to reflect local context.
- Respectful of existing topography and viewpoints ensuring that setting is prioritised and, where possible, preserved with the project.

Good road design is innovative

'Responding positively to change, good road design captures opportunities for betterment and develops in tandem with emerging new technologies. Designing to a standard is not the same as achieving good design; an innovative and resourceful approach that is mindful of context is necessary to achieve better outcomes.'

Examples of how this principle is being applied to the A66

- Ensuring that key design features are appropriately tailored to the unique qualities and characteristics of the A66 and its context and securing the delivery of these as part of the DCO consenting process.

Sample design features

- Exploring design opportunities in integrating these features into the environment.

Good road design is collaborative

'Collaboration ensures roads are useful to and accepted by the communities they serve. Collaborative working requires a rigorous process that identifies dependencies and wider opportunities, and facilitates effective communication and engagement from the start. Community engagement will be led by a local sense of culture, place and value.'

Examples of how this principle is being applied to the A66

- Undertaking extensive consultation and incorporating feedback into emerging designs, ensuring that local communities and other stakeholders have been given opportunity to comment on and influence scheme design. Public consultation has been an invaluable part of the design process to-date, in aiding understanding of local site context, identifying key issues and opportunities and in understanding the components that combine to shape the unique sense of place.
- Establishing working groups with statutory and non-statutory stakeholders, including the Environment Agency, local authorities and community groups to agree principles and influences for the scheme.
- Adopting a 'one team' approach that ensures ongoing cross-disciplinary working to provide holistic responses to design challenges.

Sample design features

- Junction design requirements reflect local context drawn out through engagement with the local community, such as, where possible retaining access to property and avoiding severance of land.

Good road design is long lasting

'With quality materials and careful detailing, good road design brings lasting value. The design process requires sufficient time for challenges to be resolved before delivery and is adaptable to future needs and technologies as part of the commitment to whole-life operation, management and maintenance.'

Examples of how this principle is being applied to the A66

- Incorporating appropriate technology to support the high standards of maintenance and operation of the new road.
- Adopting a robust management and maintenance governance regime.
- Ensuring design proposals provide future proofing where possible, including allowances for climate change adaptations and future road use growth throughout the life of the road.

Sample design features

- Drainage design is considered in relation to long-term needs, including climate change allowances.
- Locally sourced, contextually relevant materials are to be utilised where appropriate to be reflective of the history and character of the area, preventing the Project design proposals from appearing 'of its time' and incongruous to its surrounding. The design is futureproofed in landscape terms to blend with the existing landscape.

On 20 August 2021, it was announced that Highways England would be changing its name to National Highways. The name change reflects the role of the strategic road network – to connect the nation's regions – and the part it plays in setting Highways standards across the UK.

We have continued this consultation under the Highways England branding to avoid confusion but will be re-branding this project as of 8 November.

The remit of the organisation has not changed and we will continue to operate and maintain England's motorways and A roads.

This document is also available on our website at www.highwaysengland.co.uk

For an accessible version of this publication please call 0300 123 5000 and we will help you.

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