

**A66 Northern Trans-Pennine Project
TR010062**

**4.1 Project Development Overview
Report**

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A66 Northern Trans-Pennine Project
Development Consent Order 2022

4.1 PROJECT DEVELOPMENT OVERVIEW REPORT

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1. Introduction

1.1 Purpose of the Project Development Overview Report

- 1.1.1 The Project Development Overview Report (PDOR) describes the development of the route design and alignment for the A66 Northern Trans-Pennine Project (hereafter referred to as ‘the Project’). This report has been prepared to support the Development Consent Order (DCO) application in Spring 2022 by outlining the process of design development undertaken to date.
- 1.1.2 For the purposes of the PDOR, the Project is considered as eight schemes, from M6 Junction 40 Penrith to the west, to A1(M) Junction 53 Scotch Corner to the east, as outlined in Section 1.4 below. Since Statutory Consultation, the design of these schemes has continued to develop as part of National Highways’ staged development process known as the Project Control Framework (PCF) (refer to Section 3.2 for further information). Design development is a normal part of the lifecycle of bringing forward a major infrastructure project, and occurs for a number of reasons, including:
- Receipt of more detailed, new and/or revised information (such as additional environmental surveys, traffic modelling, and so on).
 - Further engagement with the public, with landowners, with statutory and non-statutory bodies (such as through Statutory and Supplementary Consultation; refer to Chapter 4) and having regard to this.
 - As a natural next phase of work beyond Option Selection to develop the design required for a Development Consent Order.
- 1.1.3 For the A66 Project, PCF Stage 3 has included further development of the design of the Preferred Route, as well as the identification of alternative alignment routes developed in response to further work undertaken to understand the baseline environment of the Project and having regard to consultation, engagement responses and feedback received.
- 1.1.4 The PDOR focuses on the principal changes to the route or other aspects such as the location of junctions. Design development has allowed National Highways to test, check and challenge previous findings, ensuring that the Project continues to meet its objectives (refer to Chapter 2 for further information).
- 1.1.5 The PDOR is a standalone document, supported by and building on its equivalent documents produced to accompany previous design iterations. For more information on design development during:
- PCF Stage 1 Option Identification, reference should be made to the Technical Appraisal Report contained in Appendix 1.
 - PCF Stage 2 Option Selection to inform the Preferred Route Announcement, reference should be made to the Scheme Assessment Report contained in Appendix 2.

- PCF Stage 3 Preliminary Design in preparation for Statutory Consultation, reference should be made to the Route Development Report contained in Appendix 3.
- 1.1.6 Further information on the design development principles is provided within the Project Design Report (PDR) (Application Document 2.3). The PDR summarises and illustrates the design proposals for which consent is being sought, explaining how these have been prepared with sensitivity to their context and how the principles of good design have been applied.
- 1.1.7 In addition, how design development has been informed by the engagement and consultation processes is set out within the Consultation Report (Application Document 4.4).
- 1.1.8 Alongside this design development, the Case for the Project has developed. Refer to this (Application Document 2.2) and the Legislation and Policy Compliance Statement (Application Document 3.9) for more information regarding policy tests introduced in Section 4.3 below, and how the Project in its developed sense conforms to these.

1.2 Project context

- 1.2.1 The existing A66 is a key national and regional strategic transport corridor and link for a range of travel movements. It carries high levels of freight traffic and is an important route for tourism and connectivity for nearby communities. There are no direct rail alternatives for passenger or freight movements along the corridor.
- 1.2.2 The A66 corridor crosses five local authority areas, being a mix of County, Unitary and District Councils, namely Cumbria County Council, North Yorkshire County Council, Durham County Council, Eden District Council and Richmondshire District Council. It runs through the North Pennines Area of Outstanding Natural Beauty between Brough and Bowes. The Lake District National Park is approximately 2km south-west of Penrith and the Yorkshire Dales National Park is located approximately 3.5km south of the A66.
- 1.2.3 Despite the strategic importance of the A66, the route between the M6 at Penrith and the A1(M) at Scotch Corner is only intermittently dualled and has six separate sections of single carriageway. The route also carries local slow-moving agricultural vehicles and other traffic making short journeys and there are a high number of private and direct access points onto the A66 along this length. These have an impact on other users and their safety, especially on the single carriageway sections. The variable road standards, together with the lack of available diversionary routes when incidents occur, affects road safety, reliability, resilience and the attractiveness of the route.
- 1.2.4 If the existing A66 route is not improved, it will constrain national and regional connectivity and may threaten the transformational growth envisaged by the Northern Powerhouse initiative, Transport for the North and the achievement of the Government levelling-up agenda. Refer to the Case for the Project (Application Document 2.2) for further information.

1.3 Project history

- 1.3.1 In 2014, the Department for Transport (DfT) announced its five-year investment programme for making improvements to the Strategic Road Network (SRN) across England. The Project is one of more than 100 schemes identified as part of the first Road Investment Strategy (RIS1) 2015-2020 published by the DfT. Funding for delivery of the Project has been confirmed within the DfT's second Road Investment Strategy (RIS2), which covers the period between 2020 and 2025 and was published in March 2020. The Project is aligned with the principles set out in RIS1 and RIS2 which promotes improving the road network to support the economy, create a greener network, making a safer and more reliable network, a more integrated network and a smarter network.
- 1.3.2 National Highways (formerly Highways England) has been appointed by the Secretary of State to be the highway authority, traffic authority and street authority for the Strategic Road Network Initial Report and pursuant to the Infrastructure Act 2015.
- 1.3.3 The upgrading of the existing A66 route is being led by National Highways, supported by a multi-disciplinary design team. An options appraisal has been undertaken through a staged process, that commenced at a strategic level in 2014 (see Chapter 3 for further information).
- 1.3.4 A Preferred Route was announced in May 2020. Preliminary Design commenced shortly afterwards, with design development including:
- Undertaking surveys (such as topographical, geotechnical and environmental);
 - Consulting with the community and stakeholders including exhibitions, preparing and making available preliminary environmental information, completing the consultation report for the Stage and resolving outstanding issues where practicable, conducting Supplementary Consultation as required;
 - Refining the preliminary design of the Preferred Route, including assessment of alignment alternatives where necessary following testing and validation of assumptions;
 - Preparing the DCO application;
 - Completing the EIA and preparing the ES in an iterative way to ensure that the design responds to and incorporates the appropriate mitigation for the environmental impacts that have been assessed.
- 1.3.5 Later in 2020, the A66 Northern Trans-Pennine project was identified as a pathfinder project under the UK Government's 'Project Speed' initiative, which aims to deliver public investment projects more strategically and efficiently. As a result, the Project was expedited to reduce the time taken to design, develop and deliver the works. To support this, the Project has been subject to a detailed pre-application process with regular and early engagement with the Planning Inspectorate, Local Authorities and Statutory Environmental Bodies to develop the Preliminary Design throughout PCF Stage 3. Refer to the Case for the Project (Application Document 2.2) for further information.

1.3.6 National Highways has submitted a DCO application to the Planning Inspectorate on behalf of the Secretary of State in Spring 2022. The application is supported by a range of plans and documents, including this Project Development Overview Report.

1.4 Project summary

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

1.4.2 The eight schemes are identified as follows:

- M6 Junction 40 to Kemplay Bank
- Penrith to Temple Sowerby
- Temple Sowerby to Appleby
- Appleby to Brough
- Bowes Bypass
- Cross Lanes to Rokeby
- Stephen Bank to Carkin Moor
- A1(M) Junction 53 Scotch Corner

1.4.3 Previous consultation materials split the Temple Sowerby to Appleby scheme into two sections, Kirkby Thore to the west and Crackenthorpe to the east. For the purposes of the Project Development Overview Report, these sections have been combined into a single scheme to better reflect the approach to design development during PCF Stage 3.

1.4.4 Further information on the Preliminary Design of each scheme is provided in Chapter 5 and is shown visually in Application Document 2.5 General Arrangement Drawings.

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

1.5 Structure of this document

1.5.1 The structure of this document is as follows:

- Sections 1.2, 1.3 and 1.4 set out the Project context, history and description.
- Chapter 2 covers the Project objectives for the A66 Northern Trans-Pennine Project as a whole. It outlines what National Highways have set out to achieve with this nationally significant infrastructure project development and delivery.
- Chapter 3 provides a summary of previous route options assessments carried out, from PCF Stages 0 (Strategy, shaping and prioritisation), 1 (Option identification) and 2 (Option selection).
- Chapter 4 provides an overview of the design development process that has followed during PCF Stage 3 (Preliminary Design).
- Chapter 5 covers the design development of each scheme. From west to east, these are: 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.

2. Project objectives

2.1.1 The core Project objectives for the A66 Northern Trans-Pennine Project are as summarised in Table 1 below.

Table 1 Project objectives

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

2.1.2 These objectives are aligned with National Highways' three priorities, as detailed below:

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

2.1.3 These priorities underpin everything that National Highways does and are critical to guiding the progression of the A66 Northern Trans-Pennine Project through successful planning, delivery, management and operation.

3. Summary of previous route options assessments

- 3.1.1 A summary of previous route options assessments carried out is presented below.
- 3.1.2 Note that information on the assessments for each scheme is presented in Chapter 5 below and that this Chapter 3 text is intended only as an overview of the general process.
- 3.1.3 To provide context, a summary of the previously referenced National Highways' staged development process known as the Project Control Framework is included below.

3.2 About the Project Control Framework

- 3.2.1 The Project Control Framework (PCF) is a joint Department for Transport and National Highways approach to managing major infrastructure projects. It is designed to support the development and delivery of major projects and comprises a standardised project life cycle, deliverables, project control processes and governance arrangements.
- 3.2.2 All major highway projects are progressed through the PCF, which is split into four phases:
 - The Pre-project phase – PCF Stage 0 – identifies and prioritises potential transport issues; shaping, investigating and assessing the viability of solutions to the problem(s).
 - The Options phase - PCF Stages 1 and 2 – identifies the preferred solution to the transport problem. By the end of this phase there is certainty that, for example, the project will involve widening along a specific route.
 - The Development phase – PCF Stages 3, 4 and 5 – focuses on the design of the preferred solution taking it through the necessary statutory processes up to the point where a decision to commit to invest in, for example, building the road solution can be made.
 - The Construction phase – PCF Stage 6 and 7 – is where the solution is built, handed over for operation and the project delivery vehicle is closed out and completed.
- 3.2.3 These phases cover eight Stages of project development, known as the Major Projects Lifecycle. The A66 Northern Trans-Pennine Project is within the Development phase as shown in Figure 1 below, and with the submission of the DCO application, has now passed through PCF Stage 3.

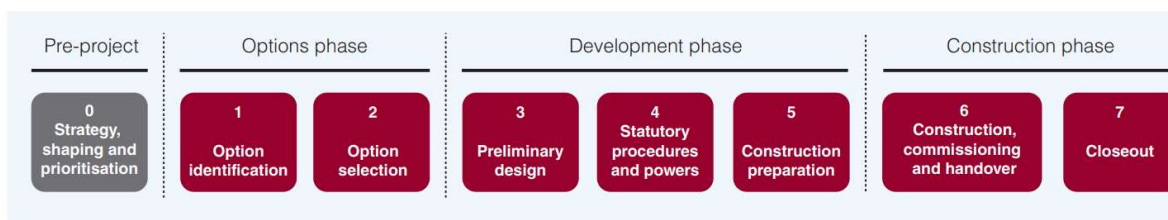


Figure 1 Project Control Framework Major Projects Lifecycle

3.3 Pre-project phase – PCF Stage 0 Strategy, shaping and prioritisation

3.3.1 In 2014, as part of National Highways’ first Roads Investment Strategy, the Northern Trans-Pennine Routes Strategic Study (NTPRSS) was announced. This study formed one of six national strategic studies located throughout England with aims to improve connectivity and deliver transformational economic growth across the Northern Region.

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

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

3.3.3 The study objectives of the NTPRSS are as summarised in Table 2 below.

Table 2 Summarised Northern Trans-Pennine Routes Strategic Study objectives

No.	Study objectives
1	Understand the current performance and constraints of the existing road infrastructure, and confirm the strategic case for considering further investment.
2	Identify options for a new strategic corridor upgrading one or both of the A66/A685 and A69 and making other improvements along their length.
3	Understand the operational benefits and challenges of the construction of each of the options, including issues with weather related resilience, diversions following incidents, the safety impact on road users and local communities and highway maintenance impacts.
4	Understand the benefits and impacts resulting from the provision of a new strategic corridor – including the benefits and impacts accruing on the M62 and other existing trans-Pennine routes, including local roads – to further inform the strategic and economic case for investment in new road infrastructure in the corridor.
5	Have reference to and reflect wherever possible the key findings of the other northern Strategic Studies (Trans-Pennine Tunnel and Manchester (M60) North-West Quadrant). Specifically, understand the interdependencies between the potential options arising from these studies.

Sub-stage 1 - Identification of the issues

3.3.4 This sub-stage sought to identify the main issues, needs and context within the wider corridor of transport routes that cross the Pennines to determine the need for intervention. This included a review of the overall transport context for the Northern Trans-Pennine corridors, such as:

- Strategic highways overview (for the A66, A685 and A69 routes)
- Rail infrastructure and services (to understand the suitability of rail infrastructure to provide a valid alternative to road-based trips)
- Long distance bus and coach services (to understand the suitability of bus infrastructure to provide a valid alternative to car-borne trips)

- Freight demand
 - Ports and airports.
- 3.3.5 Due to the significant local interest in the NTPRSS, a Stakeholder Reference Group (SRG) was established to provide input into the project as it developed. This list (as provided in the Stage 1 Report, see Appendix 4) was maintained by the DfT and was used to identify key organisations that would be consulted as the study progressed.
- 3.3.6 The SRG helped identify corridor-level issues and problems at this stage such as:
- Reliance on good transport links for local people, including road distances to a range of key services such as GP surgeries, schools, supermarkets and Post Office (not always available locally). Also, access to employment opportunities.
 - Public transport alternatives to the road links were generally poor, with no rail line to provide an alternative public transport route to the A66 between Darlington and Penrith, and low bus service provision (partial coverage and infrequent services). Public transport options for the A69 were better, with the Newcastle to Carlisle railway broadly following the same alignment as the A69 corridor, and bus services available between Newcastle and Carlisle (including an express service between Hexham and Newcastle).
 - Unreliability of journey times for road users, due to the impact of slow-moving vehicles on single carriageway sections.
 - Journey uncertainty for road users, due to the impact of incidents on single carriageway sections making it more difficult to keep routes wholly open.
 - There were frequent road closures on the A66, more than ten times as many as were recorded on the A69 for the same period. The greatest number of A66 closures were recorded between Scotch Corner and Greta Bridge and between Brough and Bowes. Many of these were due to planned roadworks but there were still incidences of closures due to bad weather including severe snow falls, high winds and flooding.
 - In the event of incidents on the road corridors, diversionary routes are poor for traffic on both the A66 and A69, particularly for HGVs. Given height and weight restrictions on the A685 and A688 it is often necessary for freight traffic on the A66 to divert via the A69 or M62 in event of incidents.
 - Both the A66/A685 and A69 corridors are important freight links, although the A66 in particular is under-utilised for freight traffic, given the comparative travel distances and journey times. Journey reliability did not meet the requirements of an efficient freight industry, causing poor service delivery, reduced productivity and higher transport costs.
 - The lack of real-time journey information also exacerbated the journey uncertainty and unreliability issues and prevented better journey planning.
 - There were major environmental constraints in the corridor, including Special Areas of Conservation and SSSIs along the A66, A685 and A69 routes.

3.3.7 The corridor-level issues and needs identified by the SRG were considered for interventions on the A66, the A685, and the A69 routes. These were assessed in accordance with the DfT's Transport Analysis Guidance (TAG) and considered:

- The situation at that time, including; relevant transport policy, the existing economic and transport context, network operations and safety, and environmental considerations associated with the operation of the various corridors.
- The future situation, including some initial forecasts of the economic and transport context associated with the operation of the various routes.
- The need for intervention.
- Intervention-specific objectives, including the objectives of the NTPRSS and confirming the geographical area of coverage associated with the North Pennines region.

3.3.8 Sub-stage 1 highlighted the importance of these highway corridors, but particularly the A66, as strategic east-west routes across the north of England. This was considered a main driver of the strategic case for intervention, to ensure that these links do not constrain the future economic growth of the North of England, as associated with the Northern Powerhouse agenda.

3.3.9 The case for intervention on the A66/A685 was summarised as:

- It is a key national and regional strategic link for a range of south-north and east-west movements, particularly for freight.
- Its importance will only increase with the economic growth of the Northern Powerhouse agenda, and other strategic road link improvements.
- The current standard of the route, principally its reliability, is constraining the use of the route and inhibiting strategic connectivity and economic growth.
- These problems will worsen as economic development and traffic growth takes place.
- Interventions will therefore have a positive impact on travel reliability, network resilience and future national and regional connectivity and economic growth.

3.3.10 This case for intervention on the A69 was summarised as:

- The A69 performs a key function in integrating communities along the route into the wider northeast / northwest economy.
- The route also supports access to key tourist destinations and some inter-regional freight.
- There are some specific issues along the route which will constrain the future economic development of the communities and development growth areas, such as Carlisle and Newcastle airports.
- Interventions will therefore have a positive impact on the economic vitality of local communities; the attractiveness of specific development areas; network resilience and future regional connectivity and economic growth.

3.3.11 These cases were further developed through Sub-stages 2 and 3 as outlined below.

Sub-stage 2 - Generating and evaluating a longlist of options (to identify a shortlist)

3.3.12 This Sub-stage involved the identification, assessment and prioritisation of any potential infrastructure improvements for upgrading one or both of the A66/A685 and A69 routes and making other improvements along their lengths. The longlist of potential options was identified in an option generation workshop, attended by representatives from Highways England, the Department for Transport and the wider project team. The outcomes of this workshop were then presented to a Stakeholder Reference Group as introduced in 3.3.5 above, and an additional workshop session held with this Group to identify any additional options not previously considered.

3.3.13 Potential options identified were then assessed against intervention-specific objectives, developed from the performance issues and constraints of the routes and consultation with the SRG. These are summarised in Table 3 below.

Table 3 NTPRSS intervention -specific objectives

Theme	Description
Economic growth	Support the economic growth objectives of the Northern Powerhouse agenda
	Improve access to regional economic centres and local growth sites served by the A66/A685 and A69
Connectivity	Ensure the improvement and long-term development of the SRN through providing better national connectivity
	Improve the A66/A685 and A69 as strategic connections for freight traffic
	Maintain and improve access for tourism served by the A66/A685 and A69
	Improve (and as a minimum maintain) access to services and jobs for all local road users
Network performance	Improve journey time reliability for road users
	Reduce the number and seriousness of incidents involving road users including Non-Motorised Users (NMUs) ¹
	Improve the resilience of the routes to the impact of events such as roadworks and severe weather events
Environment	Reduce the impact of the routes on severance for local communities
	Minimise adverse impacts on the environment and where possible optimise environmental improvement opportunities

3.3.14 Option assessment was then undertaken in line with the standard DfT Transport Analysis Guidance in two main stages:

- Application of DfT's Early Appraisal and Sifting Tool (EAST) and assessment against Intervention Specific Objectives.
- A more detailed Option Assessment Framework (OAF) to identify the shortlist.

¹ The term 'Non-Motorised Users (NMU)' has been replaced in subsequent stages with 'Walkers, Cyclists and Horse-riders (WCH)'.

- 3.3.15 The long list of 43 strategic options identified within the NTPRSS corridor, included 20 strategic options for the A66, 18 strategic options for the A69 and 5 strategic options for the A685.
- 3.3.16 Two categories of options (including one sub-category) were developed for the A66:
- Route-long interventions were options for improving the route as a whole, involving large-scale route improvements or a large number of smaller improvements of similar types along the routes. A route-long weather resilience sub-category was also included on the A66 due to the number of interventions aimed at tackling this issue (as introduced in 3.3.6 above).
 - Individual highway interventions were options aimed at improving one localised part of the route, either a junction or a specific route sub-section.
- 3.3.17 Route-long interventions and individual highway interventions were also considered for both the A69 and A685 options.
- 3.3.18 Other, non-highway interventions were also considered at this sub-stage. These were described as any intervention in the study area aimed at tackling route issues without the need for a highway scheme. Non-highway interventions were identified for the A69 route but not for the A66 given the conclusion reached during Sub-stage 1 that there is no rail line to provide an alternative main mode and public transport route to the A66 between Darlington and Penrith (whereas the Carlisle to Newcastle railway provided a public transport alternative to the A69 as part of the NTRPSS).
- 3.3.19 The original longlist of options was discussed with the Stakeholder Reference Group through workshops and comments received. The outcome from Sub-stage 2 was to take forward four options for the A66 to the next stage of the assessment, as outlined below:
- A66 dualling, to dual all remaining single carriageway sections of the A66.
 - Improvement of the existing at-grade junction. Could be delivered as a standalone scheme or as part of the A66 dualling option.
 - Dualling the section of the A66 between Greta Bridge and the A6 at Scotch Corner.
 - Dualling the section of the A66 between Temple Sowerby and Brough.
- 3.3.20 In addition, at that time and stage, it was recommended that three options for the A69 and one option for the A685 were to be taken forward to Sub-stage 3.

Sub-stage 3 - Assessment of the shortlist of options

- 3.3.21 A more detailed assessment and appraisal of the eight shortlisted options, including the four options for the A66, was undertaken using DfT Transport Analysis Guidance, including environmental assessments. The feasibility work undertaken explored the strategic case and benefits of potential options for the A66, A685 and A69 corridors.
- 3.3.22 The outcomes from this final Sub-stage were published in the Northern Trans-Pennine Routes Strategic Study Stage 3 Report (Appendix 5). The

study identified options that can feasibly be constructed, and can be operated and used safely, and provided information on the strategic, economic, safety, environmental and operational benefits and impacts for each of the feasible options for the Northern Trans-Pennine corridor. It was recognised that some of the options may have significant wider economic costs and benefits, in particular through impacts on the local labour and product markets and the economic geography of the northern transport area.

- 3.3.23 These strategic benefits align with Transport for the North aspirations to improve connectivity, and recommendations from the Northern Powerhouse Independent Economic Review to deliver transformational economic growth across the Northern Region.
- 3.3.24 Based on the emerging business cases at this time (see Business Case A66 Schemes in Appendix 6 and Business Case A69 Schemes in Appendix 7), a recommendation was made that PCF Stage 1 development of A66 dualling should be undertaken. Strategic benefits highlighted included:
- Journey time savings, particularly for strategic trips (including freight).
 - Safety improvements, including a reduction in accidents (due to increased capacity significantly reducing the need for vehicles to overtake others on busy sections of single carriageway).
 - Improved reliability (dual carriageway sections would reduce delays, incidents and the need for road closures).
- 3.3.25 Smaller-scale interventions on the A69 were also recommended, such as the junction improvements at Bridge End in Hexham, recently completed in 2021. The provision of a bypass of Kirkby Stephen on the A685 was not progressed on account of the proposals representing poorer value for money when compared to the other options assessed.
- 3.3.26 The commitment to dualling the remaining single carriageway sections of the A66 between Penrith and Scotch Corner was announced in the HM Treasury Autumn Statement of 2016.

3.4 Options phase - PCF Stage 1 Option identification

- 3.4.1 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).
- 3.4.2 For the A66 Northern Trans-Pennine Project, PCF Stage 1 Option Identification began in 2017 when National Highways commissioned their technical consultant for the stage, with a brief to identify viable dualling options for consideration.
- 3.4.3 This work culminated in the Technical Appraisal Report (TAR) of November 2018, provided in Appendix 1. The TAR identified several longlist options for each of the schemes along the route of the A66 Northern Trans-Pennine Project. These options were then appraised and those which performed poorly against the Project objectives were not taken

forward to shortlisting. Those shortlist options were as shown below in Table 4 (adapted from Table 1-2 in the TAR):

Table 4 Shortlist options recommended for public consultation

Scheme	Option	Description
M6 Junction 40 to Kemplay Bank Roundabout	2B	Underpass option at Kemplay Bank
	2E	Flyover option at Kemplay Bank
Penrith to Temple Sowerby	4A	Online dualling option, with offline section to the south of High Barn
	4B	Online dualling option
Temple Sowerby to Appleby	6H1	Kirkby Thore southern bypass
	6J1	Kirkby Thore northern bypass
	6F2	Crackenthorpe bypass, utilising disused railway
	6G2	Crackenthorpe bypass, utilising in part of the old Roman Road
Appleby to Brough	8C1	Warcop West – online dualling
	8A2	Warcop East – offline dualling to the south of the existing A66
Bowes Bypass	10A	Bowes East – online dualling
Cross Lanes to Rokeby	12A	Online dualling, with an offline section to the south avoiding the Old Rectory
	12B	Online dualling
Stephen Bank to Carkin Moor	14A	Western section online dualling, then offline to the south, re-joining A66 to east of Carkin Moor Roman Fort
	14F	Western section online dualling, then offline to the north, re-joining A66 to the west of Carkin Moor Roman Fort
	14G	Western section online dualling, then offline to south, followed by offline to north, re-joining A66 to the west of Carkin Moor Roman Fort

3.4.4 Information on the assessment criteria employed to arrive at these options can be found in the PCF Stage 1 Technical Appraisal Report.

3.5 Options phase - PCF Stage 2 Option selection

3.5.1 During PCF Stage 2, those shortlisted options, identified during PCF Stage 1 (refer to Table 4 above) were subject to a more detailed engineering, traffic, economic, safety, environmental and operational appraisal. Those options that performed satisfactorily against the Project objectives, assessment criteria and relevant policy objectives were presented to the public during a non-statutory consultation in Summer 2019. Further information on this process can be found in the Scheme Assessment Report (SAR) published January 2020 and provided in Appendix 2.

3.5.2 Comments received were analysed, and then informed further refinement of the cost estimate for the preferred option (including allowance for risk),

and for the environmental impact assessment, traffic forecasts and economic benefits to be refined if required. This environmental impact assessment stage was informed primarily by desk study information supported with some preliminary, focused surveys.

Public consultation 2019

- 3.5.3 Non-statutory public consultation ran in early Summer 2019. During this consultation stakeholders provided feedback that informed the themes for assessment of the options considered. These themes further informed Option Selection of PCF Stage 2 and the eventual selection of the Preferred Route.
- 3.5.4 These consultation sessions sought to provide a range of opportunities to engage with and provide feedback on options. This included holding 21 events in local areas along the route, as well as meetings with key stakeholders such as local planning authorities, parish councils, ward representatives, landowners, local residents and other road users.
- 3.5.5 Information provided at these consultation events focused on the options proposed for each scheme. The responses from these consultation exercises informed the selection of the Preferred Route for each of the schemes that form the Project. Those who engaged with and responded to this consultation demonstrated that there was overwhelming support for the need to make improvements to the A66, although it is acknowledged that this is not necessarily representative of those stakeholders who did not engage with or respond to the consultation.

Preferred Route Announcement May 2020

- 3.5.6 The Preferred Route Announcement (PRA) for the A66 Northern Trans-Pennine Project was made in May 2020 following public consultation and option selection.
- 3.5.7 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. Refer to the Consultation Report (Application Document 4.4) for further information.
- 3.5.8 The Preferred Route was as shown in Figure 2 and detailed in Table 5. It identified eight sections (referred to as schemes) for upgrade to dual carriageway standard along the A66. In total, the Preferred Route covered approximately 30km of the A66. Further information on each of the schemes can be found in Chapter 5 below.

The preferred route

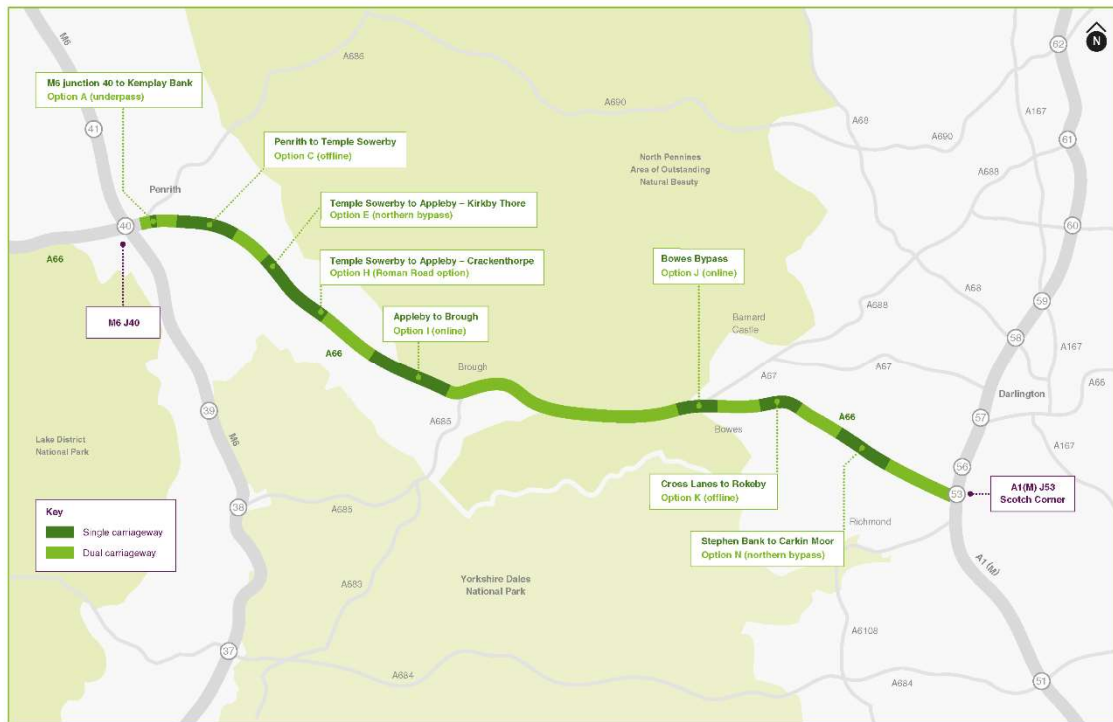


Figure 2 Preferred Route as announced in May 2020

Table 5 Preferred Route as announced in May 2020

Scheme	Preferred Route Option	Developed from PCF Stage 1 Option
M6 J40 to Kemplay Bank Roundabout	Option A	2B
Penrith to Temple Sowerby	Option C	4A
Temple Sowerby to Appleby – Kirkby Thore	Option E	6J1
Temple Sowerby to Appleby – Crackenthorpe	Option H	6G2
Appleby to Brough	Option I	8C1 + 8A2
Bowes Bypass	Option J	10A
Cross Lanes to Rokeby	Option K	12A
Stephen Bank to Carkin Moor	Option N	14F

4. Design development process

4.1 PCF Stage 3 Preliminary Design

4.1.1 As described above, the A66 Northern Trans-Pennine Project has been progressed through National Highways' PCF Stages 1 and 2 and is now at the end of PCF Stage 3 Preliminary Design. Work undertaken during this stage has included:

- Undertaking surveys, such as topographical, geotechnical and environmental surveys, to provide further information about the route and its surroundings.
- Community consultation including exhibitions, preparing consultation reports, having regard to the feedback from consultation and resolving outstanding issues where practicable.
- Regular engagement with local authorities, Statutory Environmental Bodies (SEBs), affected land interests and landowners as required, and other key stakeholders.
- Developing the preliminary design of the Preferred Route in line with new data obtained.
- Preparing the plans and reports that will support the Development Consent Order application.
- Undertaking the Preliminary Environmental Information Report (PEIR) for Statutory Consultation, plus the Environmental Impact Assessment (EIA) and Environmental Statement (ES) to support the DCO application.
- Initial construction contractor engagement, including involvement of National Highways' regional Delivery Integration Partners (DIPs) in the preliminary design and construction methods.

4.1.2 This work is undertaken alongside design development, which Chapter 5 below sets out for each scheme along the route of the A66 Northern Trans-Pennine Project. This includes where additional assessment and/or appraisal has been required and provides detail of supplementary consultation undertaken.

4.2 Design development principles

4.2.1 Development of design as part of PCF Stage 3 has been based on a number of design principles; further information on these can be found in the Project Design Report (Application Document 2.3) and the Project Design Principles (Application Document 5.11). These design principles are summarised as shown in Figure 3:



Figure 3 PCF Stage 3 design principles

4.2.2 In practice, this means integrating where practicable the following design features for the lengths of new and improved carriageway:

- Typically, each carriageway will comprise two lanes in each direction at national speed limit, with hard strips and a central reserve.
- Verges will be provided, with sufficient width to provide adequate visibility, highway drainage, communication ducts and street furniture.
- No right-turn junctions will improve safety by removing the need to cross the central reserve and opposing traffic. A continuous safety barrier will be included in the central reserve.
- Side roads will be designed as left on/left off junctions if a replacement provision is being provided.
- Side roads and private means of access will be gathered where appropriate to minimise the number of direct accesses onto the A66.
- Emergency lay-bys and parking lay-bys will be provided as required.
- Grade-separated junctions will be utilised.
- Design reflects local context, understood through engagement with the local community. This includes alternative provision where necessary for walkers, cyclists and horse-riders, and slow-moving vehicles.

4.2.3 Construction and buildability have been considered during PCF Stage 3 Preliminary Design via input from specialist contractors. However, whilst each scheme has its own context and bespoke elements such as topographical, land or structure requirements, schemes share a number of construction principles which will be core to the design and delivery of the Project. Further details on these principles, wider indicative phasing and outline methods are set out in ES Volume 1 (Main Report), Chapter 2 – The Project (Application Document 3.2).

4.2.4 Construction criteria have also informed the route selection assessments. Route design has considered the benefits and impacts of the route, material movements and impacts on stakeholders during construction. Where practicable, new land take has been reduced and an earthworks balance has been sought to reduce material movements, disturbance and other associated construction impacts. .

4.2.5 ES Volume 1 (Main Report), Chapter 2 – The Project (Application Document 3.2) outlines the intentions of the Project with respect to

minimising disturbance and maintaining safety for users, optimum works phasing and traffic management, management of environmental impacts, identification of suitable compound locations and information on material management and storage for the duration of the construction phase.

- 4.2.6 National Highways has a number of regional partners known as Delivery Integration Partners to assist with construction of the Project. The DIPs work collaboratively together with the project team to allow construction and buildability considerations to be integrated throughout preliminary design and decision making. This has also involved consideration of constraints and gathering the necessary information to produce a delivery programme for construction of the Project.

4.3 Design development for Statutory Consultation Autumn 2021

- 4.3.1 Whilst designs for all schemes had been refined to account for new and developing understanding and information obtained prior to Statutory Consultation, three schemes also had alternative route or junctions assessment and appraisal work undertaken. The Route Development Report provided in Appendix 3 gives more information on this process and its outcomes. The alternatives considered within these schemes were:
- Scheme-wide route alternatives within the Temple Sowerby to Appleby scheme (refer to Section 5.4).
 - Localised route alternatives within the Appleby to Brough scheme (refer to Section 5.5).
 - Junction alternatives within the Cross Lanes to Rokeby scheme (refer to Section 5.7).
- 4.3.2 The additional assessment and appraisal work associated with these alternatives was necessary for these schemes to further test, check and challenge previous findings and to ensure the Project continued to meet its objectives. Opportunities to further reduce the environmental and ecological impact as well as the impacts on designated areas and features (such as the Area of Outstanding Natural Beauty, Special Area of Conservation, Special Protection Area and Scheduled Ancient Monuments present along the route) were also considered as part of the evaluation of the alternatives.
- 4.3.3 The requirement for additional alternatives assessment and appraisal work for each of these schemes arose from consideration of scheme-specific issues. Due to the scale of deviation from the PRA for Temple Sowerby to Appleby, this resulted in an updated longlist of concept-level alternatives being developed and considered. An initial sifting process, based on the principles of PCF Stages 1 and 2 and the information available at the time, was adopted in order to identify a shortlist of options for further and more detailed assessment.
- 4.3.4 Following shortlisting of these alternatives, a comparative assessment was undertaken utilising a multi-disciplinary sifting matrix. This sifting matrix identified discipline criteria and sub-criteria as shown in Table 6 below,

which aligned to the Project objectives (refer to Chapter 2) and National Policy to assess alternatives identified during the design process against the developed PCF Stage 2 options.

Table 6 Discipline-specific assessment criteria for sifting matrices

Engineering	Highways standards compliance, utilities, geotechnics and earthworks, structures, drainage and hydrology, Construction Design Management (CDM), construction cost, buildability
Environment (during construction and operation)	Biodiversity, road drainage and water environment, geology, soils, contaminated land and groundwater, noise and vibration, landscape and visual, population and human health, air quality, material, assets and waste, cultural heritage, climate
Traffic and economics	Traffic volume, journey time savings, safety, economy, accessibility (including walking, cycling and horse-riding opportunities)
Stakeholders	Land take, residential, commercial, recreation and leisure, wider community issues
Policy conformity	National Policy, Local Development Plans

- 4.3.5 The performance of a proposed alternative for a scheme was recorded as having a better, neutral or worse impact with respect to each of these criteria when compared to the baseline. Explanation and justification for these assessed outcomes were recorded in the matrices.
- 4.3.6 Following the assessment against individual criteria the assessment matrix was considered holistically by the integrated project team using professional judgement and evaluation to determine a preference based on the balance of all the factors presented. No specific weighting mechanism was used albeit the relevance of assessment impacts such as policy conformity and the likelihood of development consent being granted were given greater consideration during the assessment and subsequent reviews.
- 4.3.7 Policy conformity as outlined above is critical to review and assessment of designs developed during PCF Stage 3 Preliminary Design, as any proposals taken forward to application for a DCO must conform with national policy. Section 104(3) of the Planning Act 2008 requires that:
- “(3) The [Secretary of State] must decide the [DCO] application in accordance with any relevant national policy statement, except to the extent that one or more of subsections (4) to (8) applies.”*
- 4.3.8 The relevant national policy statement that applies is the National Networks National Policy Statement (NNNPS) and its associated policies. Within this, there are key policy tests set out regarding development within internationally and nationally designated sites such as the Special Area of Conservation at Temple Sowerby to Appleby, the Area of Outstanding Natural Beauty at Appleby to Brough, and the Grade II* Registered Park and Garden at Rokeby Junction. Specific requirements are outlined in 5.4 through 5.7 below as appropriate.
- 4.3.9 Copies of all the sifting matrices produced to assess alternatives for Temple Sowerby to Appleby, Appleby to Brough, and Cross Lanes to Rokeby can be found appended to the Route Development Report

produced for Statutory Consultation in Autumn 2021, provided in Appendix 3. For each of these schemes, additional stakeholder engagement events were held throughout Summer 2021 to outline the alternatives being considered, and to gather feedback that could further inform the development of the design. Refer to 5.4 through 5.7 below for information.

