

# **A1 in Northumberland: Morpeth to Ellingham**

**Scheme Number: TR010041**

## **6.2 Environmental Statement – Chapter 15 Assessment of Combined Effects**

**Part A**

APFP Regulation 5(2)(a)

Planning Act 2008

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

June 2020

Infrastructure Planning

Planning Act 2008

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

**The A1 in Northumberland: Morpeth to Ellingham  
Development Consent Order 20[xx]**

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**Environmental Statement**

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<b>Regulation Reference:</b>	APFP Regulation 5(2)(a)
<b>Planning Inspectorate Scheme Reference</b>	TR010041
<b>Application Document Reference</b>	TR010041/APP/6.2
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# CONTENTS

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<b>15</b>	<b>ASSESSMENT OF COMBINED EFFECTS</b>	<b>1</b>
15.1	INTRODUCTION	1
15.2	COMPETENT EXPERT EVIDENCE	1
15.3	LEGISLATIVE AND POLICY FRAMEWORK	3
15.4	ASSESSMENT METHODOLOGY	4
15.5	ASSUMPTIONS AND LIMITATIONS	7
15.6	STUDY AREA	7
15.7	BASELINE CONDITIONS	7
15.8	ASSESSMENT OF COMBINED EFFECTS	7
15.9	MITIGATION AND MONITORING	15
	<b>REFERENCES</b>	<b>16</b>

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## ***TABLES***

Table 15-1 – Relevant Experience	1
Table 15-2 – National Planning Policy Relevant to the Assessment of Combined Effects	3
Table 15-3 – Combined Significance of Effect Definition	6
Table 15-4 – Matrix of Combined Effect Interactions	8

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## 15 ASSESSMENT OF COMBINED EFFECTS

### 15.1 INTRODUCTION

- 15.1.1. This chapter reports the likely significant combined environmental effects associated with the Part A: Morpeth to Felton (Part A).
- 15.1.2. This chapter assesses combined effects, which occur due to impacts from different environmental topics associated with Part A combining to cause multiple effects on a single receptor. For example, a residential receptor may be affected by noise, air quality and visual effects from Part A.

### 15.2 COMPETENT EXPERT EVIDENCE

- 15.2.1. **Table 15-1** below demonstrates that the professionals contributing to the production of this chapter have sufficient expertise to ensure the completeness and quality of this assessment.

**Table 15-1 – Relevant Experience**

Name	Role	Qualifications and Professional Membership	Experience
Declan Franklin	Author	BSc (Hons) Geography Practitioner member of the Institute of Environmental Management and Assessment (PIEMA)	Senior Consultant 4 years' experience in environmental consultancy and coordinating Environmental Impact Assessments. Other relevant experience includes: <ul style="list-style-type: none"> <li>- Assistant EIA coordinator and lead author for the combined effects assessment and ES non-technical summary for the East West Rail Phase 2 project</li> <li>- Environmental lead for Macclesfield Rail Resignalling, Blackpool Sidings and Anglesey Overhead Line Routing assessments</li> </ul>
Victoria Wilson	Reviewer	BSc (Hons) in Ecology	Associate Twenty years' experience in environmental regulation, and

Name	Role	Qualifications and Professional Membership	Experience
		<p>MSc in Environmental Analysis and Assessment</p> <p>Full Member of the Institute of Environmental Management and Assessment (IEMA)</p> <p>Chartered Environmentalist (CEnv)</p>	<p>assessment and management of engineering schemes. Other recent relevant experience includes:</p> <ul style="list-style-type: none"> <li>- Environmental assessment lead for the A19 Norton to Wynyard improvement scheme for preliminary design stage</li> <li>- Environmental assessment lead for a number of strategic road studies including Trans-Pennine Tunnel: Wider Transport Connectivity Assessment and Oxford to Cambridge Expressway</li> <li>- EIA Project Manager for A45 Daventry Development Link for Northamptonshire County Council</li> </ul>
Kevin Stubbs	Reviewer	<p>Higher National Diploma in Rural Resources and their Management</p> <p>MA in Landscape Management</p> <p>Chartered Member of the Landscape Institute</p> <p>Member of the Chartered Institute of Ecology and Environmental Management (CIEEM)</p>	<p>Technical Director</p> <p>30 years' experience in the environmental sector. Other recent relevant experience includes:</p> <ul style="list-style-type: none"> <li>- Technical Director for the A1 Birtley to Coal House scheme for Options Identification and Options Selection stages, and currently for preliminary design stage</li> <li>- Environment Technical Director for A19/A1058 Coast Road Improvement and A19 Norton to Wynyard Improvements (preliminary design stage)</li> <li>- Environment Technical Director for A1 Scotswood to North Brunton (option identification and option</li> </ul>

