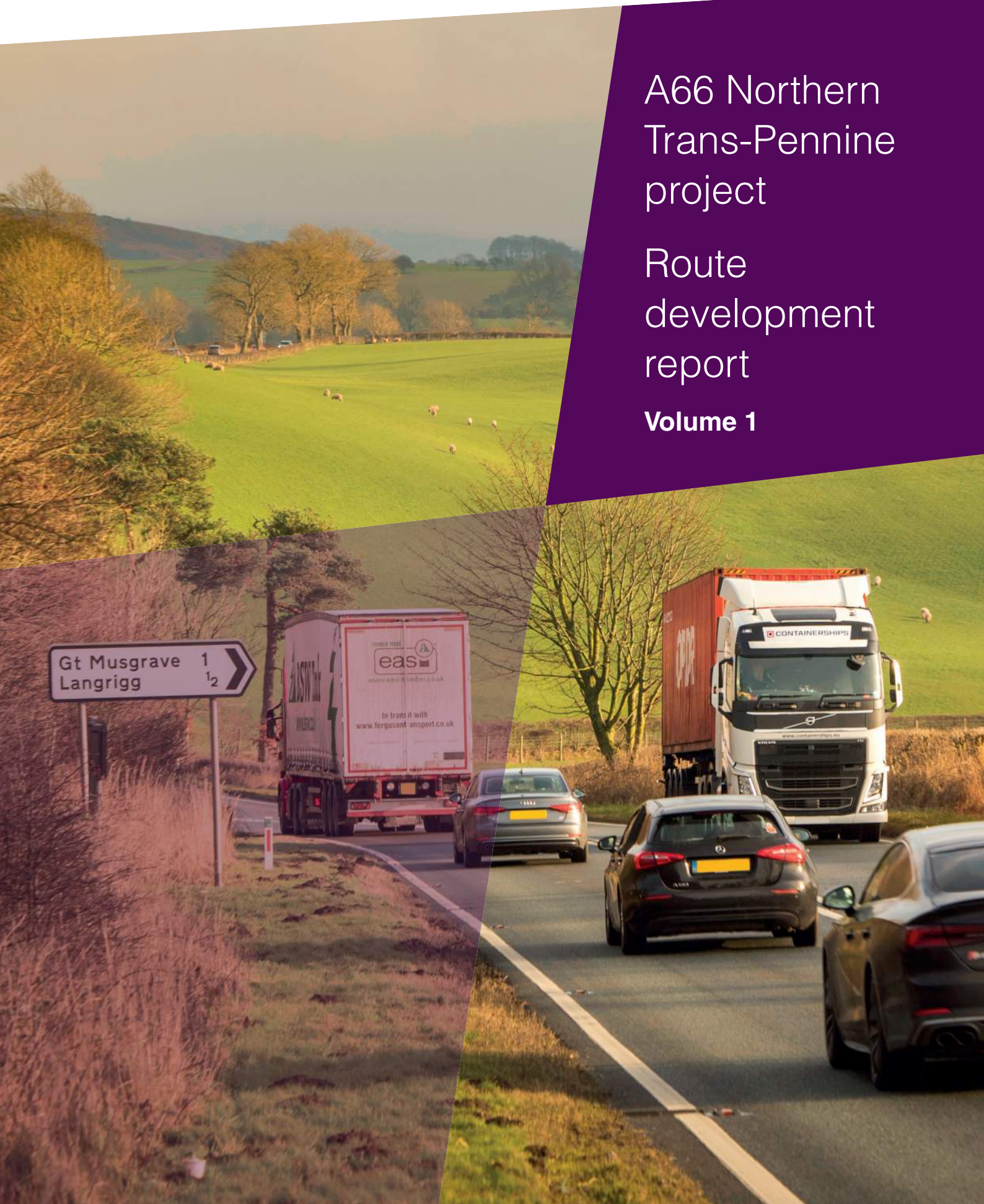
highways england

A66 Northern Trans-Pennine project

Route development report

Volume 1



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1. Introduction

1.1 Purpose of the Route Development Report

1.1.1 The Route Development Report is intended to describe the development of the route design and alignment for the A66 Northern Trans-Pennine project (hereafter referred to as 'the project') that has occurred since the publication of the Preferred Route Announcement (PRA) in May 2020. This report has been prepared to support Statutory Consultation in Autumn 2021 by enabling the local community, stakeholders and any other interested parties to understand the process of design development undertaken since announcement of the Preferred Route.

1.1.2 For the purposes of the Route Development Report, the project is considered as nine schemes, from M6 Junction 40 Penrith to the west, to A1(M) Junction 53 Scotch Corner to the east, as outlined in detail in 1.4 below. Since the PRA, the design of these schemes has continued to develop as part of Highways England's staged development process known as the Project Control Framework (PCF) (refer to Section 3.2 for further detail). Design development is a normal part of the lifecycle of bringing forward a major infrastructure project, and design development has occurred for a number of reasons, including:

- New and/or revised information (such as additional environmental surveys, traffic modelling, etc.).
- Further engagement with the public, with landowners, with statutory and non-statutory bodies.
- As a natural next phase of work beyond PCF Stage 2 to prepare for Statutory Consultation, additional engagement and development of the design required for a Development Consent Order (DCO).

1.1.3 For the A66, this 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 engagement responses and feedback received.

1.1.4 The Route Development Report does not seek to cover the entirety of design development since publication of the PRA but focuses on the principal changes to the route or locations of junctions. These changes have arisen from the design process, technical and environmental assessment work and ongoing stakeholder engagement. These factors have further informed the design to test, check and challenge previous findings and have helped to ensure that the project meets its objectives (refer to Chapter 2 for further detail).

1.1.5 The Route Development Report therefore covers the following:

- Where alternatives to the Preferred Route or to the locations of junctions have been considered (even if no change was subsequently recommended).
- Where alternatives have been considered that have the potential to affect important designated areas or features such as Areas of Outstanding Natural Beauty (AONB), Special Areas of Conservation (SAC), Scheduled Ancient Monuments (SAM), Registered Parks and Gardens (RPG), etc.

1.1.6 The Route Development Report will not cover the development of the design for the following:

- The layout of junctions, unless there is a different location proposed for the junction.
- The provision of additional farm and/or land access, etc.
- The provision of walking, cycling and horse-riding facilities.
- The provision of environmental mitigation land.
- Proposals for land for drainage and/or ponds, including relocation of previously identified elements.
- Proposals for land for borrow pits, including relocation of previously identified elements.
- Any other development of the preliminary design not covered in the above points which does not involve changes to the route or junction locations.

1.1.7 An initial explanation of the design development process is provided within the Project Design Report consultation document. Following Statutory Consultation, this will be developed further to have regard to consultation and continuing design development work to support the DCO application. In addition, how design development has been informed by the engagement and consultation processes will be set out within the Consultation Report to be submitted with the DCO application.

1.1.8 The scheme descriptions or alignment colours included in this report may differ from those set out in the Preliminary Environmental Information Report (PEIR). The PEIR was produced as the design for the project was still under development, and therefore should be regarded as a preliminary account of the principal environmental issues identified to the point that this design 'snapshot' was taken. Further information on the function and status of the PEIR is provided in Section 1.1 and Section 2.5 of the PEIR.

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 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 and the achievement of the Government levelling-up agenda.

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 (DfT, 2015b). Funding for delivery of the project has been confirmed within the second Road Investment Strategy (RIS2) (DfT, 2020a), which covers the period between 2020 and 2025 which 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. The project delivery team are also working towards conformity with the National Networks National Policy Statement (NNNPS) (DfT, 2014a).

1.3.2 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 progressed by Highways England supported by a multi-disciplinary design team. An options appraisal has been undertaken through a staged process and a Preferred Route was announced in May 2020. The design has since been developed, assumptions tested and validated, and an Environmental Impact Assessment (EIA) is currently ongoing, all of which will support an application for a DCO.

1.3.4 The project is now in the Preliminary Design stage, which includes:

- 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 possible;
- Refining the preliminary design of the Preferred Route;
- Preparing the draft DCO application; and
- Completing the EIA and preparing the Environmental Statement (ES).

1.3.5 Highways England intends to submit a DCO application to the Planning Inspectorate on behalf of the Secretary of State in Spring 2022. The application will be supported by a range of plans and documents.

1.4 Project Summary

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

1.4.2 Along with dualling the sections of single carriageway, other improvements will be made along the route, such as junction improvements at the M6 Junction 40 at Penrith and minor improvements to the existing dual carriageway sections of the A66 within the existing highway boundary (for example, new signs or road markings). Once complete, the project will lead to the entire 80km route having two lanes in both directions.

1.4.3 Along the length of the A66 it covers, the project has been split into a number of schemes as shown below:

- M6 Junction 40 Penrith
- 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.

1.4.4 It should be noted that for Statutory Consultation in Autumn 2021, some materials (for example, the PEIR and Statutory Consultation Brochure) combine the first two schemes shown into one single “M6 Junction 40 to Kemplay Bank” scheme. This is similar to the approach taken in previous consultation materials, for example the 2019 Public Consultation Brochure. They have been split in the Route Development Report to allow clearer reporting of the work done since PRA in May 2020 to develop M6 Junction 40.

1.4.5 Previous consultation materials also 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 Route Development Report, these sections have been combined into a single scheme to better reflect the approach to design development since PRA in May 2020.

1.4.6 For plans of the current proposals for each scheme, refer to Volume 2 of the Route Development Report. For details of design development to date, refer to Chapter 5 below.

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 details what Highways England have set out to achieve with this nationally significant infrastructure development.
- Chapter 3 provides a summary of previous route options assessments carried out, from previous PCF Stages 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 Penrith, M6 Junction 40 to Kemplay Bank Roundabout, 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 can be broken down according to the following themes: safety, connectivity, economy, tourism, environmental, community, capacity and reliability. Further detail is provided in Table 1 below.

Table 1 Project objectives

Theme	Project objectives
Safety	To provide a consistent standard of dual carriageway, to help reduce the number of accidents and improve safety for all users of the network.
	To use the 'old' A66 as part of the local road network to provide better, safer routes for cyclists, pedestrians and other Non-Motorised Users.
Connectivity	To improve connectivity for people living and working nearby by creating better facilities for cyclists and pedestrians.
	To improve connectivity between the key employment areas of Cumbria, Tees Valley, Tyne and Wear and North Yorkshire.
Economy	To improve strategic regional and national connectivity, particularly for freight hauliers. Heavy goods vehicles (HGVs) account for a quarter of all traffic on the road and any delays to journeys can have a negative effect on business and commerce, including lost working time, loss of perishable goods, and missed shipment slots. Support the economic growth objectives of the Northern Powerhouse and UK Government levelling-up agenda.
Tourism	To improve access to key tourist destinations such as the North Pennines, Lake District and Yorkshire Dales.
Environmental	To minimise noise levels for people living and working near the route and reduce the congestion currently occurring in the single carriageway sections.
	To minimise any potential negative impacts on the natural environment and landscapes of the North Pennines and Lake District through sensitive design and where appropriate, mitigation.
Community	To re-connect currently severed communities and provide better links between settlements along the route, as well as improving access to services such as healthcare, employment areas and education.
Capacity	To provide the additional capacity required to reduce delays and queues during busy periods and improve the performance of key junctions such as the A66/A6 at Kemplay Roundabout and the M6 Junction 40.
Reliability	To reduce congestion and improve the reliability of people's journeys between the M6 at Penrith and the A1(M) Scotch Corner. An improved A66 will lead to less accidents which will make the road more reliable.
	To provide increased resilience through dualling the carriageway, allowing the option to close lanes where required due to accidents, breakdowns or maintenance works and keep still traffic moving.

2.1.2 These objectives are borne from Highways England's 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 Highways England does and are critical to guiding the progression of the A66 Northern Trans-Pennine project through successful planning, delivery, management and operation. Further detail can be found online at Highways England’s website.

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 detail 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 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 Highways England 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 road projects are progressed through the PCF, which is split into three phases:

- The Options phase – identifies the preferred road 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 – 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 building the road solution can be made.
- The Construction phase – is where the road solution is built, handed over for operation and the project is closed down.

3.2.3 These phases cover eight Stages of project development, known as the Major Projects Lifecycle. The A66 Northern Trans-Pennine project is currently at PCF Stage 3, the start of the Development Phase, as shown in Figure 1 below.

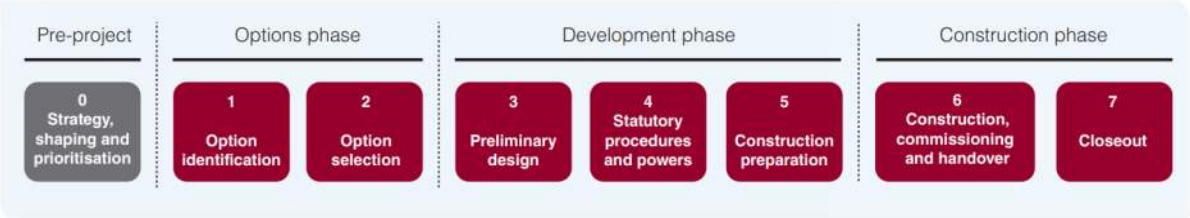

Figure 1 Project Control Framework Major Projects Lifecycle

3.3 Pre-project - Northern Trans-Pennine Routes Strategic Study

3.3.1 In 2014, as part of Highways England's first Roads Investment Strategy, the Northern Trans-Pennine Routes Strategic Study (NTPRSS) was announced. This study formed one of six national strategic studies located in the North of England.

3.3.2 The NTPRSS concentrated on two trans-Pennine routes with aims to improve connectivity and deliver transformational economic growth across the Northern Region. The two routes considered were the A69 between Carlisle and Newcastle, and the A66 between Penrith and Scotch Corner.

3.3.3 The study concluded that full dualling options were expected to deliver the greatest level of strategic benefits, with the A66 full dualling option delivering particularly strong benefits in terms of strategic connectivity and journey time reliability, as well as making a significant contribution to the Northern Powerhouse economic growth agenda and supporting access to key tourist sites. Other options which represented a lower level of intervention, such as the junction improvement and bypass options, would provide some localised journey time reliability and environmental benefits; however, the scale of these benefits would understandably be much smaller than more extensive interventions, and the contribution made towards achieving the intervention-specific objectives around economic growth and strategic connectivity would be much less significant.

3.3.4 The study also found a much clearer strategic case for the proposed improvements on the A66 compared to the A69 which better meets the intervention specific objectives set out for the study.

3.3.5 The outcome of the Study was published in the Northern Trans-Pennine Routes Strategic Study Stage 3 Report, which informed the 2016 HM Treasury Autumn Statement announcement of plans to dual the A66 and the start of the A66 Northern Trans-Pennine project.

3.4 Options phase - PCF Stage 1 Option identification

3.4.1 Highway England's 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 Highways England 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. 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 2 (adapted from Table 1-2 in the TAR):

Table 2 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

Scheme	Option	Description
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 Detail 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 Highway England's PCF Stage 2 culminates in a Preferred Route selection through the process of options refinement and public consultation.

3.5.2 During PCF Stage 2, those shortlisted options identified during PCF Stage 1 (refer to Table 2 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. Detail on this process can be found in the Scheme Assessment Report (SAR) published January 2020.

3.5.3 Comments received were analysed, which 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 was informed by the Environmental Assessment Report (EAR), the main purpose of which was to provide an initial environmental assessment of the options presented at this Stage. The EAR was primarily based on desk study information supported with some preliminary focused surveys.

Public consultation 2019

3.5.4 Non-statutory public consultation ran in early Summer 2019 (refer to the Public Consultation Brochure, published by Highways England in 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.

3.5.5 These consultation sessions sought to provide a range of opportunities to 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. Further detail can be found in the Options Consultation Report, published by Highways England in Spring 2020.

3.5.6 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

3.5.7 The Preferred Route Announcement for the A66 Northern Trans-Pennine project was made in May 2020 following public consultation and option selection.

3.5.8 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. For detail of additional factors considered, refer to the PRA documentation.

3.5.9 The Preferred Route was as shown in Figure 2 and detailed in Table 3. It identified six sections (referred to as schemes) of single carriageway for upgrade to dual carriageway standard along the A66. In total, the Preferred Route covered approximately 30km of the A66. Detail on each of the schemes can be found in Chapter 5 below.

Figure 2 Preferred Route as announced in May 2020

Table 3 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 Highways England's PCF Stages 1 and 2 and is now at PCF Stage 3 Preliminary Design, which includes:

- Undertaking surveys, such as topographical, geotechnical and environmental surveys, to provide further information about the route and its surroundings.
- Community consultation including exhibitions, completing consultation reports and resolving outstanding issues where possible.
- Developing the preliminary design of the Preferred Route in line with new data obtained.
- Preparing the draft Development Consent Order application.
- Undertaking the Preliminary Environmental Information Report for Statutory Consultation, plus the Environmental Impact Assessment and Environmental Statement to support the DCO application.
- Contractor engagement, including access to Highways England's regional Delivery Integration Partners (DIPs).

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.

Design development during PCF Stage 3 Preliminary Design

4.1.3 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, and are summarised as shown in Figure 3:

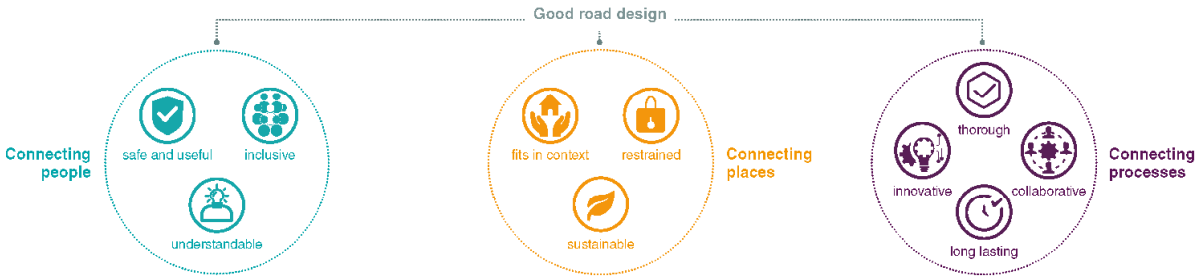

Figure 3 PCF Stage 3 design principles

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

- Typically, each carriageway will comprise two standard 3.65m lanes in each direction, 1.00m hard strips and a central reserve.
- Typically, a minimum verge width of 2.50m will be provided, though increased as required to provide adequate visibility, highway drainage, communication ducts and street furniture.

- No right turn junctions will help to ensure free-flowing 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.
- Compact grade-separated junctions will be utilised.
- Design reflects local context, understood through engagement with the local community.

4.1.5 Construction and buildability have been taken into account during PCF Stage 3 Preliminary Design. However, whilst each scheme (and alternatives considered within a scheme, where relevant – refer below) 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, and the wider indicative methods which will be used to construct the project, are set out in the Draft Construction Method Statement (CMS) which will also be available for review as part of the Statutory Consultation in Autumn 2021. This document is produced primarily to enable decision makers, local communities and other interested parties to understand the nature of the works and the various construction activities associated with the project.

4.1.6 Construction impacts have been considered in route selection.The strategy for most schemes has been to look to identify an earthworks balance where material is excavated and then deposited to achieve a net balance, reducing material movements, disturbance and other associated construction impacts.

4.1.7 Traffic management during construction has also been considered during Preliminary Design. The Draft CMS does not serve as a detailed traffic management guide but instead outlines the key traffic management principles which will be reflected in the bespoke traffic management plans. It is expected that during periods of construction there will be some limitations imposed on traffic, with some minor diversions expected for a small percentage of traffic wanting to make shorter journeys. Through efficient design, construction activities will be optimised to maintain traffic on the existing A66 for as long as possible. Works will be divided into three main sections: eastbound; westbound; and interface elements.

4.1.8 Impacts on utilities have also been considered. Whilst disruption will be minimised, construction of the project will require the diversion, relocation or protection of several existing utility assets including water, wastewater, electricity, gas and telecommunications. Wherever possible, services will be maintained with engineered solutions sought to overcome challenges. Consultation will be undertaken with service providers and stakeholders regarding affected utilities services. Further details on these principles, and the wider indicative methods which will be used to construct the project, are set out in the Draft CMS.

4.1.9 Highways England has a number of regional partners known as Delivery Integration Partners to assist with construction of the project. These 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.

Assessment and appraisal of alternatives

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

- Scheme-wide route alternatives within the Temple Sowerby to Appleby scheme (refer to Section 5.5).
- Localised route alternatives within the Appleby to Brough scheme (refer to Section 5.6).
- Junction alternatives within the Cross Lanes to Rokeby scheme (refer to Section 5.8).

4.1.11 The additional assessment and appraisal work associated with these alternatives was necessary for these schemes to test, check and challenge previous findings and to ensure the project continued to meet its objectives. Opportunities to further reduce the environmental and ecological impact as well as the impacts on designated areas and features (such as the 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.

4.1.12 The requirement for alternatives assessment and appraisal work for each of these schemes has arisen from consideration of scheme-specific issues. Due to the scale of deviation from the PRA for Temple Sowerby to Appleby, this resulted in a new longlist of concept-level alternatives being developed. An initial sifting process, based on the principles of PCF Stages 1 and 2, was adopted to rationalise the number of alternatives down to those that were promotable based on the information available at the time of the sift.

4.1.13 Following rationalisation of these alternatives, the process of reviewing and assessing them has been undertaken consistent with the approach adopted for the other schemes where alternatives have been developed to concept stage, leading to a comparative assessment.

4.1.14 This comparative assessment utilised a multi-disciplinary sifting matrix identifying discipline criteria and sub-criteria as shown in Table 4 below. These criteria are aligned to the project objectives (refer to Chapter 2) and government guidance and have been used to assess alternatives identified during the design process against the developed PCF Stage 2 options.

Table 4 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 Plan

4.1.15 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 have been recorded in the matrices.

4.1.16 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.

4.1.17 Policy conformity as outlined above was critical to review and assessment of alternative 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."

4.1.18 For the schemes where alternatives to what was announced as part of the Preferred Route in May 2020 are proposed, 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 Bowes Bypass, and the Grade II* Registered Park and Garden at Rokeby Junction. Specific requirements are outlined in 5.5, 5.6 and 5.8 below as appropriate.

4.1.19 Review of these policy requirements is necessary to ensure that the DCO application is evidence based, justified, accepted and ready for Examination. It is important that these issues are considered now at the pre-application stage of the DCO, to ensure sufficient time to obtain and consider feedback through consulting on design development and alternatives.

4.1.20 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 in Appendix A. Plans and profiles for the alternatives considered for these three schemes can be found in Volume 2 of the Route Development Report.

4.1.21 A preferred alignment is presented at Statutory Consultation for all schemes. Detail for each scheme is provided in Chapter 5 below, with plans and profiles provided in Volume 2 of the Route Development Report. As part of the Statutory Consultation, consultees will be invited to provide feedback on the preferred alignment and provide their comments formally through that channel where they will be reviewed and regard given to them in the final preparation of the application for development consent. Information will be provided as part of the Statutory Consultation on all the alternatives considered.

Stakeholder engagement throughout PCF Stage 3 Preliminary Design

4.1.22 For the project as a whole, there has been ongoing stakeholder and public engagement throughout PCF Stage 3 Preliminary Design to inform decision making and documents such as the PEIR (produced for Statutory Consultation in Autumn 2021) and the Environmental Statement (to be provided in Spring 2022 to support the DCO application).

4.1.23 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.

4.1.24 A Project Update was provided in Winter 2020, which included a virtual public engagement event to ensure the project complied with Covid-19 restrictions in place at the time. This update provided further detail of the development of the Preferred Route, including junction locations and emerging junction layouts. Hard copies of engagement materials were distributed to homes and businesses along the length of the project to ensure those with limited or no internet access could take part in the engagement process. Phone consultations and online chat forums were also available to enable stakeholders to provide feedback, with views sought from landowners and local communities in particular. This feedback has since informed the design development.

4.1.25 For those schemes where alternatives have been developed during PCF Stage 3 Preliminary Design, public engagement on the alternatives has informed assessments. This engagement has included in-person events held in Kirkby Thore, Warcop and Barnard Castle through July and August 2021.

4.1.26 Throughout PCF Stage 3, engagement and liaison has continued through a network of public liaison officers working on the ground. Engagement has been undertaken with stakeholders such as landowners, residents, business owners, community liaison groups and users of the A66 route, including emergency services and hauliers. This engagement has been in-person where it has been possible to comply with Covid-19 restrictions in place at the time. Otherwise, telephone conversations and correspondence have been used to ensure continued engagement with interested and affected parties throughout Preliminary Design.

4.1.27 Full detail on the consultation undertaken for the project can be found on the project website and in consultation materials produced to date.

5. Design development of schemes

5.1.1 Design development during PCF Stage 3 Preliminary Design is discussed below for all schemes. Supporting information such as assessment matrices, graphics, illustrations showing the alternatives considered at the various stages of the assessments where relevant, will be provided as necessary or reference made to where this information is available in other documentation.

5.2 M6 Junction 40 Penrith

Description of existing scheme

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.

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

5.2.2 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 exceded following full dualling of the A66 as it became a more attractive route for users, resulting in an increase in traffic at the major junctions to access it. 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.

5.2.3 At PCF Stage 2 Option Selection, improvements to the capacity of the M6 Junction 40 were proposed based on analysis of available data. However, it was acknowledged that these options would require further analysis and development at PCF Stage 3 Preliminary Design, to accommmodate the interdependency of the junction and the A66, drawing on more detailed traffic modelling. Further information can be found in the PCF Stage 2 Scheme Assessment Report.

5.2.4 As such, proposals for M6 Junction 40 were not presented at public consultation in 2019 in detail due to the uncertainty and need for preliminary design of the wider route to be considered.

Public consultation Summer 2019

5.2.5 As outlined above, 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 capacity in its current form once the A66 project is built. Figure 4 below was included in consultation material to indicate the parts of the junction likely to be impacted by works though it was noted that further traffic analysis would be required to support preliminary design.

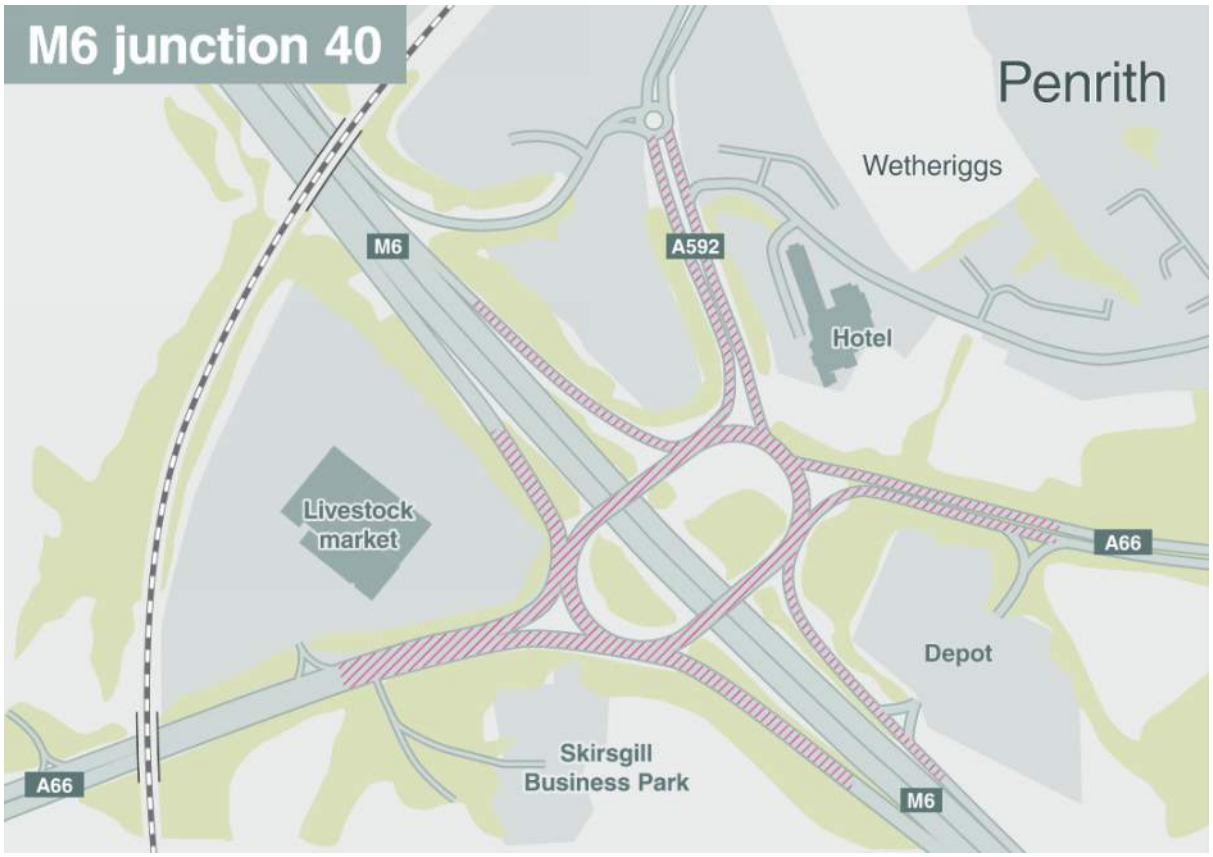

Figure 4 M6 Junction 40 as shown at public consultation Summer 2019

Preferred Route Announcement May 2020

5.2.6 The Preferred Route Announcement of May 2020 did not explicitly reference proposals for M6 Junction 40 Penrith. As with other junctions along the route, proposals were to be progressed once a Preferred Route had been selected and developed.

