JACOBS

A1 North of Newcastle Feasibility Study

Stage 2: Option Assessment Report

February 2015

Executive Summary

In February 2014 the Highways Agency commissioned Jacobs to undertake this feasibility study considering A1 North of Newcastle between its junction with the A19 at Seaton Burn and the Scottish border.

The study has been split into three key stages:

- *Stage 1: Data Collection, Analysis and Problem Identification*
- *Stage 2: Option Identification, Sifting and Assessment*
- *Stage 3: Option Affordability, Deliverability and Value for Money*

This Option Assessment Report (OAR) outlines the methodology and findings of Stage 2 of the study.

Stage 1 of the study identified several key problems and issues on the route that affect the performance of this route of strategic national importance through the analysis of a wide array of available data. The identified problems were as follows:

- *Lack of alternative routes;*
- *Inconsistent carriageway standards on the route;*
- *Poor junction standards / layout;*
- *Large number of at-grade junctions / Private Means of Access;*
- *Average speeds on the single carriageway sections of the route are significantly lower than sections that have been upgraded to dual carriageway.*
- *Relatively high proportion of HGVs (and agricultural vehicles) resulting in reduced speeds for following vehicles and potential for driver frustration;*
- *Lack of overtaking opportunities; and*
- *Peak hour traffic speeds significantly below free flow speeds - analysis of TrafficMaster data shows that peak hour traffic speeds are significantly lower than average off-peak speeds.*

These problems are likely to be exacerbated in the future due to forecast increased traffic flow. Based on these identified problems and issues, a series of route objectives have been identified. These are:

- *Improve journey times on this route of strategic national importance;*
- *Improve network resilience and journey time reliability;*
- *Improve safety;*
- *Maintain access for local traffic whilst improving the conditions for strategic traffic;*
- *Facilitate future economic growth; and*
- *Avoid, mitigate and compensate for potential impacts upon the built and natural environment.*

Both the problems and route objectives have been endorsed by the Stakeholder Reference Group and the Project Board.

Stage 2 of the study has been based on identifying potential interventions that could meet these objectives and help to address the identified problems and issues on the route. Initially a long list of options was considered including highway, public

transport and demand management interventions as well as combinations of interventions across multiple sections of the route that were considered complementary and likely to have a larger overall impact.

The initial list of options was then sifted down from 113 to ten options that were considered to have a moderate beneficial impact or greater towards solving the identified problems and contributing to the delivery of the route objectives and which were considered feasible and deliverable. The ten remaining options were then assessed against the Treasury five case model using the DfT's Early Assessment and Sifting Tool (EAST) and options were assessed against more robust criteria. This led to two further potential options being removed, leaving the following eight options which were taken forward for further assessment:

- *Option 1: Morpeth to Felton online dualling;*
- *Option 2: Morpeth to Felton offline dualling;*
- *Option 3: Full Dualling;*
- *Option 4: Dualling to Ellingham;*
- *Option 6: Dualling to Ellingham and localised widening on single carriageway sections to the North;*
- *Option 7: Dualling to Ellingham and overtaking (climbing) lanes on single carriageway sections to the North;*
- *Option 9: Dual Morpeth to Felton and junction rationalisation and parallel access roads on the dual carriageway to Alnwick; and*
- *Option 10: Dualling to Ellingham and dualling of the Berwick Bypass.*

These options have been assessed against the DfT's Option Assessment Framework, with evidence presented against the best practice Treasury five case Business Case model. This is in line with DfT guidance and presents a robust and auditable approach.

In conclusion it has been recommended that four options be taken forward for a more detailed assessment of Deliverability, Affordability and Value for Money.

Option	Fit With Problems and Objectives	Cost	Estimated Value For Money	Comments
Options 1 and 2 Dualling Morpeth to Felton (Online or Offline)	Partial	Likely to be cheapest option	Low to High	Improves most heavily trafficked single carriageway section of the route.
Option 3 Full Dualling (Online or Offline)	Fully	Likely to be most expensive option	Poor	Addresses fully all problems and issues on the route. Provides a benchmark for any potential improvement
Option 4 Dualling to Ellingham (Online or Offline)	Partial	Likely to be moderately expensive	Low to Medium	Improves most heavily trafficked single carriageway section of the route and significantly addresses problem of inconsistent carriageway standard
Option 7 Dualling to Ellingham (Online or Offline) and Overtaking/Climbing lanes on sections to the North	Partial	Likely to be moderately expensive	Low to Medium	Improves most heavily trafficked single carriageway section of the route and addresses problems on lightly trafficked sections to the North

Contents

1 Introduction

1.1 Introduction

In February 2014 the HA commissioned Jacobs to undertake this Feasibility Study considering improvements on the A1 north of Newcastle between its junction with the A19 at Seaton Burn and the Scottish border.

The study has been split into three key stages:

- *Stage 1: Data Collection, Analysis and Problem Identification*
- *Stage 2: Option Identification, Sifting and Assessment*
- *Stage 3: Option Affordability, Deliverability and Value for Money*

Further details of the methodology adopted and the study area are presented in the Stage 1 report (*A1 North of Newcastle Feasability Study – Stage 1 Report, May 2014*).

1.2 Purpose of Document

This Option Assessment Report (OAR) represents the output of Stage 2 of the Feasibility Study. It has been produced in line with the requirements set out within the DfT's Transport Analysis Guidance (TAG) and documents the process of identifying the need for intervention and the process of option development and selection.

1.3 Document Structure

The remainder of this document is structured as follows:

- *Chapter 2: Option Generation*
- *Chapter 3: Option Sifting*
- *Chapter 4: Option Assessment*
- *Chapter 5: Option 1 Assessment*
- *Chapter 6: Option 2 Assessment*
- *Chapter 7: Option 3 Assessment*
- *Chapter 8: Option 4 Assessment*
- *Chapter 9: Option 6 Assessment*
- *Chapter 10: Option 7 Assessment*
- *Chapter 11: Option 9 Assessment*
- *Chapter 12: Option 10 Assessment*
- *Chapter 13: Stage 2 Stakeholder Engagement*
- *Chapter 14: Summary and Conclusions*

2 Option Generation

2.1 Introduction

The first element of Stage 2 is the Option Generation process. The purpose of this is to develop a range of alternative measures or interventions that look likely to achieve the objectives identified in the Stage 1 Report. A wide range of possible measures should be considered. These are then sifted in a robust, transparent and auditable manner to identify the better performing options for further consideration. The Option Generation process is discussed under the following headings:

- *Option Generation Workshop*
- *Challenge Workshop*
- *Project Board Endorsement*

2.2 Option Generation Workshop

The first stage of the Option Generation process was to hold a workshop to identify and discuss potential interventions for the route. The workshop involved specialists from Transport Planning, Highways and Environment disciplines.

The workshops began with a review of the identified problems on each of the route sections and a detailed discussion on the defined objectives for the route. In line with best practice, this ensured that potential objectives were driven by the needs of the transport users within the corridor.

Each of the technical specialists provided the required breadth of knowledge, experience and expertise to fully understand the problems and objectives, the need for intervention and potential solutions for the corridor.

*An initial list of potential interventions to be considered on the corridor was drawn up. It included a broad range of highway, demand management and public transport options of varying scale. The initial list is summarised in * Further explanation of these terms is provided in Annex B*
Table 2-A, with potential interventions referenced “a” to “af”. Further details of what some of the proposed Highways Interventions can entail is presented in Annex B.

Intervention	Code
Highway Interventions	
On Line Dualling*	a
Off Line Dualling*	b
WS2*	c
Localised Widening*	d
WS2+1*	e
Overtaking Lanes	f
At-grade junction improvements	g
Grade-separated Junction improvements	h
Junction rationalisation	i
Laybys	j
Signing	k
Ban right turns at minor junctions	l
Parallel access roads	m
Cross- A1 movements onto over bridge/underbridge	n
Average Speed Limit	o
Improving bus stops on slip roads	p
Slow moving vehicle refuges to allow overtaking	q
Reduced Speed Limit	r
S2	s
Public Transport Interventions	
Increased frequency of existing bus services	t
Additional bus services linking more locations	u
Improved Interchange facilities at key locations for bus travel	v
Park and Ride schemes	w
Improved facilities (bus stops, shelters, etc.)	x
Real Time Passenger Information	y
Increased frequency of local services on the ECML	z
Improved Interchange facilities at key locations for rail travel	aa
Improved parking at rail stations	ab
Demand Management Interventions	
Variable Message Signing	ac
Haulage/routing agreements	ad
Business travel plans	ae
Car Sharing Schemes	af

* *Further explanation of these terms is provided in Annex B*

Table 2-A Potential Interventions

The highway interventions were considered across all route sections (where relevant) as illustrated in Figure 2-A (Highway Intervention Matrix).

Highway interventions not considered relevant for a particular route section have been labelled “N/A” in the Highway Intervention Matrix (Figure 2-A) Public Transport and Demand Management interventions were considered on a corridor basis.

		a	b	c	d	e	f	g	h	i	j
		dualling		WS2	Localised Widening	WS2+1	Overtaking Lanes	Junction Improvements		Junction rationalisation	Laybys
		On Line	Off Line					At-grade	Grade separated		
Route Sections	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes	N/A	N/A
	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Yes	N/A
	4	N/A	N/A	N/A	N/A	N/A	N/A	Yes	Yes	Yes	N/A
	5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	yes	N/A
	6	N/A	N/A	Yes	Yes	N/A	N/A	Yes	N/A	N/A	N/A
	7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Yes	N/A
	8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Yes	yes
	9	Yes	Yes	Yes	N/A	N/A	N/A	Yes	N/A	N/A	Yes
	10	Yes	Yes	Yes	N/A	N/A	N/A	Yes	N/A	N/A	Yes
	11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

		k	l	m	n	o	p	q	r	s
		Signing	Ban right turns at minor junctions	Parallel access roads	Cross A1 movements to	Average Speed Limit	Improving bus stops on	Slow moving vehicle refuges	Reduced Speed Limit	S2
Route Sections	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	N/A	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A
	3	N/A	yes	Yes	Yes	Yes	N/A	yes	N/A	N/A
	4	N/A	yes	Yes	Yes	N/A	N/A	N/A	Yes	N/A
	5	N/A	yes	Yes	Yes	Yes	N/A	yes	N/A	N/A
	6	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	Yes
	7	N/A	yes	Yes	Yes	N/A	N/A	yes	N/A	N/A
	8	N/A	Yes	Yes	Yes	Yes	yes	yes	N/A	N/A
	9	N/A	N/A	N/A	Yes	Yes	N/A	Yes	N/A	N/A
	10	N/A	N/A	N/A	Yes	Yes	N/A	Yes	N/A	N/A
	11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes	N/A

Figure 2-A Highways Intervention Matrix

The next stage of the Option Generation process was to use the Highway Intervention Matrix (Figure 2-A) to identify combinations of complementary options over multiple route sections that could provide greater benefits than discrete options on individual route sections. Sixteen combinations of complementary options were identified to be taken forward for further consideration alongside the discrete options on individual route sections. The potential combinations of interventions are shown in Table 2-B.

Code	Description
3,5,7,8,9,10 - A/B	Dual remaining single carriageway sections of the A1
3,5 - A/B	Dual remaining single carriageway sections south of Ellingham
9,10 - B	Dual Berwick Bypass
3-A/B, 6-C	Dual carriageway to Alnwick, single carriageway thereafter
4 - I/M	Junction rationalisation and parallel access road on dual carriageway at Alnwick (Collector-distributer)
3,5,7,8,9,10 - C	All single carriageway sections to WS2
3,5 - A/B, 7,8,9,10-C	Dual Carriageway to Ellingham, WS2 carriageway to Berwick
5,7 -A/B	Dual Carriageway between Felton and Fenwick
5,7,8 - A/B	Dual Carriageway between Felton and Scremerston
7,8 - A/B	Dual Carriageway between Brownieside and Scremerston
3, 5 - A/B, 7,8 - D	Dual carriageway to Ellingham, localised widening on single carriageway sections to the north
3, 5 - A/B, 7,8 - F	Dual carriageway to Ellingham, overtaking lanes on single carriageway sections to the north
3, 5 - A/B, 7,8 - E	Dual carriageway to Ellingham, WS2+1 on single carriageway sections to the north
3,5,7,8 - E	WS2+1 on all single carriageway sections
3 - A/B, 3,4 - I, 3,4 - M	Dual section 3 and rationalise junctions on sections 3 and 4 with parallel access roads where necessary to remove PMA conflict where possible
3,5,9.10 - A/B	Dual sections 3, 5, 9 and 10

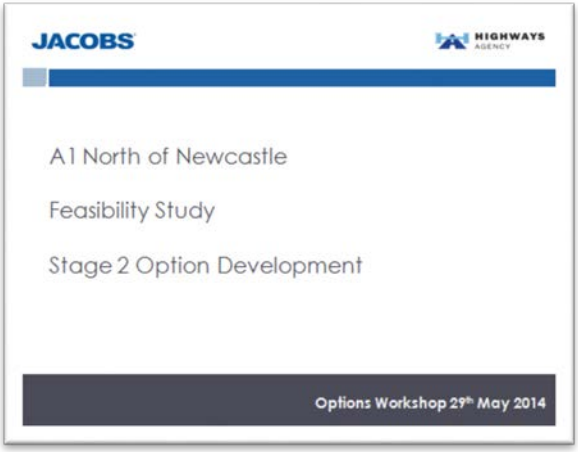
Table 2-B Combinations of Interventions

Table 2-C provides a summary of the outcome of the option generation workshop. A full list is provided in Annex A.

Interventions	Number
Highway	85
Public Transport	9
Demand Management	4
Highway Combinations	16

Table 2-C Summary of potential interventions

2.3 Challenge Workshop



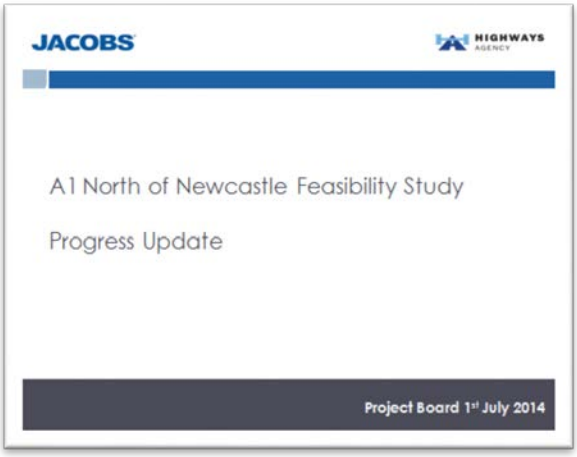
Following the initial option identification exercise undertaken in the "Option Generation Workshop" the project team held a "challenge workshop" on the 29/05/14. This was attended by the HA Project team, HA NDD, DfT Senior Responsible Owner, as well as the technical specialists from the Jacobs project team.

The aim of this workshop was to utilise the expert knowledge and experience of a broad range of individuals to discuss and agree the methodology adopted and the initial list of interventions to be considered as part of the study.

The process adopted as part of the option development exercise was presented to the group. Each route section was discussed in detail along with the potential interventions that have been identified.

The workshop resulted in a consensus on the initial list of options to be considered further as part of the study.

2.4 Project Board Endorsement



The Project Board met on the 07/07/14 to discuss progress on the Feasibility Study and confirm the way forward. The Project Board was attended by the DfT Senior Responsible Owner and representatives from the DfT Northern Engagement Team, DfT Road Economics Team, HA Major Projects and Jacobs.

The Project Board endorsed the Stage 1 data collection and analysis findings, the Study Objectives to be adopted going forward and the Option Generation and Sifting exercise.

3 Option Sifting

3.1 Introduction

The Option Generation process (Chapter 2) identified an initial list of 85 discrete highway interventions, 9 public transport interventions, 4 demand management interventions and 16 combinations of interventions, to be considered further as part of the feasibility study.

The key principle of TAG is that potential improvements are driven by identified problems and defined objectives. This ensures that the need for investment can be clearly justified and evidenced.

The next stage within the option development process was therefore to ‘sift out’ any potential solutions that clearly failed to meet the defined objectives, fail to alleviate identified problems or fail to meet key deliverability / feasibility criteria.

DfT guidance recommend the use of the Early Assessment and Sifting Tool (EAST) which enables analysts to quickly assess options against the Treasury Five Case Model to discard any options that do not represent realistic solutions or are undeliverable.

However, a limitation of EAST in the context of the Feasibility Study is that there is only a single opportunity to provide an assessment against the identified problems and objectives. As shown below these assessments are covered under 'Scale of Impact' for problems and 'Fit with other objectives' for route objectives.

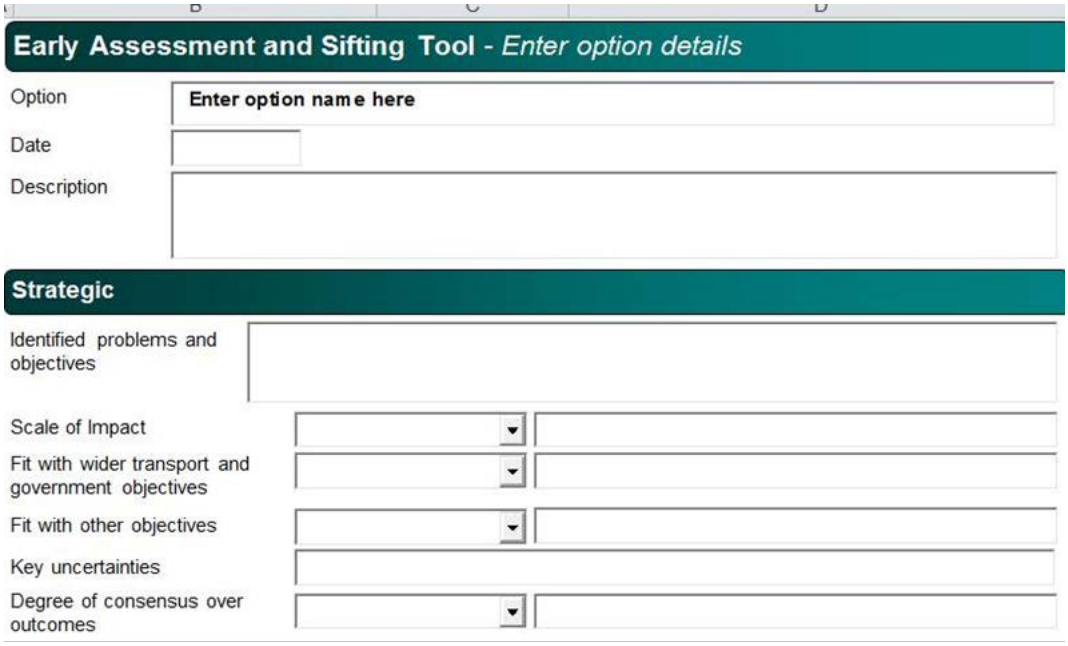


Figure 3-A EAST Input (Scale of Impact/fit with other objectives)

Given that the feasibility study has identified several problems and objectives it is considered that a single assessment could be misleading and provide limited disaggregation between the benefits of each of the potential interventions

considered. A spreadsheet has therefore been developed for use in advance of EAST in order to better understand how each of the potential interventions could alleviate each of the identified problems and contribute to the defined objectives. This 'Initial Sift' spreadsheet has also included consideration of high level deliverability and feasibility criteria in order to identify any 'show stoppers' that are likely to prevent an option from being progressed.

The Initial Sift is discussed in more detail below, followed by a description of EAST.

3.2 Initial Sift

The Initial Sift spreadsheet (Annex A) includes the following components.

- *Assessment against problems*
- *Assessment against objectives*
- *Feasibility / deliverability assessment*
- *Sifting criteria and sift*

Each element of the Initial Sift is discussed in more detail below followed by a summary of the sifting process.

3.2.1 Initial Sift: Assessment against Problems and Objectives

Each of the 114 potential interventions identified for further consideration were input into the initial sifting spreadsheet. Each intervention was assessed against how it may help to resolve the identified problems on the route and help achieve the defined objectives.

This exercise was undertaken by specialists from Transport Planning / Appraisal, Highway Design and Environmental disciplines and was based upon local knowledge, technical expertise, professional judgement and experience.

The assessment was undertaken using a five-point scale as illustrated in Figure 3-B.

Qualitative assessment against identified problems	
2	Large beneficial impact
1	Beneficial impact
0	Neutral / marginal impact
-1	Adverse impact
-2	Large adverse impact

Qualitative assessment against identified objectives	
2	Large beneficial impact
1	Beneficial impact
0	Neutral / marginal impact
-1	Adverse impact
-2	Large adverse impact

Reference (Route Section-Intervention)	Option Description	Problems (EAST Scale of Impact)								Objectives (EAST Fit with Other Objectives)							
		1	2	3	4	5	6	7	8 Total	1	2	3	4	5	6	-	Total
1-H	Localised Junction Improvement at Shotton Junction	0	0	1	0	0	0	0	0 1	0	0	1	0	0	0		1
3-A	On line dualling	0	2	1	1	2	2	2	2 12	2	2	1	1	1	-1		6
3-B	Off line dualling	0	2	1	1	2	2	2	2 12	2	2	1	1	1	-2		5
3-C	WS2	0	-1	0	1	1	0	1	1 3	1	1	-1	0	0	-1		0
3-D	Localised widening	0	-1	0	1	1	0	0	1 2	1	1	-1	1	0	-1		1
3-E	WS2+1	0	-1	0	1	1	1	1	1 4	1	1	1	0	0	-1		2
3-F	Overtaking Lanes	0	-1	0	1	1	1	1	1 4	1	1	1	0	0	-1		2
3-G	At grade junction improvements	0	0	1	1	0	0	0	0 2	0	0	1	1	0	-1		1

Figure 3-B Assessment against Problems and Objectives

The resulting assessment provided a detailed understanding of the potential benefits that could be delivered by each of the potential interventions.

3.2.2 Initial Sift: Feasibility / Deliverability Assessment

The next stage was to assess each of the potential interventions against key deliverability and feasibility criteria as listed below. Again, this exercise was undertaken by specialists from Transport Planning / Appraisal, Highway Design and Environmental disciplines and was based upon local knowledge, technical expertise, professional judgement and experience.

Deliverability Considerations

1. Political acceptability:-
    a. Who are the key stakeholders?
    b. What level of support is there likely to be from them for the option under consideration?
    c. What level of support is there likely to be from the public for the option under consideration?
    d. Are there any significant environmental impacts for the option under consideration?
2. Planning:-
    a. How far through the planning process is the option under consideration (e.g. not started, part-way through, nearing completion)?
    b. Are there any legal issues e.g. CPO?
3. Implementation timescales / funding likelihood
    a. What is the implementation timescale (e.g. short (less than 2 years), medium (2 to 5 years) and long (greater than 5 years))?
    b. What are the likely funding sources? Are they time-dependent? Is there likely to be a funding gap?
    c. Are there likely to be significant mitigation costs over and above the cost of the option itself?
4. Third Party Issues
    a. Is Third Party land required?
    b. Are there any legal issues e.g. CPO?

Feasibility Considerations

1. Physical constraints
    a. Are there any significant physical constraints that could have a direct impact on the costs and risks associated with the option under consideration e.g. existing structures (viaducts, bridges, retaining walls etc.) or structures required within option design?
2. Land ownership / availability
    a. Will CPO be required?
3. Design standards
    a. Is the option under consideration technically possible from an engineering perspective?

Each of the potential interventions were assessed against a three-point scale as illustrated in Figure 3-C.

Deliverability (e.g. political, planning, timescale or third party issues)	Feasibility (e.g. physical constraint, land availability and design standards)
Likely to be deliverable	Likely to be feasibile
Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)
Unlikely to be deliverable	Unlikely to be feasible

Reference (Route Section-Intervention)	Option Description	Deliverability	Feasibility
1-H	Localised Junction Improvement at Shotton Junction	Likely to be deliverable (with Challenges)	Likely to be feasibile
3-A	On line dualling	Likely to be deliverable	Likely to be feasibile (with Challenges)
3-B	Off line dualling	Likely to be deliverable	Likely to be feasibile
3-C	WS2	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)
3-D	Localised widening	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)
3-E	WS2+1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)
3-F	Overtaking Lanes	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)

Figure 3-C Feasibility / Deliverability Assessment

3.2.3 Initial Sift: Sifting Criteria

A set of sifting criteria was developed to sift-out potential interventions that were unlikely to provide a significant contribution to the identified problems and defined objectives or were unlikely to be deliverable or feasible. The sifting criteria is illustrated in Figure 3-D.

Initial Sifting Criteria
Each option must meet the following sifting criteria to be considered further within EAST:

1: Overall moderate impact against identified problems (Appraisal score >4, see East Conversion below)
2: Overall moderate fit with route objectives (Appraisal score >3, see East conversion below)
3: Likely to be deliverable
4: Likely be feasible in theory

Reference (Route Section-Intervention)	Option Description	Initial Sifting Criteria Prior to EAST				Take to EAST
		1	2	3	4	
1-H	Localised Junction Improvement at Shotton Junction	✗	✗	✓	✓	✗
3-A	On line dualling	✓	✓	✓	✓	✓
3-B	Off line dualling	✓	✓	✓	✓	✓
3-C	WS2	✗	✗	✓	✓	✗
3-D	Localised widening	✗	✗	✓	✓	✗
3-E	WS2+1	✗	✗	✓	✓	✗
3-F	Overtaking Lanes	✗	✗	✓	✓	✗
3-G	At grade junction improvements	✗	✗	✓	✓	✗

Figure 3-D Sifting Criteria

Only those potential interventions that met all 4 sifting criteria were selected for further consideration within EAST. These frontrunner options are summarised in Figure 3-E. At this point each of the interventions were referenced 1 - 10.

Option	Description
1	Morpeth to Felton Online Dualling
2	Morpeth to Felton Offline Dualling
3	Full Dualling
4	Dual remaining single carriageway sections of the A1 south of Ellingham (Either Online or Offline)
5	Dual Berwick Bypass
6	4 + localised widening on single carriageway sections to the north
7	4 + overtaking lanes (climbing lanes) on single carriageway sections to the north
8	4 + WS2+1 on single carriageway sections to the north
9	1 / 2 + rationalise junctions on sections 3 and 4 with parallel access roads where necessary to remove PMA conflict where possible
10	4 + 5

Route Sections	Dualling (On Line / Off Line)	Localised Widening	WS2+1	Overtaking Lanes	Junction Rationalisation & Parallel Access Roads
1					
2					
3	1 2 3 4 6 7 8 9 10				9
4					9
5	3 4 6 7 8 9 10				
6					
7	3	6	8	7	
8	3	6	8	7	
9	3 5 10				
10	3 5 10				
11					

Figure 3-E Sifted Interventions

Full details of the Initial Sift are presented in Annex A.

3.3 EAST

Each of the 10 options that remained after the 'initial sift' were then assessed within EAST against the Treasury Five Case Model as summarised below and discussed in the following paragraphs.

- ***Strategic Case***
  - *Identified problems and objectives of the option*
  - *Scale of Impact*
  - *Fit with wider transport and Government objectives*
  - *Fit with other objectives*
  - *Key uncertainties*
  - *Degree of consensus over outcomes*
- ***Economic Case***
  - *Economic Growth*
  - *Carbon Emissions*
  - *Socio-distributional impacts and the regions*
  - *Local Environment*
  - *Well Being*
  - *Expected Value for Money Category*
- ***Management Case***
  - *Implementation timetable from inception to delivery*
  - *Public acceptability*
  - *Practical feasibility*
  - *Quality of supporting evidence*
  - *Key risks*
- ***Financial Case***
  - *Affordability*
  - *Capital Costs*
  - *Revenue Costs*
  - *Cost Profile*
  - *Overall Cost Risk*
- ***Commercial Case***
  - *Flexibility of Option*
  - *Where is funding coming from?*
  - *Any Income generated?*

3.3.1 EAST: Strategic Case – Identified problems and objectives of the option

In line with DfT's EAST guidance, this provides a description of the identified problems that the option is hoping to address and how it aims to do so.

For this study, all options have been developed to address the same identified problems and to meet the same route objectives. As such this is not used as part of the assessment.

3.3.2 EAST: Strategic Case - Scale of Impact

In line with DfT's EAST guidance, Scale of Impact considers to what extent the option alleviates the identified problems. The analyst is expected to provide a brief justification for their assessment, highlighting any supporting evidence.

For this study, this has been based upon the impact of each option on the identified problems and issues on the route. As described above, the initial sift spreadsheet was used to determine the scale of impact rating. The sum of the scores for each option across the eight route problems within the Initial Sift spreadsheet was used as the basis for scoring within EAST, as summarised in Table 3-A. Options receiving

a minimum score of “Moderate Impact” were taken forward from the initial sift of options.

Initial Sift Appraisal Score	EAST Rating
≤0	Very small impact
1	Minor Impact
2	
3	
4	
5	Moderate Impact
6	
7	
8	
9	Significant impact
10	
11	
12	
13	Fully addresses identified problems
14	
15	
16	

Table 3-A Conversion of Initial Sift Appraisal score into EAST rating for “Scale of Impact”

3.3.3 EAST: Strategic Case - Fit with wider transport and government objectives

Fit with wider transport and government objectives considers:

- *How the option fits within the EU legislative framework for transport proposals and their funding, how it might affect EU proposals and /or quality for EU funding.*
- *How the option might affect pre-existing proposals or policies in the area, especially any conflicts.*
- *How the option might affect other transport modes, in particular freight*
- *The extent to which the option ‘makes better use’ of existing transport infrastructure, or ‘doing more for less’.*
- *How the scheme could affect other non-transport policies.*

For this study all options would be consistent with EU legislative frameworks and opportunities for funding, and there are no EU proposals to the best of our knowledge. All the options would have broadly similar effects on other pre-existing proposals in the area (eg. Morpeth Northern Bypass) and would have broadly similar effects on other transport modes. Most of the options involve a combination of new infrastructure and “making better use” of existing infrastructure.

Options which involved only dualling were awarded a score of “5.High” while options that involved the improvement of single carriageway sections but not to dual carriageway standard received a moderate score. In the case of Option 9 where there are proposed improvements to a section already at dual carriageway standard a score of “4” was awarded.

3.3.4 EAST: Strategic Case - Fit with other objectives

This section provides an opportunity to highlight any important regional or local objectives (both transport and non-transport related) than an option may significantly contribute to. For the A1 North of Newcastle Feasibility study this has been used to assess the impact of the option on the defined route objectives.

The sum of the scores for each option across the six route objectives within the Initial Sift spreadsheet was used as the basis for scoring within EAST, as summarised in Table 3-B. Only those interventions receiving a score of “Moderate Impact” or above remained following the initial sift of options.

Initial Sift Appraisal Score	Rating
≤0	Very small impact
1	Minor Impact
2	
3	
4	Moderate Impact
5	
6	
7	Significant impact
8	
9	
10	Fully addresses identified problems
11	
12	

Table 3-B Conversion of Initial Sift Appraisal Score into EAST rating for “Fit with other Objectives”

3.3.5 EAST: Strategic Case - Key uncertainties

This section considers the key risks associated with each option from a government and strategic perspective, and the most uncertain assumptions that have been made.

For this study, all options have similar risks from a government perspective. It should also be noted that this item has not been used to distinguish options within EAST.

3.3.6 EAST: Strategic Case - Degree of consensus over outcomes

This assesses the involvement of relevant stakeholders at this stage and whether the option under consideration would be considered to be controversial or, alternatively, met with broad agreement.

For this study, at this stage of the process no formal consultation had been undertaken. However, the identified problems and the route objectives have both been endorsed by the Stakeholder Reference Group. At this stage the individual performance of options has not been discussed outside of the project team.

3.3.7 EAST: Economic Case - Economic Growth

In line with the Treasury's Green Book, "Appraisal and Evaluation in Central Government", EAST aims to identify - at a high level - the nature and extent of all the economic, environmental and social impacts of options.

The "decision trees" within EAST provide a one-page guide to the issues that need to be considered when forming a view about the likely impact of options on the economy, carbon emissions, socio-distribution impacts and the regions, local environment and wellbeing. It is not possible to answer every question at this stage, rather they are used as a set of prompts to ensure all relevant areas have been considered or flagged for further investigation. The questions within the "decision trees" are consistent with the Treasury Five Case Model and TAG.

The five items within the "decision trees" for Economic Growth are connectivity, reliability, wider economic impacts, resilience and delivery of housing. In this study the main differentiator was considered to be connectivity, primarily reductions in journey times. Whilst other indicators could vary between options, it was considered that they would not vary significantly to change the EAST score from those identifies through reductions in Journey Times.

Hence economic growth has been scored based on a comparative assessment using a spreadsheet to estimate potential journey time savings resulting from each option and then converting these using average values of time contained within TAG.

3.3.8 EAST: Economic Case - Carbon Emissions

This assesses the likely change in vehicle-kilometres and vehicle speeds that each option is likely to have.

As all options would increase vehicle speed and fuel consumption and involve significant construction work, using materials with embedded carbon, they have all been assessed as having an adverse impact on carbon emissions.