Name	Role	Qualifications and Professional Membership	Experience
			selection stage) Improvement schemes

## 15.3 LEGISLATIVE AND POLICY FRAMEWORK

### LEGISLATION

#### Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations)

- 15.3.1. Paragraph 5, Schedule 4 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) (Ref. 15.1) requires that an Environmental Statement includes:

*“The description of the likely significant effects on the factors specified in regulation 5(2) should cover the direct effects of any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development.”*

### POLICY

- 15.3.2. National policy relevant to the assessment of potential combined effects is outlined in **Table 15-2**. There are no relevant local policies.

**Table 15-2 – National Planning Policy Relevant to the Assessment of Combined Effects**

Policy	Relevant Policy Objectives	Significance of Part A on Policy Objective
National Policy Statement for National Networks (NPS NN) (Ref. 15.2)	Paragraph 4.17 of the NPS NN further states: <i>“The Examining Authority should consider how significant cumulative effects and the interrelationship between effects might affect the environment, even though they may be acceptable when considered on an individual basis with mitigation measures in place”.</i>	An assessment of combined effects has been carried out in accordance with the requirements of the policy. <b>Section 15.8</b> presents a description of the significance of combined effects on Part A.

## 15.4 ASSESSMENT METHODOLOGY

- 15.4.1. The potential combined effects associated with Part A have been considered for the topics in **Technical Chapters 5 to 13** of this ES and are provided in this chapter.
- 15.4.2. The assessment methodologies are based on the guidance documents detailed in **Section 15.4** below, and previous professional experience from other similar highways schemes. It considers the types of receptors assessed, the nature of Part A and the environmental information available to inform the assessment.

### SCOPE OF ASSESSMENT

- 15.4.3. The scope of this assessment is in line with the **Scoping Report (Application Document Reference: TR010041/APP/6.10)** and **Scoping Opinion (Application Document Reference: TR010041/APP/6.12)**. **Appendix 4.1: Scoping Opinion Response Tracker, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**) presents commentary of how each item within the Scoping Opinion has been addressed within this ES.
- 15.4.4. Topics assessed in the **Technical Chapters 5 to 13** of this ES in relation to Part A have been scoped into the assessment of combined effects.
- 15.4.5. In relation to **Chapter 14: Climate** of this ES, the impacts of greenhouse gas (GHG) emissions, in terms of their contribution to climate change, are global and cumulative in nature, with every tonne contributing to impacts on natural and human systems. GHGs are natural and anthropogenic gases occurring in the atmosphere that absorb and emit infrared radiation, thereby maintaining the sun's energy within the earth's atmosphere. There is an overwhelming scientific consensus that the major increase in the atmospheric concentration of GHGs since the industrial revolution is contributing to climate change. It is the increase in concentrations of GHGs in the global atmosphere due to all GHG causing human activities that cause climate change. As such it is the combined effect of all GHG-emitting human activities that cause climate change, and therefore the assessment of the GHGs resulting from Part A implicitly assesses the combined effect of GHG emissions. Therefore, the quantification of emissions from Part A in the assessment of significance of effects inherently assesses combined impacts. No further assessment has therefore been undertaken in this chapter. The resilience assessment looks at the potential impacts of environmental change on Part A, rather than impacts of Part A on the environment: the receptor for the resilience assessment is Part A. As such, no assessment of combined effects has been made as there are no receptors in common with other assessments. No other combined effects have been identified.

### METHODOLOGY FOR THE ASSESSMENT OF COMBINED EFFECTS

- 15.4.6. The approach to the assessment of combined effects considers the changes in baseline conditions at common sensitive receptors identified within the ES for Part A i.e. those receptors that have been assessed by more than one technical topic in this ES, during construction and operation of Part A. For the purposes of assessment,

these common receptors have then been grouped based upon their shared attributes and/or characteristics i.e. residents, road users or agricultural land. In determining whether an effect is considered significant, effects of 'minor' or above significance are taken into consideration, to account for the potential for multiple 'non-significant effects' to combine to result in an overall significant effect. For example the potential for minor (non-significant) effects to result in a moderate (significant) effect.