PCF Stage 3 Preliminary Design

5.2.7 At PCF Stage 3 Preliminary Design, more detailed traffic modelling has been conducted that considers the interactions of road users both along the route of the A66 and with the junctions to it.

5.2.8 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. PCF Stage 3 traffic modelling of the junction has confirmed that this offers negligible benefits. This is especially true when construction complexity is accounted for, including significant impacts on operation of the Penrith Interchange Roundabout and the M6 below during construction.

5.2.9 Compared to the PCF Stage 2 proposed junction layout, the PCF Stage 3 junction layout proposed that:

- 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 PCF Stage 3 arrangement proposed to widen the aforementioned approaches, remove the free-flowing left-turn and control all lanes on each approach under the same signal phase. With this lane arrangement, the active travel cycle and footway route can still be maintained with controlled crossings and a more suitable alignment can be achieved with less impact on accesses and less additional land take (particularly on the A592 approach, where Cumbria Police had highlighted a left-turning issue and the need to widen the approach to improve stacking and queuing capacity back to the M6).
- As proposed at PCF Stage 2, 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 approiaches at M6 Junction 40.

5.2.10 The modelling and subsequent analysis undertaken demonstrated that during congested periods such as afternoon peaks, the PCF Stage 3 layout performs better from a capacity perspective than the PCF Stage 2 layout. There was little difference in operational performance of the junction layouts for the morning peak traffic flows.

5.2.11 As such, it was demonstrated that for expected peak flows, an improved level of operational capacity can be achieved without having to widen the circulatory carriageway of M6 J40 and constructing free-flow left-slip lanes. Instead, widening and controlling the approach lanes and providing a spiral lane arrangement on the roundabout will achieve a comparable improved performance. For further detail, refer to the Local Traffic Report provided at Statutory Consultation.

5.2.12 In addition, to provide a better and safer access into Skirsgill Depot, it is proposed to relocate the existing access approximately 95m to the east.

5.2.13 The proposals presented for Statutory Consultation in Autumn 2021, on which views are being sought are as summarised below. These proposals will increase capacity and improve traffic flow at the junction.

Statutory Consultation Autumn 2021

5.2.14 Plans and profiles for the proposals taken forward to Statutory Consultation in Autumn 2021 can be found in Volume 2 of the Route Development Report.

5.2.15 M6 Junction 40 will provide a three-lane circulatory carriageway with spiral markings on the current roundabout, as outlined in 5.2.9. The A66 between M6 Junction 40 and Kemplay Bank Roundabout will be widened to three lanes in each direction. Widening will be required on the following five approach arms 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
- A592 Ullswater Road.

5.2.16 It is intended that all existing accesses will be accommodated. The scheme will also include signal controlled crossings to serve the existing shared cycle and footway connection on the western side. Existing pedestrian and cycle connections will be retained on the Penrith South Bridge western side alongside Skirsgill Business Park. This will also be the case for the Skirsgill north-west pedestrian and cycle connections. The existing cycle and pedestrian route to Skirsgill Depot will be directed through a controlled crossing at the roundabout, due to safety considerations with the existing uncontrolled crossing which would be exacerbated by the widening of the A66 eastern arm to three lanes.

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

5.2.18 Whilst the improvements proposed are within the highway boundary and do not require additional land take, land take is shown on plans in the area to accommodate potential requirements for environmental mitigation to be delivered as part of the scheme. The land required for the scheme will be confirmed through the application for development consent.

5.3 M6 Junction 40 to Kemplay Bank Roundabout

Description of existing scheme

5.3.1 This scheme runs from M6 Junction 40 at Penrith through to east of Kemplay Bank Roundabout; an at-grade five-arm roundabout immediately south of Penrith that operates under full signal control. Currently, the A66 is two lanes in each direction, eastbound and westbound.

5.3.2 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.

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

5.3.4 Kemplay Bank Roundabout is constrained by Penrith Community Hospital 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. Kemplay Bank Roundabout often suffers from high levels of congestion, affecting the flow of traffic along the A66 and for north and southbound traffic using the A6. This bottleneck can also have an impact on Junction 40 of the M6. Vehicles slowing down as they approach Kemplay Bank Roundabout can lead to potential safety issues, creating problems for both east/west and north/south traffic as it passes through the roundabout.

5.3.5 This section of the A66 carries approximately 30,200 vehicles per day, 19% of which are heavy goods vehicles.

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 M6 Junction 40 and Kemplay Bank Roundabout. Further detail can be found in the PCF Stage 1 Technical Appraisal Report.

5.3.7 At PCF Stage 2 Option Selection, it was confirmed 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.

5.3.8 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 Statutory Consultation. Refer to the PCF Stage 2 Scheme Assessment Report for further detail of these options.

Public consultation Summer 2019

5.3.9 The two options, Option A and Option B presented at public consultation in Summer 2019 outlined the need to improve the approach roads and junctions along the section of the A66 from M6 Junction 40 to Kemplay Bank Roundabout. The public consultation focused on determining a preference for either an underpass or overpass option at Kemplay Bank Roundabout. Both options 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 to be maintained as existing. Refer to the 2019 Public Consultation Brochure for further detail.

5.3.10 The PCF Stage 2 Scheme Assessment Report stated that there were no post-consultation design changes to the options proposed.

Preferred Route Announcement May 2020

5.3.11 The Preferred Route Announcement of May 2020 concluded that the underpass option was preferred for this section of the route, primarily due to it having a less negative environmental impact than the alternative overpass option.

5.3.12 It was noted that both visual and noise impacts could be expected to be less with an underpass option when compared to an overpass. The underpass option also removed the need to purchase a larger area of the local recreation grounds to the north of Kemplay Bank Roundabout.

PCF Stage 3 Preliminary Design

5.3.13 At PCF Stage 3 Preliminary Design, these proposals have been developed further for Statutory Consultation in Autumn 2021. This development is as outlined below.

5.3.14 The main principles of the Preferred Route as announced in May 2020 have been retained, however it is now proposed to retain and extend the emergency services access underpass to the A686 in its current locations.

5.3.15 This proposal is the result of ongoing engagement with Cumbria County Council and Cumbria Constabulary as part of PCF Stage 3 Preliminary Design development. Concerns were raised about the proposed access route to the A6 and following more

detailed traffic modelling it became clear that what was proposed at Stage 2 was not a viable solution for this section of the works. The modelling showed that the operation of the additional proposed signalised junction on the A6 accessing the Fire and Police site included within the Stage 2 design could potentially be compromised by queueing traffic either from the Kemplay Bank Roundabout signals or the Eamont Bridge Signals.

5.3.16 As part of the design development process several alternatives were developed including access on to the A6 as well solutions to the east to connect to Carleton Avenue via an overbridge. A sketch of these options is shown in Figure 5 below.

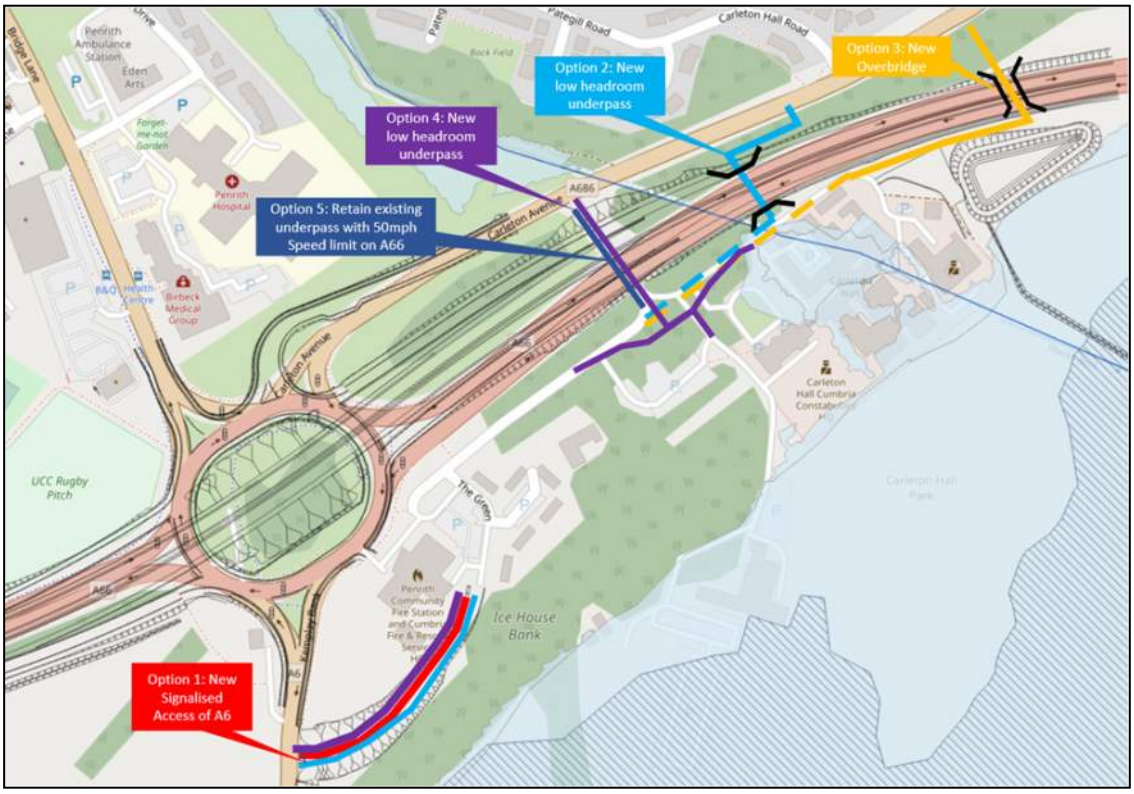

Figure 5 Alternatives developed during PCF Stage 3 Preliminary Design for Kemplay Bank

5.3.17 These alternatives were assessed with respect to environmental considerations, traffic modelling and impact on journey times, buildability, estimated budget costs and impact on programme. During this process, regular engagement with Cumbria County Council, Cumbria Constabulary and Cumbria Fire and Rescue Service ensured that the design continued to be aligned with emergency services requirements.

5.3.18 In order 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 is proposed that the speed limit on the A66 between M6 Junction 40 Penrith and Kemplay Bank Roundabout will be 50mph (rather than 70mph) in both directions, for a section approximately 2.3km in length. With tighter vertical geometry it is possible to form the A66 underpass over a shorter length and thus retain the emergency services access underpass in its current location. A 70mph solution would have meant compromising the headroom at the underpass as it would take a longer distance to rise back up from the lowest point of the A66. This would limit the size of

vehicles that could use the underpass and hence severely impact the emergency services teams that currently use it.

5.3.19 Although route consistency at 70mph was a factor in developing the PCF Stage 2 options, the need to provide safe access for emergency services was considered of greater signficance during PCF Stage 3 Preliminary Design. It is also considered that the impact of reducing the speed limit along this section of the A66 would be limited, given traffic would likely be moving more slowly on approach to either M60 Junction 40 or Kemplay Bank Roundabout thereby creating better speed transition.

5.3.20 The PCF Stage 3 proposal has been received favourably by both Cumbria County Council and Cumbria Constabulary and will therefore be presented at Statutory Consultation in Autumn 2021. Further detail on engagement undertaken to develop the preliminary design proposals will be made available and reported on within the Consultation Report to be submitted with the DCO application.

Statutory Consultation Autumn 2021

5.3.21 Plans and profiles for the proposals taken forward to Statutory Consultation in Autumn 2021 can be found in Volume 2 of the Route Development Report.

5.3.22 The design being presented at Statutory Consultation in Autumn 2021 includes a new dual carriageway under Kemplay Bank Roundabout, allowing free-flowing traffic eastbound and westbound on the A66, improving access to Penrith and the A6. This scheme will include upgraded, replacement on- and off-slip roads to Kemplay Bank Roundabout allowing users to safely join and leave the A66 in both directions. Minor realignment of the A6 and A686 arms will be required to accommodate the new slip roads serving the local road network with links to Penrith, Eamont Bridge and other local settlements.

5.3.23 It is proposed that the A66 between M6 Junction 40 Penrith and Kemplay Bank Roundabout will have a speed limit of 50mph along this section of the route. This will have a number of benefits that include allowing the existing underpass from Carleton Avenue to the Cumbria Constabulary and Cumbria Fire and Rescue Service sites (to the south of the A66) to be retained. This underpass also serves as a key route for walkers, cyclists and horseriders and will be extended accordingly, to accommodate the widened A66.

5.3.24 Signalisation of the roundabout will be retained to facilitate safe crossing for walkers, cyclists and horse riders (WCHs) at all five arms. Cycleways and footways currently located through the centre of the roundabout will be re-routed around the roundabout. The current pedestrian and cycle route on the northern side of the A66 running between M6 J40 and Kemplay Bank Roundabout will be retained in the new design proposals.

5.3.25 A replacement lay-by will be provided on the eastbound carriageway (between M6 J40 and Kemplay Bank Roundabout). The existing lay-by on the westbound carriageway between Kemplay Bank Roundabout and M6 Junction 40 will be removed and will not be replaced, due to insufficient space to accommodate one safely.

5.4 Penrith to Temple Sowerby

Description of existing scheme

5.4.1 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 Center Parcs junction 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.

5.4.2 Variations in carriageway width and horizontal and vertical alignment make for an inconsistent driving experience thus creating safety issues. 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. Three 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).

5.4.3 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.

5.4.4 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, e.g. short merge and diverge taper lengths and a short stacking length.

5.4.5 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).

5.4.6 This section of the A66 carries approximately 19,500 vehicles per day, 24% of which are heavy goods vehicles.

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

5.4.7 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 detailed in the PCF Stage 1 Technical Appraisal Report.

5.4.8 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 details refer to the PCF Stage 2 Scheme Assessment Report.

Public consultation Summer 2019

5.4.9 Two options, Option C and Option D 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.

5.4.10 As the A66 runs adjacent to the hamlet of Lane End and the village of High Barn, the two options proposed were as follows:

- Option C was 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.
- Option D was an online option that would not divert the road away from High Barn and would therefore require the demolition of some buildings.

5.4.11 Both options also proposed a new junction to be constructed at Center Parcs to provide access to the holiday park and local roads.

5.4.12 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. Both the options proposed would have involved the realignment of some local roads and alternative routes would be provided to nearby junctions where required, improving safety and ease of access for local road users.

5.4.13 The PCF Stage 2 Scheme Assessment Report stated that there were no post-consultation design changes to the options proposed.

Preferred Route Announcement May 2020

5.4.14 The Preferred Route Announcement of May 2020 concluded that the option that bypasses the properties at High Barn (Option C) 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. The alternative option (Option D) did not divert the current road away from High Barn and would therefore have required demolition of properties.

5.4.15 It was noted that Option C also positions the route further from the hamlet of Lane End, which would help to mitigate the noise and visual impact on residents there.

PCF Stage 3 Preliminary Design

5.4.16 At PCF Stage 3 Preliminary Design, these proposals have been developed further for Statutory Consultation in Autumn 2021 and are as outlined below.

5.4.17 During PCF Stage 3 design development, the potential to improve the scheme local to High Barn was explored. It was determined that the geometry of the alignment could be improved and overall land take reduced if the route moved to the north. However, this would require the acquisition and demolition of properties at High Barn. This change from the Preferred Route Announcement has been discussed during meetings and conversations with the landowners concerned and following a review of the low architectural significance of the properties and the potential impacts on farming land of the Preferred Route, a decision was taken to acquire the property at High Barn and re-route the alignment accordingly. This may lead to an increase in noise and visual impact at the hamlet of Lane End which will be subject to further assessment and provision of mitgation as appropriate.

Statutory Consultation Autumn 2021

5.4.18 Plans and profiles for the proposals taken forward to Statutory Consultation in Autumn 2021 can be found in Volume 2 of the Route Development Report.

5.4.19 Upgrading this section of the route will provide full dualling of the existing A66 single carriageway section between Penrith and Temple Sowerby. The works for this section of the route will predominantly involve online widening using the existing carriageway to form one side of the new dual carriageway. The second carriageway will be constructed to the north of the existing carriageway.

5.4.20 A compact grade-separated junction will be constructed at Center Parcs to connect this facility and local roads with the new alignment of the A66. The junction will cater for all movements on and off the A66, making it easier and safer for users to join the main highway and preventing tailbacks at peak times.

5.4.21 A new westbound left on/left off junction will be introduced to the B6262 to facilitate safe access to the local road network. An eastbound left on/left off junction will facilitate access to St Ninian's Church on Winderwath Estate. The new left on/left off junctions will be provided with associated acceleration and deceleration lanes to enable safe access to homes and businesses.

5.4.22 It is proposed that an existing access serving Whinfell Holme Wastewater Treatment Works will be converted to an eastbound left on/left off. It is possible that this access will need to be relocated to the east to facilitate widening of the A66 over the existing Shell Oil pipeline and maintain appropriate cover. This will be confirmed prior to DCO application following further investigations to confirm the line and level of the pipeline.

5.4.23 As a result of works to widen the carriageway, the Llama Karma Kafé hospitality business will close and the property and land will be acquired by Highways England. The proximity of the business to the carriageway meant that the land required for the scheme would effectively extinguish it. Thus, through dialogue and engagement with the landowners it was agreed that Highways England would purchase the site. Highways England continue to look at the longer-term use of the building including the potential that it may be converted to a community venture and/or an amenity parking area with footway linkage to the Countess Pillar English Heritage site.

5.4.24 A number of access tracks have been provided to the north and to the south of the route to facilitate access to ponds for maintenance purposes and accommodate landowner movements. Two accomodation structures have been included within this section of the route to facilitate agricultural vehicles crossing the A66 as a result of converting existing accesses to left on/left off arrangements.

5.5 Temple Sowerby to Appleby

Description of existing scheme

5.5.1 For the purposes of this Route Development Report, Temple Sowerby to Appleby is considered as one scheme, rather than the two that have been previously presented at PCF Stages 1 and 2, to enable a more considered approach to assessments. However, this scheme may be split into two sections, Kirkby Thore and Crackenthorpe, for presentation purposes in the material produced for Statutory Consultation in Autumn 2021.

5.5.2 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.

5.5.3 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.

5.5.4 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.

5.5.5 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 a number of properties and businesses adjacent to the south and east with direct access to the A66, including Bridge End Farm and a BP fuel station.

5.5.6 Local to Crackenthorpe, there is single carriageway for approximately 4km alongside the community. The carriageway here also 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.

5.5.7 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.

5.5.8 This section of the A66 carries approximately 16,500 vehicles per day, 27% of which are heavy goods vehicles.

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

5.5.9 At PCF Stage 1 Option Identification, ten options were identified for consideration to improve the A66 between the Temple Sowerby and Appleby bypases. Six options were proposed for the Kirkby Thore section of the scheme, and four options for the Crackenthorpe section. Each of the ten options sought to dual the section of single carriageway. Further information can be found in the PCF Stage 1 Technical Appraisal Report.

5.5.10 Following further analysis, four of the Kirkby Thore 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.

5.5.11 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 1 Technical Appraisal Report and the PCF Stage 2 Scheme Assessment Report.

Public consultation Summer 2019

5.5.12 The options presented at public consultation in Summer 2019 were combinations as referenced above in 5.5.11, and were named Option E and Option F respectively for Kirkby Thore and Option G and Option H respectively for Crackenthorpe, for the purposes of the consultation. All four options upgrade the A66 in such a way that its route is diverted away from both Kirkby Thore and Crackenthorpe.

5.5.13 Kirkby Thore Option E proposed a new dual carriageway bypass to the north of Kirkby Thore as an extension of the current Temple Sowerby Bypass. This route proposed to pass through fields to the west before travelling away from the village to the north and east. Option E 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.

5.5.14 Kirkby Thore Option F 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 Spitals 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 Scheduled Ancient Monument extents, local to the sewage works.

5.5.15 Crackenthorpe Option G 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. Option G proposed that the new road would re-join the current A66 just to the west of the Settle-to-Carlisle railway line.

5.5.16 Crackenthorpe Option H 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. Option H proposed that this option would also re-join the current A66 just to the west of the Settle-to-Carlisle railway line.

5.5.17 The PCF Stage 2 Scheme Assessment Report stated the following post-consultation design changes to the options proposed:

- The junction to the north of Kirkby Thore on Option E 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 sustainabilty benefits by allowing the removal of an overbridge from the design whilst improving connectivity to businesses.
- For the Crackenthorpe section of the route, the possibilitiy of moving the alignment of Option H to the north as it passed Roger Head Farm to minimise the impact on the viability of this business was investigated.
- 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

5.5.18 The Preferred Route Announcement of May 2020 concluded that the northern bypass (Option E) was the preferred option for the Kirkby Thore section of the route, and the northern bypass furthest from the village (Option H) was the preferred option for the Crackenthorpe section of the route.

5.5.19 Option E was selected as it provides the opportunity to reduce traffic, particularly HGVs, passing through the village of Kirkby Thore. Although this route represented a longer journey time and may be more expensive than the alternative presented, it had reduced environmental impacts whilst still delivering the required improvements. This option also required fewer buildings to be demolished than the alternative Option F. The northern bypass (Option E) was not anticipated to impact on the wildlife corridor on the disused railway line, and also had lower negative impact on biodiversity and the Trout Beck floodplain than Option F.

5.5.20 Option H was selected as the more resilient option of the two proposed; there were diversions available for when accidents happen on the route. This option also avoided an area of potential landslips where remedial works may be required to mitigate this issue. Option H would be routed away from nearby watercourses and floodplains, whereas Option G would potentially have had impact on the River Eden and its floodplains. This preferred option allowed for improved access for non-motorised users to Appleby and adjacent villages by utilising the ‘old’ section of road. Impact on local landowners has also been reduced in selecting this option as the route follows natural features which mark the boundaries of properties, thus reducing land take.

PCF Stage 3 Preliminary Design

5.5.21 At PCF Stage 3 Preliminary Design, the proposals outlined in 5.5.18 through 5.5.20 above have been developed further for Statutory Consultation in Autumn 2021 and are 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 legislative and policy requirements.

5.5.22 Figure 6 summarises the development of the scheme during PCF Stage 3 with respect to a number of alignment alternatives that have been assessed as detailed in the sub-sections that follow.

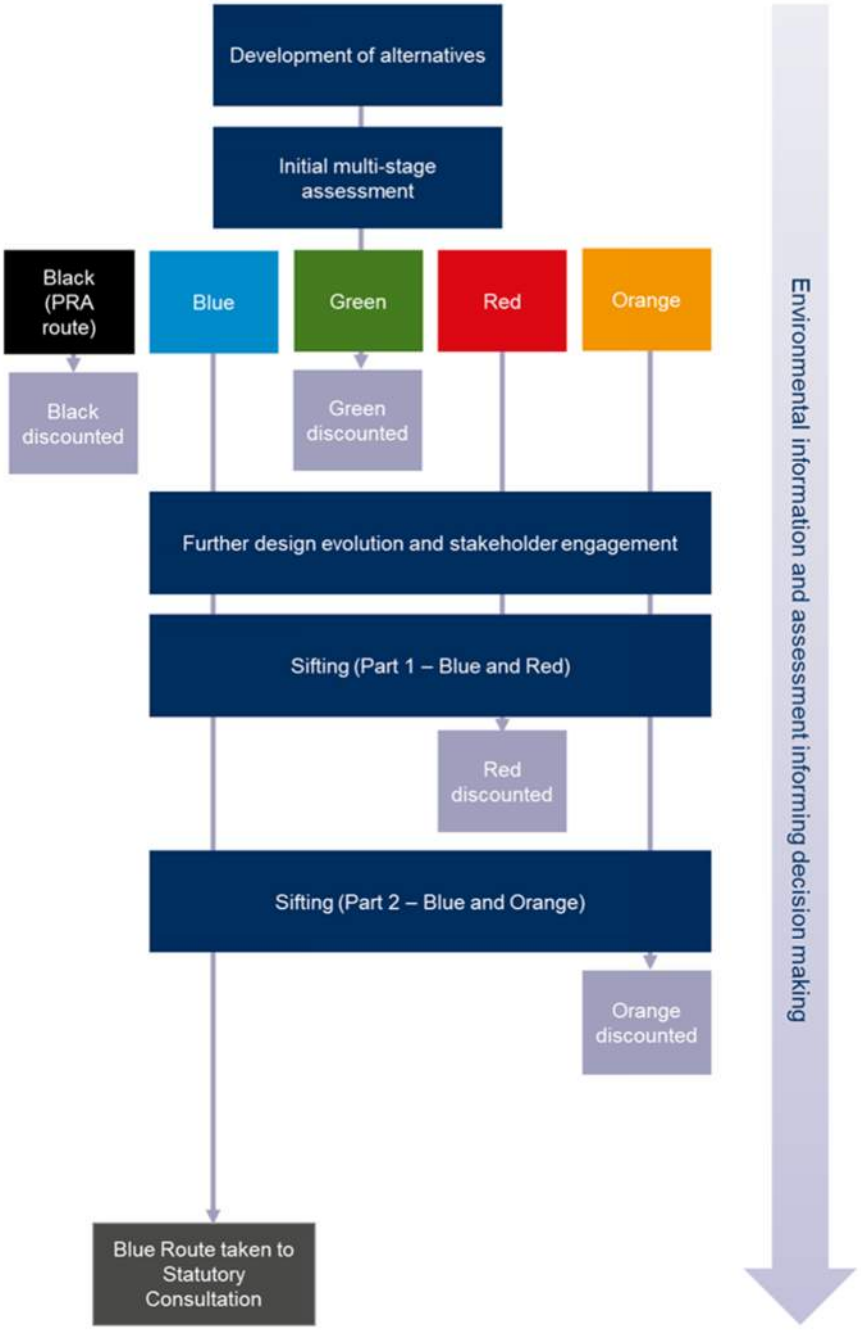

Figure 6 PCF Stage 3 scheme development summary for Temple Sowerby to Appleby

5.5.23 For Temple Sowerby to Appleby, design development work has been undertaken to ensure that the route taken forward minimises the impact of and potential damage to the River Eden Special Area of Conservation (SAC), which is protected as an internationally designated site by legislation and policy.

5.5.24 Within the NNNPS, paragraph 4.22 states:

"Prior to granting a Development Consent Order, the Secretary of State must, under the Habitats Regulations, consider whether it is possible that the project could have a significant effect on the objectives of a European site, or on any site to which the same protection is applied as a matter of policy, either alone or in combination with other plans or projects."

5.5.25 The key policy tests applicable for internationally designated sites are set out in paragraph 4.24 of the NNNPS and as such must be accounted for in assessment of route alignments for this scheme:

"If a proposed national network development makes it impossible to rule out an adverse effect on the integrity of a European site, it is possible to apply for derogation from the Habitats Directive, subject to the proposal meeting three tests. These tests are that no feasible, less-damaging alternatives should exist, that there are imperative reasons of overriding public interest for the proposal going ahead, and that adequate and timely compensation measures will be put in place to ensure the overall coherence of the network of protected sites is maintained."

5.5.26 Regarding assessment of alternatives, details are provided in paragraph 4.26 of the NNNPS, which states:

"Applicants should comply with all legal requirements and any policy requirements set out in this NPS on the assessment of alternatives. In particular:

- *The EIA Directive requires projects with significant environmental effects to include an outline of the main alternatives studied by the applicant and an indication of the main reasons for the applicant's choice, taking into account the environmental effects.*
- *There may also be other specific legal requirements for the consideration of alternatives, for example, under the Habitats and Water Framework Directives.*
- *There may also be policy requirements in this NPS, for example the flood risk sequential test and the assessment of alternatives for developments in National Parks, the Broads and Areas of Outstanding Natural Beauty (AONB)."*

Development of Preferred Route

5.5.27 Between Temple Sowerby and Appleby, the Preferred Route announced in May 2020 developed throughout the early part of PCF Stage 3 Preliminary Design. This route comprises 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 will be required to enable access on and off the A66 to improve user safety and reduce congestion.

5.5.28 This led to the development of two junction proposals for the Kirkby Thore section of the route, and two for the Crackenthorpe section of the route.

5.5.29 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.

5.5.30 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.

5.5.31 New bridge structures were proposed for both Station Road and Sleastonhowe Lane to allow access over the A66. A diversion would lead from Priest Lane to Station Road to maintain local traffic access.

5.5.32 At Crackenthorpe, one new junction was proposed at Long Marton and a new left on/left off access was proposed to link to the local road network at Crackenthorpe. In addition, it was proposed to make improvements to the existing eastbound junction with the A66 at the start of the Appleby Bypass, to make greater use of the existing infrastructure.