3.3.9 EAST: Economic Case - Socio-distributional impacts and the regions

Social and distributional impacts need to be considered when assessing the impact of options on certain people groups for noise, air quality, severance, accessibility, security, accidents, user benefits and personal affordability. Regeneration, and how much each option impacts upon regional imbalance, was also investigated but these were deemed to be not significant.

All schemes have been scored equally as they are likely to increase the economic activity of the region, but given that the Local Super Output Areas (LSOAs) nearest to the A1 are generally in the top two least deprived quintiles; they are unlikely to make a significant negative contribution of socio-distributional impact.

3.3.10 EAST: Economic Case - Local Environment

The assessment of Local Environment involved examining the impact of each option on Air Quality, Noise, Natural environment, heritage, landscape and townscape.

A desk-based assessment was conducted to determine the impact of each option on each of the TAG environment sub-objectives. The assessment considered adverse and beneficial, long-term and permanent impacts and assumed the inclusion of appropriately designed mitigation. The outcomes of the assessment were used to complete a Local Environment Decision Tree (one for each option). The decision trees included questions about the impacts on air quality, noise, the natural environment, heritage, landscape, streetscape and the urban environment. Each of the decision trees concluded that, overall, there would be an adverse impact on the local environment for all the options under consideration.

3.3.11 EAST: Economic Case - Wellbeing

Assessing Well Being is based upon the impact of the option on people's Physical Activity, injury or death, crime, terrorism, accessibility and severance.

For this study, as all options are likely to improve journey times and accessibility to services while having minimal community severance impacts, they have all been assessed as having a positive impact on Well Being.

3.3.12 EAST: Economic Case - Expected Value for Money Category

Value for money measures the benefits for each £1 of costs. It includes both the benefits and the costs that can be counted in monetary terms and other non-monetised impacts such as regeneration and environmental effects.

The indicative Value for Money (VfM) for each option has been estimated using a spreadsheet based methodology.

3.3.13 EAST: Management Case - Implementation timetable from inception to delivery

This provides the opportunity to give an estimate for the timescales for implementing the option, from inception to delivery.

The assumed implementation time for each option has been assumed to be broadly proportional to the length of each scheme and has been estimated using the known timescale for previous existing schemes.

3.3.14 EAST: Management Case - Public Acceptability

This is an assessment of whether there are likely to be any issues around public acceptability of the option. It also considers any potential behavioural changes and whether any stakeholder engagement has already taken place.

The project team assessed this based on their understanding of public opinion around the A1 north of Newcastle. There is likely to be mixed support for any scheme taken forward, there are stakeholders who are likely to support significant infrastructure improvements, however, there are also key stakeholders who may be opposed to particular improvements.

3.3.15 EAST: Management Case - Practical Feasibility

The practical feasibility of each option assesses whether the option has been tested and proven to be practical and effective elsewhere in the country, whether there are

likely to be any legal/planning or governance issues and whether the option uses proven or unproven technology.

For this study, the practical feasibility of each scheme was assessed based on the knowledge of experienced Highways engineers, with most options being determined to be feasible. However, option 8 which involves the use of WS2+1 was marked down as it is not a nationally adopted design standard.

3.3.16 EAST: Management Case - Quality of Supporting Evidence

This considers whether similar options have been implemented elsewhere and how transferable the results are likely to be and whether any modelling has been undertaken.

In line with EAST guidance it was determined that for the Morpeth to Felton schemes there was a good level of supporting evidence, while the other route sections had less supporting evidence.

3.3.17 EAST: Management Case - Key risks

This item provides the opportunity to highlight whether risks have been considered and, if so, what the key risks are and their likelihood this could include experience from pilot projects or schemes implemented elsewhere in the country.

For this study, as most options are at the earliest stages of planning and delivery, only broad risks have been highlighted. It should be noted that this item is not scored within EAST.

3.3.18 EAST: Financial Case – Affordability

Affordability is the consideration of an option's cost in comparison to available budgets and budget periods.

For this study, Affordability has not been assessed as part of this EAST assessment as any resultant scheme(s) is not contained within an existing delivery programme.

3.3.19 EAST: Financial Case - Capital Costs

Capital Costs considers the total cost of an option, including preparation and operating/maintenance costs.

Capital Costs have been based on the estimated costs of the Morpeth to Felton and Adderstone to Belford dualling schemes on a pro rata basis by length. Non Dualling options have been assessed using professional judgement and knowledge of other similar schemes.

3.3.20 EAST: Financial Case - Revenue Costs

This item considers if subsides would be required as well as overall revenue changes.

For this study, none of the proposed options on the A1 north of Newcastle would be tolled or are public transport options so would not generate any revenues.

3.3.21 EAST: Financial Case - Cost Profile

This item highlights whether any previous cost estimates included other relevant scheme costs, such as preparation, operating/maintenance and regulatory costs. It also considers if there are any costs or savings to businesses, especially small businesses.

For this study, all cost estimates have been estimated on the same comparative basis.

3.3.22 EAST: Financial Case - Overall Cost Risk

This item assess the associated risk with costs estimated at this stage and an estimate of the likelihood of cost increases based on examples of similar schemes and how they have differed from original estimates; it requires the user to enter an overall risk rating from 1 (low) to 5 (high), with supporting evidence.

For this study, Overall Cost Risk has not been assessed in this study. Because all options under consideration are similar.

3.3.23 EAST: Commercial Case - Flexibility of Option

This item considers the extent to which an option could be scaled up or down, stopped before/during operation, or amended.

For this study, all the options are bespoke, with the route already divided into sections to investigate interventions. As such, the scaling up or down of different options, or their stopping/amendment is not relevant. Therefore all the options have been assessed as static.

3.3.24 EAST: Commercial Case - Where funding is coming from

This item considers how the option will be funded (both the capital and revenue/operating costs), together with the certainty of such funding.

For this study, funding for any potential scheme is assumed to be provided by Central Government for all options. It should be noted that this item is not scored within EAST.

3.3.25 EAST: Commercial Case – Any income generated?

This item highlights whether an option would generate any additional income and whether any beneficiaries should be asked for contributions towards the cost of the option i.e. Developer Contributions.

For this study none of the options generate additional income. Regarding the issue of potential Developer Contributions, it is too early in the scheme development process for this to be considered. It should also be noted that this item is not scored within EAST.

3.3.26 EAST: Results

EAST does not determine the best performing options on the user's behalf but simply enables the project team to view all the options' scores when looking at the summary sheet.

Once EAST had been populated the project team therefore had to determine which, if any, options should not be taken any further forward.

A summary of EAST is provided in Figure 3-F.

Option	Strategic			Economic						Managerial				Financial
	Problems (Scale of impact)	Fit with wider objectives	Fit with Route Objectives	Economic Growth	Carbon emissions	SDI and the regions	Local environment	Well being	Expected VfM Category	Implementation timetable	Public acceptability	Practical feasibility	Quality of the supporting evidence	Capital Cost (£m)?
1: Morpeth to Felton Dualling (online)	5	5	3	4	3	4	3	3	2	5	3	4	4	7
2: Morpeth to Felton Dualling (offline)	5	5	3	4	3	4	3	3	2	5	3	3	4	7
3: Full Dualling	5	5	4	5	3	4	3	3	5	6	3	4	3	9
4: Dual to Ellingham	4	5	3	5	3	4	3	3	2	5	3	4	3	8
5: Dual Berwick Bypass	3	5	3	2	3	4	3	3	4	5	3	3	3	5
6: Dual to Ellingham with localised widening on sections to the North	5	3	3	5	3	4	3	3	3	5	3	4	3	8
7: Dual to Ellingham with overtaking lanes (climbing Lanes) on sections to the north	5	3	3	5	3	4	3	3	3	5	3	4	3	8
8: Dual to Ellingham with WS2+1 on sections to the North	5	3	3	5	3	4	3	3	3	6	3	2	3	9
9: Morpeth to Felton Dualling + junction rationalisation (sections 3 & 4) + Parallel access roads to remove PMA conflict	5	4	3	4	3	4	3	3	2	5	3	4	3	7
10: Dual to Ellingham + Dual Berwick Bypass	4	5	3	4	3	4	3	3	3	6	3	3	3	9
	5. High 1. Low								1. V high 2. High 3. Medium 4. Low 5. Poor	5. 2-5yrs 6. 5-10yrs	5. High 1. Low			5. 25-50 7. 100-250 8. 250-500 9. 500-1000

Figure 3-F EAST Summary Table

As highlighted in Figure 3-F, Option 5 (the dualling of the Berwick Bypass) and Option 8 (full dualling to Ellingham and WS2+1 between Ellingham and Berwick) are shown as having the lowest EAST scores. This is explained below.

Option 5 receives the lowest score for Scale of Impact, showing that it does not address the identified problems and issues on the route as well as the other options. This can be attributed to the fact that Berwick Bypass does not experience several of the route problems and therefore it cannot score highly against them. Option 5 scores significantly worse than any of the other options in terms of Economic Growth, mainly because of the low traffic volumes to the north of the route. This leads to much lower predicted journey time savings than the other options which improve longer sections of the route, including those sections with higher flows. For all the above reasons, Option 5 has not been taken forward for more detailed option assessment.

Option 8 scores lowest on Practical Feasibility due to not being a nationally adopted design standard (whilst WS2+1 has not been widely used in England at this time, it has been used in Scotland and elsewhere in Europe). For this reason Option 8 has not been taken forward.

All options except for Options 5 and 8 have been taken forward for more detailed option assessment.

4 Option Assessment

4.1 Introduction

Option Assessment has been undertaken in line with the methodology prescribed within the Appraisal Specification Report (ASR) and best practice contained within TAG, it has been undertaken as a desk based exercise based upon professional experience / judgement, has been informed by data where available and supported by relevant stakeholder engagement.

It aims to distinguish the relative costs, benefits and impacts of the options under consideration. Options are assessed against the DfT's Option Assessment Framework, with evidence presented against the best practice Treasury 5 case model as illustrated in Table 4-A.

DfT Option Assessment Framework	
Case	**Assessment Area**
Strategic Case The Strategic Case determines whether or not an investment is needed, either now or in the future. It demonstrates the case for change – that is, a clear rationale for making the investment; and strategic fit, how an investment will further the aims and objectives of the organisation.	
	Regional policy
	Local policy
	Route Objectives 'strategic fit'
Economic Case The economic case considers the Economic, Environmental and Social Impacts which when combined with estimated costs determine the overall Value for Money of a proposal.	
Economic Impacts	Business Users and Transport Providers
	Reliability
	Regeneration
	Wider Impacts
Environmental Impacts	Noise
	Air Quality
	Greenhouse Gases
	Landscape
	Townscape
	Historic Environment
	Biodiversity
	Water Environment
Social Impacts	Non-business users
	Physical activity
	Journey Quality
	Accidents
	Security
	Access to Services
	Affordability
	Severance
	Option Values

DfT Option Assessment Framework	
Case	**Assessment Area**
Public Accounts	Cost to the Broad Transport Budget
	Indirect Tax Revenues
Distributional Impacts	
Indicative BCR	
Financial Case The Financial Case of the scheme considers the cost of the scheme (both the initial development and construction costs, and the later operating and maintenance costs). It also considers significant risks that may impact upon those costs and considers the likely funding source(s) for a scheme.	
Capital and Revenue Costs	Outturn Costs to Implement
	Operating and Maintenance Costs
Funding Assumptions	Funding Assumptions and Allocations
Management / Delivery Case The management case assesses whether a proposal is deliverable. It tests the project planning, governance structure, risk management, communications and stakeholder management, benefits realisation and assurance (e.g. a Gateway Review). There should be a clear and agreed understanding of what needs to be done, why, when and how, with measures in place to identify and manage any risks. The management case sets out a plan to ensure that the benefits set out in the economic case are realised and will include measures to assess and evaluate this. All projects and programmes are expected to have a risk management plan, proportionate to their scale.	
	Likely delivery Agents
	Stakeholder Acceptability
	Public Acceptability/Interest
Commercial Case The commercial case provides evidence on the commercial viability of a proposal and the procurement strategy that will be used to engage the market. It should clearly set out the financial implications of the proposed procurement strategy. It presents evidence on risk allocation and transfer, contract timescales and implementation timescale as well as details of the capability and skills of the team delivering the project and any personnel implications arising from the proposal.	
	Route to market
	Difficulty / risks

Table 4-A Option Assessment Framework

Each of the eight options taken forward for further consideration following the 'early assessment and sifting' process are discussed in detail within Chapters 5 to 12.

4.2 Option Assessment Structure

The option assessment is structured as follows:

- *Chapter 5: Option 1 Assessment*
- *Chapter 6: Option 2 Assessment*
- *Chapter 7: Option 3 Assessment*
- *Chapter 8: Option 4 Assessment*
- *Chapter 9: Option 6 Assessment*
- *Chapter 10: Option 7 Assessment*
- *Chapter 11: Option 9 Assessment*
- *Chapter 12: Option 10 Assessment*

5 Option 1 Assessment

5.1 Option 1: Morpeth to Felton On-line Dualling

Option 1, as illustrated in Figure 5-A and Figure 5-B, would entail the widening of the existing 8 mile section of single carriageway between Morpeth and Felton (route section 3). This could be achieved by either adding additional pavement symmetrically or asymmetrically or a combination of both depending upon sectional constraints and would include provisions for non-motorised users (NMUs).

Figure 5-A Option 1 Overview

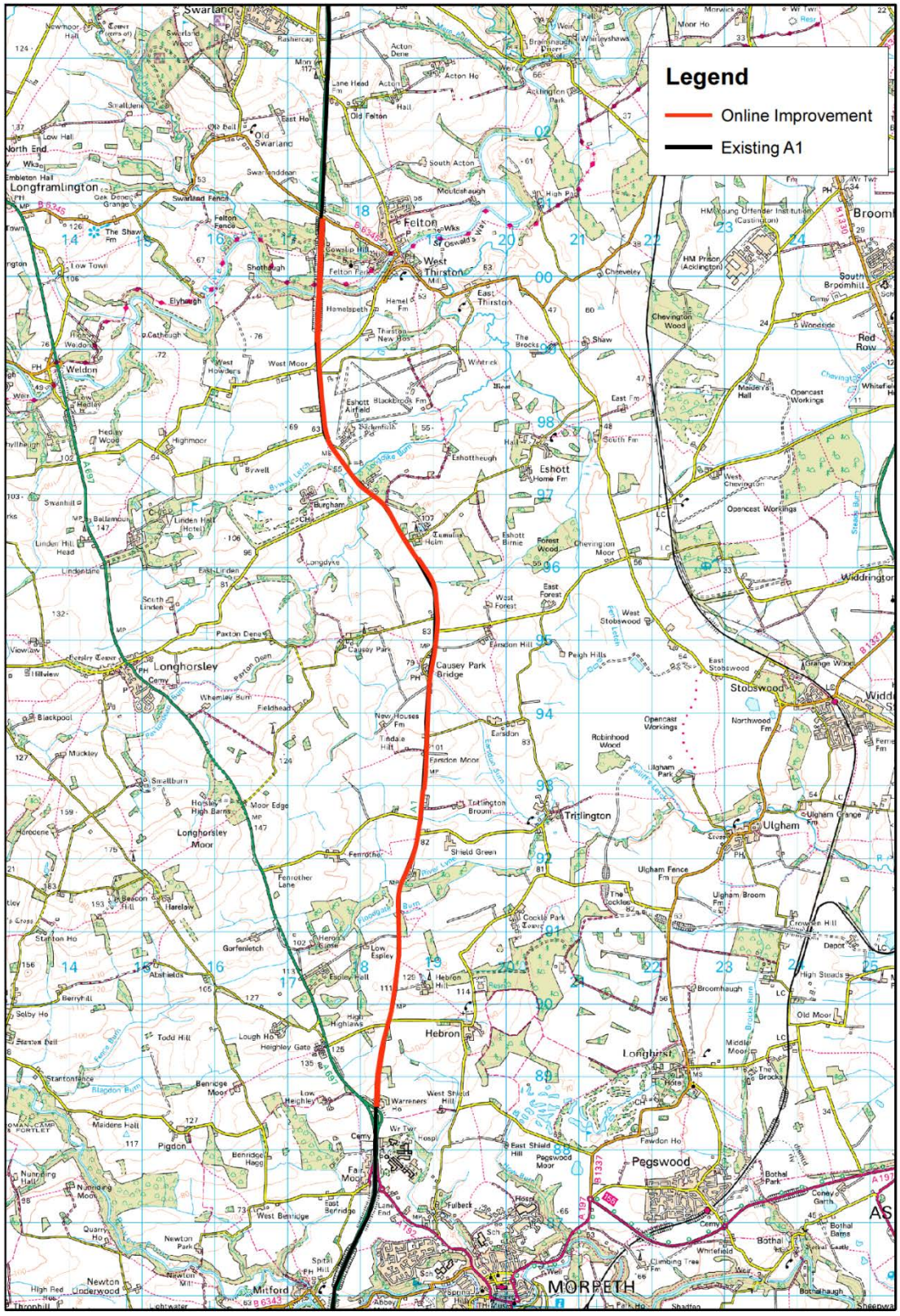


Figure 5-B Option 1

The Option 1 Assessment is summarised in Table 5-A to Table 5-I.

Option 1 Strategic Case Assessment		
Impact	**Qualitative Assessment**	
Regional Policy	This option is well supported by policy at a national, regional and local level.	+1
Local Policy		
Route Objectives	This option is likely to have a strong fit with the defined route objectives.	+1
+1	Option likely to support relevant policy	
0	Option likely to have neutral impact upon relevant policy	
-1	Option likely to conflict with relevant policy	

Table 5-A Option 1: Strategic Case Assessment

Option 1 Economic Case Assessment - Economic Impacts		
Impact	**Qualitative Assessment**	
User benefits	Option 1 is likely to result in moderate travel time savings in comparison to other options considered.	+2
Reliability	Option 1 is likely to provide moderate ability to help road users cope with incidents on the route without re-routing and to help overtake slow moving vehicles in comparison to other options.	+2
Regeneration	Not assessed	
Wider Impacts	Not Assessed	
1	Option likely to have small benefits	
2	Option likely to have moderate benefits	
3	Option likely to have large benefits	

Table 5-B Option 1: Economic Case Assessment - Economic Impacts

Option 1 Economic Case Assessment - Environmental Impacts		
Impact	**Qualitative Assessment**	
Noise	This option is expected to: • Increase noise levels as a result of increased speed. • Increase noise at those properties within 20m of the existing A1 due to repositioning of the running lanes.	-1
Air Quality	This option is likely to increase the average 12 hour vehicle speed by over 10km an hour. This variant would take the main A1 traffic to within 200m of some properties previously outside of this distance. This could have an adverse impact on air quality at these locations.	-1
Greenhouse Gases	This option is likely to increase embedded carbon and reduce efficiency.	-1
Landscape	This option is likely to: • Change the character of the road and make it more visually intrusive. • Require land take and the removal of roadside trees and hedges. • Have an adverse impact on two Special Landscape Areas (SLAs).	-1
Townscape	This option is likely to require the demolition of some properties.	-2
Historic Environment	This option is likely to require the relocation of five Listed mileposts. It may also have an adverse impact on the setting of two Grade II Listed Buildings.	-1
Biodiversity	This option is likely to require land take from both designated (a Site of Special Scientific Interest (SSSI) and a Local Wildlife Site (LWS[1])) and undesignated but important habitats (seven BAP Priority Habitats and one Ancient Woodland). The speed increases associated with this option may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
Water Environment	This option is likely to provide an opportunity to improve flooding within a flooding hot spot and to rectify any existing water quality issues through more appropriate treatment of routine runoff.	+1
+2	Large Beneficial Impact	
+1	Beneficial Impact	
0	Neutral Impact	
-1	Adverse Impact	
-2	Large Adverse Impact	

[1] There are a number of different terms used by Local Authorities to describe designated Local Wildlife Sites, including Sites of Importance for Nature Conservation (SINCs) and Sites of Nature Conservation Importance (SNCIs). To avoid confusion, all of these sites have been referred to as Local Wildlife Sites within this report.

Table 5-C Option 1: Economic Case Assessment - Environmental Impacts

Option 1 Economic Case Assessment - Social Impacts		
Impact	**Qualitative Assessment**	
Physical activity	The scheme is unlikely to lead to a significant increase in the numbers walking or cycling in the area as it is a primarily highways scheme. Some Public rights of way and cycle paths may be impacted but it is likely that further design will mitigate any potential negative impacts through the use of crossing facilities and as such there is unlikely to be much additional distance or time required due to the scheme.	0
Journey Quality	The scheme is assessed as having neutral impacts on Traveller Care and Travellers' Views while also having beneficial impacts on Frustration and Fear of potential accidents. Therefore the scheme is awarded an overall score of "Beneficial".	1
Accidents	This option is assessed as being likely to provide moderate accident savings.	1
Security	The scheme is very unlikely to have any effect on security and security was not identified as a challenge or problem for the scheme to address. Users are less likely to travel slowly or to stop regularly making them less vulnerable but given that crime levels in the area are low given the rural environment there is unlikely to be any impact on the security of scheme users	0
Access to Services	It is unlikely that this scheme will result in a change in routings or timings of current public transport services or any changes to public transport provision	0
Affordability	This option is unlikely have any impact on Parking Charges, Road User Charges or any changes to Public Transports fares or concessions	0
Severance	The scheme is considered to have negligible impact on the current severance situation. Some existing cycle paths and Public Rights of Way may be impacted by the scheme but these impacts would be mitigated at the design stage with dedicated crossing services incorporated into any design	0
Option Values	This option is not forecast to have any impact on the frequency or availability of existing public transport services in the study area and contains no additional public transport provisions	0

+2	Large Beneficial Impact
+1	Beneficial Impact
0	Neutral Impact
-1	Adverse Impact
-2	Large Adverse Impact

Table 5-D Option 1: Economic Case Assessment - Social Impacts

Option 1 Economic Case Assessment – Public Accounts		
Impact	**Qualitative Assessment**	
Cost to the broad Transport Budget	Scheme costs for economic assessment purposes (i.e. in 2010 market prices, discounted to 2010) have been estimated at under £200m	3
Indirect tax revenues	Not assessed at this stage	
3	<£200m	
2	£200m - £350m	
1	>£350m	

Table 5-E Option 1: Economic Case Assessment - Public Accounts

Option 1 Economic Case Assessment – Indicative BCR		
Impact	**Qualitative Assessment**	
Indicative BCR	An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present High Value for Money	1
2	Very High Value for Money (BCR > 4)	
1	High Value for Money (BCR = 2 - 4)	
0	Medium Value for Money (BCR = 1.5 - 2)	
-1	Low Value for Money (BCR = 1 - 1.5)	
-2	Poor Value for Money (BCR < 1)	

Table 5-F Option 1: Economic Case Assessment - Indicative BCR

Option 1 Financial Case		
Impact	**Qualitative Assessment**	
Outturn Costs to implement	Indicative scheme costs suggest that this scheme could cost under £300m, and have the lowest cost of any of the options considered	3
Operating and Maintenance Costs	As this scheme is involves improvements to 12.8km of existing road it is likely that the operating and maintenance costs will increase.	
Funding Assumptions and funding allocation	All funding is expected to be provided by central government. This scheme has the lowest cost of any of the options considered and is therefore considered most likely to receive funding at this point.	
3	<£300m	
2	£300m - £500m	
1	>£500m	

Table 5-G Option 1: Financial Case Assessment

Option 1 Management/Delivery Case		
Criteria	**Qualitative comment**	**RAG Indicator**
Governance	There is a robust assurance and risk management framework in place that has been tried and tested by the HA through the delivery of a wide range of major highways schemes. Due to the relatively short length of the widening (12.8km) and the low level of engineering required, it is likely that the Highways Agency and one contractor/designer would be required. Thus, the governance would be simple and led by the Highways Agency and their contractor/designer only.	3
3	Simple scheme with HA and single contractor/designer	
2	Moderately complex scheme with HA and single contractor/designer	
1	Complex scheme with HA and multiple contractor/designer	
Stakeholder acceptability	The key stakeholders for the scheme are NCC, and they are supportive of any work to improve the A1, particularly dualling. However, it is likely that other stakeholders could be opposed to any improvement on environmental grounds.	2
Public acceptability / interest	The general opinion of the A1 North of Newcastle is that the road is unsafe and performs poorly and as such the scheme will receive some support, however, it is likely that there will be opposition to the scheme as well.	2
3	Likely to be supported	
2	Likely to receive mixed support	
1	Unlikely to supported	

Table 5-H Option 1: Management/Delivery Case Assessment

Option 1 Commercial Case	
Assessment Area	**Proposed Methodology**
Procurement strategy	There is a robust procurement strategy in place through the use of the Highways Agency Collaborative Delivery Framework (CDF).

Table 5-I Option 1: Commercial Case Assessment

5.2 Option 1: Summary and Conclusions

Option 1 would consist of the online dualling of the A1 between Morpeth to Felton

A comparative Appraisal Summary Table (AST) is presented in Table 5-J to provide a summary the key differentiating areas of assessment.

The key positive points to draw out are:

- *Likely to have strong support from a policy perspective.*
- *Moderate benefits in comparison to some of the other options.*
- *Likely to have lowest Cost*
- *Likely to offer Highest BCR and Value for Money*
- *Likely to have a positive effect on the Water Environment.*

The key negative points to draw out for this option are:

- *Likely to have a significant adverse effect on townscape.*

- *Likely to have an adverse effect on noise, Air Quality, Greenhouse Gases, Landscape, Historic Environment and Bio Diversity*

However, it is thought that many of these adverse environmental effects could be successfully mitigated during the design process.

COMPARATIVE AST

Option 1: Morpeth to Felton Online Dualling

	Impacts	Commentary	Assessment
Economy	Business users & transport providers	At this stage travel time savings have been used as an estimate of overall user benefits. This option is likely to provide moderate travel t	2
	Reliability (Business users)	Option is likely to provide more ability to help road users cope with incidents on the route without re-routing and to help overtake slow moving vehicles.	2
	Regeneration	Not Assessed	
	Wider Impacts	Not Assessed	
Environmental	Noise	This option is expected to: • Increase noise levels as a result of increased speed. • Increase noise at those properties within 20m of the existing A1 due to repositioning of the running lanes	-1
	Air Quality	This option would increase the average 12 hour vehicle speed by over 10km an hour. This variant would take the main A1 traffic to within 200m of some properties previously outside of this distance. This could have an adverse impact on air quality at these locations.	-1
	Greenhouse gases	This option would increase embedded carbon and reduce efficiency.	-1
	Landscape	This option would: • Change the character of the road and make it more visually intrusive. • Require land take and the removal of roadside trees and hedges. • Have an adverse impact on two Special Landscape Areas (SLAs).	-1
	Townscape	This option is likely to require the demolition of some properties.	-2
	Historic Environment	This option is likely to require the relocation of five Listed mileposts. It may also have an adverse impact on the setting of two Grade II Listed Buildings.	-1
	Biodiversity	This option would require land take from both designated (a Site of Special Scientific Interest (SSSI) and a Local Wildlife Site (LWS)) and undesignated but important habitats (seven BAP Priority Habitats and one Ancient Woodland). The speed increases associated with this option may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
	Water Environment	This option would provide an opportunity to improve flooding within a flooding hot spot and to rectify any existing water quality issues through more appropriate treatment of routine runoff.	1
Social	Commuting and Other users	Included within Economy	
	Reliability (Commuting / Other users)	Included within Economy	
	Physical activity	The scheme is unlikely to lead to a significant increase in the numbers walking or cycling in the area as it is a primarily highways scheme. Some Public rights of way and cycle paths may be impacted but it is likely that further design will mitigate any potential negative impacts through the use of crossing facilities and as such there is unlikely to be much additional distance or time required due to the scheme.	0
	Journey quality	The scheme is assessed as having neutral impacts on Traveler Care and Travellers' Views while also having beneficial impacts on Frustration and Fear of potential accidents. Therefore the scheme is awarded an overall score of "Beneficial".	1
	Accidents	This option is assessed as being likely to provide considerable savings in accidents	1
	Security	The scheme is very unlikely to have any effect on security and security was not identified as a challenge or problem for the scheme to address. Users are less likely to travel slowly or to stop regularly making them less vulnerable but given that crime levels in the area are low given the rural environment there is unlikely to be any impact on the security of scheme users	0
	Access to services	It is unlikely that this scheme will result in a change in routings or timings of current public transport services or any changes to public transport provision	0
	Affordability	This option is unlikely have any impact on Parking Charges, Road User Charges or any changes to Public Transports fares or concessions	0
	Severance	The scheme is considered to have negligible impact on the current severance situation. Some existing cycle paths and Public Rights of Way may be impacted by the scheme but these impacts would be mitigated at the design stage with dedicated crossing services incorporated into any design	0
	Option and non-use values	This option is not forecast to have any impact on the frequency or availability of existing public transport services in the study area and contains no additional public transport provisions	0
Public Account	Cost to Broad Transport Budget	Option 1 is likely to have the lowest scheme costs of all options considered	
	Indirect Tax Revenues	Not Assessed	
	Indicative BCR	An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present High Value for Money	

Table 5-J Option 1 Comparative AST

6 Option 2 Assessment

6.1 Option 2: Morpeth to Felton Off-line Dualling

Option 2, as illustrated in Figure 6-A and Figure 6-B, would consist of a 8 mile section of dual carriageway mostly located to the west of the existing A1 and would include NMU provisions between Morpeth and Felton (route section 3). The existing single carriageway section of the A1 would be detrunked and the new dual carriageway would replace this section as part of the SRN.

Figure 6-A Option 2 Overview

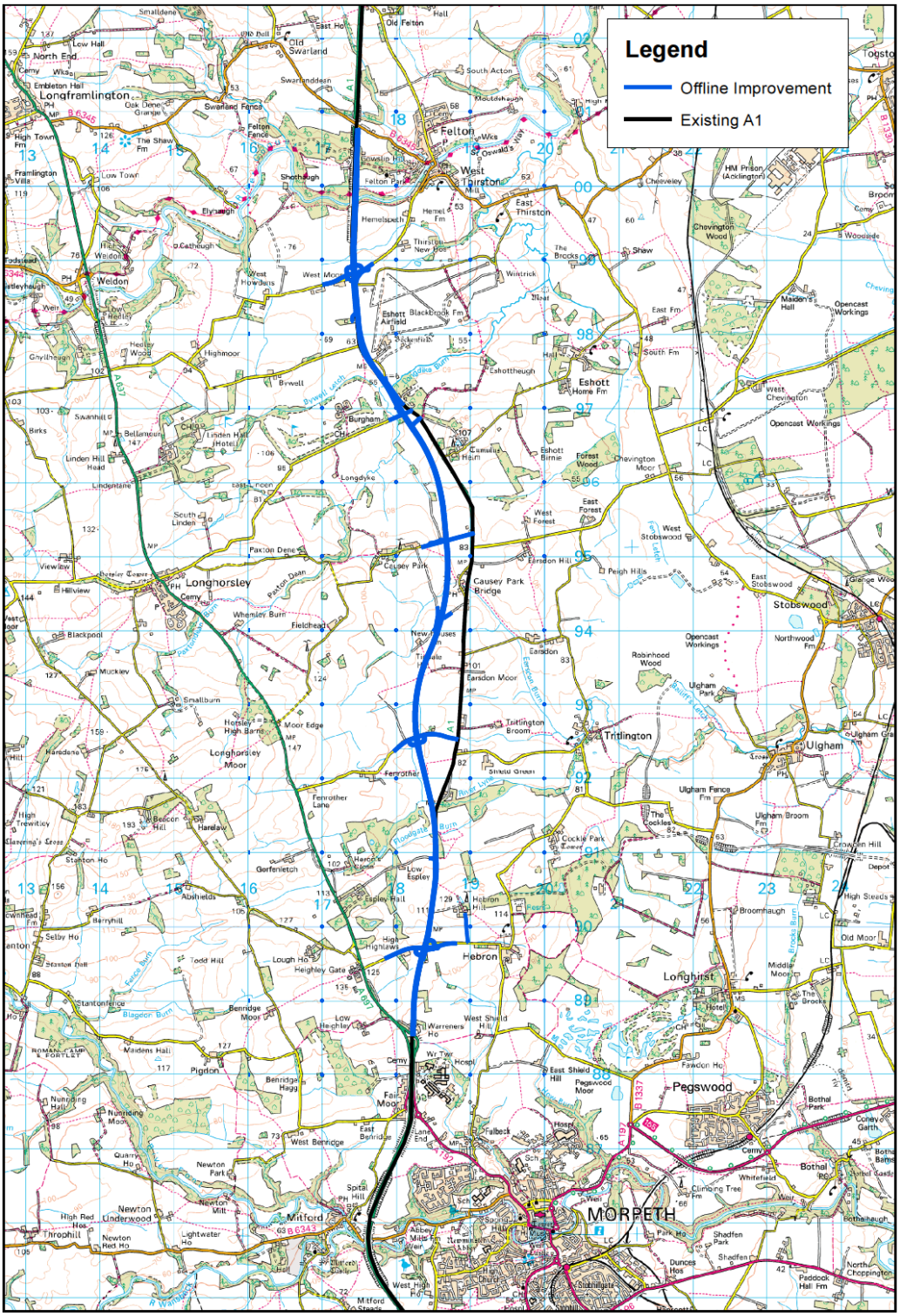


Figure 6-B Option 2

The Option 2 Assessment is summarised in Table 6-A to Table 6-I.