- 4.3.10 A preferred alignment was presented at Statutory Consultation in Autumn 2021 for all schemes. Information for each scheme is provided in Chapter 5 below. As part of the Statutory Consultation, consultees were invited to provide feedback on the preferred alignment and provide their comments formally through that channel. As information was provided at Statutory Consultation on the alternative alignments and junctions outlined above, consultees could also make comments on these alternatives and provide an explanation of why they favoured an alternative. Feedback received has since been reviewed and regard given to it in the final preparation of the application for Development Consent. Where appropriate, this has resulted in further design development post-consultation, as described below.

4.4 Design development for DCO application Spring 2022

- 4.4.1 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.
- 4.4.2 In addition to these developments, a detailed review of feedback received throughout Statutory Consultation was undertaken to further inform preliminary design. Further information about this process and how regard has been given to the feedback can be found in the Consultation Report, that is submitted with the DCO application.
- 4.4.3 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.
- 4.4.4 Issues common across all schemes on the Project are outlined below, with scheme-specific information provided in Chapter 5.

Engineering

- 4.4.5 Throughout, refinements have been made to highway geometry and access arrangements where a betterment on the Autumn 2021 design has been recognised in response to newly available information.
- 4.4.6 Departures from Standard (DfS) applications have been minimised where practicable. DfS are sought when a design that is fully in compliance with design standards would have disproportionately high costs, environmental impacts or consequences to construction programme associated with them.
- 4.4.7 Road Safety Audit feedback was made available to the design teams following Statutory Consultation. This feedback was assessed by the design team and the design updated accordingly as captured in the Road

- Safety Audit Designer's Response. Scheme-specific information (where relevant) can be found in Chapter 5 below. Otherwise, refer to Chapter 9 of the Transport Assessment (Application Document 3.7).
- 4.4.8 All schemes (with the exception of A1(M) Junction 53 Scotch Corner) include lengths of de-trunked A66 as a result of the Project. The detail of any proposed changes to the de-trunked lengths will be agreed with the relevant Local Authority where appropriate.
- 4.4.9 All existing lay-bys affected by the Project will be retained where practicable and/or replaced within the DCO Order Limits. Where new lay-bys are proposed, these would be provided in accordance with current Design Manual for Roads and Bridges (DMRB) standards.
- 4.4.10 Observation platforms have been included at strategic locations following consultation with stakeholders to give the appropriate level of operational coverage for the relevant parties which use them (such as Police, and National Highways' Traffic Officers). These platforms have been located as pairs, one eastbound and one westbound, on the Penrith to Temple Sowerby, Appleby to Brough, Cross Lanes to Rokeby, and Stephen Bank to Carkin Moor schemes.
- 4.4.11 Across all schemes, the design of structures and geotechnical elements such as overbridges and embankments has been refined following Statutory Consultation feedback, further survey information and the wider design development of the Project. For the key principles driving the design of these elements, including cut/fill balances, integration with the surrounding landscape and ensuring user needs are met, refer to the Project Design Principles (Application Document 5.11).
- 4.4.12 The design of drainage infrastructure such as cut-off ditches and drainage attenuation ponds has also been refined following Statutory Consultation feedback, further survey information and the wider design development of the scheme. For the key principles driving the drainage design, including water quality requirements, refer to ES Volume 1 (Main Report), Chapter 14 - Road Drainage and Water Environment (Application Document 3.2).
- 4.4.13 Flood modelling undertaken throughout Preliminary Design has been refined to address feedback received from SEBs, via regular dialogue and on the Preliminary Environmental Impact Report produced for Statutory Consultation. For further information, refer to ES Volume 3 (Appendices) – Appendix 14.2 Flood Risk Assessment and Outline Drainage Strategy (Application Document 3.4).
- 4.4.14 Where practicable, drainage ponds have been reshaped throughout the Project to allow them to better integrate with landholdings in response to Statutory Consultation feedback. The Project Design Principles (Application Document 5.11) seek to further integrate ponds into the landscape as part of detailed design. Where practicable, pond locations avoid areas of established vegetation, and have been rationalised to reduce required permanent acquisition of land. For information on landscaping and environmental mitigation proposals, refer to ES Volume 1 (Main Report), Chapter 10 – Landscape and Visual (Application Document 3.2).

- 4.4.15 Engagement with utilities providers has informed preliminary design and identified potential utilities diversions, protection works, temporary works and easements. National Highways' DIPs will undertake further survey works as required to develop these arrangements during detailed design. Refer to ES Volume 1 (Main Report), Chapter 2 – The Project for information.
- 4.4.16 In addition, the locations of proposed construction compounds for the duration of the works have evolved to reflect design development undertaken to date. As such, Supplementary Consultation was carried out through early 2022 to gather feedback from landowners and stakeholders on the developed proposals. For further information on Supplementary Consultation, refer to 4.4.43 through 4.4.45 below and Chapter 7 of the Consultation Report (Application Document 4.4).
- 4.4.17 Concerns regarding traffic management and diversion routes during construction works featured in feedback received from Statutory Consultation (refer to Chapter 6 of the Consultation Report (Application Document 4.4) for information). The agreed strategies of each appointed construction contractor would seek to mitigate disruption and congestion where practicable. Refer to ES Volume 1 (Main Report), Chapter 2 – The Project for information.
- 4.4.18 Detailed design would consider all aspects of the preliminary design in greater detail. Signage, pavements, signal design and accommodation works are examples of specific aspects that would be defined during detailed design.

Environment

- 4.4.19 Where practicable, environmental mitigation measures have been refined to reflect alterations to the engineering design, allowing reduction in permanent acquisition of land and a subsequent adjustment to the DCO Order Limits to reflect this. Further information on the approach taken to design can be found in the Project Design Report (Application Document 2.3) and Project Design Principles (Application Document 5.11).
- 4.4.20 Feedback received during Statutory Consultation factored in this development of proposals; refer to Chapter 6 of the Consultation Report (Application Document 4.4) for information.
- 4.4.21 Through design development, opportunities have been identified to improve the setting and visual impact of the scheme. As a result, landscaping to provide improved visual screening has been proposed on several schemes. For information on specific landscaping and environmental mitigation proposals, refer to ES Volume 1 (Main Report), Chapter 10 – Landscape and Visual.
- 4.4.22 Design development has also involved a review of the analysis processes undertaken to assess Climate impacts, as reported in the PEIR prepared for Statutory Consultation. Upon reviewing the original assumptions, ahead of undertaking the modelling for the developed design, it was found that the assumptions for ground treatment were significantly higher than for other highways projects.

- 4.4.23 This disparity was recognised to be the result of including all site-won material in the ground stabilisation calculations, rather than only a portion of it. This resulted in a significant over-estimation of the carbon impacts of the A66 Project. The modelling and associated assumptions have now been updated and checked for the Climate assessment for the ES, submitted in support of the DCO application in Spring 2022.
- 4.4.24 This correction to ground stabilisation impacts has resulted in a significant reduction to the reported carbon dioxide (CO₂) emissions for the Project. However, it is important that this is not interpreted as an actual reduction in emissions arising from design development undertaken since Autumn 2021; it is a correction to the methodology used to assess emissions for the Project.
- 4.4.25 The impacts of these updates to schemes where alternatives were assessed prior to Statutory Consultation, are outlined in Chapter 5 of this report. The updated modelling has resulted in an improvement for all alternatives assessed and has not altered the preferred scheme design progressed, nor the ranking between options as sifted prior to Autumn 2021. Refer to 5.4.66 through 5.4.67 for Temple Sowerby to Appleby, 5.5.73 through 5.5.74 for Appleby to Brough and 5.7.50 through 5.7.51 for Cross Lanes to Rokeby. See also ES Volume 1 (Main Report), Chapter 3 – Assessment of Alternatives for further information.

Traffic and economics

- 4.4.26 As introduced in Chapters 2 and 3 above, safety and improvements to network capacity and resilience were key drivers for the A66 Northern Trans-Pennine Project. To enable these objectives to be met through delivery, transport modelling has been undertaken during PCF Stage 3 to test the design proposed and identify improvements where practicable. This has been used to review the design against feedback received from Statutory Consultation regarding concerns over potential traffic flows, congestion and disruption during construction. Traffic modelling has also been used to inform environmental assessments undertaken throughout PCF Stage 3, including the PEIR produced for Statutory Consultation and the ES produced for DCO application.
- 4.4.27 For information about the modelling work undertaken, refer to the Transport Assessment (Application Document 3.7) submitted in support of the DCO application. This document contains information on the Strategic modelling undertaken, as well as the Operational modelling carried out for major junctions such as M6 Junction 40, Kemplay Bank Roundabout and A1(M) Junction 53 Scotch Corner.
- 4.4.28 In addition, information about the economic assessment work undertaken throughout PCF Stage 3 Preliminary Design can be found in the Chapter 6 of the Combined Modelling and Appraisal Report (ComMA, Application Document 3.8).
- 4.4.29 Accessibility opportunities, including those for walkers, cyclists and horse-riders (WCH), have developed throughout preliminary design. Work has been undertaken in conjunction with Local Authorities and focus groups to

improve provision for WCH along the route of the A66, providing better connectivity between communities.

- 4.4.30 Where public rights of way (PRoWs) are severed by, or converge at, the upgraded A66 carriageway, they have been gathered and redirected to the nearest grade-separated crossing facility in order to provide a safe place to cross the dual carriageway. These crossing points may be a new grade-separated junction, an accommodation underpass or overbridge, or a designated WCH underpass or overbridge.
- 4.4.31 Feedback from Statutory Consultation identified several potential WCH features that could provide additional benefits to users. These included parallel east-west links through the schemes, particularly for those west of the Pennines. Work was undertaken to investigate the suggestions made by stakeholders in relation to the dualling design, and with regards to aspirations by Local Authorities.
- 4.4.32 It was identified that some features would sit within the Order Limits for the dualling works and therefore could be brought into the scope of the A66 Northern Trans-Pennine Project. These included:
- A parallel shared cycle/footway along the northern side of the Penrith to Temple Sowerby scheme (refer to 5.3.26 through 5.3.29).
 - A parallel shared cycle/footway along the length of the Appleby to Brough scheme (refer to 5.5.75 through 5.5.77).
 - A shared bridle/footway in the verge of the old de-trunked A66 to connect several existing bridleways and footpaths throughout the Stephen Bank to Carkin Moor scheme (refer to 5.8.39 through 5.8.42).
- 4.4.33 Additional features situated on or around the A66 within the existing dualled sections were out of scope for the current Project but were eligible for consideration for National Highways' Designated Funding. For further information, refer to Chapter 5 of Walking, Cycling and Horse-riding Proposals (Application Document 2.4).

Stakeholder

- 4.4.34 For the Project as a whole, there has been ongoing stakeholder and public engagement throughout PCF Stage 3 to inform the preliminary design and the associated technical work for the DCO application. For further information, refer to the Consultation Report (Application Document 4.4).
- 4.4.35 This has included engagement with landowners, local planning authorities, Statutory Environmental Bodies, other statutory consultees and other organisations regarding emerging designs, the assessment methodology and baseline data. Design reviews (including with the Design Council, an independent charity and the government's advisor on design), and topic-specific focus groups have also informed the process.
- 4.4.36 A Project Update was provided in Winter 2020, giving further detail of the development of the Preferred Route, including junction locations and emerging junction layouts. Feedback from this Update went on to inform design development.

- 4.4.37 For those schemes where alternatives were considered (as set out in 4.3.1) prior to Statutory Consultation, public engagement on the alternatives in Summer 2021 informed the assessments and the identification of a preferred design (for Statutory Consultation).
- 4.4.38 Statutory Consultation ran during Autumn 2021 and included 24 events attended by more than 1,600 people during the consultation period. The Consultation Report (Application Document 4.4) submitted with the DCO application in Spring 2022 outlines the key findings, summarised below for context.
- Overall, there was support for the Project to dual the remaining single carriageway sections of the A66.
 - Project-wide, themes raised included traffic, transport and junctions, general environmental issues, engineering design and development and walking, cycling and horse-riding.
 - Concerns raised included potential congestion during construction and the climate impacts of the Project, and suggestions were made to improve facilities to provide greater connectivity between communities for walkers, cyclists and horse-riders.
- 4.4.39 Feedback was received from a number of landowners regarding specific temporary and permanent uses of their land, for the benefit of the Project. Engagement has been ongoing with these landowners throughout Preliminary Design and will continue over subsequent Stages.
- 4.4.40 Where practicable, existing accesses will be accommodated in the same location or replacement provided. Throughout preliminary design, the team has worked with landowners and user groups to understand their needs and implement solutions. For further information, refer to the Consultation Report (Application Document 4.4).
- 4.4.41 Permanent acquisition of land for the Project has been minimised where practicable. This may have resulted from, for example, development of the proposed environmental mitigation measures following further design development of the scheme, or an update to the design proposed in Autumn 2021. Summaries of scheme-specific design changes are outlined in Chapter 5 below.
- 4.4.42 Feedback was also provided, specific to the alternative alignments and junctions presented for the Temple Sowerby to Appleby, Appleby to Brough and Cross Lanes to Rokeby schemes. Regard has been given to this feedback and has informed design development since Autumn 2021.
- 4.4.43 Design development, including that in response to Statutory Consultation feedback, resulted in significant updates to proposals for certain schemes. As such, further targeted, Supplementary Consultation was conducted throughout early 2022 to gather the views from consultees about the updated proposals, summarised below:
- Updated proposals for Public Open Space re-provision for the M6 Junction 40 to Kemplay Bank Roundabout scheme (refer to Section 5.2).

- Updated proposals for three key junctions for the Temple Sowerby to Appleby scheme (refer to Section 5.4).
 - Proposed route alignment changes for the Appleby to Brough scheme, notably the western section of route local to Sandford junction and a central section in the vicinity of Moor Beck (refer to Section 5.5).
 - Proposed alternative sites for the Brough Hill Fair (refer to Section 5.5).
 - Updated proposals for access arrangements to Hulands Quarry and Bowes Cross Farm as part of the Bowes Bypass scheme (refer to Section 5.6).
- 4.4.44 In addition, Supplementary Consultation was also carried out for topics affecting a number of schemes, such as updates to Walking, Cycling and Horse-riding proposals. This Supplementary Consultation also provided consultees the opportunity to comment on more developed Landform and Construction Compound proposals.
- 4.4.45 Further information on Supplementary Consultation and the processes followed can be found in the Consultation Report (Application Document 4.4) submitted with the DCO application.
- 4.4.46 A further Project Update was published in March 2022, along with the Consultation Summary Report. This was the last formal public update prior to submission of the DCO application in Spring 2022.

5. Design development of schemes

- 5.1.1 The main focus of the PDOR is to outline design development of the schemes following Statutory Consultation in Autumn 2021. To provide context for this, design development for early Stage 3 and the preceding Options phase Stages is also summarised for each scheme in its relevant section.
- 5.1.2 Further detail, including supporting information such as assessment matrices, graphics, illustrations showing the alternatives considered at the various stages of the assessments where relevant, is included within the Route Development Report provided in Appendix 3 of this report. For information on engagement undertaken to develop the Preliminary Design proposals, refer to the Consultation Report (Application Document 4.4) submitted with the DCO application.

5.2 M6 Junction 40 to Kemplay Bank

Description of baseline environment

- 5.2.1 M6 Junction 40 Penrith is an existing grade-separated junction on the M6 motorway to the south-west of Penrith, with strategic and local significance. It is a signal-controlled roundabout junction serving access and egress to and from the M6 and the A66 with an additional fifth arm to the A592, serving Penrith to the north.
- 5.2.2 From M6 Junction 40, the A66 runs eastwards through to Kemplay Bank Roundabout; an at-grade five-arm roundabout immediately south of Penrith that operates under full signal control. Currently, the A66 here is two lanes in each direction, eastbound and westbound.
- 5.2.3 Of the five arms of Kemplay Bank Roundabout, two serve the A66, with two-lane entries and exits towards the M6 at the west and the eastbound A66 at the east. A further two arms serve the A6 with single carriageway flared entries and exits towards Penrith in the north and Shap in the south. The fifth arm of Kemplay Bank Roundabout serves the A686 Carleton Avenue, to the north-east of the junction.
- 5.2.4 Emergency services also have direct access onto Kemplay Bank Roundabout from the south-east, between the A66 westbound arm and the A6 southbound arm.
- 5.2.5 Kemplay Bank Roundabout serves as a primary means of access to Penrith as well as a hub for local services. Penrith Community Hospital is to the north, and Penrith Community Fire Station to the south. Cumbria Constabulary and the Fire Service access the A66 via an underpass on the A686 (Carleton Avenue) to the East of Kemplay Bank Roundabout.
- 5.2.6 Kemplay Bank Roundabout often suffers from high levels of congestion at peak times but also throughout the day, affecting the flow of traffic along the A66 and for north and southbound traffic using the A6. This interaction of local and strategic traffic creates a bottleneck that can also have an impact on Junction 40 of the M6 leading to vehicles queuing in this location.

- 5.2.7 Vehicles slowing down as they approach Kemplay Bank Roundabout, due to queuing traffic, can lead to potential safety issues, creating problems for both east/west and north/south traffic as it passes through the roundabout.

Outcomes of PCF Stage 1 Option Development and PCF Stage 2 Option Selection

- 5.2.8 At PCF Stage 1 Option Identification, a preliminary assessment of the M6 Junction 40 indicated that it was likely the operational capacity of the existing junction would be exceeded following full dualling of the A66 as it became a more attractive route for users. This increase in traffic would likely lead to greater congestion and tailbacks on the junction approaches if circulation at the junction was not improved.
- 5.2.9 To address these operational challenges, three options were identified for consideration to improve the A66 between M6 Junction 40 and Kemplay Bank Roundabout. Further information can be found in the PCF Stage 1 Technical Appraisal Report (see Appendix 1).
- 5.2.10 At PCF Stage 2 Option Selection, it was acknowledged that improvements to the operational capacity of the M6 Junction 40 would require further analysis and development at PCF Stage 3 Preliminary Design, to accommodate the interdependency of the junction and the upgraded A66, drawing on more detailed traffic modelling.
- 5.2.11 The focus for this scheme therefore was the confirmation that the approach roads and junction at Kemplay Bank require improvement. This led to the proposal to widen the A66 between M6 Junction 40 and Kemplay Bank Roundabout to three lanes in each direction. Widening would consequently be required on the five approach arms to provide additional lanes and dedicated left-turn capability, each controlled under its own signal phase.
- 5.2.12 Two options, either an underpass or an overpass for the A66 through Kemplay Bank, to provide an uninterrupted route for the A66 eastbound and westbound were taken forward to public consultation in Summer 2019. Refer to the PCF Stage 2 Scheme Assessment Report (provided in Appendix 2) for further information of these options.

Public consultation Summer 2019

- 5.2.13 Initial proposals for improvements to M6 Junction 40 were excluded from the non-statutory consultation held in Summer 2019, as its focus was to seek views on the Preferred Route options for the improvement schemes on the A66. Consultation material noted that high-level capacity assessments had been carried out that confirmed the existing junction would not provide adequate operational capacity in its current form once the A66 Project is built.
- 5.2.14 Two options for improvements between M6 Junction 40 and Kemplay Bank Roundabout, were presented at public consultation in Summer 2019. The public consultation sought feedback on whether an underpass or an overpass should be progressed for the A66 at Kemplay Bank Roundabout. Both options provided a safer, grade separated junction and included access for emergency services onto the A6 to the south-east of the

roundabout, rendering the existing access underpass redundant. Direct access for the Fire Service onto the roundabout was also proposed to be maintained in its existing form.

Preferred Route Announcement May 2020

- 5.2.15 The Preferred Route Announcement of May 2020 noted that proposals for M6 Junction 40 would be developed once the Preferred Route had been further developed.
- 5.2.16 The PRA outlined the underpass option as the preferred solution for Kemplay Bank Roundabout, primarily due to the findings at PCF Stage 2 that this solution would have a lower environmental impact compared with the overpass option.

PCF Stage 3 Preliminary Design for Statutory Consultation

5.2.17 At PCF Stage 2 Option Selection it was assumed that an extra lane may be required on the circulatory carriageway of the M6 Junction 40. Early PCF Stage 3 traffic modelling of the junction confirmed that this offered negligible benefits. Compared to the PCF Stage 2 proposed junction layout, the PCF Stage 3 junction layout was therefore developed as follows:

- Instead of four circulatory lanes on the roundabout, three were proposed within the confines of the junction carriageway footprint and bridge deck whilst maintaining all movements from all approaches. Spiral markings on the circulatory would be complemented by widened approaches with an increased number of lanes to improve flow and capacity.
- Instead of free-flowing left-turning lanes on the A66 and M6 off-slip approaches, the approaches would be widened, the free-flowing left-turn removed and all lanes on each approach controlled under the same signal phase. With this lane arrangement, the active travel cycle and footway route with controlled crossings would be maintained and a more suitable alignment could be achieved with less impact on accesses and less additional land take).
- Junction modelling confirmed that three lanes would be required between the M6 Junction 40 and Kemplay Bank Roundabout to maintain the desired operational performance of the A66 network and the alignment with the widened approaches at M6 Junction 40.

5.2.18 The modelling and subsequent analysis undertaken demonstrated that for expected peak flows, an improved level of operational capacity could be achieved without having to widen the circulatory carriageway of M6 Junction 40 and constructing free-flow left-slip lanes. Instead, widening and controlling the approach lanes and providing a spiral lane arrangement on the roundabout would achieve a comparable improved performance. For further detail, refer to the Local Traffic Report provided at Statutory Consultation.

5.2.19 In addition, it was proposed to relocate the existing access to Skirsgill Depot off M6 Junction 40, approximately 95m east to provide a better and safer access.

- 5.2.20 Between M6 Junction 40 and Kemplay Bank Roundabout, the main principles of the Preferred Route as announced in May 2020 were retained. However, it was proposed to retain and extend the emergency services access underpass to the A686 in its current location following ongoing engagement with Cumbria County Council and Cumbria Constabulary early in Stage 3.
- 5.2.21 Several alternatives were developed and assessed with respect to environmental impacts, traffic modelling and impact on journey times, buildability, estimated budget costs and programme. A sketch of these options is shown in Figure 4 below.

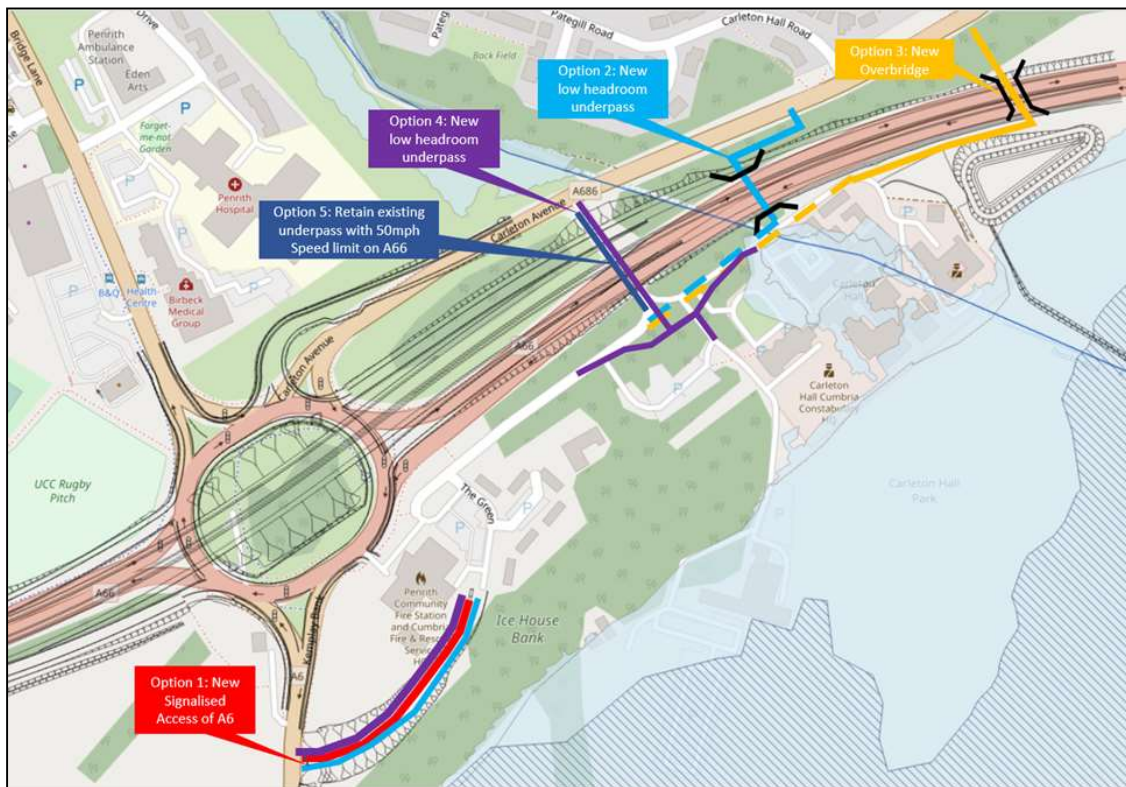


Figure 4 Alternatives developed during early PCF Stage 3 Preliminary Design for Kemplay Bank

- 5.2.22 To retain and extend the underpass in its current location, the vertical geometry of the A66 needed to be tightened (both crest and sag curves). To achieve this, it was proposed that the speed limit on the A66 between M6 Junction 40 Penrith and Kemplay Bank Roundabout should be reduced from 70mph to 50mph in both directions, for a section approximately 2.3km in length. With tighter vertical geometry, associated with a reduced speed of vehicles using this section, the current underpass could be retained and extended and thus, the emergency services access arrangements could be kept in their current location.
- 5.2.23 Although route consistency at 70mph was a factor in developing the PCF Stage 2 options, the need to provide safe and uninhibited access for emergency services was assessed to be a more important consideration for the Preliminary Design. It was also considered that the impact of reducing the speed limit on overall journey time along this section of the A66 would not be significant, given traffic would need to be moving more

slowly on the approach to or departure from the Kemplay Bank Roundabout junction.

- 5.2.24 This PCF Stage 3 design change (including the 50mph limit) was supported by Cumbria County Council, Cumbria Fire and Rescue Service and Cumbria Constabulary and was therefore part of the design solution presented at Statutory Consultation in Autumn 2021.

Statutory Consultation Autumn 2021

- 5.2.25 The preliminary design presented at Statutory Consultation in Autumn 2021 for M6 Junction 40 to Kemplay Bank can be summarised as follows:

- M6 Junction 40 would provide a three-lane circulatory carriageway with spiral markings on the current roundabout.
- The A66 between M6 Junction 40 and Kemplay Bank Roundabout would be widened to three lanes in each direction.
- The five approach arms to M6 Junction 40 would be widened, providing additional lanes and dedicated left-turn facilities, each controlled under its own signal phase.
- All existing accesses would be accommodated.
- Existing pedestrian and cycle connections would be retained, and signal-controlled crossings introduced to serve the network.
- Retention of the existing police platform on Penrith North Bridge and relocation of the existing police platform on Penrith South Bridge further into the widened verge.
- The A66 dual carriageway would be routed under Kemplay Bank Roundabout in an underpass arrangement, with upgraded on- and off-slip roads to the Roundabout facilitating safe access to and egress from the A66.
- Minor realignment of the A6 and A686 arms of Kemplay Bank Roundabout to accommodate new slip roads serving the local road network.
- The A66 dual carriageway would have a speed limit of 50mph to a distance approximately 2km east of Kemplay Bank Roundabout.
- Retention of the existing underpass to the east of Kemplay Bank Roundabout, which would be extended to account for the widened A66 above.
- Existing signalised crossing facilities at Kemplay Bank Roundabout would be retained for walkers, cyclists and horse-riders. Existing pedestrian and cycle connections would be retained, with those currently located through the centre of the roundabout being re-routed around the roundabout.
- A replacement lay-by would be provided on the eastbound carriageway between M6 Junction 40 and Kemplay Bank Roundabout.

PCF Stage 3 Preliminary Design for DCO

- 5.2.26 Following Statutory Consultation, design development has continued. The design was developed having regard to feedback received throughout the consultation and ongoing engagement, to address environmental and traffic issues that arose following completion of surveys and to incorporate mitigation for impacts that had been identified through the Environmental Impact Assessment (EIA).
- 5.2.27 This work has led to a number of opportunities to revise the design to improve aspects such as community connectivity, minimising or mitigating environmental impacts and optimising the use of land. Key developments for M6 Junction 40 to Kemplay Bank are outlined below.

Engineering

- 5.2.28 At Statutory Consultation, it was proposed to relocate the existing access to Skirsgill Depot to/from the A66, approximately 95m east. The intention of this relocation was to improve the vertical alignment and provide better and safer access to the depot.
- 5.2.29 At the western scheme extent, it was proposed to locate a drainage pond on land to the south of the A66. The size and location of this pond has been refined since Statutory Consultation, and access to it has also been amended to reduce land take following feedback received. In addition, the design has been updated such that an existing highways drain, that runs to the River Eamont through the adjacent field to the south of the road, would be used as the discharge for this pond. This provides cost savings through reusing existing infrastructure rather than constructing new.
- 5.2.30 Towards the eastern scheme extent, the proposed drainage pond has been reconfigured to minimise disturbance to mature trees in the vicinity. Moving it further south could lead to better integration with the River Eamont however, this has not been possible due to local topography.

Environment

- 5.2.31 Where practicable, environmental mitigation measures have been refined following consultation to reflect alterations to the engineering design, allowing reduction in permanent acquisition of land in some areas as outlined below in 5.2.38 through 5.2.42. For information on specific landscaping and environmental mitigation proposals that have been incorporated into the preliminary design refer to ES Volume 1 (Main Report), Chapter 10 – Landscape and Visual (Application Document 3.2).

Traffic and economics

- 5.2.32 Throughout PCF Stage 3, traffic modelling of the junctions has been undertaken and refined to reflect the developing design along the route, including the projected increased traffic flows resulting from the upgrade works. This has enabled the operational capacity of the junctions to be maximised where practicable and that potential negative impacts from increased traffic on the surrounding areas such as Penrith town centre, can

be mitigated. Refer to the Transport Assessment (Application Document 3.7) for further information.

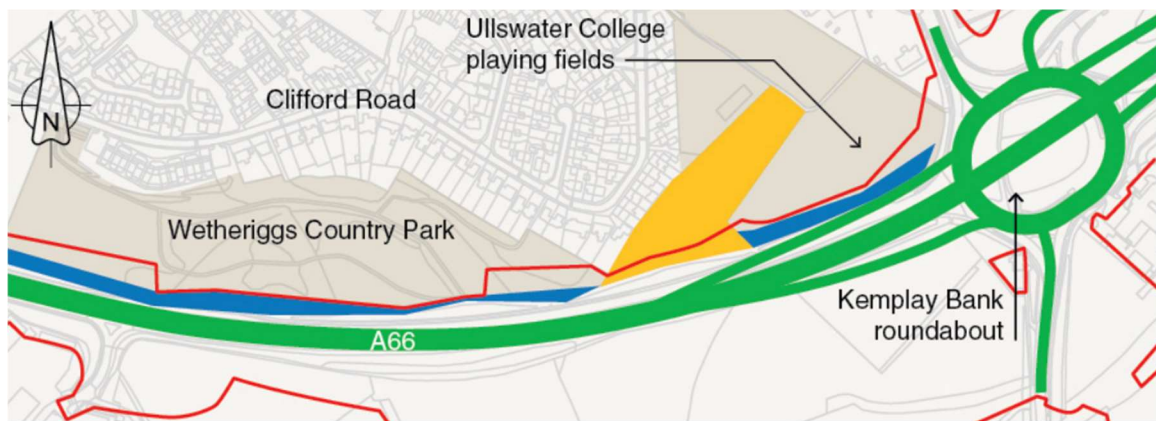
- 5.2.33 Feedback was received during Statutory Consultation in Autumn 2021 regarding driver compliance with the 50mph speed limit to be implemented for this scheme. To address this, it is proposed that parking facilities for Police vehicles would be provided to enable mobile speed enforcement in both directions.
- 5.2.34 Accessibility opportunities, including those for walkers, cyclists and horse-riders (WCH), have developed throughout preliminary design as introduced in 4.4.29 through 4.4.33 above.
- 5.2.35 For this scheme, the focus has been on providing safe routes between and across M6 Junction 40 and Kemplay Bank Roundabout for WCH users as part of a wider piece of work to improve connectivity between Penrith and Temple Sowerby.
- 5.2.36 The existing Toucan crossings are to be retained on the M6 Junction 40 roundabout, as are existing shared cycle/footways parallel to the local roads.
- 5.2.37 Existing shared pedestrian/cycle crossings are to be retained on Kemplay Bank Roundabout. The parallel shared cycle/footway on the north side of the A66, into Penrith is to be replaced to the north side of the widened dual carriageway once complete. As the proposed junction is to be grade-separated, an internal footway would be provided round the inner circulatory to allow pedestrians and cyclists to cross through the junction, improving access and connectivity for the local community.

Stakeholder

- 5.2.38 At Statutory Consultation in Autumn 2021, plans to widen the A66 between M6 Junction 40 and Kemplay Bank Roundabout to increase operational capacity were presented. This required the acquisition of land to the north of the A66 along this section of the route, along the edge of Wetheriggs Country Park and the playing fields belonging to Ullswater Community College. Feedback received from Statutory Consultation highlighted that this land is well-used by the community for recreation and is designated as public open space.
- 5.2.39 To mitigate the impact of the loss of this open space, the design was reviewed following Statutory Consultation to reduce the amount of public open space land required for the works. It was noted that the open space that would be lost, is by comparison of poorer amenity value compared to most of the open space to the north. As a result, it is not well used and there is potential to provide replacement open space which would be more accessible and of greater value and active use to the local community.
- 5.2.40 A nearby field to the east of Wetheriggs Country Park was identified as a potential replacement area of public open space. It is intended that this new area would be enhanced with landscaping, planting and habitat creation to enable it to provide suitable compensation for the public open space lost to the works. Further benefits of the proposals include better

connectivity between Wetheriggs Country Park through to Bridge Lane, and an improved interface between the park and the A66.

5.2.41 In accordance with Section 131 of the Planning Act 2008 and NNNPS Paragraph 5.166, the proposals for the open space re-provision were presented to the local community during Supplementary Consultation, in early 2022. An extract from the Supplementary Consultation Brochure is shown in Figure 5 below. Refer to 4.4.43 through 4.4.45 above and Chapter 7 of the Consultation Report (Application Document 4.4) for further detail on Supplementary Consultation. The consultation sought to understand how the current public open space is used and how the replacement land could be enhanced to be more beneficial for the local community.



Legend

- The land required for the scheme, as presented at our autumn consultation
- The reduced land we require now
- The field we are proposing to acquire
- Proposed road layout
- Public open space

Figure 5 Extract from Supplementary consultation brochure for M6 Junction 40 to Kemplay Bank Roundabout

5.2.42 A summary of matters raised and the outcomes from this consultation are provided in Chapter 7 of the Consultation Report (Application Document 4.4) and its supporting Annex P.

Development Consent Order application Spring 2022

5.2.43 An illustrative plan of the scheme presented for DCO application in Spring 2022 is given in Figure 6 below. For further information, reference should be made to General Arrangement Drawings Scheme 0102 M6 Junction 40 to Kemplay Bank (Application Document 2.5).