5.5.33 These proposals were presented to the public at a virutal engagement event in November 2020 as part of the Winter 2020 Project Update. Extracts from the brochure produced for this event are shown in Figure 7 for Kirkby Thore junctions and Figure 8 for Crackenthorpe junctions.

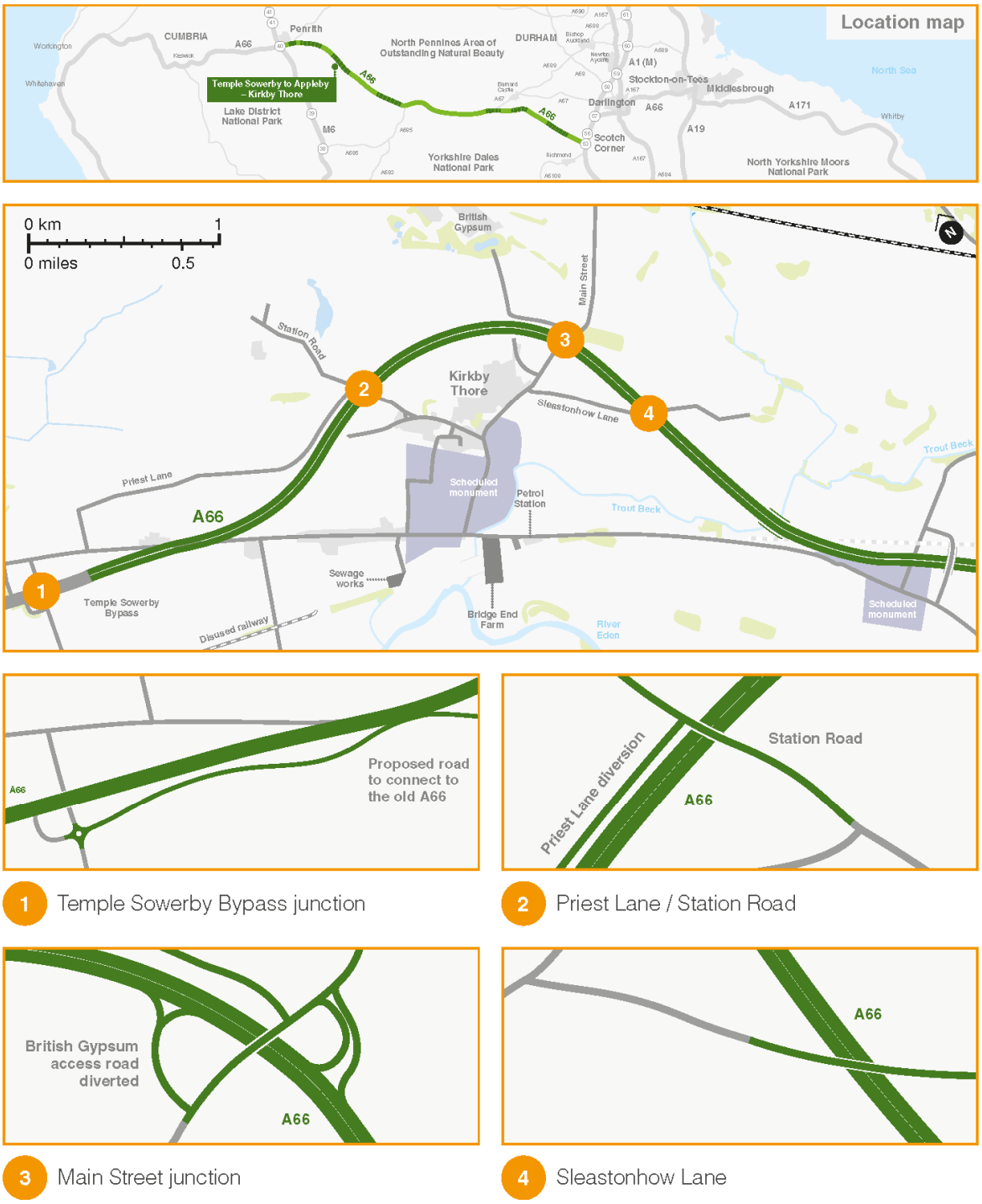

Figure 7 Winter 2020 Project Update extract for Temple Sowerby to Appleby - Kirkby Thore

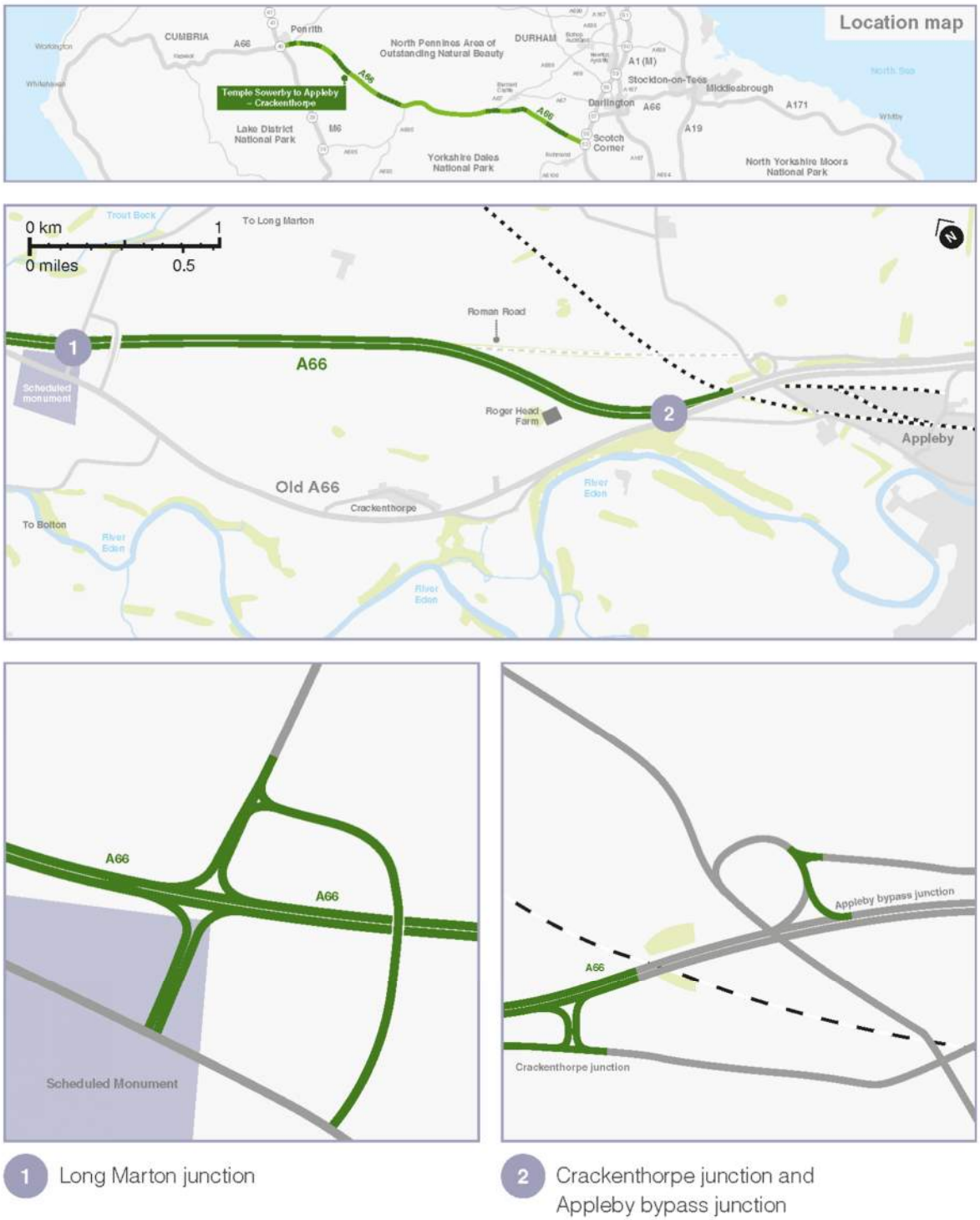

Figure 8 Winter 2020 Project Update extract for Temple Sowerby to Appleby - Crackenthorpe

5.5.34 Over this same period from Summer to Winter 2020, the alignment of the Preferred Route was further developed. This was 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).

5.5.35 This route had been designed to minimise impact on these designated features as much as possible, however through design development it became apparent that it was not possible to rule out an adverse effect on the integrity of the designated features along the route.

Development of alignment alternatives

5.5.36 As PCF Stage 3 Preliminary Design progressed following the Project Update of Winter 2020, the consenting challenges presented by the designated features were considered in greater detail.

5.5.37 Following an assessment by the project teams that took account of key environmental, engineering and stakeholder feedback, it was considered that the Preferred Route could have significant negative impacts on the Trout Beck watercourse which is both nationally and internationally designated as part of the River Eden SAC / SSSI. This was primarily as a result of the length and orientation of the embankments in the floodplain leading to a disconnection of the floodplain of the watercourse. In order to avoid these issues as far as possible, Natural England identified a preference for a clear span crossing, in order to minimise any risk of impact on the watercourse, floodplain and geomorphology of the site.

5.5.38 Due to the alignment of the Preferred Route, this would have resulted in an 800m clear span structure across the floodplain. Whilst technically possible, the scale of such a structure in the environment would have been unrealistic and inappropriate.

5.5.39 Within the same feedback Natural England accepted that a multi-span structure might be acceptable. However the Preferred Route, at 800m in length, led to a number of concerns about buildability, effect of shading of the watercourse, risk of impact on the protected site during construction, cost, materials and carbon use, as well as wider landscape and visual impacts, therefore it was considered necessary to review the scheme and develop alignment alternatives to shorten the crossing and reduce the impacts on the Trout Beck and SAC.

5.5.40 This review demonstrated that further work was required to specifically consider the implications of accordance of the Preferred Route with key national policies of the NNNPS in relation to the SAC designation. In addition, the PCF Stage 2 Environmental Assessment Report identified a red rating with respect to the potential impact of the preferred alignment alternative against criteria relating to the SAC designation.

5.5.41 Given these findings, and in combination with the Habitat Regulations Assessment (HRA) screening work undertaken for PCF Stage 2 Option Selection, it was determined impossible, based on the available data, to completely rule out an adverse effect on the integrity of the SAC European site at Trout Beck. In such circumstances, 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 (refer to 5.5.25 above):

- 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.

5.5.42 Following this decision to ensure that the alignment alternatives taken forward to the application for a DCO for this section of the A66 present “no feasible, less-damaging alternatives” on the SAC designation, and to mitigate the potential engineering and economic challenges posed by the extent of open span structure required for the Preferred Route of May 2020, alternative crossing points were developed to support assessment against the policy tests.

5.5.43 The design team progressed to consider alternative alignments which would change the type and extents of structure required to carry the A66 through, over, or around, the SAC. It should be noted that 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 in detail at this point as they did not have a direct impact on the SAC.

5.5.44 With regard to the River Eden SAC, further data and analysis led the design team to test, check and challenge previous assumptions, and as such a constraints plan was produced. A total of 15 principal routes or combination of routes were identified via this process, taking into account potential environmental impacts, project design principles, impacts on landowners, buildability and design safety (shown in Appendix B.1).

5.5.45 The alternatives were subject to a multi-stage assessment, which included early discounting of alternatives based on the following:

- 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 considered. The risk profile from PCF Stage 2 was explored and confirmed as being too significant to accept.

5.5.46 The merits of the remaining alternatives were subsequently assessed at a meeting held in March 2021, attended by technical specialists from the integrated project team, the outcomes of which were:

- 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. This led to the development of the Red Route – refer below.

- Online routes were recognised to pass in close proximity to 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 warrant further assessment. This led to the development of the Orange Route – refer below.

5.5.47 A subsequent meeting was held in April 2021, attended by technical specialists from the integrated project team. The routes which were considered at this meeting are summarised in Table 5 below and included in Appendix B.2.

Table 5 Route alternatives assessed for Temple Sowerby to Appleby in April 2021

Route	Description	Northern or Southern Routes
Black	This was the Preferred Route promoted at the end of PCF Stage 2 that swings to the north of Kirkby Thore. This includes an 850m structure crossing of Trout Beck and its associated floodplain.	Northern
Blue	This is a development of the Preferred Route that seeks to minimise the crossing distance of Trout Beck and its associated floodplain by moving eastwards. The structure crossing is approximately 400m.	Northern
Dark Green	This is a development of the Preferred Route that crosses Trout Beck and its associated floodplain through Flood Zone 2 flooding rather than Flood Zone 3. The route is closer to part of the village of Kirkby Thore, whilst both the Dark and the Light Green route (below) were developed to strike a balance between the encroachment into the gypsum mining area and a Scheduled Ancient Monument to the south. The structure crossing Trout Beck and its associated floodplain is approximately 250m.	Northern
Light Green	This route principally follows the line of the Dark Green route (above) to the point where it crosses the existing A66, then runs south of the Scheduled Ancient Monument whilst also improving the horizontal geometry. The structure crossing the Trout Beck and its associated floodplain is approximately 250m.	Northern
Red	This route principally follows the line of the Blue Route (above) to approximately Sleastonhowe Lane, where it diverges slightly north to enable a crossing of the Trout Beck and its associated floodplain as far upstream as possible. This has the result of tying into the old Roman Road (near Crackenthorpe) much further east. The structure crossing the Trout Beck and its associated floodplain is approximately 220m.	Northern
Dark Orange	The route principally follows the line of the existing A66 and crosses the Trout Beck immediately south of the existing road bridge. The route passes through the River Eden floodplain and designated area of Scheduled Ancient Monument south of Kirkby Thore. The structure crossing the Trout Beck and its associated floodplain is dependent on the detailed flood modelling but will range from 110 to 350m in length.	Southern
Light Orange	This route was developed as a variation of the Dark Orange Route (above) to avoid the designated area of the Scheduled Ancient Monument with a recognition that this moved the alignment closer to the River Eden. The structure crossing the Trout Beck and its associated floodplain is dependent on the detailed flood modelling but will range from 110 to 350m in length.	Southern
Purple	This route was developed as the closest representation of an online solution. To achieve this the route is designed to 40mph – all other alternatives are designed to 70mph. This route acquires up to eight residential/business properties and reduces the length of the route in the designated area of the Scheduled Ancient Monument.	Southern

5.5.48 A sifting matrix approach was used to assess the alternatives across 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. A summary of the assessment is provided in Appendix B.3.

5.5.49 As part of this this meeting, the five alternatives which were not discounted and therefore were considered in further detail were as follows:

- Black Route
- Blue Route
- Dark/Light Green Route (referred to in the remainder of the Route Development Report as the Green Route)
- Red Route
- Dark Orange Route (referred to in the remainder of the Route Development Report as the Orange Route).

5.5.50 As part of the sifting review, the Green Route was discounted from further consideration primarily as it brought the route closer to the eastern edge of Kirkby Thore village and could therefore be expected to have more negative noise and visual impact on residents and businesses. In addition, it also had the potential to negatively impact the registered Scheduled Ancient Monument Roman Camp near Redlands Bank Farm.

5.5.51 Whilst the Black Route was deemed to be technically deliverable following the sifting meeting, subsequent considerations determined that it offered no significant benefit over the Blue Route. The potential for an 800m structure across the floodplain remained and comments made by statutory environmental bodies Natural England and the Environment Agency led to the conclusion that the Blue Route offered a preferable solution when compared directly against the Black Route. As a result, the Black Route was discounted.

Further design development of alignment alternative – Blue Route

5.5.52 The Blue Route was developed following analysis of the Environment Agency's flood maps for the area around Trout Beck, to minimise the potential impact of the A66 crossing this watercourse and the River Eden SAC. It proposed a shorter crossing of the SAC than the Preferred Route did, of approximately 400m compared to 800m.

5.5.53 Natural England were advised of the direction of design development and sought confirmation that the form of the structure will be designed such that it minimises the impact on Trout Beck and SAC designation. Whilst a large, expansive structure would be possible, some concerns remained.

5.5.54 The need for detailed flood modelling was recognised, including whether there is residual impact to the SAC both in terms of the completed scheme and potential impacts arising from construction.

5.5.55 The Blue Route includes a new bypass around the north of Kirkby Thore (between the village and the gypsum works) and a new bypass to the north of Crackenthorpe.

5.5.56 Following the alignment of the Preferred Route, the Blue Route would travel 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.

5.5.57 Heading south, the route would then pass 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, as outlined in 5.5.52.

5.5.58 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. 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.

5.5.59 The Blue Route would impact farms and associated land and require demolition of two residential properties.

5.5.60 This alignment alternative would mean local traffic would be able to use the de-trunked A66 between Appleby and Temple Sowerby as part of the local road network.

Further design development of alignment alternative – Red Route

5.5.61 As with the Blue Route, the Red Route was developed following analysis of the Environment Agency's flood maps for the area around Trout Beck. It sought to reduce impact on the SAC by crossing Trout Beck and its floodplain at a narrower point than either the Preferred Route alignment or the Blue Route alignment. This resulting crossing point is around 220m in length.

5.5.62 It was proposed that the Red Route follow 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.

5.5.63 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. 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. This avoided potential impacts on the Roman Camp at Redlands Bank.

5.5.64 The Red Route would impact farms and associated land and require demolition of a residential property.

5.5.65 The Red Route is constrained from moving further to the east because of the existing gypsum mineworkings.

5.5.66 This alignment alternative would mean local traffic would be able to use the de-trunked A66 between Appleby and Temple Sowerby as part of the local road network.

Further design development of alignment alternative – Orange Route

5.5.67 The Orange Route was developed as an alternative which crossed Trout Beck at a point where it was already constrained by the existing A66 bridge at Bridge End. It was considered that this may have an overall lesser effect on the River Eden SAC as the watercourse and its floodplain is already constrained by the existing infrastructure in the area. The intention would be that this would result in a shorter crossing structure, although this could not be confirmed without detailed flood modelling and geomorphological analysis (refer to 5.5.96 below). By moving to a more online solution, the new A66 would be kept within an already developed corridor.

5.5.68 The Orange Route mostly follows the route of the existing A66 along the southern edge of Kirkby Thore, before bypassing Crackenthorpe to the north.

5.5.69 From the end of the Temple Sowerby Bypass the Orange Route initially runs 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.

5.5.70 East of Trout Beck, the Orange Route would pass through part of Bridge End Farm, requiring the acquistion 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.

5.5.71 As this route mostly follows the existing A66, a number of new connections and local roads would be required to allow local traffic to use the current A66 between Appleby and Temple Sowerby. This would result in an extensive network of sideroads for local access.

5.5.72 The Orange Route would have potentially significant detrimental effects on the cultural heritage sites that are located within the existing A66 corridor, most notably the Roman Fort and associated Vicus which it passes south of Kirkby Thore.

5.5.73 The Orange Route also has a significant impact on the farm at Bridge End to the extent that it may not be a viable business.

Presentation of route alignment alternatives at July 2021 stakeholder engagement events

5.5.74 As there has 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.

5.5.75 These events were held to present the three route alignment alternatives that had been developed to that point. The alternatives presented were the Blue, Red and Orange routes, as shown in Figure 9 below.

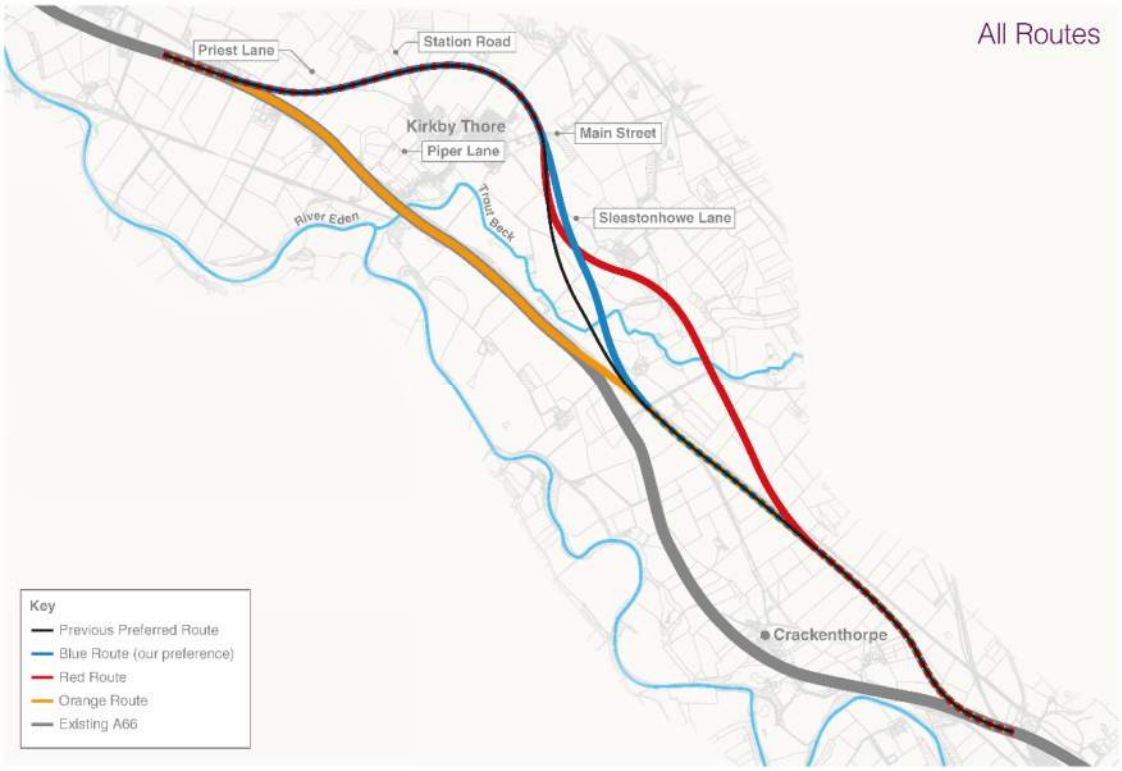

Figure 9 Alignment alternatives presented for Temple Sowerby to Appleby at July 2021 stakeholder engagement events

5.5.76 The engagement event provided additional information for stakeholders to help them understand the alignment 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.

5.5.77 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 Highways England team that a route preference would be stated at Statutory Consultation.

Alignment alternatives sifting for Statutory Consultation

5.5.78 A further sifting exercise has since been carried out 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, Highways England's three priorities of Safety, Customer and Delivery were considered crucial to assessing the alignments ahead of Statutory Consultation. Refer to 4.1 for further detail on the assessment process and criteria.

5.5.79 The Blue Route has been identified as the preference to be taken forward to the application for a DCO. The Red and Orange routes have been discounted as a result

of the sifting exercise undertaken for this section of route past Kirkby Thore. Refer below for detail.

Alignment alternatives sifting between Blue and Red Routes

5.5.80 The Blue and Red routes were sifted together first as they were considered directly comparable, both being northern bypasses of the village of Kirkby Thore. This then allowed the resultant preference to be compared against the Orange Route, which was the online alternative presented.

5.5.81 A copy of the assessment matrix for the alignment alternatives sifting exercise undertaken to determine a preference for either the Blue or Red Route can be found in Appendix A.1 and a summary of the matrix is shown below in Table 6.

Table 6 Summary of sifting matrix for comparison between Blue and Red Routes for Penrith to Temple Sowerby

Discipline		**Comparison with base Blue Route**
Engineering		
Highways - Standards Compliance		Worse
Utilities		Better
Geotechnics and Earthworks		Neutral
Structures		Worse
Drainage and Hydrology		Better
Construction Design Management (CDM)		Neutral
Construction Cost		Neutral
Buildability		Neutral
Environment		
Biodiversity	Construction	Neutral
	Operation	Neutral
Road Drainage and Water Environment	Construction	Worse
	Operation	Neutral
Geology, Soils, Contaminated Land and Groundwater	Construction	Neutral
	Operation	Neutral
Noise and Vibration	Construction	Neutral
	Operation	Better
Landscape and Visual	Construction	Neutral
	Operation	Worse
Population and Human Health	Construction	Worse
	Operation	Better
Air Quality	Construction	Neutral
	Operation	Neutral
Material Assets and Waste	Construction	Neutral
	Operation	Neutral
Cultural Heritage	Construction	Better
	Operation	Neutral
Climate	Construction	Worse
	Operation	Neutral

Discipline	Comparison with base Blue Route
Traffic and Economic	
Traffic Volume	Neutral
Journey Time Savings	Neutral
Safety	Neutral
Economy (not modelled with TUBA)	Neutral
Accessibility including WCH Opportunities	Neutral
Stakeholder	
Land Take	Worse
Residential	Worse
Commercial	Worse
Recreation and Leisure	Neutral
Wider Community Issues	Worse

Engineering

5.5.82 From an engineering perspective, the Red Route has a poorer geometry throughout with relaxed design standards for horizontal and vertical curves used for a larger proportion of the scheme length than for the Blue Route. It would also require an additional structure over Keld Syke, which would not be required for the Blue Route. The crossing of Trout Beck would be much more visually intrusive for the Red Route, as the structure would require to be approximately 18m high due to surrounding topography, compared to approximately 7m above existing ground level for the Blue Route. This would also present challenges from a cost and constructability perspective. Since the Red Route is longer than the Blue Route, this has the potential to increase costs further. The Red Route also crosses the geological fault line from Penrith Sandstone to Eden Shales (the formation associated with the gypsum mineworkings, which introduces a higher potential for finding sinkholes along the route, and the risk of dissolution).

5.5.83 However, the Red Route performs better than the Blue Route with regard to effect on utilities, as it is anticipated to have a slightly lesser impact on overhead powerlines.

5.5.84 The Red Route would not require construction of a separate bridge to connect to Long Marton Road as the elevation of the structure is such that Long Marton Road could pass underneath unhindered. For the Blue Route, Long Marton Road would require side road realignment and upgrade works to the junction due to the point where it is crossed. The Blue Route would also require additional drainage for the proposed side road works at Long Marton Road.

Environment

5.5.85 Assessment of environmental criteria for this sifting exercise identified that both the Blue and Red routes are broadly similar for this metric. However, the Red Route does perform worse with regard to landscape and visual impacts as a result of the proposed 18m high Trout Beck Crossing. It would also require development in an area of land currently allocated to future housing. To counter, the Red Route performs better in terms of noise and vibration as it moves the route further away from Kirkby Thore; although closer to Long Marton, fewer receptors are affected.

5.5.86 When flooding and geomorphology factors were assessed, it was determined that there were no significant differentiators between the Blue and Red Routes. Refer to 5.5.96 below in regard to the findings from the assessment work.

5.5.87 The Red Route has less impact on designated heritage assets than the Blue Route, including the Roman Camp near Powis House and Redlands Bank. Further details of the environmental assessment criteria can be found in the PEIR.

Traffic

5.5.88 When traffic and economic factors were assessed, it was determined that there were no significant differentiators between the Blue and Red Routes.

Stakeholder

5.5.89 Considering the impact of each alignment alternative on stakeholders, it was determined that the Red Route presented greater negative impacts in terms of land take, residential, commercial and wider community aspects. It would move the route closer to the village of Long Marton and would affect a number of landowners who were not previously affected by the Preferred Route as it was announced in May 2020, including having a greater effect on a single landowner.

Conclusion

5.5.90 Following the analysis outlined in 5.5.80 through 5.5.89 above, the Red Route that was presented at the July 2021 stakeholder engagement events has been discounted from further consideration ahead of Statutory Consultation in Autumn 2021. Although the Blue and Red Route share many similarities it is clear that by moving further to the east a number of additional landowners would be affected and the effects of the route on Long Marton would be increased. Additionally, whilst the crossing of Trout Beck would be shorter, it would result in a structure which would be much more visible within the landscape due to its increased height and the way the land falls in this area.

Alignment alternatives sifting between Blue and Orange Routes

5.5.91 Once the Red Route had been discounted, it was then possible to compare the Blue Route with the remaining Orange Route.

5.5.92 A copy of the assessment matrix for the alignment alternatives sifting exercise undertaken to determine a preference for either the Blue or Orange Route can be found in Appendix A.2 and a summary of the matrix is shown below in Table 7.

Table 7 Summary of sifting matrix for comparison between Blue and Orange Routes for Penrith to Temple Sowerby

Discipline	**Comparison with base Blue Route**
Engineering	
Highways - Standards Compliance	Better
Utilities	Neutral
Geotechnics and Earthworks	Better
Structures	Neutral
Drainage and Hydrology	Worse
Construction Design Management (CDM)	Neutral
Construction Cost	Neutral
Buildability	Worse

Discipline		Comparison with base Blue Route
Environment		
Biodiversity	Construction	Neutral
	Operation	Neutral
Road Drainage and Water Environment	Construction	Neutral
	Operation	Neutral
Geology, Soils, Contaminated Land and Groundwater	Construction	Neutral
	Operation	Neutral
Noise and Vibration	Construction	Neutral
	Operation	Better
Landscape and Visual	Construction	Neutral
	Operation	Better
Population and Human Health	Construction	Worse
	Operation	Neutral
Air Quality	Construction	Neutral
	Operation	Neutral
Material Assets and Waste	Construction	Better
	Operation	Neutral
Cultural Heritage	Construction	Worse
	Operation	Worse
Climate	Construction	Better
	Operation	Neutral
Traffic and Economic		
Traffic Volume		Better
Journey Time Savings		Better
Safety		Neutral
Economy (not modelled with TUBA)		Better
Accessibility including WCH Opportunities		Neutral
Stakeholder		
Land Take		Worse
Residential		Worse
Commercial		Worse
Recreation and Leisure		Neutral
Wider Community Issues		Neutral

Engineering

5.5.93 Considering the engineering critiera, the Orange Route has a better geometric alignment than the Blue Route. It is expected the mainline would cost less to construct as it is a shorter route with reduced earthworks, however this potential benefit is likely to be offset due to the cost of constructing a more extensive side road network and the acquistion and demolition of some or all of the farm buildings of Bridge End Farm. This shorter mainline route would however lead to journey time savings for users on the dualled A66.