Option 2 Strategic Case Assessment		
Impact	**Qualitative Assessment**	
Regional Policy	This option is well supported by policy at a national, regional and local level.	+1
Local Policy		
Route Objectives	This option is likely to have a strong fit with the defined route objectives.	+1
+1	Option likely to support relevant policy	
0	Option likely to have neutral impact upon relevant policy	
-1	Option likely to conflict with relevant policy	

Table 6-A Option 2: Strategic Case Assessment

Option 2 Economic Case Assessment - Economic Impacts		
Impact	**Qualitative Assessment**	
User benefits	Option 2 is likely to lead to moderate travel time savings in comparison to other options assessed in this report.	+2
Reliability	Option 2 is likely to provide a moderate ability to help road users cope with incidents on the route without re-routing and to help overtake slow moving vehicles in comparison to other options.	+2
Regeneration	Not assessed	
Wider Impacts	Not Assessed	
1	Option likely to have small benefits	
2	Option likely to have moderate benefits	
3	Option likely to have large benefits	

Table 6-B Option 2: Economic Case Assessment - Economic Impacts

Option 2 Economic Case Assessment - Environmental Impacts		
Impact	**Qualitative Assessment**	
Noise	This option is expected to: • Increase noise levels as a result of increased speed. • Increase noise at some properties within 20m of the existing A1 due to repositioning of the running lanes (relevant to the sections of on line dualling). • Reduce noise at some properties close to the existing A1 that would be bypassed by new route (relevant to sections of off line dualling). • Increase noise at some properties close to the new route of the A1 (relevant to sections of offline dualling). • Move properties both into (negative), and out of (beneficial), the noise calculation area.	-1
Air Quality	This option is likely to increase the average 12 hour vehicle speed by over 10km an hour and move the traffic (and thus emissions) to within 200m of (negative), or over 200m from (beneficial), sensitive receptors.	-1
Greenhouse Gases	This option is likely to increase embedded carbon and reduce efficiency.	-1

Option 2 Economic Case Assessment - Environmental Impacts		
Impact	**Qualitative Assessment**	
Landscape	This option is likely to: • Change the character of the road and make it more visually intrusive. • Require land take and the removal of roadside trees and hedges (on line sections). • Have an adverse impact on three Special Landscape Areas (SLAs). • Introduce development into areas not previously developed (off line sections). However, some sensitive receptors may benefit from an increase in distance from the A1 (off line dualling).	-1
Townscape	This option is likely to include some on line dualling between the off-line sections. This would require the demolition of at least one property.	-2
Historic Environment	This option may require the relocation of two Listed mileposts. It may also have an adverse impact on the setting of seven Grade II Listed Buildings.	-1
Biodiversity	The off line section of this option is not likely to require any land take from designated or undesignated but important habitats. However, it would require a significant amount of land take from agricultural land, including hedgerows, trees and areas of woodland. The on line sections of this option are likely to require land take from both designated (one SSSI and one LWS[1]) and undesignated but important habitats (BAP Priority Habitats and Ancient Woodland). The speed increases associated with this option may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
Water Environment	This variant is likely to provide an opportunity to improve flooding within a flooding hot spot. The on line sections of this variant are likely to provide an opportunity to rectify any existing water quality issues through more appropriate treatment of routine runoff. This variant may discharge into watercourses that have not previously received routine road runoff, which could have an adverse impact on water quality.	0

+2	Large Beneficial Impact
+1	Beneficial Impact
0	Neutral Impact
-1	Adverse Impact
-2	Large Adverse Impact

[1] There are a number of different terms used by Local Authorities to describe designated Local Wildlife Sites, including Sites of Importance for Nature Conservation (SINCs) and Sites of Nature Conservation Importance (SNCIs). To avoid confusion, all of these sites have been referred to as Local Wildlife Sites within this report.

Table 6-C Option 2: Economic Case Assessment - Environmental Impacts

Option 2 Economic Case Assessment - Social Impacts		
Impact	**Qualitative Assessment**	
Physical activity	The scheme is unlikely to lead to a significant increase in the numbers walking or cycling in the area as it is a primarily highways scheme. Some Public rights of way and cycle paths may be impacted but it is likely that further design will mitigate any potential negative impacts through the use of crossing facilities and as such there is unlikely to be much additional distance or time required due to the scheme.	0
Journey Quality	The scheme is assessed as having neutral impacts on Traveller Care and Travellers' Views while also having beneficial impacts on Frustration and Fear of potential accidents. Therefore the scheme is awarded an overall score of "Beneficial".	1
Accidents	This option is assessed as being likely to provide moderate accident savings.	1
Security	The scheme is very unlikely to have any effect on security and security was not identified as a challenge or problem for the scheme to address. Users are less likely to travel slowly or to stop regularly making them less vulnerable but given that crime levels in the area are low given the rural environment there is unlikely to be any impact on the security of scheme users	0
Access to Services	It is unlikely that this scheme will result in a change in routings or timings of current public transport services or any changes to public transport provision	0
Affordability	This option is unlikely have any impact on Parking Charges, Road User Charges or any changes to Public Transports fares or concessions	0
Severance	The scheme is considered to have negligible impact on the current severance situation. Some existing cycle paths and Public Rights of Way may be impacted by the scheme but these impacts would be mitigated at the design stage with dedicated crossing services incorporated into any design	0
Option Values	This option is not forecast to have any impact on the frequency or availability of existing public transport services in the study area and contains no additional public transport provisions	0

+2	Large Beneficial Impact
+1	Beneficial Impact
0	Neutral Impact
-1	Adverse Impact
-2	Large Adverse Impact

Table 6-D Option 2: Economic Case Assessment - Social Impacts

Option 2 Economic Case Assessment – Public Accounts		
Impact	**Qualitative Assessment**	
Cost to the broad Transport Budget	Scheme costs for economic assessment purposes (i.e. in 2010 market prices, discounted to 2010) have been estimated at under £200m	3
Indirect tax revenues	Not assessed at this stage	
3	<£200m	
2	£200m - £350m	
1	>£350m	

Table 6-E Option 2: Economic Case Assessment - Public Accounts

Option 2 Economic Case Assessment – Indicative BCR		
Impact	**Qualitative Assessment**	
Indicative BCR	An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Low Value for Money	-1
2	Very High Value for Money (BCR > 4)	
1	High Value for Money (BCR = 2 - 4)	
0	Medium Value for Money (BCR = 1.5 - 2)	
-1	Low Value for Money (BCR = 1 - 1.5)	
-2	Poor Value for Money (BCR < 1)	

Table 6-F Option 2: Economic Case Assessment - Indicative BCR

Option 2 Financial Case		
Impact	**Qualitative Assessment**	
Outturn Costs to implement	Indicative scheme costs suggest that this scheme could cost under £300m.	3
Operating and Maintenance Costs	As this scheme is involves replacing over 12km of existing road it is likely that the operating and maintenance costs will increase.	
Funding Assumptions and funding allocation	All funding is expected to be provided by central government. This scheme has the second lowest cost of any of the options considered and is therefore considered most likely to receive funding at this point.	
3	<£300	
2	£300m - £500m	
1	>£400m	

Table 6-G Option 2: Financial Case Assessment

Option 2 Management/Delivery Case		
Criteria	**Qualitative comment**	**RAG Indicator**
Governance	There is a robust assurance and risk management framework in place that has been tried and tested by the HA through the delivery of a wide range of major highways schemes. Due to the relatively short length of the improvement (12.5km) and the low level of engineering required, it is likely that the Highways Agency and only one contractor/designer would be required. Thus, the governance would be simple and led by the Highways Agency and their contractor/designer only.	3
3	Simple scheme with HA and single contractor/designer	
2	Moderately complex scheme with HA and single contractor/designer	
1	Complex scheme with HA and multiple contractor/designer	
Stakeholder acceptability	The key stakeholders for the scheme are NCC, and they are supportive of any work to improve the A1, particularly dualling. However, it is likely that other stakeholders could be opposed to any improvement on environmental grounds.	2
Public acceptability / interest	The general opinion of the A1 North of Newcastle is that the road is unsafe and performs poorly and as such the scheme will receive some support, however, it is likely that there will be opposition to the scheme as well.	2
3	Likely to be supported	
2	Likely to receive mixed support	
1	Unlikely to supported	

Table 6-H Option 2: Management/Delivery Case Assessment

Option 2 Commercial Case	
Assessment Area	**Proposed Methodology**
Procurement strategy	There is a robust procurement strategy in place through the use of the Highways Agency Collaborative Delivery Framework (CDF).

Table 6-I Option 2: Commercial Case Assessment

6.2 Option 2: Summary and Conclusions

Option 2 would consist of the offline dualling of the A1 between Morpeth and Felton.

A comparative AST is presented in Table 6-J to provide a summary of many of the areas assessed for this Option.

The key positive points to draw out are:

- *Likely to have strong support from a policy perspective.*
- *Moderate benefits in comparison to some of the other options.*
- *Likely to have one of the lowest costs*
- *Likely to offer Low Value for Money*
- *Likely to have a positive effect on the Water Environment.*

The key negative points to draw out for this option are:

- *Likely to have a significant adverse effect on townscape.*

- *Likely to have an adverse effect on noise, Air Quality, Greenhouse Gases, Landscape, Historic Environment and Bio Diversity*

However, it is thought that many of these adverse environmental effects could be successfully mitigated during the design process, it is acknowledged that some environmental impacts (notably Air Quality and Greenhouse Gases) cannot be mitigated for.

COMPARATIVE AST

Option 2: Morpeth to Felton OfflineDualling

	Impacts	Commentary	Assessment
Economy	Business users & transport providers	At this stage travel time savings have been used as an estimate of overall user benefits. This option is likely to provide moderate travel time savings and therefore moderate user benefits	2
	Reliability (Business users)	Option is likely to provide more ability to help road users cope with incidents on the route without re-routing and to help overtake slow moving vehicles.	2
	Regeneration	Not Assessed	
	Wider Impacts	Not Assessed	
Environmental	Noise	This option is expected to: • Increase noise levels as a result of increased speed. • Increase noise at some properties within 20m of the existing A1 due to repositioning of the running lanes (relevant to the sections of on line dualling). • Reduce noise at some properties close to the existing A1 that would be bypassed by new route (relevant to sections of off line dualling). • Increase noise at some properties close to the new route of the A1 (relevant to sections of offline dualling). • Move properties both into (negative), and out of (beneficial), the noise calculation area.	-1
	Air Quality	This option would increase the average 12 hour vehicle speed by over 10km an hour and move the traffic (and thus emissions) to within 200m of (negative), or over 200m from (beneficial), sensitive receptors.	-1
	Greenhouse gases	This option would increase embedded carbon and reduce efficiency.	-1
	Landscape	This option would: • Change the character of the road and make it more visually intrusive. • Require land take and the removal of roadside trees and hedges (on line sections). • Have an adverse impact on three Special Landscape Areas (SLAs). • Introduce development into areas not previously developed (off line sections). However, some sensitive receptors may benefit from an increase in distance from the A1 (off line dualling).	-1
	Townscape	This option would include some on line dualling between the off-line sections. This would require the demolition of at least one property.	-2
	Historic Environment	This option may require the relocation of two Listed mileposts. It may also have an adverse impact on the setting of seven Grade II Listed Buildings.	-1
	Biodiversity	The off line section of this option would not require any land take from designated or undesignated but important habitats. However, it would require a significant amount of land take from agricultural land, including hedgerows, trees and areas of woodland. The on line sections of this option would require land take from both designated (one SSSI and one LWS1) and undesignated but important habitats (BAP Priority Habitats and Ancient Woodland). The speed increases associated with this option may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
	Water Environment	This variant would provide an opportunity to improve flooding within a flooding hot spot. The on line sections of this variant would provide an opportunity to rectify any existing water quality issues through more appropriate treatment of routine runoff. This variant may discharge into watercourses that have not previously received routine road runoff, which could have an adverse impact on water quality.	0
Social	Commuting and Other users	Included within Economy	
	Reliability (Commuting / Other users)	Included within Economy	
	Physical activity	The scheme is unlikely to lead to a significant increase in the numbers walking or cycling in the area as it is a primarily highways scheme. Some Public rights of way and cycle paths may be impacted but it is likely that further design will mitigate any potential negative impacts through the use of crossing facilities and as such there is unlikely to be much additional distance or time required due to the scheme.	0
	Journey quality	The scheme is assessed as having neutral impacts on Traveler Care and Travellers' Views while also having beneficial impacts on Frustration and Fear of potential accidents. Therefore the scheme is awarded an overall score of "Beneficial".	1
	Accidents	This option is assessed as being likely to provide considerable savings in accidents	1
	Security	The scheme is very unlikely to have any effect on security and security was not identified as a challenge or problem for the scheme to address. Users are less likely to travel slowly or to stop regularly making them less vulnerable but given that crime levels in the area are low given the rural environment there is unlikely to be any impact on the security of scheme users	0
	Access to services	It is unlikely that this scheme will result in a change in routings or timings of current public transport services or any changes to public transport provision	0
	Affordability	This option is unlikely have any impact on Parking Charges, Road User Charges or any changes to Public Transports fares or concessions	0
	Severance	The scheme is considered to have negligible impact on the current severance situation. Some existing cycle paths and Public Rights of Way may be impacted by the scheme but these impacts would be mitigated at the design stage with dedicated crossing services incorporated into any design	0
	Option and non-use values	This option is not forecast to have any impact on the frequency or availability of existing public transport services in the study area and contains no additional public transport provisions	0
Public Account	Cost to Broad Transport Budget	Option 2 is likely to have the second lowest scheme cost of all options	
	Indirect Tax Revenues	Not Assessed	
	Indicative BCR	An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Low Value for Money	

Table 6-J Option 2 Comparative AST

7 Option 3 Assessment

7.1 Option 3: Description

Option 3, as illustrated in Figure 7-Aand Figure 7-B, would consist of dualling all the remaining single carriageway sections of the A1 between Seaton Burn and the Scottish border (route sections 3, 5, 7, 8, 9 and 10). Approximately 37 miles of new dual carriageway would be constructed either as an online or offline improvement depending on sectional constraints and would include NMU provisions.

Figure 7-A Option 3 Overview

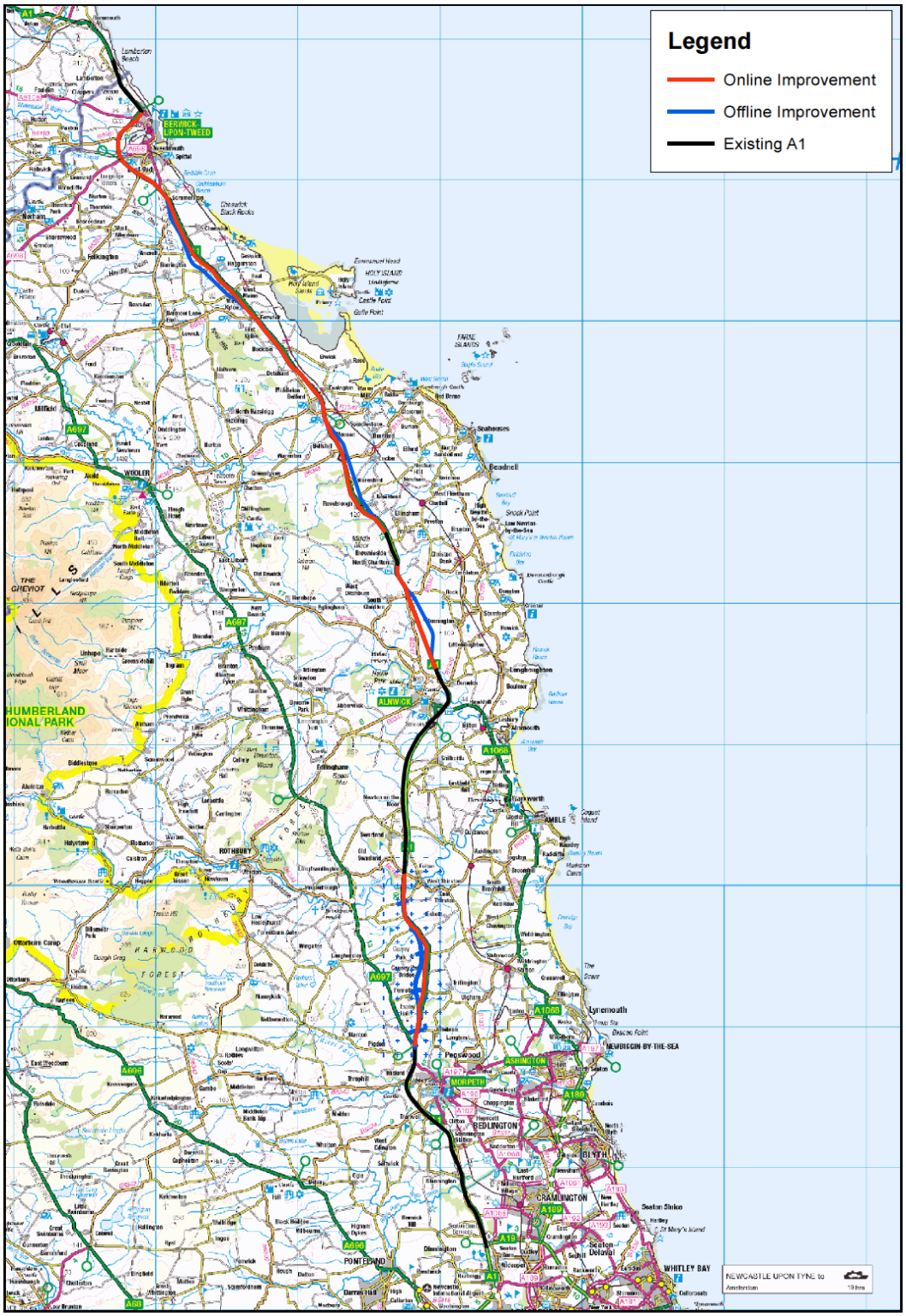


Figure 7-B Option 3

The Option 2 Assessment is summarised in Table 7-A to Table 7-I.

Option 3 Strategic Case Assessment		
Impact	**Qualitative Assessment**	
Regional Policy	This option is well supported by policy at a national, regional and local level.	+1
Local Policy		
Route Objectives	This option is likely to have a strong fit with the defined route objectives.	+1
+1	Option likely to support relevant policy	
0	Option likely to have neutral impact upon relevant policy	
-1	Option likely to conflict with relevant policy	

Table 7-A Option 3: Strategic Case Assessment

Option 3 Economic Case Assessment - Economic Impacts		
Impact	**Qualitative Assessment**	
User benefits	Option 3 is likely to lead to large travel time savings in comparison to the other options.	+3
Reliability	Option is likely to provide significantly more ability to help road users cope with incidents on the route without re-routing and to help overtake slow moving vehicles than the other options	+3
Regeneration	Not assessed	
Wider Impacts	Not Assessed	
1	Option likely to have small benefits	
2	Option likely to have moderate benefits	
3	Option likely to have large benefits	

Table 7-B Option 3: Economic Case Assessment - Economic Impacts

Option 3 Economic Case Assessment - Environmental Impacts				
Impact	**Qualitative Assessment (on line variant)**		**Qualitative Assessment (off line variant, which includes on line sections)**	
Noise	This variant is expected to: • Increase noise levels as a result of increased speed. • Increase noise at those properties within 20m of the existing A1 due to repositioning of the running lanes.	-1	This variant is expected to: • Increase noise levels as a result of increased speed. • Increase noise at some properties within 20m of the existing A1 due to repositioning of the running lanes (relevant to sections of on line dualling). • Reduce noise at some properties close to the existing A1 that would be bypassed by new route (relevant to sections of off line dualling). • Increase noise at some properties close to the new route of the A1 (relevant to the sections of offline dualling). • Move properties both into (negative), and out of (beneficial), the noise calculation area.	-1

Option 3 Economic Case Assessment - Environmental Impacts				
Air Quality	This variant is likely to increase average 12 hour vehicle speed by over 10km an hour. This variant would take the main A1 traffic to within 200m of some properties previously outside of this distance. This could have an adverse impact on air quality at these locations.	-1	This variant is expected to: • Increase average 12 hour vehicle speed by over 10km an hour. • Move the traffic (and thus emissions) to within 200m of (negative), or over 200m from (beneficial), sensitive receptors.	-1
Greenhouse Gases	This variant is likely to increase embedded carbon and reduce efficiency.	-1	This variant is likely to increase embedded carbon and reduce efficiency.	-1
Landscape	This variant is likely to: • Change the character of the road and make it more visually intrusive. • Require the removal of roadside trees and hedges. • Have an adverse impact on Special Landscape Areas (SLA).	-1	This variant is likely to: • Change the character of the road and make it more visually intrusive. • Introduce development into areas not previously developed. • Affect trees, hedgerows and agricultural land through land take. • Have an adverse impact on SLAs. • Benefit some sensitive receptors by increasing the distance between the receptor and the A1 traffic.	-2
Townscape	This variant is likely to require the demolition of some properties.	-2	This variant is likely to include some on line dualling between the off-line sections. This would require the demolition of at least one property.	-2
Historic Environment	This variant may require the: • Relocation of 11 Listed mileposts. • Demolition of a Grade II Listed Building. • Development within Belford Conservation Area. This variant is likely to have an adverse impact on the settings of a number of heritage assets, including: eight Scheduled Monuments; two Grade I Listed Buildings; thirty nine Grade II Listed Buildings (in addition to the mileposts); and a Registered Park and Garden (RPG). This variant may also cause physical damage to unknown buried archaeology.	-2	The on line sections of this variant may require the demolition of four Listed mileposts. These sections may also have an adverse impact on six Scheduled Monuments; one Grade II* Listed Buildings; and nineteen Grade I Listed Buildings. The off line sections of this variant may have an adverse impact on the settings of one Scheduled Monument; and twenty three Grade II Listed Buildings. This variant may cause physical damage to unknown buried archaeology.	-1

Option 3 Economic Case Assessment - Environmental Impacts				
Biodiversity	This variant is likely to require land take from both designated (one Special Area of Conservation (SAC), two SSSIs and two LWSs[1]) and undesignated but important habitats (fourteen BAP Priority Habitats and one Ancient Woodland). Overall, this variant would require more land take from designated and undesignated but important habitats than the off line variant (based on the conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1	The off line sections of this variant is not likely to require any land take from designated habitats. However, they would require land take from three BAP Priority Habitats and an Ancient Woodland. They would also need a significant amount of land take from agricultural land, including hedgerows, trees and areas of woodland. The on line sections of this variant are likely to require land take from both designated (one SSSI and one LWS[1]) and undesignated but important habitats (ten BAP Priority Habitats and an area of Ancient Woodland). Overall, this variant is likely to require less land take from designated and undesignated but important habitats than the on line variant (based on the conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
Water Environment	This variant is likely to provide an opportunity to improve flooding within a flooding hot spot and to rectify any existing water quality issues through more appropriate treatment of routine runoff. If additional / larger piers are needed to accommodate the crossing of the River Tweed then this variant may have an adverse impact on the river's fluvial geomorphology.	0	This variant is likely to provide an opportunity to improve flooding within a flooding hot spot. The on line sections of this variant are likely to provide an opportunity to rectify any existing water quality issues through more appropriate treatment of routine runoff. This variant may discharge into watercourses that have not previously received routine road runoff, which could have an adverse impact on water quality. If additional / larger piers are needed to accommodate the crossing of the River Tweed (relevant to on line section) then this variant may have an adverse impact on the river's fluvial geomorphology.	0

+2	Large Beneficial Impact
+1	Beneficial Impact
0	Neutral Impact
-1	Adverse Impact
-2	Large Adverse Impact

Option 3 Economic Case Assessment - Environmental Impacts
[1] There are a number of different terms used by Local Authorities to describe designated Local Wildlife Sites, including Sites of Importance for Nature Conservation (SINCs) and Sites of Nature Conservation Importance (SNCIs). To avoid confusion, all of these sites have been referred to as Local Wildlife Sites within this report.

Table 7-C Option 3: Economic Case Assessment - Environmental Impacts

Option 3 Economic Case Assessment - Social Impacts		
Impact	**Qualitative Assessment**	
Physical activity	The scheme is unlikely to lead to a significant increase in the numbers walking or cycling in the area as it is a primarily highways scheme. Some Public rights of way and cycle paths may be impacted but it is likely that further design will mitigate any potential negative impacts through the use of crossing facilities and as such there is unlikely to be much additional distance or time required due to the scheme.	0
Journey Quality	The scheme is assessed as having neutral impacts on Traveller Care and Travellers' Views while also having beneficial impacts on Frustration and Fear of potential accidents. Therefore the scheme is awarded an overall score of "Beneficial".	1
Accidents	This option is assessed as being likely to provide a high level of accident savings.	2
Security	The scheme is very unlikely to have any effect on security and security was not identified as a challenge or problem for the scheme to address. Users are less likely to travel slowly or to stop regularly making them less vulnerable but given that crime levels in the area are low given the rural environment there is unlikely to be any impact on the security of scheme users	0
Access to Services	It is unlikely that this scheme will result in a change in routings or timings of current public transport services or any changes to public transport provision	0
Affordability	This option is unlikely have any impact on Parking Charges, Road User Charges or any changes to Public Transports fares or concessions	0
Severance	The scheme is considered to have negligible impact on the current severance situation. Some existing cycle paths and Public Rights of Way may be impacted by the scheme but these impacts would be mitigated at the design stage with dedicated crossing services incorporated into any design	0
Option Values	This option is not forecast to have any impact on the frequency or availability of existing public transport services in the study area and contains no additional public transport provisions	0

+2	Large Beneficial Impact
+1	Beneficial Impact
0	Neutral Impact
-1	Adverse Impact
-2	Large Adverse Impact

Table 7-D Option 3: Economic Case Assessment - Social Impacts

Option 3 Economic Case Assessment – Public Accounts			
Impact	**Qualitative Assessment**		
Cost to the broad Transport Budget	Scheme costs for economic assessment purposes (i.e. in 2010 market prices, discounted to 2010) have been estimated at over £350m for both the online and offline option	Online	1
		Offline	1
Indirect tax revenues	Not assessed at this stage		
3	<£200m		
2	£200m - £350m		
1	>£350m		

Table 7-E Option 3: Economic Case Assessment - Public Accounts

Option 3 Economic Case Assessment – Indicative BCR			
Impact	**Qualitative Assessment**		
Indicative BCR	An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Poor Value for Money	Online	-2
		Offline	-2
2	Very High Value for Money (BCR > 4)		
1	High Value for Money (BCR = 2 - 4)		
0	Medium Value for Money (BCR = 1.5 - 2)		
-1	Low Value for Money (BCR = 1 - 1.5)		
-2	Poor Value for Money (BCR < 1)		

Table 7-F Option 3: Economic Case Assessment - Indicative BCR

Option 3 Financial Case			
Impact	**Qualitative Assessment**		
Outturn Costs to implement	Indicative scheme costs suggest that both the online and offline options for this scheme could cost over £500m, the highest cost of any potential option	Online	1
		Offline	1
Operating and Maintenance Costs	As this scheme is involves improvements to 58km of existing road it is likely that the operating and maintenance costs will significantly increase.		
Funding Assumptions and funding allocation	All funding is expected to be provided by central government. This scheme would represent one of the most expensive schemes to be funded by DfT and the treasury, the likelihood of securing such funding needs to be seen as such.		
3	<£300m		
2	£300m - £500m		
1	>£500m		

Table 7-G Option 3: Financial Case Assessment

Option 3 Management/Delivery Case		
Criteria	**Qualitative comment**	**RAG Indicator**
Governance	There is a robust assurance and risk management framework in place that has been tried and tested by the HA through the delivery of a wide range of major highways schemes. Due to the complexity of the scheme (over 58km of dual carriageway), it is recommended that the scheme be divided in to sections which are delivered independently to each other in order to successfully deliver a scheme of this nature. Thus, each section would require its own governance and therefore the Highways Agency would require more than one delivery agent in order to deliver the scheme.	1
3	Simple scheme with HA and single contractor/designer	
2	Moderately complex scheme with HA and single contractor/designer	
1	Complex scheme with HA and multiple contractor/designer	
Stakeholder acceptability	The key stakeholders for the scheme are NCC, and they are supportive of any work to improve the A1, particularly dualling. However, it is likely that other stakeholders could be opposed to any improvement on environmental grounds.	2
Public acceptability / interest	The general opinion of the A1 North of Newcastle is that the road is unsafe and performs poorly and as such the scheme will receive some support, however, it is likely that there will be opposition to the scheme as well.	2
3	Likely to be supported	
2	Likely to receive mixed support	
1	Unlikely to supported	

Table 7-H Option 3: Management/Delivery Case Assessment

Option 3 Commercial Case	
Assessment Area	**Proposed Methodology**
Procurement strategy	There is a robust procurement strategy in place through the use of the Highways Agency Collaborative Delivery Framework (CDF).

Table 7-I Option 3: Commercial Case Assessment

7.2 Option 3: Summary and Conclusions

Option 3 would consist of the full dualling of all remaining single carriageway sections of A1 North of Newcastle.

A comparative AST is presented in Table 7-J to provide a summary of many of the areas assessed for this Option.

The key positive points to draw out are:

- *Likely to have strong support from a policy perspective.*
- *Highest level of benefits in comparison to some of the other options.*
- *Likely to have a positive effect on the Water Environment.*
- *Likely to have the highest level of Accident Savings in comparison to other options.*
- *Likely to complete address the problem of inconsistent carriageway standards on the route.*

The key negative points to draw out for this option are:

- *Likely to have the highest scheme costs of any potential option*
- *Likely to offer Poor Value for Money*
- *Likely to have a significant adverse effect on townscape, Historic Environment and Landscape*
- *Likely to have an adverse effect on noise, Air Quality, Greenhouse Gases, and Bio Diversity*

However, it is thought that many of these adverse environmental effects could be successfully mitigated during the design process, it is acknowledged that some environmental impacts (notably Air Quality and Greenhouse Gases) cannot be mitigated for.