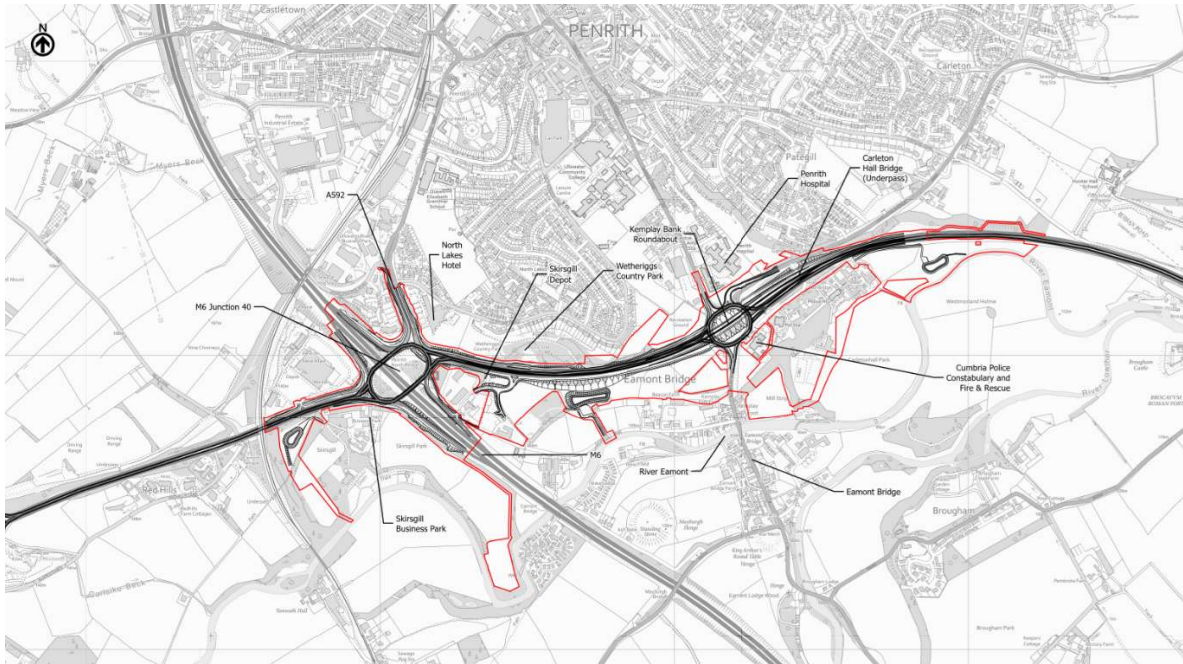


Figure 6 Illustrative plan of M6 Junction 40 to Kemplay Bank scheme and surrounding area (DCO Order Limits shown in red)

- 5.2.44 The M6 Junction 40 to Kemplay Bank scheme would provide a three-lane circulatory carriageway with spiral markings, within the footprint of the current roundabout at M6 Junction 40. The A66 eastern arm of the roundabout would be widened to three lanes in each direction between M6 Junction 40 and Kemplay Bank Roundabout to increase capacity for local movements around Penrith. Widening would be required on the following five approach arms to M6 Junction 40 to provide additional lanes and a dedicated left turn facility, each controlled under its own signal phase: M6 North, M6 South, A66 East, A66 West, and A592 Ullswater Road.
- 5.2.45 All existing local accesses would be accommodated, and it is proposed to relocate the existing access to Skirsgill Depot by approximately 95m to the east of its existing access. This scheme would also include signal-controlled crossings serving the existing shared cycle/footway connection on the western side.
- 5.2.46 All existing pedestrian and cycle connections would be retained on the Penrith South Bridge western side alongside Skirsgill Business Park. This would also be the case for the Skirsgill North-West pedestrian and cycle connections. The existing cycle/pedestrian route to Skirsgill Depot would be directed through a signal-controlled crossing at the roundabout, to provide a safer replacement for the existing uncontrolled crossing of the A66 Eastern Arm. This would be an improvement to the walking and cycling safety of this route.
- 5.2.47 The existing police platform located on the Penrith North Bridge to the eastern side, between the M6 off slip and A592, is to be retained in its current location. The existing police platform on the Penrith South Bridge

western side would be relocated further into the widened verge to allow for the new dedicated left-hand lane from the M6 off slip.

- 5.2.48 Further to the east, at Kemplay Bank Roundabout, the scheme would pass beneath the existing roundabout via two underpass structures that would carry the circulatory carriageway. This would comprise a new dual carriageway under Kemplay Bank Roundabout allowing free-flowing east-west traffic, reducing congestion, and improving access to Penrith and the A6.
- 5.2.49 This scheme would include new on-slip and off-slip roads with the A6 and A686 allowing users to safely join and leave the A66 in both directions, serving the local road network with links to Penrith, Eamont Bridge, and other local settlements. Minor realignment of the A6 and A686 arms would be required to accommodate the new slip roads serving the local road network.
- 5.2.50 It is proposed that the speed limit between M6 Junction 40 and Kemplay Bank would be reduced from the National Speed Limit to 50mph in both directions (approximately 2.3km). This allows for the retention and extension of an existing underpass from Carleton Avenue which provides access to the Police and Fire site to the south of the existing A66. As this is a critical access requirement, retaining it has avoided the need to construct a replacement underpass or overbridge to maintain access (therefore reducing construction impacts and reducing embodied carbon). This existing underpass would be extended to accommodate the widening of the A66. The reduced speed limit is considered acceptable for this section of the route due to the proximity to key junctions with the A6, A686 and M6 and associated safety considerations.
- 5.2.51 A police observation point would be included on the Kemplay Bank overbridges for speed enforcement purposes.
- 5.2.52 Signalisation of the Kemplay Bank Roundabout would be retained to facilitate safe crossing at all five arms. Cycleways and footways currently located through the centre of the roundabout would be re-routed around the roundabout. The existing emergency exit from the fire station linked with the existing traffic signals would be maintained throughout construction and would remain in place once the works are complete.
- 5.2.53 A replacement lay-by would be provided on the eastbound carriageway between the M6 Junction 40 and Kemplay Bank Roundabout. The existing lay-by on the westbound carriageway between Kemplay Bank Roundabout and M6 Junction 40 would be removed and would not be replaced due to the proximity of adjacent junctions.
- 5.2.54 Replacement land would be provided to compensate the local community for land take from public open space alongside Wetheriggs Park, as a result of widening the existing A66 to the north.
- 5.2.55 The scheme would include lighting provision, extending and in some locations replacing the current provision.
- 5.2.56 Three ponds would be required for this scheme for the purpose of drainage of the road network and to manage water quality before the water is

discharged into the surrounding watercourses. The western-most of these ponds is proposed to be located to the south of the existing A66 to the east of the West Coast Mainline, the second is proposed to be located to the south of the A66 in the open fields between the M6 and the A6, and the eastern-most pond is situated to the south of the A66 to the east of the Fire, Police and Ambulance site. Access tracks would be constructed to allow vehicular access to facilitate the maintenance of these ponds. The locations of these ponds have been selected to ensure effective drainage, minimise impacts on future proposed development in the area, and minimise environmental impacts.

- 5.2.57 Utility works would be required for gas, electricity, water, and communications services throughout the length of the scheme.
- 5.2.58 No demolition of property is required as part of this scheme. The scheme would involve minor demolition works, such as roadside features, drainage and kerbing associated with the existing A66 and other local roads.

5.3 Penrith to Temple Sowerby

Description of baseline environment

- 5.3.1 The A66 between its junction with the B6262 at Brougham and the Temple Sowerby Bypass is single carriageway and follows the route of the old Roman Road. Whilst between Brougham and the junction local to Center Parcs the existing horizontal and vertical alignment generally appears to be to standard, beyond Center Parcs to the Temple Sowerby Bypass both the horizontal and vertical alignments are poor and therefore unsuitable for incorporation into the permanent works.
- 5.3.2 Variations in carriageway width and horizontal and vertical alignment make for an inconsistent driving experience resulting in safety issues for road users. There are several junctions and direct accesses along this section, with a number of them being private means of access to residential and commercial properties. These accesses can further exacerbate the safety concerns outlined above. Four direct accesses have right turn facilities for opposing traffic, where it can be difficult for cars to join the main highway:
- The B6262 junction.
 - The access to the United Utilities sewage treatment plant.
 - The access to Center Parcs.
 - The access to the former Llama Karma Kafé (although this is shared with an adjacent gated field access).
- 5.3.3 There are a further four major/minor priority direct accesses serving Whinfell Park, Whinfell Cottage and two at the Hamlet of Lane End. There are currently more than fifteen field accesses between Brougham and the section of dual carriageway at Temple Sowerby.
- 5.3.4 Other features include the provision of an unsegregated lay-by on the eastbound carriageway towards the end of this section. This lay-by generally displays several sub-standard features, for example, short merge and diverge taper lengths and a short stacking length.

- 5.3.5 There are no WCH facilities in this section although an on-road cycle lane is marked at the commencement of the Temple Sowerby Bypass which diverts users to the local highway network. There are bus stops at three locations along this section, Whinfell Park/Cottage (westbound and eastbound stops), School House at Lane End (westbound and eastbound stops) and Whinfell House at the start of Temple Sowerby Bypass (westbound and eastbound stops).

Outcomes of PCF Stage 1 Option Development and PCF Stage 2 Option Selection

- 5.3.6 At PCF Stage 1 Option Identification, three options were identified for consideration to improve the A66 between Penrith and Temple Sowerby. Each of these sought to dual the section of single carriageway and are outlined in the PCF Stage 1 Technical Appraisal Report (see Appendix 1).
- 5.3.7 At PCF Stage 2 Option Selection, these three options were reduced to two. One option was discounted for reasons including route length, severance to properties, and the need for additional structures and service roads leading to it being poorer value for money than the alternatives proposed. For further information refer to the PCF Stage 2 Scheme Assessment Report included in Appendix 2.

Public consultation Summer 2019

- 5.3.8 Two options were presented at public consultation in Summer 2019. Both consisted of online dualling of the existing carriageway, utilising part of the existing infrastructure for westbound traffic, with a new carriageway predominantly on the northern side of the existing A66 for eastbound traffic.
- 5.3.9 As the A66 runs adjacent to the hamlet of Lane End and the village of High Barn and the two options proposed had different impacts on this hamlet, as follows:
- One proposed an offline bypass to the south of High Barn, avoiding the need for any property demolition. From Whinfell Park Farm the road would divert to the south to avoid the hamlet of Lane End, then re-join the A66 at Swine Gill before continuing to the Temple Sowerby Bypass.
 - The other proposed an online option that would not divert the road away from High Barn and would therefore require the demolition of some buildings in this hamlet.
- 5.3.10 Both options also proposed a new junction to be constructed local to Center Parcs to provide access to the holiday park and local roads.
- 5.3.11 Between Brougham Castle and Whinfell Park Farm, both options followed the line of the existing A66, utilising the corridor of the existing carriageway where possible and requiring the realignment of some local roads. Alternative routes would be provided to nearby junctions where required.

Preferred Route Announcement May 2020

- 5.3.12 The Preferred Route Announcement of May 2020 concluded that the option that bypasses the properties at High Barn was the preferred option for this section of the route, primarily because it would not require the demolition of the buildings in High Barn and the potential impact this would have on businesses and residents. This proposal also positioned the route further from the hamlet of Lane End, mitigating noise and visual impacts on residents there.

PCF Stage 3 Preliminary Design for Statutory Consultation

- 5.3.13 During early PCF Stage 3 Preliminary Design, these proposals were developed further for Statutory Consultation in Autumn 2021.
- 5.3.14 At this stage, the potential to improve the scheme local to High Barn was explored, including improvements to the geometry of the alignment and reductions to overall land take (through moving the route to the north). However, it was recognised that a drawback of making these changes would be the need to acquire and demolish properties at High Barn. These changes from the Preferred Route Announcement were discussed during meetings and conversations with the landowners who would be affected and taking into account this engagement and other considerations, such as the low architectural significance of the properties to be demolished and the lower impacts on farming land, a decision was taken to acquire the property at High Barn and re-route the alignment accordingly. An implication of the change was the potential for increases in noise and visual impact at the hamlet of Lane End and it was recognised that further assessment of these impacts would be needed, and appropriate mitigation identified.

Statutory Consultation Autumn 2021

- 5.3.15 The preliminary design presented at Statutory Consultation in Autumn 2021 for Penrith to Temple Sowerby can be summarised as follows:
- Online widening using the existing carriageway to form one side of the new dual carriageway.
 - The second carriageway would be constructed to the north of the existing carriageway.
 - Construction of a compact grade-separated junction local to Center Parcs which would cater for all movements on and off the A66 at this point, including local road connections.
 - New westbound left on/left off junction proposed to the B6262 for access to the local road network.
 - New eastbound left on/left off junction proposed for access to St Ninian's Church on Winderwath Estate.
 - Conversion of existing access serving Whinfell Holme Wastewater Treatments Works to an eastbound left on/left off. Noted that this may

need relocation further east due to proximity of existing Shell high pressure gas pipeline and the impacts of widening the A66 over this.

- Closure of the Llama Karma Kafé hospitality business, with property and land acquired by National Highways. Site was converted to a Project Hub during Statutory Consultation, providing a fixed location for ongoing engagement with the local communities.
- Provision of access tracks for maintenance purposes and to accommodate landowner movements.
- Provision of two accommodation structures to facilitate agricultural vehicles crossing the A66.

PCF Stage 3 Preliminary Design for DCO

5.3.16 Following Statutory Consultation, design development continued. The design was developed having regard to feedback received throughout the consultation and ongoing engagement, to address environmental and traffic issues that arose following completion of surveys and to incorporate mitigation for impacts that had been identified through the Environmental Impact Assessment (EIA). This work has led to a number of opportunities to revise the design to improve aspects such as community connectivity, minimising or mitigating environmental impacts and optimising the use of land. Key developments for Penrith to Temple Sowerby are outlined below.

Engineering

- 5.3.17 Throughout preliminary design, refinements have been made to highway geometry and access arrangements where a betterment on the Autumn 2021 design has been recognised.
- 5.3.18 Where practicable, for example to the north of the proposed junction local to Center Parcs, design development has allowed proposed earthworks to be refined and regraded to enhance landscape integration and enable land to be handed back to landowners.
- 5.3.19 Following feedback regarding the potentially significant adverse impact on the Scheduled Ancient Monuments in the area (particularly Brougham Castle and Brougham Roman fort and civil settlement), carriageway levels have been reviewed and confirmed to have minimal impact on these sites on account of being maintained as existing.
- 5.3.20 Refinements have also been made to pond locations to address feedback received and the outcomes of further flood modelling undertaken throughout design development. Changes have been made to the design and shape of drainage ponds throughout the scheme to allow them to better integrate with their surroundings, avoid Root Protection Areas of established vegetation, and reduce land take. One such example is at the junction local to Center Parcs, where design development has allowed for the ponds proposed at Statutory Consultation be rationalised and grouped within one field boundary.
- 5.3.21 Survey information obtained since Statutory Consultation in Autumn 2021 has highlighted the need to increase land take to accommodate utilities

diversions or protection works, temporary works and easements as outlined in 4.4.15.

- 5.3.22 For example, there would be a need to temporarily use land within a Scheduled Ancient Monument site at Brougham to accommodate potential diversionary work to overhead cables that run north-south over the site. This would be a temporary use of land to obtain access and all works are expected to be above ground. Therefore, there is no adverse impact on the value of the heritage features of the SAM as ground is not being broken (refer to ES Volume 1 (Main Report), Chapter 8 – Cultural Heritage (Application Document 3.2)).
- 5.3.23 Another example is where, following Statutory Consultation, discussions were held with representatives from Shell to review the scheme proposals in relation to the Shell high pressure gas pipeline location. To ensure the appropriate cover could be provided to the pipeline, in accordance with Shell health and safety requirements, a site survey was undertaken to inform the design further. This has resulted in the existing access serving Whinfell Holme Wastewater Treatment works being relocated eastwards to minimise the widening of the carriageway over the Shell gas pipeline which traverses the A66. Specific limits of deviation have been included in this area to reduce the risk of damage to a nationally important asset.

Environment

- 5.3.24 Some concerns were raised at Statutory Consultation for the Penrith to Temple Sowerby scheme regarding land required for landscaping and environmental mitigation. For the majority, reference should be made to the Consultation Report (Application Document 4.4) for detail. For information on specific landscaping and environmental mitigation proposals, refer to ES Volume 1 (Main Report), Chapter 10 – Landscape and Visual (Application Document 3.2).
- 5.3.25 As outlined in 4.4.11 above, earthworks have been refined at specific locations throughout the scheme to allow them to better integrate with the alignment, junctions, and their surroundings. This has resulted in reductions to the visual intrusion of the Project within the landscape and allows for additional areas of land to be returned to agricultural use following construction.

Traffic and economics

- 5.3.26 Following feedback received and ongoing stakeholder engagement as outlined in 4.4.10 above, police observation platforms have now been included in both the proposed eastbound lay-by (west of the proposed junction at Center Parcs) and westbound lay-by (west of Temple Sowerby Bypass).
- 5.3.27 Accessibility opportunities, including those for walkers, cyclists and horse-riders (WCH), have developed throughout preliminary design as introduced in 4.4.29 through 4.4.33 above.
- 5.3.28 For this scheme, the focus has been on providing a safe east-west route between Penrith and Temple Sowerby for walkers and cyclists as part of a

wider piece of work to improve connectivity between these communities. Measures proposed include a shared cycle and footway parallel to the scheme, connecting existing infrastructure and completing the route from Penrith to Temple Sowerby via Brougham.

- 5.3.29 The proposed route follows the B6262 from the south, crosses the dualled A66 via an overbridge then follows the northern edge of the proposed A66, to connect into existing WCH infrastructure to the west of Temple Sowerby. Where practicable, accommodation and maintenance tracks that were already proposed at Statutory Consultation in Autumn 2021 have been used to provide this link, to reduce the need for additional track construction and associated land take.

Stakeholder

- 5.3.30 At Statutory Consultation, the proposed design was based on a realistic worst case for the boundary of the Project. One of the implications of this worst-case approach would be the need to take land from Whinfell House and garden. Design development has enabled this area to be avoided and the Order Limits for DCO application have been adjusted to reflect that there is no longer a requirement for land take from Whinfell House.
- 5.3.31 Through continued engagement with the landowner since Statutory Consultation, agreement has been reached to acquire Lightwater Cottages to the south of the A66 and demolish these properties. The acquisition of this land would result in an improvement to the access and how it would merge onto the A66 at this location.
- 5.3.32 Following feedback and workshops with stakeholders since Statutory Consultation, the design team has changed the route of the access tracks to the drainage ponds to the north of the scheme, so that they now loop to the north around the ponds rather than run parallel to the dualled A66. This would provide the means to manage future access for all interested parties, such as National Highways' Operations, landowners and potentially Local Authorities.
- 5.3.33 In addition, the existing access serving Whinfell Holme Wastewater Treatment Works is to be relocated to the east to minimise the impact on the adjacent Shell high pressure gas pipeline.
- 5.3.34 The accommodation overbridge proposed from the B6262 has been updated to include additional linkage to the east towards land around the Countess Pillar to benefit multiple landowners in the vicinity who had their access interrupted as a result of the scheme.

Development Consent Order application Spring 2022

- 5.3.35 An illustrative plan of the scheme presented for DCO application in Spring 2022 is given in Figure 7 below. For further information, reference should be made to General Arrangement Drawings Scheme 03 Penrith to Temple Sowerby (Application Document 2.5).

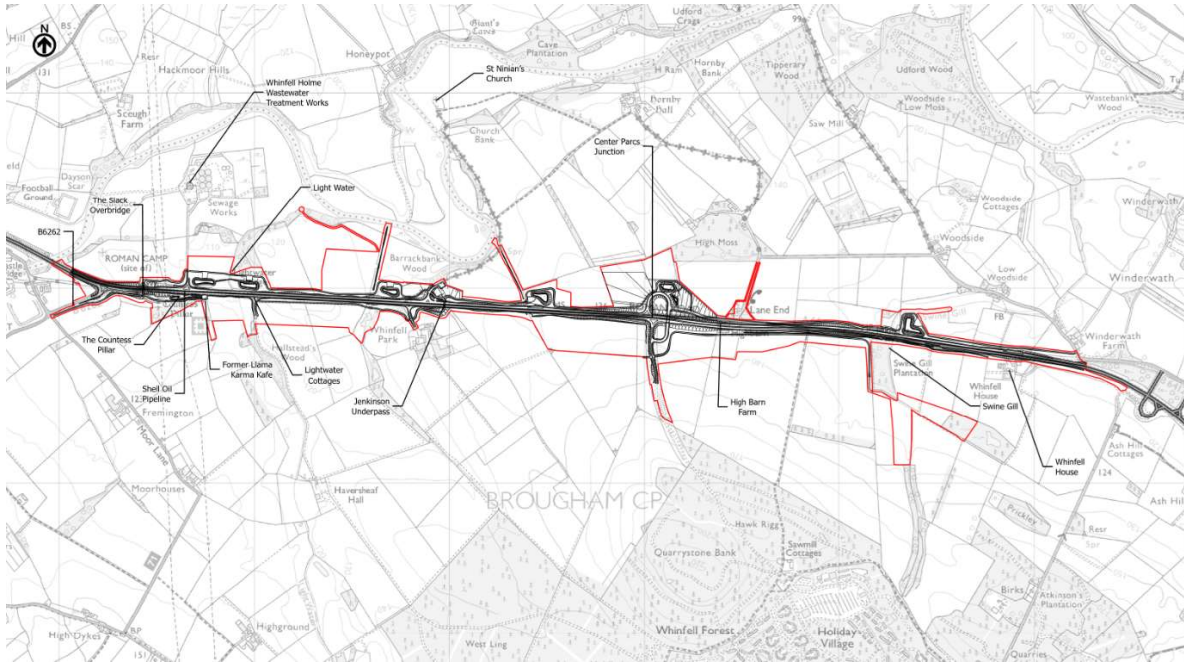


Figure 7 Illustrative plan of Penrith to Temple Sowerby scheme and surrounding area (DCO Order Limits shown in red)

- 5.3.36 The Penrith to Temple Sowerby scheme would provide full dualling of the existing 5.2km length of single carriageway A66 between Penrith and Temple Sowerby. The scheme would predominantly involve online widening using the existing carriageway to form the westbound half of the dual carriageway. The second carriageway would be constructed to the north of the existing carriageway to form the new eastbound carriageway.
- 5.3.37 A new grade-separated junction would be constructed to replace the existing junction to Center Parcs to connect the local road network and Center Parcs with the new alignment of the A66. The northern side of this junction would have shallower graded embankment slopes to integrate the junction more appropriately into the surrounding landscape. The extent of this grading would allow the land to be returned to agriculture following construction. The junction would cater for all movements on and off the A66, making it easier and safer for users to join the A66 and preventing tail backs at peak times.
- 5.3.38 New left-in/left-out junctions would be provided to the B6262 and to St Ninian's Church on the Winderwath Estate, with associated merge and diverge lanes to enable safe access to homes and businesses. Improved parking provision would be provided for access to St Ninian's Church to enhance accessibility to this heritage asset.
- 5.3.39 An existing access serving Whinell Holme Wastewater Treatment Works would be converted to left-in/left-out. This access is proposed to be relocated to the east of its current location, to minimise the need for widening over the existing Shell high pressure gas pipeline which crosses the A66 in a north-south direction.
- 5.3.40 Works to widen the carriageway would reduce the current parking provision at the National Highways A66 Information Hub (formerly the Llama Karma

Kafé). It is proposed that this area be converted to an amenity parking area with a new footpath providing access to the Countess Pillar historic monument to the east of this site, to provide an enhancement and accessibility for the public to an important heritage feature along the route. Landscape and biodiversity mitigation planting would take the Countess Pillar and its prominence along the A66 route into consideration to ensure it continues to be a known feature.

- 5.3.41 The scheme removes existing at-grade crossing points of the A66. An overpass and one underpass have been included to facilitate the safe crossing of the A66. The overbridge, which would serve as an agricultural access and as a Public Right of Way, is proposed to be situated approximately 260m to the east of the existing junction with the B6262, and the underpass is proposed to be situated approximately 180m to the east of the existing entrance to Whinfell Park.
- 5.3.42 An east/west walking and cycling link, connecting Penrith with Temple Sowerby, would be provided along the length of this scheme (predominantly to the north of the A66) which would also be utilised as an access track for pond maintenance and serve as a local access route for landowners. All other pedestrian, cyclist and horse-rider facilities that would be severed by the scheme are to be reconnected via grade-separated crossings.
- 5.3.43 New lay-by facilities would be provided on the proposed A66 mainline; two in the eastbound and one in the westbound direction, to replace existing provision which would be lost due to the implementation of the scheme. Observation platforms would be included in the westbound lay-by, and the eastbound lay-by opposite it.
- 5.3.44 No lighting would be provided on the length of the scheme.
- 5.3.45 Seven ponds are proposed at low points in the scheme to attenuate drainage and run-off from the road to manage the water quality before it is discharged into the surrounding watercourses. Shared and dedicated access tracks would be provided to the north and to the south of the road to facilitate access to ponds for maintenance purposes and to accommodate landowner movements.
- 5.3.46 Utility works would be required for gas, electricity, water, and communications services throughout the length of the scheme.
- 5.3.47 The existing farm buildings at High Barn are proposed to be demolished to accommodate the offline section of the A66 to the east of the new grade-separated junction. The proposals also include the demolition of the Lightwater Cottages to the south of the A66 to facilitate and accommodate a replacement left-in/left-out access to the Winderwath Estate. The scheme would involve minor demolition works, such as roadside features, drainage and kerbing associated with the existing A66 and other local roads.

5.4 Temple Sowerby to Appleby

Description of baseline environment

- 5.4.1 The A66 between the Temple Sowerby and Appleby bypasses includes more than 8km of single carriageway, which it is proposed to be dualled as part of the overall route upgrades. The carriageway along this section of the A66 is generally inconsistent, with narrow verges, poor alignment and substandard hardstrips.
- 5.4.2 The route is mostly located within agricultural pastureland and generally follows the route of the old Roman Road in a south-easterly direction. The route diverges from the Roman Road and passes through the Roman Camp located directly on the A66 east of Redlands Bank Farm. This Roman Camp is one of two Scheduled Ancient Monuments in the vicinity of the scheme, the other being Kirkby Thore Roman Fort and Associated Vicus, surrounding Kirkby Thore village to the south where it meets the existing A66. From the Roman Camp at Redlands Bank, the existing A66 continues southwards to pass Crackenthorpe before connecting to the Appleby Bypass.
- 5.4.3 There are several existing priority junctions along this section of the existing A66. On the eastbound carriageway, there is a bus lay-by in the diverge taper for Kirkby Thore junction.
- 5.4.4 At Kirkby Thore, there is single carriageway for a little over 3km alongside the village. This carriageway varies in width and there are several connections with local roads and private access points. A high number of HGVs pass through the village, including lorries accessing businesses to the north. Records show this section of the A66 suffers from high accident rates (potentially due to the poor horizontal and vertical geometry) and as such has already had its speed limit reduced from 60mph to 40mph. Kirkby Thore village is generally to the north of the A66 with several properties and businesses adjacent to the south and east with direct access to the A66, including Bridge End Farm and a BP fuel station.
- 5.4.5 Local to Crackenthorpe, there is single carriageway for approximately 4km alongside the community. The carriageway here varies in width, with narrow verges and poor alignment presenting visibility issues for network users. There are also several connections with local roads and private access points where accidents could potentially occur.
- 5.4.6 In addition to the Scheduled Ancient Monuments noted above, the A66 between Temple Sowerby and Appleby also passes alongside the River Eden Special Area of Conservation (SAC) and crosses it where the road passes over Trout Beck, north-east of its confluence with the River Eden. The interaction of the proposed route with these designated sites has been a significant consideration to ensure proposals conform with national planning policy.

Outcomes of PCF Stage 1 Option Development and PCF Stage 2 Option Selection

- 5.4.7 At PCF Stage 1 Option Identification, ten options were identified to improve the A66 between the Temple Sowerby and Appleby bypasses. Six options were proposed for the Kirkby Thore section of the scheme, and four options for the Crackenthorpe section; all involving the dualling of the single carriageways. Further information can be found in the PCF Stage 1 Technical Appraisal Report (Appendix 1).
- 5.4.8 Following further analysis, four of the Kirkby Thore options and two of the Crackenthorpe options were discounted and therefore not taken forward to public consultation in Summer 2019. Reasons for this included among others, longer journey times, increased local severance and negative impacts on Scheduled Ancient Monuments. Detail on this appraisal process can be found in the PCF Stage 1 Technical Appraisal Report.
- 5.4.9 The options taken forward to PCF Stage 2 Option Selection were therefore routes which combined a Kirkby Thore proposal with a Crackenthorpe proposal. In addition, a new proposal was taken forward for the section alongside Kirkby Thore. Further information on this process can be found in the PCF Stage 2 Scheme Assessment Report (Appendix 2).

Public consultation Summer 2019

- 5.4.10 The options presented at public consultation in Summer 2019 were combinations as referenced above in 5.4.9. All options upgrade the A66 in such a way that its route is diverted away from both Kirkby Thore and Crackenthorpe.
- 5.4.11 One Kirkby Thore option proposed a new dual carriageway bypass to the north of Kirkby Thore as an extension of the current Temple Sowerby Bypass. This route was proposed to pass through fields to the west before travelling away from the village to the north and east and followed a route which is lower than the surrounding land, which would help preserve the visual outlook of properties in the north of Kirkby Thore. An additional junction was proposed to improve access to Kirkby Thore village. As a consequence of location of this proposed junction, access was also improved for businesses in the area, which would serve to reduce HGV traffic through the village. Four new bridges would be required over the existing road network for Station Road, Main Street, Sleastonhowe Lane and the new Kirkby Thore junction to the north of the village. A new bridge over Trout Beck would also be required before the new road returns to the original alignment.
- 5.4.12 The other Kirkby Thore option proposed a new dual carriageway bypass to the south of Kirkby Thore as an extension of the current Temple Sowerby Bypass. This route proposed to pass through fields and follow the path of an old railway line before re-joining the current A66 just after the fuel station near Spittals Farm. This option would require additional underpasses to provide access for local farms, walkers, cyclists and horse-riders, and the demolition of several buildings. A new junction would allow access to the former A66 and the village. The route passed to the south of

the known extent of a Scheduled Ancient Monument, near to the sewage works.

- 5.4.13 One Crackenthorpe option proposed a new dual carriageway bypass to the north of Crackenthorpe, with the route following the path of the old railway line. Two new junctions would be created to serve the villages of Bolton, Crackenthorpe and Long Marton. This option proposed that the new road would re-join the current A66 just to the west of the Settle-to-Carlisle railway line.
- 5.4.14 The other Crackenthorpe option also proposed a new dual carriageway bypass to the north of Crackenthorpe, however for this option the route followed the original Roman Road to the north of Crackenthorpe and Roger Head Farm. Two new junctions would be created to serve the villages of Bolton, Crackenthorpe and Long Marton. This option proposed that this option would also re-join the current A66 just to the west of the Settle-to-Carlisle railway line.
- 5.4.15 The PCF Stage 2 Scheme Assessment Report (Appendix 2) described the following post-consultation design changes to the options, prior to announcement of the Preferred Route in May 2020:
- For the preferred Kirkby Thore option, it was proposed that the junction to the north of Kirkby Thore would be relocated to Main Street. This aligned the scheme objective of providing connectivity to the village of Kirkby Thore, with the added benefit of connecting to the north and businesses such as British Gypsum and other hauliers. Overall, this resulted in safety benefits for the village through completely removing non-access-related HGV movements from needing to enter the north of the village. It also brought economic and sustainability benefits by allowing the removal of an overbridge from the design whilst improving connectivity to businesses.
 - For the preferred Crackenthorpe option, the possibility of moving the alignment to the north as it passed Roger Head Farm to minimise land take and potential farm business effects was investigated and incorporated into the Preferred Route as outlined below. The eastbound arm of the junction at Crackenthorpe was also removed from the scheme and replaced with an upgraded junction at the Appleby Bypass to make greater use of existing infrastructure.

Preferred Route Announcement May 2020

- 5.4.16 The Preferred Route Announcement of May 2020 concluded that the northern bypass was the preferred option for the Kirkby Thore section of the route, and the northern bypass furthest from the village was the preferred option for the Crackenthorpe section of the route.
- 5.4.17 This route was preferred for passing Kirkby Thore as it provides the opportunity to reduce traffic, particularly HGVs, passing through the village. Although this route represented a longer journey time and may be more expensive than the alternative presented, it had lower environmental impacts whilst still delivering the required improvements. This option also required fewer buildings to be demolished than the alternative. In addition,

this option was not anticipated to impact on the wildlife corridor of the disused railway line, and had lower negative impact on biodiversity and the Trout Beck floodplain than the alternative considered.

- 5.4.18 This route was preferred for passing Crackenthorpe as it was the more resilient option of the two proposed; as for example, there were diversions available for when accidents happen on the route. This option also avoided an area of potential landslips where remedial works are likely to have been required with the alternative option to mitigate the potential for landslip. The preferred route was routed away from nearby watercourses and floodplains, whereas the alternative considered would potentially have had impact on the River Eden and its floodplains. The preferred option also allowed for improved access for non-motorised users to Appleby and adjacent villages by utilising the 'old' section of road. Amendments to the alignment to follow natural features which mark the boundaries of properties, such as the Eden Valley Railway have reduced the impact on landholdings.

PCF Stage 3 Preliminary Design for Statutory Consultation

- 5.4.19 During early PCF Stage 3 Preliminary Design, the proposals outlined in 5.5.17 through 5.5.19 above were developed further for Statutory Consultation in Autumn 2021 and were as outlined below. This is part of natural design development that occurs when new data and analysis supplements previously available information, for example the outcomes of surveys and further stakeholder engagement. In addition, the PCF Stage 2 Option Selection work has been revisited to review whether the announced Preferred Route addresses all the legislative and policy requirements. For Temple Sowerby to Appleby, design development was undertaken with the objective of minimising the impact of and potential damage to the River Eden Special Area of Conservation (SAC), and to accord with policy and legislation that protects this internationally designated site.
- 5.4.20 Figure 8 summarises the development of the scheme during PCF Stage 3 prior to Statutory Consultation with respect to the several alignment alternatives that were assessed as summarised in the sub-sections that follow. For further detail of the alignment alternatives assessment undertaken, refer to the Route Development Report Section 5.5 as produced for Statutory Consultation in Autumn 2021 (provided in Appendix 3).

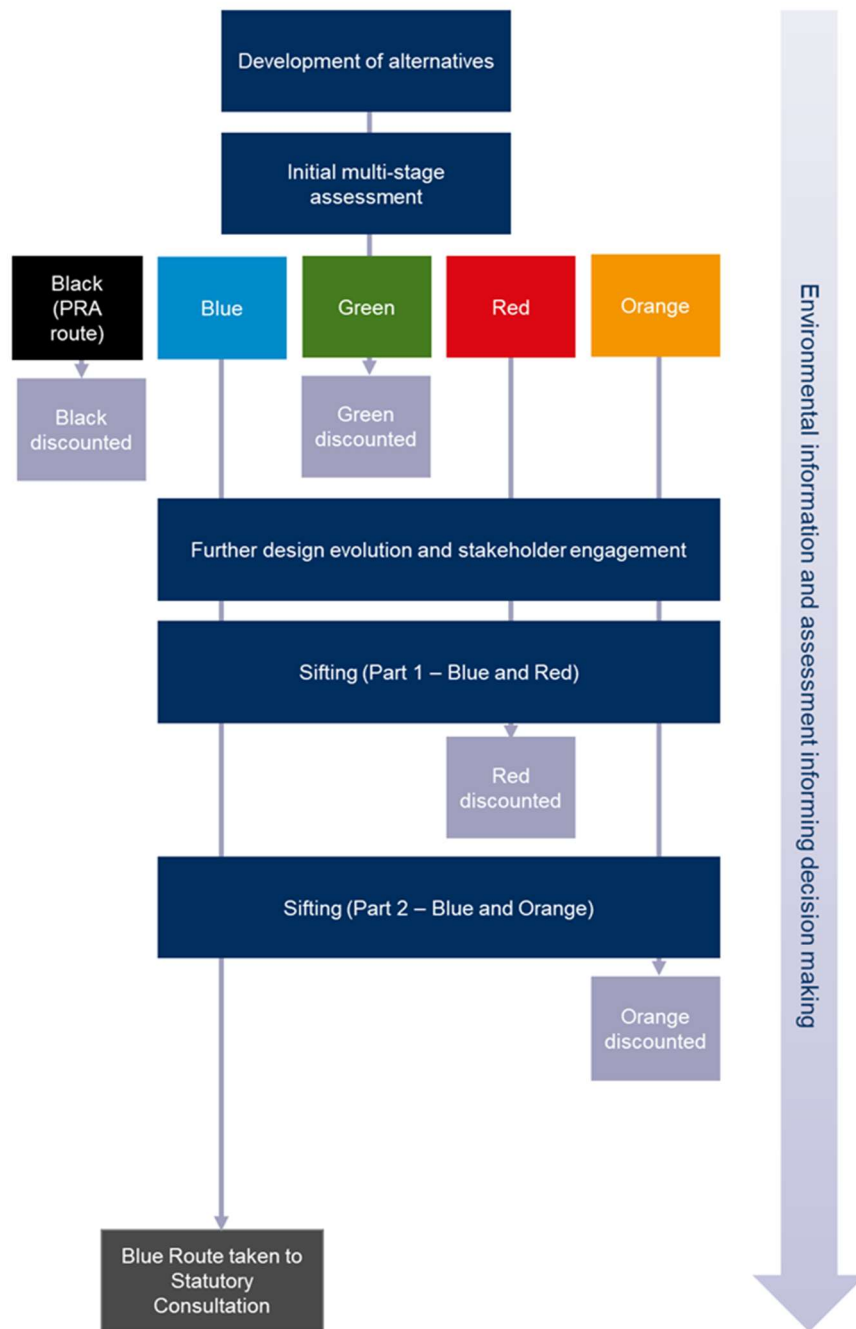


Figure 8 Early PCF Stage 3 scheme development summary for Temple Sowerby to Appleby

Development of Preferred Route

5.4.21 Between Temple Sowerby and Appleby, the Preferred Route announced in May 2020 comprised 8.5km of offline carriageway to provide a dual carriageway between the Temple Sowerby and Appleby bypasses. For the dualled sections to be viable, junction improvements would be required to enable access on and off the A66 to improve user safety and reduce congestion.

- 5.4.22 At Kirkby Thore, a short road was proposed to connect from the Temple Sowerby bypass junction to the old A66, allowing access for local traffic and other road users from Temple Sowerby to Crackenthorpe and beyond. A new junction was also proposed at Main Street of the north-east of Kirkby Thore to maintain the key local connection onto the A66 and would also provide access to businesses in the area including the British Gypsum Plant via a private access road. This would help to reduce the number of HGVs travelling through the village. New bridge structures were proposed for both Station Road and Sleastonhowe Lane to allow access over the A66 and a diversion would lead from Priest Lane to Station Road to maintain local traffic access.
- 5.4.23 To the southeast of Kirkby Thore, a new Long Marton junction was proposed to provide left-on, left-off access to both the eastbound and westbound carriageways of the new A66. It was proposed that the junction would link to the old A66 and an existing minor road, providing access to both Bolton and Long Marton. A new bridge was proposed to the east of the junction to allow users to pass over the new A66 alignment.
- 5.4.24 At Crackenthorpe, a new junction was proposed on the westbound carriageway of the new A66 alignment to provide left-on, left-off access. It was proposed that this junction would link the old A66 and the B6542, providing access to both Crackenthorpe and Appleby.
- 5.4.25 Improvements were also proposed to the existing eastbound junction with the A66 at the start of the Appleby Bypass, to make greater use of the existing infrastructure.
- 5.4.26 These proposals were presented to the public at a virtual engagement event in November 2020 as part of the Winter 2020 Project Update.