5.5.94 As the Orange Route is much closer to the existing A66 route corridor, it presents buildability challenges due to interactions with existing traffic. However, as noted above, it would keep the new A66 within a corridor already developed for infrastructure.

5.5.95 Both the Blue and Orange routes require a similar length of structure to cross Trout Beck (approximately 400m for Blue and 350m for Orange). However, when considering the drainage and hydrology aspects of each route, the Orange Route would have greater impact on the floodplain. This would likely require mitigation measures to be provided for the Orange Route that would not be required for the Blue Route.

5.5.96 Flooding was raised as an issue during engagement with Natural England, and flood modelling and geomorphological analysis has been carried out for both the Blue and Orange routes during PCF Stage 3 Preliminary Design to assess the impact of proposed structures within and around Trout Beck and its floodplain, and any resultant effects on the River Eden SAC. This analysis has proven that both the Blue and Orange routes are viable, provided appropriate mitigation measures are built into the designs as they develop. Refer to Appendix A.2 for further information.

Environment

5.5.97 The effects on the cultural environment are considered to be significant and are the primary differentiator between the Orange and Blue routes. Although more heritage assets would be affected by the Blue Route, it has been determined that these impacts can be mitigated and that during operation, benefits will be brought to these assets due to reduction in traffic noise and visibility of the A66 affecting and improving the setting of these assets. Whilst there is a risk that the longer offline construction afforded by the Blue Route may present greater potential for encountering undiscovered archaeology, this must be weighed against the known impact of harm likely to be caused by the Orange Route. Further details of the environmental assessment criteria can be found in the PEIR.

5.5.98 The Orange Route would require significant works within the Kirkby Thore Roman Fort and Associated Vicus Scheduled Ancient Monument, with the potential for substantial harm to be caused to the designated heritage site that it may not be possible to mitigate. From a planning policy perspective, the impacts of proposed developments on the significance of designated heritage assets must adhere to strict conditions and constraints, and require clear and convincing justification. 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. Substantial harm to or loss of Scheduled Monuments should be “wholly exceptional”. Refer below for further detail.

Traffic

5.5.99 Traffic assessment indicated that the Orange Route would have marginal benefits in terms of traffic flow on the A66 mainline at Kirkby Thore and journey time savings. However, there were no significant differences for safety or accessibility.

Stakeholder

5.5.100 Considering the impact of each alignment alternative on stakeholders, it was determined that the Orange Route presented greater negative impacts. Although it does not affect the gypsum mineworkings and operations there, it does affect a number of landowners who were not previously affected by the Preferred Route as it was announced in May 2020. Most notably, it would require the acquistion and demolition of some or all of the farm buildings of Bridge End Farm, at significant

disruption to this business and cost to the scheme. A number of concerns have also been raised during stakeholder engagement, including at the July 2021 events, in relation to provision of suitable access to properties at the west end of the Orange Route where it is proposed to stop up the A66.

Conclusion

5.5.101 Given the impact the Orange Route would have on the Kirkby Thore Roman Fort and Associated Vicus Scheduled Ancient Monument, the application for development consent would therefore have to demonstrate exceptional circumstances in order to put forward the Orange Route alternative for Examination. This would require a case for the scheme to be made that potential substantial harm or loss of significance is necessary in order to deliver substantial public benefits that outweigh that loss or harm.

5.5.102 Route alternatives proposed must be in conformity with the policy tests of paragraph 5.133 of the NNNPS, as set out below:

> *"5.133 Where the proposed development will lead to substantial harm or total loss of significance of a designated heritage asset, the Secretary of State should refuse consent unless it can be demonstrated that the substantial harm or loss of significance is necessary in order to deliver substantial public benefits that outweigh that loss or harm, or alternatively that all of the following apply:*
>
> - *The nature of the heritage asset prevents all reasonable uses of the site; and*
> - *No viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and*
> - *Conservation by grant-funding or some form of charitable or public ownership is demonstrably not possible; and*
> - *The harm or loss is outweighed by the benefit of bringing the sit back into use."*

5.5.103 In the situation where a proposed development would lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal.

5.5.104 As an alternative alignment exists in the Blue Route, it is considered that the Orange Route is likely not to be in accordance with national policy and therefore there is a risk that a DCO application including the Orange Route would not be likely to secure a grant of consent.

5.5.105 This sifting exercise therefore discounted the Orange Route that was presented at the July 2021 stakeholder engagement events from further consideration ahead of Statutory Consultation in Autumn 2021.

Statutory Consultation Autumn 2021

5.5.106 Plans and profiles for the proposals taken forward to Statutory Consultation in Autumn 2021, as well as alternatives assessed and discounted during PCF Stage 3 Preliminary Design, can be found in Volume 2 of the Route Development Report.

5.5.107 As outlined above, Temple Sowerby to Appleby is one of the schemes where further consideration of alternative alignment routes has occurred, in order to minimise the potential impact on the River Eden Special Area of Conservation and to ensure that there is no impact on the integrity of the SAC which would conflict with National Policy.

5.5.108 The Preferred Route alignment announced in Spring 2020 is no longer under consideration and is therefore not described below. Instead the alignment alternative being presented at Statutory Consultation in Autumn 2021, the Blue Route is summarised.

5.5.109 The Blue Route is a developed version of the route that was included in the Preferred Route Announcement and will comprise a new offline bypass around the north of Kirkby Thore, a new bypass to the north of Crackenthorpe, and a number of new junctions and improvements.

5.5.110 Design development since the Preferred Route Announcement has not altered the proposed route from the western end of the village to the junction at Kirkby Thore village. As the route travels south-east the alignment has moved approximately 100m east. Moving the route alignment reduces the length of affected floodplain at the Trout Beck crossing from 850m to around 400m. This alignment route will cross Trout Beck at a more perpendicular angle than the route indicated at the Preferred Route Announcement, with a shorter overall length of structure required and reduced subsequent impact on the SAC.

5.5.111 Temple Sowerby Bypass Junction will provide connections between the existing A66 and the local road network. A short section of road will connect from Temple Sowerby Bypass Junction to the existing A66, allowing access for local traffic and other road users from Temple Sowerby to Crackenthorpe and beyond.

5.5.112 A new junction will be provided at Main Street to the north-east of Kirkby Thore. Main Street will pass over the proposed A66 alignment on a bridge structure. This junction will maintain the key local connection onto the A66 and has the additional benefit of providing access to businesses and hauliers to the north of the village. This will contribute to a reduction in the number of HGV movements through Kirkby Thore.

5.5.113 New merge and diverge lanes will enable users to safely join and leave the A66 in both directions. New bridge structures for both Station Road and Sleastonhowe Lane will enable access over and under the A66 respectively. A diversion will lead from Priest Lane to Station Road to maintain local traffic access.

5.5.114 A new multi-span viaduct will be provided for the crossing over Trout Beck and its associated floodplain. The design of this viaduct will be informed by detailed design, flood modelling and the Habitats Regulations Assessment, which is ongoing. Work to date has proven that a viable solution for the Blue Route exists.

5.5.115 A new bridge will be provided over the new A66 at Long Marton Road close to Powis House. This will maintain connectivity between Bowdon and Long Marton and will also allow traffic to access the existing A66 to travel east or west where traffic levels will be considerably reduced leading to a safer junction. This reduction in traffic levels, confirmed through modelling and concerns over substandard vertical geometry and impacts on the Scheduled Ancient Monument Roman Camp, led to the change of the solution from a junction to an overbridge.

5.5.116 Recently completed archaeological survey works indicate that the extents of the Roman Camp at Redlands Bank may be more extensive than its designation would imply, and it is anticipated that further refinement and development of the route at this point will be required post-consultation to address this issue. This work will be

undertaken as part of the Environmental Satement and reported in the DCO application.

5.5.117 At Crackenthorpe a new junction on the westbound carriageway of the new A66 alignment will provide left on/left off access. The junction will link to the previous A66 alignment and the B6542 and provide access to both Crackenthorpe and Appleby. New merge and diverge lanes will enable users to safely join and leave the A66.

5.5.118 Provision of an additional left-on junction to the eastbound carriageway at the existing Appleby Bypass junction will make better use of the existing infrastructure. This, together with the proposed Crackenthorpe junction, will provide all-movement access to the A66 west of Appleby.

5.5.119 The proposed route, like all alternative alignments considered throughout PCF Stage 3 Preliminary Design, currently has an impact on part of the Fair Hill site at Appleby which is the field used for the annual Appleby Horse Fair. While this is a relatively small land take, designed to facilitate a safer junction arrangement, the project team is aware of the impacts this might have on the Fair site and work is ongoing to develop junction proposals at this location, prior to application for development consent, to mitigate this impact. A key element of this work is continuing engagement with the Gypsy, Roma and Traveller communities as well as local communities and local authorities.

5.6 Appleby to Brough

Description of existing scheme

5.6.1 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.

5.6.2 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.

5.6.3 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.

5.6.4 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.

5.6.5 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.

5.6.6 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 recongised site of outstanding geological heritage.

5.6.7 This section of the A66 carries approximately 14,600 vehicles per day, 30% of which are heavy goods vehicles.

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

5.6.8 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.

5.6.9 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.

5.6.10 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 for further detail.

5.6.11 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 presented the potential need to compensate or purchase these buildings.

5.6.12 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 the majority of the construction works.

5.6.13 Culverts would be required for existing watercourse crossings including Cringle Beck, Hayber Beck, Moor Beck and Lowgill Beck.

5.6.14 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. This would be a compact grade-separated junction with an underbridge beneath the proposed A66 to connect the village of Warcop to the old A66.

5.6.15 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.

5.6.16 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.

5.6.17 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

5.6.18 A single option was presented at public consultation in Summer 2019. This option was known as Option I for the purposes of consultation.

5.6.19 Option I 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.

5.6.20 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.

5.6.21 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.

5.6.22 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.

5.6.23 Option I proposed to minimise the impact on the Area of Outstanding Natural Beauty to the north of the current A66 and provide continued access for local communities during construction.

5.6.24 It was proposed that a new dual carriageway would connect back into the existing A66 at the Brough Bypass.

5.6.25 The PCF Stage 2 Scheme Assessment Report noted that although the proposed Option I received positive public support at consultation, feedback was identified that resulted in further route development ahead of the Preferred Route Announcement.

5.6.26 There were concerns from the public regarding additional traffic to local side roads, specifically from Warcop Primary School. As such, 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

5.6.27 The Preferred Route Announcement of May 2020 concluded that since Option I was the only viable route proposed for the Appleby to Brough 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

5.6.28 At PCF Stage 3 Preliminary Design, these proposals have been developed further for Statutory Consultation in Autumn 2021 and are 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 legislative and policy requirements.

5.6.29 Figure 10 summarises the development of the scheme during PCF Stage 3 with respect of alignment alternatives assessment, detailed in the sub-sections that follow.

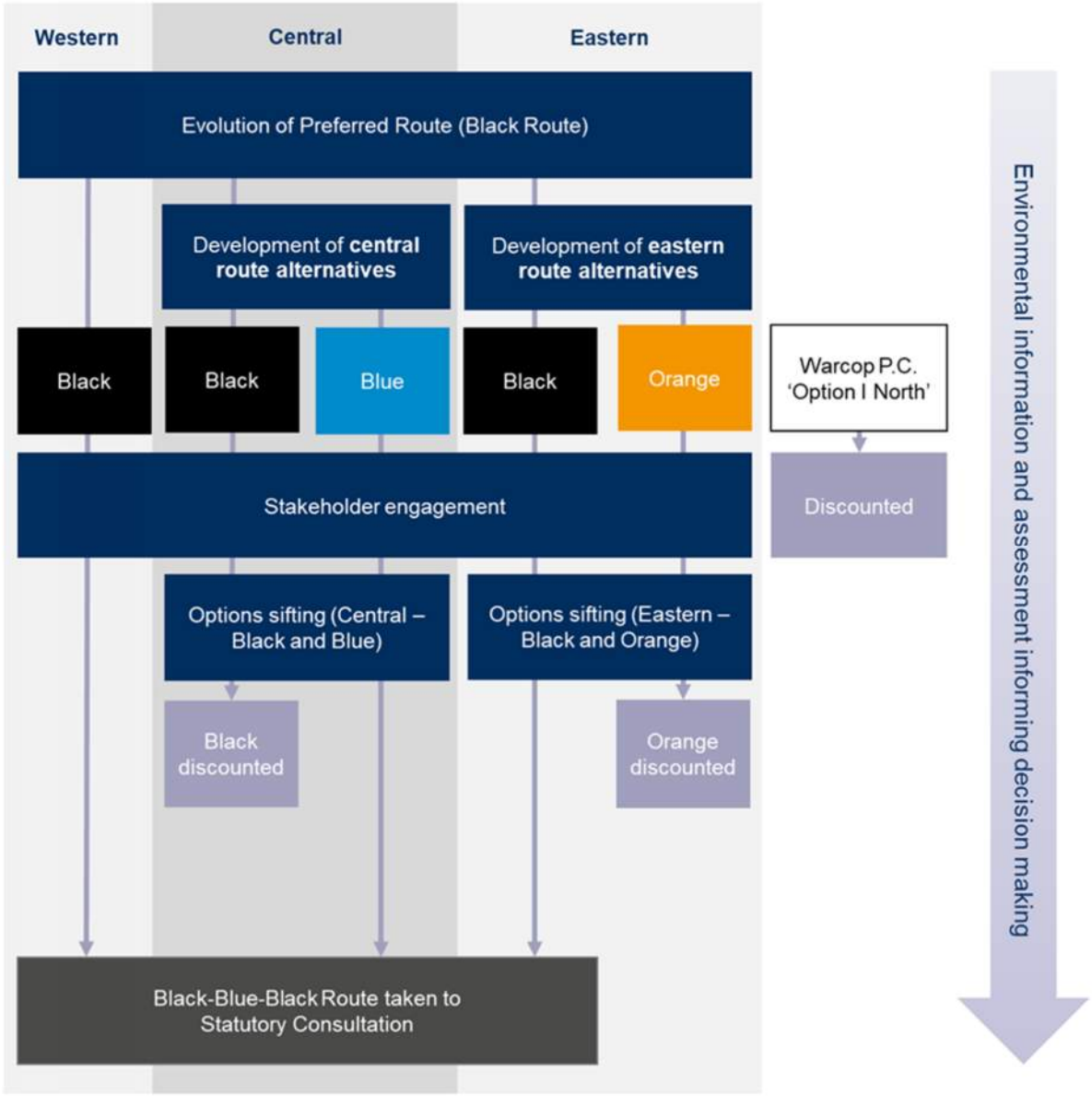

Figure 10 PCF Stage 3 scheme development summary for Appleby to Brough

5.6.30 For Appleby to Brough, design development work has been undertaken to ensure that the route taken forward 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.

5.6.31 For development proposed within nationally designated areas, paragraph 5.151 of the NNNPS outlines the policy tests as follows:

"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. Consideration of such applications should include an assessment of:

- *The need for the development, including in terms of any national considerations, and the impact of consenting, or not consenting it, upon the local economy;*
- *The cost of, and scope for, developing elsewhere, outside the designated area, or meeting the need for it in some other way; and*
- *Any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated."*

5.6.32 Paragraph 5.152 goes on to state:

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

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

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

5.6.34 Paragraph 5.155 goes on to state:

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

Development of Preferred Route

5.6.35 Between Appleby and Brough, the Black Route developed from the Preferred Route announced in May 2020. 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 will be required to enable access on and off the A66 to improve user safety and reduce congestion.

5.6.36 This led to the development of three junction proposals, at Sandford, Warcop and Langrigg.

5.6.37 At Sandford, the junction was further developed with regard to feedback received following the announcement of the Preferred Route, as outlined in 5.6.27 above. In addition, the further design development sought to improve connectivity between local footpaths and bridleways by providing a route over the new A66. This would have the added benefit of improving the link between Great Ormside, Sandford and the North Pennines AONB.

5.6.38 Therefore, at Sandford (B6259):

- A new all-movement junction on the A66 was proposed approximately 1km west from its junction with the B6259.
- The 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 proposed to provide a new structure over the new A66.

5.6.39 At Warcop:

- It was proposed to provide junctions on the westbound and eastbound carriageways to facilitate access to the A66 in both directions. This would also provide access to Warcop village and the old A66 in order to maintain access to the local road network.
- 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. This junction would be screened by the existing Eden Valley railway embankment to reduce potential visual impacts.
- 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.

5.6.40 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. This would allow Flitholme residents access to the new A66 westbound at Langrigg left-only junction.

5.6.41 These proposals were presented to the public at a virtual engagement event in November 2020 as part of the Winter 2020 Project Update. An extract from the brochure produced for this event is shown in Figure 11 below.

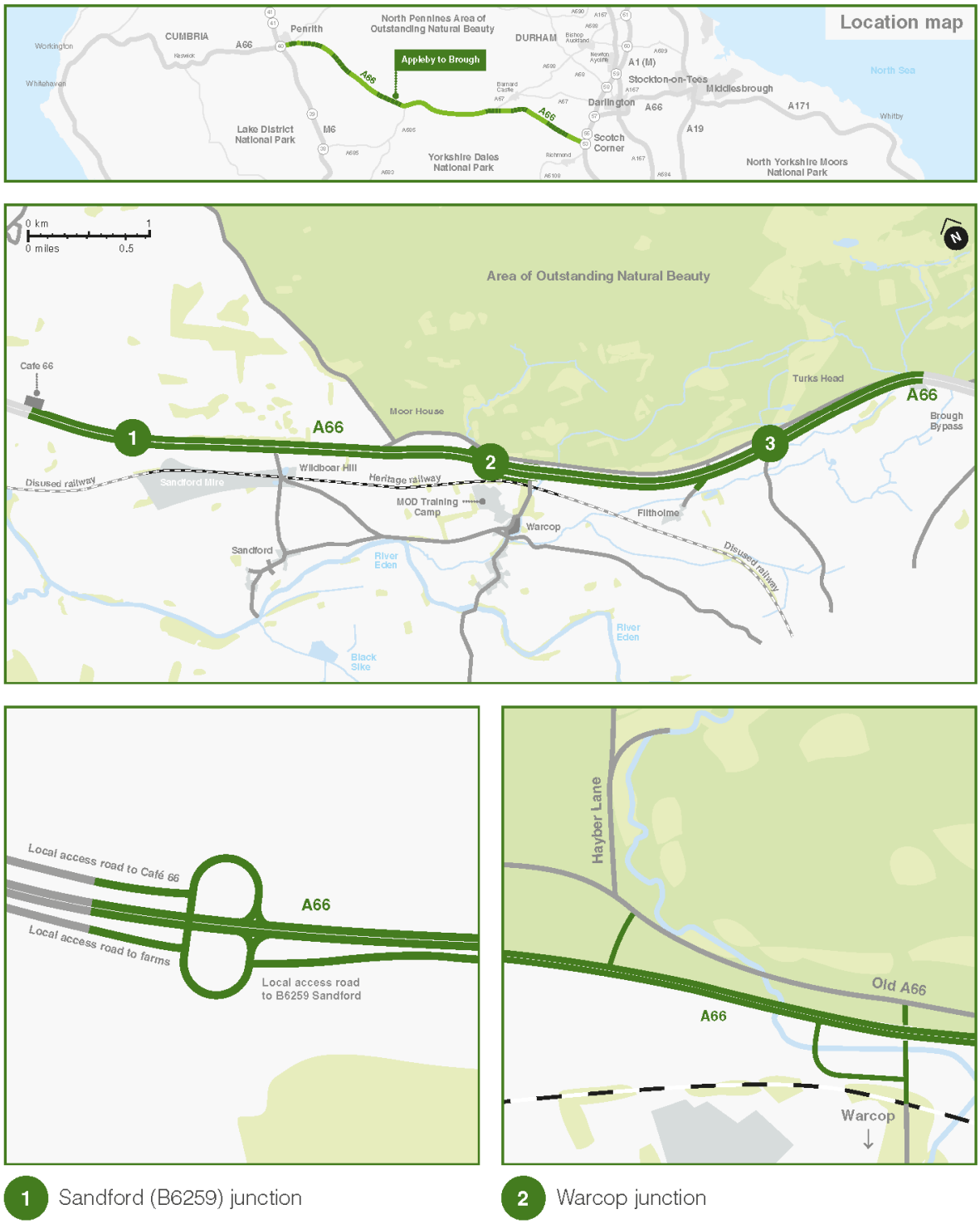

Figure 11 Winter 2020 Project Update extract for Appleby to Brough

5.6.42 Over this same period from Summer to Winter 2020, the alignment of the Preferred Route was further developed. This was informed by the findings of assessments and surveys, and a detailed review of policy requirements relevant to Areas of Outstanding Natural Beauty.

5.6.43 This route was designed to remain outside the AONB as much as possible, however through design development it became apparent that the eastern tie-in cannot be constructed as part of the Preferred Route, and local access cannot be maintained, without some limited construction within the AONB.

Development of alignment alternatives

Development of Preferred Route – Black Route

5.6.44 As Preliminary Design progressed following the Project Update of Winter 2020, the Black Route was developed further as outlined below and shown in Figure 12.

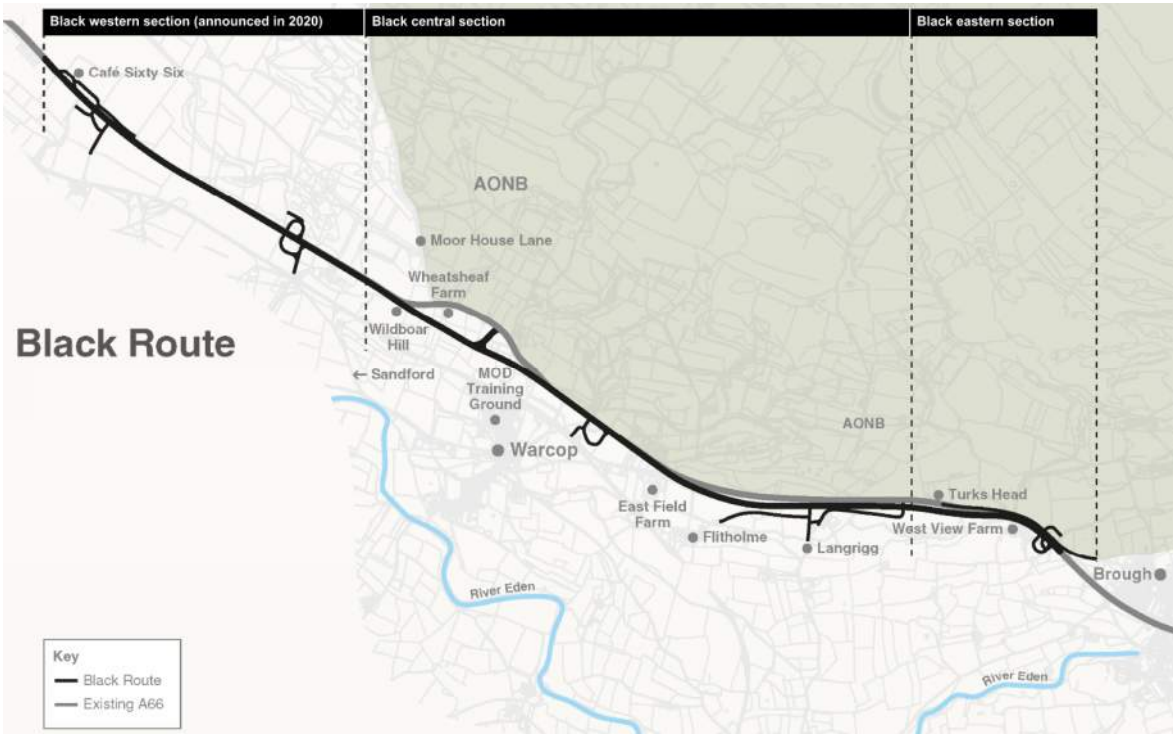

Figure 12 Development of announced Preferred Route for Appleby to Brough - Black Route

Black Route western section alignment

5.6.45 The western section alignment presented in the Preferred Route Announcement of May 2020 was outwith the extents of the AONB and therefore it was not proposed to deviate from the principles as set out in the PRA. This section was therefore only subject to minor design refinement as follows:

- The western section of the route, starting from Coupland Beck comprises 2.6km of online widening with a new westbound carriageway to the south of the existing carriageway.
- An eastbound diverge and merge will be provided at Café Sixty Six to provide access to the new eastbound A66 carriageway that matches the existing. It is proposed that 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. Access tracks will link the underpass with each carriageway, providing access to the A66 in all directions for farms, properties and land at this location.

- A new grade-separated junction is proposed to be provided at Sandford, with a diverge and merge on both carriageways. An underbridge will be provided under the new A66 to connect to the B6259 and provide access to MoD and agricultural land in the north. This arrangement reduces the required footprint of the junction and associated land take.

5.6.46 No alternatives have been proposed to the alignment for this section of the route. Therefore, the original Preferred Route announced with the refinements set out above will be presented at Statutory Consultation in Autumn 2021 for the western section of the Appleby to Brough scheme.

5.6.47 It is recognised however that there has been some feedback from members of the local community about these proposals that queries why the route has been widened to the south of the existing A66 and not to the north. Engagement around this issue is ongoing and stakeholders have been encouraged to participate in the Statutory Consultation in Autumn 2021 and make their comments formally where they will be reviewed and regard given to them in the final preparation of the application for development consent.

Black Route central section alignment

5.6.48 The central section alignment presented in the Preferred Route Announcement of May 2020 was refined as follows:

- From Sandford this route will generally follow an alignment to the south of the existing A66 diverting south from the line of the old A66 at Wildboar Hill.
- An underpass will be provided to allow access to agricultural land and drainage ponds at Wheatsheaf Farm. A new structure crossing Moor Beck will be provided, which will also be used to convey an existing footpath under the new A66.
- New junctions will be provided at Warcop on the westbound and eastbound carriageways to facilitate access to the A66 in both directions and providing access to the village of Warcop and the de-trunked A66. These junctions will maintain access to the village of Warcop, MoD facilities, side roads, properties and land to the north and south of the A66 via a new underbridge located to the east of Moor Beck bridge.
- It is proposed that these left on/left off priority junctions are designed to utilise existing side road connections where possible.
- From East Field Farm, the route continues to the south of the existing A66. A new junction will be provided at Langrigg, close to its current location. Movements will be limited by providing a left-only T-junction with appropriate diverge and merge tapers on the westbound carriageway only.
- A new local road to the south of the new A66 alignment will link the village of Flitholme with Langrigg, providing access to the westbound A66 and the local road network. This local road is linked to Langrigg by a staggered cross-roads. This junction also links to a new local road to the south of the A66 heading east to a new overbridge provided opposite The Gatehouse and connecting to the existing A66 near Turks Head.
- As this route proposed to utilise land that currently hosts the annual Brough Hill Fair, provision of an alternative site for this community event would have to be sought.

5.6.49 However, a review of the extents of the North Pennines AONB showed that there were elements of this proposed central section alignment that would require

development within the boundary of the designated site. As such, it was determined that alternative alignments should be investigated to ascertain whether the AONB could be avoided entirely, thereby aligning the route more fully with the starting point for new roads in AONB in the NNNPS.

Black Route eastern section alignment

5.6.50 The eastern section alignment presented in the Preferred Route Announcement of May 2020 was refined as follows:

- An overbridge is proposed at Gate House, from which it is proposed that the route continues to follow an alignment to the south of the existing A66 before tying into Brough Bypass near West View Farm.
- A new farm accommodation underpass will be provided to the west of West View Farm for agricultural vehicle and livestock use only. This will be constructed under the new A66 and local road.
- An accommodation overbridge will also be provided for agricultural use, walkers, cyclists and horse riders to the east of West View Farm, providing access to land on the north side of the A66 and maintaining footpath and bridleway connectivity. Further analysis at PCF Stage 3 noted that this will encroach into the AONB (refer to 5.6.52 onward).
- To the north of the new dual carriageway, the old A66 will be used for access to the local road network, west to Warcop or east to Brough. A new local road will be provided to the north from Turks Head into Brough; further analysis at PCF Stage 3 Preliminary Design noted that this will encroach into the AONB (refer to 5.6.52 onward).
- A left-only T-junction with appropriate diverge and merge tapers on the westbound carriageway is proposed to provide access to properties, farm and land on the south side of the new dual carriageway. Eastbound local movements to Brough will be via the accommodation bridge to join with the local road into Brough.
- It is proposed that the de-trunked sections of the existing A66 will maintain access into the AONB for walkers, cyclists and horse riders.