COMPARATIVE AST

Option 3: Fulll Dualling

	Impacts	Commentary	Assessment
Economy	Business users & transport providers	At this stage travel time savings have been used as an estimate of overall user benefits. This option is likely to provide large travel time savings and therefore large user benefits	3
	Reliability (Business users)	Option is likely to provide significantly more ability to help road users cope with incidents on the route without re-routing and to help overtake slow moving vehicles.	3
	Regeneration	Not Assessed	
	Wider Impacts	Not Assessed	
Environmental	Noise	**Online:** This variant is expected to: • Increase noise levels as a result of increased speed. • Increase noise at those properties within 20m of the existing A1 due to repositioning of the running lanes.	-1
		Offline: This variant is expected to: • Increase noise levels as a result of increased speed. • Increase noise at some properties within 20m of the existing A1 due to repositioning of the running lanes (relevant to sections of on line dualling). • Reduce noise at some properties close to the existing A1 that would be bypassed by new route (relevant to sections of off line dualling). • Increase noise at some properties close to the new route of the A1 (relevant to the sections of offline dualling). • Move properties both into (negative), and out of (beneficial), the noise calculation area.	-1
	Air Quality	**Online:** This variant would increase average 12 hour vehicle speed by over 10km an hour. This variant would take the main A1 traffic to within 200m of some properties previously outside of this distance. This could have an adverse impact on air quality at these locations.	-1
		Offline: This variant is expected to: • Increase average 12 hour vehicle speed by over 10km an hour. • Move the traffic (and thus emissions) to within 200m of (negative), or over 200m from (beneficial), sensitive receptors.	-1
	Greenhouse gases	**Online:** This variant would increase embedded carbon and reduce efficiency.	-1
		Offline: This variant would increase embedded carbon and reduce efficiency.	-1
	Landscape	**Online:** This variant would: • Change the character of the road and make it more visually intrusive. • Require the removal of roadside trees and hedges. • Have an adverse impact on Special Landscape Areas (SLA).	-1
		Offline: This variant would: • Change the character of the road and make it more visually intrusive. • Introduce development into areas not previously developed. • Affect trees, hedgerows and agricultural land through land take. • Have an adverse impact on SLAs. • Benefit some sensitive receptors by increasing the distance between the receptor and the A1 traffic.	-2
	Townscape	**Online:** This variant would require the demolition of some properties	-2
		Offline: This variant would include some on line dualling between the off-line sections. This would require the demolition of at least one property.	-2
	Historic Environment	**Online:** This variant may require the: • Relocation of 11 Listed mileposts. • Demolition of a Grade II Listed Building. • Development within Belford Conservation Area. This variant would have an adverse impact on the settings of a number of heritage assets, including: eight Scheduled Monuments; two Grade I Listed Buildings; thirty nine Grade II Listed Buildings (in addition to the mileposts); and a Registered Park and Garden (RPG). This variant may also cause physical damage to unknown buried archaeology.	-2
		Offline: The on line sections of this variant may require the demolition of four Listed mileposts. These sections may also have an adverse impact on six Scheduled Monuments; one Grade II* Listed Buildings; and nineteen Grade I Listed Buildings. The off line sections of this variant may have an adverse impact on the settings of one Scheduled Monument; and twenty three Grade II Listed Buildings. This variant may cause physical damage to unknown buried archaeology.	-1
	Biodiversity	**Online:** This variant would require land take from both designated (one Special Area of Conservation (SAC), two SSSIs and two LWSs1) and undesignated but important habitats (fourteen BAP Priority Habitats and one Ancient Woodland). Overall, this variant would require more land take from designated and undesignated but important habitats than the off line variant (based on the conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
		Offline: The off line sections of this variant would not require any land take from designated habitats. However, they would require land take from three BAP Priority Habitats and an Ancient Woodland. They would also need a significant amount of land take from agricultural land, including hedgerows, trees and areas of woodland. The on line sections of this variant would require land take from both designated (one SSSI and one LWS1) and undesignated but important habitats (ten BAP Priority Habitats and an area of Ancient Woodland). Overall, this variant would require less land take from designated and undesignated but important habitats than the on line variant (based on the conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
	Water Environment	**Online:** This variant would provide an opportunity to improve flooding within a flooding hot spot and to rectify any existing water quality issues through more appropriate treatment of routine runoff. If additional / larger piers are needed to accommodate the crossing of the River Tweed then this variant may have an adverse impact on the river's fluvial geomorphology.	0
		Offline: This variant would provide an opportunity to improve flooding within a flooding hot spot. The on line sections of this variant would provide an opportunity to rectify any existing water quality issues through more appropriate treatment of routine runoff. This variant may discharge into watercourses that have not previously received routine road runoff, which could have an adverse impact on water quality. If additional / larger piers are needed to accommodate the crossing of the River Tweed (relevant to on line section) then this variant may have an adverse impact on the river's fluvial geomorphology.	0
Social	Commuting and Other users	Included within Economy	
	Reliability (Commuting / Other users)	Included within Economy	
	Physical activity	The scheme is unlikely to lead to a significant increase in the numbers walking or cycling in the area as it is a primarily highways scheme. Some Public rights of way and cycle paths may be impacted but it is likely that further design will mitigate any potential negative impacts through the use of crossing facilities and as such there is unlikely to be much additional distance or time required due to the scheme.	0
	Journey quality	The scheme is assessed as having neutral impacts on Traveler Care and Travellers' Views while also having beneficial impacts on Frustration and Fear of potential accidents. Therefore the scheme is awarded an overall score of "Beneficial".	1
	Accidents	This option is assessed as being likely to provide a high level of accident savings.	2
	Security	The scheme is very unlikely to have any effect on security and security was not identified as a challenge or problem for the scheme to address. Users are less likely to travel slowly or to stop regularly making them less vulnerable but given that crime levels in the area are low given the rural environment there is unlikely to be any impact on the security of scheme users	0
	Access to services	It is unlikely that this scheme will result in a change in routings or timings of current public transport services or any changes to public transport provision	0
	Affordability	This option is unlikely have any impact on Parking Charges, Road User Charges or any changes to Public Transports fares or concessions	0
	Severance	The scheme is considered to have negligible impact on the current severance situation. Some existing cycle paths and Public Rights of Way may be impacted by the scheme but these impacts would be mitigated at the design stage with dedicated crossing services incorporated into any design	0
	Option and non-use values	This option is not forecast to have any impact on the frequency or availability of existing public transport services in the study area and contains no additional public transport provisions	0
Public Account	Cost to Broad Transport Budget	Online : Option 3 is likely to have significantly higher scheme costs than any other option.	
		Offline:Option 3 is likely to have significantly higher scheme costs than any other option.	
	Indirect Tax Revenues	Not Assessed	
	Indicative BCR	Online: An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Poor Value for Money	
		Offline: An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Poor Value for Money	

Table 7-J Option 3 Comparative AST

8 Option 4 Assessment

8.1 Option 4: Description

This option consists of dualling the remaining single carriageway sections of the A1 between Seaton Burn and Ellingham (route sections 3 and 5). This would result in approximately 13 miles of additional dual carriageway either widening the existing carriageway or offline to the East or West and would include NMU provisions. This would result in continuous dual carriageway from the South to Ellingham. Figure 8-A and Figure 8-B below show the scheme's location on the route and detail the improvements.

Figure 8-A Option 4 Overview

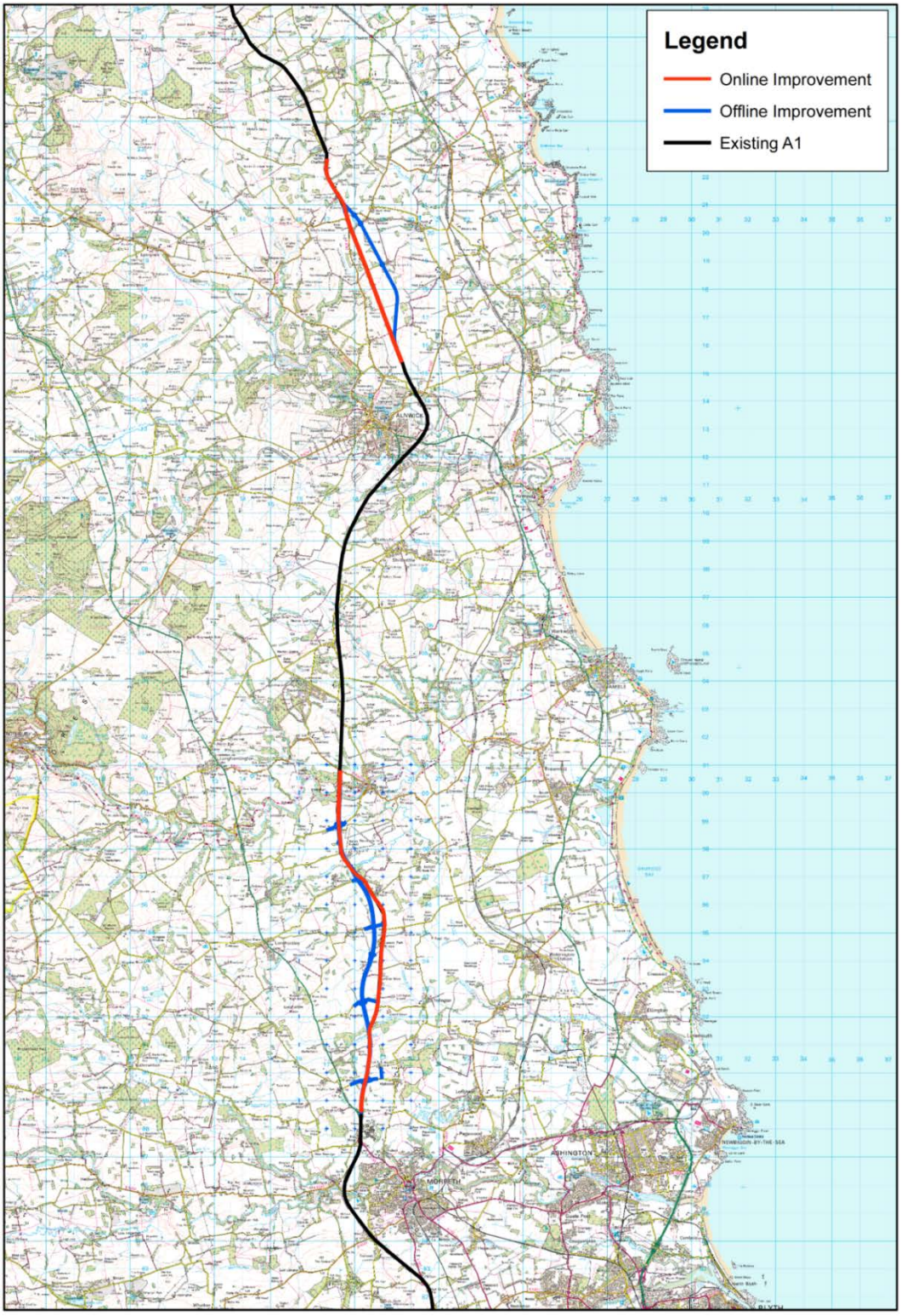


Figure 8-B Option 4

The Option 4 Assessment is summarised in Table 8-A to Table 8-I.

Option 4 Strategic Case Assessment		
Impact	**Qualitative Assessment**	
Regional Policy	This option is well supported by policy at a national, regional and local level.	+1
Local Policy		
Route Objectives	This option is likely to have a strong fit with the defined route objectives.	+1
+1	Option likely to support relevant policy	
0	Option likely to have neutral impact upon relevant policy	
-1	Option likely to conflict with relevant policy	

Table 8-A Option 4: Strategic Case Assessment

Option 4 Economic Case Assessment - Economic Impacts		
Impact	**Qualitative Assessment**	
User benefits	Option 4 is likely to lead to moderate travel time savings in comparison to the other options assessed	+2
Reliability	Option 4 is likely to provide more ability to help road users cope with incidents on the route without re-routing and to help overtake slow moving vehicles.	+2
Regeneration	Not assessed	
Wider Impacts	Not Assessed	
1	Option likely to have small benefits	
2	Option likely to have moderate benefits	
3	Option likely to have large benefits	

Table 8-B Option 4: Economic Case Assessment - Economic Impacts

Option 4 Economic Case Assessment - Environmental Impacts				
Impact	**Qualitative Assessment (on line variant)**		**Qualitative Assessment (off line variant, which includes on line sections)**	
Noise	This variant is expected to: • Increase noise levels as a result of increased speed. • Increase or decrease noise at properties within 20m of the existing A1 due to repositioning of the running lanes.	-1	This variant is expected to: • Increase noise levels as a result of increased speed. • Increase noise at some properties within 20m of the existing A1 due to repositioning of the running lanes (relevant to sections of on line dualling). • Reduce noise at some properties close to the existing A1 that would be bypassed by new route (relevant to sections of off line dualling). • Increase noise at some properties close to the new route of the A1 (relevant to the sections of offline dualling). • Move properties both into (negative), and out of (beneficial), the noise calculation area.	-1

Option 4 Economic Case Assessment - Environmental Impacts				
Air Quality	This variant is likely to increase average 12 hour vehicle speed by over 10km an hour. This variant would take the main A1 traffic to within 200m of some properties previously outside of this distance. This could have an adverse impact on air quality at these locations.	-1	This variant is expected to: • Increase average 12 hour vehicle speed by over 10km an hour. • Move the traffic (and thus emissions) to within 200m of (negative), or over 200m from (beneficial), sensitive receptors.	-1
Greenhouse Gases	This variant is likely to increase embedded carbon and reduce efficiency.	-1	This variant is likely to increase embedded carbon and reduce efficiency.	-1
Landscape	This variant is likely to: • Change the character of the road and make it more visually intrusive. • Require the removal of roadside trees and hedges. • Have an adverse impact on two SLAs.	-1	This variant is likely to: • Change the character of the road and make it more visually intrusive. • Introduce development into areas not previously developed. • Affect trees, hedgerows and agricultural land through land take. • Have an adverse impact on three SLAs. • Benefit some sensitive receptors by increasing the distance between the receptor and the A1 traffic.	-2
Townscape	This variant is likely to require the demolition of some properties.	-2	This variant is likely to include some on line dualling between the off-line sections. This would require the demolition of at least one property.	-2
Historic Environment	This variant may require the relocation of five Listed mileposts, which would lead to adverse impacts on their setting. This variant is likely to have an adverse impact on the settings of four Scheduled Monuments; one Grade I Listed Building; and five Grade II Listed Buildings. This variant may also cause physical damage to unknown buried archaeology.	-1	This variant may require the relocation of two Listed mileposts, which would lead to adverse impacts on their setting. The on line sections of this variant are likely to have an adverse impact on the setting of four Scheduled Monuments; and four Grade II Listed Buildings. The off line sections of this variant ware likely to have an adverse impact on nine Grade II Listed Buildings. This variant may cause physical damage to unknown buried archaeology.	-1

Option 4 Economic Case Assessment - Environmental Impacts				
Biodiversity	This variant is likely to require land take from both designated (one SSSI and one LWS[1]) and undesignated but important habitats (eight BAP Priority Habitats and one Ancient Woodland). Overall, this variant is likely to require slightly more land take from undesignated but important habitats than the off line variant (based on the conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1	The off line sections of this variant are not likely to require any land take from designated habitats. However, they would require land take from one BAP Priority Habitat and an Ancient Woodland. They would also need a significant amount of land take from agricultural land, including hedgerows, trees and areas of woodland. The on line sections of this variant are likely to require land take from both designated (one SSSI and one LWS[1]) and undesignated but important habitats (eight BAP Priority Habitats and an area of Ancient Woodland). Overall, this variant would require slightly less land take from undesignated but important habitats then the on line variant (based on the conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
Water Environment	This variant is likely to provide an opportunity to improve flooding within a flooding hot spot and to rectify any existing water quality issues through more appropriate treatment of routine runoff.	+1	This variant is likely to provide an opportunity to improve flooding within a flooding hot spot. The on line sections of this variant are likely to provide an opportunity to rectify any existing water quality issues through more appropriate treatment of routine runoff. This variant may discharge into watercourses that have not previously received routine road runoff, which could have an adverse impact on water quality.	0

+2	Large Beneficial Impact
+1	Beneficial Impact
0	Neutral Impact
-1	Adverse Impact
-2	Large Adverse Impact

[1] There are a number of different terms used by Local Authorities to describe designated Local Wildlife Sites, including Sites of Importance for Nature Conservation (SINCs) and Sites of Nature Conservation Importance (SNCIs). To avoid confusion, all of these sites have been referred to as Local Wildlife Sites within this report.

Table 8-C Option 4: Economic Case Assessment - Environmental Impacts

Option 4 Economic Case Assessment - Social Impacts		
Impact	**Qualitative Assessment**	
Physical activity	The scheme is unlikely to lead to a significant increase in the numbers walking or cycling in the area as it is a primarily highways scheme. Some Public rights of way and cycle paths may be impacted but it is likely that further design will mitigate any potential negative impacts through the use of crossing facilities and as such there is unlikely to be much additional distance or time required due to the scheme.	0
Journey Quality	The scheme is assessed as having neutral impacts on Traveller Care and Travellers' Views while also having beneficial impacts on Frustration and Fear of potential accidents. Therefore the scheme is awarded an overall score of "Beneficial".	1
Accidents	This option is assessed as being likely to provide a moderate level of accident savings.	1
Security	The scheme is very unlikely to have any effect on security and security was not identified as a challenge or problem for the scheme to address. Users are less likely to travel slowly or to stop regularly making them less vulnerable but given that crime levels in the area are low given the rural environment there is unlikely to be any impact on the security of scheme users	0
Access to Services	It is unlikely that this scheme will result in a change in routings or timings of current public transport services or any changes to public transport provision	0
Affordability	This option is unlikely have any impact on Parking Charges, Road User Charges or any changes to Public Transports fares or concessions	0
Severance	The scheme is considered to have negligible impact on the current severance situation. Some existing cycle paths and Public Rights of Way may be impacted by the scheme but these impacts would be mitigated at the design stage with dedicated crossing services incorporated into any design	0
Option Values	This option is not forecast to have any impact on the frequency or availability of existing public transport services in the study area and contains no additional public transport provisions	0

+2	Large Beneficial Impact
+1	Beneficial Impact
0	Neutral Impact
-1	Adverse Impact
-2	Large Adverse Impact

Table 8-D Option 4: Economic Case Assessment - Social Impacts

Option 4 Economic Case Assessment – Public Accounts			
Impact	**Qualitative Assessment**		
Cost to the broad Transport Budget	Scheme costs for economic assessment purposes (i.e. in 2010 market prices, discounted to 2010) have been estimated at under £200m for an online option, and between £200m and £350m for an offline option	Online	3
		Offline	2
Indirect tax revenues	Not assessed at this stage		
3	<£200m		
2	£200m - £350m		
1	>£350m		

Table 8-E Option 4: Economic Case Assessment - Public Accounts

Option 4 Economic Case Assessment – Indicative BCR			
Impact	**Qualitative Assessment**		
Indicative BCR	An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present between Medium and Poor Value for Money	Online	0
		Offline	-2
2	Very High Value for Money (BCR > 4)		
1	High Value for Money (BCR = 2 - 4)		
0	Medium Value for Money (BCR = 1.5 - 2)		
-1	Low Value for Money (BCR = 1 - 1.5)		
-2	Poor Value for Money (BCR < 1)		

Table 8-F Option 3: Economic Case Assessment - Indicative BCR

Option 4 Financial Case			
Impact	**Qualitative Assessment**		
Outturn Costs to implement	Indicative scheme costs suggest that this scheme could cost between less than £300m for the online option, and between £300 and £500m for the offline option. This is a middle of the range value compared to other options.	Online	3
		Offline	2
Operating and Maintenance Costs	As this scheme is involves improvements to 21km of existing road it is likely that the operating and maintenance costs will increase.		
Funding Assumptions and funding allocation	All funding is expected to be provided by central government. This scheme would represent a significant funding requirement by the DfT and Treasury.		
3	<£300m		
2	£300m - £500m		
1	>£500m		

Table 8-G Option 4: Financial Case Assessment

Option 4 Management/Delivery Case		
Criteria	**Qualitative comment**	**RAG Indicator**
Governance	There is a robust assurance and risk management framework in place that has been tried and tested by the HA through the delivery of a wide range of major highways schemes. Due to the moderate complexity of the scheme, it is likely that the Highways Agency and only one contractor/designer would be required. Thus, the governance would be simple and led by the Highways Agency and their contractor/designer only.	2
3	Simple scheme with HA and single contractor/designer	
2	Moderately complex scheme with HA and single contractor/designer	
1	Complex scheme with HA and multiple contractor/designer	
Stakeholder acceptability	The key stakeholders for the scheme are NCC, and they are supportive of any work to improve the A1, particularly dualling. However, it is likely that other stakeholders could be opposed to any improvement on environmental grounds.	2
Public acceptability / interest	The general opinion of the A1 North of Newcastle is that the road is unsafe and performs poorly and as such the scheme will receive some support, however, it is likely that there will be opposition to the scheme as well.	2
3	Likely to be supported	
2	Likely to receive mixed support	
1	Unlikely to supported	

Table 8-H Option 4: Management/Delivery Case Assessment

Option 4 Commercial Case	
Assessment Area	**Proposed Methodology**
Procurement strategy	There is a robust procurement strategy in place through the use of the Highways Agency Collaborative Delivery Framework (CDF).

Table 8-I Option 4: Commercial Case Assessment

8.2 Option 4: Summary and Conclusions

Option 4 would consist of the full dualling of the A1 to Ellingham.

A comparative AST is presented in Table 8-J to provide a summary of many of the areas assessed for this Option.

The key positive points to draw out are:

- *Likely to have strong support from a policy perspective.*
- *Moderate level of benefits in comparison to some of the other options.*
- *Likely to have a moderate scheme cost in comparison to some other options.*
- *Likely to provide between Poor and Medium Value for Money, dependent on whether offline or online variants are chosen.*

The key negative points to draw out for this option are:

- *Likely to have a significant adverse effect on townscape and Landscape*
- *Likely to have an adverse effect on noise, Air Quality, Greenhouse Gases, Historic Environment and Bio Diversity*

However, it is thought that many of these adverse environmental effects could be successfully mitigated during the design process, it is acknowledged that some environmental impacts (notably Air Quality and Greenhouse Gases) cannot be mitigated for.

COMPARATIVE AST

Option 4: Dualling to Ellingham

	Impacts	Commentary	Assessment
Economy	Business users & transport providers	At this stage travel time savings have been used as an estimate of overall user benefits. This option is likely to provide moderate travel time savings and therefore moderate user benefits	2
	Reliability (Business users)	Option is likely to provide more ability to help road users cope with incidents on the route without re-routing and to help overtake slow moving vehicles.	2
	Regeneration	Not Assessed	
	Wider Impacts	Not Assessed	
Environmental	Noise	**Online:** This variant is expected to: • Increase noise levels as a result of increased speed. • Increase or decrease noise at properties within 20m of the existing A1 due to repositioning of the running lanes.	-1
		Offline: This variant is expected to: • Increase noise levels as a result of increased speed. • Increase noise at some properties within 20m of the existing A1 due to repositioning of the running lanes (relevant to sections of on line dualling). • Reduce noise at some properties close to the existing A1 that would be bypassed by new route (relevant to sections of off line dualling). • Increase noise at some properties close to the new route of the A1 (relevant to the sections of offline dualling). • Move properties both into (negative), and out of (beneficial), the noise calculation area.	-1
	Air Quality	**Online:** This variant is expected to: • Increase average 12 hour vehicle speed by over 10km an hour. • Move the traffic (and thus emissions) to within 200m of (negative), or over 200m from (beneficial), sensitive receptors.	-1
		Offline: This variant is expected to: • Increase average 12 hour vehicle speed by over 10km an hour. • Move the traffic (and thus emissions) to within 200m of (negative), or over 200m from (beneficial), sensitive receptors.	-1
	Greenhouse gases	**Online:** This variant would increase embedded carbon and reduce efficiency.	-1
		Offline: This variant would increase embedded carbon and reduce efficiency.	-1
	Landscape	**Online:** This variant would: • Change the character of the road and make it more visually intrusive. • Require the removal of roadside trees and hedges. • Have an adverse impact on two SLAs.	-1
		Offline: This variant would: • Change the character of the road and make it more visually intrusive. • Introduce development into areas not previously developed. • Affect trees, hedgerows and agricultural land through land take. • Have an adverse impact on three SLAs. • Benefit some sensitive receptors by increasing the distance between the receptor and the A1 traffic.	-2
	Townscape	**Online:** This variant would require the demolition of some properties	-2
		Offline: This variant would include some on line dualling between the off-line sections. This would require the demolition of at least one property.	-2
	Historic Environment	**Online:** This variant may require the relocation of five Listed mileposts, which would lead to adverse impacts on their setting. This variant would have an adverse impact on the settings of four Scheduled Monuments; one Grade I Listed Building; and five Grade II Listed Buildings. This variant may also cause physical damage to unknown buried archaeology.	-1
		Offline: This variant may require the relocation of two Listed mileposts, which would lead to adverse impacts on their setting. The on line sections of this variant would have an adverse impact on the setting of four Scheduled Monuments; and four Grade II Listed Buildings. The off line sections of this variant would have an adverse impact on nine Grade II Listed Buildings. This variant may cause physical damage to unknown buried archaeology.	-1
	Biodiversity	**Online:** This variant would require land take from both designated (one SSSI and one LWS1) and undesignated but important habitats (eight BAP Priority Habitats and one Ancient Woodland). Overall, this variant would require slightly more land take from undesignated but important habitats than the off line variant (based on the conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
		Offline: The off line sections of this variant would not require any land take from designated habitats. However, they would require land take from one BAP Priority Habitat and an Ancient Woodland. They would also need a significant amount of land take from agricultural land, including hedgerows, trees and areas of woodland. The on line sections of this variant would require land take from both designated (one SSSI and one LWS1) and undesignated but important habitats (eight BAP Priority Habitats and an area of Ancient Woodland). Overall, this variant would require slightly less land take from undesignated but important habitats then the on line variant (based on the conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
	Water Environment	**Online:** This variant would provide an opportunity to improve flooding within a flooding hot spot and to rectify any existing water quality issues through more appropriate treatment of routine runoff.	1
		Offline: This variant would provide an opportunity to improve flooding within a flooding hot spot. The on line sections of this variant would provide an opportunity to rectify any existing water quality issues through more appropriate treatment of routine runoff. This variant may discharge into watercourses that have not previously received routine road runoff, which could have an adverse impact on water quality.	0
Social	Commuting and Other users	Included within Economy	
	Reliability (Commuting / Other users)	Included within Economy	
	Physical activity	The scheme is unlikely to lead to a significant increase in the numbers walking or cycling in the area as it is a primarily highways scheme. Some Public rights of way and cycle paths may be impacted but it is likely that further design will mitigate any potential negative impacts through the use of crossing facilities and as such there is unlikely to be much additional distance or time required due to the scheme.	0
	Journey quality	The scheme is assessed as having neutral impacts on Traveler Care and Travellers' Views while also having beneficial impacts on Frustration and Fear of potential accidents. Therefore the scheme is awarded an overall score of "Beneficial".	1
	Accidents	This option is assessed as being likely to provide a moderate level of accident savings.	1
	Security	The scheme is very unlikely to have any effect on security and security was not identified as a challenge or problem for the scheme to address. Users are less likely to travel slowly or to stop regularly making them less vulnerable but given that crime levels in the area are low given the rural environment there is unlikely to be any impact on the security of scheme users	0
	Access to services	It is unlikely that this scheme will result in a change in routings or timings of current public transport services or any changes to public transport provision	0
	Affordability	This option is unlikely have any impact on Parking Charges, Road User Charges or any changes to Public Transports fares or concessions	0
	Severance	The scheme is considered to have negligible impact on the current severance situation. Some existing cycle paths and Public Rights of Way may be impacted by the scheme but these impacts would be mitigated at the design stage with dedicated crossing services incorporated into any design	0
	Option and non-use values	This option is not forecast to have any impact on the frequency or availability of existing public transport services in the study area and contains no additional public transport provisions	0
Public Accounts	Cost to Broad Transport Budget	Online: This option is likely to have moderately low scheme costs in comparison to the other options	
		Online: This option is likely to have moderate scheme costs in comparison to the other options	
	Indirect Tax Revenues	Not Assessed	
	Indicative BCR	Online: An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Medium Value for Money	
		Offline: An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Poor Value for Money	

Table 8-J Option 4 Comparative AST

9 Option 6 Assessment

9.1 Option 6: Description

This option would entail nearly 13miles of additional dual carriageway via either online or offline widening or a combination of both depending upon sectional constraints between Morpeth and Felton and between Alnwick and North Charlton (route sections 3 and 5). The option would also involve upgrading 19 miles of existing single carriageway between Ellingham and Scremerston (route sections 7 and 8) by means of localised widening where a particular need can be identified. The Berwick Bypass already contains localised widening so this would provide consistent standards between dual carriageway sections. This option would also include NMU provision. Figure 9-A and Figure 9-B below show the scheme's location on the route and detail the improvements.

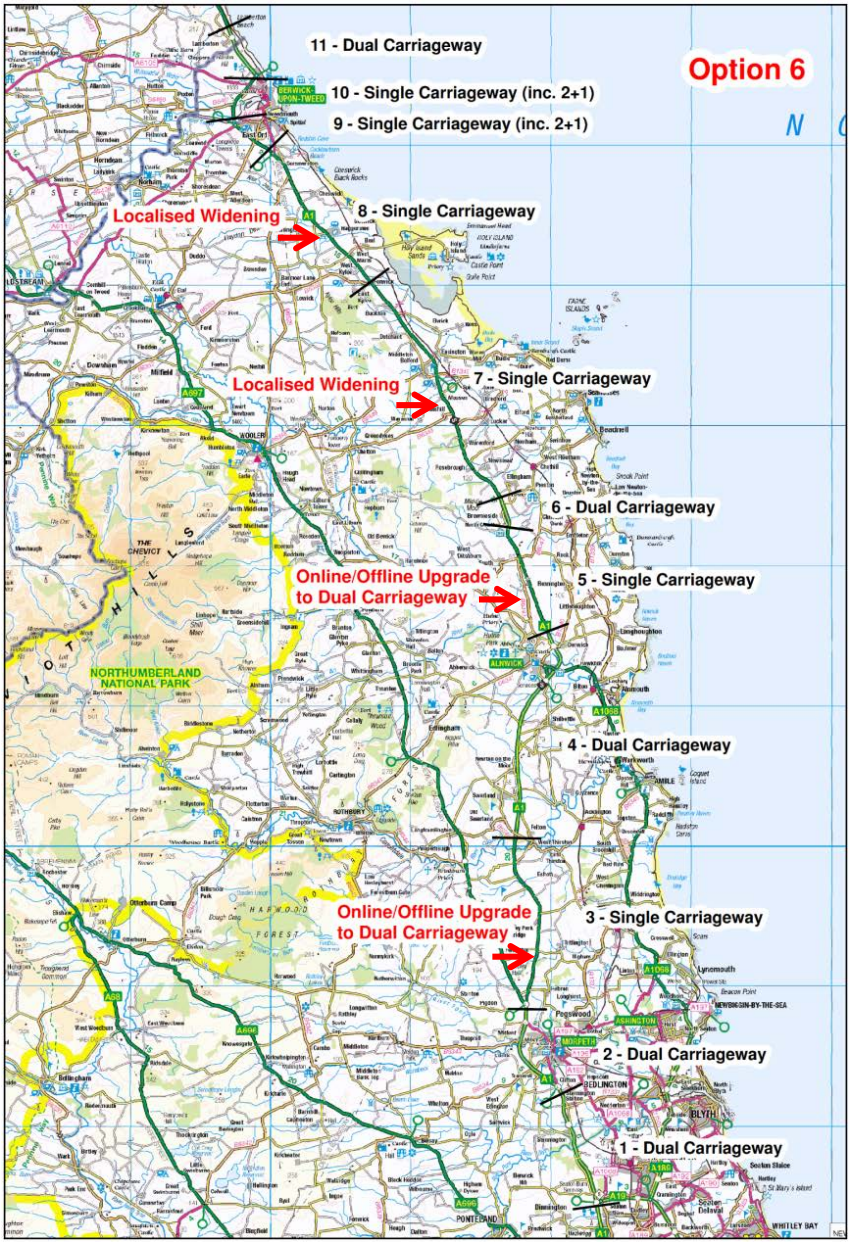


Figure 9-A Option 6 Overview

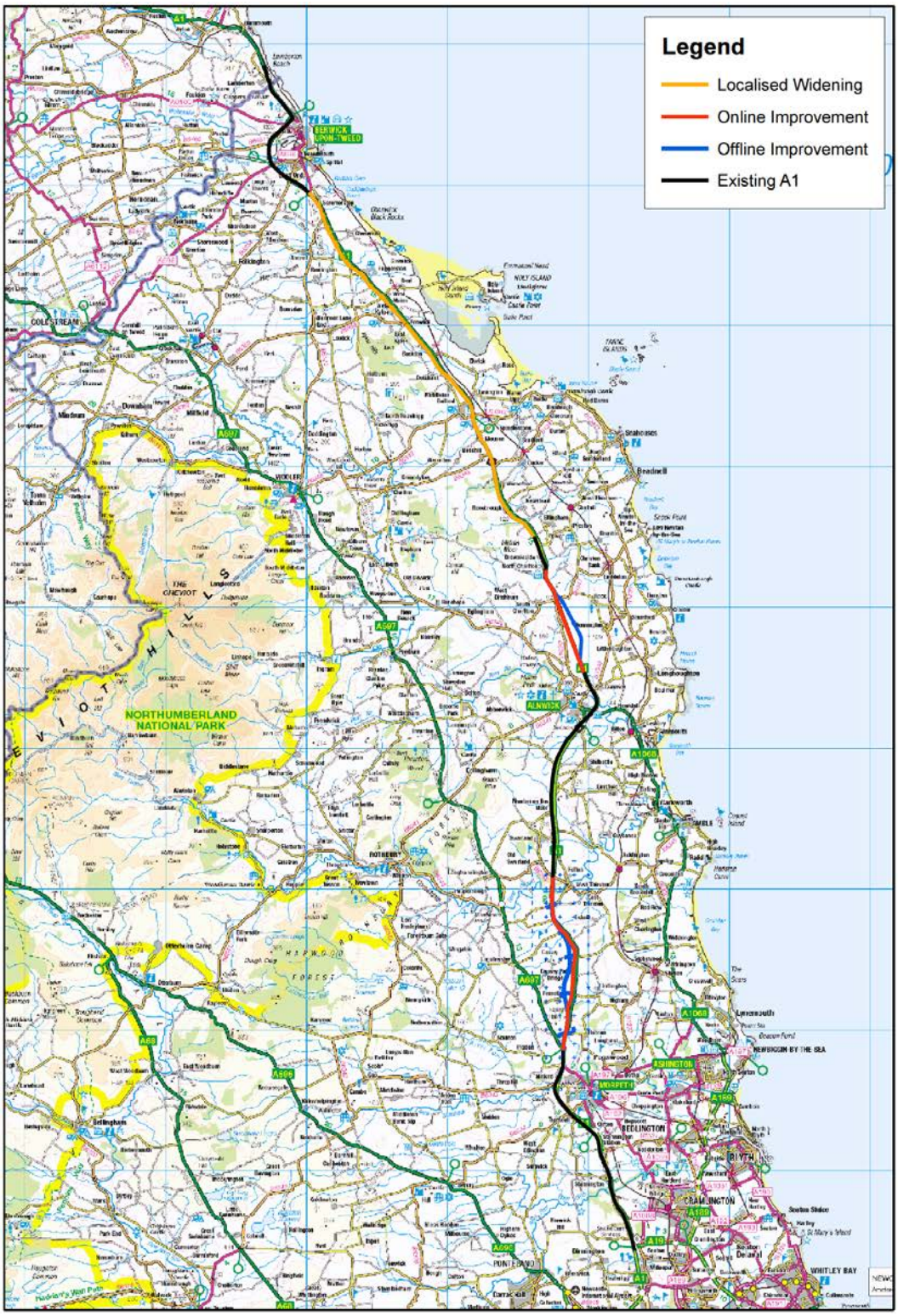


Figure 9-B Option 6

The Option 6 Assessment is summarised in Table 9-A to Table 9-I.