Development of alignment alternatives

- 5.4.27 As PCF Stage 3 Preliminary Design progressed following the Project Update of Winter 2020, it continued to be informed by the findings of assessments and surveys, and a detailed review of policy requirements relevant to Special Areas of Conservation (SAC), Sites of Special Scientific Interest (SSSI) and Scheduled Ancient Monuments (SAM). It became apparent that it was not possible to rule out an adverse effect on these designated features along the route and alternatives needed to be explored in order to ensure that there was no alignment which would avoid or result in less impact on these designated sites.
- 5.4.28 It was considered that the Preferred Route could potentially result in significant adverse impacts on the Trout Beck watercourse, which is part of a nationally designated SSSI and internationally designated as part of the River Eden SAC. The impacts were associated with the length and orientation of the embankments in the floodplain which could potentially lead to a disconnection of the floodplain of the watercourse.
- 5.4.29 The design team considered alternative alignments which would change the type and extents of structure required to carry the A66 through, over, or around, the SAC. These alternative alignments focused on the Kirkby Thore section of the route and that alternative alignments for the

Crackenthorpe section of the route were not considered at this point as they did not have a direct impact on the SAC.

- 5.4.30 As part of this review, a total of 15 principal alternative routes or combinations of routes were identified, considering potential environmental impacts, Project design principles, impacts on landowners, buildability, and design safety.
- 5.4.31 These alternatives were subject to a multi-stage assessment, which included early discounting of alternatives, as follows:
- Routes to the south of the River Eden were unviable due to the number of watercourse crossings required, and that the resultant routes were likely to be too long to be considered cost-effective.
 - Routes through the area of gypsum mines were discounted as the risk profile associated with the potential for damage to a new road from the mine workings was assessed to be too significant to accept.
- 5.4.32 Following a reduction in viable options, the merits of the remaining alternatives were assessed, and it was concluded:
- Routes to the north of Kirkby Thore but principally south of the gypsum mines were considered viable in line with the Preferred Route approach outlined at PCF Stage 2 Option Selection.
 - Online routes were recognised to pass near the River Eden and through Scheduled Ancient Monuments but were considered to provide a viable alternative crossing point in respect to Trout Beck and therefore warranted further assessment.
- 5.4.33 A sifting matrix approach was used to assess the remaining alternatives against several criteria including: environmental and landscape effects, safety, land take, demolition, geomorphology, impact on local businesses including farms and the economy, impact on communities and users, engineering, buildability and cost, carbon, and conformity with the NNNPS. The outcome of this assessment was the identification of three routes (referred to as the blue, orange, and red routes) to be taken forward for further assessment, to be informed by engagement and consultation as described below.
- 5.4.34 For full details of the alignment alternatives considered and the assessment process undertaken, refer to the Route Development Report Section 5.5, provided in Appendix 3.

Presentation of route alignment alternatives at July 2021 stakeholder engagement events

- 5.4.35 As there had been significant design development during PCF Stage 3 Preliminary Design for this section of the A66 between Temple Sowerby to Appleby, further stakeholder engagement events were held during July 2021 to gather feedback from interested and affected parties on how the design was developing at that point. These sessions included in-person drop-in sessions at Kirkby Thore Memorial Hall with the opportunity for

stakeholders to book an appointment to experience a SoundLab (virtual listening tool) simulation of the proposals.

5.4.36 The engagement events provided additional information for stakeholders to help them understand the three alignment alternatives before they were presented at Statutory Consultation. These three alternatives were as shown in Figure 9 and summarised below.

5.4.37 It was communicated to attendees that while suggestions would be taken onboard and considered going forward, they would not be reflected in the Statutory Consultation materials. Attendees were encouraged to participate in the Statutory Consultation and make their comments formally through that channel where they would be reviewed, and regard given to them in the final preparation of the application for development consent. Attendees were also advised by the National Highways team that a route preference would be stated at Statutory Consultation.

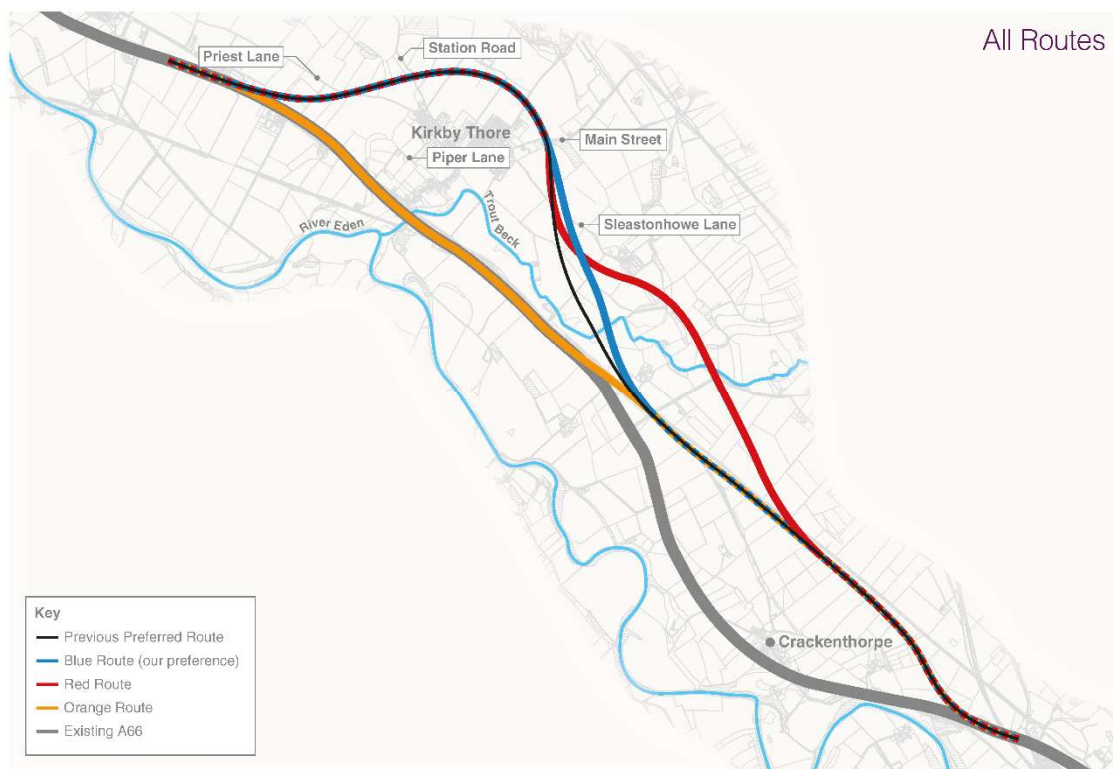


Figure 9 Alignment alternatives presented for Temple Sowerby to Appleby at July 2021 stakeholder engagement events

5.4.38 The Blue Route included a new bypass around the north of Kirkby Thore and a new bypass to the north of Crackenthorpe. Following the alignment of the Preferred Route, the Blue Route travelled in a north-easterly direction from the end of the Temple Sowerby Bypass, crossing over Priest Lane and under Station Road before turning south after passing north of the village. Heading south, the route then passed under Main Street, where it was proposed to build a new junction, and under Sleastonhowe Lane. From here, the route would deviate from the Preferred Route, with the

alignment further east to allow a shorter crossing of Trout Beck and its floodplain. The Blue Route would then follow the line of the Preferred Route as it turns in a south-easterly direction to follow the line of the Roman Road towards Appleby.

- 5.4.39 The Red Route followed the alignment of the Blue Route from Temple Sowerby Bypass to where the route would pass under Main Street, where it was proposed to build a new junction, and under Sleastonhowe Lane. From here, the road would then run parallel to the existing A66 to cross over two watercourses, Keld Syke and Trout Beck and their associated floodplains. The crossing of Trout Beck would be further east from both the Preferred Route and the Blue Route. After crossing Trout Beck, the Red Route would head south to re-join the line of the Preferred Route near Crackenthorpe as it follows the line of the Roman Road towards Appleby.
- 5.4.40 The Orange Route mostly followed the route of the existing A66 along the southern edge of Kirkby Thore, before bypassing Crackenthorpe to the north. From the end of the Temple Sowerby Bypass the Orange Route initially ran to the north of the existing A66 before crossing to the south, close to Piper Lane. It would then run parallel to the A66, to the rear of a row of houses, before crossing Trout Beck at Bridge End. At this location the river is confined by the existing A66 bridge and other buildings around Kirkby Thore. Kirkby Thore would be accessible via the existing junction at Temple Sowerby and the old A66 which would be connected to the local road network. East of Trout Beck, the Orange Route would pass through part of Bridge End Farm, requiring the acquisition and demolition of some or all of the farm buildings, and behind the fuel station, running parallel to the existing A66. It would then follow the line of the Preferred Route as it turns in a south-easterly direction to follow the line of the Roman Road towards Appleby. It was proposed to connect this bypass back into the existing A66 at the eastern end of the scheme with access to Crackenthorpe and Appleby being provided via connections to the existing road network.

Alignment alternatives sifting for Statutory Consultation

- 5.4.41 Following these stakeholder engagement events, a further sifting exercise was undertaken prior to Statutory Consultation to compare the alignment alternatives for Temple Sowerby to Appleby. Alignments were assessed against engineering, environmental, traffic, economic, stakeholder principles, with commentary on policy conformity. In addition, National Highways' three priorities of Safety, Customer and Delivery were considered crucial to assessing the alignments ahead of Statutory Consultation.
- 5.4.42 Refer to 4.1 for further detail on the assessment process and criteria and the Route Development Report Section 5.5 provided in Appendix 3 for detail of the assessments and outcomes. The Blue Route was subsequently identified as the preference to be taken forward for Statutory Consultation.

Statutory Consultation Autumn 2021

5.4.43 Following the assessment and engagement process described above, the Blue Route emerged as the preferred route for this scheme. The preliminary design presented at Statutory Consultation in Autumn 2021 for Temple Sowerby to Appleby can be summarised as follows:

- A developed version of the route shown in the Preferred Route Announcement comprising a new offline bypass north of Kirkby Thore, new bypass north of Crackenthorpe, new junctions and improvements.
- As the route travelled south-east from Kirkby Thore, the alignment had moved approximately 100m east to reduce the length of affected floodplain at the Trout Beck crossing.
- Temple Sowerby Bypass Junction would provide connections between the existing A66 and the local road network.
- New junction to be provided at Main Street to the north-east of Kirkby Thore; Main Street would pass over the proposed A66 alignment on a bridge structure.
- New merge and diverge lanes would enable users to safely join and leave the A66 in both directions.
- New bridge structures for Station Road and Sleastonhowe Lane, enabling access over and under the A66 respectively. Diversion provided from Priest Lane to Station Road to maintain local traffic access.
- New multi-span viaduct proposed for the A66 to cross Trout Beck and its floodplain.
- New bridge provided over the new A66 at Long Marton Road close to Powis House to maintain connectivity between Bowdon and Long Marton and allow access to the existing A66.
- New left on/left off junction on the new westbound carriageway at Crackenthorpe, linking to the previous A66 and the B6542 to provide access to both Crackenthorpe and Appleby. This and provision of an additional left-on junction on the eastbound carriageway at the existing Appleby Bypass junction would provide all-movement access to the A66 west of Appleby.

5.4.44 Throughout PCF Stage 3, design development continued as a result of further modelling, assessment and survey works. This enabled flood modelling and the Habitats Regulations Assessment work to refine the design of structures crossing Trout Beck. Archaeological survey works in the vicinity of the Roman Camp, 350m east of Redlands Bank were undertaken to assess the extents of the designation leading to an iteration of the design prior to DCO application (see below).

5.4.45 It was recognised at Statutory Consultation that the proposed route for this scheme had an impact on part of the Fair Hill site at Appleby which is the field used for the annual Appleby Horse Fair. While this was a relatively small land take, designed to facilitate a safer junction arrangement, the

project team was aware of the impacts this might have on the Fair site and noted that work would continue before submission of the DCO application to develop junction proposals at this location, to mitigate this impact.

PCF Stage 3 Preliminary Design for DCO

5.4.46 Following Statutory Consultation design development continued. The design was developed having regard to feedback received throughout the consultation and ongoing engagement, to address environmental and traffic issues that arose following completion of surveys and to incorporate mitigation for impacts that had been identified through the Environmental Impact Assessment (EIA). This work has led to a number of opportunities to revise the design to improve aspects such as community connectivity, minimising or mitigating environmental impacts and optimising the use of land. Key developments for Temple Sowerby to Appleby are outlined below.

Engineering

5.4.47 Throughout preliminary design, refinements have been made to highway geometry and access arrangements where a betterment on the Autumn 2021 design has been recognised.

5.4.48 The junction to the north of Kirkby Thore has been relocated from its originally proposed position at Main Street to Fell Lane. It is proposed to provide a compact, grade-separated all-movement junction of a similar shape and size to that presented in Autumn 2021. This new junction arrangement provides a more suitable route for HGVs between the industrial estates and the A66, which was a concern raised in Statutory Consultation feedback by locals. The previously proposed junction severed a number of farm access tracks including Metcalf Bridge, which have now been realigned accordingly to tie-in with the new junction proposals.

5.4.49 Although the Fell Lane junction proposal is closer to the residential area of Sandersons Croft, it provides better highway geometry, a safer route with improved visibility and connectivity and would allow for improvements to access for several businesses in the area. It also avoids the previously required permanent acquisition of land from the industrial estate, including the caravan storage park. However, temporary acquisition of the land would be required during construction of the improved access.

5.4.50 As introduced in 5.4.44 above, archaeological survey works undertaken during PCF Stage 3 Preliminary Design indicated that the extents of the designated site of the Roman camp, 350m east of Redlands Bank were greater than previously recorded. This led to the development of the alignment in this location to avoid the footprint of the SAM.

5.4.51 During this design development process, a review of feedback received from Parish Councils through Statutory Consultation and ongoing engagement led to the reintroduction of a junction at Long Marton (see Chapter 6 of the Consultation Report (Application Document 4.4) for further information). In parallel, a review of the interaction between Long Marton Lane End and access to Appleby allowed the proposals at Appleby to be

similarly updated to reduce potential negative impacts on a range of stakeholders and receptors.

- 5.4.52 This review considered traffic volumes, design standards and required land take from the Fair Hill site that would have been required to facilitate the previously proposed eastbound Appleby junction arrangement. The outcome was the proposal that eastbound access remains as existing.
- 5.4.53 The design presented at Statutory Consultation had two westbound junctions within 3km of each other, each serving low volumes of traffic. Considering the area as a whole, the decision was taken to remove the westbound Appleby junction. This junction would have required a deep cutting and widening of the A66 in an area with known geotechnical concerns.
- 5.4.54 These developments in the vicinity of Appleby, combined with the reintroduction of an all-movement junction at Long Marton provides access for local communities, whilst also removing the need for land take from the Fair Hill site. Although the developments at Long Marton would result in an increase in traffic numbers on the old A66 between Long Marton and Appleby compared to the proposals presented at Statutory Consultation in Autumn 2021, these numbers are lower than the forecast traffic flows on the A66 without completion of the Project (refer to the Transport Assessment (Application Document 3.7)).
- 5.4.55 Other design development that has taken place since Statutory Consultation includes a minor realignment of the proposed carriageway around the Sleastonhowe Oak. This follows Statutory Consultation feedback and receipt of further survey information. The resulting proposal avoids this significant tree. Supporting infrastructure, such as drainage ponds and access routes to them have also been moved to accommodate the Oak.
- 5.4.56 Opportunities to optimise earthworks throughout the scheme have also been reviewed. For example, the mainline realignment past the Roman camp outlined in 5.4.50 has enabled the road to be lifted to ground level, which avoids the need for the deep cutting required in the Autumn 2021 design. This allows for reduced earthworks adjacent to the Roman Road, which in turn results in benefits for constructability, landscaping, and cost.
- 5.4.57 Drainage attenuation provision has been reviewed and rationalised in the vicinity of Powis House. As a result, the two ponds proposed at Statutory Consultation have been consolidated into one and located further from the property.
- 5.4.58 Where practicable, land severed by the proposed dual carriageway have been reconnected. One such example is where the severed access track to Sleastonhowe Farm has been diverted to the proposed Sleastonhowe Lane bridge where it can then connect onto Sleastonhowe Lane and onwards to reconnect with the farm.
- 5.4.59 At the eastern scheme extents, near Roger Head Farm, engagement with landowners throughout PCF Stage 3 has resulted in a change to accommodation arrangements. The underpass proposed in Autumn 2021

has been replaced by an overbridge further southeast. This bridge would be shared between landowners, and better suits their requirements.

- 5.4.60 A new overbridge is to be provided near the Roman fortlet at Crackenthorpe in response to Statutory Consultation feedback that highlighted the previously proposed underpass did not adequately reconnect severed land.

Environment

- 5.4.61 Statutory Consultation feedback for the Temple Sowerby to Appleby scheme highlighted concerns relating to landscaping and environmental mitigation. Design development has sought to address such issues and has included Supplementary Consultation on proposals where required. Reference should be made to the Consultation Report (Application Document 4.4) for detail. For information on specific landscaping and environmental mitigation proposals, refer to ES Volume 1 (Main Report), Chapter 10 – Landscape and Visual.
- 5.4.62 At Kirkby Thore northern junction, it was recognised that the new junction is closer to Sandersons Croft and measures would be required to mitigate the impact on this community, including the use of landscaping bunds to reduce noise and visibility impacts. The relocation of the junction also reduces the potential for headlight glare into properties on Main Street and measures such as bunding or fencing would be implemented to mitigate potential glare with the new junction location to affected properties in Sandersons Croft.
- 5.4.63 Where practicable, for example between Spittals Farm and Cross Street, design development has allowed proposed earthworks to be refined and regraded to enhance landscape integration and enable land to be handed back to landowners.
- 5.4.64 Around Long Marton, the change in alignment has removed the potential negative impacts on the Roman camp, 350m east of Redlands Bank, Scheduled Ancient Monument, identified following receipt of further survey information (see 5.4.50 above).
- 5.4.65 Minor realignment of the carriageway is proposed to avoid negatively impacting the Sleastonhowe Oak tree and its Root Protection Area.
- 5.4.66 As outlined in 4.4.22 above, an update to the modelling assumptions used for the Greenhouse Gas (GHG) emissions calculations has resulted in a reduction in emissions figures for the schemes assessed. This includes Temple Sowerby to Appleby, for which alignment alternatives were assessed prior to Statutory Consultation. As a result of this change in modelling assumptions, the team have reviewed the sifting process carried out; for further information, refer to ES Volume 1 (Main Report), Chapter 3 – Assessment of Alternatives (Application Document 3.2).
- 5.4.67 However, GHG emissions were not the only factor influencing the assessment of alternatives ahead of Statutory Consultation. For Temple Sowerby to Appleby, the main reason the Blue Route was progressed through to DCO application was its conformance to national planning policy. The reduction in GHG emissions resulting from the updated

methodology provided an improvement for all alternatives considered but does not change the assessment that Blue Route is the option that should be progressed.

Traffic and economics

- 5.4.68 Feedback from Statutory Consultation led to further design development and design improvements for Temple Sowerby to Appleby, most notably for the junctions and access arrangements, as described above and that were subject to Supplementary Consultation in February 2022 (see 5.4.78 through 5.4.90 below). This feedback allowed the design team to better understand the local area, the roads and their usage and seek to develop an improved design for this scheme.
- 5.4.69 To the north of the village of Kirkby Thore, it is intended to relocate the junction westwards from Main Street to Fell Lane. This change addresses concerns over traffic volumes and the potential for congestion on Main Street. Feedback received highlighted safety concerns due to HGVs and LGVs accessing the industrial estate, given that the Autumn 2021 design still required them to pass through Kirkby Thore via a narrow stretch of Main Street.
- 5.4.70 The proposal to move this junction to Fell Lane removes a narrow stretch of road and redirects HGVs to a wider route more suitable for two-way traffic. This would result in a reduction in the overall level of HGV and LGV traffic through the village as British Gypsum and other businesses to the north of Kirkby Thore would use the new Fell Lane junction.
- 5.4.71 Feedback from Statutory Consultation was also integral to the development of the proposals in the vicinity of Long Marton. Concerns were raised about potential increased traffic levels, particularly passing the Grammar School and properties to access the B6542 eastbound junction at Appleby. Safety issues were highlighted, including the potential for increased use of unsuitable local roads by drivers seeking to avoid the proposed junctions, diversions and increased journey times. In addition, residents and businesses noted that travel east of Appleby during the annual Horse Fair would not be possible and that the proposals could limit future growth of the parishes.
- 5.4.72 The previously proposed access arrangements at Appleby have similarly been revised to address feedback received regarding traffic and use of the roads in the area as outlined in 5.4.51 through 5.4.54 above.
- 5.4.73 Accessibility opportunities, including those for walkers, cyclists and horse-riders (WCH), have developed throughout preliminary design as introduced in 4.4.29 through 4.4.33 above.
- 5.4.74 For this scheme, the focus has been on providing safer WCH connections in response to Local Authority and user group feedback. Along the length of the A66 between Temple Sowerby and Appleby, the existing A66 severs a number of Public Rights of Way. It is therefore proposed to connect these terminated routes to provide more useable WCH infrastructure.
- 5.4.75 It is proposed to provide an additional shared cycle and footway in the verge of the de-trunked A66 along the length of this scheme. This

reconnects severed WCH routes between the north and south of the proposed dual carriageway, improving connectivity and accessibility for users. These proposals were part of the Statutory Consultation materials, with favourable feedback received that has further informed design development of provision of this path.

5.4.76 Road Safety Audit feedback highlighted concerns regarding visibility around Kirkby Thore Primary School. Design development since Statutory Consultation has sought to address this by providing additional footpath connectivity around the school, narrowing the carriageway to allow for widened and hardened verges suitable for pedestrian use.

5.4.77 Bridleways and footpaths severed by the proposed dualling scheme would be reconnected, with diversions minimised where practicable. Refer to Walking, Cycling and Horse-riding Proposals (Application Document 2.4) for further information.

Stakeholder

5.4.78 Following Statutory Consultation in Autumn 2021, design development presented opportunities to improve the design along the route of the Temple Sowerby to Appleby scheme, responding to issues raised during consultation. These proposals seek to improve community connectivity and mitigate environmental and land impacts at:

- The northern junction at Main Street in Kirkby Thore
- Long Marton Lane End
- Access arrangements at Long Marton Road, west of Appleby.

5.4.79 Figure 10 below has been extracted from the material prepared for the Supplementary Consultation on these proposals to identify the location and form of the improvements proposed. Further description of these improvements to the design are set out below.

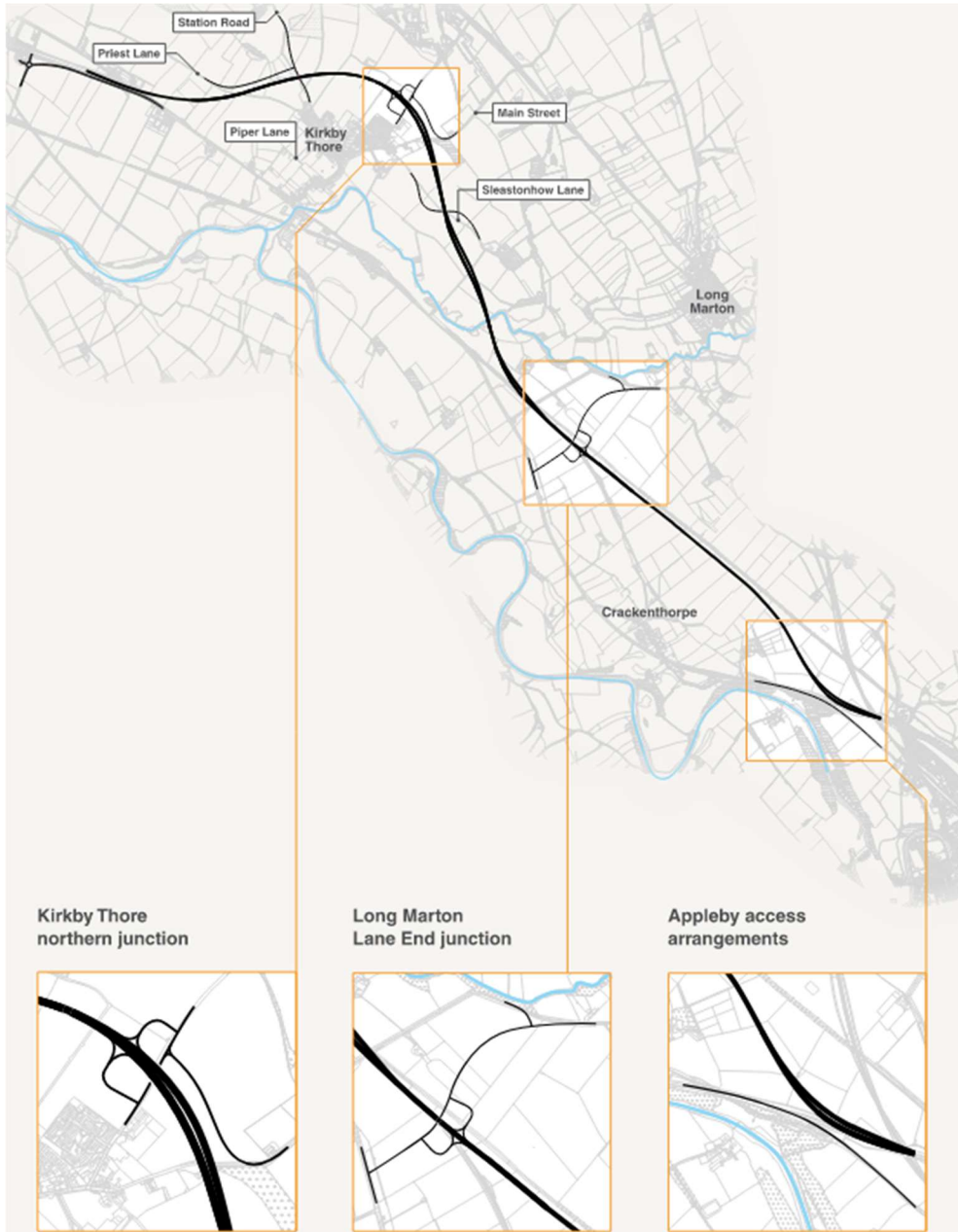
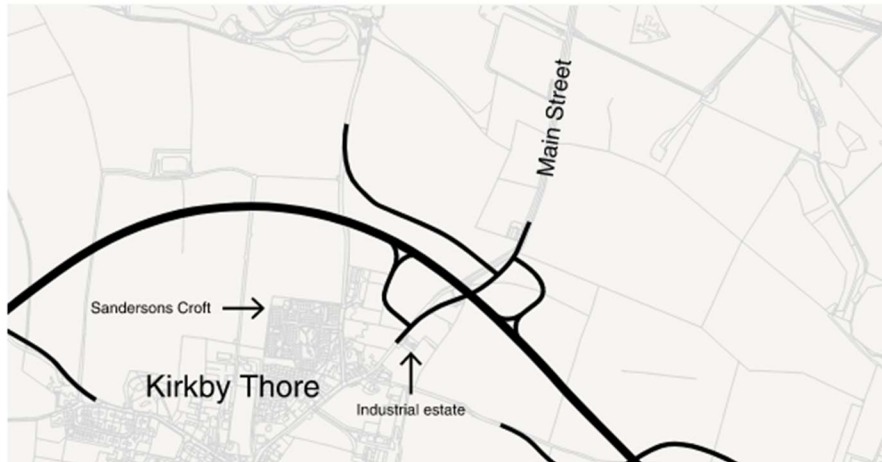


Figure 10 Extract from Supplementary consultation brochure for Temple Sowerby to Appleby

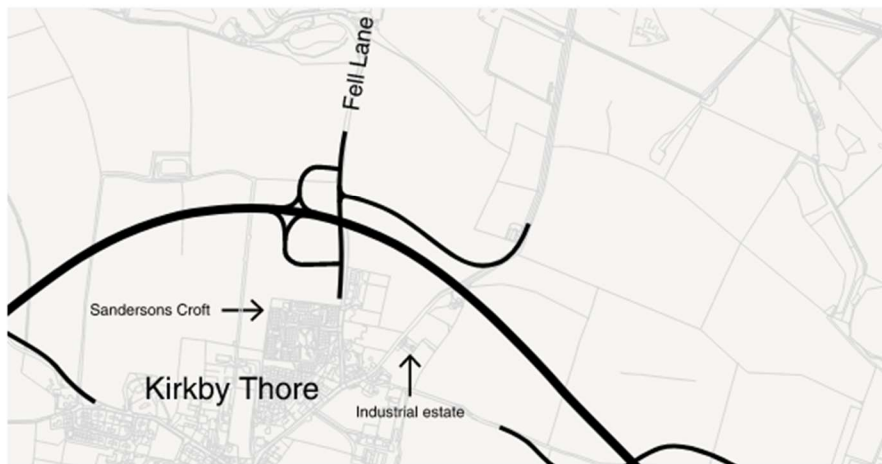
Kirkby Thore northern junction

5.4.80 At Statutory Consultation in Autumn 2021, it was proposed to construct a new junction to the north-east of Kirkby Thore, connecting Main Street to the new A66. Subsequent design development repositioned this junction westwards from Main Street to Fell Lane, as shown in Figure 11 below.

Design as presented at our autumn consultation



Our amended design



Legend

— Proposed improvement to junction and road layout

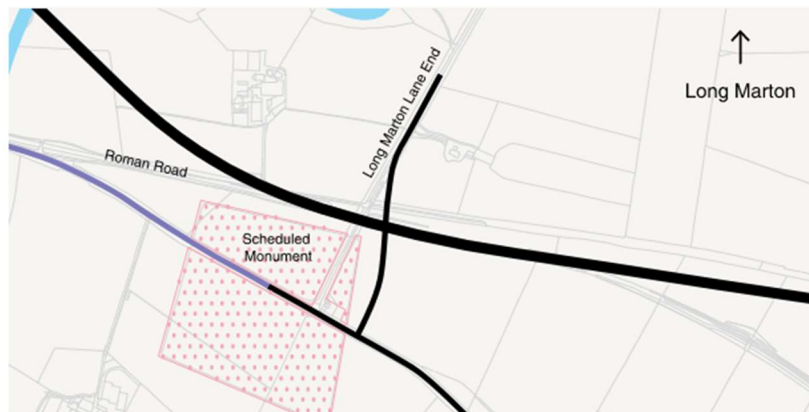
Figure 11 Extract from Supplementary consultation brochure for Temple Sowerby to Appleby: Kirkby Thore northern junction proposals

Long Marton Lane End junction

- 5.4.81 At Statutory Consultation in Autumn 2021, it was proposed to provide an overbridge Long Marton Lane End.
- 5.4.82 Realigning both the new A66 dual carriageway and Long Marton Lane End would avoid potential negative impacts on the nearby Redlands Bank Roman camp SAM. This realignment also allows for previous slip road visibility and safety concerns to be addressed. The developed design includes a compact, all-movement, grade-separated junction at Long Marton Lane End to serve villages to the north and south with an underpass. This diverts the Long Marton road under the new A66 with connector roads to the new dual carriageway.

- 5.4.83 At Long Marton Lane End, it is recognised that previously unaffected landowners would now be impacted by the junction proposals. Engagement has been ongoing throughout design development and would continue as required to seek to address issues of the affected land interests, where practicable. It should also be noted that the new proposals at Long Marton avoid the nearby Roman camp and therefore potential policy issues associated with developments at designated sites.
- 5.4.84 See Figure 12 below for an extract from the consultation materials produced, for context.

Design as presented at our autumn consultation



Our amended design

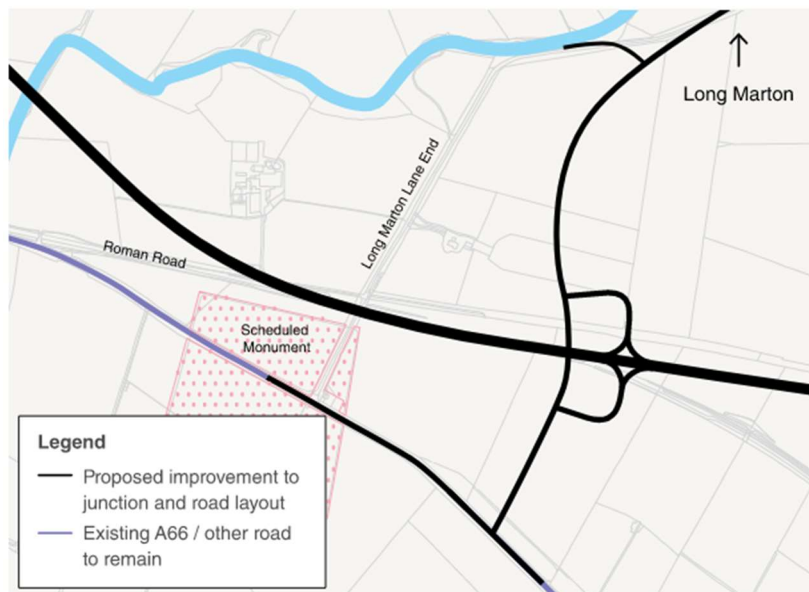


Figure 12 Extract from Supplementary consultation brochure for Temple Sowerby to Appleby: Long Marton Lane End junction proposals

Appleby access arrangements

- 5.4.85 At Statutory Consultation, it was proposed to provide two upgraded junctions on the A66 at the eastern end of this scheme, towards Appleby. Design development in this area proposes to remove both junctions and simplify the access arrangements for all users.

- 5.4.86 This improvement in this location is possible due to the works proposed to reintroduce a junction at Long Marton Lane End, as described above. The existing westbound slip road would be changed to a two-way road to allow traffic from Appleby to access the old A66 and head west to the new Long Marton Lane End junction and beyond.
- 5.4.87 By revising the access arrangements at Appleby, it is possible to avoid the need for permanent acquisition of land from the Fair Hill showground, as was previously proposed at Statutory Consultation. This dedicated open space used for the annual Appleby Horse Fair would remain as is and the new proposals seek to reduce congestion locally during the Fair week.
- 5.4.88 See Figure 13 below for an extract from the consultation materials produced, for context.

Design as presented at our autumn consultation



Our amended design



Legend

- Proposed improvement to junction and road layout
- Existing A66 / other road to remain

Figure 13 Extract from Supplementary consultation brochure for Temple Sowerby to Appleby: Appleby access arrangements proposals

- 5.4.89 Given the potential impacts of each of these junctions on local communities, National Highways carried out Supplementary Consultation through early 2022. This sought to gather insights from stakeholders to further inform design development in these locations.

5.4.90 A summary of matters raised and the outcomes from this consultation are provided in Chapter 7 of the Consultation Report (Application Document 4.4) and its supporting Annex P.

Development Consent Order application Spring 2022

5.4.91 An illustrative plan of the scheme presented for DCO application in Spring 2022 is given in Figure 14 below. For further information, reference should be made to General Arrangement Drawings Scheme 0405 Temple Sowerby to Appleby (Application Document 2.5).



Figure 14 Illustrative plan of Temple Sowerby to Appleby scheme and surrounding area (DCO Order Limits shown in red)

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

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

5.4.94 The scheme then continues under the realigned Sleastonhow Lane where a new overbridge would be provided. The realignment of Sleastonhow Lane avoids and runs to the south of the veteran oak tree. The new A66 would then cross the SAC and SSSI designated Trout Beck and its

associated floodplain on a new multi-span viaduct before heading in a south-easterly direction towards Crackenthorpe.

- 5.4.95 A false bund would be created on the south side of the new A66, around the north of Kirkby Thore. The false bund, formed by creating an embankment above existing ground levels, would increase the depth of cutting to visually screen the road and to reduce noise impacts to the village of Kirkby Thore. These embankments would be graded out on the village side to allow them to fit better into the surrounding landscape and to enable the land on which they are constructed to be returned to agricultural use following construction.
- 5.4.96 A new compact grade-separated junction is proposed to be provided at Long Marton. To facilitate this junction, the route of Long Marton Road would require some realignment. This realignment would move the road away from the Roman Camp, 350m to the east of Redlands Bank Scheduled Monument. This route would provide full access to the new A66 and maintain the existing link between the communities of Bolton and Long Marton. East of Long Marton the route would run in a south-easterly direction and has been designed to follow the line of the Roman Road towards Appleby. The scheme would connect to the existing A66 Appleby Bypass at the eastern end of the scheme.
- 5.4.97 The existing eastbound diverge slip road linking to the B6542 close to the Appleby Fair field would be maintained to allow access into Appleby. The existing westbound merge slip road at this location would be changed to a two-way road to allow traffic from Appleby to access the de-trunked (old) A66 and head west to the new Long Marton junction and beyond.
- 5.4.98 To improve local connectivity at the western end of the scheme, the existing junction at the eastern end of the Temple Sowerby bypass would be improved. The improved junction would provide connections between the existing A66 and the local road network. A short section of road would connect from Temple Sowerby Bypass junction to the existing A66, allowing access for local traffic and other road users from Temple Sowerby to Crackenthorpe and to wider settlements.
- 5.4.99 A new grade-separated junction would be provided at Fell Lane to the north of Kirkby Thore. Fell Lane would pass over the proposed A66 alignment on a bridge structure. This junction would maintain the key local connection onto the A66 at Kirkby Thore and also provide access for communities to the north as well as the British Gypsum site. This would contribute to a reduction in the number of Heavy Goods Vehicles (HGV) movements through Kirkby Thore. New merge and diverge lanes would be incorporated as part of this junction to enable users to safely join and leave the A66 in both directions. A connector road, on the northern side of the new A66, would also be constructed which would provide a link from the new junction to Main Street. The property Whinthorn House, together with an agricultural barn, would need to be demolished to accommodate the route at this location.
- 5.4.100 Accommodation works would be undertaken to ensure that access to properties is suitably maintained. The existing underpass would be widened and undergo redesign to maintain access for Spittals Farm. A new

accommodation overbridge would be used to carry an existing bridleway over the new A66 at its north-westernmost extent and to maintain access for Crossfell House Farm. To the eastern extent of the route, a new accommodation overbridge would maintain access over the new A66 for Rogerhead Farm.