5.6.51 As with the central section of the developed Preferred Route, the eastern section of the developed Preferred Route also encroached into the North Pennines AONB. This eastern incursion was more significant than the central incursion however as it became clear that the tie in between the proposed A66 and the existing carriageway could not be constructed without encroaching into the AONB, alternative alignments were therefore investigated for the eastern section of the scheme, to ascertain whether the AONB could be avoided entirely so as to align the route more fully with the starting point for new roads in AONB in the NNNPS.

Design development of alignment alternatives

5.6.52 The current alignment of the A66 forms the southern boundary of the AONB designation, between Moor House Lane in the west and Brough in the east.

5.6.53 Throughout PCF Stages 1 and 2, a core principle adopted for the Appleby to Brough scheme was the aim to develop a route that could be constructed outwith the North Pennines AONB, in accordance with the Section 104(3) of the Planning Act 2008 and the NNNPS. Following a detailed design review from both an environmental and engineering perspective however, it was determined that the developed Preferred Route for the Appleby to Brough scheme could not be constructed without land take

within the North Pennines AONB designated area at the eastern tie-in (associated with a private access and local access road).

5.6.54 From a planning policy perspective, as outlined in the NNNPS (refer to 5.6.30 through 5.6.34 above), there is a starting presumption against development of new roads within an AONB.

5.6.55 Due to the policy challenges outlined above, the design team continued to investigate alternative route alignments that could either remain completely outside the AONB thus avoiding any direct impact, and that could minimise potential compromise of the purposes of the designation of the AONB as a direct result of the scheme. This design development resulted in alternatives as outlined in 5.6.57 and 5.6.58 below.

5.6.56 The western section of the route remained as the developed Preferred Route design as outlined in 5.6.45 above. No alternative alignment was developed for this section as the developed Preferred Route did not present an incursion into the AONB or present potential for significant impacts on its setting.

5.6.57 The eastern alignment alternative was developed following review of proposed tie ins with the existing A66. During Preliminary Design it was confirmed that it would not be possible to tie the proposed new A66 into the existing without encroaching into the AONB, which would present a significant consenting challenge if viable alternative alignments with less harm to the AONB and lower overall environmental impact were available. There were also issues presented when trying to provide local road access to Brough. This alignment alternative became known as the Orange Route and sought to avoid any direct impact on the AONB.

5.6.58 The central alignment alternative was developed as a result of initial work on the eastern section. Simultaneously, feedback from stakeholders in regard to concerns about the proximity of the route to East Field Farm and Warcop village led to consideration of an alignment that coincided and overlapped with the fringes and edge of the AONB. This alignment alternative became known as the Blue Route.

Design development of eastern section alignment alternative – Orange Route

5.6.59 During early review of the Preferred Route that was announced in May 2020, it was identified that the local connection road from the de-trunked A66 into Brough is located within the North Pennines AONB towards the eastern end of the scheme.

5.6.60 Given this would result in direct development within part of the AONB, a design exercise was undertaken to identify alternative alignments that would reduce or avoid direct impact on the AONB at the eastern end of the scheme. These are summarised below.

Alignment alternative with removal of local road in AONB

5.6.61 A design was developed that tied the new A66 dual carriageway alignment into the existing A66 dual carriageway kerb line which is also the AONB boundary, avoiding "significant road widening or the building of new roads" within the AONB, in line with paragraph 5.152 of the NNNPS. However, some associated works would still be required in the AONB within the existing highway verge e.g., vehicle restraint systems (VRS), drainage, earthworks, etc. in order for this design to work.

5.6.62 This alignment alternative would reduce direct impact on the AONB but does not allow the existing de-trunked A66 to be used as a local road connection for the villages of Warcop and Flitholme, and there will be no local road connectivity to the East and Brough for WCHs. For example, all local traffic would have to join A66 dual carriageway at Warcop to travel to the East and Brough.

5.6.63 Further analysis of this alternative identified the following disadvantages:

- No local road connectivity from Warcop to Brough.
- Highway alignment that was not to current standards, requiring approval of a number of departures from standard.
- Closure of existing gaps in the central reserve, reducing crossing opportunities for land/property owners. This will result in the requirement for an alternative method of crossing the A66.
- Restriction in the number of Private Means of Access (PMA) off the A66 westbound carriageway.
- Closure of (quarry) access track to north of A66 (off eastbound carriageway).
- Lack of Public Right of Way (PRoW) connectivity.

5.6.64 As such, this alignment alternative has not been developed further and was not taken forward to a sifting review.

Alignment alternative outside of the AONB

5.6.65 Considering the importance of local road connectivity and providing a connection between the de-trunked A66 from Warcop and the west to Brough and the east for local road traffic and WCHs, an alignment alternative was developed that was entirely outside the AONB.

5.6.66 This alternative takes the new A66 dual carriageway from a point near to Turks Head on an alternative alignment to the south of West View Farm and connects back into the existing A66 dual carriageway near to Musgrave Lane Overbridge.

5.6.67 This alternative will allow the de-trunked A66 to become the local road connection to Brough Main Street and will allow the existing north and south movements from properties on the south side of the old A66 to be maintained.

5.6.68 This alternative will require the acquisition of one residential property and will impact the operation of West View Farm considerably.

5.6.69 This alternative has no encroachment directly into the AONB compared with the announced Preferred Route, which encroaches in to the AONB over a length of approximately 1150m averaging approximately 35m in width. There are some localised areas associated with the announced Preferred Route where the encroachment is greater, up to 85m in width.

5.6.70 In discussion with local stakeholders, including landowners, parish councils and Statutory Bodies it is recognised that this alignment alternative has very limited support. However, given it does not encroach directly into the AONB and also provided the desired connectivity for the scheme, it was taken forward to a sifting review as an alignment alternative (Orange Route) for the eastern section of the scheme.

Design development of central section alignment alternative – Blue Route

5.6.71 As outlined in 5.6.58, an alignment alternative has been developed for the central section of the route. The development of the central section also took into account stakeholder concerns raised, particularly from the village of Warcop, during engagement for this scheme and to explore the potential for a route further from the village of Warcop and with lower visual and noise impact on nearby residents and businesses. Its development is described below.

Alignment alternative at East Field Farm

5.6.72 During landowner engagement in Autumn 2020, concerns were raised by the owners of East Field Farm about the proximity of the proposed new A66 carriageway to the dairy farm. These concerns included noise, air quality, safety, biosecurity and general disturbance issues. Site visits confirmed that the proposed Preferred Route Alignment at this point would have been approximately 10m from the edge of the existing Silage Clamp building to the edge of the A66 westbound carriageway.

5.6.73 Consequently, the design team reviewed the alignment at this location and were able to realign the new carriageway shown in the PRA, slightly north in order to increase the distance from the corner of the Silage Clamp building to the edge of the new carriageway to approximately 15m.

5.6.74 In late December 2020, further engagement with landowners and Warcop Parish Council led to consideration of a route in the central section slightly north of the existing A66, within the AONB and MoD land. This would result in a direct impact on the AONB and residential properties in this location and the potential for the route to be considered to be substantially in conflict with national policy. It would also result in considerable disruption for the MoD and their active training ranges. The A66 design team have developed an alternative alignment with lower impact on the AONB and on the MoD operations, which we consider is in accordance with national policy. The principle of this alternative is to move the new A66 dual carriageway further north away from Warcop village and East Field Farm whilst also providing the opportunity to lower the level of the road. This alternative places the new eastbound carriageway of the A66 over the existing A66 and places the new westbound carriageway of the A66 to the south of the existing. The result is an increased distance of approximately 30m from the Silage Clamp Building at East Field Farm to the edge of the new carriageway.

5.6.75 This alternative alignment requires the replacement of the local road and this will need to be constructed parallel to the new A66 within the AONB and MoD training camp, resulting in a direct impact on the AONB and MoD. However, with this alternative it has also been possible to reduce the approximately 8m high embankment and lower the new A66 and local road to be predominantly “at grade” on a reduced embankment at similar levels to the existing. This will reduce the visual impact on the AONB and its setting, reduce the amount of imported fill material required and reduce the impact on the MoD training camp.

5.6.76 This alternative encroaches in to the AONB over a length of approximately 1400m averaging approximately 30m in width. There are localised areas where the encroachment is greater, up to 200m in width.

5.6.77 An alignment alternative was considered that followed the same alignment but was on an embankment similar to that shown in the Preferred Route Announcement. This alternative was discounted as it had a direct impact on the AONB and would have had the same visual impact as the Black Route, as well as increased impact on the MoD training camp.

5.6.78 An overbridge with embankments will be required to take the local road and westbound junction connection up and over the new A66 to connect with the local road on the north side, providing access to the local road network and MoD training camp.

Development of route through MoD property

5.6.79 The westbound and eastbound junctions at Warcop have been designed with appropriate merges, diverges and connections with local roads that will allow the MoD

Heavy Equipment Transporter (HET) access and egress from the training camp from and to the new A66. A number of accesses into the MoD training camp, maintenance compound and residential properties on the northern side of the A66 will be provided off the new road. An area of the MoD tank storage and filling station compound will be lost with the new local road provision so an existing MoD compound area to the east will be upgraded and extended to ensure conformity with the NNNPS. Paragraph 5.54 states:

"…It is important that new national networks infrastructure does not significantly impede or compromise the safe and effective use of any defence assets."

5.6.80 By extending the encroachment of the local road into the MoD training camp on the north side of the old A66 further to the east, an opportunity to provide an underpass at Flitholme has been presented. This full height underpass will allow Flitholme residents access to the local road network. It is proposed that this underpass and road from Flitholme will be connected to Langrigg via a new local road, allowing residents to access the local road network, also.

5.6.81 This new length of detrunked A66 and underpass to Flitholme will result in removal of an area of planting to the north of the old A66 that screens MoD facilities and as such further engagement with the MoD was sought for the proposals. The outcome of this engagement was the proposal to provide additional planting in an area of grass to the south of Brough Hill to mitigate both additional incursion into the AONB for the Flitholme underpass and provide additional screening to the MoD facilities.

Provision of alternative site for Brough Hill Fair

5.6.82 As with the Black Route through the central section of the Appleby to Brough scheme, development of the Blue Route also gave rise to the need to identify an alternative site for the Brough Hill Fair, held on the last weekend of September every year. The existing location, a field owned by the MoD and tenanted by the owners of East Field Farm will not be viable following construction of the proposed A66, which requires this land. The existing site is approximately 5.4 acres, is relatively flat and level, has access off the existing A66 and is outwith both the AONB and the MoD training facilities.

5.6.83 Considerations and requirements for alternative sites were established as follows, that the new site must:

- In its final provision, be a grass field, relatively flat and level to match the existing site.
- Be of similar provision to the existing circa 5.4 acre site.
- Have safe access off the old de-trunked A66 'local road', not the proposed new, dualled A66.
- Be within the scheme extents of Appleby to Brough.
- Be outside the MoD training range and camp.
- Be outside the designated Area of Outstanding Natural Beauty.
- Be as close as practicable to the existing site given the historical and cultural association of Brough Hill Fair to Brough Hill.

5.6.84 A site of approximately 5.4 acres has been identified, which will be available after construction of the proposed Blue Route. This site is to the north of East Field Farm,

is relatively flat and level and has safe access off the old A66. The site combines part of the old Brough Hill Fair site with an area currently owned by the MoD and used for visiting troops and cadets to camp in. It is not within the bounds of the AONB, nor the active MoD training range.

5.6.85 Stakeholder engagement has been ongoing as the design has developed and interested and affected parties have been encouraged to participate in the Statutory Consultation to make their comments formally through that channel where they will be reviewed and regard given to them in the final preparation of the application for development consent.

Warcop junction

5.6.86 It is proposed to provide junctions on both the westbound and eastbound carriageways of the A66 at Warcop, to allow access to the A66 in both directions. It will also provide access to Warcop village and the old A66, maintaining access to the local road network.

5.6.87 On the A66 eastbound carriageway a new left on/left off junction will be provided joining to the existing A66. This will provide access to Warcop Village, properties and land north of the existing A66.

5.6.88 On the A66 westbound carriageway a new left on/left off priority junction will be provided joining the road into Warcop village. The A66 will be predominantly at similar levels to existing ground level in this location and a new structure will be provided over the A66 to improve the connection between local footpaths and linking Warcop, Dogber Tarn and the North Pennines AONB.

Stakeholder engagement during alignment alternative development

5.6.89 There has been engagement with the MoD, Warcop Parish Council, local landowners and Statutory Bodies on the Blue Route alignment alternative. All have been given the opportunity to comment and engagement has shown there is support for this alternative when compared with the Preferred Route design announced in May 2020. As such, the Blue Route will be presented at Statutory Consultation in Autumn 2021, and all stakeholders have been encouraged to participate in the Statutory Consultation and make their comments formally through that channel.

Presentation of route alignment alternatives at July 2021 stakeholder engagement events

5.6.90 As there has been significant design development during PCF Stage 3 Preliminary Design for this section of the A66 between Appleby and Brough, 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 Warcop Parish Hall with the opportunity for stakeholders to book an appointment to experience a SoundLab (virtual listening tool) simulation of the proposals.

5.6.91 These events were held to present the four route alignment alternatives that had been developed to that point, each presenting a different combination of alternatives for the western, central and eastern sections of the route.

5.6.92 The route combinations were as shown in Table 8 below.

Table 8 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

5.6.93 The development of these alignment alternatives is presented above and the combinations discussed were as follows in Figure 13 below.

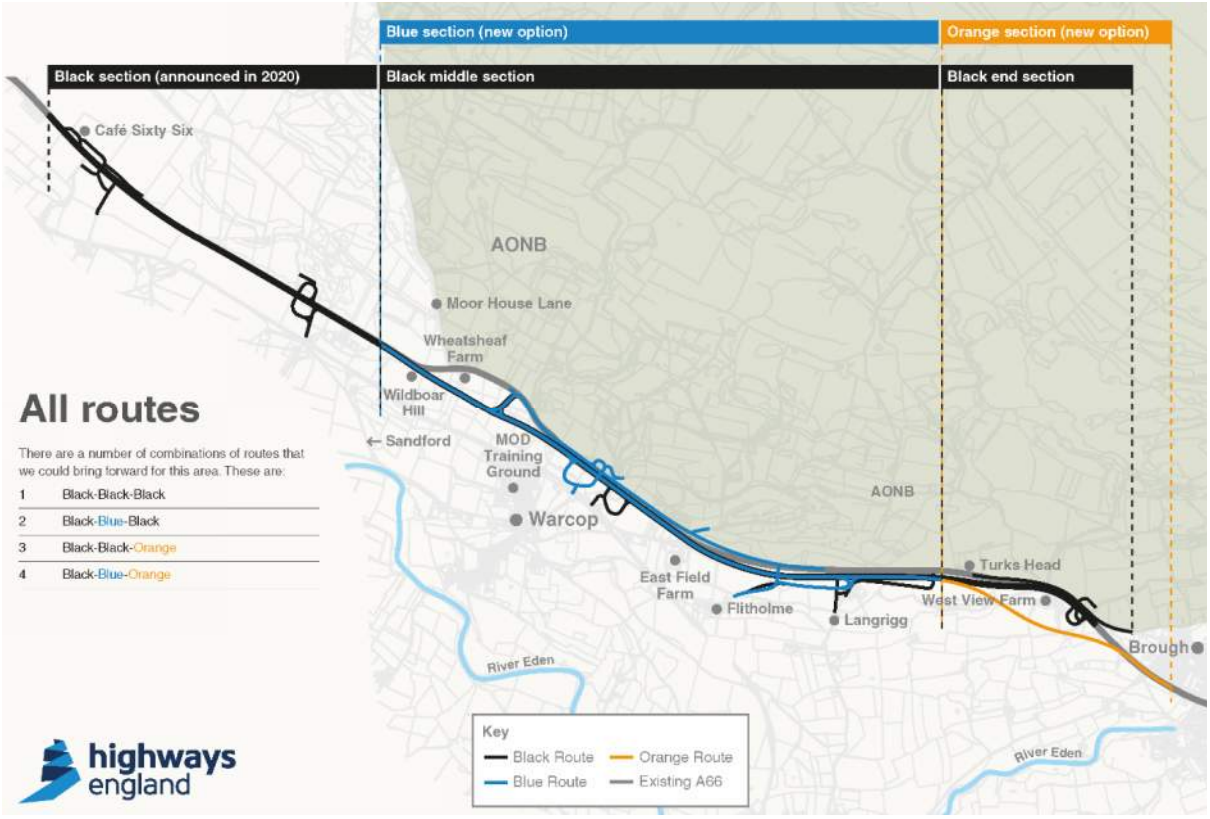

Figure 13 Alignment alternatives presented for Appleby to Brough at July 2021 stakeholder engagement events

5.6.94 The engagement event provided additional information for stakeholders to help them understand the alignment 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.

5.6.95 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 Highways England team that a route preference would be stated at Statutory Consultation.

Alignment alternatives sifting for Statutory Consultation

5.6.96 A sifting exercise has been carried out to compare the developed Preferred Route (Black) and alternative alignments for both the eastern (Orange) and central (Blue) sections of the route from Appleby to Brough. Alignments were assessed against engineering, environmental, traffic, economic, stakeholder principles, with commentary on policy conformity. In addition, Highways England's three priorities of Safety, Customer and Delivery were considered crucial to assessing the alignments ahead of Statutory Consultation. Refer to 4.1 for further detail on the assessment process and criteria.

5.6.97 In consideration throughout the Route Development Report the design team has had regard to the need to be in conformity with national planning policy as the project is developed, assessed, consulted on and prepared for development consent application. In this regard, the starting considerations in relation to the policy tests for development within or in the setting of the AONB have been set out. In this context, the main assessment requirements from paragraph 5.151 of the NNNPS have been considered, namely:

- *"the need for the development, including in terms of any national considerations, and the impact of consenting, or not consenting it, upon the local economy;*
- *the cost of, and scope for, developing elsewhere, outside the designated area, or meeting the need for it in some other way; and*
- *any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated."*

5.6.98 Having assessed the alternative route alignments for this scheme:

- Central section alignment – Black Route to the south of the existing A66 (outside the AONB) and the Blue Route (the preference) online with a local road connection to the north of the existing A66 (the local road is within the AONB).
- Eastern section alignment – Black Route (the preference) online with a local road connection and junction within the AONB and the Orange Route to the south of the current A66 alignment (outside of the AONB).

5.6.99 Within the PEIR it is identified that there is scope to develop the scheme outside the designated area (to be in full conformity with the second requirement) of paragraph 5.151 of the NNNPS. The alternative alignments outside the AONB are the Black Route within the central section and the Orange Route within the eastern section, as described above.

5.6.100 There are currently no significant differences in the construction cost estimates for the central section route alignments, although there is a cost difference in favour of the Black Route (compared to the Orange Route) for the eastern section.

5.6.101 From the assessments of the routes there are detrimental effects on the environment, landscape and recreational opportunities associated with both the Black Route within the central section and Orange Route within the eastern section, both wholly outside the AONB, which in combination outweigh any positive impacts for these routes (when compared to the routes with some incursion in the AONB). These considerations in combination provide the starting basis of the exceptional

circumstances for development of the routes partly within the AONB. The initial differing effects of the route alternatives in relation to environment, landscape and recreational opportunities which contribute to the aforementioned conclusion on the preferred alignments (Blue Route in the central section and Black Route in the eastern section) are set out below.

Alternatives sifting between Orange and Black Routes for eastern section alignment

5.6.102 A copy of the assessment matrix for the Appleby to Brough eastern section alignment alternatives sifting exercise can be found in Appendix A.3 and a summary of the matrix is shown below in Table 9. This assessment compared the Black Route with the Orange Route.

Table 9 Summary of sifting matrix for comparison between Orange and Black Routes for eastern section alignment of Temple Sowerby to Appleby

Discipline		Comparison with base Black Route
Engineering		
Highways - Standards Compliance		Neutral
Utilities		Neutral
Geotechnics and Earthworks		Worse
Structures		Worse
Drainage and Hydrology		Neutral
Construction Design Management (CDM)		Neutral
Construction Cost		Worse
Buildability		Better
Environment		
Biodiversity	Construction	Worse
	Operation	Worse
Road Drainage and Water Environment	Construction	Worse
	Operation	Worse
Geology, Soils, Contaminated Land and Groundwater	Construction	Better
	Operation	Neutral
Noise and Vibration	Construction	Neutral
	Operation	Worse
Landscape and Visual	Construction	Neutral
	Operation	Worse
Population and Human Health	Construction	Worse
	Operation	Neutral
Air Quality	Construction	Neutral
	Operation	Neutral
Material Assets and Waste	Construction	Neutral
	Operation	Neutral
Cultural Heritage	Construction	Neutral
	Operation	Neutral
Climate	Construction	Worse
	Operation	Neutral

Discipline	Comparison with base Black Route
Traffic and Economic	
Traffic Volume	Neutral
Journey Time Savings	Neutral
Safety	Neutral
Economy (not modelled with TUBA)	Neutral
Accessibility including WCH Opportunities	Neutral
Stakeholder	
Land Take	Better
Residential	Worse
Commercial	Worse
Recreation and Leisure	Neutral
Wider Community Issues	Worse

Engineering

5.6.103 Considering the engineering criteria, the Orange Route generally performed worse than the Black Route. The Orange Route would require a large structure over Low Gill Beck to span both the Beck and its floodplain, whereas a culvert extension would be required for the Black Route. This would increase costs for the Orange Route, primarily for the reasons below:

- Increased earthworks, increased land take and the need to import fill.
- A larger structure required over Low Gill Beck to span the beck and floodplain compared to culvert extension in the Black route.
- Increased length of new dual carriageway construction of approximately 500m to tie back into Brough Bypass by Musgrave Lane Overbridge.
- Costs including social and business impacts associated with acquiring Mains House and impacts on West View Dairy Farm.

5.6.104 Highways standards compliance, utilities, drainage and hydrology and CDM criteria were considered as having little to differentiate the schemes.

5.6.105 However, it was considered that the Orange Route would likely be easier to build despite the increased structures complexity over the Low Gill Beck as it can be built 'offline', keeping the old A66 open during works and only impacting road users to complete the tie-in to Brough Bypass.

Environment

5.6.106 The Orange Route presents significant environmental challenges, with the majority of criteria assessed returning a worse result for the Orange Route than the Black Route. Although some of these impacts may be reduced through further design development, it is not expected that this will be to the extent which would lead to an improvement over either the existing situation (current operational A66) or that proposed by development of the Black Route (developed Preferred Route).

5.6.107 The greater number of watercourse crossings proposed for the Orange Route could adversely affect the biodiversity of these features, and increase habitat fragmentation. Lowgill Beck is hydrologically linked to the River Eden so there is an

inherent risk to species present in the watercourse; this may also have a resultant effect on the SAC designation.

5.6.108 Further details of the environmental assessment criteria can be found in the PEIR.

Traffic

5.6.109 There is little to differentiate the routes when considering traffic and economics, for example traffic volume, journey time savings, safety and economy. From an accessibility perspective, a number of Public Rights of Way are severed by the Orange Route and blocked by the Black Route, but diversions via underpasses and overbridges are provided in both routes to ensure connectivity is maintained.

Stakeholder

5.6.110 From a stakeholder perspective, the Black Route generally performs better than the Orange Route. Although the Orange Route would require no land take from the AONB, the Black Route would require encroachment into the AONB on its boundary. However, the Black Route does not require the acquisition or demolition of residential properties to facilitate its construction, nor the increased agricultural land take required for development of the Orange Route. It is expected that the Orange Route would have a greater impact on the local community through this additional land take of agricultural, commercial and residential properties, as well as the severance of Public Rights of Way.

Exceptional circumstances

Effects on the Environment

5.6.111 For the eastern section alignment, the Black Route is better in relation to:

- Biodiversity (during construction and operation):
    - Construction impacts of the Black Route will be largely similar to those of the Orange Route with a number of exceptions including potential for greater impacts to additional watercourse crossing of Lowgill Beck, increased loss of riparian habitat, increased loss of woodland and increased risk of impact of habitats that have potential to support protected species.
    - During operation, the Orange Route will result in additional watercourse crossings compared to the Black Route, which increases the risk of impacts to the watercourses in the area and would result in increased habitat fragmentation.
- Noise and Vibration (during operation):
    - Compared to the Black Route, the Orange Route has more residential receptors at risk of experiencing adverse noise impact, more receptors expected to experience a beneficial effect from noise, and a greater number of PRoWs being at risk of adverse noise impact.
- Water environment (during operation):
    - The Black Route would result in an extension to the structure which crosses Low Gill Beck where it is already constrained by the A66. The Orange Route requires a new crossing of Lowgill Beck which leads to the potential for impacts to this watercourse as a result of potential constraint of the floodplain and impacts of construction related run off affecting water quality. The Orange Route is also located within a high-risk areas for fluvial flooding.

- Climate:
    - Greenhouse gas modelling has indicated that the Orange Route has the potential to lead to increased greenhouse gas emissions compared to the Black Route.
- Wider community and local economy (including population and human health):
    - The Orange Route will have a greater impact on the local population through additional land take of agricultural, commercial, and residential property, as well as the severance of PRoWs. A residential property would need to be demolished for the Orange Route. The increased land take from West View Farm will affect future expansion plans and would affect farm productivity due to loss of productive land.

5.6.112 In considering the above environmental matters in favour of the Black Route, account also needs to be taken of where the Orange Route may be better than the Black Route, in relation to the following criteria:

- Geology, soils, contaminated land and groundwater:
    - The Orange Route sits to the south of the North Pennines UNESCO Global Geopark, the border of which follows that of the AONB and avoids any direct impact on it.

5.6.113 In giving consideration to the effects on the environment overall the Black Route is clearly preferred to the alternative Orange Route.

Landscape and visual impacts(operations)

5.6.114 During operation, the principal features of the Orange Route, which contribute to its greater visual and landscape impact when compared with the Black Route are:

- The Orange Route alignment would introduce a large embankment required to take the route alignment to the south of West View Farm and enable construction of a structure over Low Gill Beck and an underpass under new A66 to accommodate livestock, agricultural vehicles and WCH users.
- The Orange Route will be through open countryside and will introduce a new infrastructure corridor within this area. In contrast the improvements online (with the Black Route) will involve work to or alongside the existing A66.

5.6.115 The Orange Route will result in permanent loss of trees, woodland and hedges and alteration of field pattern and size, with a much lower extent of impact with respect to these features for the Black Route.

5.6.116 The impacts on the setting of the AONB for the Orange Route will be considerable albeit in a limited area. There will also be considerable impacts on landscape character of the Broad Valleys sub-type. The Orange Route alternative will be a very noticeable feature in views from the wider public rights of way network in this area and a notable influence on views from Brough Castle.

5.6.117 Overall the impacts are considered to be greater with the Orange Route alternative due to the scale of the offline section and the impacts on landscape character, setting of the AONB and impacts on visual amenity. With regard to landscape and visual impacts the Black Route is preferred to the alternative Orange Route.

Recreational opportunities

5.6.118 There are no notable differences between the Black and Orange routes in relation to recreational opportunities. A number of Public Rights of Way are affected by both

routes, but diversions via underpasses and overbridges in both routes ensure connectivity maintained so Neutral impact.

Conclusion

5.6.119 The sifting exercise, set out above, concluded that for the eastern section of the Appleby to Brough scheme, the Black Route was preferred over the Orange Route. An initial assessment of the route alignments against the policy considerations of the NNNPS (paragraph 5.151) has been undertaken. As set out above, this assessment supports the case for exceptional circumstances for the incursion of the Preferred Route alignment (the Black Route) into the AONB. Further work will be undertaken, informed by the feedback received during Statutory Consultation, to build on this case so that the full exceptional circumstances case can be part of the application for development consent.

Alternatives sifting between Blue and Black Routes for central section alignment

5.6.120 A copy of the assessment matrix for the Appleby to Brough eastern section alignment alternatives sifting exercise can be found in Appendix A.4 and a summary of the matrix is shown below in Table 10. This assessment compared the Black Route with the Blue Route.