- 15.4.7. In determining the significance of effect for each category of common receptors, the assessment considers the worst-case effects reported in **Technical Chapters 5 to 13** of this ES for receptors relevant to each respective common receptor group. For example, in the category 'Users of footpaths and public rights of way', **Chapter 7: Landscape and Visual** of this ES and **Chapter 12: Population and Human Health** of this ES respectively assesses the effects upon Public Rights of Way (PRoWs) and reports a range of different significance of effects for each PRoW. This assessment therefore considers the highest level of significance reported for each common receptor. Therefore, the overall significance of effect reported in **Table 15-4** considers worst-case combined effects for each common receptor group.

#### **SIGNIFICANCE OF EFFECTS**

- 15.4.8. Although the ES, unless otherwise stated, considers effects of moderate or above significance as a 'significant effect' in terms of the EIA Regulations (as stated in **Section 4.5** in **Chapter 4: Environmental Assessment Methodology, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**)), this combined effects assessment considers effects of minor significance or above to assess whether multiple effects of minor significance (i.e. those which are not considered significant in terms of the EIA Regulations) could combine to result in a significant combined effect. Effects of negligible significance have been excluded in this assessment as, by virtue of their definition, their measurable effect is not considered to have the potential to result in a significant combined effect.
- 15.4.9. The following factors have been considered in determining the significance of combined effects, in accordance with Design Manual for Roads and Bridges (DMRB) Volume 11 Section 2 Part 5 Section IV (**Ref. 15.3**):
- a. Which receptors/resources are affected?
  - b. How will the activity or activities affect the condition of the receptor/resource?
  - c. What are the probabilities of such effects occurring?
  - d. What ability does the receptor/resource have to absorb further effects before change becomes irreversible?
- 15.4.10. The significance of combined effects has then been determined using professional judgement based on the following criteria, which are set out in DMRB (**Ref. 15.3**) and defined **Table 15-3**.



**Table 15-3 – Combined Significance of Effect Definition**

Significance	Effect
Severe	Effects that the decision-maker must take into account as the receptor/resource is irretrievably comprised.
Major	Effects that may become key decision-making issue.
Moderate	Effects that are unlikely to become issues on whether the project design should be selected, but where future work may be needed to improve on current performance.
Minor	Effects that are locally significant.
Not Significant	Effects that are beyond the current forecasting ability or are within the ability of the resource to absorb such change.

## GUIDANCE

15.4.11. The following guidance documents have been used to inform the methodology for this assessment:

- a. DMRB, Volume 11 Section 2, Part 5 (**Ref. 15.3**).
- b. The Planning Inspectorate Advice Note Seventeen - Cumulative Effects Assessment (**Ref. 15.4**). This guidance sets out a staged process for the assessment of cumulative effects for an ES.

### Updated DMRB guidance

15.4.12. DMRB, Volume 11 Section 2, Part 5 (**Ref. 15.3**) has been superseded by DMRB LA 104 (**Ref. 15.5**). As detailed in **Appendix 4.5: DMRB Sensitivity Test, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**), the combined effects assessment complies with the changes in LA 104. Therefore, the conclusions presented in this chapter would remain unchanged with the implementation of the updated DMRB guidance for the combined effects assessment (LA 104).

15.4.13. However, the combined effects assessment is based on the outcomes of the technical assessments as detailed in the Part A **Technical Chapters 5 to 13** of this ES. Therefore, if the updated DMRB guidance for these assessments would change the outcomes of the technical assessments, this could change the outcomes of the combined effects assessment. A DMRB sensitivity test has therefore been undertaken in order to determine whether the updated DMRB guidance would change the outcomes of the combined effects assessment due to changes in the outcomes of the technical assessments. This DMRB sensitivity test is presented in **Section 15.8** of this chapter.

## 15.5 ASSUMPTIONS AND LIMITATIONS

- 15.5.1. The assessment of combined effects resulting from Part A has focused on the residual effects from the construction and operational phase following the implementation of mitigation measures. There is an assumption that all proposed mitigation measures identified in **Technical Chapters 5 to 13** of this ES would be secured and delivered through the relevant consenting or permitting regimes.

## 15.6 STUDY AREA

- 15.6.1. The Study Areas used for the combined assessment will be the same as those identified within each of the **Technical Chapters 5 to 13** of this ES. The assessment considers the potential combined effects where the Study Areas of the **Technical Chapters 5 to 13** of this ES overlap.