Option 6 Strategic Case Assessment		
Impact	**Qualitative Assessment**	
Regional Policy	This option is well supported by policy at a national, regional and local level.	+1
Local Policy		
Route Objectives	This option is likely to have a strong fit with the defined route objectives.	+1
+1	Option likely to support relevant policy	
0	Option likely to have neutral impact upon relevant policy	
-1	Option likely to conflict with relevant policy	

Table 9-A Option 6: Strategic Case Assessment

Option 6 Economic Case Assessment - Economic Impacts		
Impact	**Qualitative Assessment**	
User benefits	Option is likely to lead to large travel time savings	+3
Reliability	Option is likely to provide more ability to help road users cope with incidents on the route without re-routing and to help overtake slow moving vehicles.	+2
Regeneration	Not assessed	
Wider Impacts	Not Assessed	
1	Option likely to have small benefits	
2	Option likely to have moderate benefits	
3	Option likely to have large benefits	

Table 9-B Option 6: Economic Case Assessment - Economic Impacts

Option 6 Economic Case Assessment - Environmental Impacts				
Impact	**Qualitative Assessment (on line variant)**		**Qualitative Assessment (off line variant, which includes on line sections)**	
Noise	This variant is expected to: • Increase noise levels as a result of increased speed. • Increase or decrease noise at properties within 20m of the existing A1 due to repositioning of the running lanes.	-1	This variant is expected to: • Increase noise levels as a result of increased speed. • Increase noise at some properties within 20m of the existing A1 due to repositioning of the running lanes (relevant to sections of on line dualling). • Reduce noise at some properties close to the existing A1 that would be bypassed by new route (relevant to sections of off line dualling). • Increase noise at some properties close to the new route of the A1 (relevant to the sections of offline dualling). • Move properties both into (negative), and out of (beneficial), the noise calculation area.	-1

Option 6 Economic Case Assessment - Environmental Impacts				
Air Quality	This variant is likely to increase average 12 hour vehicle speed by over 10km an hour. This variant is likely to take the main A1 traffic to within 200m of some properties previously outside of this distance. This could have an adverse impact on air quality at these locations.	-1	This variant is expected to: • Increase average 12 hour vehicle speed by over 10km an hour. • Move the traffic (and thus emissions) to within 200m of (negative), or over 200m from (beneficial), sensitive receptors.	-1
Greenhouse Gases	This variant is likely to increase embedded carbon and reduce efficiency.	-1	This variant is likely to increase embedded carbon and reduce efficiency.	-1
Landscape	This variant is likely to: • Change the character of the road and make it more visually intrusive. • Require the removal of roadside trees and hedges. • Have an adverse impact on SLAs.	-1	This variant is likely to: • Change the character of the road and make it more visually intrusive. • Introduce development into areas not previously developed. • Affect trees, hedgerows and agricultural land through land take. • Have an adverse impact on SLAs. • Benefit some sensitive receptors by increasing the distance between the receptor and the A1 traffic.	-2
Townscape	This variant is likely to require the demolition of some properties.	-2	This variant is likely to include some on line dualling. This would require the demolition of at least one property.	-2
Historic Environment	This variant may require the relocation of six Listed mileposts, which would lead to adverse impacts on their setting. This variant is likely to have an adverse impact on the settings of five Scheduled Monuments; one Grade I Listed Building; and six Grade II Listed Buildings. This variant is likely to require the demolition of a Grade II Listed Building. This variant may also cause physical damage to unknown buried archaeology.	-2	This variant may require the relocation of three Listed mileposts, which would lead to adverse impacts on their setting. The off line sections of this variant are likely to have an adverse impact on nine Grade II Listed Buildings. The on line sections of this variant (including localised widening) are likely have an adverse impact on the setting of five Scheduled Monuments; and five Grade II Listed Buildings. This variant may cause physical damage to unknown buried archaeology.	-2

Option 6 Economic Case Assessment - Environmental Impacts				
Biodiversity	This variant is likely to require land take from both designated (one SSSI and one LWS[1]) and undesignated but important habitats (nine BAP Priority Habitats and one Ancient Woodland). Overall, this variant is likely to require slightly more land take from undesignated but important habitats than the off line variant (based on the conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1	The off line sections of this variant are not likely to require any land take from designated habitats. However, they would require land take from one BAP Priority Habitat and an area of Ancient Woodland. They are also likely to need a significant amount of land take from agricultural land, including hedgerows, trees and areas of woodland. The on line sections of this variant (including localised widening) are likely to require land take from both designated (one SSSI and one LWS[1]) and undesignated but important habitats (nine BAP Priority Habitats and an area of Ancient Woodland). Overall, this variant is likely to require slightly less land take from undesignated but important habitats then the on line variant (based on the conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
Water Environment	This is likely to would provide an opportunity to improve flooding within a flooding hot spot and to rectify any existing water quality issues through more appropriate treatment of routine runoff.	+1	This variant is likely to provide an opportunity to improve flooding within a flooding hot spot. The on line sections of this variant are likely to provide an opportunity to rectify any existing water quality issues through more appropriate treatment of routine runoff. This variant may discharge into watercourses that have not previously received routine road runoff, which could have an adverse impact on water quality.	0

+2	Large Beneficial Impact
+1	Beneficial Impact
0	Neutral Impact
-1	Adverse Impact
-2	Large Adverse Impact

[1] There are a number of different terms used by Local Authorities to describe designated Local Wildlife Sites, including Sites of Importance for Nature Conservation (SINCs) and Sites of Nature Conservation Importance (SNCIs). To avoid confusion, all of these sites have been referred to as Local Wildlife Sites within this report.

Table 9-C Option 6: Economic Case Assessment - Environmental Impacts

Option 6 Economic Case Assessment - Social Impacts		
Impact	**Qualitative Assessment**	
Physical activity	The scheme is unlikely to lead to a significant increase in the numbers walking or cycling in the area as it is a primarily highways scheme. Some Public rights of way and cycle paths may be impacted but it is likely that further design will mitigate any potential negative impacts through the use of crossing facilities and as such there is unlikely to be much additional distance or time required due to the scheme.	0
Journey Quality	The scheme is assessed as having neutral impacts on Traveller Care and Travellers' Views while also having beneficial impacts on Frustration and Fear of potential accidents. Therefore the scheme is awarded an overall score of "Beneficial".	1
Accidents	This option is assessed as being likely to provide a high level of accident savings.	2
Security	The scheme is very unlikely to have any effect on security and security was not identified as a challenge or problem for the scheme to address. Users are less likely to travel slowly or to stop regularly making them less vulnerable but given that crime levels in the area are low given the rural environment there is unlikely to be any impact on the security of scheme users	0
Access to Services	It is unlikely that this scheme will result in a change in routings or timings of current public transport services or any changes to public transport provision	0
Affordability	This option is unlikely have any impact on Parking Charges, Road User Charges or any changes to Public Transports fares or concessions	0
Severance	The scheme is considered to have negligible impact on the current severance situation. Some existing cycle paths and Public Rights of Way may be impacted by the scheme but these impacts would be mitigated at the design stage with dedicated crossing services incorporated into any design	0
Option Values	This option is not forecast to have any impact on the frequency or availability of existing public transport services in the study area and contains no additional public transport provisions	0

+2	Large Beneficial Impact
+1	Beneficial Impact
0	Neutral Impact
-1	Adverse Impact
-2	Large Adverse Impact

Table 9-D Option 6: Economic Case Assessment - Social Impacts

Option 6 Economic Case Assessment – Public Accounts			
Impact	**Qualitative Assessment**		
Cost to the broad Transport Budget	Scheme costs for economic assessment purposes (i.e. in 2010 market prices, discounted to 2010) have been estimated at under £200m for an online option, and between £200m and £350m for an offline option	Online	3
		Offline	2
Indirect tax revenues	Not assessed at this stage		
3	<£200m		
2	£200m - £350m		
1	>£350m		

Table 9-E Option 6: Economic Case Assessment - Public Accounts

Option 6 Economic Case Assessment – Indicative BCR			
Impact	**Qualitative Assessment**		
Indicative BCR	An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Low to Medium Value for Money	Online	0
		Offline	-1
2	Very High Value for Money (BCR > 4)		
1	High Value for Money (BCR = 2 - 4)		
0	Medium Value for Money (BCR = 1.5 - 2)		
-1	Low Value for Money (BCR = 1 - 1.5)		
-2	Poor Value for Money (BCR < 1)		

Table 9-F Option 6: Economic Case Assessment - Indicative BCR

Option 6 Financial Case			
Impact	**Qualitative Assessment**		
Outturn Costs to implement	Indicative scheme costs suggest that this scheme could cost between less than £300m for the online option, and between £300 and £500m for the offline option. This is a middle of the range value compared to other options.	Online	3
		Offline	2
Operating and Maintenance Costs	As this scheme is involves improvements to 51.5km of existing road it is likely that the operating and maintenance costs will significantly increase.		
Funding Assumptions and funding allocation	All funding is expected to be provided by central government. This scheme would represent a significant funding requirement by the DfT and Treasury.		
3	<£300m		
2	£300m - £500m		
1	>£500m		

Table 9-G Option 6: Financial Case Assessment

Option 6 Management/Delivery Case		
Criteria	**Qualitative comment**	**RAG Indicator**
Governance	There is a robust assurance and risk management framework in place that has been tried and tested by the HA through the delivery of a wide range of major highways schemes. Due to the length and complexity of the scheme it is recommended that the scheme be split in to its three sections (Morpeth to Felton, Alnwick to North Charlton and Ellingham to Scremerston) and each section delivered independently in order to successfully deliver the scheme. Thus, each section would require its own governance and therefore the Highways Agency would require more than one delivery agent in order to deliver the scheme.	1
3	Simple scheme with HA and single contractor/designer	
2	Moderately complex scheme with HA and single contractor/designer	
1	Complex scheme with HA and multiple contractor/designer	
Stakeholder acceptability	The key stakeholders for the scheme are NCC, and they are supportive of any work to improve the A1, particularly dualling. However, it is likely that other stakeholders could be opposed to any improvement on environmental grounds.	2
Public acceptability / interest	The general opinion of the A1 North of Newcastle is that the road is unsafe and performs poorly and as such the scheme will receive some support, however, it is likely that there will be opposition to the scheme as well.	2
3	Likely to be supported	
2	Likely to receive mixed support	
1	Unlikely to supported	

Table 9-H Option 6: Management/Delivery Case Assessment

Option 6 Commercial Case	
Assessment Area	**Proposed Methodology**
Procurement strategy	There is a robust procurement strategy in place through the use of the Highways Agency Collaborative Delivery Framework (CDF).

Table 9-I Option 6: Commercial Case Assessment

9.2 Option 6: Summary and Conclusions

Option 6 would consist of dualling the A1 to Ellingham and localised widening on single carriageway sections to the North.

A comparative AST is presented in Table 9-J to provide a summary of many of the areas assessed for this Option.

The key positive points to draw out are:

- *Likely to have strong support from a policy perspective.*
- *Likely to provide a high level of benefits in comparison to some of the other options.*
- *Likely to have a moderate scheme cost in comparison to some other options.*

- *Likely to provide Low to Medium Value for Money, dependent on whether offline or online variants are chosen.*
- *Likely to provide significant Accident Savings on the route.*

The key negative points to draw out for this option are:

- *Likely to have a significant adverse effect on townscape, Historic Environment and Landscape*
- *Likely to have an adverse effect on noise, Air Quality, Greenhouse Gases and Bio Diversity*
- *Likely to receive mixed support from the general public.*

However, it is thought that many of these adverse environmental effects could be successfully mitigated during the design process, it is acknowledged that some environmental impacts (notably Air Quality and Greenhouse Gases) cannot be mitigated for.

COMPARATIVE AST

Option 6: Dualling to Ellingham, localised widening on single carriageway sections to the north

	Impacts	Commentary	Assessment
Economy	Business users & transport providers	At this stage travel time savings have been used as an estimate of overall user benefits. This option is likely to provide large travel time savings and therefore large user benefits	3
	Reliability (Business users)	Option is likely to provide more ability to help road users cope with incidents on the route without re-routing and to help overtake slow moving vehicles.	2
	Regeneration	Not Assessed	
	Wider Impacts	Not Assessed	
Environmental	Noise	**Online:** This variant is expected to: • Increase noise levels as a result of increased speed. • Increase or decrease noise at properties within 20m of the existing A1 due to repositioning of the running lanes.	-1
		Offline: This variant is expected to: • Increase noise levels as a result of increased speed. • Increase noise at some properties within 20m of the existing A1 due to repositioning of the running lanes (relevant to sections of on line dualling). • Reduce noise at some properties close to the existing A1 that would be bypassed by new route (relevant to sections of off line dualling). • Increase noise at some properties close to the new route of the A1 (relevant to the sections of offline dualling). • Move properties both into (negative), and out of (beneficial), the noise calculation area.	-1
	Air Quality	**Online:** This variant would increase average 12 hour vehicle speed by over 10km an hour. This variant would take the main A1 traffic to within 200m of some properties previously outside of this distance. This could have an adverse impact on air quality at these locations.	-1
		Offline: This variant is expected to: • Increase average 12 hour vehicle speed by over 10km an hour. • Move the traffic (and thus emissions) to within 200m of (negative), or over 200m from (beneficial), sensitive receptors.	-1
	Greenhouse gases	**Online:** This variant would increase embedded carbon and reduce efficiency.	-1
		Offline: This variant would increase embedded carbon and reduce efficiency.	-1
	Landscape	**Online:** This variant would: • Change the character of the road and make it more visually intrusive. • Require the removal of roadside trees and hedges. • Have an adverse impact on SLAs.	-1
		Offline: This variant would: • Change the character of the road and make it more visually intrusive. • Introduce development into areas not previously developed. • Affect trees, hedgerows and agricultural land through land take. • Have an adverse impact on SLAs. • Benefit some sensitive receptors by increasing the distance between the receptor and the A1 traffic.	-2
	Townscape	**Online:** This variant would require the demolition of some properties	-2
		Offline: This variant would include some on line dualling between the off-line sections. This would require the demolition of at least one property.	-2
	Historic Environment	**Online:** This variant may require the relocation of six Listed mileposts, which would lead to adverse impacts on their setting. This variant would have an adverse impact on the settings of five Scheduled Monuments; one Grade I Listed Building; and six Grade II Listed Buildings. This variant would require the demolition of a Grade II Listed Building. This variant may also cause physical damage to unknown buried archaeology.	-2
		Offline: This variant may require the relocation of three Listed mileposts, which would lead to adverse impacts on their setting. The off line sections of this variant would have an adverse impact on nine Grade II Listed Buildings. The on line sections of this variant (including localised widening) would have an adverse impact on the setting of five Scheduled Monuments; and five Grade II Listed Buildings. This variant may cause physical damage to unknown buried archaeology.	-2
	Biodiversity	**Online:** This variant would require land take from both designated (one SSSI and one LWS1) and undesignated but important habitats (nine BAP Priority Habitats and one Ancient Woodland). Overall, this variant would require slightly more land take from undesignated but important habitats than the off line variant (based on the conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
		Offline: The off line sections of this variant would not require any land take from designated habitats. However, they would require land take from one BAP Priority Habitat and an area of Ancient Woodland. They would also need a significant amount of land take from agricultural land, including hedgerows, trees and areas of woodland. The on line sections of this variant (including localised widening) would require land take from both designated (one SSSI and one LWS1) and undesignated but important habitats (nine BAP Priority Habitats and an area of Ancient Woodland). Overall, this variant would require slightly less land take from undesignated but important habitats then the on line variant (based on the conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
	Water Environment	**Online:** This variant would provide an opportunity to improve flooding within a flooding hot spot and to rectify any existing water quality issues through more appropriate treatment of routine runoff.	1
		Offline: This variant would provide an opportunity to improve flooding within a flooding hot spot. The on line sections of this variant would provide an opportunity to rectify any existing water quality issues through more appropriate treatment of routine runoff. This variant may discharge into watercourses that have not previously received routine road runoff, which could have an adverse impact on water quality.	0
Social	Commuting and Other users	Included within Economy	
	Reliability (Commuting / Other users)	Included within Economy	
	Physical activity	The scheme is unlikely to lead to a significant increase in the numbers walking or cycling in the area as it is a primarily highways scheme. Some Public rights of way and cycle paths may be impacted but it is likely that further design will mitigate any potential negative impacts through the use of crossing facilities and as such there is unlikely to be much additional distance or time required due to the scheme.	0
	Journey quality	The scheme is assessed as having neutral impacts on Traveler Care and Travellers' Views while also having beneficial impacts on Frustration and Fear of potential accidents. Therefore the scheme is awarded an overall score of "Beneficial".	1
	Accidents	This option is assessed as being likely to provide a high level of accident savings.	2
	Security	The scheme is very unlikely to have any effect on security and security was not identified as a challenge or problem for the scheme to address. Users are less likely to travel slowly or to stop regularly making them less vulnerable but given that crime levels in the area are low given the rural environment there is unlikely to be any impact on the security of scheme users	0
	Access to services	It is unlikely that this scheme will result in a change in routings or timings of current public transport services or any changes to public transport provision	0
	Affordability	This option is unlikely have any impact on Parking Charges, Road User Charges or any changes to Public Transports fares or concessions	0
	Severance	The scheme is considered to have negligible impact on the current severance situation. Some existing cycle paths and Public Rights of Way may be impacted by the scheme but these impacts would be mitigated at the design stage with dedicated crossing services incorporated into any design	0
	Option and non-use values	This option is not forecast to have any impact on the frequency or availability of existing public transport services in the study area and contains no additional public transport provisions	0
Public Accounts	Cost to Broad Transport Budget	Online: This option is likely to have moderately low scheme costs in comparison to the other options	1
		Online: This option is likely to have moderate scheme costs in comparison to the other options	0
	Indirect Tax Revenues	Not Assessed	
	Indicative BCR	Online: An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Medium Value for Money	
		Online: An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Low Value for Money	

Table 9-J Option 6 Comparative AST

10 Option 7 Assessment

10.1 Option 7: Description

This option would entail nearly 13 miles of additional dual carriageway via either online or offline widening or a combination of both depending upon sectional constraints between Morpeth and Felton and between Alnwick and North Charlton (route sections 3 and 5). The option would also involve upgrading 19 miles of existing single carriageway between Ellingham and Scremerston (route sections 7 and 8) by means of overtaking lanes where a particular need can be identified. The Berwick Bypass already contains overtaking lanes so this would provide consistent standards between dual carriageway sections. This option would also include NMU provision. Figure 10-A and Figure 10-B below show the scheme's location on the route and detail the improvements.

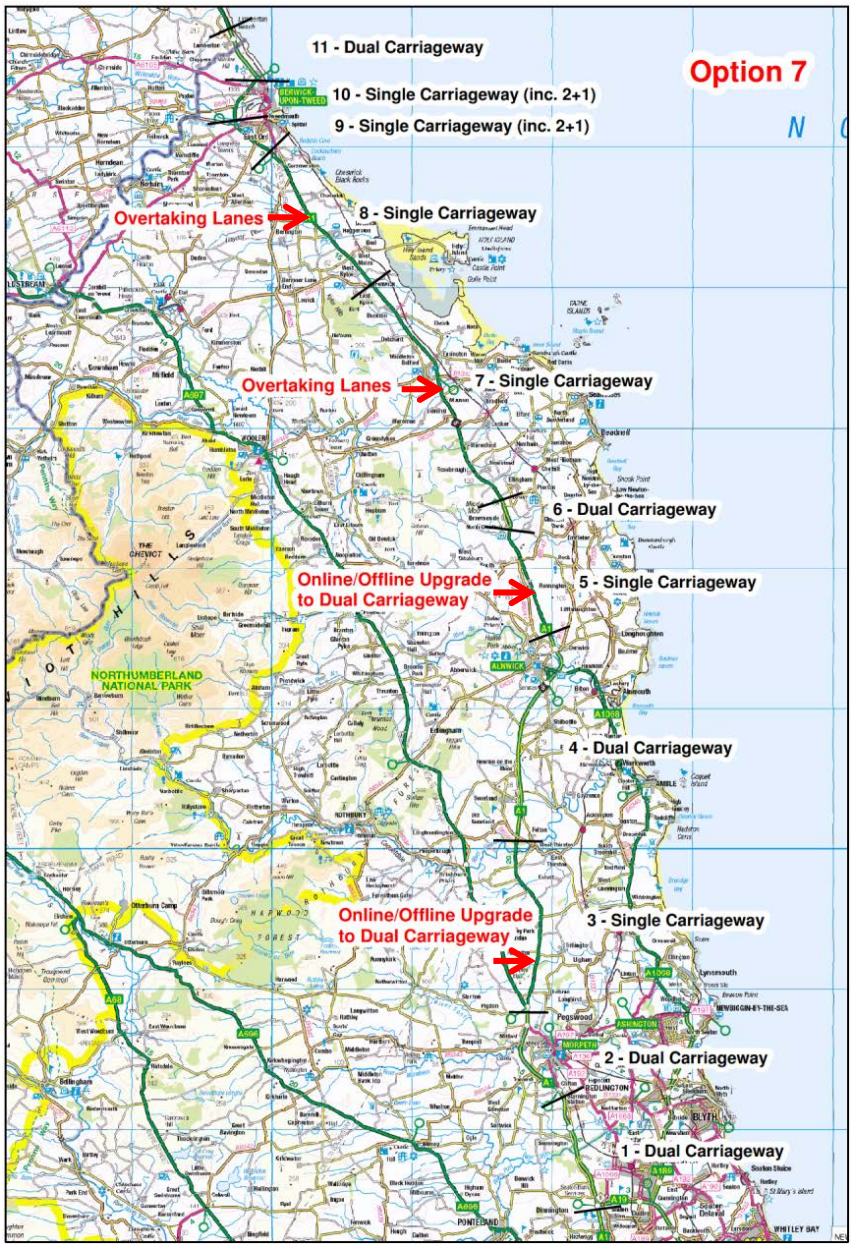


Figure 10-A Option 7 Overview

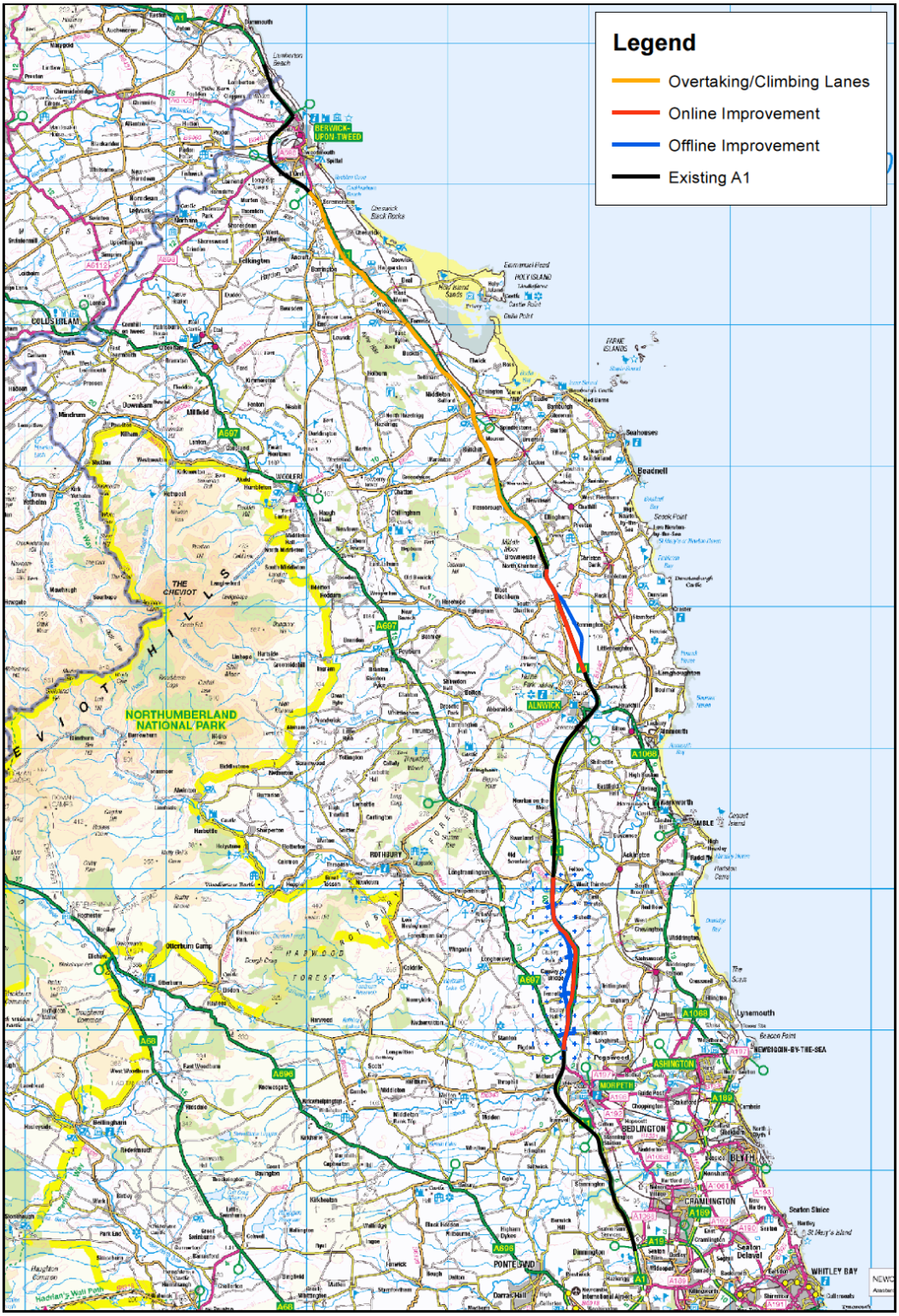


Figure 10-B Option 7

The Option 7 Assessment is summarised in Table 10-A to Table 10-I.

Option 7 Strategic Case Assessment		
Impact	**Qualitative Assessment**	
Regional Policy	This option is well supported by policy at a national, regional and local level.	+1
Local Policy		
Route Objectives	This option is likely to have a strong fit with the defined route objectives.	+1
+1	Option likely to support relevant policy	
0	Option likely to have neutral impact upon relevant policy	
-1	Option likely to conflict with relevant policy	

Table 10-A Option 7: Strategic Case Assessment

Option 7 Economic Case Assessment - Economic Impacts		
Impact	**Qualitative Assessment**	
User benefits	Option is likely to lead to large travel time savings	+3
Reliability	Option is likely to provide more ability to help road users cope with incidents on the route without re-routing and to help overtake slow moving vehicles.	+3
Regeneration	Not assessed	
Wider Impacts	Not Assessed	
1	Option likely to have small benefits	
2	Option likely to have moderate benefits	
3	Option likely to have large benefits	

Table 10-B Option 7: Economic Case Assessment - Economic Impacts

Option 7 Economic Case Assessment - Environmental Impacts				
Impact	**Qualitative Assessment (on line variant)**		**Qualitative Assessment (off line variant, which includes on line sections)**	
Noise	This variant is expected to: • Increase noise levels as a result of increased speed. • Increase or decrease noise at properties within 20m of the existing A1 due to repositioning of the running lanes.	-1	This variant is expected to: • Increase noise levels as a result of increased speed. • Increase noise at some properties within 20m of the existing A1 due to repositioning of the running lanes (relevant to sections of on line dualling). • Reduce noise at some properties close to the existing A1 that would be bypassed by new route (relevant to sections of off line dualling). • Increase noise at some properties close to the new route of the A1 (relevant to the sections of offline dualling). • Move properties both into (negative), and out of (beneficial), the noise calculation area.	-1

Option 7 Economic Case Assessment - Environmental Impacts				
Air Quality	This variant is likely to increase average 12 hour vehicle speed by over 10km an hour. This variant is likely to take the main A1 traffic to within 200m of some properties previously outside of this distance. This could have an adverse impact on air quality at these locations.	-1	This variant is expected to: • Increase average 12 hour vehicle speed by over 10km an hour. • Move the traffic (and thus emissions) to within 200m of (negative), or over 200m from (beneficial), sensitive receptors.	-1
Greenhouse Gases	This variant is likely to increase embedded carbon and reduce efficiency.	-1	This variant is likely to increase embedded carbon and reduce efficiency.	-1
Landscape	This variant is likely to: • Change the character of the road and make it more visually intrusive. • Require the removal of roadside trees and hedges. • Have an adverse impact on SLAs.	-1	This variant is likely to: • Change the character of the road and make it more visually intrusive. • Introduce development into areas not previously developed. • Affect trees, hedgerows and agricultural land through land take. • Have an adverse impact on SLAs. • Benefit some sensitive receptors by increasing the distance between the receptor and the A1 traffic.	-2
Townscape	This variant is likely to require the demolition of some properties.	-2	This variant is likely to include some on line dualling. This would require the demolition of at least one property.	-2
Historic Environment	Overtaking lanes (sections 7 and 8) may have an adverse impact on historic buildings and other heritage assets. However, in the absence of a conceptual design drawing those that would be affected cannot be determined. This variant may require the relocation of at least five Listed mileposts, which would lead to adverse impacts on their setting. This variant may require the demolition of at least one Grade II Listed Building. This variant is likely to have an adverse impact on the settings of at least five Scheduled Monuments; one Grade I Listed Building; and six Grade II Listed Buildings. This variant may also cause physical damage to unknown buried archaeology.	-2	Overtaking lanes (sections 7 and 8) may have an adverse impact on historic buildings and other heritage assets. However, in the absence of a conceptual design drawing those that would be affected cannot be determined. This variant may require the relocation of at least two Listed mileposts, which would lead to adverse impacts on their setting. This variant may require the demolition of at least one Grade II Listed Building. The off line sections of this variant would have an adverse impact on nine Grade II Listed Buildings. The on line sections of this variant would have an adverse impact on the setting of at least five Scheduled Monuments; and five Grade II Listed Buildings. This variant may cause physical damage to unknown buried archaeology.	-2

Option 7 Economic Case Assessment - Environmental Impacts				
Biodiversity	Overtaking lanes (sections 7 and 8) may have an adverse impact on designated and undesignated but important sites. However, in the absence of a conceptual design drawing those that would be affected cannot be determined. This variant is likely to require land take from both designated (one SSSI and two LWSs[1]) and undesignated but important habitats (at least eight BAP Priority Habitats and one Ancient Woodland). Overall, this variant is likely to require slightly more land take from undesignated but important habitats than the off line variant (based on the conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1	Overtaking lanes (sections 7 and 8) may have an adverse impact on designated and undesignated but important sites. However, in the absence of a conceptual design drawing those that would be affected cannot be determined. The off line sections of this variant are not likely require any land take from designated habitats. However, they would require land take from one BAP Priority Habitat and an Ancient Woodland. They would also need a significant amount of land take from agricultural land, including hedgerows, trees and areas of woodland. The on line sections of this variant (including localised widening) are likely to require land take from both designated (one SSSI and at least one LWS[1]) and undesignated but important habitats (at least eight BAP Priority Habitats and an Ancient Woodland). Overall, this variant is likely to require slightly less land take from undesignated but important habitats then the on line variant (based on the conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
Water Environment	This variant is likely to provide an opportunity to improve flooding within a flooding hot spot and to rectify any existing water quality issues through more appropriate treatment of routine runoff.	+1	This variant is likely to provide an opportunity to improve flooding within a flooding hot spot. The on line sections of this variant are likely to provide an opportunity to rectify any existing water quality issues through more appropriate treatment of routine runoff. This variant may discharge into watercourses that have not previously received routine road runoff, which could have an adverse impact on water quality.	0

+2	Large Beneficial Impact
+1	Beneficial Impact
0	Neutral Impact
-1	Adverse Impact

Option 7 Economic Case Assessment - Environmental Impacts	
-2	Large Adverse Impact

[1] There are a number of different terms used by Local Authorities to describe designated Local Wildlife Sites, including Sites of Importance for Nature Conservation (SINCs) and Sites of Nature Conservation Importance (SNCIs). To avoid confusion, all of these sites have been referred to as Local Wildlife Sites within this report.