Table 10 Summary of sifting matrix for comparison between Blue and Black Routes for central section alignment of Temple Sowerby to Appleby

Discipline		**Comparison with base Black Route**
Engineering		
Highways - Standards Compliance		Neutral
Utilities		Neutral
Geotechnics and Earthworks		Better
Geo-Environmental		Worse
Structures		Worse
Drainage and Hydrology		Better
Construction Design Management (CDM)		Neutral
Construction cost		Neutral
Buildability		Neutral
Environment		
Biodiversity	Construction	Worse
	Operation	Worse
Road drainage and water environment	Construction	Better
	Operation	Better
Geology, soils, contaminated land and groundwater	Construction	Neutral
	Operation	Neutral
Noise and vibration	Construction	Neutral
	Operation	Better
Landscape & Visual	Construction	Neutral
	Operation	Neutral
Population & Human Health	Construction	Worse
	Operation	Better

Discipline		Comparison with base Black Route
Air quality	Construction	Neutral
	Operation	Neutral
Material assets and waste	Construction	Neutral
	Operation	Neutral
Cultural Heritage	Construction	Worse
	Operation	Neutral
Climate	Construction	Neutral
	Operation	Neutral
Traffic and Economic assessment		
Traffic volume		Neutral
Journey Time Savings		Neutral
Safety		Better
Economy (not modelled with TUBA)		Neutral
Accessibility including WCH opportunities		Better
Stakeholder		
Land take		Neutral
Residential		Worse
Commercial		Better
Recreation and leisure		Neutral
Wider community issues		Better

Engineering

5.6.121 The Blue Route presented a number of improvements over the Black Route when considering the engineering criteria used for the sifting exercises. There would be reduced earthworks and material import, which would contribute to cost savings, carbon reductions and vehicle movements and associated congestion during construction of the scheme. This is possible as the Blue Route reduces a circa 8m high embankment that was proposed as part of the Black Route. The Blue Route also has a lesser impact on the floodplain past Warcop village, although there may be some associated impact on agricultural land take for provision of drainage ponds.

5.6.122 However, from a geo-environmental perspective there is a significant risk of increased contamination in soil and groundwater for the Blue Route, given its proximity to the Warcop depot and other MoD and agricultural land uses to the north of the existing A66. However, this may be mitigated through remediation of any contaminated ground prior to works starting.

5.6.123 The Blue Route would require an additional structure when compared to the Black Route. The majority of other engineering criteria showed no clear differentiation between the two routes.

Environment

5.6.124 The environmental assessment of these alignments was complex, with some disciplines noting a preference for one route whilst others were negatively impacted by it. Most disciplines returned a neutral assessment as there were not sufficient

differentiators between the routes for there to be a clear preference. However, there was a clear preference for the Blue Route in terms of its visual impact and impact on the AONB. Further details on the implications of impact on the AONB are provided below.

5.6.125 The impacts of the Blue Route on biodiversity would be largely similar to those of the Black Route with a number of key exceptions which on balance would make the Blue Route the least preferable of the two alignments. These exceptions include, but are not limited to, additional watercourse crossings, loss of woodland and negative impacts on Sandford Mire County Wildlife Site. It is expected however that the majority of these significant impacts could be mitigated through further design and that biodiversity should not therefore be a driving factor in the decision to present one route over the other.

5.6.126 The Blue Route does impact additional heritage features when compared to the Black Route. This includes a feature known as Platform Earthworks to the north of the existing A66, just east of the existing MoD site.

5.6.127 When considering road drainage and water environment, the Blue Route is preferred over the Black Route as it sits further north of the floodplain of Cringle Beck, therefore reducing potential impacts on this floodplain. This also facilitates more opportunity to reduce the risk of construction related impacts on the watercourse.

5.6.128 Further details of the environmental assessment criteria can be found in the PEIR.

Traffic

5.6.129 The Blue Route presents overall greater benefits than the Black Route when traffic is assessed, although it should be noted that there were no significant differences in relation to traffic volume or journey time savings. The Blue Route offers an improvement in accessibility and provision of WCH facilities over the Black Route. For the Black Route, to allow Flitholme residents access to the old A66 it was necessary to construct a staggered crossroads and new local road from Langrigg to Gatehouse on the south side of the new A66, with an overbridge to connect to the old A66. This increased land take and impact on residents and raised objections during stakeholder engagement. The Blue Route provides a development of this proposal at Langrigg, with an underpass for Flitholme connected to the old A66, which removes the need for the staggered crossroads and overbridge arrangement.

Stakeholder

5.6.130 Stakeholder benefits of the Blue Route over the Black Route include commercial benefits for farmers and business owners, the actioning of feedback received through ongoing engagement and provision of replacement facilities for both the MoD and the Brough Hill Fair. However, it should be noted that the Blue Route does impact a number of receptors not previously affected by the Black Route although there are fewer residential receptors at risk of experiencing adverse noise impact.

Exceptional circumstances

Effects on the environment

5.6.131 For the central section alignment, the Blue Route is better in relation to:

- Noise (during operation):
    - Fewer residential receptors at risk of experiencing adverse noise impact.
    - More receptors expected to experience a beneficial effect from noise.
- Water environment (during construction):

- The Blue Route sits at a greater distance to the north of the floodplain of Cringle Beck reducing the risk of impacts on the floodplain.
- The increased distance of the Blue Route from Cringle Beck also allows for greater opportunity to reduce the risk of construction related impacts and pathway to the watercourse.

- Wider community and local economy (including population and human health):
  - From a human health perspective, the Blue Route has fewer residential receptors at risk of experiencing adverse noise impact and more receptors expected to experience a beneficial effect from noise.
  - For Brough Hill Fair, annually held by the traveller community, the Blue Route enables what is left of the existing Brough Hill Fair field and an area currently owned by the MoD and used for visiting troops and cadets to camp in, to be used as a replacement site. It would provide an area similar to the existing site that is lost to the scheme and in addition allows for improved facilities. The Black Route does not allow or enable this and an alternative site will be required to be found that is not near the existing nor of suitable provision. There is not yet any identified alternative location or landowner and user agreement for an alternative site away from its current location.
  - The Blue Route is preferred as it moves further to the north away from West View Diary Farm onto the north side of the existing A66. This has a number of benefits for the farm business ranging from biosecurity, reduced potential disturbance to livestock and reduced potential for vehicle accident strikes. The Blue Route moves the edge of the new A66 to approximately 30m from the edge of the farm buildings, an improvement on the circa 15m in the Black Route.
  - There is one negative population and human health consideration associated with the Blue Route arising from the requirement for land take from residential receptors during construction which isn't required in the Black Route. Overall, the positive community benefits following construction, associated with the greater distance of the route from residential properties outweigh this negative effect.

5.6.132 In considering the above environmental matters in favour of the Blue Route, account also needs to be taken of where the Black Route may be better than the Blue Route, in relation to the following criteria:

- Biodiversity:
  - Construction impacts of the Blue Route overall will be largely similar to those of the Black. However, in the preliminary environmental information there are a number of specific exceptions which are identified including two additional watercourse crossings which will increase the potential for impacts to the watercourse and increase loss of 500m of woodland, with the potential loss of a number of other priority habitats and the protected species supported by them.
- Cultural heritage:
  - An additional heritage feature, known as Platform Earthworks to the north of the existing A66 just east of the existing MoD site, is potentially impacted as a result of the Blue Route compared to the Black.

5.6.133 In giving consideration to the effects on the environment taken together, the Blue Route is preferred to the alternative Black Route.

Landscape and visual impacts

5.6.134 Regarding landscape and visual impacts, the principal features of the Blue Route, which contribute to its preference compared with the Black Route are:

- The Blue Route road is on a much lower embankment than the Black Route which is on an 8m embankment. Therefore, visual impact associated with the Blue Route is lower and setting impact on the AONB is also lower when compared with the Black Route.
- The road associated with the Blue Route would result in development within an existing road corridor on land that is already disturbed which will reduce its visual and landscape impact compared with the Black Route.
- With this Blue Route, encroachment into the AONB is kept to the edge of the AONB bordering the existing A66 highway, in an area that is also already impacted and in part characterised by MoD infrastructure.
- Encroachment into the AONB is for a local road only with the Blue Route, which would be designed to be incorporated and embedded into the landscape and more appropriate to the AONB.

5.6.135 In addition, there is the potential to mitigate the Blue Route, thereby reducing its overall impact on the purposes and setting of the AONB. These opportunities do not exist to the same extent for the Black Route.

5.6.136 The Blue Route also facilitates the removal of an MoD compound providing an opportunity for restoration of previously developed land in the AONB.

5.6.137 With regard to landscape and visual impacts, following consideration of the potential for moderation (through incorporation of mitigation) of impacts the Blue Route is preferred to the alternative Black Route.

Recreational opportunities

5.6.138 The construction impacts of the Blue Route overall will be largely similar to those of the Black. However, there are some specific additional opportunities relating to the Blue Route and accessibility including:

- There would be adverse impacts on walking, cycling and horse-riding network with the Black Route, that would not arise from the Blue Route, including:
    - To enable Flitholme residents to maintain access to the old A66 for the Black Route it would be necessary to include the construction of a staggered crossroads and new local road from Langrigg to Gatehouse on the south side of new A66, with an overbridge to connect to the old A66. This would result in increased land take and impact on residents at Langrigg.
    - An existing footpath past East Field Farm would be stopped up in the Black Route, However, in the Blue Route a diversion to Flitholme Lane can be provided so the new underpass can be used to gain access to routes north of the old A66.

5.6.139 In giving consideration to recreational opportunities, the Blue Route is preferred to the alternative Black Route.

Conclusion

5.6.140 The sifting exercise, set out above, concluded that for the central section of the Appleby to Brough scheme, the Blue Route was preferred over the Black Route. An initial assessment of the route alignments against the policy considerations of the NNNPS (paragraph 5.151) has been undertaken. As set out above, the assessment supports the case for exceptional circumstances for the incursion of the Preferred Route alignment (the Blue Route) into the AONB. Further work will be undertaken, informed by the feedback received during Statutory Consultation, to build on this case so that the full exceptional circumstances case can be part of the application for development consent.

Warcop Parish Council Proposed Route 'Option I North'

5.6.141 Throughout PCF Stage 3, design development has included consideration of stakeholder proposals through engagement. During PCF Stages 1 and 2, Warcop Parish Council (WPC) suggested a potential route for the new A66. This has again been suggested at PCF Stage 3 Preliminary Design and proposed that the new A66 go further to the north of existing A66 and Warcop village, through the MoD ranges and facilities, and through the North Pennines Area of Outstanding Natural Beauty. Warcop Parish Council proposed that this route would reduce the perceived potential negative impacts of the A66 scheme on homes and businesses.

5.6.142 Warcop Parish Council have also conducted a petition, for which the majority of respondents show support for their proposed route. The A66 team have been engaging with Warcop Parish Council throughout the preliminary design process and have notified the Council that their proposed route will not conform with national planning policy and therefore could not be presented at Statutory Consultation or ultimately as part of the Development Consent Order application.

5.6.143 As 'Option I North' contains a significant incursion into the AONB, it is highly unlikely that it would be granted consent at DCO application.

5.6.144 In addition, the position of Natural England must be considered. They are a key stakeholder for the A66 scheme and a publicly-funded statutory nature conservation body. Feedback has been received from Natural England and reiterates that a route with a significant incursion into the AONB where there are clear feasible alternatives would be unlikely to be supported in the context of the NNNPS.

5.6.145 This explanation was set out in a letter to Warcop Parish Council in March 2021. The rationale and logic presented in that letter is unchanged and as such the suggestion has not been considered further at PCF Stage 3 Preliminary Design.

5.6.146 In addition to the policy considerations outlined above, there have also been concerns raised by the MoD regarding the impact of the proposed Warcop Parish Council northern route on their training facilities and ranges. Land take within MoD property must be by agreement as per paragraph 135 of the Planning Act 2008, with development proposals in conformity with the NNNPS as outlined in 5.6.79 above.

Statutory Consultation Autumn 2021

5.6.147 Plans and profiles for the proposals taken forward to Statutory Consultation in Autumn 2021, as well as alternatives assessed and discounted during PCF Stage 3 Preliminary Design, can be found in Volume 2 of the Route Development Report.

5.6.148 As outlined above, Appleby to Brough is one of the schemes where further consideration of alternative alignment routes has occurred in response to stakeholder

feedback and to consider further minimising the potential impact on the North Pennines AONB located to the north of the existing A66.

5.6.149 The developed Preferred Route alignment is being presented for the western and eastern parts of the route. However, this has been combined with an alternative alignment (the Blue alternative central route) to produce a new route combination as shown in Table 11.

Table 11 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

5.6.150 The Route as developed for Statutory Consultation in Autumn 2021 is summarised below.

5.6.151 From the end of the existing Appleby Bypass (near Café Sixty Six) to a point west of Wildboar Hill, it is proposed to use the existing A66 as the eastbound carriageway and build a new westbound carriageway to the south. A new junction will be provided at the B6259 at Sandford to provide access to and from both the eastbound and westbound carriageways.

5.6.152 The new dual carriageway will continue in a south-easterly direction, deviating from the line of the existing A66 near Moor House Lane, running through Wheatsheaf Farm. The route will be predominantly elevated through this section. From East Field Farm, the new A66 will continue to follow a line to the south of the old A66 to tie in to Brough Bypass, near West View Farm.

5.6.153 The old existing A66 will be used for local journeys between Moor House Lane and Turks Head. To provide a connection to Brough and the eastern end of the scheme, it is proposed to build a new section of local road that runs parallel to the north of the new A66 to connect to Brough Main Street.

5.6.154 Between Wheatsheaf Farm and Turks Head, it is proposed to move the new A66 further away from the community of Warcop compared to the current Preferred Route as announced in May 2020. This will be achieved by using the old A66 as the new eastbound carriageway to the south rather than building both new carriageways to the south. This results in the route being around 15m further north than the current Preferred Route.

5.6.155 It is proposed that between Wheatsheaf Farm and Turks Head, the route will follow the line of the existing A66. It is also proposed that a new road for local journeys will be constructed to the north of the new A66. Part of this new local road will result in minor encroachment into the boundary of the AONB. It is also recognised that some residents and businesses to the north of the existing A66, previously unaffected by the Preferred Route may now be impacted by these proposals.

5.6.156 It is 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. Constructing this route closer to existing ground level will significantly reduce the visual impact of the route. The highway network will be moved further north away from Warcop village, but the new local road will encroach further in to the AONB and will require demolition of one of

the MoD training camp facilities whilst impacting the other compound into which the lost compound will be located.

5.6.157 A new local road is also proposed to provide connection between Flitholme and Langrigg, with a westbound-only junction at Langrigg. Another new local road is proposed at Turks Head to connect Langrigg to the old A66 via a new overbridge.

5.6.158 It is proposed to provide new track connections, including an overbridge to cross the new A66, for local access to Brough for land and property owners at the eastern end of the scheme.

5.6.159 As the Preferred Route alignment will 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 above. The assessment supports the case for exceptional circumstances for the incursion of the Preferred Route alignment into the AONB. Further work will be undertaken, informed by the feedback received during Statutory Consultation, to build on this case so that the full exceptional circumstances case can be part of the application for development consent.

5.7 Bowes Bypass

Description of existing scheme

5.7.1 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.

5.7.2 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.

5.7.3 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.

5.7.4 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.

5.7.5 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.

5.7.6 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 close proximity to the Pennine Way and Walney to Wear WCH routes, which pass through Bowes village and over the A66 via Clint Lane bridge at Bowes, make this a less attractive route for long-distance walking. There is one bus-stop lay-by westbound on the A66 near Clint Lane Bridge, and another eastbound on the Bowes Interchange eastbound off-slip. No footways or paved WCH facilities exist throughout this section of the A66.

5.7.7 This section of the A66 carries approximately 16,300 vehicles per day, 24% of which are heavy goods vehicles.

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

5.7.8 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.

5.7.9 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.

5.7.10 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 Highways England's Safety, Engineering and Standards (SES) team and a formal departure from standard application would be required for this.

5.7.11 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.

5.7.12 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.

5.7.13 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 also subject to demolition.

5.7.14 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

5.7.15 The single option developed throughout PCF Stages 1 and 2 based on the above description and was presented at public consultation in Summer 2019 as Option J.

5.7.16 The PCF Stage 2 Scheme Assessment Report stated that there were no post-consultation design changes to the options proposed.

Preferred Route Announcement May 2020

5.7.17 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

5.7.18 At PCF Stage 3 Preliminary Design, these proposals have been developed further for Statutory Consultation in Autumn 2021 and are 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.

5.7.19 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. Along a length of approximately 80m, the carriageway encroaches into the AONB by a maximum of 1.8m. This results from the AONB boundary being tight to the existing edge of carriageway and overlapping existing road verge at the western extent of the scheme and the widening proposed to achieve two lanes in both directions pushing this carriageway edge further southwards.

5.7.20 Given this slight incursion into the AONB with the Preferred Route for the Bowes Bypass scheme, the main assessment requirements from paragraph 5.151 of the NNNPS have been considered, namely:

- *"the need for the development, including in terms of any national considerations, and the impact of consenting, or not consenting it, upon the local economy;*
- *the cost of, and scope for, developing elsewhere, outside the designated area, or meeting the need for it in some other way; and*
- *any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated."*

5.7.21 There is potential to develop the scheme outside the designated area. This alignment alternative moves the proposed dual carriageway alignment approximately 4m to the north at its maximum between Clint Lane Bridge and the western scheme extent so that the southern kerb line matches the existing kerbline over the extent of the AONB. Construction to minimise the impact on the AONB is likely to be more costly and more complex, due to the requirement for approximately 3,500m^3 of additional earthworks compared to the Preferred Route.

5.7.22 This work would also require diversion of existing utilities outwith the proposed road construction. The shift in horizontal alignment would require additional land and new road construction, resulting in more traffic management phases to complete the works, potentially adding several weeks to the construction programme. This increase in complexity and programme would increase operative time on the road network and cause more disruption to road users. This alternative has then been compared to the developed Preferred Route. The findings of this assessment are set out in Table 3-3 Bowes Bypass of PEIR Chapter 3: Alternatives.

5.7.23 The principal findings from this assessment are that the alternative route outside the AONB has increased impacts upon deciduous woodland and additional agricultural land requirements in comparison with the Preferred Route design. The change associated with development of the Preferred Route within the AONB will be too small to affect key qualities and purposes of the designation and overall the environmental impacts of the alternative outside the AONB are greater.

5.7.24 In conclusion, in relation to the policy tests of paragraph 5.151 of the NNNPS there are exceptional circumstances for development of part of the route within the AONB. This will involve minimal works within the AONB, as the works largely affect land within the existing highways boundary. There would be greater environmental effects and costs associated with the alternative route alignment outwith the AONB.

5.7.25 A departure from standard for a reduced cross section through the existing Clint Lane Bridge structure is required in order to retain the existing structure in-situ. The design team are currently progressing this which may lead to design development following Statutory Consultation. This may include a reduced carriageway cross section to retain the existing structure or if the departure from standard is not approved then this may require a replacement, wider, structure to be considered.

Statutory Consultation Autumn 2021

5.7.26 Plans and profiles for the proposals taken forward to Statutory Consultation in Autumn 2021 can be found in Volume 2 of the Route Development Report.

5.7.27 The route of the A66 around Bowes will closely follow the existing road alignment to the north of the village, with a new adjacent eastbound carriageway to the north. The existing carriageway will be changed to carry westbound traffic. It is currently proposed that the new eastbound carriageway will be constructed to the north of the existing road, transitioning to the existing dual carriageway to the western and eastern scheme extents. However, this is subject to ongoing discussions with SES regarding retention of the existing Clint Lane Bridge structure and as such may be developed further post-consultation.

5.7.28 It is proposed that at the junction with the A67, a new underbridge will carry the proposed eastbound carriageway. A new eastbound on-slip and westbound off-slip is proposed to accommodate traffic travelling to and from the east. These will provide access to and from the A67 and Bowes village. Some derelict buildings at the junction and a barn structure will require demolition. The A67 will 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 will be realigned to the north to make way for the new eastbound A66 carriageway. The existing westbound on-slip will have minor improvements made to create a safer merge.

5.7.29 Existing access from Bowes to the A66 via the Roman Road known as The Street and locally as Low Road, will be stopped up. The upgraded grade-separated Bowes Junction will provide safer access to the A66 for local traffic.

5.7.30 A new overpass bridge will be constructed to ensure Stone Bridge Farm, Mid Low Fields Farm and High Broats Farm have continued access to the A66 via the improved junction at the A67.

5.7.31 The existing westbound lay-by will be relocated to the east of Stone Bridge Farm to make way for the new westbound off-slip.

5.7.32 Due to weight restrictions on the bridge over the River Tees, this route will still not permit HGV access into Barnard Castle and HGVs will continue to access Barnard Castle via the A66 at Rokeby.

5.8 Cross Lanes to Rokeby

Description of existing scheme

5.8.1 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 with the exception of 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.

5.8.2 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.

5.8.3 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.

5.8.4 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.

5.8.5 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 ot the Teesdale Way WCH route. No footways, paved WCH facilities or bus-stop lay-bys exist within the scheme extents.

5.8.6 This section of the A66 carries approximately 16,900 vehicles per day, 27% of which are heavy goods vehicles.

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

5.8.7 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.

5.8.8 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.

Public consultation Summer 2019

5.8.9 The options presented at public consultation in Summer 2019 were Option K and Option L. 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.

5.8.10 Option K 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.

5.8.11 Option L is similar to Option K 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.

5.8.12 The PCF Stage 2 Scheme Assessment Report stated that there were no post-consultation design changes to the options proposed.

Preferred Route Announcement May 2020

5.8.13 The Preferred Route Announcement of May 2020 concluded that Option K, the southern bypass, was the preferred route to be taken forward to PCF Stage 3 Preliminary Design.

5.8.14 Option K 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. This option 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

5.8.15 At PCF Stage 3 Preliminary Design, the proposals at Cross Lanes and Rokeby junctions have been developed further for Statutory Consultation in Autumn 2021 and

are 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.

5.8.16 Figure 14 summarises the development of the scheme during PCF Stage 3 with respect of alignment alternatives assessment, detailed in the sub-sections that follow.

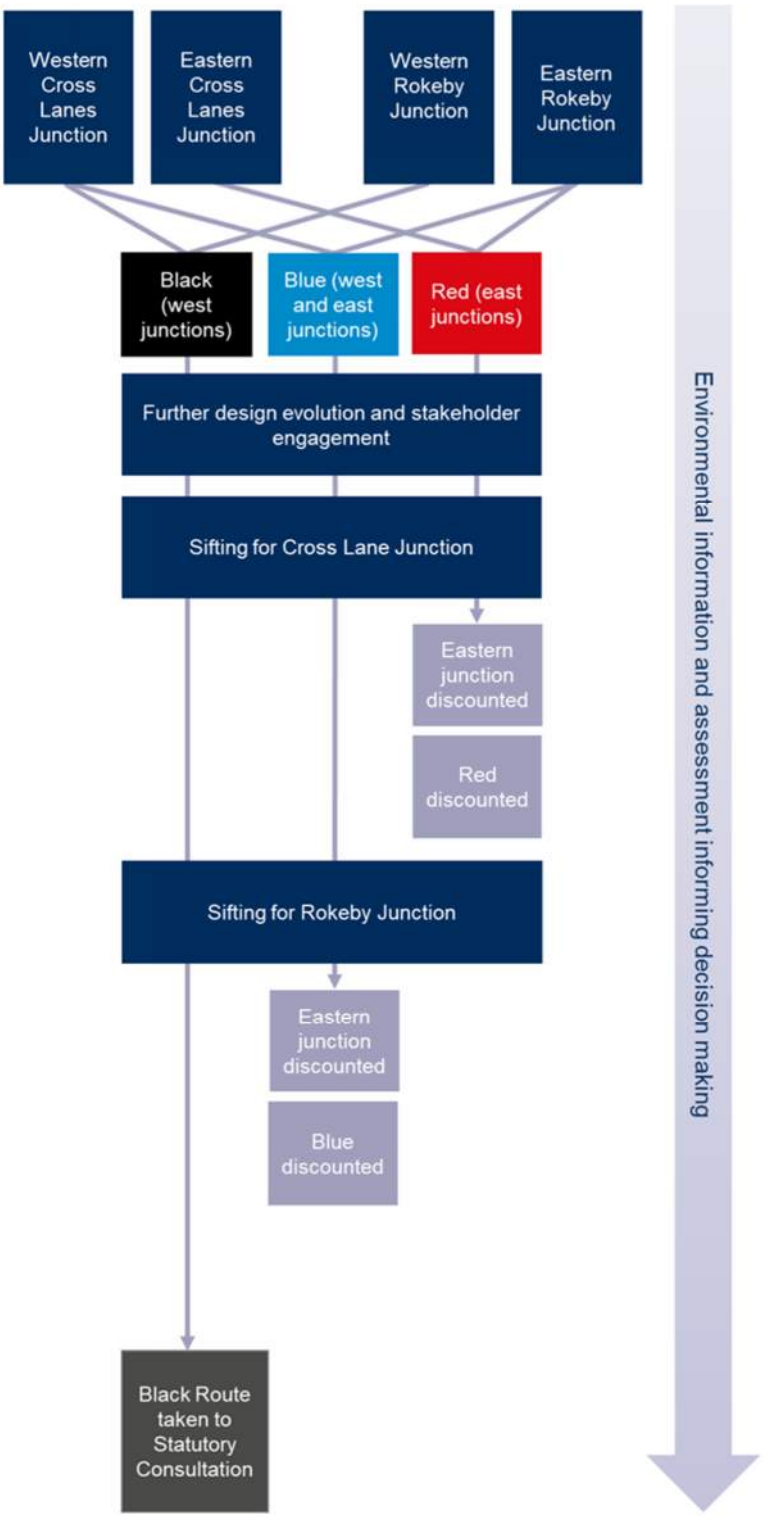

Figure 14 PCF Stage 3 scheme development summary for Cross Lanes to Rokeby

5.8.17 Early in PCF Stage 3 Preliminary Design, a detailed assessment of the PCF Stage 2 Option Selection design was carried out. This assessment covered aspects of the highway design such as validation against the latest standards, junction design and review of proposed connections.

5.8.18 In addition, since announcement of the Preferred Route in May 2020, several environmental and ecological studies have been conducted to develop the route and to explore how to further minimise the overall impact of the project, where possible. Regular meetings with landowners and members of the local community have also taken place, including a virtual engagement event in November 2020 and an in-person drop-in engagement session held in The Witham Community Arts Centre in August 2021.

5.8.19 This led the design team to consider alternatives for the junctions at Cross Lanes and Rokeby, the development of which is outlined below.

Development of junctions proposals from Preferred Route Announcement

5.8.20 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.

5.8.21 Early PCF Stage 3 Preliminary Design at Cross Lanes led to the following:

- It was proposed to remove the existing junctions which provide access to the B6277, Moorhouse Lane and Cross Lanes Organic Farm to eliminate the need for right turn manoeuvres.
- It was proposed that access to these roads would instead be via a new overbridge and road connecting the B6277 and Moorhouse Lane.
- New slip roads connecting into this new road would be provided to allow users to safely join and leave the A66 in both directions.

5.8.22 At Rokeby:

- It was proposed to provide a new junction to the west of St Mary's Church, giving access to the existing A66 and Rokeby. The junction would cross above the A66 via a new overbridge.
- New merge and diverge lanes would be provided which would allow users to safely join and leave the A66 in both directions.
- Following the completion of the new A66 alignment south of the Old Rectory and St Mary's Church, the existing A66 would be detrunked between the new junction and Barnard Castle Road to maintain access to properties and the existing HGV route to Barnard Castle.

5.8.23 These proposals were presented to the public at a virtual engagement event in November 2020 as part of the Winter 2020 Project Update. An extract from the brochure produced for this event is shown in Figure 15 below.