## 15.7 BASELINE CONDITIONS

- 15.7.1. The baseline for the combined effects is described in the **Technical Chapters 5 to 13** of this ES.

## 15.8 ASSESSMENT OF COMBINED EFFECTS

- 15.8.1. A review of the technical assessments reported in **Technical Chapters 5 to 13** of this ES has been undertaken to identify environmental effects and therefore those that could combine to result in an effect of greater significance. These combined effect interactions are detailed in **Table 15-4** below.

**Table 15-4 – Matrix of Combined Effect Interactions**

Common Sensitive Receptors	Impacts	Air Quality	Noise and Vibration	Landscape and Visual	Cultural Heritage	Biodiversity	Road Drainage and Water	Geology and Soils	Population and Human Health	Material Resources	Combined Effect
<b>CONSTRUCTION</b>											
Residents	<ul style="list-style-type: none"> <li>- Changes to air quality within 200 m of construction activities</li> <li>- Increased noise and vibration levels within 300 m of construction activities</li> <li>- Changes to views due to temporary reduction in roadside vegetation screening and changes to views</li> <li>- Community severance and reduced access to public rights of way during diversions</li> <li>- Potential for socio-economic benefits for residents during construction</li> <li>- Disruption and restriction of recreational activities along the River Coquet due to construction activity</li> <li>- Impacts to human health e.g. inhalation of construction dust and increase in driver stress</li> <li>- Impact to residents from permanent loss of private property (North Gate House)</li> </ul>	ü	ü	ü					ü		<p>Potential for local temporary and permanent adverse/combined effects during construction. With the implementation of mitigation measures set out in the <b>Technical Chapters 5 to 13</b> of this ES and presented in the <b>Outline Construction Environmental Management Plan (Outline CEMP) (Application Document Reference: TR010041/APP/7.3)</b>, the combined effect would be of <b>moderate to large adverse</b> significance.</p> <p>This is due to the loss of private property and significant visual effects being predicted at some residential properties near to Part A, which would also experience noise and air quality impacts during construction. Residents closest to Part A are predicted to experience the larger significant effects as reported in <b>Chapter 7: Landscape and Visual</b> of this ES.</p>
Areas of amenity surrounding Part A	<ul style="list-style-type: none"> <li>- Changes to air quality within 200 m of construction activities</li> <li>- Increased noise and vibration levels within 300 m of construction activities</li> <li>- Changes to views due to temporary reduction in roadside vegetation screening and appearance of construction compounds and construction associated machinery</li> </ul>	ü	ü	ü	ü			ü	ü		<p>Potential for both local temporary adverse and permanent beneficial combined effects during construction. With the implementation of mitigation measures set out in the <b>Technical Chapters 5 to 13</b> of this ES and presented in the <b>Outline CEMP (Application Document Reference: TR010041/APP/7.3)</b>, the combined effect for Part A would be of <b>moderate adverse</b> significance.</p>

Common Sensitive Receptors	Impacts	Air Quality	Noise and Vibration	Landscape and Visual	Cultural Heritage	Biodiversity	Road Drainage and Water	Geology and Soils	Population and Human Health	Material Resources	Combined Effect
	<ul style="list-style-type: none"> <li>- Temporary removal of a heritage asset (Grade II listed milestone) from existing location to new surroundings</li> <li>- Reduced enjoyment of use and access to public rights of way during diversions</li> <li>- Impacts to human health e.g. inhalation of construction dust</li> <li>- Impacts on water quality due to construction activities</li> <li>- Loss of landscape features, including some of the trees which make up Coronation Avenue</li> </ul>										<p>This is due to significant effects being predicted on access to some public rights of way that would also experience changes to views from loss of vegetation and landscape features.</p>
Road users	<ul style="list-style-type: none"> <li>- Changes to views because of temporary reduction in roadside vegetation screening and construction activities</li> <li>- Impacts to human health e.g. driver/user stress</li> </ul>			ü					ü		<p>Potential for local temporary combined adverse effects during construction. With the implementation of mitigation measures set out in the <b>Technical Chapters 5 to 13</b> of this ES and presented in the <b>Outline CEMP (Application Document Reference: TR010041/APP/7.3)</b>, the combined effect for Part A would be of <b>moderate to large adverse</b> significance.</p> <p>This is due to significant effects being predicted for some road users due to changes to views as identified within <b>Chapter 7: Landscape and Visual</b> and <b>Chapter 12: Population and Human Health</b> of this ES.</p>
Users of footpaths and public rights of way (walking, cycling and horse riding)	<ul style="list-style-type: none"> <li>- Changes to air quality within 200 m of construction activities</li> <li>- Increased noise and vibration levels within 300 m of construction activities</li> <li>- Reduction of amenity due to noise and air quality effects</li> <li>- Visual e.g. changes to views due to temporary reduction in roadside vegetation screening and appearance</li> </ul>	ü	ü	ü					ü		<p>Potential for local temporary adverse combined effects during construction. With the implementation of mitigation measures set out in the <b>Technical Chapters</b> of this ES and presented in the <b>Outline CEMP (Application Document Reference: TR010041/APP/7.3)</b>, the combined effect for Part A would be of <b>moderate to large adverse</b> significance.</p> <p>This is due to significant effects being predicted due to the closure or diversion of some PRowS, combined with amenity and visual effects for users of these PRowS.</p>