Table 10-C Option 7: Economic Case Assessment - Environmental Impacts

Option 7 Economic Case Assessment - Social Impacts		
Impact	**Qualitative Assessment**	
Physical activity	The scheme is unlikely to lead to a significant increase in the numbers walking or cycling in the area as it is a primarily highways scheme. Some Public rights of way and cycle paths may be impacted but it is likely that further design will mitigate any potential negative impacts through the use of crossing facilities and as such there is unlikely to be much additional distance or time required due to the scheme.	0
Journey Quality	The scheme is assessed as having neutral impacts on Traveller Care and Travellers' Views while also having beneficial impacts on Frustration and Fear of potential accidents. Therefore the scheme is awarded an overall score of "Beneficial".	1
Accidents	This option is assessed as being likely to provide a high level of accident savings.	2
Security	The scheme is very unlikely to have any effect on security and security was not identified as a challenge or problem for the scheme to address. Users are less likely to travel slowly or to stop regularly making them less vulnerable but given that crime levels in the area are low given the rural environment there is unlikely to be any impact on the security of scheme users	0
Access to Services	It is unlikely that this scheme will result in a change in routings or timings of current public transport services or any changes to public transport provision	0
Affordability	This option is unlikely have any impact on Parking Charges, Road User Charges or any changes to Public Transports fares or concessions	0
Severance	The scheme is considered to have negligible impact on the current severance situation. Some existing cycle paths and Public Rights of Way may be impacted by the scheme but these impacts would be mitigated at the design stage with dedicated crossing services incorporated into any design	0
Option Values	This option is not forecast to have any impact on the frequency or availability of existing public transport services in the study area and contains no additional public transport provisions	0
+2	Large Beneficial Impact	
+1	Beneficial Impact	
0	Neutral Impact	
-1	Adverse Impact	
-2	Large Adverse Impact	

Table 10-D Option 7: Economic Case Assessment - Social Impacts

Option 7 Economic Case Assessment – Public Accounts			
Impact	**Qualitative Assessment**		
Cost to the broad Transport Budget	Scheme costs for economic assessment purposes (i.e. in 2010 market prices, discounted to 2010) have been estimated at under £200m for an online option, and between £200m and £350m for an offline option	Online	3
		Offline	2
Indirect tax revenues	Not assessed at this stage		
3	<£200m		
2	£200m - £350m		
1	>£350m		

Table 10-E Option 7: Economic Case Assessment - Public Accounts

Option 7 Economic Case Assessment – Indicative BCR			
Impact	**Qualitative Assessment**		
Indicative BCR	An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Low to Medium Value for Money.	Online	0
		Offline	-1
2	Very High Value for Money (BCR > 4)		
1	High Value for Money (BCR = 2 - 4)		
0	Medium Value for Money (BCR = 1.5 - 2)		
-1	Low Value for Money (BCR = 1 - 1.5)		
-2	Poor Value for Money (BCR < 1)		

Table 10-F Option 7: Economic Case Assessment - Indicative BCR

Option 7 Financial Case			
Impact	**Qualitative Assessment**		
Outturn Costs to implement	Indicative scheme costs suggest that this scheme could cost between less than £300m for the online option, and between £300 and £500m for the offline option. This is a middle of the range value compared to other options.	Online	3
		Offline	2
Operating and Maintenance Costs	As this scheme is involves improvements to 51.5km of existing road it is likely that the operating and maintenance costs will significantly increase.		
Funding Assumptions and funding allocation	All funding is expected to be provided by central government. This scheme would represent a significant funding requirement by the DfT and Treasury.		
3	<£300m		
2	£300m - £500m		
1	>£500m		

Table 10-G Option 7: Financial Case Assessment

Option 7 Management/Delivery Case		
Criteria	**Qualitative comment**	**RAG Indicator**
Governance	There is a robust assurance and risk management framework in place that has been tried and tested by the HA through the delivery of a wide range of major highways schemes. It is recommended that the scheme be split in to its three sections (Morpeth to Felton, Alnwick to North Charlton and Ellingham to Scremerston) and each section delivered independently in order to successfully deliver the scheme. Thus the Highways Agency would require more than one delivery agent in order to deliver the scheme.	1
3	Simple scheme with HA and single contractor/designer	
2	Moderately complex scheme with HA and single contractor/designer	
1	Complex scheme with HA and multiple contractor/designer	
Stakeholder acceptability	The key stakeholders for the scheme are NCC, and they are supportive of any work to improve the A1, particularly dualling. However, it is likely that other stakeholders could be opposed to any improvement on environmental grounds.	2
Public acceptability / interest	The general opinion of the A1 North of Newcastle is that the road is unsafe and performs poorly and as such the scheme will receive some support, however, it is likely that there will be opposition to the scheme as well.	2
3	Likely to be supported	
2	Likely to receive mixed support	
1	Unlikely to supported	

Table 10-H Option 7: Management/Delivery Case Assessment

Option 7 Commercial Case	
Assessment Area	**Proposed Methodology**
Procurement strategy	There is a robust procurement strategy in place through the use of the Highways Agency Collaborative Delivery Framework (CDF).

Table 10-I Option 7: Commercial Case Assessment

10.2 Option 7: Summary and Conclusions

Option 7 would consist of full dualling to Ellingham and overtaking/climbing lanes on the single carriageway sections to the north.

A comparative AST is presented in Table 10-J to provide a summary of many of the areas assessed for this Option.

The key positive points to draw out are:

- *Likely to have strong support from a policy perspective.*
- *Likely to provide a high level of benefits in comparison to some of the other options.*
- *Likely to have a moderate scheme cost in comparison to some other options.*

- *Likely to provide Low to Medium Value for Money, dependent on whether offline or online variants are chosen.*
- *Likely to provide significant Accident Savings on the route.*

The key negative points to draw out for this option are:

- *Likely to have a significant adverse effect on townscape, Historic Environment and Landscape*
- *Likely to have an adverse effect on noise, Air Quality, Greenhouse Gases and Bio Diversity*
- *Likely to receive mixed support from the general public.*

However, it is thought that many of these adverse environmental effects could be successfully mitigated during the design process, it is acknowledged that some environmental impacts (notably Air Quality and Greenhouse Gases) cannot be mitigated for.

COMPARATIVE AST

Option 7: Dualling to Ellingham, Overtaking (climbing) lanes on single carriageway sections to the north

	Impacts	Commentary	Assessment
Economy	Business users & transport providers	At this stage travel time savings have been used as an estimate of overall user benefits. This option is likely to provide large travel time savings and therefore large user benefits	3
	Reliability (Business users)	Option is likely to provide more ability to help road users cope with incidents on the route without re-routing and to help overtake slow moving vehicles.	3
	Regeneration	Not Assessed	
	Wider Impacts	Not Assessed	
Environmental	Noise	**Online:** This variant is expected to: • Increase noise levels as a result of increased speed. • Increase or decrease noise at properties within 20m of the existing A1 due to repositioning of the running lanes.	-1
		Offline: This variant is expected to: • Increase noise levels as a result of increased speed. • Increase noise at some properties within 20m of the existing A1 due to repositioning of the running lanes (relevant to sections of on line dualling). • Reduce noise at some properties close to the existing A1 that would be bypassed by new route (relevant to sections of off line dualling). • Increase noise at some properties close to the new route of the A1 (relevant to the sections of offline dualling). • Move properties both into (negative), and out of (beneficial), the noise calculation area.	-1
	Air Quality	**Online:** This variant would increase average 12 hour vehicle speed by over 10km an hour. This variant would take the main A1 traffic to within 200m of some properties previously outside of this distance. This could have an adverse impact on air quality at these locations.	-1
		Offline: This variant is expected to: • Increase average 12 hour vehicle speed by over 10km an hour. • Move the traffic (and thus emissions) to within 200m of (negative), or over 200m from (beneficial), sensitive receptors.	-1
	Greenhouse gases	**Online:** This variant would increase embedded carbon and reduce efficiency.	-1
		Offline: This variant would increase embedded carbon and reduce efficiency.	-1
	Landscape	**Online:** This variant would: • Change the character of the road and make it more visually intrusive. • Require the removal of roadside trees and hedges. • Have an adverse impact on SLAs.	-1
		Offline: This variant would: • Change the character of the road and make it more visually intrusive. • Introduce development into areas not previously developed. • Affect trees, hedgerows and agricultural land through land take. • Have an adverse impact on SLAs. • Benefit some sensitive receptors by increasing the distance between the receptor and the A1 traffic.	-2
	Townscape	**Online:** This variant would require the demolition of some properties	-2
		Offline: This variant would include some on line dualling between the off-line sections. This would require the demolition of at least one property.	-2
	Historic Environment	**Online:** Overtaking lanes (sections 7 and 8) may have an adverse impact on historic buildings and other heritage assets. However, in the absence of a conceptual design drawing those that would be affected cannot be determined. This variant may require the relocation of at least five Listed mileposts, which would lead to adverse impacts on their setting. This variant may require the demolition of at least one Grade II Listed Building. This variant would have an adverse impact on the settings of at least five Scheduled Monuments; one Grade I Listed Building; and six Grade II Listed Buildings. This variant may also cause physical damage to unknown buried archaeology.	-2
		Offline: Overtaking lanes (sections 7 and 8) may have an adverse impact on historic buildings and other heritage assets. However, in the absence of a conceptual design drawing those that would be affected cannot be determined. This variant may require the relocation of at least two Listed mileposts, which would lead to adverse impacts on their setting. This variant may require the demolition of at least one Grade II Listed Building. The off line sections of this variant would have an adverse impact on nine Grade II Listed Buildings. The on line sections of this variant would have an adverse impact on the setting of at least five Scheduled Monuments; and five Grade II Listed Buildings. This variant may cause physical damage to unknown buried archaeology.	-2
	Biodiversity	**Online**: Overtaking lanes (sections 7 and 8) may have an adverse impact on designated and undesignated but important sites. However, in the absence of a conceptual design drawing those that would be affected cannot be determined. This variant would require land take from both designated (one SSSI and two LWSs1) and undesignated but important habitats (at least eight BAP Priority Habitats and one Ancient Woodland). Overall, this variant would require slightly more land take from undesignated but important habitats than the off line variant (based on the conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
		Offline: Overtaking lanes (sections 7 and 8) may have an adverse impact on designated and undesignated but important sites. However, in the absence of a conceptual design drawing those that would be affected cannot be determined. The off line sections of this variant would not require any land take from designated habitats. However, they would require land take from one BAP Priority Habitat and an Ancient Woodland. They would also need a significant amount of land take from agricultural land, including hedgerows, trees and areas of woodland. The on line sections of this variant (including localised widening) would require land take from both designated (one SSSI and at least one LWS1) and undesignated but important habitats (at least eight BAP Priority Habitats and an Ancient Woodland). Overall, this variant would require slightly less land take from undesignated but important habitats then the on line variant (based on the conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
	Water Environment	**Online:** This variant would provide an opportunity to improve flooding within a flooding hot spot and to rectify any existing water quality issues through more appropriate treatment of routine runoff.	1
		Offline: This variant would provide an opportunity to improve flooding within a flooding hot spot. The on line sections of this variant would provide an opportunity to rectify any existing water quality issues through more appropriate treatment of routine runoff. This variant may discharge into watercourses that have not previously received routine road runoff, which could have an adverse impact on water quality.	0
Social	Commuting and Other users	Included within Economy	
	Reliability (Commuting / Other users)	Included within Economy	
	Physical activity	The scheme is unlikely to lead to a significant increase in the numbers walking or cycling in the area as it is a primarily highways scheme. Some Public rights of way and cycle paths may be impacted but it is likely that further design will mitigate any potential negative impacts through the use of crossing facilities and as such there is unlikely to be much additional distance or time required due to the scheme.	0
	Journey quality	The scheme is assessed as having neutral impacts on Traveler Care and Travellers' Views while also having beneficial impacts on Frustration and Fear of potential accidents. Therefore the scheme is awarded an overall score of "Beneficial".	1
	Accidents	This option is assessed as being likely to provide a high level of accident savings.	2
	Security	The scheme is very unlikely to have any effect on security and security was not identified as a challenge or problem for the scheme to address. Users are less likely to travel slowly or to stop regularly making them less vulnerable but given that crime levels in the area are low given the rural environment there is unlikely to be any impact on the security of scheme users	1
	Access to services	It is unlikely that this scheme will result in a change in routings or timings of current public transport services or any changes to public transport provision	1
	Affordability	This option is unlikely have any impact on Parking Charges, Road User Charges or any changes to Public Transports fares or concessions	1
	Severance	The scheme is considered to have negligible impact on the current severance situation. Some existing cycle paths and Public Rights of Way may be impacted by the scheme but these impacts would be mitigated at the design stage with dedicated crossing services incorporated into any design	1
	Option and non-use values	This option is not forecast to have any impact on the frequency or availability of existing public transport services in the study area and contains no additional public transport provisions	1
Public Accounts	Cost to Broad Transport Budget	Online: This option is likely to have moderately scheme costs in comparison to the other options	
		Offline: This option is likely to have moderate scheme costs in comparison to the other options	
	Indirect Tax Revenues	Not Assessed	
	Indicative BCR	Online: An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Medium Value for Money	
		Offline: An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Low Value for Money	

Table 10-J Option 7 Comparative AST

11 Option 9 Assessment

11.1 Option 9: Description

This option would consist of dualling the remaining 8 miles of single carriageway between Morpeth and Felton (route section 3) either through an online or offline improvement while also installing parallel access roads and rationalising junctions on the existing dual carriageway between Felton and Alnwick (route section 4) due to the large number of PMAs and side junctions. This option would also include NMU provision. Figure 11-A and Figure 11-B below show the scheme's location on the route and detail the improvements.

Figure 11-A Option 9 Overview

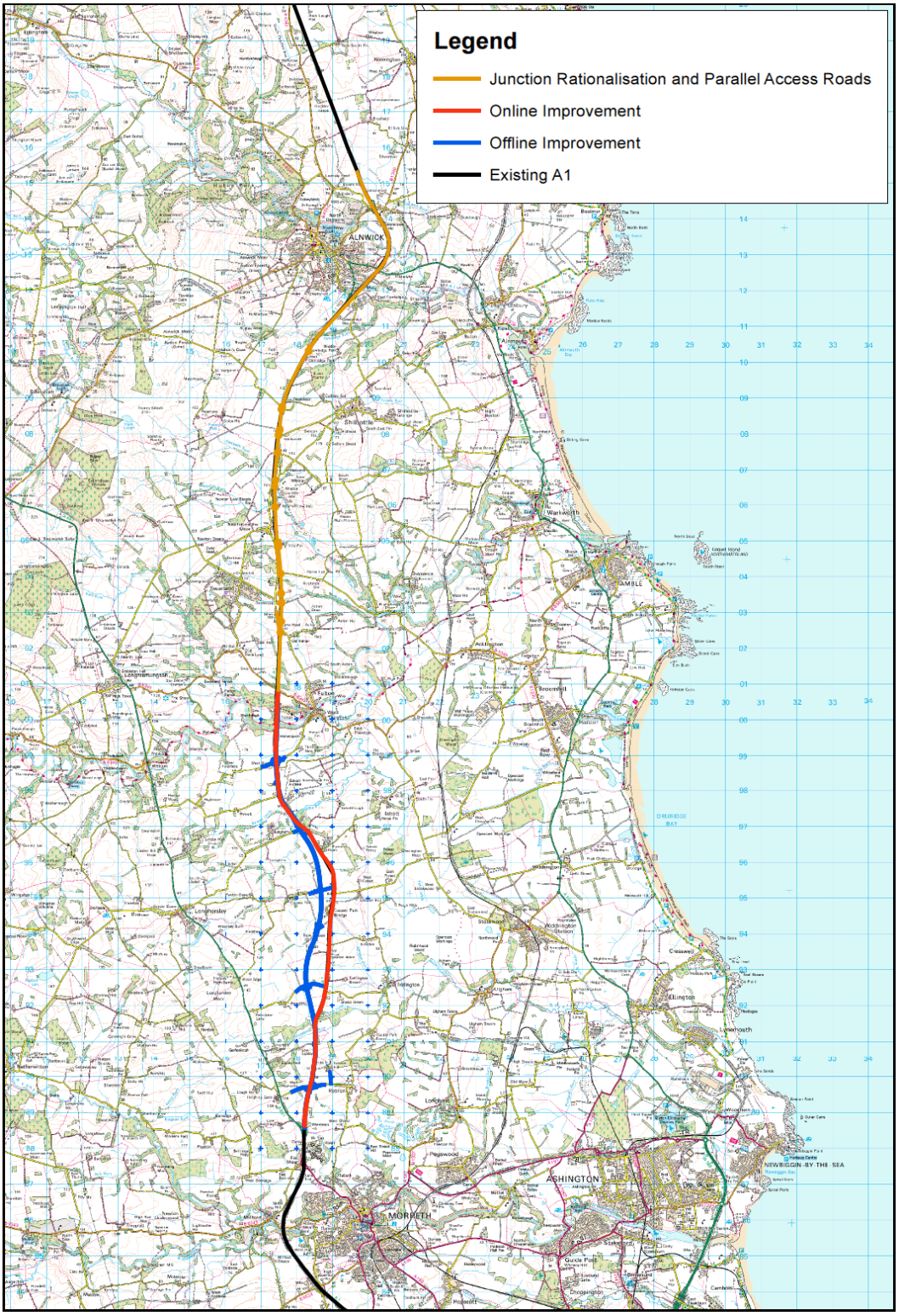


Figure 11-B Option 9

The Option 9 Assessment is summarised in Table 11-A to Table 11-I.

Option 9 Strategic Case Assessment		
Impact	**Qualitative Assessment**	
Regional Policy	This option is well supported by policy at a national, regional and local level.	+1
Local Policy		
Route Objectives	This option is likely to have a strong fit with the defined route objectives.	+1
+1	Option likely to support relevant policy	
0	Option likely to have neutral impact upon relevant policy	
-1	Option likely to conflict with relevant policy	

Table 11-A Option 9: Strategic Case Assessment

Option 9 Economic Case Assessment - Economic Impacts		
Impact	**Qualitative Assessment**	
User benefits	Option is likely to lead to moderate travel time savings	+2
Reliability	Option is likely to provide more ability to help road users cope with incidents on the route without re-routing and to help overtake slow moving vehicles.	+2
Regeneration	Not assessed	
Wider Impacts	Not Assessed	
1	Option likely to have small benefits	
2	Option likely to have moderate benefits	
3	Option likely to have large benefits	

Table 11-B Option 9: Economic Case Assessment - Economic Impacts

Option 9 Economic Case Assessment - Environmental Impacts				
Impact	**Qualitative Assessment (on line variant)**		**Qualitative Assessment (off line variant, which includes on line sections)**	
Noise	This variant is expected to: • Increase noise levels as a result of increased speed. • Increase or decrease noise at properties within 20m of the existing A1 due to relocation of the running lanes.	-1	This variant is expected to: • Increase noise levels as a result of increased speed. • Increase noise at some properties within 20m of the existing A1 due to repositioning of the running lanes (relevant to sections of on line dualling). • Reduce noise at some properties close to the existing A1 that would be bypassed by new route (relevant to sections of off line dualling). • Increase noise at some properties close to the new route of the A1 (relevant to the sections of offline dualling). • Move properties both into (negative), and out of (beneficial), the noise calculation area.	-1

Option 9 Economic Case Assessment - Environmental Impacts				
Air Quality	This variant is likely to increase average 12 hour vehicle speed by over 10km an hour. This variant would take the main A1 traffic to within 200m of some properties previously outside of this distance. This could have an adverse impact on air quality at these locations.	-1	This variant is expected to: • Increase average 12 hour vehicle speed by over 10km an hour. • Move the traffic (and thus emissions) to within 200m of (negative), or over 200m from (beneficial), sensitive receptors.	-1
Greenhouse Gases	This variant is likely to increase embedded carbon and reduce efficiency.	-1	This variant is likely to increase embedded carbon and reduce efficiency.	-1
Landscape	This variant is likely to: • Change the character of the road and make it more visually intrusive. • Require the removal of roadside trees and hedges. • Have an adverse impact on SLAs.	-1	This variant is likely to: • Change the character of the road and make it more visually intrusive. • Introduce development into areas not previously developed. • Affect trees, hedgerows and agricultural land through land take. • Have an adverse impact on SLAs. • Benefit some sensitive receptors by increasing the distance between the receptor and the A1 traffic.	-2
Townscape	This variant is likely to require the demolition of some properties.	-2	This variant is likely to include some on line dualling between the off-line sections. This would require the demolition of at least one property.	-2
Historic Environment	This variant may require the relocation of five Listed mileposts, which would lead to adverse impacts on their setting. This variant may need to demolish a Grade II Listed Building to accommodate a new junction. This variant may have an adverse impact on the setting of five Scheduled Monuments; one Grade I Listed Building; and eight further Grade II Listed Buildings. This variant may also cause physical damage to unknown buried archaeology.	-2	This variant may require the relocation of two Listed mileposts, which would lead to adverse impacts on their setting. This variant may need to demolish a Grade II Listed Building to accommodate a new junction. The off line sections of this variant are likely to have an adverse impact on nine Grade II Listed Buildings. The on line sections of this variant (including the junction rationalisation and parallel access roads) are likely to have an adverse impact on the setting of five Scheduled Monuments; and a further seven Grade II Listed Buildings. This variant may cause physical damage to unknown buried archaeology.	-2

Option 9 Economic Case Assessment - Environmental Impacts				
Biodiversity	This variant is likely to require land take from both designated (one SSSI and one LWS[1]) and undesignated but important habitats (seven BAP Priority Habitats and one Ancient Woodland). Junction rationalisation and parallel access roads is likely to require land take from three BAP Priority Habitats (based on conceptual design drawings). This option is likely to require the same area of land take from designated and undesignated but important habitats as the off line variant (based on conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1	The off line sections of this variant is not likely to require any land take from designated or undesignated but important habitats. However, they would require a significant amount of land take from agricultural land, including hedgerows, trees and areas of woodland. The on line sections of this variant are likely to require land take from both designated (one SSSI and one LWS[1]) and undesignated but important habitats (seven BAP Priority Habitats and one Ancient Woodland). Junction rationalisation and parallel access roads is likely to require land take from three BAP Priority Habitats (based on conceptual design drawings). This option is likely to require the same area of land take from designated and undesignated but important habitats as the on line variant (based on conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
Water Environment	This variant is likely to provide an opportunity to improve flooding within a flooding hot spot and to rectify any existing water quality issues through more appropriate treatment of routine runoff.	+1	This variant is likely to provide an opportunity to improve flooding within a flooding hot spot. The on line sections of this variant would provide an opportunity to rectify any existing water quality issues through more appropriate treatment of routine runoff. This variant may discharge into watercourses that have not previously received routine road runoff, which could have an adverse impact on water quality.	0

+2	Large Beneficial Impact
+1	Beneficial Impact
0	Neutral Impact
-1	Adverse Impact
-2	Large Adverse Impact

[1] There are a number of different terms used by Local Authorities to describe designated Local Wildlife Sites, including Sites of Importance for Nature Conservation (SINCs) and Sites of Nature Conservation Importance (SNCIs). To avoid confusion, all of these sites have been referred to as Local Wildlife Sites within this report.

Table 11-C Option 9: Economic Case Assessment - Environmental Impacts

Option 9 Economic Case Assessment - Social Impacts		
Impact	**Qualitative Assessment**	
Physical activity	The scheme is unlikely to lead to a significant increase in the numbers walking or cycling in the area as it is a primarily highways scheme. Some Public rights of way and cycle paths may be impacted but it is likely that further design will mitigate any potential negative impacts through the use of crossing facilities and as such there is unlikely to be much additional distance or time required due to the scheme.	0
Journey Quality	The scheme is assessed as having neutral impacts on Traveller Care and Travellers' Views while also having beneficial impacts on Frustration and Fear of potential accidents. Therefore the scheme is awarded an overall score of "Beneficial".	1
Accidents	This option is assessed as being likely to provide a moderate level of accident savings.	1
Security	The scheme is very unlikely to have any effect on security and security was not identified as a challenge or problem for the scheme to address. Users are less likely to travel slowly or to stop regularly making them less vulnerable but given that crime levels in the area are low given the rural environment there is unlikely to be any impact on the security of scheme users	0
Access to Services	It is unlikely that this scheme will result in a change in routings or timings of current public transport services or any changes to public transport provision	0
Affordability	This option is unlikely have any impact on Parking Charges, Road User Charges or any changes to Public Transports fares or concessions	0
Severance	The scheme is considered to have negligible impact on the current severance situation. Some existing cycle paths and Public Rights of Way may be impacted by the scheme but these impacts would be mitigated at the design stage with dedicated crossing services incorporated into any design	0
Option Values	This option is not forecast to have any impact on the frequency or availability of existing public transport services in the study area and contains no additional public transport provisions	0
+2	Large Beneficial Impact	
+1	Beneficial Impact	
0	Neutral Impact	
-1	Adverse Impact	
-2	Large Adverse Impact	

Table 11-D Option 9: Economic Case Assessment - Social Impacts

Option 9 Economic Case Assessment – Public Accounts			
Impact	**Qualitative Assessment**		
Cost to the broad Transport Budget	Scheme costs for economic assessment purposes (i.e. in 2010 market prices, discounted to 2010) have been estimated at under £200m for an online option, and between £200m and £350m for an offline option	Online	3
		Offline	2
Indirect tax revenues	Not assessed at this stage		
3	<£200m		
2	£200m - £350m		
1	>£350m		

Table 11-E Option 9: Economic Case Assessment - Public Accounts

Option 9 Economic Case Assessment – Indicative BCR			
Impact	**Qualitative Assessment**		
Indicative BCR	An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Low Value for Money	Online	-1
		Offline	-1
2	Very High Value for Money (BCR > 4)		
1	High Value for Money (BCR = 2 - 4)		
0	Medium Value for Money (BCR = 1.5 - 2)		
-1	Low Value for Money (BCR = 1 - 1.5)		
-2	Poor Value for Money (BCR < 1)		

Table 11-F Option 9: Economic Case Assessment - Indicative BCR

Option 9 Financial Case			
Impact	**Qualitative Assessment**		
Outturn Costs to implement	Indicative scheme costs suggest that this scheme could cost between less than £300m for the online option, and between £300 and £500m for the offline option. This is a middle of the range value compared to other options.	Online	3
		Offline	2
Operating and Maintenance Costs	As this scheme is involves improvements to 12.5km of existing road it is likely that the operating and maintenance costs will increase.		
Funding Assumptions and funding allocation	All funding is expected to be provided by central government. This scheme would represent a significant funding requirement by the DfT and Treasury.		
3	<£300m		
2	£300m - £500m		
1	>£500m		

Table 11-G Option 9: Financial Case Assessment

Option 9 Management/Delivery Case		
Criteria	**Qualitative comment**	**RAG Indicator**
Governance	There is a robust assurance and risk management framework in place that has been tried and tested by the HA through the delivery of a wide range of major highways schemes. Due to the moderate complexity of the scheme, it is likely that the Highways Agency and only one contractor/designer would be required. Thus, the governance would be simple and led by the Highways Agency and their contractor only.	2
3	Simple scheme with HA and single contractor/designer	
2	Moderately complex scheme with HA and single contractor/designer	
1	Complex scheme with HA and multiple contractor/designer	
Stakeholder acceptability	The key stakeholders for the scheme are NCC, and they are supportive of any work to improve the A1, particularly dualling. However, it is likely that other stakeholders could be opposed to any improvement on environmental grounds.	2
Public acceptability / interest	The general opinion of the A1 North of Newcastle is that the road is unsafe and performs poorly and as such the scheme will receive some support, however, it is likely that there will be opposition to the scheme as well.	2
3	Likely to be supported	
2	Likely to receive mixed support	
1	Unlikely to supported	

Table 11-H Option 9: Management/Delivery Case Assessment

Option 9 Commercial Case	
Assessment Area	**Proposed Methodology**
Procurement strategy	There is a robust procurement strategy in place through the use of the Highways Agency Collaborative Delivery Framework (CDF).

Table 11-I Option 9: Commercial Case Assessment

11.2 Option 9: Summary and Conclusions

Option 9 would consist of the dualling of Morpeth to Felton (either online or offline) and junction rationalisation and parallel access roads on the dual carriageway to the south of Alnwick.

A comparative AST is presented in Table 11-J to provide a summary of many of the areas assessed for this Option.

The key positive points to draw out are:

- *Likely to have strong support from a policy perspective.*
- *Likely to provide a moderate level of benefits in comparison to some of the other options.*
- *Likely to have a moderate scheme cost in comparison to some other options.*

The key negative points to draw out for this option are:

- *Likely to have a significant adverse effect on townscape, Historic Environment and Landscape*
- *Likely to have an adverse effect on noise, Air Quality, Greenhouse Gases and Bio Diversity*
- *Likely to receive mixed support from the general public.*
- *Likely to provide Low Value for Money.*

However, it is thought that many of these adverse environmental effects could be successfully mitigated during the design process, it is acknowledged that some environmental impacts (notably Air Quality and Greenhouse Gases) cannot be mitigated for.

COMPARATIVE AST

Option 7: Dualling to Ellingham, Overtaking (climbing) lanes on single carriageway sections to the north

	Impacts	Commentary	Assessment
Economy	Business users & transport providers	At this stage travel time savings have been used as an estimate of overall user benefits. This option is likely to provide large travel time savings and therefore large user benefits	3
	Reliability (Business users)	Option is likely to provide more ability to help road users cope with incidents on the route without re-routing and to help overtake slow moving vehicles.	3
	Regeneration	Not Assessed	
	Wider Impacts	Not Assessed	
Environmental	Noise	**Online:** This variant is expected to: • Increase noise levels as a result of increased speed. • Increase or decrease noise at properties within 20m of the existing A1 due to repositioning of the running lanes.	-1
		Offline: This variant is expected to: • Increase noise levels as a result of increased speed. • Increase noise at some properties within 20m of the existing A1 due to repositioning of the running lanes (relevant to sections of on line dualling). • Reduce noise at some properties close to the existing A1 that would be bypassed by new route (relevant to sections of off line dualling). • Increase noise at some properties close to the new route of the A1 (relevant to the sections of offline dualling). • Move properties both into (negative), and out of (beneficial), the noise calculation area.	-1
	Air Quality	**Online:** This variant would increase average 12 hour vehicle speed by over 10km an hour. This variant would take the main A1 traffic to within 200m of some properties previously outside of this distance. This could have an adverse impact on air quality at these locations.	-1
		Offline: This variant is expected to: • Increase average 12 hour vehicle speed by over 10km an hour. • Move the traffic (and thus emissions) to within 200m of (negative), or over 200m from (beneficial), sensitive receptors.	-1
	Greenhouse gases	**Online:** This variant would increase embedded carbon and reduce efficiency.	-1
		Offline: This variant would increase embedded carbon and reduce efficiency.	-1
	Landscape	**Online:** This variant would: • Change the character of the road and make it more visually intrusive. • Require the removal of roadside trees and hedges. • Have an adverse impact on SLAs.	-1
		Offline: This variant would: • Change the character of the road and make it more visually intrusive. • Introduce development into areas not previously developed. • Affect trees, hedgerows and agricultural land through land take. • Have an adverse impact on SLAs. • Benefit some sensitive receptors by increasing the distance between the receptor and the A1 traffic.	-2
	Townscape	**Online:** This variant would require the demolition of some properties	-2
		Offline: This variant would include some on line dualling between the off-line sections. This would require the demolition of at least one property.	-2
	Historic Environment	**Online:** Overtaking lanes (sections 7 and 8) may have an adverse impact on historic buildings and other heritage assets. However, in the absence of a conceptual design drawing those that would be affected cannot be determined. This variant may require the relocation of at least five Listed mileposts, which would lead to adverse impacts on their setting. This variant may require the demolition of at least one Grade II Listed Building. This variant would have an adverse impact on the settings of at least five Scheduled Monuments; one Grade I Listed Building; and six Grade II Listed Buildings. This variant may also cause physical damage to unknown buried archaeology.	-2
		Offline: Overtaking lanes (sections 7 and 8) may have an adverse impact on historic buildings and other heritage assets. However, in the absence of a conceptual design drawing those that would be affected cannot be determined. This variant may require the relocation of at least two Listed mileposts, which would lead to adverse impacts on their setting. This variant may require the demolition of at least one Grade II Listed Building. The off line sections of this variant would have an adverse impact on nine Grade II Listed Buildings. The on line sections of this variant would have an adverse impact on the setting of at least five Scheduled Monuments; and five Grade II Listed Buildings. This variant may cause physical damage to unknown buried archaeology.	-2
	Biodiversity	**Online**: Overtaking lanes (sections 7 and 8) may have an adverse impact on designated and undesignated but important sites. However, in the absence of a conceptual design drawing those that would be affected cannot be determined. This variant would require land take from both designated (one SSSI and two LWSs1) and undesignated but important habitats (at least eight BAP Priority Habitats and one Ancient Woodland). Overall, this variant would require slightly more land take from undesignated but important habitats than the off line variant (based on the conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
		Offline: Overtaking lanes (sections 7 and 8) may have an adverse impact on designated and undesignated but important sites. However, in the absence of a conceptual design drawing those that would be affected cannot be determined. The off line sections of this variant would not require any land take from designated habitats. However, they would require land take from one BAP Priority Habitat and an Ancient Woodland. They would also need a significant amount of land take from agricultural land, including hedgerows, trees and areas of woodland. The on line sections of this variant (including localised widening) would require land take from both designated (one SSSI and at least one LWS1) and undesignated but important habitats (at least eight BAP Priority Habitats and an Ancient Woodland). Overall, this variant would require slightly less land take from undesignated but important habitats then the on line variant (based on the conceptual design drawings). The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
	Water Environment	**Online:** This variant would provide an opportunity to improve flooding within a flooding hot spot and to rectify any existing water quality issues through more appropriate treatment of routine runoff.	1
		Offline: This variant would provide an opportunity to improve flooding within a flooding hot spot. The on line sections of this variant would provide an opportunity to rectify any existing water quality issues through more appropriate treatment of routine runoff. This variant may discharge into watercourses that have not previously received routine road runoff, which could have an adverse impact on water quality.	0
Social	Commuting and Other users	Included within Economy	
	Reliability (Commuting / Other users)	Included within Economy	
	Physical activity	The scheme is unlikely to lead to a significant increase in the numbers walking or cycling in the area as it is a primarily highways scheme. Some Public rights of way and cycle paths may be impacted but it is likely that further design will mitigate any potential negative impacts through the use of crossing facilities and as such there is unlikely to be much additional distance or time required due to the scheme.	0
	Journey quality	The scheme is assessed as having neutral impacts on Traveler Care and Travellers' Views whle also having beneficial impacts on Frustration and Fear of potential accidents. Therefore the scheme is awarded an overall score of "Beneficial".	1
	Accidents	This option is assessed as being likely to provide a high level of accident savings.	2
	Security	The scheme is very unlikely to have any effect on security and security was not identified as a challenge or problem for the scheme to address. Users are less likely to travel slowly or to stop regularly making them less vulnerable but given that crime levels in the area are low given the rural environment there is unlikely to be any impact on the security of scheme users	1
	Access to services	It is unlikely that this scheme will result in a change in routings or timings of current public transport services or any changes to public transport provision	1
	Affordability	This option is unlikely have any impact on Parking Charges, Road User Charges or any changes to Public Transports fares or concessions	1
	Severance	The scheme is considered to have negligible impact on the current severance situation. Some existing cycle paths and Public Rights of Way may be impacted by the scheme but these impacts would be mitigated at the design stage with dedicated crossing services incorporated into any design	1
	Option and non-use values	This option is not forecast to have any impact on the frequency or availability of existing public transport services in the study area and contains no additional public transport provisions	1
Public Accounts	Cost to Broad Transport Budget	Online: This option is likely to have moderately scheme costs in comparison to the other options	
		Offline: This option is likely to have moderate scheme costs in comparison to the other options	
	Indirect Tax Revenues	Not Assessed	
	Indicative BCR	Online: An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Medium Value for Money	
		Offline: An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Low Value for Money	

Table 11-J Option 9 Comparative AST

12 Option 10 Assessment

12.1 Option 10: Description

This option would consist nearly 13km of additional dual carriageway between Morpeth and Ellingham (route sections 3 and 5) this could be achieved via either online or offline widening or a combination of both depending upon sectional constraints. In addition the Berwick bypass (route sections 9 and 10) would be upgraded to dual carriageway giving approximately 4 miles of additional dual carriageway and would look to widen this existing single carriageway section by adding a further lane in each direction. This could be achieved by either adding additional paved area symmetrically or asymmetrically or a combination of both depending upon sectional constraints. This option would also include NMU provision. Figure 12-A and Figure 12-B below show the scheme's location on the route and detail the improvements.