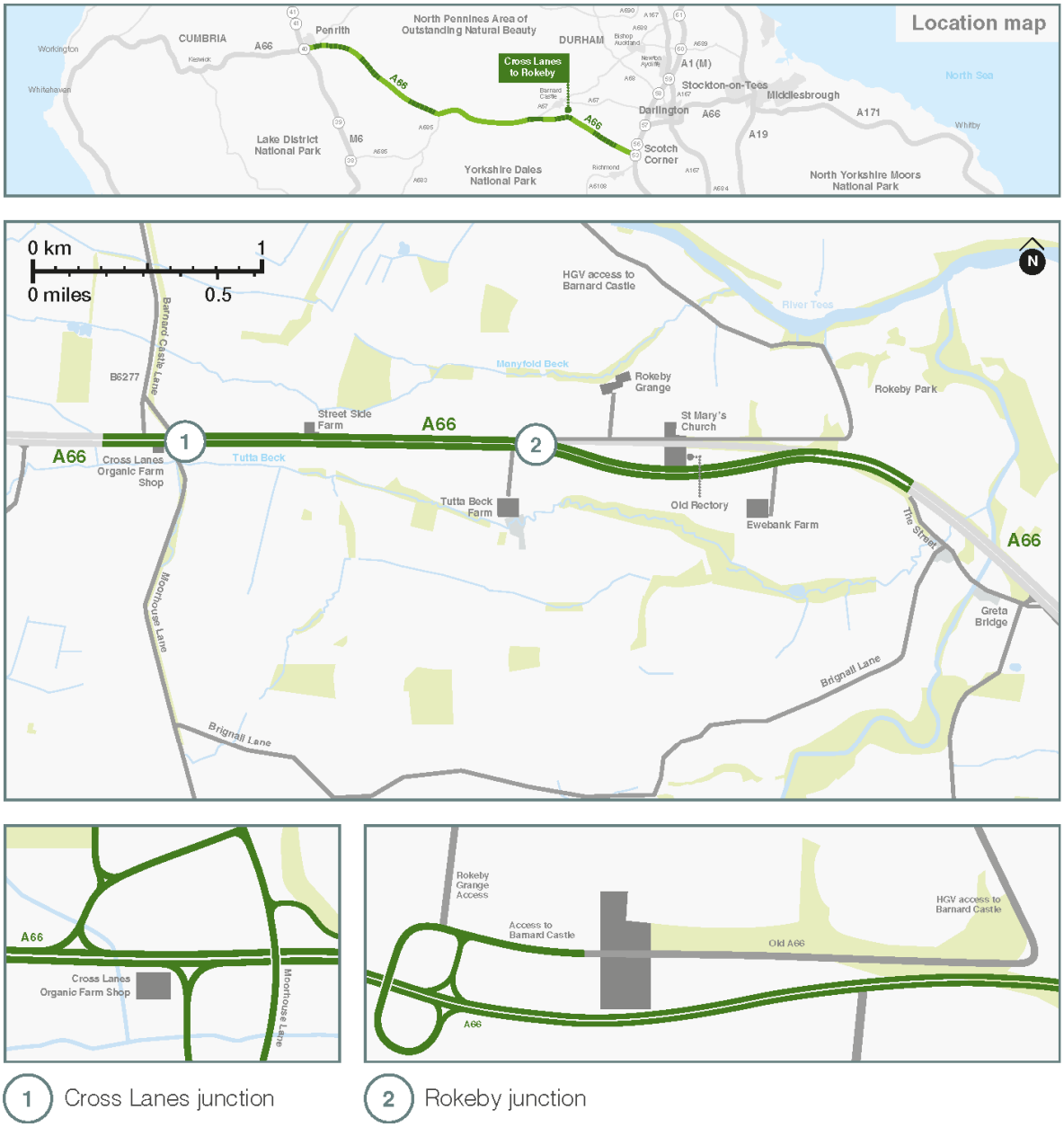

Figure 15 Winter 2020 Project Update extract for Cross Lanes to Rokeby

Development of junctions following Winter 2020 Project Update

5.8.24 As Preliminary Design progressed following the Project Update of Winter 2020, it was noted that the proposed junction at Cross Lanes required the use of non-compliant hard-strip and central reserve widths on the mainline around a key junction location, which would have required a departure from standard, whilst the proposed slip road layout and dualling moved the live edge of carriageway to within 2.7m of the farmhouse at its narrowest point, previously 4.9m.

5.8.25 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.

5.8.26 The westbound on-slip road encroached into the Cross Lane farm shop and there were also constructability and cost implications with the PCF2 design.

5.8.27 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. It would also allow for a more compliant mainline cross-section width.

5.8.28 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

5.8.29 The design team continued to develop the junction proposal for Cross Lanes as described above and shown below in Figure 16. As Preliminary Design progressed, this came to be known as the baseline junction for Cross Lanes.

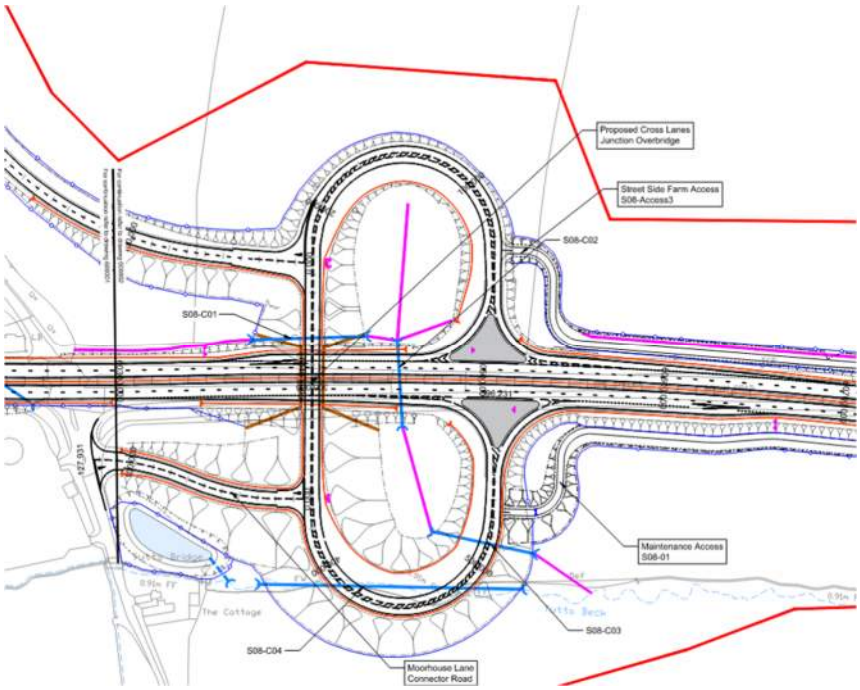

Figure 16 Baseline eastern junction for Cross Lanes

5.8.30 Preliminary traffic modelling showed that the proposals for Cross Lanes and Rokeby Junctions may encourage more traffic (cars and light goods vehicles) to use the B6277 to access Barnard Castle, as the proposals at Rokeby would result in a longer route for traffic coming from the east, which would ordinarily travel by Barnard Castle Road to access the town. As the B6277 route is not suitable for HGV traffic in Barnard Castle, given the 7.5 tonne weight limit on an existing bridge structure along the route, HGVs accessing Barnard Castle and to the east would still utilise Barnard Castle Road.

5.8.31 This analysis corroborated feedback that had been received from local stakeholders following the Preferred Route Announcement and the commencement of PCF Stage

3. This feedback noted concerns about the potential for increased traffic on the B6277 due to the junction locations. Concerns were also raised in regard to the safety of the Rutherford Lane and Moorhouse Lane, both in terms of pedestrian/cyclist and vehicular movements.

5.8.32 In particular the WCH focus group for the scheme informed the design team that Rutherford Lane to the B6277 Moorhouse Lane is a popular route for walkers and cyclists. This route currently crosses the existing A66 on a right-left stagger, with no formal crossing facilities.

5.8.33 The junctions are located on a gradient and at a point where the dual carriageway to the west has just formed whilst the eastbound carriageway has just reduced from two lanes to one. This means that there is a tendency for drivers heading westbound to accelerate as they are passing Rutherford Lane whilst in the eastbound direction drivers have often made a last-ditch attempt to overtake before the single carriageway forms, meaning that speeds can be higher here. Previous solutions did not seek to change the principles of the junction in regard to the right-left stagger, leaving the gap in the central reserve open.

5.8.34 Local landowner concerns were raised regarding the visual impact of the proposed overbridge and embankments on nearby properties and on potential land take associated with the junction layout (however acknowledging they and additional landowners would be potentially impacted with an alternative).

5.8.35 Following a review of these concerns and other stakeholder feedback, an alternative proposal was developed for Cross Lanes that moved the junction to the west of the existing Cross Lanes priority junction. This alternative has been developed to concept stage and it is expected the layout will be further refined following Statutory Consultation. However, following preliminary design development it was shown to have the potential to afford several benefits over the baseline junction originally developed following the PRA and Winter 2020 Project Update. Refer to Figure 17 for a plan of the proposal, known as the alternative junction for Cross Lanes.

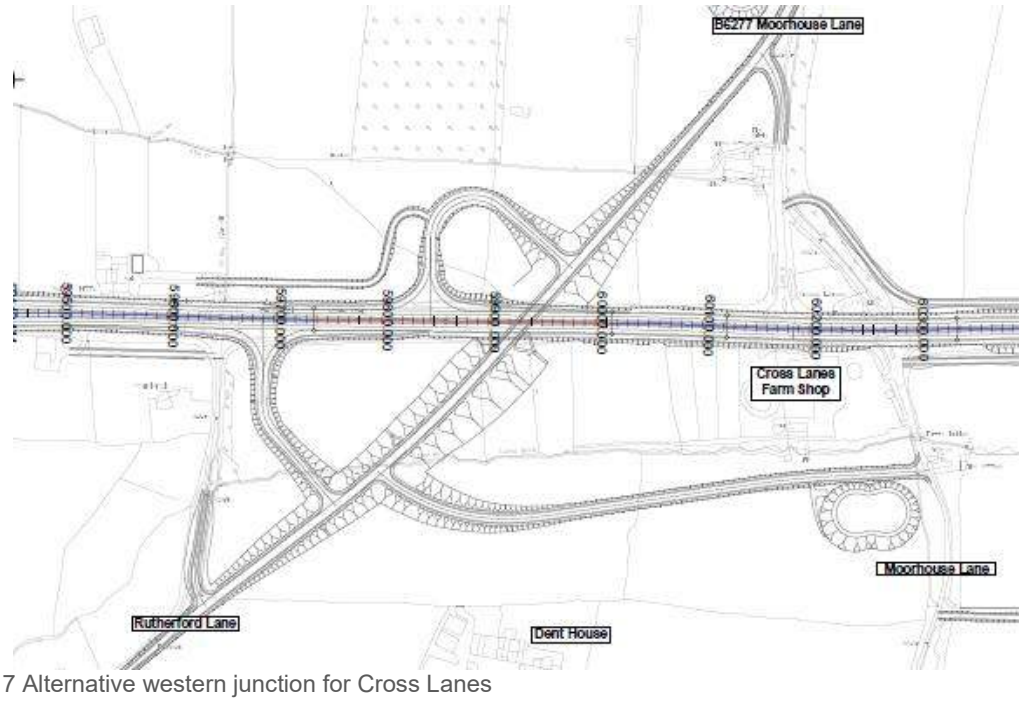

Figure 17 Alternative western junction for Cross Lanes

5.8.36 The alternative junction proposes a compact grade-separated junction, with a link road connecting Rutherford Lane in the south with the B6277 Moorhouse Lane in the north. This alternative junction has more conventional turning movements than the baseline junction, which will contribute to safety improvements for the scheme. It is intended that all movements be retained between the A66, Rutherford Lane and Moorhouse Lane.

5.8.37 The link from Rutherford Land to the B6277 in the alternative junction provides a more direct, shorter and safer crossing of the A66 which reduces severance created by the A66 and significantly improves connectivity for vulnerable non-motorised users compared to the baseline junction. The same movement is not provided in the baseline junction as cyclists and horse-riders travelling from Rutherford Lane towards the B6277 will need to cross an existing gap in the central reservation, travel eastbound along the A66 and then join the stopped-up B6277 at Cross Lanes.

5.8.38 Further potential benefits afforded by this alternative include the potential to remove the existing central reserve opening and two direct accesses onto the A66 at the scheme extents. The removal of the central reserve opening removes the conflict and significantly improves the safety and operation of this part of the network. The accesses are re-routed to the alternative junction, which improves the standard of the A66 at this point in the scheme, whilst providing safer access onto and off the A66 for local properties.

5.8.39 The alternative junction also seeks to reduce the visual impact of the junction overbridge at nearby properties as the distance from the alternative bridge location to properties has increased. There is also more opportunity for visual mitigation such as screening and planting.

5.8.40 Although the alternative junction reduces the impact of the scheme on arable farming land, it is acknowledged that other landowners will still be impacted by the development and engagement is ongoing to mitigate these impacts where possible.

5.8.41 The alternative junction takes more land than the baseline junction, meaning more habitats and agricultural land are affected and it would have a bigger impact on the existing landscape. It is expected, though, that this could be reduced through further design to make the junction smaller.

Design development of Rokeby junction alternatives

5.8.42 At Rokeby, the baseline junction developed from that which was presented at the Winter 2020 Project Update. This proposal is situated to the west of St Mary's Church.

5.8.43 Following stakeholder engagement and review of new data and analysis to supplement previously available information, the proposed junction was changed such that it is now proposed to cross the A66 via a new underbridge rather than an overbridge. This significantly reduced the visual impact of the junction on the surrounding environment, particularly the setting of the historic buildings nearby, such as St Mary's Church and the Old Rectory.

5.8.44 In order to accommodate the underbridge, the mainline was raised on to a small embankment, particularly to the west of the junction. Whilst this slightly increases the visual impact of the mainline it was considered that the removal of the overbridge was of greater importance to the setting of St Mary's Church. This alternative was discussed in principle with Historic England who provided positive feedback. Refer to Figure 18 below.

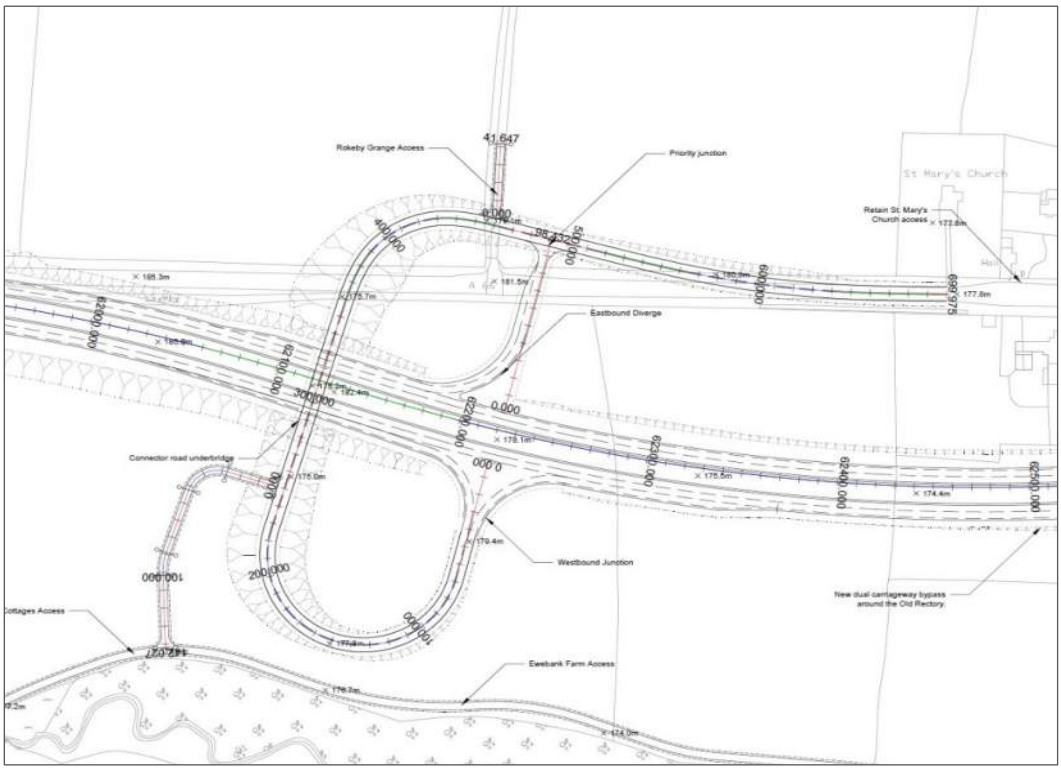

Figure 18 Baseline western junction for Rokeby

5.8.45 As noted above, early PCF Stage 3 feedback, particularly from the landowner and the local authority, queried why Rokeby Junction was located to the west of St Mary's Church in the Preferred Route Announcement. Community Liaison Group meetings and other engagement activities demonstrated support for an alternative closer to the existing Rokeby Junction location, and thus an alternative to the east of St Mary's Church was developed. In addition, concerns were raised about the impact of HGVs using the de-trunked section of the A66 proposed past St Mary's Church, effectively having to double back on themselves, passing the Church twice.

5.8.46 It was also made clear that there were local concerns that the junction location announced as part of the Preferred Route in May 2020 would have negative impacts on existing arable farmland, and a consequent commercial impact on tenanted properties.

5.8.47 Following these discussions, interrogation of the updated traffic modelling showed that there was in relative terms, traffic transfer from Barnard Castle Road to the B6277 Moorhouse Lane, due to the proximity of the proposed junctions and the upgrading of the A66 to dual carriageway throughout (based on the Preferred Route Announcement). Increasing the distance between Cross Lanes and Rokeby junctions would partially address this shift in traffic to alleviate some concerns, although the attractiveness of the A66 as a dual carriageway influences a change in driver route choice.

5.8.48 From a WCH perspective, the western Rokeby junction solution would cause an increase (approximately 2km) in route distance for those users travelling from east of Rokeby (Greta Bridge) to Barnard Castle Road, as they would have to travel west to

the proposed junction and then back east along the detrunked section of A66 to link to the C165 Barnard Castle Road.

5.8.49 An alternative junction was developed to determine the feasibility of a junction located closer to Rokeby which would make the C165 route more attractive given its shorter distance from the A66 to Barnard Castle, compared to the B6277 route. This alternative was assessed in comparison to the baseline junction. To test this a compact grade-separated junction to the east of St Mary's Church and west of the existing Rokeby junction was developed. The compact connector road directly impacts the Registered Park and Garden, crossing at its narrowest point, during construction and operation. The compact connector road passes beneath the proposed alignment of the A66, the de-trunked A66 and the Registered Park and Garden in an underpass.

5.8.50 This alternative is as shown in Figure 19 below.

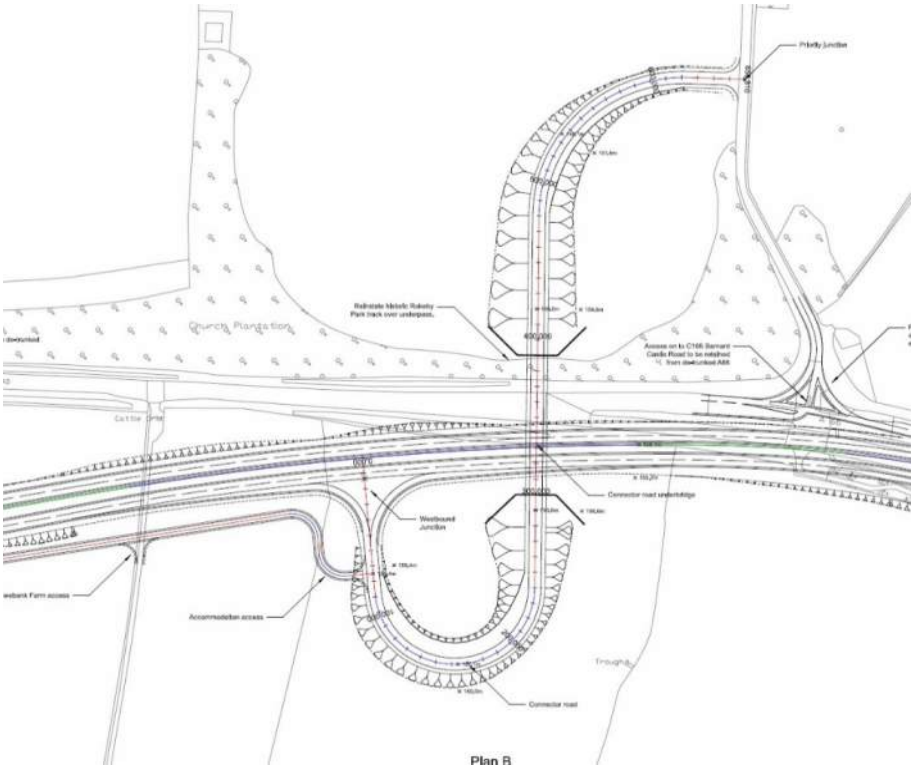

Figure 19 Alternative eastern junction for Rokeby

5.8.51 The Rokeby eastern junction alternative does however have a direct impact on the Registered Park and Garden at Rokeby. It is intended that an underpass arrangement here would have the least visual impact compared with an overbridge solution for crossing the Registered Park and Garden, and in addition the crossing would be at the shortest point practicable.

Presentation of junctions alternatives at August 2021 stakeholder engagement event

5.8.52 Traffic modelling highlighted that these junctions need to be considered together because the location of the junctions can affect how traffic uses the local roads. Of the four potential combinations of junction alternatives, three were considered viable

and one discounted due to the potential transfer of the majority of traffic from Rokeby to Cross Lanes, as shown in Table 12 below.

Table 12 Junction combinations presented at August 2021 stakeholder engagement event

Cross Lanes	Rokeby	Viable	Route Colour
West	West	Yes	Black
West	East	Yes	Blue
East	West	No	N/A
East	East	Yes	Red

5.8.53 The traffic modelling outputs for the three technically viable junction combinations are shown in Table 13 below.

Table 13 Sample traffic modelling output for B6277 Moorhouse Lane and C165 Barnard Castle Road

	Northbound		Southbound	
B6266 Moorhouse Lane				
Existing (2015 AADT vpd)	121		124	
Do Minimum (2046 AADT vpd)	389		217	
Do Something - PCF Stage 2 (2046 AADT vpd)	2022	+1633 COMPARED TO DO MINIMUM	1248	+1031 COMPARED TO DO MINIMUM
Do Something - Black Option (2046 AADT vpd)	929	-1093 COMPARED TO PCF STAGE 2	400	-848 COMPARED TO PCF STAGE 2
Do Something - Red Option (2046 AADT vpd)	916	-1106 COMPARED TO PCF STAGE 2	665	-583 COMPARED TO PCF STAGE 2
Do Something - Blue Option (2046 AADT vpd)	662	-1360 COMPARED TO PCF STAGE 2	585	-663 COMPARED TO PCF STAGE 2

	Northbound		Southbound	
C165 Barnard Castle Road				
Existing (2015 AADT vpd)	1384		1637	
Do Minimum (2046 AADT vpd)	1754		2162	
Do Something - PCF Stage 2 (2046 AADT vpd)	183	-1571 COMPARED TO DO MINIMUM	1083	-1079 COMPARED TO DO MINIMUM
Do Something - Black Option (2046 AADT vpd)	1122	+939 COMPARED TO PCF STAGE 2	1970	+887 COMPARED TO PCF STAGE 2
Do Something - Red Option (2046 AADT vpd)	1189	+1006 COMPARED TO PCF STAGE 2	1710	+627 COMPARED TO PCF STAGE 2
Do Something - Blue Option (2046 AADT vpd)	1609	+1426 COMPARED TO PCF STAGE 2	1783	+700 COMPARED TO PCF STAGE 2

5.8.54 As there has 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.

5.8.55 The three technically viable junction combinations for Cross Lanes and Rokeby as identified in Table 12 above were presented at the event as illustrated in Figure 20, Figure 21 and Figure 22 below.

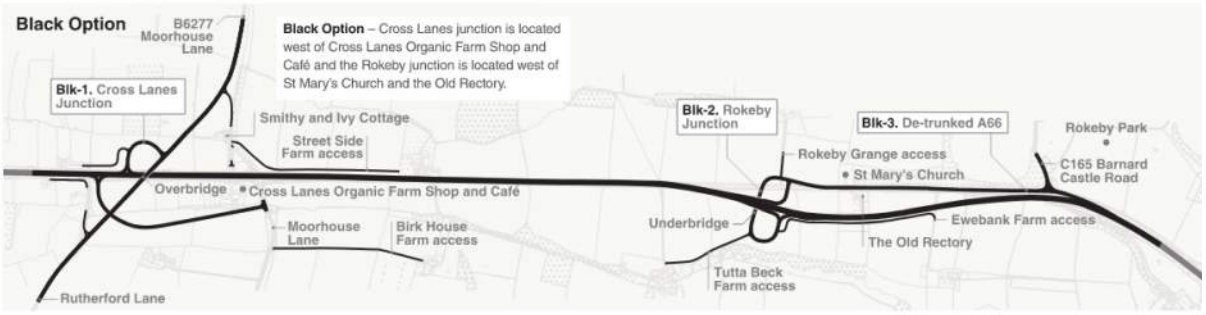

Figure 20 Cross Lanes to Rokeby Black Option: Cross Lanes western junction and Rokeby western junction

Figure 21 Cross Lanes to Rokeby Red Option: Cross Lanes eastern junction and Rokeby eastern junction

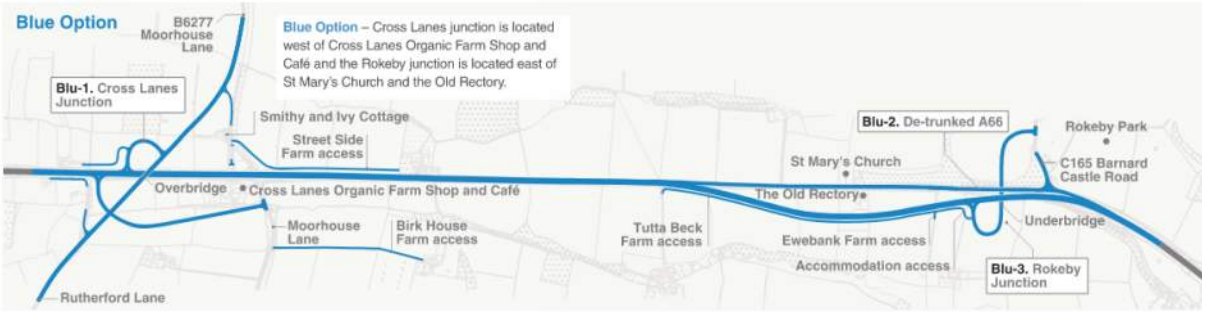

Figure 22 Cross Lanes to Rokeby Blue Option: Cross Lanes western junction and Rokeby eastern junction

5.8.56 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.

5.8.57 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 Highways England team that a route preference would be stated at Statutory Consultation.

Alternatives sifting for Statutory Consultation

5.8.58 A sifting exercise was carried out 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, Highways England's three priorities of Safety, Customer and Delivery were considered crucial to assessing the alternatives ahead of Statutory Consultation. Refer to 4.1 for further detail on the assessment process and criteria.

5.8.59 Both the Red and Blue Route Options have been discounted as a result of the sifting exercise undertaken for each junction. The reasons for these decisions are set out below.

Alternative sifting for Cross Lanes junction

5.8.60 A copy of the assessment matrix for the Cross Lanes junction alternatives sifting exercise can be found in Appendix A.5 and a summary of the matrix is shown below in Table 14.

Table 14 Summary of sifting matrix for Cross Lanes junction – eastern baseline and western alternative

Discipline		**Comparison with baseline**
Engineering		
Highways - Standards Compliance		Better
Utilities		Neutral
Geotechnics and Earthworks		Worse
Structures		Worse
Drainage and Hydrology		Worse
Construction Design Management (CDM)		Worse
Construction Cost		Worse
Buildability		Neutral
Environment		
Biodiversity	Construction	Worse
	Operation	Worse
Road Drainage and Water Environment	Construction	Worse
	Operation	Worse
Geology, Soils, Contaminated Land and Groundwater	Construction	Worse
	Operation	Worse
Noise and Vibration	Construction	Worse
	Operation	Worse
Landscape and Visual	Construction	Neutral
	Operation	Worse
Population and Human Health	Construction	Worse
	Operation	Worse
Air Quality	Construction	Neutral
	Operation	Neutral

Discipline		Comparison with baseline
Material Assets and Waste	Construction	Neutral
	Operation	Neutral
Cultural Heritage	Construction	Worse
	Operation	Worse
Climate	Construction	Worse
	Operation	Worse
Traffic and Economic		
Traffic Volume		Better
Journey Time Savings		Better
Safety		Better
Economy (not modelled with TUBA)		Neutral
Accessibility including WCH Opportunities		Better
Stakeholder		
Land take		Worse
Residential		Neutral
Commercial		Neutral
Wider Community Issues		Better

Engineering

5.8.61 The alternative junction, situated to the west of Cross Lanes provides a more direct link between Rutherford Lane and the B6277 Moorhouse Lane, which is a busier local route, in comparison with the baseline junction that connects Moorhouse Lane north and south. From a safety perspective the alternative junction removes the existing at-grade right-left stagger across the A66 which is the predominant local movement (for both vehicular traffic and walkers, cyclists and horse-riders) and is inherently unsafe. This is a significant benefit over the baseline junction, which leaves this junction unchanged.

5.8.62 The design standards for the alternative junction are the same as the baseline junction. No departures from standard are required for either proposal, although the alternative does remove two additional direct accesses from the A66, re-routing these to the proposed alternative junction which improves safety and the standard of the A66. This is a significant benefit over the baseline junction.

5.8.63 The span of the alternative structure is approximately 55m and on a high skew when compared to the baseline junction of 40m on a 90-degree crossing. The alternative junction will result in a larger quantum of earthworks, mostly additional fill (circa 29%), with a similar percentage increase in extent. The additional structure length and larger footprint results in further impacts for drainage, CDM and cost, which is considered worse overall than the baseline junction.

5.8.64 The alternative junction arrangement has the potential to be refined to minimise engineering footprint and extent of earthworks. This may also reduce the structure length and skew which introduces the option of an integral structure, comparable to the baseline junction.

5.8.65 Therefore, the assessment in regard to drainage impact, cost and CDM impacts are considered comparable to the baseline junction. The baseline junction is as compact a footprint as it can be and offers little scope for further refinement.

5.8.66 Although the alternative junction bridge length is longer, the embankments are slightly lower in height and there is more flexibility for traffic management, therefore buildability impacts are considered similar to the baseline junction. However, considering the design refinements that can be made to the structure length, buildability would be considered better for the alternative junction than the baseline.