Common Sensitive Receptors	Impacts	Air Quality	Noise and Vibration	Landscape and Visual	Cultural Heritage	Biodiversity	Road Drainage and Water	Geology and Soils	Population and Human Health	Material Resources	Combined Effect
	<ul style="list-style-type: none"> <li>of construction compounds and construction associated machinery</li> <li>- Community severance, reduced access to PRow during closures or diversions and temporary bus stop diversions</li> <li>- Impacts to human health e.g. inhalation of construction dust</li> </ul>										
Statutory and non-statutory designated ecological sites/local biodiversity	<ul style="list-style-type: none"> <li>- Changes to air quality within 200 m of construction activities.</li> <li>- Increased noise and vibration levels within 300 m of construction activities</li> <li>- Loss of trees, vegetation and impact on the connectivity of wildlife corridors (this includes an area loss to River Coquet and Coquet Valley Woodlands SSSI and Coquet River Felton Park LWS)</li> <li>- Loss of an area of Ancient Woodland (Duke's Bank Wood ancient woodland)</li> <li>- Impacts to the ecological quality of watercourses associated with works within or near watercourses e.g. due to the installation and alteration of culverts</li> </ul>	ü	ü	ü		ü	ü				<p>Potential for local temporary adverse and beneficial effects during construction. With the implementation of mitigation measures set out in the <b>Technical Chapters 5 to 13</b> of this ES and presented in the <b>Outline CEMP (Application Document Reference: TR010041/APP/7.3)</b>, the combined effect would be of <b>minor adverse to moderate beneficial</b> significance.</p> <p>The combined effect is due to significant effects being predicted from the creation of habitats including woodland and semi-improved grassland as part of Part A.</p> <p>The combined effect on the Coquet River Felton Park LWS and the River Coquet and Coquet Valley Woodlands SSSI (which encompasses Duke's Bank Ancient Woodland) could potentially be of moderate adverse and very large adverse significance respectively due to the loss of irreplaceable ancient woodland as reported in <b>Chapter 9: Biodiversity</b> of this ES. However, with the implementation of compensation measures as set out in <b>Chapter 9: Biodiversity</b> of this ES and the <b>Ancient Woodland Strategy</b> (refer to <b>Appendix 9.21, Volume 7</b> of this ES (<b>Application Document Reference: TR010041/APP/6.7</b>)), the combined effect is not anticipated to be greater than the individual effect.</p>
Commercial properties	<ul style="list-style-type: none"> <li>- Changes to air quality within 200 m of construction activities</li> <li>- Increased noise and vibration levels within 300 m of construction activities respectively</li> </ul>	ü	ü	ü					ü		<p>Potential for local temporary adverse effects during construction. With the implementation of mitigation measures set out in the <b>Technical Chapters 5 to 13</b> of this ES and presented in the <b>Outline CEMP (Application Document Reference:</b></p>