Figure 12-A Option 10 Overview

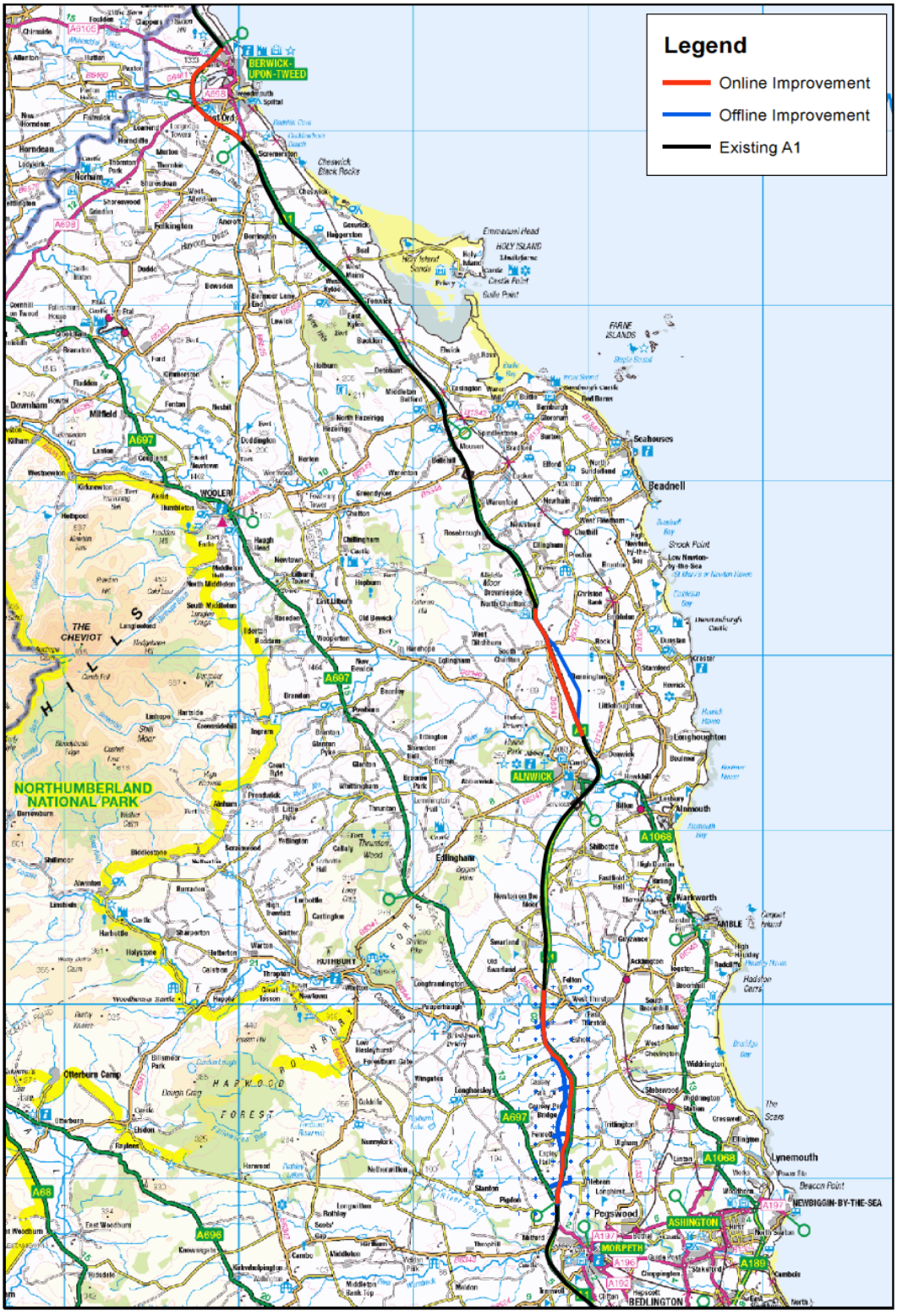


Figure 12-B Option 10

The Option 10 Assessment is summarised in Table 12-A to Table 12-I.

Option 10 Strategic Case Assessment		
Impact	**Qualitative Assessment**	
Regional Policy	This option is well supported by policy at a national, regional and local level.	+1
Local Policy		
Route Objectives	This option is likely to have a strong fit with the defined route objectives.	+1
+1	Option likely to support relevant policy	
0	Option likely to have neutral impact upon relevant policy	
-1	Option likely to conflict with relevant policy	

Table 12-A Option 10: Strategic Case Assessment

Option 10 Economic Case Assessment - Economic Impacts		
Impact	**Qualitative Assessment**	
User benefits	Option is likely to lead to large travel time savings	+3
Reliability	Option is likely to provide more ability to help road users cope with incidents on the route without re-routing and to help overtake slow moving vehicles.	+2
Regeneration	Not assessed	
Wider Impacts	Not Assessed	
1	Option likely to have small benefits	
2	Option likely to have moderate benefits	
3	Option likely to have large benefits	

Table 12-B Option 10: Economic Case Assessment - Economic Impacts

Option 10 Economic Case Assessment - Environmental Impacts				
Impact	**Qualitative Assessment (on line variant)**		**Qualitative Assessment (off line variant, which includes on line sections)**	
Noise	This variant is expected to: • Increase noise levels as a result of increased speed. • Increase or decrease noise at properties within 20m of the existing A1 due to repositioning of the running lanes.	-1	This variant is expected to: • Increase noise levels as a result of increased speed. • Increase noise at some properties within 20m of the existing A1 due to repositioning of the running lanes (relevant to sections of on line dualling). • Reduce noise at some properties close to the existing A1 that would be bypassed by new route (relevant to sections of off line dualling). • Increase noise at some properties close to the new route of the A1 (relevant to the sections of offline dualling). • Move properties both into (negative), and out of (beneficial), the noise calculation area.	-1

Option 10 Economic Case Assessment - Environmental Impacts				
Air Quality	This variant is likely to increase average 12 hour vehicle speed by over 10km an hour. This variant is likely to take the main A1 traffic to within 200m of some properties previously outside of this distance. This could have an adverse impact on air quality at these locations.	-1	This variant is expected to: • Increase average 12 hour vehicle speed by over 10km an hour. • Move the traffic (and thus emissions) to within 200m of (negative), or over 200m from (beneficial), sensitive receptors.	-1
Greenhouse Gases	This variant is likely to increase embedded carbon and reduce efficiency.	-1	This variant is likely to increase embedded carbon and reduce efficiency.	-1
Landscape	This variant is likely to: • Change the character of the road and make it more visually intrusive. • Require the removal of roadside trees and hedges. • Have an adverse impact on SLAs.	-1	This variant is likely to: • Change the character of the road and make it more visually intrusive. • Introduce development into areas not previously developed. • Affect trees, hedgerows and agricultural land through land take. • Have an adverse impact on SLAs. • Benefit some sensitive receptors by increasing the distance between the receptor and the A1 traffic.	-2
Townscape	This variant w is likely to require the demolition of some properties.	-2	This variant is likely to include some on line dualling between the off-line sections. This would require the demolition of at least one property.	-2
Historic Environment	This variant may require the relocation of five Listed mileposts, which would lead to adverse impacts on their setting. This variant is likely to have an adverse impact on the settings of four Scheduled Monuments; one Grade I Listed Building; and five Grade II Listed Buildings. This variant may also cause physical damage to unknown buried archaeology.	-1	This variant may require the relocation of Listed mileposts, which would lead to adverse impacts on their setting. The on line sections of this variant are likely to have an adverse impact on the setting of four Scheduled Monuments; and four Grade II Listed Buildings. The off line sections of this variant are likely to have an adverse impact on nine Grade II Listed Buildings. This variant may cause physical damage to unknown buried archaeology.	-1

Option 10 Economic Case Assessment - Environmental Impacts				
Biodiversity	This variant is likely to require land take from both designated (one SAC, two SSSIs and one LWS[1]) and undesignated but important habitats (nine BAP Priority Habitats and one Ancient Woodland). Overall, this variant is likely to require slightly more land take from undesignated but important habitats than the off line variant (based on the conceptual design drawings). If additional / larger piers are needed to accommodate the crossing of the River Tweed then this variant may have an adverse impact on a SSSI and a SAC due to changes in fluvial geomorphology. The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1	The off line sections of this variant are not likely to require any land take from designated habitats. However, they would require land take from one BAP Priority Habitat and an area of Ancient Woodland. They would also need a significant amount of land take from agricultural land, including hedgerows, trees and areas of woodland. The on line sections of this variant are likely to require land take from both designated (one SSSI and one LWS) and undesignated but important habitats (eight BAP Priority Habitats and one Ancient Woodland). Overall, this variant is likely to require slightly less land take from undesignated but important habitats then the on line variant (based on the conceptual design drawings). If additional / larger piers are needed to accommodate the crossing of the River Tweed (relevant to on line section) then this variant may have an adverse impact on a SSSI and a SAC due to changes in fluvial geomorphology. The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
Water Environment	This variant is likely to provide an opportunity to improve flooding within a flooding hot spot and to rectify any existing water quality issues through more appropriate treatment of routine runoff. If additional / larger piers are needed to accommodate the crossing of the River Tweed then this variant may have an adverse impact on the river's fluvial geomorphology.	0	This variant is likely to provide an opportunity to improve flooding within a flooding hot spot. The on line sections of this variant would provide an opportunity to rectify any existing water quality issues through more appropriate treatment of routine runoff. This variant may discharge into watercourses that have not previously received routine road runoff, which could have an adverse impact on water quality. If additional / larger piers are needed to accommodate the crossing of the River Tweed (relevant to on line section) then this variant may have an adverse impact on the river's fluvial geomorphology.	0

Option 10 Economic Case Assessment - Environmental Impacts	
+2	Large Beneficial Impact
+1	Beneficial Impact
0	Neutral Impact
-1	Adverse Impact
-2	Large Adverse Impact

[1] There are a number of different terms used by Local Authorities to describe designated Local Wildlife Sites, including Sites of Importance for Nature Conservation (SINCs) and Sites of Nature Conservation Importance (SNCIs). To avoid confusion, all of these sites have been referred to as Local Wildlife Sites within this report.

Table 12-C Option 10: Economic Case Assessment - Environmental Impacts

Option 10 Economic Case Assessment - Social Impacts		
Impact	**Qualitative Assessment**	
Physical activity	The scheme is unlikely to lead to a significant increase in the numbers walking or cycling in the area as it is a primarily highways scheme. Some Public rights of way and cycle paths may be impacted but it is likely that further design will mitigate any potential negative impacts through the use of crossing facilities and as such there is unlikely to be much additional distance or time required due to the scheme.	0
Journey Quality	The scheme is assessed as having neutral impacts on Traveller Care and Travellers' Views while also having beneficial impacts on Frustration and Fear of potential accidents. Therefore the scheme is awarded an overall score of "Beneficial".	+1
Accidents	This option is assessed as being likely to provide a high level of accident savings.	+2
Security	The scheme is very unlikely to have any effect on security and security was not identified as a challenge or problem for the scheme to address. Users are less likely to travel slowly or to stop regularly making them less vulnerable but given that crime levels in the area are low given the rural environment there is unlikely to be any impact on the security of scheme users	0
Access to Services	It is unlikely that this scheme will result in a change in routings or timings of current public transport services or any changes to public transport provision	0
Affordability	This option is unlikely have any impact on Parking Charges, Road User Charges or any changes to Public Transports fares or concessions	0
Severance	The scheme is considered to have negligible impact on the current severance situation. Some existing cycle paths and Public Rights of Way may be impacted by the scheme but these impacts would be mitigated at the design stage with dedicated crossing services incorporated into any design	0
Option Values	This option is not forecast to have any impact on the frequency or availability of existing public transport	0

	services in the study area and contains no additional public transport provisions	
+2	Large Beneficial Impact	
+1	Beneficial Impact	
0	Neutral Impact	
-1	Adverse Impact	
-2	Large Adverse Impact	

Table 12-D Option 10: Economic Case Assessment - Social Impacts

Option 10 Economic Case Assessment – Public Accounts			
Impact	**Qualitative Assessment**		
Cost to the broad Transport Budget	Scheme costs for economic assessment purposes (i.e. in 2010 market prices, discounted to 2010) have been estimated at between £200m and £350m for an online option, and over £350m for an offline option	Online	2
		Offline	1
Indirect tax revenues	Not assessed at this stage		
3	<£200m		
2	£200m - £350m		
1	>£350m		

Table 12-E Option 10: Economic Case Assessment - Public Accounts

Option 10 Economic Case Assessment – Indicative BCR			
Impact	**Qualitative Assessment**		
Indicative BCR	An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Poor to Low Value for Money	Online	-1
		Offline	-2
2	Very High Value for Money (BCR > 4)		
1	High Value for Money (BCR = 2 - 4)		
0	Medium Value for Money (BCR = 1.5 - 2)		
-1	Low Value for Money (BCR = 1 - 1.5)		
-2	Poor Value for Money (BCR < 1)		

Table 12-F Option 10: Economic Case Assessment - Indicative BCR

Option 10 Financial Case			
Impact	**Qualitative Assessment**		
Outturn Costs to implement	Indicative scheme costs suggest that this scheme could cost between £300m and £500m for the online option, and over £500m for the offline option. This would be the second highest cost of all the options considered.	Online	2
		Offline	1
Operating and Maintenance Costs	As this scheme is involves improvements to 29km of existing road it is likely that the operating and maintenance costs will increase.		
Funding Assumptions and funding allocation	All funding is expected to be provided by central government. This scheme would represent a significant funding requirement by the DfT and Treasury.		
3	<£300m		
2	£300m - £500m		
1	>£500m		

Table 12-G Option 10: Financial Case Assessment

Option 10 Management/Delivery Case		
Criteria	**Qualitative comment**	**RAG Indicator**
Governance	There is a robust assurance and risk management framework in place that has been tried and tested by the HA through the delivery of a wide range of major highways schemes. It is recommended that the scheme be delivered in three sections (Morpeth to Felton, Alnwick to Ellingham and Berwick Bypass) and each section delivered independently in order to successfully deliver the scheme. Thus, each section would require its own governance and therefore the Highways Agency would require more than one delivery agent in order to deliver the scheme.	1
3	Simple scheme with HA and single contractor/designer	
2	Moderately complex scheme with HA and single contractor/designer	
1	Complex scheme with HA and multiple contractor/designer	
Stakeholder acceptability	The key stakeholders for the scheme are NCC, and they are supportive of any work to improve the A1, particularly dualling. However, it is likely that other stakeholders could be opposed to any improvement on environmental grounds.	2
Public acceptability / interest	The general opinion of the A1 North of Newcastle is that the road is unsafe and performs poorly and as such the scheme will receive some support, however, it is likely that there will be opposition to the scheme as well.	2
3	Likely to be supported	
2	Likely to receive mixed support	
1	Unlikely to supported	

Table 12-H Option 10: Management/Delivery Case Assessment

Option 10 Commercial Case	
Assessment Area	**Proposed Methodology**
Procurement strategy	It will be delivered through the Highways Agency Collaborative Delivery Framework (CDF).

Table 12-I Option 10: Commercial Case Assessment

12.2 Option 10: Summary and Conclusions

A comparative AST is presented in Table 12-J to provide a summary of many of the areas assessed for this Option.

The key positive points to draw out are:

- *Likely to have strong support from a policy perspective.*
- *Likely to provide a high level of benefits in comparison to some of the other options.*
- *Likely to have a moderate scheme cost in comparison to some other options.*
- *Likely to provide significant Accident Savings on the route.*
- *Likely to significantly address the problem of inconsistent carriageway standards.*

The key negative points to draw out for this option are:

- *Likely to have a significant adverse effect on townscape and Landscape*
- *Likely to have an adverse effect on noise, Air Quality, Greenhouse Gases, Historic Environment and Bio Diversity*
- *Likely to receive mixed support from the general public.*
- *Likely to provide Poor to Low Value for Money, dependent on whether offline or online variants are chosen.*

However, it is thought that many of these adverse environmental effects could be successfully mitigated during the design process, it is acknowledged that some environmental impacts (notably Air Quality and Greenhouse Gases) cannot be mitigated for.

COMPARATIVE AST

Option 10: Dualling to Ellingham and Dualling Berwick Bypass

	Impacts	Commentary	Assessment
Economy	Business users & transport providers	At this stage travel time savings have been used as an estimate of overall user benefits. This option is likely to provide large travel time savings and therefore large user benefits	3
	Reliability (Business users)	Option is likely to provide significantly more ability to help road users cope with incidents on the route without re-routing and to help overtake slow moving vehicles.	2
	Regeneration	Not Assessed	
	Wider Impacts	Not Assessed	
Environmental	Noise	**Online:** Noise This variant is expected to: • Increase noise levels as a result of increased speed. • Increase or decrease noise at properties within 20m of the existing A1 due to relocation of the running lanes.	-1
		Offline: This variant is expected to: • Increase noise levels as a result of increased speed. • Increase noise at some properties within 20m of the existing A1 due to repositioning of the running lanes (relevant to sections of on line dualling). • Reduce noise at some properties close to the existing A1 that would be bypassed by new route (relevant to sections of off line dualling). • Increase noise at some properties close to the new route of the A1 (relevant to the sections of offline dualling). • Move properties both into (negative), and out of (beneficial), the noise calculation area.	-1
	Air Quality	**Online:** This variant would increase average 12 hour vehicle speed by over 10km an hour. This variant would take the main A1 traffic to within 200m of some properties previously outside of this distance. This could have an adverse impact on air quality at these locations.	-1
		Offline: This variant is expected to: • Increase average 12 hour vehicle speed by over 10km an hour. • Move the traffic (and thus emissions) to within 200m of (negative), or over 200m from (beneficial), sensitive receptors.	-1
	Greenhouse gases	**Online:** This variant would increase embedded carbon and reduce efficiency.	-1
		Offline: This variant would increase embedded carbon and reduce efficiency.	-1
	Landscape	**Online:** This variant would: • Change the character of the road and make it more visually intrusive. • Require the removal of roadside trees and hedges. • Have an adverse impact on SLAs.	-1
		Offline: This variant would: • Change the character of the road and make it more visually intrusive. • Introduce development into areas not previously developed. • Affect trees, hedgerows and agricultural land through land take. • Have an adverse impact on SLAs. • Benefit some sensitive receptors by increasing the distance between the receptor and the A1 traffic.	-2
	Townscape	**Online:** This variant would require the demolition of some properties	-2
		Offline: This variant would include some on line dualling between the off-line sections. This would require the demolition of at least one property.	-2
	Historic Environment	**Online:** This variant may require the relocation of five Listed mileposts, which would lead to adverse impacts on their setting. This variant would have an adverse impact on the settings of four Scheduled Monuments; one Grade I Listed Building; and five Grade II Listed Buildings. This variant may also cause physical damage to unknown buried archaeology.	-1
		Offline: This variant may require the relocation of Listed mileposts, which would lead to adverse impacts on their setting. The on line sections of this variant would have an adverse impact on the setting of four Scheduled Monuments; and four Grade II Listed Buildings. The off line sections of this variant would have an adverse impact on nine Grade II Listed Buildings. This variant may cause physical damage to unknown buried archaeology.	-1
	Biodiversity	**Online:** This variant would require land take from both designated (one SAC, two SSSIs and one LWS1) and undesignated but important habitats (nine BAP Priority Habitats and one Ancient Woodland). Overall, this variant would require slightly more land take from undesignated but important habitats than the off line variant (based on the conceptual design drawings). If additional / larger piers are needed to accommodate the crossing of the River Tweed then this variant may have an adverse impact on a SSSI and a SAC due to changes in fluvial geomorphology. The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
		Offline: The off line sections of this variant would not require any land take from designated habitats. However, they would require land take from one BAP Priority Habitat and an area of Ancient Woodland. They would also need a significant amount of land take from agricultural land, including hedgerows, trees and areas of woodland. The on line sections of this variant would require land take from both designated (one SSSI and one LWS) and undesignated but important habitats (eight BAP Priority Habitats and one Ancient Woodland). Overall, this variant would require slightly less land take from undesignated but important habitats then the on line variant (based on the conceptual design drawings). If additional / larger piers are needed to accommodate the crossing of the River Tweed (relevant to on line section) then this variant may have an adverse impact on a SSSI and a SAC due to changes in fluvial geomorphology. The speed increases associated with this variant may heighten noise disturbance and the deposition of air pollutants, which could have adverse impacts on fauna and flora.	-1
	Water Environment	**Online:** This variant would provide an opportunity to improve flooding within a flooding hot spot and to rectify any existing water quality issues through more appropriate treatment of routine runoff. If additional / larger piers are needed to accommodate the crossing of the River Tweed then this variant may have an adverse impact on the river's fluvial geomorphology.	0
		Offline: This variant would provide an opportunity to improve flooding within a flooding hot spot. The on line sections of this variant would provide an opportunity to rectify any existing water quality issues through more appropriate treatment of routine runoff. This variant may discharge into watercourses that have not previously received routine road runoff, which could have an adverse impact on water quality. If additional / larger piers are needed to accommodate the crossing of the River Tweed (relevant to on line section) then this variant may have an adverse impact on the river's fluvial geomorphology.	0
Social	Commuting and Other users	Included within Economy	
	Reliability (Commuting / Other users)	Included within Economy	
	Physical activity	The scheme is unlikely to lead to a significant increase in the numbers walking or cycling in the area as it is a primarily highways scheme. Some Public rights of way and cycle paths may be impacted but it is likely that further design will mitigate any potential negative impacts through the use of crossing facilities and as such there is unlikely to be much additional distance or time required due to the scheme.	0
	Journey quality	The scheme is assessed as having neutral impacts on Traveler Care and Travellers' Views whle also having beneficial impacts on Frustration and Fear of potential accidents. Therefore the scheme is awarded an overall score of "Beneficial".	1
	Accidents	This option is assessed as being likely to provide a high level of accident savings.	2
	Security	The scheme is very unlikely to have any effect on security and security was not identified as a challenge or problem for the scheme to address. Users are less likely to travel slowly or to stop regularly making them less vulnerable but given that crime levels in the area are low given the rural environment there is unlikely to be any impact on the security of scheme users	0
	Access to services	It is unlikely that this scheme will result in a change in routings or timings of current public transport services or any changes to public transport provision	0
	Affordability	This option is unlikely have any impact on Parking Charges, Road User Charges or any changes to Public Transports fares or concessions	0
	Severance	The scheme is considered to have negligible impact on the current severance situation. Some existing cycle paths and Public Rights of Way may be impacted by the scheme but these impacts would be mitigated at the design stage with dedicated crossing services incorporated into any design	0
	Option and non-use values	This option is not forecast to have any impact on the frequency or availability of existing public transport services in the study area and contains no additional public transport provisions	0
Public Accounts	Cost to Broad Transport Budget	Online: This option is likely to have moderate scheme costs compared to other options	
		Offline: This option is likely to have high scheme costs compared to other options	
	Indirect Tax Revenues	Not Assessed	
	Indicative BCR	Online: An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Low Value for Money	
		Offline: An indicative BCR has been calculated using initial estimates of Costs and Benefits. At this early stage, a detailed assessment of benefits has not been undertaken, therefore this is merely comparative and subject to change with further assessment. It is likely that this scheme could present Poor Value for Money	

Table 12-J Option 10 Comparative AST

13 Summary and Conclusions

13.1 Summary

The Stage 1 Data Collection and Analysis Report identified a number of problems and issues on the route as summarised below.

- *Lack of alternative routes;*
- *Inconsistent carriageway standards on the route;*
- *Poor junction standards / layout;*
- *Large number of at-grade junctions / Private Means of Access;*
- *Average speeds on the single carriageway sections of the route are significantly lower than sections that have been upgraded to dual carriageway.*
- *Relatively high proportion of HGVs (and agricultural vehicles) resulting in reduced speeds for following vehicles and potential for driver frustration;*
- *Lack of overtaking opportunities; and*
- *Peak hour traffic speeds significantly below free flow speeds - analysis of TrafficMaster data shows that peak hour traffic speeds are significantly lower than average off-peak speeds.*

These problems and issues are likely to be exacerbated in the future as a result of forecast traffic growth.

Given that traffic volumes reduce considerably on northern sections of the route it is clear that investment (from an operational perspective) is a higher priority on the southern sections. However, given the data presented it is evident that there is some rationale for investment on the wider route.

Based on these identified problems and issues, a series of route objectives have been identified and were endorsed by the Stakeholder Reference Group and Project Board. These are:

- *Improve journey times on this route of strategic national importance;*
- *Improve network resilience and journey time reliability;*
- *Improve safety;*
- *Maintain access for local traffic whilst improving the conditions for strategic traffic;*
- *Facilitate future economic growth; and*
- *Avoid, mitigate and compensate for potential impacts upon the built and natural environment.*

An initial long list of interventions was generated based on professional judgement to address the identified problems and issues on the route and to contribute towards the agreed route objectives. These interventions cover highway, public transport and demand management to give a broad spectrum of potential solutions. Combinations of complementary interventions have also been generated to provide more wide ranging interventions on the route. The options and combinations of options were endorsed by the Stakeholder Reference Group and Project Board.

This initial long list of 116 interventions has been sifted using an “Initial Sifting” methodology endorsed by the Stakeholder Reference Group and Project Board. Ten front runner options were identified to be taken forward for assessment in the DfT’s

Early Assessment and Sifting Tool (EAST). Two Options were discarded following EAST, this resulted in a pool of eight options being taken forward for more detailed assessment. These options are listed below:

- *Option 1: Morpeth to Felton online dualling;*
- *Option 2: Morpeth to Felton offline dualling;*
- *Option 3: Full Dualling;*
- *Option 4: Dualling to Ellingham;*
- *Option 6: Dualling to Ellingham and localised widening on single carriageway sections to the North;*
- *Option 7: Dualling to Ellingham and overtaking (climbing) lanes on single carriageway sections to the North;*
- *Option 9: Dual Morpeth to Felton and junction rationalisation and parallel access roads on the dual carriageway to Alnwick; and*
- *Option 10: Dualling to Ellingham and dualling of the Berwick Bypass.*

These eight options have been assessed in line with the methodology described within the ASR and follows best practice contained within TAG. It has been undertaken as a desk based exercise based upon professional experience / judgement, informed by data where available.

The methodology aimed to distinguish the relative costs, benefits and impacts of the options under consideration, using the DfT's Option Assessment Framework, with evidence presented following the Treasury best practice five case model.

A summary of the results of the option assessment process is shown in Table 13-A.

Case	Assessment Area		Option											
			Option 1	Option 2	Option 3		Option 4		Option 6		Option 7		Option 9		Option 10	
					Online	Offline	Online	Offline	Online	Offline	Online	Offline	Online	Offline	Online	Offline
Strategic	Policy													
	Route Objectives													
Value for Money	Economic Impacts	User Benefits												
		Reliability												
	Environmental Impacts	Noise												
		Air Quality												
		Greenhouse Gases												
		Landscape												
		Townscape												
		Historic Environment												
		Biodiversity												
		Water Environment												
	Social Impacts	Physical Activity												
		Journey Quality												
		Accidents												
		Security												
		Access to services												
		Affordability												
		Severance												
		Option Values												
	Public Accounts	Cost to the Broad Transport Budget												
		Indirect Tax Revenues	N/A	N/A	N/A		N/A		N/A		N/A		N/A	
	Distributional Impacts		N/A	N/A	N/A		N/A		N/A		N/A		N/A	
	Indicative BCR													
Financial	Outturn Costs													
Management	Likely Delivery Agents													
	Public Acceptability													
	Stakeholder Support													

Strategic Case	Value For Money Case – Economic Impacts	Value for Money Case – Environmental and Social Impacts	Value for Money Case – Indicative BCR	Value for Money – Cost to Broad Transport budget	Management Case – Likely delivery agents	Management Case - Public Acceptability and Stakeholder Support
Significantly Supports Policy/Objective	Likely to provide large benefits	Likely to have large beneficial Impact	Very High (BCR >4)	Scheme Costs < £200m	Simple scheme with HA and single contractor/designer	Likely to be well supported
Supports Policy/Objective	Likely to provide moderate benefits	Likely to have beneficial impact	High (BCR 2 – 4)	Scheme Costs £200m-350m	Moderately complex scheme with HA and single contractor/designer	Likely to received mixed support
No impact on Policy/Objective	Likely to provide small benefits	Likely to have neutral/minimal impact	Medium (BCR 1.5 - 2)	Scheme Costs > £350m	Complex scheme with HA and multiple contractors/designers	Unlikely to be supported
Conflicts with Policy/Objective		Likely to have adverse impact	Low (BCR 1 – 1.5)	Financial Case		
Significantly conflicts with Policy/Objective		Likely to have large adverse impact	Poor (BCR < 1)	Outturn Costs < £300m		
				Outturn Costs £300m - £500m		
				Outturn Costs > £500m		

Table 13-A Option Assessment Summary

Table 13-A shows that all the options are well supported by policy and all would contribute to the defined route objectives. All options are likely to receive mixed support from stakeholders and the public. All the options score similarly across social impacts but options 3, 6, 7 and 10 would result in a higher level of accident savings as they improve longer stretches of the route. A similar pattern is seen with regards to user benefits.

In general, offline variants of any route are likely to have a greater effect environmentally, particularly on the local landscape while all options are likely to have a significant adverse effect on townscape. Options 1, 4, 6, 7 and 9 could, depending on whether the offline or online variants were chosen, result in a slight beneficial impact on the water environment.