Environment

5.8.67 The assessments for air quality and materials, assets and waste presented similar results for both the baseline and alternative junctions therefore these have not been considered to have a significant impact on the preference of one proposal over the other. In terms of biodiversity, two more watercourses are impacted for the alternative junction than the baseline junction. This could be considered a worsening of the baseline situation, however with appropriate post-consultation development such as through ecological design at the watercourse crossings, the impacts would be considered neutral compared to the baseline.

5.8.68 For road drainage and the water environment, geology, contaminated land and ground water, noise and vibration and population and human health, the larger footprint of the alternative junction results in it being considered worse when compared to the baseline junction. This reflects an increase in the number of watercourses impacted, an increase in the number of receptors impacted such as agricultural holdings, and increased earthworks requirements. It is expected that these impacts will reduce as the footprint of the alternative junction is refined following post-consultation design development, to a comparable level against the baseline junction.

5.8.69 In terms of cultural heritage, the impact on buried archaeological remains would be greater for the alternative junction compared to the baseline junction due to the larger footprint. The Grade II listed Dent House Farmhouse would be increased to a moderate adverse effect, as the connecting road for the alternative junction would be considerably closer and constitute a more substantial change to views and the surrounding landscape of the farmhouse. However, the permanent adverse effect on Cross Lanes Farmhouse would be a lower magnitude of impact as the road to the west would be set back from the building and the overbridge would be replaced by a slip-lane junction for the alternative junction arrangement.

5.8.70 It is acknowledged that some of the environmental aspects of the alternative junction are worse than for the baseline junction. However, most of the alternative junction impacts are considered marginally worse than the baseline junction and there is a high probability that these impacts can be reduced through refinement of the design footprint. There are no environmental impacts highlighted that are felt to be prohibitive or outside the normal scope of a typical highway project.

5.8.71 Further details of the environmental assessment criteria can be found in the PEIR.

Traffic

5.8.72 The alternative junction is considered better than the baseline junction from a traffic perspective. This is due to:

- Locating the Cross Lanes junction to the west of the existing junction, which results in more westbound vehicles on the A66 choosing to use the Rokeby junction, and not Cross Lanes. The proximity of the baseline junction to Rokeby

induces traffic transfer to Cross Lanes/B6277 Moorhouse Lane, which is not favoured by Durham County Council and local residents.

- The alternative junction is located such that Rutherford Lane and the B6277 Moorhouse Lane are linked. This route carries more local vehicular movements and WCH traffic, compared to the baseline junction.
- The link from Rutherford Land to the B6277 provides a more direct, shorter and safer crossing of the A66 which reduces severance created by the A66 and significantly improves connectivity for vulnerable non-vehicular users compared to the baseline design.

Stakeholder

5.8.73 Six new landowners are impacted by the alternative junction proposals– two associated with new private means of access, and four associated with loss of agricultural land. The residential properties at North Bitts and Punder Gill are adjacent to the alternative junction compared to the baseline junction (350m away). However safer access to and from the A66 is provided by linking the property accesses to the alternative junction and removing their current direct accesses on to the A66.

5.8.74 Feedback from the owners of Cross Lanes Farm Shop suggests the alternative junction is preferred, with the exception that the access road to Moorhouse Lane be placed to the north of the shop adjacent to the A66. This would be a betterment to them in terms of visual impact on views to the south from the premises. The business owner perception is that the alternative junction has the potential to capture westbound passing trade compared to the baseline junction, as views of the café from the dual carriageway will be obstructed by the baseline structure. Other landowners have commented on the potential loss of arable land.

5.8.75 The impact on new landowners from the alternative junction is considered balanced against improvements to accesses and reducing impact on properties at Cross Lanes. Post-consultation design refinement may lead to land take being reduced but the number of landowners impacts will be similar, therefore the overall impacts still considered neutral, compared to the baseline junction.

5.8.76 The alternative junction is preferred by Durham County Council, Local Councillors, and representatives of the Community Liaison Group on the basis that it improves the safety of the junctions whilst minimising impacts on the local road network and increasing WCH provision. Notwithstanding the direct impact on affected landowners, the overall impact is considered better in the wider community as it has the potential to benefit more stakeholders.

Conclusion

5.8.77 In summary, the alternative junction is favoured primarily for the significant safety improvements, traffic movement and WCH improvements it offers, whilst acknowledging that engineering and environmental impacts can be reduced through further refinement of the layout and environmental design. The alternative junction complies more favourably with Highways England priorities of Safety, Customer and Delivery.

5.8.78 As such, the western alternative junction will be presented at Statutory Consultation in Autumn 2021 as the preference for Cross Lanes junction.

Alternatives sifting for Rokeby junction

5.8.79 A copy of the assessment matrix for the Rokeby junction alternatives sifting exercise can be found in Appendix A.6 and a summary of the matrix is shown below in Table 15.

Table 15 Summary of sifting matrix for Rokeby junction – western baseline and eastern alternative

Discipline		Comparison with baseline
Engineering		
Highways - Standards Compliance		Neutral
Utilities		Better
Geotechnics and Earthworks		Better
Structures		Worse
Drainage and Hydrology		Better
Construction Design Management (CDM)		Worse
Construction Cost		Neutral
Buildability		Neutral
Environment		
Biodiversity	Construction	Neutral
	Operation	Neutral
Road Drainage and Water Environment	Construction	Better
	Operation	Neutral
Geology, Soils, Contaminated Land and Groundwater	Construction	Neutral
	Operation	Worse
Noise and Vibration	Construction	Worse
	Operation	Worse
Landscape and Visual	Construction	Worse
	Operation	Worse
Population and Human Health	Construction	Worse
	Operation	Neutral
Air Quality	Construction	Neutral
	Operation	Neutral
Material Assets and Waste	Construction	Neutral
	Operation	Neutral
Cultural Heritage	Construction	Worse
	Operation	Worse
Climate	Construction	Neutral
	Operation	Better
Traffic and Economic		
Traffic Volume		Better
Journey Time Savings		Better
Safety		Better

Discipline	Comparison with baseline
Economy (not modelled with TUBA)	Neutral
Accessibility including WCH Opportunities	Better
Stakeholder	
Land Take	Neutral
Residential	Better
Commercial	Better
Wider Community Issues	Neutral

Engineering

5.8.80 The alternative eastern junction locates the proposed Rokeby Junction closer to the site of the existing at-grade crossing, which better maintains current traffic distribution between the C165 Barnard Castle Road and B6277 Moorhouse Lane when compared to the baseline junction. This removes the need for westbound vehicles travelling to or from Barnard Castle to undertake an additional 2.5km U-turn route associated with the baseline junction, which increases the journey time into Barnard Castle. This reduction in traffic on the B6277 Moorhouse Lane is considered safer for walkers, cyclists and horse-riders whilst also providing a better point of crossing for pedestrians and cyclists from Greta Bridge.

5.8.81 When considering highways standards compliance, there is little to differentiate between the baseline western and alternative eastern Rokeby junctions assessed. Both would require an application for a departure from standards for the retention of the existing eastbound merge onto the A66. Similarly, there is little differentiating the baseline and alternative junctions when considering construction cost and buildability. Whilst there would be some additional complexity and cost associated with the structure for the alternative eastern junction, this is counterbalanced by the ability to construct more of the junction offline and the increased cut generated by the alternative proposal reducing the deficit of fill material for the wider scheme.

5.8.82 The alternative eastern junction is better in terms of utilities as it affords the opportunity to retain utilities that the baseline western junction would need to divert. The alternative junction is also better for geotechnics as it provides a more favourable earthworks balance. However, the increased work within cut and a longer, more costly structure for the alternative proposal results in the baseline junction being considered better for both CDM and structures.

5.8.83 From a drainage perspective, the alternative eastern junction is considered better, as whilst it would introduce an additional pond and outfall, it has the significant benefit of not introducing a trapped cutting as present in the baseline western junction design. The alternative junction manages to maintain falls such that water can escape the underpass in the event of any drainage blockages on the local road.

Environment

5.8.84 When assessing the biodiversity, air quality and waste topics, there is little to differentiate between the baseline western and alternative eastern Rokeby junctions. However, the landscape, visual, and noise impacts of the eastern alternative junction

are considered to be worse than for the western baseline junction. For noise, this results from an increase in the number of properties impacted by the alternative junction compared to the baseline. The eastern alternative junction is also worse for geology impacts due to the increased land take, although it should be noted that this increase is very minor at 3%.

5.8.85 There would also be a worse impact on population and human health during construction of the eastern alternative junction as it intersects an additional footpath which is considered to be of medium value. During operation, there is little differentiating the junctions from a population and human health perspective as both would provide an alternative and safer means of crossing the A66.

5.8.86 For road drainage, the eastern alternative junction is considered to be better than the western baseline junction during the construction phase due to the works being undertaken further away from Tutta Beck and the resultant reduction in risk of negatively impacting water quality. The operational impact on climate change is considered better for the eastern alternative junction due to the ability for the junction drainage to flow freely, therefore avoiding the risk of the underpass flooding which is present in the baseline junction.

5.8.87 Rokeby Park and Gardens is a Grade II* Registered Park and Garden. The eastern alternative junction would result in fragmentation of Rokeby Park and introduce traffic to a nationally designated heritage asset, leading to harm of that asset. Consequently, the eastern alternative junction is assessed as worse during both construction and operation when compared to the western baseline junction. The eastern alternative junction will also negatively impact upon the setting of the Registered Park and Garden both during construction and operation and therefore has a greater impact on landscape character than the western baseline junction.

5.8.88 Further details of the environmental assessment criteria can be found in the PEIR.

Traffic

5.8.89 Regarding traffic, modelling has confirmed the eastern alternative junction is considered better than the western baseline junction due to the primary flow remaining on the C165 Barnard Castle Road. This improves journey times, minimises change at The Sills and Barnard Castle Bridge. The location of the eastern alternative junction is considered better for walkers and cyclists travelling to and from Greta Bridge when compared to the western baseline junction as it provides a more direct route on the likely preferred more direct line and avoids the diversion present in the baseline junction. However, the eastern alternative junction does result in a further diversion for walkers using the Public Rights of Way north and west of St Mary's Church.

Stakeholder

5.8.90 The eastern alternative junction requires a marginally larger area of land take compared to the western baseline junction. However, the singular landowner affected by both junctions, favours the eastern alternative junction due to the impact on the number and considered value of the affected land parcels. The western baseline junction would also introduce a greater degree of severance on their land between the realigned A66 and the Ancient Woodland adjacent to Tutta Beck.

5.8.91 The eastern alternative junction is similarly favoured by Local Councillors, Durham County Council and the General Public who attended the August 2021 stakeholder engagement event, primarily for the traffic and safety reasons cited in 5.8.89 above. However, Historic England do not support the eastern alternative junction due to the

preliminarily assessed impacts on St Mary's Church and the Registered Park and Garden.

Conclusion

5.8.92 In summary, although the eastern alternative junction is favoured for traffic, some engineering disciplines and many stakeholders, it does not conform to national planning policy.

5.8.93 The principal consideration in the presented preference for the western junction is the impact on the Grade II* Registered Park and Garden at Rokeby Park. The eastern junction will 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. 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. The western junction is not anticipated to lead to harm to the RPG.

5.8.94 In terms of 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."*

5.8.95 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:

> *"5.133 Where the proposed development will lead to substantial harm or total loss of significance of a designated heritage asset, the Secretary of State should refuse consent unless it can be demonstrated that the substantial harm or loss of significance is necessary in order to deliver substantial public benefits that outweigh that loss or harm, or alternatively that all of the following apply:*
>
> - *The nature of the heritage asset prevents all reasonable uses of the site; and*
> - *No viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and*
> - *Conservation by grant-funding or some form of charitable or public ownership is demonstrably not possible; and*
> - *The harm or loss is outweighed by the benefit of bringing the sit back into use."*

5.8.96 In the situation where a proposed development would lead to a harmful impact on the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, in accordance with paragraph 5.132 of the NNNPS.

5.8.97 As an alternative junction location and layout exists, it is considered that the eastern junction alternative at Rokeby is likely to be regarded as not to conform to national policy and therefore there is a risk that for this scheme, a DCO application including the alternative eastern Rokeby junction would not be likely to secure a grant of consent.

5.8.98 As such, the western Rokeby junction will be presented at Statutory Consultation in Autumn 2021 as part of the Black Route. Consultees are encouraged to participate in the Statutory Consultation and make their comments formally through that channel where they will be reviewed and regard given to them in the final preparation of the application for development consent. For this reason, the land required to implement the eastern junction at Rokeby will be included in the proposed draft Development Consent Order boundary and views will be sought regarding any wider public and traffic benefits of this junction during the consultation.

Statutory Consultation Autumn 2021

5.8.99 Plans and profiles for the proposals taken forward to Statutory Consultation in Autumn 2021, as well as alternatives assessed and discounted during PCF Stage 3 Preliminary Design, can be found in Volume 2 of the Route Development Report.

5.8.100 As outlined above, Cross Lanes to Rokeby is one of the schemes where further consideration of alternative junctions has occurred to further assess and minimise the potential impacts upon landowners, heritage assets and to improve traffic movements in the area.

5.8.101 The Preferred Route Announcement alignment still applies for this scheme however, this has been combined with further developed junction junctions to produce the presented route, known as the Black Option, i.e., a junction to the west at Cross Lanes and a junction to the west at Rokeby.

5.8.102 It is proposed that this route will mostly follow the existing alignment, with a new adjacent westbound carriageway constructed to the south between the B6277 junction at Cross Lanes and the existing Tutta Beck Cottage access. Both carriageways will then be routed to the south of the Old Rectory and St Mary's Church, re-joining the existing A66 at Rokeby.

5.8.103 At Cross Lanes, it is proposed to remove the existing junctions which provide access to the B6277 Moorhouse Lane and Cross Lanes Organic Farm and Café. The removal of these junctions will remove the need for right-turn manoeuvres.

5.8.104 For this junction, a compact grade-separated junction on the A66, west of the existing Cross Lanes junction is proposed. The B6277 Moorhouse Lane and Rutherford Lane will be linked via a structure over the A66. This will help to maintain and improve access to the B6277 (Moorhouse Lane) for Barnard Castle, Cross Lanes Organic Farm Shop and Café, the Grade II listed Cross Lanes Farmhouse, and other local farms and residential properties.

5.8.105 At Rokeby, it is 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. This junction would be an underpass arrangement and would avoid direct impact on the Registered Park and Garden and the Old Rectory and therefore removes the potential risk of the scheme not being consented based on non-conformity with planning policy.

5.8.106 This junction will provide access to Barnard Castle Road for all westbound traffic and diverging eastbound traffic via the old A66, which will form part of the local road network. Eastbound merging traffic will join the A66 via a slip road at the existing Rokeby Junction with the C165 Barnard Castle Road. This junction would maintain HGV access to Barnard Castle.

5.8.107 As outlined above, the project team will continue to consult and listen to justifications as to why the Black Route should not be progressed. For this reason, the land required to implement the eastern junction at Rokeby will be included in the proposed draft Development Consent Order boundary and views will be sought regarding any wider public and traffic benefits of this junction during the consultation that may lead to the team reconsidering the preference expressed.

5.9 Stephen Bank to Carkin Moor

Description of existing scheme

5.9.1 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.

5.9.2 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.

5.9.3 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.

5.9.4 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.

5.9.5 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.

5.9.6 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.

5.9.7 This section of the A66 carries approximately 17,100 vehicles per day, 27% of which are heavy goods vehicles.

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

5.9.8 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.

5.9.9 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.

5.9.10 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.

Public consultation Summer 2019

5.9.11 The options presented at public consultation in Summer 2019 were therefore Options M, N and O. For all, it is proposed that the current A66 is 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.

5.9.12 Option M 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.

5.9.13 Option N 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.

5.9.14 Option O followed the same route as Option M 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

5.9.15 The Preferred Route Announcement of May 2020 concluded that Option N, the northern bypass, would be the option taken forward to PCF Stage 3 Preliminary Design.

5.9.16 Option N 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.

5.9.17 However, the PCF Stage 2 Scheme Assessment Report stated that following feedback from the public, it was agreed that access to West Layton on Option N 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

5.9.18 At PCF Stage 3 Preliminary Design, these proposals have been developed further for Statutory Consultation in Autumn 2021 and are 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.

5.9.19 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 in order to provide the required headroom and structural clearances to allow the proposed mainline to pass under Moor Lane as proposed in the PRA.

5.9.20 As such, the grade separation announced in May 2020 has been reversed and it is now proposed that Moor Lane is lowered, with the A66 mainline passing over instead of passing under this local road. This allows 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 brings the added benefit of reducing the visual impact of the grade-separated junction on the surrounding areas.

5.9.21 Following consultation with stakeholders including community representatives and local businesses, this junction has also been moved to the west of the existing Moor Lane. This improves on the earlier proposals between Moor Lane and Mainsgill Farm Shop by providing better separation between the two proposed staggered junctions. This relocation also brings 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.

5.9.22 A review of the junction proposals at Collier Lane was also conducted. 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 is now proposed that the A66 mainline passes in cutting beneath Collier Lane.

5.9.23 Stakeholder engagement has been key to developing the route between Stephen Bank and Carkin Moor. Advice has been sought from Historic England to support

development of the route in relation to the Scheduled Ancient Monument. The A66 mainline alignment here has been raised as it passes through the cutting adjacent to the site. This minimises the amount of excavation required to accommodate the proposed retaining wall to the south of the alignment and therefore reduces impacts on the Scheduled Ancient Monument itself.

5.9.24 WCH access will 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 will be linked through the new grade-separated junction at Moor Lane, with safety further improved as a consequence of re-routing the southern path to the west of Mainsgill Farm.

5.9.25 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 is 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.

5.9.26 In addition, two new lay-bys are proposed within the scheme extents. It is proposed that one will serve the eastbound carriageway and one will serve the westbound carriageway. Both lay-bys will have geometry in line with current design standards and include 60m parking provision.

Statutory Consultation Autumn 2021

5.9.27 Plans and profiles for the proposals taken forward to Statutory Consultation in Autumn 2021 can be found in Volume 2 of the Route Development Report.

5.9.28 The preliminary design presented at Statutory Consultation in Autumn 2021 will show the new dual carriageway to the north of the old A66 and the properties at Fox Hall and Mainsgill Farm. The new A66 would then re-join the old A66 to the east of Mainsgill Farm.

5.9.29 This proposal will improve safety and ease congestion by widening and dualling the A66 through Carkin Moor Scheduled Ancient Monument to Carkin Moor Farm. The proposed A66 will be raised as it passes through the cutting adjacent to the Carkin Moor SAM to minimise the amount of excavation required to accommodate the proposed retaining walls to the north and south of the alignment and reduce any impact on the Scheduled Ancient Monument itself.

5.9.30 It is proposed that the old detrunked A66 to the south of the proposed new A66 route will be used for local road access. This will provide access to Dick Scot Lane, Old Dunsa Bank and Mainsgill Farm Shop. A new underpass will be provided to the north of Dick Scot Lane to allow for access to land north of the proposed A66.

5.9.31 An overbridge link from Collier Lane to the detrunked A66 will be provided. The grade separation at Collier Lane has the proposed A66 passing beneath Collier Lane in cutting, reducing the amount of imported fill material required for the scheme in addition to reducing the visual impact on the landscape.

5.9.32 As part of the upgrade works between Stephen Bank and Carkin Moor, a new compact grade-separated junction is proposed to the west of Moor Lane to provide safer access to the detrunked A66, the villages of East Layton, West Layton, Ravensworth, and Mainsgill Farm Shop.

5.9.33 It is proposed that the southern section of Moor Lane be realigned and connected to the proposed compact grade-separated junction. There is an existing bridleway north of the A66, to the east of Mainsgill Farm and another separate bridleway south of the A66, through Mainsgill Farm. It is 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 will be stopped up.

5.9.34 The existing right turn from the A66 on to Warrener Lane will be closed and removed. Traffic will join the A66 via a new link road to Moor Lane junction.

5.10 A1(M) Junction 53 Scotch Corner

Description of existing scheme

5.10.1 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.

5.10.2 The A1(M) passes under the roundabout with southbound access via on- and off-sliproads 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

5.10.3 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. This reflects improvements to the A66 making it a more attractive route for users, resulting in an increase in traffic at the major junctions to access it. 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.

5.10.4 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 for further detail.

5.10.5 The key junctions included in the modelled network are forecast to operate within capacity. However, the Middleton Tyas junction is forecast to operate over-capacity in 2043. It was noted in the Scheme Assessment Report that there was limited information available on the use of the Motorway Services in the future for the purposes of this modelling work. PCF Stage 2 Option Selection concluded that the existing layout at Scotch Corner is forecast to have sufficient capacity to accommodate forecast traffic growth beyond 2046, which is the project design year.

5.10.6 However, 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. As such, these initial modelling outcomes were not presented at public consultation in 2019 in detail due to the uncertainty and need for preliminary design of the wider route to be considered.

Public consultation Summer 2019

5.10.7 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. Figure 23 below was included in consultation material to indicate the parts of the junction likely to be impacted by works though it was noted that further traffic analysis would be required to support preliminary design.

Figure 23 A1(M) Junction 53 Scotch Corner as shown at public consultation Summer 2019

Preferred Route Announcement May 2020

5.10.8 The Preferred Route Announcement of May 2020 did not explicitly reference proposals for A1(M) Junction 53 Scotch Corner. As with other junctions along the route, proposals were to be progressed once a Preferred Route had been selected and developed.

PCF Stage 3 Preliminary Design

5.10.9 At PCF Stage 3 Preliminary Design, 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.

5.10.10 This review concluded that there will 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, will be unable to easily gain access to the roundabout at the priority approach.

5.10.11 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.

5.10.12 Collison data was analysed, and feedback was sought from Highways England Operations Directorate, 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.

5.10.13 In line with the outcomes of this traffic modelling and stakeholder engagement, it is proposed to widen the approach to the existing Scotch Corner Roundabout from Middleton Tyas Lane from one lane to two lanes. It is 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 is also proposed to improve the interaction of the A1(M) southbound off-ramp, the roundabout circulatory and Middleton Tyas Lane.

5.10.14 Relocation of an existing bus stop, signage and lighting columns will be required to accommodate the above.

5.10.15 An additional lane will be accommodated within the existing carriageway extents on the northern bridged section of the circulatory carriageway. The southern verge will be narrowed to accommodate this.

Statutory Consultation Autumn 2021

5.10.16 Plans and profiles for the proposals taken forward to Statutory Consultation in Autumn 2021 can be found in Volume 2 of the Route Development Report.

5.10.17 The preliminary design presented at Statutory Consultation in Autumn 2021 will show the existing Middleton Tyas Lane approach to the A1(M) Junction 53 at Scotch Corner roundabout widened from one lane to two lanes. This will result in better access to the roundabout at this priority approach.

5.10.18 In addition, it is proposed to alter road markings and kerbs on the circulatory carriageway to provide three lanes on the existing northern bridge structure to improve operational capacity.

5.10.19 A section of footway, a bus stop, some signage and lighting columns will require relocation to the back of the widened carriageway to accommodate these works, and road markings will be required to tie in with existing.

6. Abbreviation list

Table 16 Abbreviations

Term	Definition
AONB	Area of Outstanding Natural Beauty
CCC	Cumbria County Council
CDM	Construction Design and Management
CMS	Construction Method Statement
DCC	Durham County Council
DCO	Development Consent Order
DfT	Department for Transport
DIPs	Delivery Integration Partners
EAR	Environmental Assessment Report
EDC	Eden District Council
EIA	Environmental Impact Assessment
ES	Environmental Statement
HET	Heavy Equipment Transporter
HGV	Heavy Goods Vehicle
HRA	Habitats Regulations Assessment
km	Kilometre
MoD	Ministry of Defence
NNNPS	National Networks National Policy Statement
NSIP	Nationally Significant Infrastructure Project
NTPRSS	Northern Trans-Pennines Routes Strategic Study
NYCC	North Yorkshire County Council
PCF	Project Control Framework
PEIR	Preliminary Environmental Information Report
PMA	Private Means of Access
PRA	Preferred Route Announcement
PRoW	Public Right of Way
RDC	Richmondshire District Council
RIS	Road Investment Strategy
RPG	Registered Park and Garden
SAC	Special Area of Conservation
SAM	Scheduled Ancient Monument
SAR	Scheme Assessment Report
SES	Safety, Engineering and Standards
SPA	Special Protection Area
SRN	Strategic Road Network
SSSI	Site of Special Scientific Interest
TAR	Technical Appraisal Report
UNESCO	United Nations Educational, Scientific and Cultural Organisation
VRS	Vehicle Restraint System
WCH	Walking, Cycling and Horse riding / Walkers, Cyclists and Horse-riders
WPC	Warcop Parish Council

7. Glossary

Table 17 Glossary of terms

Term	Definition
(The) Act	The Planning Act 2008
Annual average daily traffic (AADT)	The total volume of vehicle traffic of a motorway or road for a year divided by 365 days.
Applicant	Highways England
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 of countryside considered to have significant landscape value.
Assessment	A process by which information about effects of a proposed plan, project or intervention is collected, assessed and used to inform decision-making.
Baseline environment	The environment as it appears (or would appear) immediately prior to the implementation of the project together with any known or foreseeable future changes that will take place before completion of the project.
Biodiversity	The variety of life forms, the different plants animals and microorganisms, the genes they contain and the ecosystems they form.
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.
Consultation	A process by which regulatory authorities, statutory and non-statutory bodies are approached for information and opinions regarding a development proposal.
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.
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.
Enhancement	A measure that is over and above what is required to mitigate the adverse effects of a project.

Term	Definition
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 Assessment (EIA)	A statutory process by which the environmental impact of certain planned projects must be assessed through an EIA before a formal decision to proceed can be made.
Examination stage	The formal, legal process governed by the Planning Act 2008 and related legislation. The examination stage is operated and led by the Planning Inspectorate on behalf of the Secretary of State.
Examining authority	The person(s) appointed by the Secretary of State to assess the DCO application and make a recommendation to the Secretary of State.
Flood zones	Flood Zones refer to the probability of river and sea flooding. They are available to view on the Environment Agency's website.
Geodiversity	The diversity of rocks, fossils, minerals and soils, landforms and geological processes that constitute the topography, landscape and the underlying structure of the Earth.
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.
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.
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.

Term	Definition
Monitoring	A continuing assessment of the performance of the project, including mitigation measures. This determines if effects occur as predicted or if operations remain within acceptable limits, and if mitigation measures are as effective as predicted.
National Networks National Policy Statement 2014 (NN NPS)	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 NN NPS is the basis for the examination of a Development Consent Order application by the Planning Inspectorate and decisions by the Secretary of State. It was adopted as national policy by the UK Parliament in March 2015.
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.
Operational	The functioning of a project on completion of construction.
Phase 1 Habitat Survey	Recognised standard methodology for collating information on the habitat structure of a particular site.
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	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.
Preliminary design	The design on which the application for development consent is based.
Programme	A series of steps that have been identified or series of projects that are linked by dependency.
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 purpose 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.

Term	Definition
Scoping	The process of identifying the issues to be addressed by the EIA process. It is a method of ensuring that an assessment focuses on the important issues and avoids those that are considered to be not significant.
Secretary of State	The Secretary of State for Transport.
Sensitivity	The extent to which the receiving environment can accept and accommodate change without experiencing adverse effects.
Statutory	Related to legislation or prescribed in law or regulation.
Traffic modelling or forecasting	The process used to estimate the number of vehicles using a specific section of road or defined network of roads.

8. Bibliography

Arcadis Consulting (UK) Limited. (2018) A66 Northern Trans-Pennine Project Technical Appraisal Report. Highways England.

Arcadis Consulting (UK) Limited. (2020) A66 Northern Trans-Pennine Project Scheme Assessment Report. Highways England.

Department for Transport (2014) *National Policy Statement for National Networks*, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data /file/387222/npsnn-print.pdf

Department for Transport (2015), *Road investment strategy: 2015 to 2020*, available at: https://www.gov.uk/government/publications/road-investment-strategy-for-the-2015-to-2020-road-period

Department for Transport (March 2020) *Road investment strategy: 2020 to 2025*, available at: https://www.gov.uk/government/publications/road-investment-strategy-2-ris2-2020-to2025.

Highways England (2018) *The Project Control Framework Handbook (version 4)*

Highways England (2019) *A66 North Trans-Pennine Project Public Consultation Brochure*, available at: https://highwaysengland.citizenspace.com/cip/a66-northern-trans-pennine/supporting_documents/Web%20%20A66%20NTP%20Consultation%20Brochure.pdf

Highways England (2020) *A66 North Trans-Pennine Preferred Route Announcement* available at: https://highwaysengland.citizenspace.com/cip/a66-northern-trans-pennine/results/pra_report_aw_lo_res.pdf

Highways England (2020) *A66 North Trans-Pennine Winter 2020 Project Update Brochure*

Highways England (2021) *A66 North Trans-Pennine Draft Construction Method Statement*

Highways England (2021) *A66 North Trans-Pennine Preliminary Environmental Information Report*

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

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

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