5.4.101 New lay-by facilities would be provided on the proposed A66 mainline to replace existing provision which would be lost due to the implementation of the scheme. Three lay-bys would be provided in the eastbound direction, with another three in the westbound direction

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

5.4.103 15 ponds are proposed at low points in the scheme to attenuate drainage and run-off from the road to manage the water quality before it is discharged into the surrounding watercourses. Shared and dedicated access tracks are proposed to be provided to the north and to the south of the road to facilitate access to ponds for maintenance purposes and to accommodate landowner movements.

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

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

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

5.5 Appleby to Brough

Description of baseline environment

5.5.1 The A66 between Appleby and Brough includes an approximately 8km section of single carriageway with local access junctions at Sandford, Moor House Lane, Hayber Lane, Warcop, Toddygill, Flitholme and Great Musgrave.

5.5.2 This section of the route follows the alignment of the Roman Road, with a carriageway width varying between 7.3m and 9.3m. This variation in carriageway width, particularly between the B6259 and Brough, makes for an inconsistent driving experience and thus creates safety issues.

5.5.3 The junctions along this section of the route vary in layout and present further safety issues, with vehicles attempting to join the main highway which is a single lane operating at a higher speed. Sandford and Warcop junctions comprise ghost islands, and there are no specific facilities provided at Moor House Lane, Hayber Lane, Toddygill, Flitholme and Langrigg junctions.

- 5.5.4 Drivers can also find themselves in a vulnerable position when attempting to slow and leave the A66, especially when turning right. Changes in speed limits also create potential accident spots and as such the speed limit has already been locally lowered from 60mph to 50mph to mitigate this.
- 5.5.5 The route of the A66 between Appleby and Brough is generally located within agricultural land bounded by a Ministry of Defence (MoD) training camp and firing range to the north. The MoD also retains its headquarters in the village of Warcop and as such requires frequent access across the A66 between these two sites. A P-Loop on the A66 assists with MoD access to the site for westbound articulated vehicles accessing the firing range access at Fell Lane.
- 5.5.6 The A66 along this route follows the southern edge of the North Pennines Area of Outstanding Natural Beauty from Moor House Lane all the way to Brough in the east. The AONB also contains the North Pennines UNESCO Global Geopark, an internationally recognised site of outstanding geological heritage.

Outcomes of PCF Stage 1 Option Development and PCF Stage 2 Option Selection

- 5.5.7 At PCF Stage 1 Option Identification, seven options were considered. Four were for the western section of the route, and three were for the eastern section. One of each of these options would therefore be required to complete the route. Further information can be found in the PCF Stage 1 Technical Appraisal Report, provided in Appendix 1.
- 5.5.8 Following further analysis, three of the western options and two of the eastern options were discounted and therefore not taken forward to public consultation in Summer 2019. Reasons for this included among others, potential construction complexity, undulating geometry of the existing route preventing significant re-use and negative impacts on Scheduled Ancient Monuments, the North Pennines Area of Outstanding Natural Beauty, and the Eden Valley railway line. For those options requiring significant incursion into the AONB, it was noted that these would be difficult to justify where there are alternative options with potentially lesser impact on the AONB. Detail on this appraisal process can be found in the PCF Stage 1 Technical Appraisal Report.
- 5.5.9 A single option was therefore taken forward to PCF Stage 2 Option Selection, combining the remaining western and eastern options as outlined below. Refer to the PCF Stage 2 Scheme Assessment Report provided in Appendix 2 for further information.
- 5.5.10 It was proposed that between the Appleby Bypass and Wildboar Hill, the route would utilise as much of the existing A66 as possible for eastbound traffic. For westbound traffic, it was proposed to construct a new carriageway adjacent and to the south of the existing carriageway. It was noted that due to the need for a high embankment along this proposed route, there was the potential to severely adversely affect a group of properties at Sandford which would require the need to compensate or purchase these buildings.

- 5.5.11 From Wildboar Hill, it was proposed that the route would leave the line of the existing A66 to pass behind Wheatsheaf Farm and cross the MoD sports field, remaining close to but south of the A66 before re-joining the dual carriageway at Brough Bypass. Constructing the new carriageway to the south would increase the distance between the North Pennines AONB and the A66 and facilitate use of the old A66 during most of the construction works.
- 5.5.12 Culverts would be required for existing watercourse crossings including Cringle Beck, Hayber Beck, Moor Beck and Lowgill Beck.
- 5.5.13 It was proposed that all access to the route from the local road network be provided with a junction at Warcop, with potential for limited access at Sandford, Flitholme and Langrigg. The proposal was for a compact grade-separated junction with an underbridge beneath the proposed A66 to connect the village of Warcop to the old A66.
- 5.5.14 In addition, it was proposed to retain portions of the existing A66 for local traffic, MoD traffic and non-motorised users between Moor House Lane and Turks Head.
- 5.5.15 It was proposed that three left on/left off junctions be provided to the south of the A66 to connect small hamlets to the south with the A66. To the north of the proposed A66, there would be a new section of single carriageway provided from Turks Head to connect with the existing local road network of Brough village to the east.
- 5.5.16 Four small accesses would be provided to the north and south of the A66 providing access to individual farms, residential buildings, Café Sixty Six and agricultural land.

Public consultation Summer 2019

- 5.5.17 A single option was presented at public consultation in Summer 2019.
- 5.5.18 This option proposed to widen the current carriageway between Café Sixty Six and Wildboar Hill, allowing it to be utilised as the eastbound carriageway. It was proposed to construct a new westbound carriageway directly to the south of the current A66.
- 5.5.19 Between Wildboar Hill and the Brough Bypass, it was proposed that a completely new dual carriageway would be constructed directly to the south of the current A66. The existing road would then be used for local access and pedestrians, walkers, cyclists and horse-riders.
- 5.5.20 New culverts would divert streams under the road at Cringle Beck, Hayber Beck, Moor Beck and Lowgill Beck. New junctions and a bridge would provide access from the new road to Warcop.
- 5.5.21 Access to the proposed route from local roads would be limited to junctions at Sandford, Warcop, Flitholme, and Langrigg, which would make this section much less accident-prone. The existing A66 between Moor House Lane and Turks Head would become part of the county road network for safer local access to nearby villages, especially for walkers, cyclists and horse-riders.

- 5.5.22 It was proposed that a new dual carriageway would connect back into the existing A66 at the Brough Bypass.
- 5.5.23 The PCF Stage 2 Scheme Assessment Report noted that although the proposed option received positive public support at consultation, it was found that to address some of the main issues raised further route development would be required before the Preferred Route Announcement.
- 5.5.24 For example, there were concerns from the public regarding additional traffic to local side roads, specifically from Warcop Primary School. To respond to that, it was proposed to upgrade the westbound-only junction at Sandford to an all-movement junction, thus minimising pressure on local roads.

Preferred Route Announcement May 2020

- 5.5.25 The Preferred Route Announcement of May 2020 concluded that since there was only one viable route proposed for the Appleby to Brough section of the A66 at that time, it would therefore be taken forward to PCF Stage 3 Preliminary Design.

PCF Stage 3 Preliminary Design for Statutory Consultation

- 5.5.26 During early PCF Stage 3 Preliminary Design, the proposals outlined in 5.5.17 through 5.5.25 above were developed further for Statutory Consultation in Autumn 2021 and were as outlined below. This was part of the design development necessary, due to a number of factors such as the availability of new and more reliable data and analysis to supplement and update previously available information, for example the information from surveys and from further stakeholder engagement.
- 5.5.27 For Appleby to Brough, one of the key considerations in the design development work has been to ensure that the design of the route minimises the impact of and potential damage to the North Pennines Area of Outstanding Natural Beauty, which is protected as a nationally designated site by legislation and policy. There are two key sets of policy tests to be addressed for such developments; notably those applicable to developments within the boundary of such an area, and those applicable to developments outside such areas but that have an impact on them.
- 5.5.28 Conformity with the policy set out at paragraphs 5.154 and 5.155 of the National Networks National Policy Statement (NNNPS) is necessary when considering development outside the boundary as they highlight that there is a need to have regard to the purpose of AONBs and avoid compromising this purpose when designing schemes which are outside of the designation, but which could lead to adverse effects within them. Paragraphs 5.150 – 5.152 of the NNNPS concern development proposed within nationally designated areas and paragraph 5.151 states that the Secretary of State should refuse development consent in these areas except in exceptional circumstances and where it can be demonstrated that it is in the public interest. Paragraph 5.151 sets out several considerations that need to be taken into account to establish whether exceptional circumstances exist to justify development within an AONB.

For further information, refer to the Legislation and Policy Compliance Statement (Application Document 3.9 and Section 6.5 of the Case for the Project (Application Document 2.2), prepared to support the DCO application.

5.5.29 Figure 15 summarises the development of the scheme during PCF Stage 3 prior to Statutory Consultation with respect to the alignment alternatives that were assessed as summarised in the sub-sections that follow. For detail of the alignment alternatives assessment undertaken, refer to Section 6.6 of the Route Development Report, provided in Appendix 3.

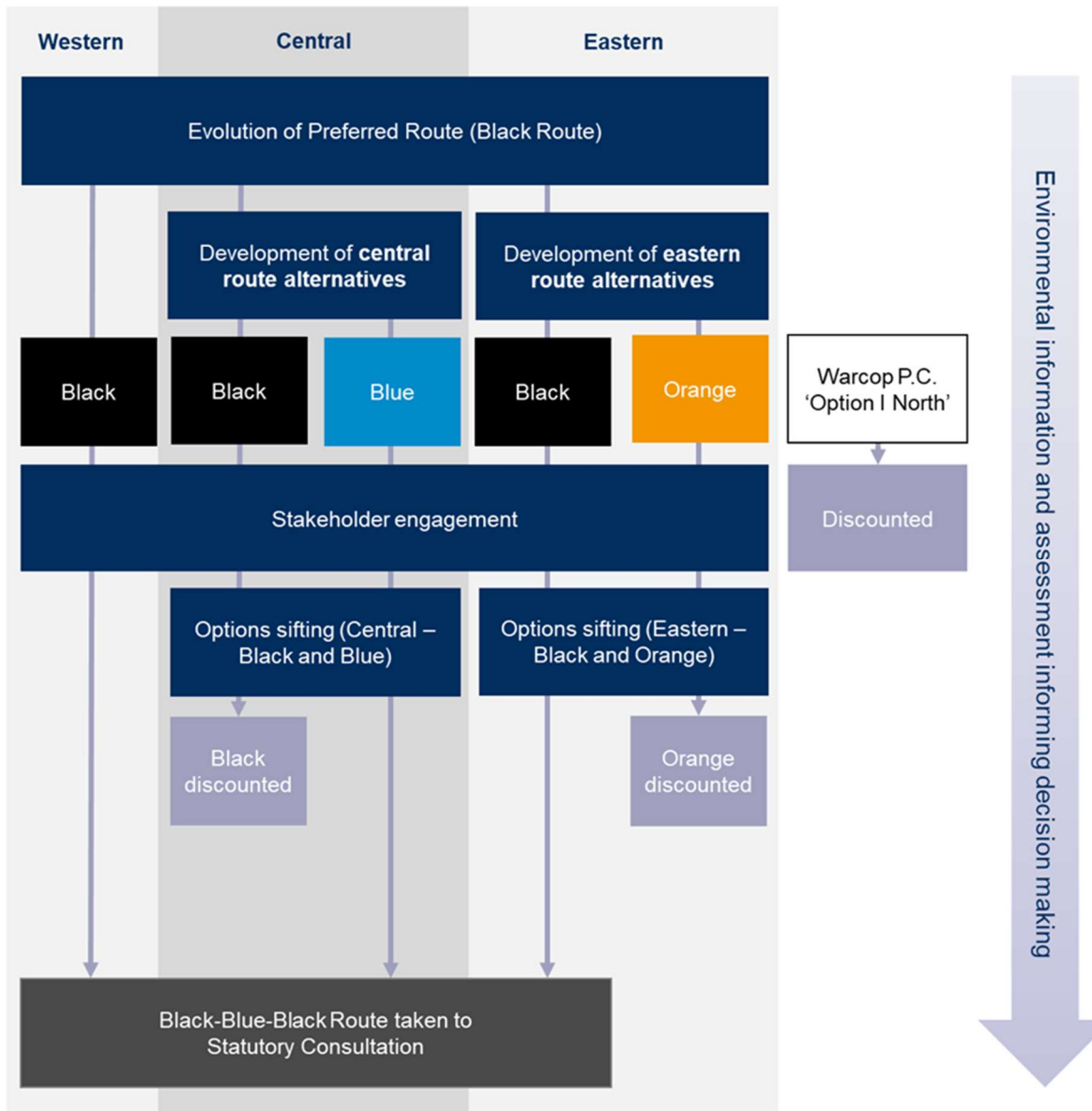


Figure 15 Early PCF Stage 3 scheme development summary for Appleby to Brough

Development of Preferred Route

5.5.30 Between Appleby and Brough, the Black Route developed from the Preferred Route announced in May 2020 throughout the early part of PCF

Stage 3 Preliminary Design. This route comprises upgrading an 8km section of carriageway from single to dual carriageway between Coupland Beck and Brough. For the dualled section to be viable, junction improvements would be required to enable access on and off the A66 to improve user safety and reduce congestion. This led to the development of three junction proposals, at Sandford, Warcop and Langrigg.

- 5.5.31 At Sandford, a new all-movement junction on the A66 was proposed approximately 1km west from its junction with the B6259. This junction was designed to connect to the B6259 for Sandford and Warcop and to provide access to the new A66 for farms and land on the southern side of the A66 and to Café Sixty Six and land on the northern side of the A66. It was also proposed to provide a new structure over the new A66.
- 5.5.32 At Warcop it was proposed to provide junctions on the westbound and eastbound carriageways to facilitate access to the A66 in both directions. On the A66 eastbound carriageway a new left on/left off junction was proposed to join to the existing A66 and provide access to Warcop village and properties and land to the north of the existing A66. On the A66 westbound carriageway a new left on/left off priority junction was proposed to join the road into Warcop village. It was proposed to elevate the A66 in this location above existing ground level and provide a new structure under the A66 to improve the connection between local footpaths and link Warcop, Dogber Tarn and the North Pennines AONB.
- 5.5.33 At Langrigg it was proposed to maintain access to Langrigg through a left-only junction with diverge and merge lanes on the westbound A66 carriageway to allow users to leave and join safely. A new local road was proposed on the south side of the A66 to connect Flitholme to Broomrigg, allowing Flitholme residents access to the new A66 westbound at Langrigg left-only junction.
- 5.5.34 These proposals were presented to the public at a virtual engagement event in November 2020 as part of the Winter 2020 Project Update.

Development of alignment alternatives

- 5.5.35 Preliminary Design continued following the Project Update of Winter 2020 and was informed by the findings of assessments and surveys undertaken at this time as well as a more detailed consideration of policy requirements relevant to Areas of Outstanding Natural Beauty. Through further design of the eastern tie-in and associated local access road, it was found that these elements of the Project could not be constructed following the alignment of the Preferred Route, without some limited construction within the AONB.
- 5.5.36 This work led the design team to progress alternative alignments for the eastern tie-in as well as other sections of this scheme which had potential to impact on the AONB. The objective was to identify alignments for this scheme which would be in conformity with the key policy tests for the AONB (see 5.5.26 through 5.5.28 above), would be suitable with respect to minimising or satisfactorily mitigating environmental impacts and meet the Project objectives. For the identification and assessment of the alternative alignments the scheme was split into three sections: western, central, and eastern.

- 5.5.37 At the western section of the Scheme, which is outside of the AONB, some adjustments were proposed to the design of the original Preferred Route alignment. These comprised of:
- A new grade-separated junction at Sandford instead of the previously proposed all-movement junction.
 - An eastbound diverge and merge was proposed at Café Sixty Six to provide access to the new eastbound A66 carriageway to match the existing.
 - A replacement underpass be constructed to serve both New Hall Farm and Far Bank End, with a left on/left off junction proposed on the westbound carriageway.
- 5.5.38 For the central section of the Appleby to Brough scheme, two alignment alternatives were developed; the Black and the Blue Route (for further detail, refer to Section 5.6 of the Route Development Report as provided in Appendix 3). Both proposed a new junction at Warcop to provide access to and from the new A66 for the village and the nearby MoD facilities. A new local road connection was proposed between Flitholme and Langrigg with a new westbound junction providing left on/left off access to the new A66. A network of local roads was proposed, connected with underpasses and underbridges where necessary to cross the proposed new dual carriageway. Both routes proposed to join the eastern section of the scheme to the east of Langrigg.
- 5.5.39 The Blue Route sought to move the route north away from Warcop village and existing properties to the south of the A66. This resulted in a minor encroachment into the AONB (around 30m over a length of 1.1km) and a direct effect on MoD operations. However, these changes would allow provision of an underpass at Flitholme which would give residents there, access to the local road network. The Blue Route was also lower in the landscape than the Black Route, which would provide benefits such as reduced noise and visual intrusion.
- 5.5.40 For the eastern section of the Appleby to Brough scheme, two alignment alternatives were developed; the Black and the Orange Route (for detail, refer to Section 5.6 of the Route Development Report as produced for Statutory Consultation, provided in Appendix 3). These routes were markedly different and are as summarised below.
- 5.5.41 The Black Route proposed an overbridge at Gate House, from which the route would continue to follow an alignment to the south of the existing A66 before tying into Brough Bypass near West View Farm. New accommodation structures would be provided for agricultural use, walkers, cyclists and horse-riders to provide access to land on the north side of the A66 and maintain footpath and bridleway connectivity. To the north of the new dual carriageway, the old A66 would be used for access to the local road network, west to Warcop or east to Brough and a new local road would be provided to the north from Turks Head into Brough.
- 5.5.42 The Orange Route proposed for the new A66 dual carriageway to head in a south-easterly direction from a point near Turks Head on an alternative alignment to the south of West View Dairy Farm and connect back into the

old A66 dual carriageway near to Musgrave Lane overbridge further east than the Preferred Route as announced in Spring 2020.

- 5.5.43 The key differences between the Black and Orange routes for the eastern section of the Appleby to Brough scheme relate to connectivity, the potential negative impacts of construction and environmental impact (particularly with respect to landscape and visual impacts related to the AONB). The Orange Route would require no encroachment into the AONB; however, it would require a completely new stretch of road which would have detrimental effects on the setting of the AONB. It would also require an extensive network of local roads to be constructed to provide the level of connectivity offered by the Black Route, require the demolition of residential property, and have significant negative impacts on local businesses, such as the operation of West View Dairy Farm.

Presentation of route alignment alternatives at July 2021 stakeholder engagement events

- 5.5.44 As there had been significant design development during PCF Stage 3 Preliminary Design, further stakeholder engagement events were held during July 2021 to gather feedback from interested and affected parties on the design of the alternative alignments at that point. These sessions included in-person drop-in sessions at Warcop Parish Hall with the opportunity for stakeholders to book an appointment to experience a SoundLab (virtual listening tool) simulation of the proposals.
- 5.5.45 The engagement events provided additional information for stakeholders to help them understand the alignment alternatives before they were presented at Statutory Consultation. These four alternatives were the combined Routes as shown in Table 7 and Figure 16 below.
- 5.5.46 It was communicated to attendees that while suggestions would be taken onboard and considered going forward, they would not be reflected in the Statutory Consultation materials. Attendees were encouraged to participate in the Statutory Consultation and make their comments formally through that channel where they would be reviewed, and regard given to them in the final preparation of the application for development consent. Attendees were also advised by the National Highways team that a route preference would be stated at Statutory Consultation.

Table 7 Appleby to Brough route alternatives presented at stakeholder engagement events, July 2021

	Western Section	Central Section	Eastern Section
Route One	Black	Black	Black
Route Two	Black	Blue	Black
Route Three	Black	Black	Orange
Route Four	Black	Blue	Orange

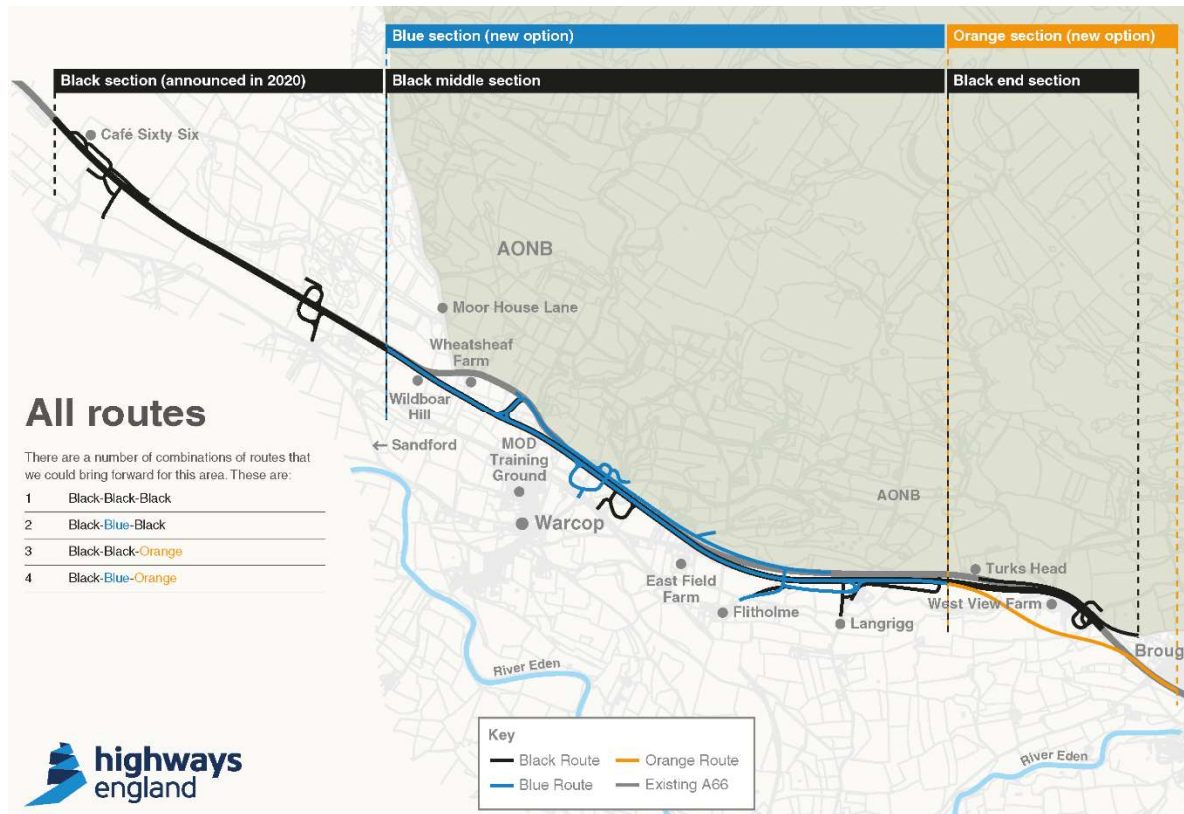


Figure 16 Alignment alternatives presented for Appleby to Brough at July 2021 stakeholder engagement events

Alignment alternatives sifting for Statutory Consultation

- 5.5.47 Following these stakeholder engagement events, a sifting exercise was carried out prior to Statutory Consultation to compare the alignment alternatives for Appleby to Brough. Alignments were assessed against engineering, environmental, traffic, economic, stakeholder principles, with commentary on policy conformity. In addition, National Highways' three priorities of Safety, Customer and Delivery were considered crucial to assessing the alignments ahead of Statutory Consultation.
- 5.5.48 Throughout the development of the route alignment for Appleby to Brough, there was ongoing engagement with the MoD, Warcop Parish Council, local landowners and Statutory Bodies and other stakeholders (refer to Section 5.6 of the Route Development Report). These parties were all encouraged to participate in the Statutory Consultation to allow due regard to be given to their suggestions and concerns.
- 5.5.49 Refer to 4.1 for further detail on the assessment process and criteria and Section 5.6 of the Route Development Report as produced for Statutory Consultation (Appendix 3) for detail of the assessments and outcomes. The Black (West) - Blue (central) - Black (East) Route was identified following the assessments and engagement as the preference to be taken forward for Statutory Consultation.

Statutory Consultation Autumn 2021

5.5.50 Following the assessment and engagement process described above, the Black-Blue-Black Route emerged as the preferred route for this scheme. The preliminary design presented at Statutory Consultation in Autumn 2021 for Appleby to Brough can be summarised as follows:

- A developed version of the route shown in the Preferred Route Announcement for the western and eastern ends, combined with an alternative alignment (the Blue Route) for the central section, as shown in Table 8.

Table 8 Appleby to Brough - route combination taken to Statutory Consultation in Autumn 2021

Café Sixty Six to Wheatsheaf Farm	Wheatsheaf Farm to Turks Head	Turks Head to Brough
Western Section	Central Section	Eastern Section
Black Route	Blue Route	Black Route

- For the western section, it was proposed to use the existing A66 as the eastbound carriageway and build a new westbound carriageway to the south. A new junction would be provided at the B6259 to provide access to and from both carriageways.
- Continue new dual carriageway in a south-easterly direction, deviating from the line of the existing A66 near Moor House Lane, running through Wheatsheaf Farm. The route would predominantly be elevated through this section.
- New A66 would continue from East Field Farm 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 would be de-trunked and used for local journeys between Moor House Lane and Turks Head.
- New section of local road proposed parallel to the north of the new A66 to connect to Brough Main Street.
- For the central section, it was proposed to move the new A66 further from the community of Warcop, compared to the PRA by using the old A66 as the new eastbound carriageway to the south rather than building both new carriageways to the south.
- The central section of the route would follow the line of the existing A66 with a new road for local journeys provided to the north of the new A66. Part of this new local road would result in minor encroachment into the boundary of the AONB.
- It was proposed to lower the new A66 to be on a smaller embankment closer to existing ground levels around Warcop, with access to the MoD training camp and local road to the north crossing over the top of the new road. Moving the highway network further from Warcop village would require demolition of one of the MoD training camp facilities and impact the other compound into which the lost compound would be relocated.

- The eastern section of the route included provision of a new local road to connect Flitholme and Langrigg, with a westbound-only junction at Langrigg.
- Provision of a new local road at Turks Head to connect Langrigg to the old A66 via a new overbridge.
- New track connections, including an overbridge to cross the new A66 to provide local access to Brough.

5.5.51 As the Preferred Route alignment would require incursions into the AONB initial assessments of the alignment against the policy considerations of the NNNPS (paragraph 5.151) have been undertaken, as set out in Section 5.6 of the Route Development Report (Appendix 3). The assessment supported the case for exceptional circumstances for the incursion of the Preferred Route alignment into the AONB, as reported in the Case for the Project (Application Document 2.2).

PCF Stage 3 Preliminary Design for DCO

5.5.52 Following Statutory Consultation design development continued. The design was developed having regard to feedback received throughout the consultation and ongoing engagement, to address environmental and traffic issues that arose following completion of surveys and to incorporate mitigation for impacts that had been identified through the Environmental Impact Assessment (EIA). This work has led to a number of opportunities to revise the design to improve areas such as community connectivity, environmental and land aspects. Key developments for Appleby to Brough are outlined below.

Engineering

5.5.53 Design development has resulted in the updated proposal to construct the new eastbound carriageway of the A66 to the north of the existing A66 as it passes Sandford. The existing A66 carriageway would become the new westbound carriageway in this arrangement. This has the effect of moving the route further north in this section, thereby reducing land take to the south of the existing A66.

5.5.54 Although previously considered during PCF Stage 2 Option Selection, this alignment was not presented as the Preferred Route in 2020 due to topography, potential impacts on Warcop Roman camp SAM north of Wildboar Hill, and the mature treeline alongside the existing A66. However, following receipt of early more detailed topographical survey information it was determined that Warcop Roman camp could be avoided. Ongoing stakeholder engagement throughout PCF Stage 3 Preliminary Design also informed the development of a variant of the PCF Stage 2 route which still utilised the existing road corridor.

5.5.55 The variants were compared with the conclusion being that the potential benefits of the proposed new alignment outweighed the disadvantages identified in earlier studies following the avoidance of the SAM.

- 5.5.56 Notably, the new proposed alignment reduces the potential negative noise and visual impacts on properties at Sandford, maintaining trees for screening these from the new carriageway. In addition, the alignment and associated highways drainage infrastructure have moved further from the properties and land take impacts have been reduced. The new proposed alignment would require additional earthworks due to the rising topography on the northern side of the carriageway.
- 5.5.57 In addition, this new alignment of the A66 at the Sandford junction has allowed for the drainage pond nearest the properties there to be moved to the northern side of the carriageway. This reduces land take requirements in the permanent situation, although some temporary land take would still be required for construction works.
- 5.5.58 Throughout design development, the design team have sought to reduce Departures from Standards where practicable. One such example is at the proposed junction northeast of Warcop village, where the junction straight has been extended by 20m to allow the proposed access road to come off a straight, rather than a bend as previously proposed at Statutory Consultation. This provides better visibility for drivers, resulting in a safer junction.
- 5.5.59 Throughout PCF Stage 3 Preliminary Design, environmental and ecological surveys have been ongoing to provide more information about the areas surrounding the proposed schemes, and the potential impacts the A66 upgrade works could have on the environment. Between Appleby and Brough, watercourse surveys have found that Moor and Cringle Becks have species within them that tie them to the River Eden Special Area of Conservation.
- 5.5.60 As such, the structures spanning these watercourses must now be designed as open span structures with abutments set back from the edge of the watercourse. This would ensure that neither the construction works nor the completed structure impact upon the natural bank of the watercourse. These structural changes also require a change to the vertical alignment of the carriageway, which was presented to stakeholders during Supplementary Consultation as outlined in 5.5.81 through 5.5.81 below.
- 5.5.61 At Moor Beck, it is proposed to construct a viaduct 260m in length to span the beck and floodplain. This would require an increase in carriageway height of around 3m over Moor Beck, compared to what was proposed in Autumn 2021.
- 5.5.62 At Cringle Beck, it is proposed to construct a viaduct 100m in length near Wheatsheaf Farm. This presented the opportunity to replace two drainage culverts and the agricultural underpass previously proposed at Statutory Consultation with a single structure.
- 5.5.63 Where practicable, for example at Wheatsheaf Farm, earthworks have been refined to minimise potential negative noise and visual impacts on local stakeholders. For further information on earthworks, particularly their use in landscaping, refer to 4.4.11.

- 5.5.64 The drainage design for the scheme has developed as a result of flood modelling undertaken throughout PCF Stage 3 Preliminary Design to mitigate impacts on flooding, watercourses and the integrity of the River Eden SAC. This includes revision to the flood compensation arrangements in the vicinity of Low Gill Beck, Moor Beck and Wheatsheaf Farm to ensure they would provide sufficient storage for storm events. These measures include raising and widening structures where necessary, constructing a storage pond in the flood plain, leaving watercourses untouched and constructing flood compensation areas.
- 5.5.65 Refinements have also been made to pond locations to address feedback received and the outcomes of further flood modelling undertaken throughout design development.

Environment

- 5.5.66 For information on specific landscaping and environmental mitigation proposals, refer to ES Volume 1 (Main Report), Chapter 10 – Landscape and Visual.
- 5.5.67 At Warcop West, the new Sandford junction proposal would change impacts on some already affected landowners, although no new landowners would be affected. The impact on the MoD land in this area would also change. This change also allows for the retention of a copse of trees which would improve screening for residential receptors.
- 5.5.68 At Warcop Central, the proposed alterations to structures spanning Cringle Beck and Moor Beck allow the Project to minimise impact on the River Eden SAC and to conform with National Planning Policy and the Habitat Regulations.
- 5.5.69 Paragraph 4.24 of the NNNPS sets out the three tests to be applied in order to apply for derogation from the Habitats Regulations, all of which must be met. In summary, these are as follows:
- No feasible alternatives to the plan or project that are less damaging.
 - Imperative reasons of overriding public interest.
 - Compensatory measures secured to ensure coherence of network of sites is maintained.
- 5.5.70 All three tests are met for the proposed alterations in this section as set out in the Case for the Project (Application Document 2.2) and the Legislation and Policy Compliance Statement (Application Document 3.9).
- 5.5.71 Cultural heritage surveys undertaken throughout PCF Stage 3 Preliminary Design indicate that the extent of the Roman camp Scheduled Ancient Monument and length of Roman road to the north of the A66 between Dyke Nook and Wheatsheaf Farm may be larger than previously understood. The highways alignment design has been updated to minimise impacts to this designated site and it is not intended that the proposed new carriageway encroach into the footprint of the camp. The proposals currently conform with policy to protect the designated heritage assets in this area, including policies 5.131 - 5.133 of the NNNPS, as set out in the

Case for the Project (Application Document 2.2) and the Legislation and Policy Compliance Statement (Application Document 3.9).

- 5.5.72 However, it is recognised that supporting infrastructure such as drainage and WCH provision may encroach into the footprint of the camp, based on the current level of survey detail available at this stage. Further survey works would be undertaken to inform detailed design to confirm that the Project does not negatively impact this Scheduled Ancient Monument.
- 5.5.73 As outlined in 4.4.22 above, an update to the modelling assumptions used for the Greenhouse Gas (GHG) emissions calculations has resulted in a reduction in emissions figures for the schemes assessed. This includes Appleby to Brough, for which alignment alternatives were assessed prior to Statutory Consultation. As a result of this change in modelling assumptions, the team have reviewed the sifting process carried out; for further information, refer to ES Volume 1 (Main Report), Chapter 3 – Assessment of Alternatives.
- 5.5.74 However, GHG emissions were not the only factor influencing the assessment of alternatives ahead of Statutory Consultation. For Appleby to Brough, the main reason the Black-Blue-Black Route was progressed through to DCO application was its conformance to national planning policy. The reduction in GHG emissions resulting from the updated methodology provided an improvement for all alternatives considered but does not change the assessment that Black-Blue-Black Route is the option that should be progressed.

Traffic and economics

- 5.5.75 Following feedback received and ongoing stakeholder engagement as outlined in 4.4.10 above, police observation platforms have now been included in both the proposed east and westbound lay-bys (west of the proposed Sandford junction).
- 5.5.76 Accessibility opportunities, including those for walkers, cyclists and horse-riders (WCH), have developed throughout preliminary design as introduced in 4.4.29 through 4.4.33 above.
- 5.5.77 For this scheme, the focus has been on providing a safe east-west route between Appleby and Brough for walkers and cyclists as part of a wider piece of work to improve connectivity between these communities. Measures proposed include a shared cycle and footway parallel to the scheme, connecting existing infrastructure and completing the route from Appleby to Brough. Key crossing points over or under the proposed dual carriageway are proposed at Café Sixty Six, Warcop, Great Musgrave and Brough.

Stakeholder

- 5.5.78 Following Statutory Consultation in Autumn 2021, design development presented two opportunities to change the design along the route of the Appleby to Brough scheme.
- 5.5.79 Towards the western end of the scheme, it is proposed to alter the location of the carriageway and junction in the vicinity of Sandford. The additional

carriageway would be built to the north of the existing A66 rather than the south, as was proposed in Autumn 2021. This change reflects feedback received from Statutory Consultation regarding impacts on land and properties to the south of the old A66, as outlined in 5.5.56 through 5.5.57 above. These alterations also reduce potential negative impacts on the tumuli to the south of the existing A66, although could potentially have negative impacts on Warcop Roman camp and the length of Roman road to the east.

5.5.80 The proposed alteration to the junction at Sandford would require different permanent acquisition of land to the north of the existing A66 to what was proposed at Statutory Consultation and as such, these alterations were presented to the local community during Supplementary Consultation, held throughout February 2022. An extract from the Consultation Brochure is shown in Figure 17 below.

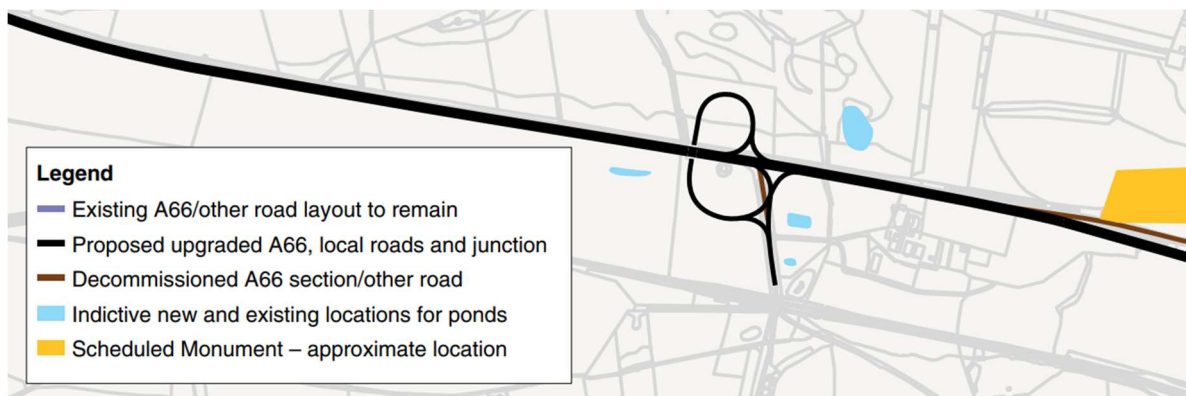


Figure 17 Extract from Supplementary consultation brochure for Appleby to Brough - Warcop West

5.5.81 In addition, to mitigate potential negative impacts on the River Eden Special Area of Conservation (SAC) it would be necessary to widen the span of the bridge structures proposed to cross Moor Beck and Cringle Beck. As a result, it would be necessary to raise the vertical alignment of the carriageway by 3m to achieve this increased watercourse clearance.