Both variants (online / offline) of Options 3, 9 and 10 are likely to offer Poor to Low Value for Money. However, although Option 3 is likely to be significantly more expensive than any other option, it is likely to largely resolve all the problems on the route and have the largest contribution to the objectives.

13.2 Conclusions

Based on the analysis presented in this document, it is recommended that four options be taken forward for a more detailed assessment of Deliverability, Affordability and Value for Money as part of Stage 3 of the Feasibility Study. These are shown in Table 13-B.

Option	Fit With Problems and Objectives	Cost	Value For Money	Comments
Options 1 and 2 Dualling Morpeth to Felton (Online or Offline)	Partial	Likely to be cheapest option	Low to High	Improves most heavily trafficked single carriageway section of the route.
Option 3 Full Dualling (Online or Offline)	Fully	Likely to be most expensive option	Poor	Addresses fully all problems and issues on the route. Provides a benchmark for any potential improvement.
Option 4 Dualling to Ellingham (Online or Offline)	Partial	Likely to be moderately expensive	Low to Medium	Improves most heavily trafficked single carriageway section of the route and significantly addresses problem of inconsistent carriageway standard.
Option 7* Dualling to Ellingham (Online or Offline) and Overtaking/Climbing lanes on sections to the North	Partial	Likely to be moderately expensive	Low to Medium	Improves most heavily trafficked single carriageway section of the route and addresses problems on lightly trafficked sections to the North.

** Going forward, Option 7 will also consider opportunities for localised widening as defined in Option 6.*

Table 13-B Recommended Options

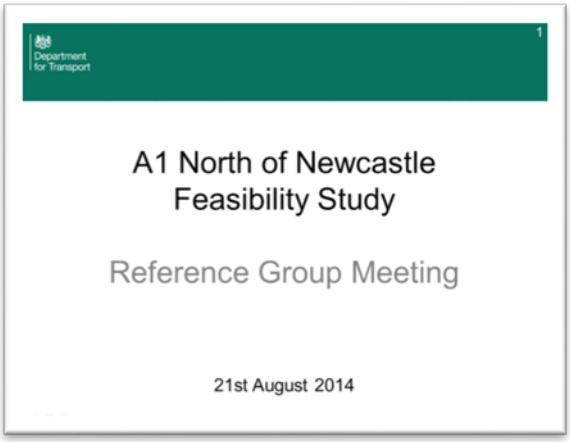
14 Stage 2 Stakeholder Engagement

Northumberland County Council (NCC) will be one of the key stakeholders for any scheme(s) going forward as they are only Local Authority through which the route passes.

Draft options were presented to NCC at an informal meeting on 07/07/14 attended by representatives of NCC. NCC endorsed the adopted approach to Option Generation and the initial findings presented within this report. They also noted that any potential intervention could be complementary to improved Public Transport services in the region.

A wider stakeholder engagement exercise was held on the 21/08/2014. This was attended by the Stakeholder Reference Group (SRG) consisting of representatives from the following organisations:

- *Parliamentary Office for Berwick upon Tweed*
- *Dual the A1 Campaign*
- *North East LEP and North East Combined Authority*
- *Northumberland County Council*
- *Newcastle City Council*
- *Natural England*
- *Northumberland Wildlife Trust*
- *HA*
- *Jacobs*
- *DfT*



The workshop was structured around a presentation summarising Stage 2 of the Feasibility Study (as presented within this report) with clear break points to allow for open discussion and debate on the findings of the work.

The presentation began with a recap of the background to the Feasibility Studies and the key outcomes of Stage 1 which were endorsed by the Stakeholder Reference Group at a workshop on the 21/05/14

The Option Generation process was then presented along with the initial list of interventions to be considered for the A1 NoN. The SRG confirmed that the initial list of Highway Interventions was comprehensive and captured their thoughts. They also confirmed that Public Transport and Demand Management measures should be considered alongside the Highway Interventions.

The Initial Sift and Option Assessment approach was then presented. The SRG confirmed that the approach appeared robust and that the results of the EAST were considered an appropriate reflection of the likely impacts of each of the shortlisted options.

A discussion was then initiated on the four ‘better performing options’ that the study team had recommended to be taken forward in to Stage 3 of the Feasibility Study. The SRG confirmed that they endorsed these recommendations.

The aims of the workshop and outcomes are summarised in Table 14-A.

Workshop Aims	Outcomes
Review and agree the 'Terms of Reference' for the Stakeholder Reference Group	Agreed / endorsed
Review and agree the option identification methodology	Agreed / endorsed
Review / agree the initial list of options	Agreed / endorsed
Review and agree the initial sift / EAST methodology	Agreed / endorsed
Review / agree the shortlisted options	Agreed / endorsed

Table 14-A Stakeholder Engagement (Stage 2)

JACOBS

HIGHWAYS AGENCY

Annex A Initial Sift

A1 North of Newcastle Feasibility Study

Initial Sift of Options
(Draft Criteria for Approval)

Mike Cammock
Jacobs

See end of sheet for identified problems and objectives.
See Intervention Matrix (Sheet 2) for Intervention Codes.

Qualitative assessment against identified problems	
2	Large beneficial impact
1	Beneficial impact
0	Neutral / marginal impact
-1	Adverse impact
-2	Large adverse impact

Qualitative assessment against identified objectives	
2	Large beneficial impact
1	Beneficial impact
0	Neutral / marginal impact
-1	Adverse impact
-2	Large adverse impact

Deliverability (e.g. political, planning, timescale or third party issues)
Likely to be deliverable
Likely to be deliverable (with Challenges)
Unlikely to be deliverable

Feasibility (e.g. physical constraint, land availability and design standards)
Likely to be feasible
Likely to be feasibile (with Challenges)
Unlikely to be feasible

Initial Sifting Criteria
Each option must meet the following sifting criteria to be considered further within EAST:
1: Overall moderate impact against identified problems (Appraisal score >4, see East Conversion below)
2: Overall moderate fit with route objectives (Appraisal score >3, see East conversion below)
3: Likely to be deliverable
4: Likely be feasible in theory

Reference (Route Section-Intervention)	Option Description	Problems (EAST Scale of Impact)									Objectives (EAST Fit with Other Objectives)								Deliverability	Feasibility	Initial Sifting Criteria Prior to EAST				Take to EAST
		1	2	3	4	5	6	7	8	Total	1	2	3	4	5	6	-	Total			1	2	3	4	
1-H	Localised Junction Improvement at Shotton Junction	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0		1	Likely to be deliverable (with Challenges)	Likely to be feasible	×	×	✓	✓	×
3-A	On line dualling	0	2	1	1	2	2	2	2	12	2	2	1	1	1	-1		6	Likely to be deliverable	Likely to be feasibile (with Challenges)	✓	✓	✓	✓	✓
3-B	Off line dualling	0	2	1	1	2	2	2	2	12	2	2	1	1	1	-2		5	Likely to be deliverable	Likely to be feasible	✓	✓	✓	✓	✓
3-C	WS2	0	-1	0	1	1	0	1	1	3	1	1	-1	0	0	-1		0	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	×	×	✓	✓	×
3-D	Localised widening	0	-1	0	1	1	0	0	1	2	1	1	-1	1	0	-1		1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
3-E	WS2+1	0	-1	0	1	1	1	1	1	4	1	1	1	0	0	-1		2	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	×	×	✓	✓	×
3-F	Overtaking Lanes	0	-1	0	1	1	1	1	1	4	1	1	1	0	0	-1		2	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	×	×	✓	✓	×
3-G	At grade junction improvements	0	0	1	1	0	0	0	0	2	0	0	1	1	0	-1		1	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
3-I	Junction rationalisation	0	0	1	2	0	0	0	0	3	0	0	1	-1	0	-1		-1	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	×	×	✓	✓	×
3-J	Laybys	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
3-L	Ban right turns	0	0	0	1	0	0	0	0	1	0	0	0	-1	0	0		-1	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
3-M	Parallel access roads	0	0	1	2	1	1	0	1	6	0	0	1	-1	0	-2		-2	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
3-N	Cross A1 movements to over/underbridge	0	0	1	1	0	0	0	0	2	0	0	0	0	0	-1		-1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
3-O	Average Speed cameras	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0		0	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
3-Q	Slow moving vehicle refuges (larger laybys for HGVs)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1		-1	Likely to be deliverable (with Challenges)	Likely to be feasible	×	×	✓	✓	×
4-G	At grade junction improvement, north of Swarland	0	0	1	1	0	0	0	0	2	0	0	2	1	0	-1		2	Likely to be deliverable	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
4-H	Grade separated junction improvement A1/A1068 dependent on accident causes	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0		1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
4-I	Junction rationalisation	0	0	1	2	0	0	0	0	3	0	0	1	-1	0	-1		-1	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	×	×	✓	✓	×
4-L	Ban right turns at minor junctions	0	0	0	1	0	0	0	0	1	0	0	0	-1	0	0		-1	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
4-M	Parallel access roads	0	0	1	2	1	1	0	0	5	0	0	1	-1	0	-2		-2	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
4-N	Cross A1 movements to over/under bridge	0	0	1	1	0	0	0	0	2	0	0	1	0	0	-1		0	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	×	×	✓	✓	×
4-R	Reduced Speed limit on curve around Alnwick	0	-1	0	0	-1	0	0	0	-2	-1	0	1	0	0	0		0	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
5-A	On line dualling	0	2	1	1	2	2	2	0	10	1	1	0	0	1	-1		2	Likely to be deliverable	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
5-B	Off line dualling	0	2	1	1	2	2	2	0	10	1	1	0	0	1	-2		1	Likely to be deliverable	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
5-C	WS2	0	-1	0	1	1	0	1	0	2	1	1	-1	0	0	-1		0	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	×	×	✓	✓	×
5-D	Localised widening	0	-1	0	1	1	0	0	0	1	1	1	-1	1	0	-1		1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
5-E	WS2+1	0	-1	0	1	1	1	1	0	3	1	1	1	0	0	-1		2	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	×	×	✓	✓	×
5-F	Overtaking Lanes	0	-1	0	1	1	1	1	0	3	1	1	1	0	0	-1		2	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
5-G	At grade junction improvements	0	0	1	1	0	0	0	0	2	0	0	1	1	0	-1		1	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
5-I	Junction rationalisation	0	0	1	2	0	0	0	0	3	0	0	1	-1	0	-1		-1	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	×	×	✓	✓	×
5-J	Laybys	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
5-L	Ban right turns	0	0	0	1	0	0	0	0	1	0	0	0	-1	0	0		-1	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
5-M	Parallel access roads	0	0	1	2	1	1	0	0	5	0	0	1	-1	0	-2		-2	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
5-N	Cross A1 movements to over/underbridge	0	0	1	1	0	0	0	0	2	0	0	1	0	0	-1		0	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	×	×	✓	✓	×
5-O	Average Speed cameras	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0		0	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
5-Q	Slow moving vehicle refuges	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1		-1	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
6-C	WS2	0	-1	0	0	-1	-1	-1	0	-4	-1	-1	-2	1	0	1		-2	Unlikely to be deliverable	Likely to be feasibile (with Challenges)	×	×	×	✓	×
6-D	Localised widening	0	-1	0	0	-1	-1	-1	0	-4	-1	-1	-2	1	0	1		-2	Unlikely to be deliverable	Likely to be feasibile (with Challenges)	×	×	×	✓	×
6-S	S2	0	2	0	0	-1	-1	-1	0	-1	-1	-1	-1	1	0	0		-2	Unlikely to be deliverable	Likely to be feasibile (with Challenges)	×	×	×	✓	×
6-L	Ban right turns at minor junctions	0	0	0	1	0	0	0	0	1	0	0	0	-1	0	0		-1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
7-A	On line dualling	0	1	1	1	2	2	2	1	10	1	1	1	0	1	-1		3	Likely to be deliverable	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
7-B	Off line dualling	0	1	1	1	2	2	2	1	10	1	1	1	0	1	-2		2	Likely to be deliverable	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
7-C	WS2	0	-1	0	1	1	0	1	1	3	1	1	-1	0	0	-1		0	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
7-D	Localised widening	0	-1	0	1	1	0	0	1	2	1	1	-1	1	0	-1		1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
7-E	WS2+1	0	-1	0	1	1	1	1	1	4	1	1	1	0	0	-1		2	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	×	×	✓	✓	×
7-F	Overtaking Lanes	0	-1	0	1	1	1	1	1	4	1	1	1	0	0	-1		2	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
7-G	At grade junction improvements	0	0	1	1	0	0	0	0	2	0	0	1	1	0	-1		1	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
7-I	Junction rationalisation	0	0	1	2	0	0	0	0	3	0	0	1	-1	0	-1		-1	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	×	×	✓	✓	×
7-J	Laybys	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
7-L	Ban right turns	0	0	0	1	0	0	0	0	1	0	0	0	-1	0	0		-1	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
7-M	Parallel access roads	0	0	1	2	1	1	0	1	6	0	0	1	-1	0	-2		-2	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×

See end of sheet for identified problems and objectives.
See Intervention Matrix (Sheet 2) for Intervention Codes.

Qualitative assessment against identified problems	
2	Large beneficial impact
1	Beneficial impact
0	Neutral / marginal impact
-1	Adverse impact
-2	Large adverse impact

Qualitative assessment against identified objectives	
2	Large beneficial impact
1	Beneficial impact
0	Neutral / marginal impact
-1	Adverse impact
-2	Large adverse impact

Deliverability (e.g. political, planning, timescale or third party issues)
Likely to be deliverable
Likely to be deliverable (with Challenges)
Unlikely to be deliverable

Feasibility (e.g. physical constraint, land availability and design standards)
Likely to be feasible
Likely to be feasibile (with Challenges)
Unlikely to be feasible

Initial Sifting Criteria
Each option must meet the following sifting criteria to be considered further within EAST:
1: Overall moderate impact against identified problems (Appraisal score >4, see East Conversion below)
2: Overall moderate fit with route objectives (Appraisal score >3, see East conversion below)
3: Likely to be deliverable
4: Likely be feasible in theory

Reference (Route Section-Intervention)	Option Description	Problems (EAST Scale of Impact)									Objectives (EAST Fit with Other Objectives)								Deliverability	Feasibility	Initial Sifting Criteria Prior to EAST				Take to EAST
		1	2	3	4	5	6	7	8	Total	1	2	3	4	5	6	-	Total			1	2	3	4	
7-N	Cross A1 movements to over/underbridge	0	0	1	1	0	0	0	0	2	0	0	1	0	0	-1		0	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
7-O	Average Speed cameras	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0		0	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
7-Q	Slow moving vehicle refuges	0	0	0	0	0	0	0	0	0	0	0	0	0	-1			-1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
8-A	On line localised dualling	0	-1	1	1	2	2	2	1	8	1	1	1	0	1	-1		3	Likely to be deliverable	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
8-B	Off line localised dualling	0	-1	1	1	2	2	2	1	8	1	1	1	0	1	-2		2	Likely to be deliverable	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
8-C	WS2	0	-1	0	1	1	0	1	1	3	1	1	-1	0	0	-1		0	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
8-D	Localised widening	0	-1	0	1	1	0	0	1	2	1	1	-1	1	0	-1		1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
8-E	WS2+1	0	-1	0	1	1	1	1	1	4	1	1	1	0	0	-1		2	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
8-F	Overtaking Lanes	0	-1	0	1	1	1	1	1	4	1	1	1	0	0	-1		2	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
8-G	At grade junction improvements	0	0	1	1	0	0	0	0	2	0	0	1	1	0	-1		1	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
8-I	Junction rationalisation	0	0	1	2	0	0	0	0	3	0	0	1	-1	0	-1		-1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
8-J	Laybys	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
8-L	Ban right turns	0	0	0	1	0	0	0	0	1	0	0	0	-1	0	0		-1	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
8-M	Parallel access roads	0	0	1	2	1	1	0	1	6	0	0	1	-1	0	-2		-2	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
8-N	Cross A1 movements to over/underbridge	0	0	1	1	0	0	0	0	2	0	0	1	0	0	-1		0	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
8-O	Average Speed limits	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0		0	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
8-Q	Slow moving vehicle refuges	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1		-1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
9-A	On line dualling	0	-1	1	1	2	2	2	0	7	1	1	1	0	1	-1		3	Likely to be deliverable	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
9-B	Off line dualling	0	-1	1	1	2	2	2	0	7	1	1	1	0	1	-2		2	Likely to be deliverable	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
9-C	WS2	0	-1	0	1	1	0	1	0	2	1	1	-1	0	0	-1		0	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
9-G	At grade junction improvements	0	0	1	1	0	0	0	0	2	0	0	1	1	0	-1		1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
9-J	Laybys	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
9-N	Cross A1 movements to over/underbridge	0	0	1	1	0	0	0	0	2	0	0	1	0	0	-1		0	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
9-O	Average Speed cameras	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0		0	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
9-Q	Slow moving vehicle refuges	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1		-1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
10-A	On line dualling	0	1	1	1	2	2	2	0	9	1	1	1	0	1	-1		3	Likely to be deliverable	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
10-B	Off line dualling	0	1	1	1	2	2	2	0	9	1	1	1	0	1	-2		2	Likely to be deliverable	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
10-C	WS2	0	-1	0	1	1	0	1	0	2	1	1	-1	0	0	-1		0	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
10-G	At grade junction improvements	0	0	1	1	0	0	0	0	2	0	0	1	1	0	-1		1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
10-J	Laybys	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
10-N	Cross A1 movements to over/underbridge	0	0	1	1	0	0	0	0	2	0	0	1	0	0	-1		0	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
10-O	Average Speed cameras	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0		0	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
10-Q	Slow moving vehicle refuges	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1		-1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
11-R	Reduced Speed limit (Welcome to Scotland sign)	0	-1	0	0	-1	0	0	0	-2	-1	0	1	0	0	0		0	Likely to be deliverable (with Challenges)	Likely to be feasibile	×	×	✓	✓	×
Public Transport Options																									
PT-T	Increased frequency of existing bus services	0	0	0	0	0	-1	0	1	0	0	0	0	0	1	1		2	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
PT-U	Additional bus services linking more locations	0	0	0	0	0	-1	0	1	0	0	0	0	0	1	1		2	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
PT-V	Improved Interchange facilities at key locations for bus travel	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0		1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
PT-W	Park and Ride schemes	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1		2	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
PT-X	Improved facilities (bus stops, shelters, etc)	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0		1	Likely to be deliverable	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
PT-Y	Real Time Passenger Information	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0		1	Likely to be deliverable	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
PT-Z	Increased frequency of local services on the ECML	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1		2	Unlikely to be deliverable	Likely to be feasibile (with Challenges)	×	×	×	✓	×
PT-AA	Improved Interchange facilities at key locations for rail travel	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1		2	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
PT-AB	Improved parking at rail stations	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1		2	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
Demand Management Options																									
DM-AC	Variable Message Signing	1	0	0	0	0	0	0	1	2	0	1	1	0	0	0		2	Likely to be deliverable	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
DM-AD	Haualge/routing agreements	1	0	0	0	0	1	1	0	3	0	0	1	0	0	0		1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
DM-AE	Busines travel plans	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0		1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
DM-AF	Car Sharing Schemes	0	0	0	0	0	0	0	1	1	0	1	0	0	0			1	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×

See end of sheet for identified problems and objectives.
See Intervention Matrix (Sheet 2) for Intervention Codes.

Qualitative assessment against identified problems	Qualitative assessment against identified objectives	Deliverability (e.g. political, planning, timescale or third party issues)	Feasibility (e.g. physical constraint, land availability and design standards)
2 Large beneficial impact	2 Large beneficial impact	Likely to be deliverable	Likely to be feasibile
1 Beneficial impact	1 Beneficial impact	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)
0 Neutral / marginal impact	0 Neutral / marginal impact	Unlikely to be deliverable	Unlikely to be feasible
-1 Adverse impact	-1 Adverse impact		
-2 Large adverse impact	-2 Large adverse impact		

Initial Sifting Criteria
Each option must meet the following sifting criteria to be considered further within EAST:
1: Overall moderate impact against identified problems (Appraisal score >4, see East Conversion below)
2: Overall moderate fit with route objectives (Appraisal score >3, see East conversion below)
3: Likely to be deliverable
4: Likely be feasible in theory

Reference (Route Section-Intervention)	Option Description	Problems (EAST Scale of Impact)									Objectives (EAST Fit with Other Objectives)								Deliverability	Feasibility	Initial Sifting Criteria Prior to EAST				Take to EAST
		1	2	3	4	5	6	7	8	Total	1	2	3	4	5	6	-	Total			1	2	3	4	
Packages of Options																									
3,5,7,8,9,10 - A/B	Dual remaining single carriageway sections of the A1	0	2	1	1	2	2	2	2	12	2	2	2	1	2	-2		7	Likely to be deliverable	Likely to be feasibile (with Challenges)	✓	✓	✓	✓	✓
3,5 - A/B	Dual remaining single carriageway sections south of Ellingham	0	1	1	1	2	1	1	1	8	2	1	1	1	1	-2		4	Likely to be deliverable	Likely to be feasibile (with Challenges)	✓	✓	✓	✓	✓
9,10 - B	Dual Berwick Bypass	0	1	1	1	2	1	1	0	7	1	1	1	1	1	-1		4	Likely to be deliverable	Likely to be feasibile (with Challenges)	✓	✓	✓	✓	✓
3-A/B, 6-C	Dual carriageway to Alnwick, single carriageway thereafter	0	1	1	1	2	0	1	1	7	2	0	1	1	1	-1		4	Unlikely to be deliverable	Likely to be feasibile (with Challenges)	✓	✓	×	✓	×
4 - I/M	Junction rationalisation and parallel access road on dual carriagway at Alnwick (Collector-distributer)	0	0	2	2	0	0	0	0	4	1	1	2	-1	0	-1		2	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	×	×	✓	✓	×
3,5,7,8,9,10 - C	All single carriageway sections to WS2	0	1	0	1	1	0	1	1	5	1	1	-1	0	0	-1		0	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
3,5 - A/B, 7,8,9,10-C	Dual Carriagway to Ellingham, WS2 carriagway to Berwick	0	2	1	1	2	1	1	1	9	2	1	-1	1	1	-1		3	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
5,7 -A/B	Dual Carriageway between Felton and Fenwick	0	1	1	1	2	1	1	1	8	1	1	1	1	1	-2		3	Likely to be deliverable	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
5,7,8 - A/B	Dual Carriageway between Felton and Scremerston	0	1	1	1	2	1	1	1	8	1	1	1	1	1	-2		3	Likely to be deliverable	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
7,8 - A/B	Dual Carriageway betweeen Brownieside and Scremerston	0	1	1	1	2	1	1	1	8	1	1	1	1	1	-2		3	Likely to be deliverable	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
3, 5 - A/B, 7,8 - D	Dual carriageway to Ellingham, localised widening on single carriageway sections to the north	0	2	1	1	2	2	2	2	12	2	2	1	1	2	-2		6	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	✓	✓	✓	✓	✓
3, 5 - A/B, 7,8 - F	Dual carriageway to Ellingham, overtaking lanes on single carriageway sections to the north	0	2	1	1	2	2	2	2	12	2	2	1	1	2	-2		6	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	✓	✓	✓	✓	✓
3, 5 - A/B, 7,8 - E	Dual carriageway to Ellingham, WS2+1 on single carriageway sections to the north	0	2	1	1	2	2	2	2	12	2	2	1	1	2	-2		6	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	✓	✓	✓	✓	✓
3,5,7,8 - E	WS2+1 on all single carriageway sections	0	0	1	1	2	1	1	1	7	1	1	1	1	0	-1		3	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	✓	×	✓	✓	×
3 - A/B, 3,4 - I, 3,4 - M	Dual section 3 and rationalise junctions on sections 3 and 4 with parallel access roads where necessary to remove PMA conflict where possible	0	2	1	1	2	2	2	2	12	2	2	2	1	1	-2		6	Likely to be deliverable (with Challenges)	Likely to be feasibile (with Challenges)	✓	✓	✓	✓	✓
3,5,9,10 - A/B	Dual sections 3, 5, 9 and 10	0	1	1	1	2	1	1	1	8	2	1	1	1	1	-2		4	Likely to be deliverable	Likely to be feasibile (with Challenges)	✓	✓	✓	✓	✓

Identified Problems

1 Lack of Alternative routes
2 Inconsistent carriageway standards on the route.
3 Poor junctions standards / layout.
4 Large number of at-grade junctions / Private Means of Access. This can result in delays to following vehicles and potential for accidents when vehicles slow down to exit the main carriageway or are entering the main carriageway.
5 Traffic speeds - analysis of TRADS data and Trafficmaster data reveals low average traffic speeds relative to other sections of the route.
6 Relatively high proportion of HGVs (and agricultural vehicles) resulting in reduced speeds for following vehicles and potential for driver frustration.
7 Lack of overtaking opportunities.
8 Peak hour traffic speeds significantly below free flow speeds - analysis of Trafficmaster data shows that peak hour traffic speeds are significantly lower than average off-peak speeds.

Route Objectives

1 Improve journey times on this route of strategic national importance
2 Improve network resilience and journey time reliability
3 Improve safety.
4 Maintain access for local traffic whilst improving the conditions for strategic traffic.
5 Facilitate future economic growth.
6 Avoid, mitigate and compensate for potential impacts upon the build and natural environment.

East Conversion

Problems (Scale of Impact)

Appraisal Score	East Rating
≤0	Very small impact
1	Minor Impact
2	
3	
4	
5	Moderate Impact
6	
7	
8	
9	Significant impact
10	
11	
12	
13	Fully addresses identified problems
14	
15	
16	

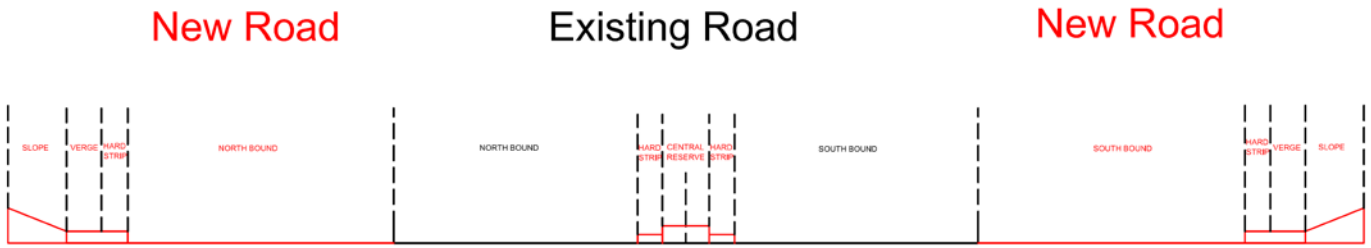
Objectives (Fit with Other Objectives)

Appraisal Score	Rating
≤0	Very small impact
1	Minor impact
2	
3	
4	Moderate Impact
5	
6	
7	Significant Impact
8	
9	
10	Fully Addresses Objectives
11	
12	

		a	b	c	d	e	f	g	h	i	j
		dualling		WS2	Localised Widening	WS2+1	Overtaking Lanes	Junction Improvements		Junction rationalisation	Laybys
		On Line	Off Line					At-grade	Grade separated		
Route Sections	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes	N/A	N/A
	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Yes	N/A
	4	N/A	N/A	N/A	N/A	N/A	N/A	Yes	Yes	Yes	N/A
	5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Yes	N/A
	6	N/A	N/A	Yes	Yes	N/A	N/A	Yes	N/A	N/A	N/A
	7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Yes	N/A
	8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Yes	Yes
	9	Yes	Yes	Yes	N/A	N/A	N/A	Yes	N/A	N/A	Yes
	10	Yes	Yes	Yes	N/A	N/A	N/A	Yes	N/A	N/A	Yes
	11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

		k	l	m	n	o	p	q	r	s
		Signing	Ban right turns at minor junctions	Parallel access roads	Cross A1 movements to	Average Speed Limit	Improving bus stops on	Slow moving vehicle refuges	Reduced Speed Limit	S2
Route Sections	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	N/A	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A
	3	N/A	Yes	Yes	Yes	Yes	N/A	Yes	N/A	N/A
	4	N/A	Yes	Yes	Yes	N/A	N/A	N/A	Yes	N/A
	5	N/A	Yes	Yes	Yes	Yes	N/A	Yes	N/A	N/A
	6	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	Yes
	7	N/A	Yes	Yes	Yes	N/A	N/A	Yes	N/A	N/A
	8	N/A	Yes	Yes	Yes	Yes	Yes	Yes	N/A	N/A
	9	N/A	N/A	N/A	Yes	Yes	N/A	Yes	N/A	N/A
	10	N/A	N/A	N/A	Yes	Yes	N/A	Yes	N/A	N/A
	11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes	N/A

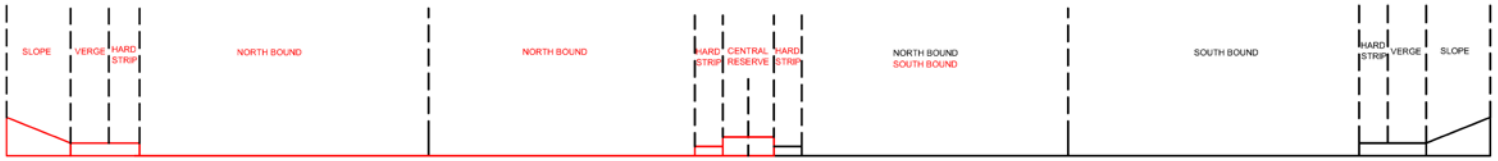
Online Dualling: Symmetrical widening



Online Dualling:
Asymmetrical widening

New Road

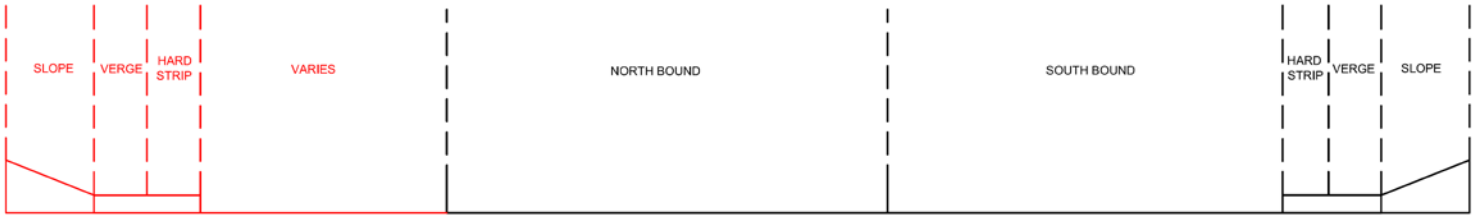
Existing Road



Wide Single carriageway +1 (WS2+1)

New Road (+1)

Existing Road (WS2)



Localised Widening

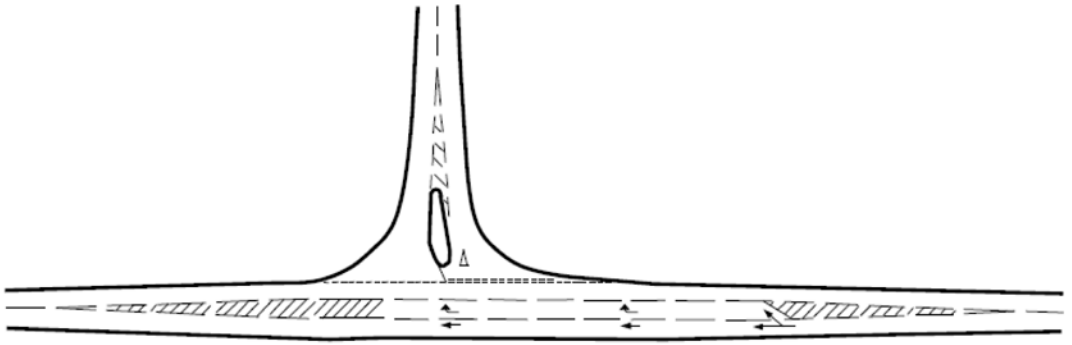


Figure 1 / 2 : Ghost Island Junction (para 1.15)

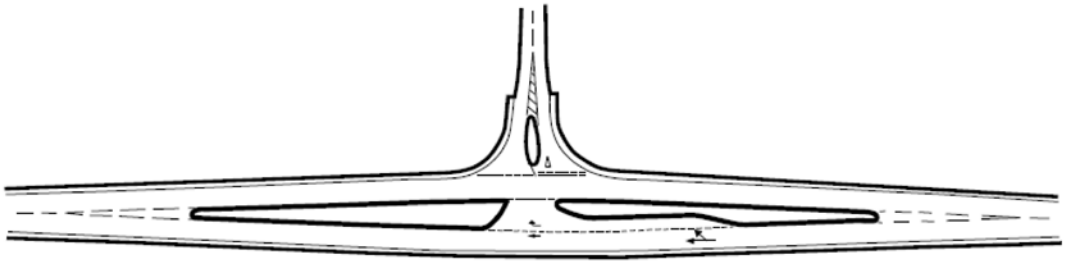


Figure 1/3 : Single Lane Dualling (para 1.16)