5.5.82 As with the Warcop West proposals outlined above, these proposals for Warcop Central have been presented to stakeholders, including affected landowners during Supplementary Consultation, held throughout February 2022. An extract from the Consultation Brochure is shown in Figure 18 below.

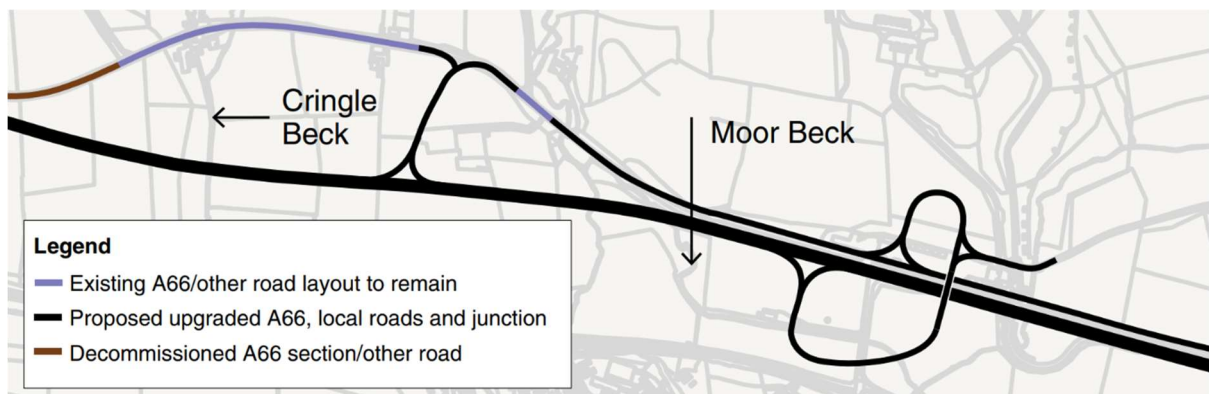


Figure 18 Extract from Supplementary consultation brochure for Appleby to Brough - Warcop Central

- 5.5.83 A summary of matters raised and the outcomes from this consultation are provided in Chapter 7 of the Consultation Report (Application Document 4.4) and its supporting Annex P.
- 5.5.84 National Highways have also undertaken Supplementary Consultation through March 2022 to seek feedback on design development and its impact on the proposed Brough Hill Fair site.
- 5.5.85 Plans to widen the A66 in the vicinity of Brough Hill require part of the existing field currently used for the fair. At Statutory Consultation, it was proposed to move the Brough Hill Fair to a site currently used by the MoD as a 'bivvy' or camping site and training area (as shown in Figure 19 below).

Site 1: The central site, proposed in our autumn 2021 consultation

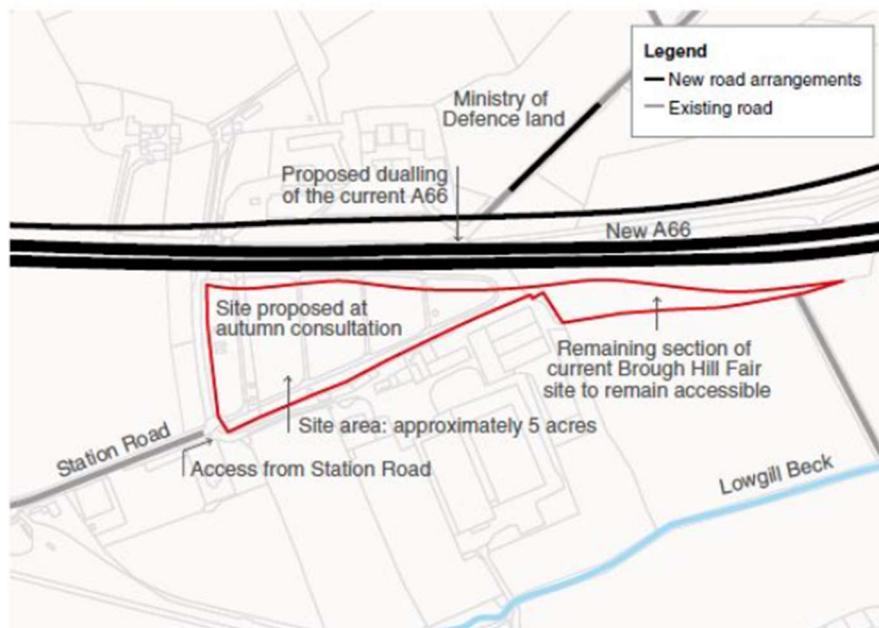


Figure 19 Extract from Supplementary consultation material for Appleby to Brough – proposed Brough Hill Fair site from Statutory Consultation

- 5.5.86 However, feedback received from Statutory Consultation made the team aware of challenges such as land levels, proximity to residential properties and the A66. This led to the consideration of an alternative site, as shown in Figure 20 below, following confirmation that this area of land would be purchased by National Highways for the development of the scheme.

Site 2: Proposed alternative eastern site

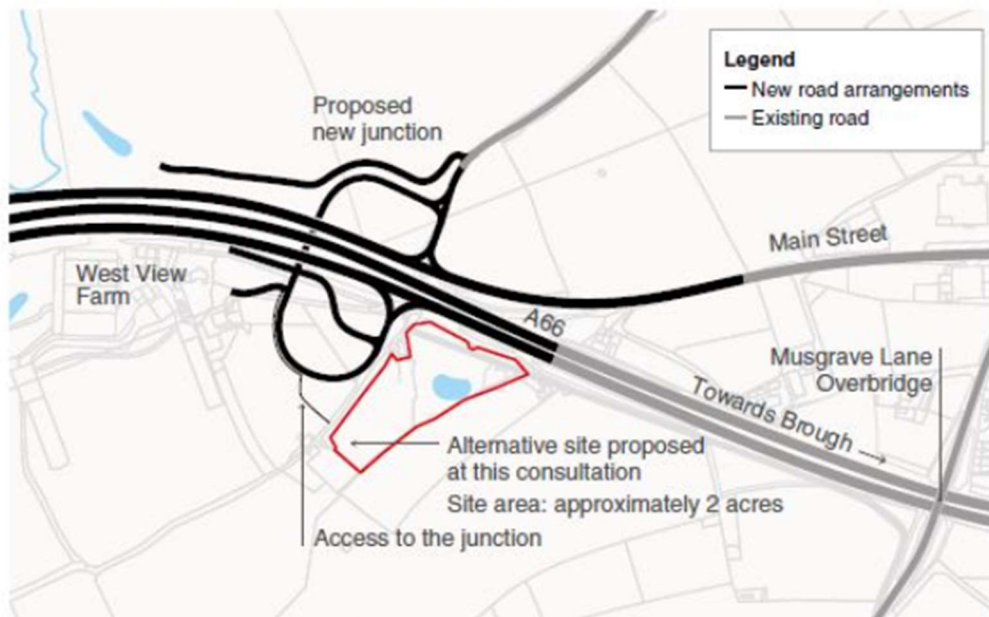


Figure 20 Extract from Supplementary consultation material for Appleby to Brough – alternative proposed Brough Hill Fair from Supplementary Consultation

- 5.5.87 This alternative site is situated to the south of the A66, approximately 1.6 miles east of the current site. It has an access from Musgrave Lane which would allow access for horses and horse-drawn vehicles and would allow users of the site to park caravans further from the road. However, this site is smaller than the site originally presented at Statutory Consultation.
- 5.5.88 A summary of matters raised and the outcomes from this consultation are provided in Chapter 7 of the Consultation Report (Application Document 4.4) and its supporting Annex P.
- 5.5.89 Following Supplementary Consultation, the bivvy site was selected as the preferred alternative site for the relocation of Brough Hill Fair. This site is more than twice the size of the alternative eastern site, has the ability for better mitigation than the eastern site in terms of noise bunding and screening to the upgraded A66 and nearby businesses and has good access available from Station Road. It also maintains the cultural connection to the existing Brough Hill Fair Site by being alongside and using part of the old site in the layout.

Development Consent Order application Spring 2022

- 5.5.90 An illustrative plan of the scheme presented for DCO application in Spring 2022 is given in Figure 21 below. For further information, reference should be made to General Arrangement Drawings Scheme 06 Appleby to Brough (Application Document 2.5).

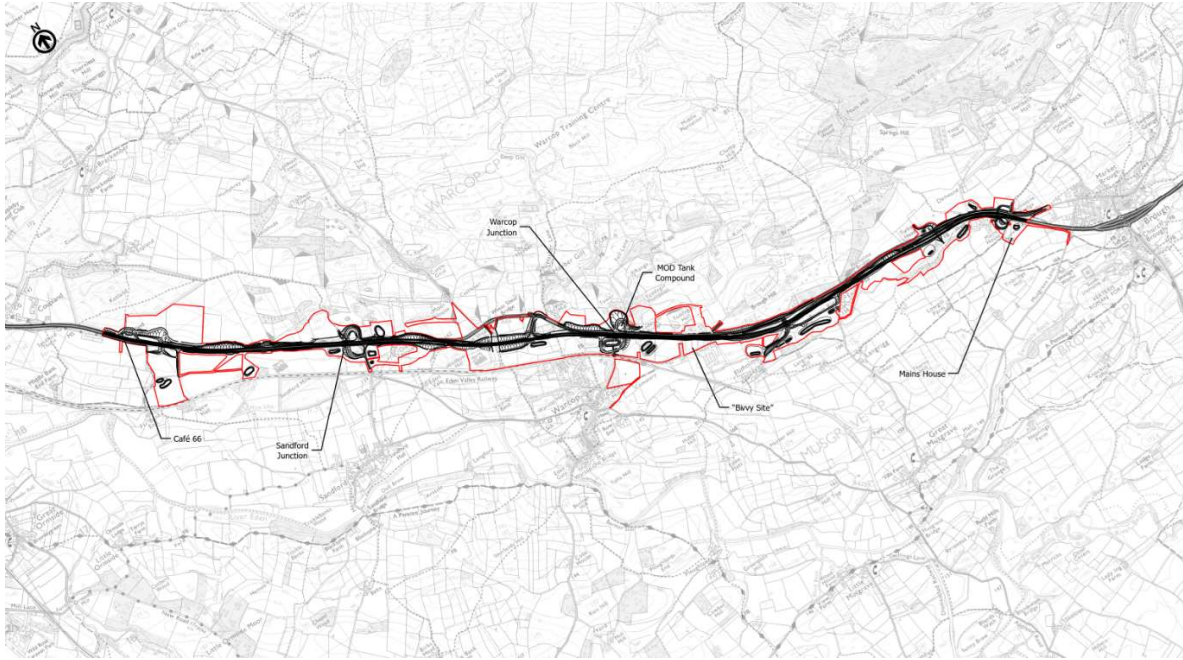


Figure 21 Illustrative plan of Appleby to Brough scheme and surrounding area (DCO Order Limits shown in red)

- 5.5.91 The Appleby to Brough scheme comprises dualling an 8.3km length of single carriageway between Coupland Beck and Brough. A number of junction improvements are proposed to enable access on and off the A66 to improve user safety and reduce congestion.
- 5.5.92 The western extent of the scheme comprises 2.6km of online widening with a new eastbound carriageway to the north of the existing carriageway. The westbound carriageway would follow the line of the existing A66. The dualled section includes junction improvements to enable access on and off the A66 to improve user safety and reduce congestion.
- 5.5.93 An improved left-in/left-out junction from the eastbound carriageway would be provided at Café Sixty Six. This would loop to the rear of the building and serve as access to agricultural land at the western end of the scheme.
- 5.5.94 A replacement underpass would be provided for New Hall Farm and Far Bank End. A left in/left out junction would be provided on the westbound carriageway. Access tracks would link the underpass and each carriageway, providing access to the A66 in all directions for farms, properties, and land at this location.
- 5.5.95 A new compact grade-separated junction would provide a link to the B6259 to Sandford and Warcop as well as providing links for Public Rights of Way. A new underpass is proposed to facilitate access to agricultural land on the south side of the new A66 and for footpath connectivity to be provided adjacent to Wheatsheaf Farm.
- 5.5.96 From Wheatsheaf Farm the central length of the scheme is proposed to be located approximately 50m to the south of the existing A66. It would follow an alignment utilising the line of the existing A66 as the eastbound carriageway and a new westbound carriageway would be constructed

directly to the south of the line of the existing A66 alignment to reduce the extent of construction within the designation of the North Pennines Area of Outstanding Natural Beauty.

- 5.5.97 New viaducts would be provided to cross over Moor Beck and Cringle Beck together with a new bridge on the Warcop westbound junction. These are being provided to minimise any effects on the becks as they have been found to be functionally linked to the River Eden Special Area of Conservation downstream and support multiple species protected by this designation. Land has also been identified in the area for flood compensation areas to be provided.
- 5.5.98 A new local road would be provided to the north of the new A66 dual carriageway, in this central section, to maintain local access and facilitate movement on and off the A66 to both Warcop and the Ministry of Defence (MoD) facility.
- 5.5.99 This scheme encroaches up to 150m into the AONB, and results in the demolition of the MoD tank storage and refuelling compound which would be replaced within an extension to the MoD's existing landscape maintenance compound located approximately 600m further east.
- 5.5.100 Land from two residential properties on the north side of the existing A66 would be required to facilitate the construction of the new local access road through this section.
- 5.5.101 The central section of the scheme would pass through the existing Brough Hill Fair site, and this would need to be replaced on a like for like basis. A replacement site has been identified adjacent to the current site making use of the MoD bivvy (camping) site. A level of remediation of the bivvy site would be required to facilitate the Brough Hill Fair.
- 5.5.102 New junctions would be provided at Warcop on the westbound and eastbound carriageways facilitating access to the A66 in both directions and providing access to the village of Warcop and the realigned existing A66. These junctions would maintain access to the village of Warcop, the relocated MoD facility, side roads, properties, and land to the north and south of the A66 via a new overbridge located to the east of Moor Beck bridge.
- 5.5.103 A local road would be provided to the south of the new A66 connecting Flitholme and Langrigg allowing residents a connection to the new westbound carriageway and local roads to the south via Musgrave Lane.
- 5.5.104 The proposed left-in/left-left out priority junctions would be approximately 0.6km apart and designed to utilise existing side road connections and minimise earthworks.
- 5.5.105 The eastern length of the scheme would continue to follow an alignment to the south of the existing A66 before tying into the Brough Bypass.
- 5.5.106 The de-trunked sections of the existing A66 would enable use for access to the local road network west of Warcop and a new local road would be provided to the north from Turks Head into Brough. This would encroach approximately 130m into the AONB. A left-only T-junction with appropriate diverge and merge tapers on the westbound carriageway would be

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

- 5.5.107 A new access road and an overbridge for farm traffic, walkers, cyclists and horse-riders would be provided at the eastern end of the scheme near West View Farm, providing access to land on the north side of the A66 from the farm located to the south, as well as providing footpath and bridleway connectivity. This overbridge and access road connection does fall within the AONB and would therefore be designed to minimise the footprint and visual impact. There would be an encroachment of up to 134m into the AONB.
- 5.5.108 New lay-by facilities would be provided on the proposed mainline; two in the eastbound direction and one in the westbound direction, to replace existing provision which would be lost due to the implementation of the scheme. Observation platforms would be included in the westbound lay-by and the eastbound lay-by closest to it.
- 5.5.109 No lighting would be provided on the length of the scheme.
- 5.5.110 18 ponds are proposed at low points in the scheme to attenuate drainage and run-off from the road to manage the water quality before it is discharged into the surrounding watercourses. Shared and dedicated access tracks are proposed to be provided to the north and to the south of the road to facilitate access to ponds for maintenance purposes and to accommodate landowner movements.
- 5.5.111 Utility works would be required for electricity, water, and communications services throughout the length of the scheme.
- 5.5.112 An east-west walking and cycle route is being provided along the length of this scheme, providing connectivity for users between Appleby and Brough. All pedestrian, cyclist and horse-rider facilities that would be severed by the scheme are to be reconnected via grade-separated crossings.
- 5.5.113 The MoD tank storage and refuelling compound would be demolished and replaced within the MOD's existing landscape compound located 600m to the east. The scheme would involve minor demolition works, such as roadside features, drainage and kerbing associated with the existing A66 and other local roads.

5.6 Bowes Bypass

Description of baseline environment

- 5.6.1 Bowes Bypass is an approximately 3km single carriageway section of the A66 between dual carriageway sections to the west and east. A key feature of this section is the junction with the A67 which is currently only accessible to traffic to and from the west.
- 5.6.2 Eastbound traffic approaching is often not aware that one lane at this junction is utilised for the A67, which reduces capacity along this section of the route. It also leads to dangerous lane changes and slowing traffic on the A66, which both present significant safety issues. The westbound

carriageway is a single lane with a taper merge from the A67 merging just before Clint Lane overbridge.

- 5.6.3 Between the A67 and Stone Bridge Farm, the A66 is two-lane single carriageway. A short system of double white lines exists to prohibit overtaking through the length of Bowes Interchange where the carriageway alignment curves to the right. At the end of the double white lines the carriageway has a section of broken central hatched marking through to the dual carriageway section east of the Bowes Bypass. The existing road features VRS, traffic signs and parapet fences in the verges.
- 5.6.4 With the exception of A67 Bowes Interchange, this section of the A66 includes a series of private means of access together with both used and disused gated field accesses located in the north and south verges. Between Bowes Interchange and the at-grade junction to Bowes village, Bowes Hall Underpass and Mirekeld Underpass provide grade-separated access for farm traffic and livestock across the A66 thereby resulting, in some cases, in redundant field accesses. At Bowes Junction, the A66 central hatching is omitted over the extents of the junction. Seven gated field accesses exist between Bowes Interchange and the section of dual carriageway located 0.65km east of Bowes Junction.
- 5.6.5 Other features along this section of the A66 include a lay-by on the westbound carriageway which has several substandard features such as short merge and diverge taper lengths and a short stacking length.
- 5.6.6 There is one crossing route for WCH across the A66 at this section of the route, which takes the form of an at-grade PRow crossing located midway between Bowes Interchange and Bowes Junction. This crossing facility currently has a flag-post sign in the south verge only; the verge to the north is overgrown and consequently no flag-post is visible. There is no evidence to suggest significant use of this WCH route. It is likely that its proximity to the Pennine Way and Walney to Wear WCH routes, which pass through Bowes village and over the A66 via Clint Lane bridge at Bowes, make this a less attractive route for long-distance walking. There is one bus-stop lay-by westbound on the A66 near Clint Lane Bridge, and another eastbound on the Bowes Interchange eastbound off-slip. No footways or paved WCH facilities exist throughout this section of the A66.

Outcomes of PCF Stage 1 Option Development and PCF Stage 2 Option Selection

- 5.6.7 At PCF Stage 1 Option Identification, a single option was identified for consideration to improve the A66 at Bowes Bypass. This option proposed online dualling to the north of the existing A66, including east-facing slip roads at the A67 Junction. Further information can be found in the PCF Stage 1 Technical Appraisal Report, provided in Appendix 1.
- 5.6.8 At PCF Stage 2 Option Selection, this option was developed further ahead of being taken to public consultation in Summer 2019, as summarised below. Further information can be found in the PCF Stage 2 Scheme Assessment Report, provided in Appendix 2.

- 5.6.9 Following assessment of the as-built drawings for the existing Clint Bridge, it was proposed to provide a new two-lane dual carriageway through the bridge area, with narrow shoulders, 3.5m wide lanes and concrete barriers so that the existing structure could be retained. It was acknowledged that this reduction in cross section provision would require further discussion and agreement with National Highways' Safety, Engineering and Standards (SES) team and a formal departure from standard application would be required for this.
- 5.6.10 It was proposed to utilise the existing A66 carriageway as the westbound carriageway, with the westbound merge slip road retained. For the westbound carriageway, it was proposed to retain the existing accommodation bridge and road bridge however, for the eastbound carriageway, new structures would be required. It was proposed to offset the eastbound carriageway from the westbound carriageway near the existing road underbridge so that desirable minimum stopping sight distance can be maintained.
- 5.6.11 It was proposed to realign the eastbound diverge and offset it to the north of the existing alignment, with two new east-facing slip roads proposed to the east of the existing road underpass. The eastbound merge slip road would start to the north-east on the A67 and the westbound diverge slip road would terminate to the south-east of the local road connecting the A67 with the village of Bowes.
- 5.6.12 It was proposed that the farm buildings directly to the north-east of the existing A67 junction would be demolished as part of the works. In addition, the existing accommodation underpass that served these buildings would be backfilled or blocked off. Further to the east, the existing farm accommodation underpass was proposed to be extended under the new eastbound carriageway with the existing underpass under the westbound carriageway retained. It was expected that Low Broats Farm would require demolition as the existing residential building is directly in the path of the proposed eastbound carriageway and the remaining barns and outbuildings would become redundant and subject to demolition.
- 5.6.13 This option also proposed that the existing eastern end of The Street, that currently provides the connection from Bowes to the eastbound A66 and the westbound connection from the A66 into Bowes, be stopped up. It was proposed that the new east-facing slip roads would provide that connection.

Public consultation Summer 2019

- 5.6.14 The single option developed throughout PCF Stages 1 and 2 based on the above description was presented at public consultation in Summer 2019.
- 5.6.15 The PCF Stage 2 Scheme Assessment Report (refer to Appendix 2) stated that there were no post-consultation design changes to the options proposed.

Preferred Route Announcement May 2020

- 5.6.16 The Preferred Route Announcement of May 2020 concluded that since the option presented at public consultation was the only viable route proposed for the Bowes Bypass section of the A66 at that time, it was therefore the one that would be taken forward to PCF Stage 3 Preliminary Design.

PCF Stage 3 Preliminary Design for Statutory Consultation

- 5.6.17 During early PCF Stage 3 Preliminary Design, the proposals outlined in 5.6.14 through 5.6.16 above were developed further for Statutory Consultation in Autumn 2021 and are as outlined below. This development was part of a natural design process that occurs when new data and analysis supplements previously available information, for example the outcomes of surveys and further stakeholder engagement.
- 5.6.18 As part of the review undertaken during PCF Stage 3 it was confirmed that the announced Preferred Route alignment for the Bowes Bypass scheme had a minor encroachment into the North Pennines Area of Outstanding Natural Beauty at the western tie-in. Given this slight incursion into the AONB, the matters set out at paragraph 5.151 of the NNNPS had to be considered and it was concluded that the proposals conformed with the policy requirements, as described in Section 6.6 of the Case for the Project (Application Document 2.2) and summarised below.
- 5.6.19 It was concluded that there were exceptional circumstances for development of part of the route within the AONB. This would involve minimal works within the AONB, as the works largely affect land within the existing highways boundary verge. There would also be greater environmental effects and costs associated with an alternative route alignment outwith the AONB. For further information, refer to the Legislation and Policy Compliance Statement (Application Document 3.9) and Section 6.6 of the Case for the Project (Application Document 2.2), prepared to support the DCO application.

Statutory Consultation Autumn 2021

- 5.6.20 The preliminary design presented at Statutory Consultation in Autumn 2021 for Bowes Bypass can be summarised as follows:
- Around Bowes, the route of the A66 would closely follow the existing road alignment, with a new adjacent eastbound carriageway to the north. The existing carriageway would be changed to carry westbound traffic.
 - At the junction with the A67, a new underbridge was proposed to carry the eastbound carriageway. A new eastbound on-slip and westbound off-slip were proposed to accommodate traffic travelling to and from the east, providing access to and from the A67 and Bowes village. To facilitate this, some derelict buildings at the junction and a barn structure would require demolition.
 - The A67 would be widened to the east to create a staggered junction and a right-turn lane for the eastbound on-slip. The existing eastbound

off-slip would be realigned to the north to make way for the new eastbound A66 carriageway.

- Existing access from Bowes to the A66 via the Roman Road known as The Street and locally as Low Road, was to be stopped up.
- Provision of new overbridge to ensure continued access to the A66 via the improved junction at the A67 for local farms.
- Relocation of existing westbound lay-by to the east of Stone Bridge Farm to make way for the proposed new westbound off-slip.
- Due to weight restrictions on the bridge over the River Tees, this route would still not permit HGV access into Barnard Castle and HGVs would therefore continue to access Barnard Castle via the A66 at Rokeby.

5.6.21 It was noted that the proposals for the alignment of the A66 dual carriageway for the Bowes Bypass scheme were subject to further design development following Statutory Consultation, given ongoing discussions with National Highways' Safety, Engineering and Standards team regarding retention of the existing Clint Lane Bridge.

PCF Stage 3 Preliminary Design for DCO

5.6.22 Following Statutory Consultation design development continued. The design was developed having regard to feedback received throughout the consultation and ongoing engagement, to address environmental and traffic issues that arose following completion of surveys and to incorporate mitigation for impacts that had been identified through the Environmental Impact Assessment (EIA). This work has led to a number of opportunities to revise the design to improve areas such as community connectivity, environmental and land aspects. Key developments for Bowes Bypass are outlined below.

Engineering

5.6.23 Road Safety Audit feedback resulted in development of the alignment design local to the Hulands Quarry access junction at the eastern scheme extent. The new proposals include the closure of the central reserve gap currently present to provide westbound access to the site, thereby removing the opportunity for right-turn movements. A new left-in/left-out access would be provided for the site and the DCO Order Limits extended to accommodate works in this area.

5.6.24 Road Safety Audit feedback received during Preliminary Design also recommended the removal of bus stops from the proposed A66 mainline design, on account of sufficient provision being available in surrounding villages rendering the mainline stops redundant and little used. This recommendation has been incorporated into the design for DCO application following engagement with local Bus Operators. Refer to Section 10.5 of the Transport Assessment (Application Document 3.7) for further information. The existing bus stops on the eastbound diverge and westbound merge lanes at Bowes Bypass would remain.

- 5.6.25 Throughout Preliminary Design, discussions have been ongoing with National Highways' Safety, Engineering and Standards (SES) team regarding a solution to allow for Clint Lane Bridge to be extended to accommodate the widened A66 beneath. A Provisional Departure from Standard application was submitted to the SES team proposing a narrower highway cross sectional width. However, this was rejected shortly before Statutory Consultation as it was determined that the constraints placed on the design resulting in the requirement for a DfS, could be designed out by replacing the structure altogether. As such, further design development has been required between Statutory Consultation and DCO application.
- 5.6.26 This design development has considered options that would allow the bridge to be replaced. The proposal for DCO application is to provide a like-for-like cross section, incorporating both carriageway and WCH provision as existing, but the bridge would have a longer span to allow it to cross over the widened A66 to the north. This proposal would continue to be refined through subsequent design stages by National Highways' DIPs to work within the constraints presented by safeguarded land and allotments to the north. In addition, access arrangements during construction would be agreed following further engagement with those affected by the proposed works.
- 5.6.27 The accommodation overbridge proposed to the east of Stone Bridge Farm has been moved further east, away from this property, in response to stakeholder feedback received at Statutory Consultation. The access road to this overbridge has also been realigned compared to the Statutory Consultation proposals and has now also been moved further from the property, closer to the A66.
- 5.6.28 Considering drainage and flooding design, refinements have been made to pond locations and geometries to address feedback received and the outcomes of further flood modelling undertaken throughout design development.

Environment

- 5.6.29 Statutory Consultation feedback for the Bowes Bypass scheme highlighted concerns relating to landscaping and environmental mitigation. For the majority, reference should be made to Chapter 6 of the Consultation Report (Application Document 4.4) for detail. For information on specific landscaping and environmental mitigation proposals, refer to ES Volume 1 (Main Report), Chapter 10 – Landscape and Visual.

Traffic and economics

- 5.6.30 Road Safety Audit feedback resulted in development of the Hulands Quarry access, as detailed in 5.6.23 above.
- 5.6.31 Accessibility opportunities, including those for walkers, cyclists and horse-riders (WCH), have developed throughout preliminary design as introduced in 4.4.29 through 4.4.33 above.
- 5.6.32 For this scheme, the focus has been on providing north-south connectivity for walkers, cyclists and horse-riders to ensure the current severance

presented by the A66 is not exacerbated once it is dualled through the Bowes Bypass scheme. This includes connecting those routes that are currently severed by the dual carriageway, where practicable.

- 5.6.33 One such example of this is where it is proposed to close the central reserve gap at Hulands Quarry. Walkers, cyclists and horse-riders would be diverted to the proposed accommodation underpass to the west to access a safe, grade-separated crossing point.
- 5.6.34 At Bowes junction, the existing footways on the local road running beneath the A66 as it currently is, would be retained.

Stakeholder

- 5.6.35 As introduced in 5.6.23 above, Road Safety Audit feedback highlighted safety concerns regarding the access to Hulands Quarry, which was beyond the eastern scheme extents as presented at Statutory Consultation.
- 5.6.36 It is therefore proposed that the DCO Order Limits are increased along this eastern end to accommodate closure of the central reserve gap and current right-turn arrangement from the westbound carriageway, facilitating improvements to the access junction and its approach. As such, an extension to the permanent acquisition of land proposed at Statutory Consultation would be required to accommodate the works.
- 5.6.37 It is also proposed to extend the works on the westbound carriageway to provide an access track from Bowes junction to Bowes Cross Farm. This proposed access track is required because of the demolition of property within Bowes, which could see increased use of the Bowes Cross Farm access. Providing an accommodation track to Bowes Cross Farm provides safer access to the farm and the resulting closure of the existing direct access and central reserve gap on the dual carriageway provides safety benefits for all road users.
- 5.6.38 The developed proposals for the Hulands Quarry access and Bowes Cross Farm access were presented to stakeholders, including affected landowners during Supplementary Consultation, held throughout February 2022.
- 5.6.39 A summary of matters raised and the outcomes from this consultation are provided in Chapter 7 of the Consultation Report (Application Document 4.4) and its supporting Annex P.

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- 5.6.40 An illustrative plan of the scheme presented for DCO application in Spring 2022 is given in Figure 22 below. For further information, reference should be made to General Arrangement Drawings Scheme 07 Bowes Bypass (Application Document 2.5).

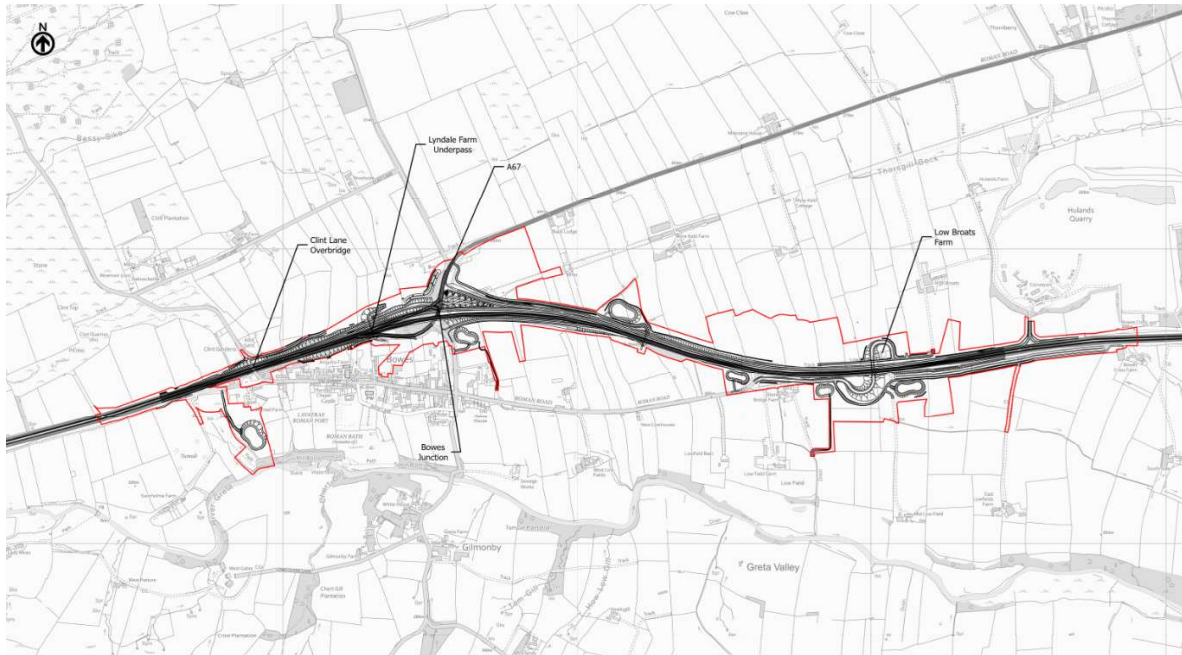


Figure 22 Illustrative plan of Bowes Bypass scheme and surrounding area (DCO Order Limits shown in red)

- 5.6.41 The Bowes Bypass scheme would closely follow the existing A66 alignment to the north of the village of Bowes over a length of 3km. The current line of the existing A66 would form the westbound dual carriageway, with a new adjacent eastbound carriageway constructed to the north.
- 5.6.42 The existing A66 to the west of Bowes passes through the North Pennines AONB. At the westernmost end of this scheme, the AONB boundary abuts the existing edge of pavement of the westbound A66 (the existing highway verge falls within the AONB boundary). Work to connect the new dual carriageway with the existing dual carriageway falls approximately 10m within the AONB boundary at this location for a length of approximately 300m.
- 5.6.43 Clint Lane overbridge would be reconstructed to accommodate the upgraded (wider) A66 dual carriageway. This structure would be replaced like-for-like to ensure all access and existing facilities are maintained.
- 5.6.44 Lyndale Farm Underpass would be extended under the new carriageway to maintain access to Lyndale Farm.
- 5.6.45 At the junction with the A67, a bridge would carry the new eastbound carriageway over the A67. The eastbound diverge slip road would be relocated north to make way for the new eastbound A66 carriageway. Two new slip roads would accommodate traffic travelling to and from the east providing access to and from the A67 and Bowes village. The A67 would be widened at the junction to accommodate a new right turn lane for the eastbound on-slip. The existing westbound on-slip road would have minor improvements made to create a safer merge.

- 5.6.46 Ruins (former Bowes Railway Station) and a barn structure immediately north-east of the junction would be removed. Black Lodge Farm underpass would be extended to the north under the new eastbound carriageway.
- 5.6.47 Access from Bowes to the A66 (via the Roman road known as The Street, and locally known as Low Road) would be stopped up. The upgraded grade-separated Bowes junction would provide safer access to the A66 for local traffic.
- 5.6.48 The existing westbound lay-by to the west of the existing Low Road access would be relocated to the easternmost extent of the scheme.
- 5.6.49 East of Bowes an accommodation overbridge would be constructed to allow Low Broats Farm and High Broats Farm to have continued access to the A66 via the improved junction with the A67. Additionally, a parallel accommodation access would be provided to ensure Mid Low Fields Farm, East Low Fields Farm and Bowes Cross Farm have continued access to the A66 again via the improved junction with the A67.
- 5.6.50 The house at Low Broats Farm and three associated farm buildings are proposed to be demolished to facilitate the new eastbound carriageway.
- 5.6.51 Access to and from Hulands Quarry would be made safer by closure of the existing central reserve gaps on the A66 and by upgrading the junction geometry. The existing central reserve gap at Bowes Cross Farm would be closed, along with access from the premises onto the A66, to improve safety.
- 5.6.52 The scheme would include lighting provision, extending and in some locations replacing the current provision.
- 5.6.53 Six ponds are proposed at low points in the scheme to attenuate drainage and run-off from the road to manage the water quality before it is discharged into the surrounding watercourses. Shared and dedicated access tracks are proposed to be provided to the north and to the south of the road to facilitate access to ponds for maintenance purposes and to accommodate landowner movements.
- 5.6.54 Utility works would be required for electricity, water, and communications services throughout the length of the scheme.
- 5.6.55 The ruins of the former Bowes Station and Low Broats Farm buildings would be demolished. The scheme would involve minor demolition works, such as roadside features, drainage and kerbing associated with the existing A66 and other local roads.

5.7 Cross Lanes to Rokeby

Description of baseline environment

- 5.7.1 Between Cross Lanes and Rokeby, there is a section of single carriageway approximately 3km long, which sits between dual carriageway to the west and east. The carriageway is generally straight throughout except for the right-hand curve at the eastern extents, where the link transitions into the dual carriageway section at Rokeby Junction. The carriageway generally has narrow lanes throughout.

- 5.7.2 There are two at-grade junctions at each end of this section, and several private means of access directly onto the A66. These numerous access points present considerable safety risks due to the resultant mix of fast- and slow-moving vehicles. This can be a contributing factor to road accidents along this section of the route and to mitigate this, it is proposed to dual this section to provide a consistent road standard throughout the scheme.
- 5.7.3 As well as several private means of access along this section of the route, there are both used and disused gated field accesses located in the north and south verges; seven gated field accesses exist along this short section of single carriageway alone.
- 5.7.4 Other features along this section of the A66 include lay-bys. They are immediately west of Street Side Farm and between Tutta Beck and Rokeby Grange access junctions. Lay-bys exist in the north and south verges for eastbound and westbound users, respectively. These lay-bys generally display several substandard features such as short merge and diverge taper lengths and short stacking lengths.
- 5.7.5 There are three routes for WCH which take the form of Public Rights of Way. Only one of these crosses the A66. Two public footpaths are associated with the Tutta Beck Farm Junction; both start in the northern verge and head north towards Dowson's Gill. One crosses the A66 at Church Plantation in a north/south orientation. Currently, all three PRoW have flag-post signs in one verge only, likely due to the opposite verge being overgrown. There is no evidence to suggest significant use of the WCH routes near Tutta Beck Farm. However, the cross-carriageway route at Church Plantation is accessed through the churchyard gates and heads north to the Teesdale Way WCH route. No footways, paved WCH facilities or bus-stop lay-bys exist within the scheme extents.

Outcomes of PCF Stage 1 Option Development and PCF Stage 2 Option Selection

- 5.7.6 At PCF Stage 1 Option Identification, three options were identified for consideration to improve the A66 between Cross Lanes and Rokeby. Each of these sought to widen the existing A66 to the south. Further information can be found in the PCF Stage 1 Technical Appraisal Report, provided in Appendix 1.
- 5.7.7 At PCF Stage 2 Option Selection, the option that proposed an offline diversion to the north to avoid the Old Rectory was discounted as it would result in the direct, permanent loss of an area of woodland adjacent to the existing A66 that forms part of the Rokeby Registered Park and Garden. The remaining two shortlisted options were therefore developed further for public consultation in Summer 2019. Their key principles are detailed in the PCF Stage 2 Scheme Assessment Report, provided in Appendix 2.

Public consultation Summer 2019

- 5.7.8 Two options were presented at public consultation in Summer 2019. For this scheme, a new westbound carriageway was proposed to the south of

the current A66 between the B6277 junction at Cross Lanes and Rokeby, after which the two options exist around the St Mary's Church buildings.

- 5.7.9 One option proposed to divert both carriageways to the south of the Old Rectory and St Mary's Church before re-joining the existing road at Rokeby. A new junction would be provided for access to Moorhouse Lane, the B6277 for Barnard Castle, Cross Lanes Organic Farm and the listed building Cross Lanes. This option would require the construction of two new culverts to accommodate Tutta Beck at Cross Lanes. A new junction west of St Mary's Church was proposed to allow access to the original A66 and Rokeby.
- 5.7.10 The other option was similar to that outlined in 5.7.9 above but proposed the new westbound carriageway be constructed next to the current carriageway. This would mean that some buildings to the south of the current A66 would require demolition. This option would retain local access at Rokeby Junction for eastbound traffic. Westbound traffic would be required to use Cross Lanes junction and the B6277 for access to Barnard Castle.
- 5.7.11 The PCF Stage 2 Scheme Assessment Report (see Appendix 2) stated that there were no post-consultation design changes to the options proposed.

Preferred Route Announcement May 2020

- 5.7.12 The Preferred Route Announcement of May 2020 concluded that the southern bypass option was the preferred route to be taken forward to PCF Stage 3 Preliminary Design.
- 5.7.13 This option was considered to have the least impact on the setting of the listed St Mary's Church, nor require demolition of the Old Rectory buildings. It would also improve access to the listed church and allow HGVs to easily travel in both directions on the A66 via the proposed new all-movement junction.

PCF Stage 3 Preliminary Design for Statutory Consultation

- 5.7.14 During early PCF Stage 3 Preliminary Design, proposals for junctions at Cross Lanes and Rokeby were developed further for Statutory Consultation in Autumn 2021 as outlined below. This is part of natural design development that occurs when new data and analysis supplements previously available information, for example the outcomes of surveys and further stakeholder engagement. In addition, an assessment of the PCF Stage 2 Option Selection design was carried out, including a review of the highway design such as validation against the latest standards, junction design and review of proposed connections.
- 5.7.15 In addition, following announcement of the Preferred Route in May 2020, several environmental and ecological studies were conducted to develop the route and to explore how to further minimise the overall impact of the Project, where practicable. This led the design team to consider alternatives for the junctions at Cross Lanes and Rokeby, the development of which is summarised below. Figure 23 summarises the development of

the scheme during PCF Stage 3 prior to Statutory Consultation with respect to the alignment alternatives assessment carried out. For detail of these assessments, refer to Section 5.8 of the Route Development Report as provided in Appendix 3.

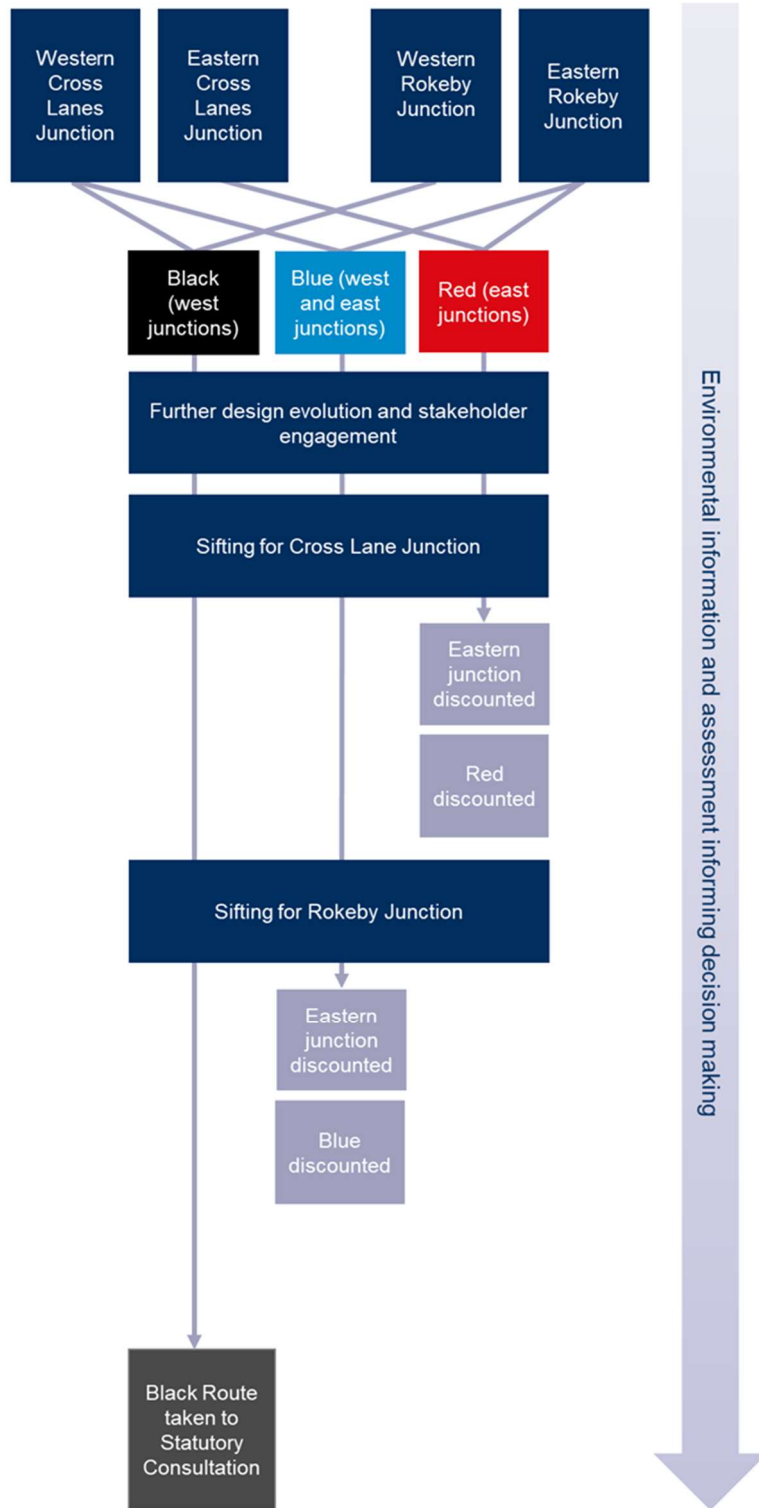


Figure 23 Early PCF Stage 3 scheme development summary for Cross Lanes to Rokeby

Development of junctions proposals from Preferred Route Announcement

- 5.7.16 The Preferred Route Announcement of May 2020 stated that a new junction would be provided for access to Moorhouse Lane, the B6277 for Barnard Castle, Cross Lanes Organic Farm and the listed building Cross Lanes, making access safer and easier for these destinations. In addition, a new junction west of St Mary's Church was proposed to allow access to the original A66 and Rokeby.
- 5.7.17 Early PCF Stage 3 Preliminary Design at Cross Lanes led to development of these proposals, including removal of the existing junctions to the B6277, Moorhouse Lane and Cross Lanes Organic Farm to eliminate right-turn manoeuvres to and from the dual carriageway. Instead, it was proposed that access to these roads would be via a new overbridge and road connecting the B6277 and Moorhouse Lane, with new slip roads provided to allow users to safely join and leave the A66 in both directions.
- 5.7.18 At Rokeby, it was proposed to provide a new junction to the west of St Mary's Church, providing access to the existing A66 and Rokeby. The junction would cross above the A66 via a new overbridge and new merge and diverge lanes would be provided which would allow users to safely join and leave the A66 in both directions. It was proposed that following the completion of the new A66 alignment south of the Old Rectory and St Mary's Church, the existing A66 would be de-trunked between the new junction and Barnard Castle Road to maintain access to properties and the existing HGV route to Barnard Castle.
- 5.7.19 These proposals were presented to the public at a virtual engagement event in November 2020 as part of the Winter 2020 Project Update.

Development of junctions following Winter 2020 Project Update

- 5.7.20 As Preliminary Design progressed following the Project Update of Winter 2020, it was found that the proposed junction at Cross Lanes required a Departure from Standard, the footprint of the Moorhouse Lane realignment was significant and the farmhouse and the cottage opposite the farm shop became landlocked between the dual carriageway and junction slip roads. It was also noted that the westbound on-slip road encroached into the Cross Lane farm shop and there were constructability and cost implications identified with the PCF2 design.
- 5.7.21 The design team determined that moving the junctions to the eastern side of the Moorhouse Lane realignment would reduce the impacts on the local receptors. As such, the proposed junction arrangement at Cross Lanes, including Moorhouse Lane developed to a compact grade-separated junction with loops. Priority junctions for both westbound and eastbound traffic were relocated east of Moorhouse Lane. It was proposed that the B6277 Moorhouse Lane be realigned to connect to the junction overbridge to help 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.

Design development of Cross Lanes junction alternatives

- 5.7.22 A Preliminary Design progressed, two junction proposals for Cross Lanes emerged as a result of more detailed traffic modelling. The baseline junction was developed to the east of the existing Cross Lanes junction, whereas the alternative junction was developed to the west.
- 5.7.23 The western Cross Lanes junction proposal provided a more direct link between Rutherford Lane and the B6277 Moorhouse Lane. It was proposed that this all-movement junction would include a structure over the A66 to serve this busy route, removing an existing right-left stagger across the A66 for local traffic.
- 5.7.24 The eastern Cross Lanes junction proposal was for an all-movement junction and the B6277 Moorhouse Lane would be realigned to connect to the junction overbridge.
- 5.7.25 For further detail on the development of these junctions, refer to the Route Development Report produced for Statutory Consultation.

Design development of Rokeby junction alternatives

- 5.7.26 As Preliminary Design of the Cross Lanes junctions developed, alternatives were developed for Rokeby in parallel. This was necessary given the interdependency of the junctions on this scheme and the transfer of traffic between the two, along the A66 between them and on to nearby towns and villages.
- 5.7.27 The western Rokeby junction proposal was for an all-movement junction to the west of St Mary's Church and the Old Rectory, avoiding any direct impact on the Registered Park and Garden and the Old Rectory. It was proposed that this junction would be an underpass arrangement, providing access to Barnard Castle Road for all westbound traffic and diverging eastbound traffic via the old A66.
- 5.7.28 The eastern Rokeby junction proposal was for an all-movement junction to the east of St Mary's Church but west of the existing Rokeby junction. The proposed compact connector road would directly impact the Registered Park and Garden and as such did not conform with National Policy.
- 5.7.29 For further detail on the development of these junctions, refer to the Route Development Report produced for Statutory Consultation.

Presentation of junction alternatives at August 2021 stakeholder engagement event

- 5.7.30 As there had been significant design development during PCF Stage 3 Preliminary Design for this section of the A66 between Cross Lanes and Rokeby, a further stakeholder engagement event was held in August 2021 to gather feedback from interested and affected parties on how the design was developing at that point. This session was an in-person drop-in session at The Witham in Barnard Castle.
- 5.7.31 The engagement event allowed the project team to explain the development behind the junction alternatives under consideration to stakeholders to help them understand the alternatives before the Statutory

Consultation. It was communicated to attendees that while suggestions would be taken onboard and considered going forward, they would not be reflected in the Statutory Consultation materials. Attendees were encouraged to participate in the Statutory Consultation and make their comments formally through that channel to allow them to be reviewed and regard given to them in the final preparation of the application for development consent. Attendees were also advised by the National Highways team that a route preference would be stated at Statutory Consultation.

5.7.32 Three technically viable junction combinations for Cross Lanes and Rokeby had been identified through the Preliminary Design process and were presented at the event as illustrated in Figure 24, Figure 25 and Figure 26 below. For information relating to the development of these combinations, refer to Section 5.8 of the Route Development Report as produced for Statutory Consultation.



Figure 24 Cross Lanes to Rokeby Black Option: Cross Lanes western junction and Rokeby western junction

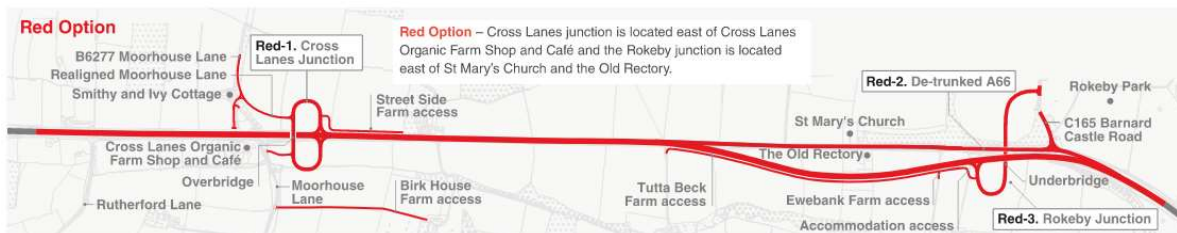


Figure 25 Cross Lanes to Rokeby Red Option: Cross Lanes eastern junction and Rokeby eastern junction



Figure 26 Cross Lanes to Rokeby Blue Option: Cross Lanes western junction and Rokeby eastern junction

Alternatives sifting for Statutory Consultation

- 5.7.33 Following this stakeholder engagement event, a further sifting exercise was carried out prior to Statutory Consultation to compare the proposed alternative against the baseline for each of Cross Lanes and Rokeby junctions. They were compared using engineering, environmental, traffic, economic, stakeholder principles with commentary on policy conformity. In addition, National Highways' three priorities of Safety, Customer and Delivery were considered crucial to assessing the alternatives ahead of Statutory Consultation.
- 5.7.34 Refer to 4.1 for further detail on the assessment process and criteria and Section 5.8 of the Route Development Report produced for Statutory Consultation for detail of the assessments and outcomes. The Red and Blue Route Options were discounted as a result of the sifting exercise undertaken for each junction and as such the Black Route was subsequently identified as the preference to be taken forward for Statutory Consultation.
- 5.7.35 The principal consideration in the preference for the black route (with a western junction at Rokeby) is the impact on the Grade II* Registered Park and Garden at Rokeby Park. The eastern junction would create harm to the Grade II* Registered Park and Garden at Rokeby Park. Whilst impacts on some key views of the eastern junction could be mitigated through careful landform design and reinstatement, the impacts cannot be completely avoided as the eastern junction would still lead to additional fragmentation of the site.
- 5.7.36 National policy requires a very strong justification for any harm to a nationally designated asset, and evidence to show that there is not a viable alternative. National planning policy, paragraph 5.131 of the NNNPS states that: *“Once lost, heritage assets cannot be replaced, and their loss has a cultural, environmental, economic and social impact. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. Given that heritage assets are irreplaceable, harm or loss affecting any designated heritage asset should require clear and convincing justification...Substantial harm to or loss of designated assets of the highest significance, including...grade I and II* Registered Parks and Gardens should be wholly exceptional.”*
- 5.7.37 If there is substantial harm to the Rokeby Park heritage asset the DCO application would need to set out exceptional circumstances for the Rokeby east junction alternative. These exceptional circumstances would need to be demonstrated in terms of substantial public benefits which outweigh any harm or loss, or alternatively other strict criteria apply as set out in paragraph 5.133 of the NNNPS.
- 5.7.38 It was considered that the eastern junction alternative at Rokeby was likely to be regarded as not conforming with national policy and therefore there was a risk that a DCO application including the alternative eastern Rokeby junction would not secure a grant of consent. As such, the western Rokeby junction was identified, as part of the black route as the preferred solution at Statutory Consultation. The land required to implement the eastern

junction at Rokeby was included in the proposed draft Development Consent Order boundary for the proposals presented at Statutory Consultation. This allowed for an eastern junction option at Rokeby to form part of the DCO application (in place of the western junction) if further information (either resulting from further technical work or as result of feedback from the consultation) could clearly show that it was possible to satisfy the policy requirements of the NNNPS with an eastern junction.

Statutory Consultation Autumn 2021

5.7.39 Following the assessment and engagement process described above, the Black Route emerged as the preferred route for this scheme. The preliminary design presented at Statutory Consultation in Autumn 2021 for Cross Lanes to Rokeby can be summarised as follows:

- The route would mostly follow the existing alignment of the A66, with a new adjacent westbound carriageway proposed to the south between the B6277 junction at Cross Lanes and the existing Tutta Beck Cottage access. Both carriageways would then be route 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 providing access to the B6277 Moorhouse Lane and Cross Lanes Organic Farm and Café were to be removed.
- A new compact grade-separated junction was proposed on the A66 west of the existing Cross Lanes junction. This arrangement would link the B6277 Moorhouse Lane and Rutherford Lane via a structure over the dualled A66.
- At Rokeby, it was proposed to remove the existing junction and replace it with a compact grade-separated junction west of St Mary's Church and the Old Rectory, which would pass beneath the dualled A66.
- The proposed junction would be an underpass arrangement, providing access to Barnard Castle for all westbound traffic and eastbound traffic via the old A66, which would form part of the local road network.
- Eastbound merging traffic would join the A66 via a slip road at the existing Rokeby Junction with the C165 Barnard Castle Road. This junction would maintain HGV access to Barnard Castle.

PCF Stage 3 Preliminary Design for DCO

5.7.40 Following Statutory Consultation design development continued. The design was developed having regard to feedback received throughout the consultation and ongoing engagement, to address environmental and traffic issues that arose following completion of surveys and to incorporate mitigation for impacts that had been identified through the Environmental Impact Assessment (EIA). This work has led to a number of opportunities to revise the design to improve areas such as community connectivity, environmental and land aspects. Key developments for Cross Lanes to Rokeby are outlined below.

Engineering

- 5.7.41 The most significant design developments for this scheme have taken place at Cross Lanes junction. The junction footprint has been reduced as a result of realignment so that it crosses the A66 on less of a skew than presented in Autumn 2021, and the link roads have also been refined. This minimised footprint avoids more useful land and reduces environmental impacts whilst maintaining improved connectivity between Moorhouse Lane and Rutherford Lane.
- 5.7.42 The proposed Scargill Road link from Moorhouse Lane to Rutherford Lane has also been rerouted to the north of Cross Lanes Organic Farm Shop, parallel but separate to the A66 before turning southwest to connect to the B6277 overbridge. This change follows feedback from Statutory Consultation and ongoing stakeholder engagement, which highlighted concerns about the Farm Shop and the practicality of being surrounded by roads on four sides and led to a more optimised solution. The update also allows views to the south from the restaurant to be maintained, minimises disruption to adjacent farming businesses through reducing the amount of productive farmland required for construction and reduces potential negative impacts on Tutta Beck and habitats there.
- 5.7.43 At Rokeby junction, design development has resulted in a minor adjustment to the position of the junction. The junction geometry has been compressed to minimise land take and moved slightly east. This update also removes the requirement for several notable trees along the driveway to Rokeby Grange Farm to be felled to accommodate the scheme. However, it should be noted that the trees within the verge to the north of the existing A66 would have to be removed to comply with visibility requirements for the new carriageway.
- 5.7.44 It is proposed to move the access track to the east from Rokeby junction from its position parallel with the A66, as shown at Statutory Consultation, to follow the treeline at the northern side of Jack Wood, to the south of the field instead. This change allows for the more productive area of the field to be retained for farming and formalises what is the current typical access route followed by agricultural vehicles. This track would be positioned such that it avoids the Root Protection Area of the Ancient Woodland along Tutta Beck.
- 5.7.45 Design development has also resulted in the proposal to replace the junction to the C165 from the de-trunked A66 with a roundabout. This would help to reduce vehicle speeds on approach whilst also improving the geometry of the C165 Barnard Castle Road. This update addresses safety concerns that were raised during Statutory Consultation and highlighted the number of accidents that occur at this junction, including crashes into the Grade II listed wall and railings at Rokeby Park.
- 5.7.46 Where practicable, earthworks have been refined and regraded to enhance landscape integration and minimise land take. Similarly, efforts have also been made to reshape drainage ponds throughout the scheme to allow them to better integrate with their surroundings, avoid Root Protection Areas of established vegetation, and reduce land take.

- 5.7.47 This complements refinements that have also been made to drainage pond locations to address feedback received regarding land take and severance of land, and the outcomes of further flood modelling undertaken throughout design development. One such example is the westward movement of the pond south of Cross Lanes Organic Farm Shop. This follows design development to move the Scargill Road link between the B6277 overbridge and Moorhouse Lane to ensure that this access is adequately drained.
- 5.7.48 Design development has also led to refinement of accommodation and access routes such that they are suitable for the vehicles that would use them, such as large agricultural vehicles and HGVs. This development has taken place in conjunction with continued landowner engagement throughout Preliminary Design.

Environment

- 5.7.49 Statutory Consultation feedback for the Cross Lanes to Rokeby scheme highlighted concerns relating to landscaping and environmental mitigation. For the majority, reference should be made to the Consultation Report (Application Document 4.4) for detail. For information on specific landscaping and environmental mitigation proposals, refer to ES Volume 1 (Main Report), Chapter 10 – Landscape and Visual (Application Document 3.2).
- 5.7.50 As outlined in 4.4.22 above, an update to the modelling assumptions used for the Greenhouse Gas (GHG) emissions calculations has resulted in a reduction in emissions figures for the schemes assessed. This includes Cross Lanes to Rokeby, for which junction alternatives were assessed prior to Statutory Consultation. As a result of this change in modelling assumptions, the team have reviewed the sifting process carried out; for further information, refer to ES Volume 1 (Main Report), Chapter 3 – Assessment of Alternatives (Application Document 3.2).
- 5.7.51 However, GHG emissions were not the only factor influencing the assessment of alternatives ahead of Statutory Consultation. For Cross Lanes to Rokeby, the main reason the Black Route was progressed through to DCO application was its conformance to national planning policy. The reduction in GHG emissions resulting from the updated methodology provided an improvement for all alternatives considered but does not change the assessment that Black Route is the option that should be progressed.

Traffic and economics

- 5.7.52 Feedback was received at Statutory Consultation that raised concerns about vehicle speeds at the junction of the de-trunked A66 with the C165 Barnard Castle Road. Consequently, this junction has been replaced with a roundabout (see 5.7.45 above).
- 5.7.53 Throughout PCF Stage 3, traffic modelling of the junctions at Cross Lanes and Rokeby, and the interaction between these has been undertaken and refined to reflect the developing design along the route. This modelling includes the projected increased traffic flows resulting from the upgrade works to ensure that potential negative impacts on surrounding areas can

be identified and mitigated (refer to the Transport Assessment (Application Document 3.7) for further information). For further details on air quality and noise assessments undertaken and proposed environmental mitigation measures, refer to ES Volume 1 (Main Report), Chapter 5 – Air Quality and Chapter 12 – Noise and Vibration (Application Document 3.2).

- 5.7.54 Following feedback received and ongoing stakeholder engagement as outlined in 4.4.10 above, police observation platforms have now been included in both the proposed eastbound lay-by (east of Dick Scot Lane) and westbound lay-by (west of Dick Scot Lane).
- 5.7.55 Accessibility opportunities, including those for walkers, cyclists and horse-riders (WCH), have developed throughout preliminary design as introduced in 4.4.29 through 4.4.33 above.
- 5.7.56 For this scheme, the focus has been on providing north-south connectivity for walkers, cyclists and horse-riders to ensure the current severance presented by the A66 is not exacerbated once it is dualled between Cross Lanes and Rokeby. The proposed grade-separated junctions would improve safety and new footways linking existing footways together would provide users with safe routes to the north and south.
- 5.7.57 At Cross Lanes junction, connectivity would be improved for those users who frequent Moorhouse Lane and the B6277 as a result of the proposed overbridge. Appropriate provision is proposed for horse-riders using the junction on their way north to the bridleway to Egglestone.
- 5.7.58 Feedback from cyclists during Statutory Consultation highlighted concerns about the speed of traffic travelling on the roads approaching Cross Lanes junction (refer to Chapter 6 of the Consultation Report (Application Document 4.4). As part of the design development that has taken place, it is proposed to implement a reduced speed limit of 40mph on for example, Rutherford Lane.
- 5.7.59 Design development has responded to focus group feedback to include an east-west walking connection between the access proposed for the drainage pond to the east of Streetside and an existing footpath, which would then route towards Rokeby junction. In the vicinity of the proposed Rokeby junction, the design would gather several WCH routes and bring them to the junction, providing grade-separated crossing of the dual carriageway for those users.
- 5.7.60 A shared cycle/footway is proposed for the northern side of the scheme, parallel to the proposed A66 between Cross Lanes junction and Greta Bridge cycleway, informed by further focus group feedback. This provides cyclists with the requested connectivity between Greta Bridge and Barnard Castle, which can be accessed via the B6277.

Stakeholder

- 5.7.61 Design development between Statutory Consultation and DCO application has resulted in an overall reduction in proposed permanent acquisition of land. The land required for the eastern Rokeby junction option (Blue and Red options) was originally included in the draft DCO boundary shown at Statutory Consultation to inform stakeholders of the potential land required

to develop that junction. As this land is not required for the scheme to be taken to DCO, it has been removed from the DCO Order Limits.

- 5.7.62 In addition, the overall footprint of the proposed Cross Lanes junction has been reduced through design development and has similarly contributed to a reduction in proposed permanent acquisition of land compared to that presented at Statutory Consultation.

Development Consent Order application Spring 2022

- 5.7.63 An illustrative plan of the scheme presented for DCO application in Spring 2022 is given in Figure 27 below. For further information, reference should be made to General Arrangement Drawings Scheme 08 Cross Lanes to Rokeby (Application Document 2.5).

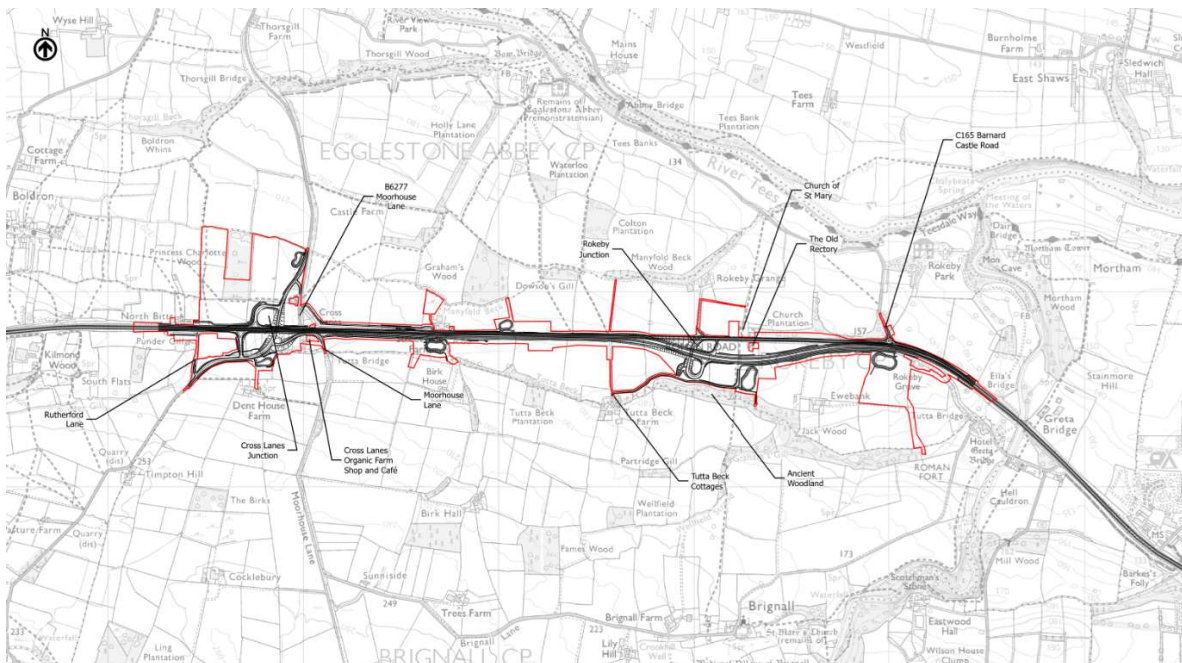


Figure 27 Illustrative plan of Cross Lanes to Rokeby scheme and surrounding area (DCO Order Limits shown in red)

- 5.7.64 The Cross Lanes to Rokeby scheme would mostly follow the 4.4km existing A66 alignment, with a new adjacent westbound carriageway constructed to the south between the B6277 at Cross Lanes and the existing Tutta Beck Cottage access. Both carriageways would then be routed to the south of the Old Rectory and St Mary's Church, re-joining the existing dualled A66 at Rokeby.
- 5.7.65 A new compact grade-separated junction would be constructed at Cross Lanes, west of the Organic Farm Shop and Café. An overbridge would carry a new single carriageway link between the B6277 Moorhouse Lane (to the north) and Rutherford Lane (to the south). Traffic would be able to leave and join the A66 via new priority junctions, maintaining all movements. The existing accesses from the B6277 and Rutherford Lane onto the A66 would be stopped up. Moorhouse Lane (to the south) would be stopped up and realigned to connect the new grade-separated Cross Lanes Junction.

- 5.7.66 Access to the Cross Lanes Organic Farm Shop and Café from the Cross Lanes Junction would be provided via the realigned Moorhouse Lane. An accommodation access would spur from Moorhouse Lane and run parallel to the A66, leading to Birk House Farm.
- 5.7.67 Access to Ivy and Smithy Cottages, Cross Lanes Farmhouse and Streetside Farm would be provided by a connection to the new junction link road on the north. North Bitts Farm would also connect to the new Cross Lanes Junction via an accommodation access.
- 5.7.68 The junction at Cross Lanes has been designed to minimise impact upon existing woodland, land parcels and watercourses. Tutta Beck would be realigned through the Cross Lanes Junction.
- 5.7.69 Access to Poundergill would be maintained via Rutherford Lane.
- 5.7.70 The new A66 dual carriageway would mostly follow the existing A66 alignment between Cross Lanes and Rokeby junctions. Lay-by provision along this section would be maintained by the construction of new lay-bys serving the eastbound and westbound carriageways either side of Streetside Farm. Streetside Farm's existing access onto the A66 would be stopped up and an accommodation access parallel to the A66 (to the north), would lead to the Cross Lanes Junction.
- 5.7.71 The existing Tutta Beck Cottages access onto the A66 would be stopped up. Here, the new A66 dual carriageway would divert to the south of the Old Rectory before realigning with the existing A66 at Rokeby. A new three arm compact grade-separated junction would be constructed west of the Old Rectory allowing westbound traffic to leave and join the A66, and eastbound traffic to leave the A66. The Rokeby Junction would be constructed in an underbridge arrangement with the westbound loop passing beneath the predominantly at grade A66. The junction has also been located to avoid impacts upon veteran trees where practicable, located to the north of the junction.
- 5.7.72 Accommodation accesses would spur off from the new Rokeby Junction to maintain access to Tutta Beck Cottages and Ewe Bank Farm (to the south) and Rokeby Grange (to the north).
- 5.7.73 The new Rokeby Junction would maintain HGV access to Barnard Castle via the C165 Barnard Castle Road.
- 5.7.74 The existing A66 would be de-trunked west of the Grade II* listed Church of St Mary along its length to the C165 Barnard Castle Road. A roundabout would manage traffic movements between the de-trunked A66, C165 and the new eastbound merge local to the Rokeby Park Registered Park and Gardens. A new eastbound merge would ensure all movements are possible at Rokeby (when the provision at Rokeby Junction is considered).
- 5.7.75 The existing access from Tack Room Cottage onto the A66 (to the south) would be stopped up. Access would be replaced via an accommodation access to the new Rokeby Junction. The access track has been designed with a 15m offset from Jack Wood Ancient Woodland to minimise impact to the woodland which is located directly to the south. The Tack Room Cottage existing access to/from Greta Bridge would be maintained. A new

cycleway would connect Greta Bridge to the Tack Room Cottage access route, and thus the Rokeby Junction, allowing cyclists to travel to/from Barnard Castle and Greta Bridge more safely.

- 5.7.76 New lay-by facilities would be provided on the proposed mainline in both eastbound and westbound directions to replace existing provision which is lost due to the implementation of the scheme. Both lay-bys would include observation platforms.
- 5.7.77 No lighting would be provided on the length of the scheme.
- 5.7.78 Six ponds are proposed at low points in the scheme to attenuate drainage and run-off from the road to manage the water quality before it is discharged into the surrounding watercourses. Shared and dedicated access tracks are proposed to be provided to the north and to the south of the road to facilitate access to ponds for maintenance purposes and to accommodate landowner movements.
- 5.7.79 Utility works would be required for electricity, water, and communications services throughout the length of the scheme.
- 5.7.80 No demolition of property is required as part of this scheme. The scheme would involve minor demolition works, such as roadside features, drainage and kerbing associated with the existing A66 and other local roads.

5.8 Stephen Bank to Carkin Moor

Description of baseline environment

- 5.8.1 This section of the A66 extends from Browson Bank Farm in the west to Carkin Moor in the east, where the next length of dual carriageway is introduced. Along this section of the route is just over 6km of single carriageway, and whilst it closely follows the alignment of the Roman Road and is therefore relatively straight, the road rises and falls in areas causing visibility issues and forcing heavy goods vehicles to accelerate to navigate steep inclines.
- 5.8.2 There are multiple access points along this section of the route, where vehicles are attempting to join a single lane carriageway on which traffic is travelling at high speeds. Drivers can also find themselves in a vulnerable position when attempting to slow and leave the A66, especially when turning right.
- 5.8.3 Of these access points, five are major/minor junctions and seven are private residential or commercial accesses. Two of the major/minor junctions have been provided with ghost island right turns to improve safety for vehicles leaving the A66. However, these features result in frequent vehicle manoeuvres to and from the A66, thereby increasing accident risk.
- 5.8.4 This single carriageway section of the A66 is generally narrow in cross section, with narrow edge strips and verges. This results in insufficient run-off areas, should a vehicle leave the carriageway. Other potential collision hazards include trees, shrubs, telegraph poles, buildings, and drystone walls along the verges.

- 5.8.5 Other features along this section of the A66 include lay-bys which generally display several substandard features such as short merge and diverge taper lengths and short stacking lengths. The carriageway passes through the site of a Scheduled Ancient Monument, a Roman Fort and prehistoric enclosed settlement approximately 400m west of Carkin Moor Farm.
- 5.8.6 There are three WCH routes crossing the A66 along this section of the route. A bridleway is located on the north verge near Browson Bank Farm, crossing the A66 in the vicinity of Dick Scot Lane. Currently, this crossing facility has no flag-post signs or corral. Two further WCH routes cross the A66, one being a public footpath in the vicinity of Fox Hall Junction and the other a bridleway near Mainsgill Farm. No footways, paved WCH facilities or bus-stop lay-bys exist throughout this section of the A66.

Outcomes of PCF Stage 1 Option Development and PCF Stage 2 Option Selection

- 5.8.7 At PCF Stage 1 Option Identification, five options were identified for consideration to improve the A66 between Stephen Bank and Carkin Moor. Each of these sought to widen the existing A66 to the south. Further information can be found in the PCF Stage 1 Technical Appraisal Report (Appendix 1).
- 5.8.8 At PCF Stage 2 Option Selection, four of these five options were discounted and therefore not taken forward to public consultation in Summer 2019. Reasons for this included among others:
- Lower standard geometry requirements to avoid existing properties.
 - Additional land take or other more significant direct impacts on the Scheduled Ancient Monument.
 - Use of existing sections of the A66 unsuitable for inclusion in the permanent works.
- 5.8.9 However, following options appraisal, two further alternative options were developed. Details of each of these options and their development can be found in the PCF Stage 2 Scheme Assessment Report (Appendix 2).

Public consultation Summer 2019

- 5.8.10 Three options were presented at public consultation in Summer 2019. For all, it was proposed that the current A66 be dualled between Stephen Bank and West Layton, broadly following the line of the existing road. From West Layton, there were then three different options that considered the impact on Foxhall, Mainsgill Farm and the Carkin Moor Scheduled Ancient Monument.
- 5.8.11 One option proposed a new dual carriageway to the south of the existing A66 and the properties at Foxhall and Mainsgill Farm, after West Layton. It would re-join the A66 at Carkin Moor Farm, beyond the Scheduled Ancient Monument. A new junction and bridge were proposed at New Lane to provide access to the new A66 for several properties and the villages of East Layton, West Layton, and Ravensworth. Several underpasses would be created to maintain land access and public rights of way.

- 5.8.12 Another option proposed a new dual carriageway to the north of the existing A66 and the properties at Foxhall and Mainsgill Farm, after West Layton. It would re-join the A66 at Carkin Moor Farm. As the new dual carriageway would be expected to re-join the A66 just after Mainsgill Farm it would therefore require the widening of the road through the Scheduled Ancient Monument. A new junction and bridge were proposed on Moor Lane to provide safe and easy access to the old A66 for the villages of East Layton, West Layton and Ravensworth and the Mainsgill Farm shop.
- 5.8.13 The final option followed the same route as that outlined in 5.8.10 as far as New Lane, where it diverted north to avoid Mainsgill Farm Shop. A new eastbound junction was proposed at Foxhall to provide local access to the old A66 and West Layton. New Lane would be realigned to connect with the new A66, providing access for Ravensworth. The proposed route would continue in a northerly direction to a new junction at Moor Lane which would provide access to Mainsgill Farm and the old A66. As the new dual carriageway would be expected to re-join the A66 just after Mainsgill Farm it would therefore require the widening of the road through the Scheduled Ancient Monument.

Preferred Route Announcement May 2020

- 5.8.14 The Preferred Route Announcement of May 2020 concluded that the northern bypass option, would be taken forward to PCF Stage 3 Preliminary Design.
- 5.8.15 This option was preferred as it maintained the line of the A66 through the Scheduled Ancient Monument at Carkin Moor, reducing potential additional impacts on this designated heritage asset. It also presented better options for utilising the de-trunked section of the A66 to allow safe and easy access to local villages and facilities, such as Ravensworth and the Fox Hall Inn.
- 5.8.16 However, the PCF Stage 2 Scheme Assessment Report (see Appendix 2) stated that following feedback from the public, it was agreed that access to West Layton for this option would be problematic. Consequently, it was proposed to add an additional structure to connect Collier Lane to the de-trunked A66 network, thus maintaining access provisions.

PCF Stage 3 Preliminary Design for Statutory Consultation

- 5.8.17 During early PCF Stage 3 Preliminary Design, these proposals were developed further for Statutory Consultation in Autumn 2021 and are as outlined below. These updates follow the natural design development that occurs when new data and analysis supplements previously available information, for example the outcomes of surveys and further stakeholder engagement.
- 5.8.18 Examination of the interaction of the proposed A66 over the watercourse to the east of Mainsgill indicated a requirement to raise the proposed A66 mainline alignment to obtain sufficient vertical clearance over this watercourse to allow it to be culverted beneath the new offline section. This amendment to the vertical geometry of the carriageway reduced the level difference that could feasibly be achieved at Moor Lane to provide the

- required headroom and structural clearances to allow the proposed mainline to pass under Moor Lane as proposed in the PRA.
- 5.8.19 As such, the grade separation announced in May 2020 was reversed and it was proposed that Moor Lane be lowered, with the A66 mainline passing over instead of passing under this local road. This allowed adequate clearance to the watercourse mentioned above, whilst still allowing the compact grade-separated geometry to be maintained. Lowering Moor Lane in this manner also brought the added benefit of reducing the visual impact of the grade-separated junction on the surrounding areas.
- 5.8.20 Following consultation with stakeholders including community representatives and local businesses, this junction was also moved to the west of the existing Moor Lane. This improved on the earlier proposals between Moor Lane and Mainsgill Farm Shop by providing better separation between the two proposed staggered junctions. This relocation also brought the added benefit of discouraging the use of Moor Lane for through traffic as a result of adequate separation between the two proposed staggered junctions.
- 5.8.21 A review of the junction proposals at Collier Lane was also undertaken. This determined that there could be significant savings in imported fill volumes, and an improvement with respect to potential visual impacts of the scheme on its surroundings, if the grade separation was also reversed here. As such, it was proposed that the A66 mainline passed in cutting beneath Collier Lane.
- 5.8.22 Stakeholder engagement was key to developing the route between Stephen Bank and Carkin Moor. Advice was sought from Historic England to support development of the route in relation to the Scheduled Ancient Monument. The proposals at Statutory Consultation raised the A66 mainline alignment here as it passed through the cutting adjacent to the site. This minimised the amount of excavation required to accommodate the proposed retaining wall to the south of the alignment and therefore also reduced impacts on the Scheduled Ancient Monument itself.
- 5.8.23 WCH access would be improved along the scheme through provision of a new underpass suitable for horse-riders, beneath the A66 mainline adjacent to the existing junction of Warrener Lane and the A66. In addition, two previously unconnected bridleways were to be linked through the new grade-separated junction at Moor Lane, with safety further improved due to re-routing the southern path to the west of Mainsgill Farm.
- 5.8.24 Review of the previous design for a left on/left off junction at Warrener Lane noted that such an arrangement may encourage drivers to make dangerous U-turn manoeuvres at the junction to the east, where there was still a gap in the central reserve. It was proposed to close this central reserve gap and provide a new link road to connect Warrener Lane with the existing A66 in the vicinity of Mainsgill Farm, allowing safer connections between the A66 and local roads.
- 5.8.25 In addition, two new lay-bys were proposed within the scheme extents. It was proposed that one would serve the eastbound carriageway and one would serve the westbound carriageway. Both lay-bys were to have

geometry in line with current design standards and include 60m parking provision.

Statutory Consultation Autumn 2021

5.8.26 The preliminary design presented at Statutory Consultation in Autumn 2021 for Stephen Bank to Carking Moor can be summarised as follows:

- Provision of a new dual carriageway to the north of the old A66 and the properties at Fox Hall and Mainsgill Farm. The new A66 would re-join the old A66 to the east of Mainsgill Farm.
- Existing A66 would be widened and dual through Carkin Moor Scheduled Ancient Monument to Carkin Moor Farm. The proposed A66 was to be raised as it passed through the cutting adjacent to the Carkin Moor SAM.
- Proposed that the old de-trunked A66 to the south of the proposed new A66 route be used for local access.
- New underpass would be provided to the north of Dick Scot Lane to allow access to land north of the proposed A66.
- Provision of a new overbridge link from Collier Lane to the de-trunked A66. Grade separation at Collier Lane had the proposed A66 passing beneath Collier Lane in cutting.
- Provision of a new compact grade-separated junction to the west of Moor Lane to provide local access to the de-trunked A66.
- Realignment of the southern section of Moor Lane to connect it to the proposed compact grade-separated junction.
- Connection of existing bridleways north and south of the A66 in the vicinity of Mainsgill Farm. It was proposed to connect these routes via a diversion on the northern side, to cross under the proposed A66 via the new junction to then follow the western boundary of Mainsgill Farm. The existing bridleway through Mainsgill Farm was to be stopped up.
- Removal of the existing right turn from the A66 on to Warrener Lane; it was proposed that traffic was to join the A66 via a new link road to Moor Lane junction.

PCF Stage 3 Preliminary Design for DCO

5.8.27 Following Statutory Consultation design development continued. The design was developed having regard to feedback received throughout the consultation and ongoing engagement, to address environmental and traffic issues that arose following completion of surveys and to incorporate mitigation for impacts that had been identified through the Environmental Impact Assessment (EIA). This work has led to a number of opportunities to revise the design to improve areas such as community connectivity, environmental and land aspects. Key developments for Stephen Bank to Carkin Moor are outlined below.

Engineering

- 5.8.28 Several stakeholders raised concerns at Statutory Consultation regarding the lack of connection of the de-trunked A66 to the proposed new carriageway at the western scheme extent in the vicinity of Browson Bank. As such, in response to the suggestions put forward, the design team have carried out further refinements and are now proposing that a new westbound slip road be constructed to provide access from surrounding villages to the new westbound A66 dual carriageway. The impacted farm access has also been redesigned to suit this new arrangement, providing reducing journey times for those accessing the A66 in this area. This proposal avoids local detours to Moor Lane Junction for access to the A66 and prevents the de-trunked road from becoming a dead-end with the potential to be misused, for example, for fly-tipping or overnight stays.
- 5.8.29 Throughout Preliminary Design, engagement has been ongoing with Historic England to determine the optimum retaining solution for the carriageway as it passes through the Carkin Moor Roman fort and prehistoric settlement. Options proposed included the choice between an embankment or a structural retaining wall along the edge of the southern portion of the Scheduled Ancient Monument.
- 5.8.30 A retaining wall solution was selected as the preference as it offers the potential to increase the height of the retaining structure and lower the carriageway within the proposed footprint, affording the opportunity to mitigate and reduce the visual and noise impacts to the east of the SAM site.
- 5.8.31 At the western scheme extent, the design team have been able to significantly reduce the required land take by working with the landowner to optimise the drainage pond design and location.
- 5.8.32 At the eastern scheme extent, two proposed drainage ponds have had to be removed to avoid significant adverse effects on the Roman fort and prehistoric enclosed settlement 400m west of Carkin Moor Farm, following concerns regarding their impact on the visual setting of the monument. Removal of these ponds has resulted in an increase in the size of the pond proposed opposite Mainsgill Farm, in the field to the east of Moor Lane.
- 5.8.33 Feedback received at Statutory Consultation regarding issues with the existing drainage arrangements of local roads such as Waitlands Lane by Ravensworth Lodge to the south of the A66, and Collier Lane to the north of the A66 has been taken on board. Both the design team and National Highways are continuing to engage with North Yorkshire County Council regarding drainage of the adopted highway to seek solutions to these ongoing concerns that could be implemented during the de-trunking process for the scheme.

Environment

- 5.8.34 Design development for this scheme has led to significant landscaping and environmental mitigation changes as outlined below.
- 5.8.35 The decision to construct a retaining structure alongside the proposed A66 westbound carriageway (see 5.8.29 through 5.8.30 above), allows the road

to be lowered to reduce visual and noise impact on the setting of the Scheduled Ancient Monument at Carkin Moor. Similar landscaping developments in the vicinity of the Roman fort and prehistoric settlement include the consolidation of the drainage ponds to reduce significant adverse impacts on the visual setting of the SAM.

- 5.8.36 Suggestions have been received in Statutory Consultation feedback regarding alternative land for environmental mitigation measures and amendments have been made where practicable. Reference should be made to Chapter 6 of the Consultation Report (Application Document 4.4) for detail. For information on specific landscaping and environmental mitigation proposals, refer to ES Volume 1 (Main Report), Chapter 10 – Landscape and Visual (Application Document 3.2).

Traffic and economics

- 5.8.37 Following feedback received and ongoing stakeholder engagement as outlined in 4.4.10 above, police observation platforms have now been included in both the proposed east and westbound lay-bys, to the east of the proposed B6277 overbridge.
- 5.8.38 Accessibility opportunities, including those for walkers, cyclists and horse-riders (WCH), have developed throughout preliminary design as introduced in 4.4.29 through 4.4.33 above.
- 5.8.39 For this scheme, the focus has been on providing safer bridleway connections in response to Local Authority and user group feedback. Along the length of the A66 between Stephen Bank and Carkin Moor, the existing A66 severs a number of Public Rights of Way. It is therefore proposed to connect these terminated routes to provide more useable WCH infrastructure.
- 5.8.40 Given focus group feedback that horse-riders often prefer underpasses to overbridges for crossing the dual carriageway, the design has accommodated this where practicable. This includes the proposals to connect bridleways at Hutton Magna, West Layton, Mainsgill and Carkin Moor via accommodation underpasses.
- 5.8.41 It is proposed to provide an additional horse and pedestrian path in the verge of the de-trunked A66 along the length of this scheme from Collier Lane overbridge along to Warrener Lane. This reconnects severed WCH routes between the north and south of the proposed dual carriageway, improving connectivity and accessibility for users.
- 5.8.42 Additional protection for horse-riders was also a concern raised during engagement with stakeholders, as many feel unable to safely use the current routes parallel to the A66 as they are too close to the main carriageway. To further improve safety of the WCH routes, it is proposed that the design of the de-trunked sections such as that between Warrener Lane and Dick Scot Lane used to access Mainsgill Farm Shop, would be such that it encourages other motorised users to drive more considerately. Measures proposed include reduced carriageway widths, the addition of horse-riding routes, and safe crossing points.

Stakeholder

- 5.8.43 Stakeholder engagement has formed a key part of the design development of the Stephen Bank to Carkin Moor scheme throughout Preliminary design. In particular, development of access arrangements has often been driven by feedback received, such as for the improved connectivity at the western scheme extents (see 5.8.28 above).
- 5.8.44 In addition, feedback also highlighted concerns about the connection of the access track proposed for the pond to the west of Mainsgill Farm, to the de-trunked A66. This junction has since been reviewed and the connection amended.
- 5.8.45 Feedback with suggested design improvements was received from Statutory Consultation. Some of these, such as the request to connect the proposed Warrener Lane access through to Gilling junction, are outside the scope of the current scheme and would require land take and significant works beyond the scheme extents and therefore it has not been possible to incorporate them at this Stage. For further information, reference should be made to Chapter 6 of the Consultation Report (Application Document 4.4).

Development Consent Order application Spring 2022

- 5.8.46 An illustrative plan of the scheme presented for DCO application in Spring 2022 is given in Figure 28 below. For further information, reference should be made to General Arrangement Drawings Scheme 09 Stephen Bank to Carkin Moor (Application Document 2.5).

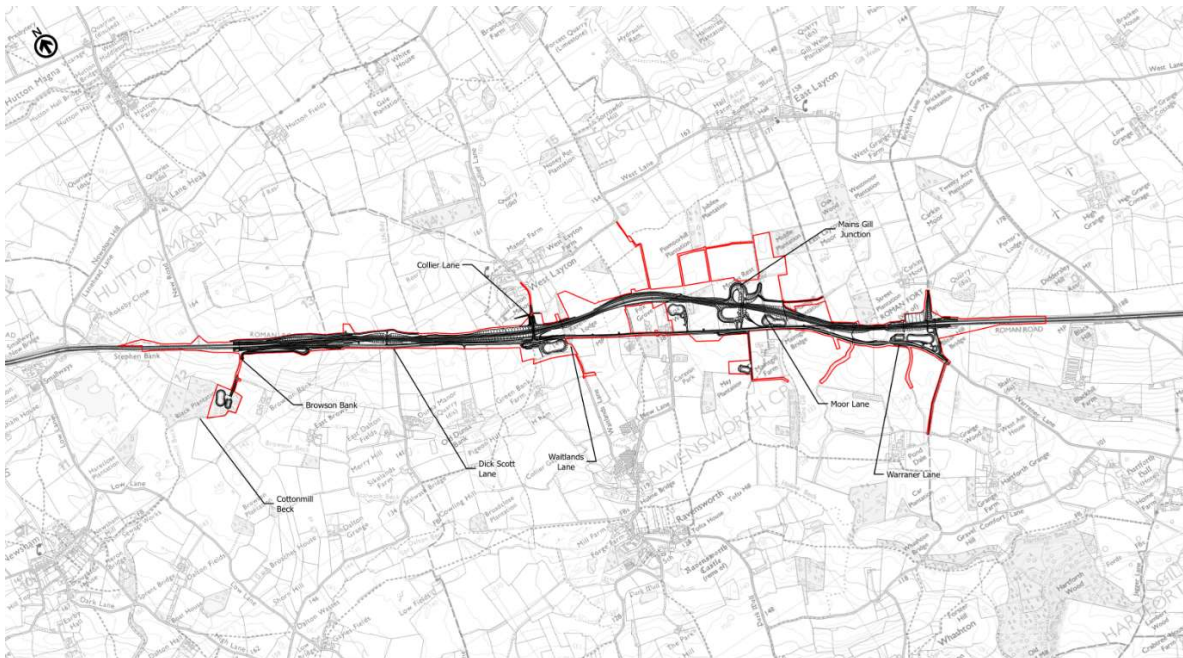


Figure 28 Illustrative plan of Stephen Bank to Carkin Moor scheme and surrounding area (DCO Order Limits shown in red)

- 5.8.47 The 5km Stephen Bank to Carkin Moor scheme would comprise a new offline dual carriageway section between Stephen Bank and Carkin Moor Farm. The new dual carriageway would pass to the north of the existing

A66 and the properties at Fox Hall and Mainsgill Farm, re-joining the existing A66 alignment to the east of Mainsgill Farm. The existing A66 would be de-trunked and would be used in part as a collector road for local access to surrounding villages and properties.

- 5.8.48 A new accommodation underpass would be provided to the north of Dick Scot Lane to allow access to land to the north of the scheme. This underpass would also allow the existing bridleway from Hutton Magna, which currently ends at the A66 to the west, to pass beneath the proposed A66 alignment.
- 5.8.49 New lay-by facilities would be provided on the proposed mainline in both eastbound and westbound directions to replace existing provision which would be lost due to the implementation of the scheme. Both lay-bys would include observation platforms.
- 5.8.50 To maintain access to Collier Lane, a section of the existing A66 to the west of Ravensworth Lodge would be realigned over approximately 600m to facilitate connection to the new Collier Lane overbridge. New drainage ponds would be provided to the west of Ravensworth Lodge and to the East of Fox Hall Cottages. The proposed alignment of the A66 in this location has been designed to be in cutting at this location.
- 5.8.51 Mains Gill Junction, which is a proposed new compact grade-separated junction to the west of Moor Lane, would provide connectivity between the de-trunked A66 and the proposed mainline of the new A66. This new junction is proposed to be placed in a cutting beneath the proposed alignment of the A66 and connects to the de-trunked A66 to the west of Mainsgill Farm.
- 5.8.52 The southern section of Moor Lane would be stopped up and the highway realigned to connect to the Mains Gill Junction link road. The existing bridleway, which currently ends at the A66, would be diverted to the west to allow it to be rerouted along the proposed realigned section of Moor Lane and beneath the A66 via Mains Gill Junction. It would then connect with a realigned bridleway which passes to the south of the de-trunked A66 along the western boundary of Mainsgill Farm. The existing route of this realigned bridleway which proceeds through the busy entrance of Mainsgill Farm would be extinguished as part of this diversion.
- 5.8.53 Two new drainage ponds are proposed to be provided in the vicinity of Mainsgill Farm, one to the western boundary and one to the north of the existing A66 alignment.
- 5.8.54 The proposed alignment passes through the current cutting formed by the existing A66 at the Carkin Moor Scheduled Monument. To minimise the impact on the monument, the vertical alignment of the road is proposed to be lifted within the existing cutting and a retaining structure is proposed to be provided to the southern boundary.
- 5.8.55 The existing connection between the A66 and Warrener Lane would be removed, and a new link provided between Warrener Lane and the de-trunked A66, allowing vehicles travelling from Hartforth to access the proposed A66 alignment via Mains Gill Junction. The alignment of this new

link road is proposed to avoid the footprint of the scheduled remains of the Roman fort and prehistoric enclosed settlement at Carkin Moor.

- 5.8.56 A further 3 ponds would be provided at the eastern extent of the scheme in between the existing A66 and the new Warrener Lane link. One of these ponds is a replacement for an existing attenuation pond which is proposed to be removed to accommodate the earthworks needed for the scheme, whilst the other two offer storage for water run-off from both the A66 and also the new Warrener Lane link. Shared and dedicated access tracks are proposed to be provided to the north and to the south of the road to facilitate access to ponds for maintenance purposes and to accommodate landowner movements.
- 5.8.57 A new bridleway underpass would be provided to allow the bridleway which currently crosses the A66 at grade in the vicinity of the junction with Warrener Lane, to be grade-separated.
- 5.8.58 This new bridleway, which is to be provided alongside the de-trunked A66, would also be linked with the existing bridleway from Hutton Magna at the western end of the scheme.
- 5.8.59 Utility works would be required for electricity, water, and communications services throughout the length of the scheme.
- 5.8.60 No lighting would be provided on the length of the scheme.
- 5.8.61 No demolition of property is required as part of this scheme. The scheme would involve minor demolition works, such as roadside features, drainage and kerbing associated with the existing A66 and other local roads.

5.9 A1(M) Junction 53 Scotch Corner

Description of baseline environment

- 5.9.1 The A1(M) Junction 53 at Scotch Corner is an existing grade-separated roundabout junction to the south of Darlington. It is a signalised roundabout serving the A1(M), A66, A6055 and Middleton Tyas Lane, which provides access to the Scotch Corner Motorway Services area.
- 5.9.2 The A1(M) passes under the roundabout with southbound access via on- and off-slip-roads to the roundabout. Northbound access to the A1(M) is via an off-slip to the roundabout with the northbound on-slip located off a new roundabout on the A6055 to the north.

Outcomes of PCF Stage 1 Option Development and PCF Stage 2 Option Selection

- 5.9.3 At PCF Stage 1 Option Identification, a preliminary assessment of the junction indicated that it was likely the operational capacity of the existing junction would be exceeded following full dualling of the A66 as it became a more attractive route for users. This increase in traffic would likely lead to greater congestion and tailbacks on the junction approaches if circulation were not improved. Further information can be found in the PCF Stage 1 Technical Appraisal Report (see Appendix 1).

- 5.9.4 At PCF Stage 2 Option Selection, a traffic model was assembled that included the Scotch Corner roundabout, the A6055/A1(M) roundabout north of Scotch Corner, the Barracks Bank roundabout south of Scotch Corner and the access road leading to the Scotch Corner Motorway Services area. It also included the junction improvement changes recently made as part of the A1 Leeming to Barton scheme. This model was developed to provide a suitable representation of the operation of Scotch Corner, including the interaction between the peripheral roundabouts and Scotch Corner Services. Refer to the PCF Stage 2 Scheme Assessment Report (provided in Appendix 2) for further information.
- 5.9.5 The key junctions included in the modelled network were forecast to operate within capacity however, the Middleton Tyas junction was forecast to operate over-capacity following future traffic growth. It was acknowledged that further analysis would be required at PCF Stage 3 following the announcement of the Preferred Route and design development elsewhere on the route, to accommodate the interdependency of the junction and the A66.

Public consultation Summer 2019

- 5.9.6 The modelling outlined above was excluded from the non-statutory consultation held in Summer 2019, as its focus was to seek views on the Preferred Route options for each section of the A66. Consultation material noted that high-level capacity assessments had been carried out that confirmed the existing junction would not provide adequate capacity in its current form once the A66 Project is built.

Preferred Route Announcement May 2020

- 5.9.7 The Preferred Route Announcement of May 2020 noted that proposals for A1(M) Junction 53 Scotch Corner would be developed once the Preferred Route had been further developed.

PCF Stage 3 Preliminary Design for Statutory Consultation

- 5.9.8 Ahead of Statutory Consultation in Autumn 2021, a review of the development of the traffic model during PCF Stage 2 was undertaken to:
- Confirm the conclusions reached at the end of PCF Stage 2.
 - Identify and undertake any further sensitivity testing that would be required to validate the PCF Stage 2 conclusion.
 - Identify any potential improvement works required at Scotch Corner as a result of dualling the A66 and compare against the feasibility design layout produced during PCF Stage 2.
- 5.9.9 This review concluded that there would be a significant increase in traffic flows on the A66 approach to A1(M) Junction 53 as a result of the proposed upgrades to the A66. Although this increase can be accommodated within the existing design, potential issues have been identified at the Middleton Tyas arm of the junction. It is anticipated that traffic from the Middleton Tyas arm, including from the existing motorway

services, would be unable to easily gain access to the roundabout at the priority approach.

- 5.9.10 A sensitivity test was undertaken to understand the potential impact of a possible development that is at pre-application stage within the north-west quadrant of the junction. No additional negative impacts were identified other than those already noted for the Middleton Tyas Arm.
- 5.9.11 Collision data was analysed, and feedback was sought from National Highways Operations, the Driver and Vehicles Standards Agency and North Yorkshire Police. No significant operational improvements were identified, although observations were made regarding potential signage and road marking improvements for the A1(M) northbound off-ramp. For further detail, refer to the Local Traffic Report provided at Statutory Consultation.
- 5.9.12 In line with the outcomes of this traffic modelling and stakeholder engagement, it was proposed to widen the approach to the existing Scotch Corner Roundabout from Middleton Tyas Lane from one lane to two lanes. It was proposed to move the kerbline to the south, into the verge to accommodate the additional carriageway width required. Reconfiguration of the lane markings on the eastern side of the roundabout was also proposed to improve the interaction of the A1(M) southbound off-ramp, the roundabout circulatory and Middleton Tyas Lane.
- 5.9.13 Relocation of an existing bus stop, signage, and lighting columns would be required to accommodate the above.
- 5.9.14 An additional lane would be accommodated within the existing carriageway extents on the northern bridged section of the circulatory carriageway by narrowing the southern verge.

Statutory Consultation Autumn 2021

- 5.9.15 The preliminary design presented at Statutory Consultation in Autumn 2021 for A1(M) Junction 53 Scotch Corner can be summarised as follows:
- Existing Middleton Tyas Lane approach to the A1(M) Junction 53 at Scotch Corner roundabout widened from one lane to two lanes.
 - Alterations to road markings and kerbs on the circulatory carriageway to provide three lanes on the existing northern bridge structure.
 - Relocation of a section of footway, a bus stop, some signage, and lighting columns to the back of the widened carriageway to accommodate these works. Road markings would be required to tie in with existing.

PCF Stage 3 Preliminary Design for DCO

- 5.9.16 Design development between Statutory Consultation and DCO application did not result in significant changes to the proposals for this scheme.
- 5.9.17 To enable retention of the existing northern bridge structure at Scotch Corner, lane widths have been reduced on the circulatory carriageway to fit within the constraints presented by the existing bridge.

5.9.18 Feedback from Statutory Consultation requested that works be undertaken to alter the A1 northbound off-slip approach to the Scotch Corner roundabout. Suggestions included changes to lane markings, signage, and lighting of the slip-road, echoing the observations made during earlier PCF Stage 3 Preliminary Design discussions as outlined in 5.9.11 above – refer to Chapter 6 of the Consultation Report (Application Document 4.4) for further information.

Development Consent Order application Spring 2022

5.9.19 An illustrative plan of the scheme presented for DCO application in Spring 2022 is given in Figure 29 below. For further information, reference should be made to General Arrangement Drawings Scheme 11 A1(M) Junction 53 Scotch Corner (Application Document 2.5).

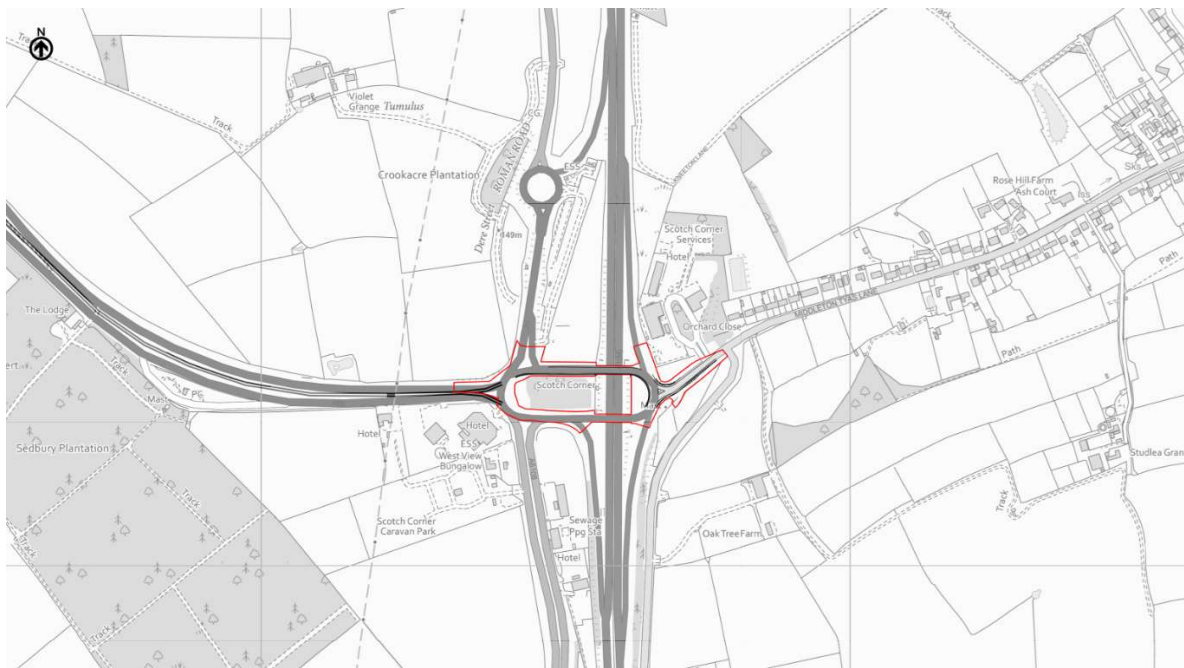


Figure 29 Illustrative plan of A1(M) Junction 53 Scotch Corner scheme and surrounding area (DCO Order Limits shown in red)

5.9.20 The A1(M) Junction 53 Scotch Corner scheme would widen the existing Middleton Tyas Lane approach at Scotch Corner roundabout from one lane to two lanes. A length of existing footway and existing signage and lighting columns would be relocated to the edge of the widened carriageway, and road markings would require amendment to tie in with the existing arrangement.

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

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

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

6. Summary and next steps

- 6.1.1 The Project Development Overview Report has been prepared to support the Development Consent Order application for the A66 Northern Trans-Pennine Project and outlines the development of the route design and alignment undertaken to date.
- 6.1.2 The primary focus of the PDOR has been on the development of the design through National Highways' PCF Stage 3, Preliminary Design and how this has been informed by ongoing engagement with stakeholders, receipt of more detailed, new and/or revised information, and as a natural next step to develop the design for Development Consent Order application. Supporting information for PCF Stage 3 design development prior to Statutory Consultation in Autumn 2021 is provided in the Route Development Report, Appendix 3 to the PDOR.
- 6.1.3 The PDOR outlines principal changes to the route or other aspects such as the location of junctions, including those presented at Statutory Consultation in Autumn 2021, Supplementary Consultation in early 2022 and via Project Updates made available to stakeholders and other interested parties throughout Preliminary Design.
- 6.1.4 It is recognised that ongoing engagement with stakeholders has been key to the development of the A66 Northern Trans-Pennine Project to date. This will continue throughout the next stages of the Project beyond the application for a Development Consent Order submitted in Spring 2022.

7. Abbreviation list

Table 9 Abbreviations

Abbreviation	In full
AONB	Area of Outstanding Natural Beauty
AW	Ancient Woodland
BCR	Benefit to Cost Ratio
CCC	Cumbria County Council
CDM	Construction Design and Management
ComMA	Combined Modelling and Appraisal
DCC	Durham County Council
DCO	Development Consent Order
DfT	Department for Transport
DIPs	Delivery Integration Partners
DMRB	Design Manual for Roads and Bridges
EAR	Environmental Assessment Report
EDC	Eden District Council
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ES	Environmental Statement
EU	European Union
FRA	Flood Risk Assessment
GA	General Arrangement
GHG	Greenhouse Gas
GI	Ground Investigation
ha	Hectare
HDV	Heavy Duty Vehicle
HGV	Heavy Goods Vehicle
HM	Her Majesty's
HRA	Habitats Regulations Assessment
HS	Health & Safety
HSE	Health and Safety Executive
IPT	Integrated Project Team
km	Kilometre (Unit of Measurement)
km/hr	Kilometre per hour
LA	Local Authorities
LDV	Light Duty Vehicles
LPA	Local Planning Authority
m	Metres (Unit of Measurement)
m ²	Metres squared
m ³	Cubic metres
mm	Millimetres
MoD	Ministry of Defence
mph	Miles per hour
N/A	Not Applicable
NPPF	National Planning Policy Framework
NPS	National Policy Statements
NPS NN	National Policy Statement for National Networks
NSIP	Nationally Significant Infrastructure Project
NTP	Northern Trans-Pennine
NTPR	Northern Trans-Pennine Routes
NTPRSS	Northern Trans-Pennine Routes Strategic Study

Abbreviation	In full
NYCC	North Yorkshire County Council
OD	Ordnance Datum
OS	Ordnance Survey
PA 2008	The Planning Act 2008
PCF	Project Control Framework
PEI	Preliminary Environmental Information
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
PMA	Private Means of Access
PRA	Preferred Route Announcement
PRoW	Public Rights of Way
RDC	Richmondshire District Council
RIS	Road Investment Strategy
RIS1	Road Investment Strategy Period 1
RIS2	Road Investment Strategy Period 2
RPA	Root Protection Area
RPG	Registered Park and Gardens
SAC	Special Area of Conservation
SAM	Scheduled Ancient Monument
SAR	Scheme Assessment Report
SEB	Statutory Environmental Bodies
SES	Safety, Engineering and Standards
SGAR	Stage Gate Assessment Review
SM	Scheduled Monument
SoS	Secretary of State
SPA	Special Protection Area
SRN	Strategic Road Network
TA	Transport Assessment
TAG	Transport Analysis Guidance
TAR	Technical Appraisal Report
TfN	Transport for North
WCH	Walkers, Cyclists and Horse-Riders
WCHAR	Walking, Cycling Horse Riding Assessment and Review

8. Glossary

Table 10 Glossary of terms

Term	Definition
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.
Ancient woodland (AW)	Land that has been continually wooded since at least 1600 AD.
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.
Baseline	Existing environmental conditions present on, or near a site, against which future changes can be measured or predicted.
Benefit Cost Ratio (BCR)	The benefit cost ratio is a presentation of the amount of benefit being bought for every £1 of cost to the public purse – the higher the BCR the greater the benefit for every £1 spent.
Biodiversity	Biological diversity: The variety of life forms in a given area, includes all species of plants and animals, their genetic variation and the complex ecosystems of which they are part.
Buildability advisors	Provide buildability advice on all aspects of construction and delivery and inputting into the scheme estimates.
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 are approached for information and opinions regarding a development proposal.
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.
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.

Term	Definition
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.
Development Consent Order (DCO)	The means of obtaining permission for developments categorised as nationally significant infrastructure projects.
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.
Embedded mitigation	Design measures which are integrated into a project for the purpose of minimising environmental effects.
Enhancement	A measure that is over and above what is required to mitigate the adverse effects of a project.
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)	<i>DMRB LA 104 Environmental assessment and monitoring (DMRB LA 104)</i> (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

² Highways England (2020) Design Manual for Roads and Bridges LA 104 Environmental assessment and monitoring.

Term	Definition
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 Statement (ES)	A statutory report produced by the developer 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.
Examining authority	The person(s) appointed by the Secretary of State (SoS) to assess the DCO application and make a recommendation to the SoS.
Floodplain	A floodplain or flood plain is an area of land adjacent to a stream or river which stretches from the banks of its channel to the base of the enclosing valley walls and which experiences flooding during periods of high discharge.
Flood Risk Assessment	An assessment of the likelihood of flooding in a particular area so that development needs and mitigation measures can be considered
Greenhouse Gas (GHG)	A gas that contributes towards global warming by trapping heat given off from the earth's surface. Under the United Nations' Kyoto Protocol, the 6 GHG gases are carbon dioxide, methane, nitrous oxide, perfluorocarbons, hydrofluorocarbons and sulphur hexafluoride.
Groundwater	Groundwater is the water present beneath Earth's surface in soil pore spaces and in the fractures of rock formations.
Ground investigation	To obtain information on the physical properties of soil and rock around a site.
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.
Habitat Regulations Assessment (HRA)	A HRA refers to the several distinct stages of Assessment which must be undertaken in accordance with the Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) to determine if a plan or project may affect the protected features of a habitats site before deciding whether to undertake, permit or authorise it.
Heavy Duty Vehicle (HDV)	As HGV with the inclusion of buses and coaches.
Heavy Goods Vehicle (HGV)	A goods vehicle over 3.5 tonnes, including rigid and articulated lorries.

Term	Definition
Historic Environment	All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora.
Impact	Change that is caused by an action (for example land clearing (action) during construction which results in habitat loss (impact)).
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.
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 Planning Policy Framework (NPPF)	The National Planning Policy Framework sets out the Government's planning policies for England.
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 Policy Statement for National Networks 2014 (NPS NN)	A national policy document issued by the government which sets out the government's objectives and the need for the development of nationally significant infrastructure projects on road and rail networks in England. It is also known as National Policy Statement for National Networks. The NPS NN 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 designated as national policy by the Secretary of State in 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.
Operational	The functioning of a project on completion of construction.
Order limits	The extent of land required for the scheme
Parish Council	A civil local authority in England, the lowest tier of local government. They are elected corporate bodies, have variable tax raising powers, and are responsible for areas known as civil parishes, serving in total 16 million people.
PA 2008	The Planning Act 2008 (as amended). Act of Parliament which sets out the statutory requirements and planning application process for nationally significant infrastructure projects, such as energy, water, transport and waste. Applications for Development Consent Order are submitted following the processes set out in the Planning Act. The Act has subsequently been amended.
Planning Inspectorate (PINS)	The government agency responsible for operating the planning process for nationally significant infrastructure projects and for examining applications for development consent under the Planning Act 2008, on behalf of the Secretary of State.

Term	Definition
Preliminary design	The design on which the application for development consent is based.
Preliminary Environmental Information (PEI)	PEI is defined in the EIA Regulations as ‘information referred to in Part 1 of Schedule 4 (information for inclusion in environmental statements) which – (a) has been compiled by the applicant; and (b) is reasonably required to assess the environmental effects of the development (and of any associated development).’
Programme	A series of steps that have been identified or series of projects that are linked by dependency.
Public Rights of Way (PRoW)	A way over which the public have a right to pass and repass. The route may be used on foot, on (or leading) a horse, on a pedal cycle or with a motor vehicle, depending on its status. Although the land may be owned by a private individual, the public may still gain access across that land along a specific route
Receptor	A defined individual environmental feature usually associated with population, fauna and flora that has potential to be affected by a project.
Registered Parks and Gardens	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.
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 individual schemes. Scheme names are (west to east): <ul style="list-style-type: none"> • M6 Junction 40 to Kemplay Bank • Penrith to Temple Sowerby • Temple Sowerby to Appleby • Appleby to Brough • Bowes Bypass • Cross Lanes to Rokeby • Stephen Bank to Carkin Moor • A1(M) Junction 53 Scotch Corner
Scheme Assessment Report (SAR)	The main aims of the assessment reporting process are to permit consideration of the likely environmental, economic and traffic effects of alternative proposals, and to allow the public and statutory bodies to comment on proposals taking account of their environmental, economic and traffic implications.
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.

Term	Definition
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 a particular interest in the project.
Statutory	Related to legislation or prescribed in law or regulation.
Statutory consultees	Individuals or groups which are contacted and requested to provide information or comment on a scheme, legally recognised under statute.
Statutory Environmental Bodies (SEB)	Environment Agency, Historic England and Natural England.
Traffic modelling or forecasting	The process used to estimate the number of vehicles using a specific section of road or defined network of roads.
Walkers, cyclists and horse-riders	Walkers, cyclists and horse-riders using the network.