Common Sensitive Receptors	Impacts	Air Quality	Noise and Vibration	Landscape and Visual	Cultural Heritage	Biodiversity	Road Drainage and Water	Geology and Soils	Population and Human Health	Material Resources	Combined Effect
	<ul style="list-style-type: none"> <li>- Potential temporary disruption of access to businesses</li> </ul>										<p>TR010041/APP/7.3), the combined effect would be of minor adverse significance (<b>not significant</b>).</p>
Agricultural Land and associated rural enterprises	<ul style="list-style-type: none"> <li>- Part A would result in the temporary and permanent loss of areas of agricultural land within the Order Limits</li> <li>- Temporary and permanent impact on existing farm and diversified rural businesses along the route.</li> <li>- Temporary disruption to access</li> </ul>							ü	ü		<p>Potential for local temporary adverse effects during construction. With the implementation of mitigation measures set out in the <b>Technical Chapters 5 to 13</b> of this ES and presented in the <b>Outline CEMP (Application Document Reference: TR010041/APP/7.3)</b>, the combined effect would be of <b>slight to moderate adverse</b> significance.</p> <p>This is due to significant effects being predicted due to the temporary and permanent loss of agricultural land on some land holdings which would also potentially experience temporary disruption to access. No further effects on agricultural land or rural enterprises have been identified during operation.</p>
Community facilities	<ul style="list-style-type: none"> <li>- Changes to air quality within 200 m of construction activities and increased noise and vibration levels within 300 m of construction activities upon facilities including Northgate Hospital, Tritlington Church of England Aided First School and Northumbrian Woodland Burials</li> <li>- Reduction in visual amenity upon Tritlington Church of England Aided First School</li> <li>- Reduction in amenity for users of facilities including Tritlington Church of England Aided First School and Northgate Hospital</li> </ul>	ü	ü	ü					ü		<p>Potential for local temporary combined adverse effects during construction. With the implementation of mitigation measures set out in the <b>Technical Chapters 5 to 13</b> of this ES and presented in the <b>Outline CEMP (Application Document Reference: TR010041/APP/7.3)</b>, the combined effect would be of <b>minor adverse</b> significance (<b>not significant</b>).</p> <p>However, the combined effect upon Tritlington Church of England Aided First School could potentially be <b>moderate adverse (significant)</b> due to the significant visual effect reported in <b>Chapter 7: Landscape and Visual</b> of this ES.</p>

Common Sensitive Receptors	Impacts	Air Quality	Noise and Vibration	Landscape and Visual	Cultural Heritage	Biodiversity	Road Drainage and Water	Geology and Soils	Population and Human Health	Material Resources	Combined Effect
<b>OPERATION</b>											
Residents	<ul style="list-style-type: none"> <li>- Exposure to increased pollution (NO<sub>2</sub> and PM<sub>10</sub>) from changes to traffic flow, mix and speed</li> <li>- Both an experienced increase (residents near to the offline section) and reduction (residents near to the detrunked section) in noise across Part A</li> <li>- Changes to views to a number of properties due vegetation removal (in the medium term until landscape planting is established), the offline section and new features (e.g. junctions) as part of Part A</li> <li>- Reduced traffic congestion along the carriageway is likely to improve safety, journey times and reduce driver stress</li> <li>- Proposed improvements and negative impacts to existing PRoWs e.g. increased journey times.</li> </ul>	ü	ü	ü					ü		<p>Potential for both local permanent adverse and beneficial combined effects during operation. Some effects relating to the removal of vegetation would be temporary until such time where vegetation is established. With the implementation of mitigation measures set out in the <b>Technical Chapters 5 to 13</b> of this ES the overall combined effects for Part A would be of <b>major beneficial</b> and <b>major adverse</b> significance.</p> <p>This is due to significant visual effects being predicted at some residential properties near to Part A, which would also experience noise impacts during operation.</p>
Areas of amenity surrounding Part A	<ul style="list-style-type: none"> <li>- Both an experienced increase and reduction in noise levels depending on the location of the surroundings in relation to the portion of Part A</li> <li>- Changes to local sense of landscape character due to the location of the newly established Scheme</li> <li>- Reduced traffic congestion along the carriageway is likely to improve safety, journey times and air quality and reduce noise (e.g. reduce driver/user stress)</li> </ul>	ü	ü	ü	ü		ü		ü		<p>Potential for local permanent combined adverse effect on amenity users and several combined beneficial effects. Some effects relating to changes to local sense of landscape character would be temporary until such time where vegetation has established. With the implementation of mitigation measures set out in the <b>Technical Chapters 5 to 13</b> of this ES the overall combined effects would be of <b>minor beneficial</b> and <b>minor adverse</b> significance (<b>not significant</b>).</p>

Common Sensitive Receptors	Impacts	Air Quality	Noise and Vibration	Landscape and Visual	Cultural Heritage	Biodiversity	Road Drainage and Water	Geology and Soils	Population and Human Health	Material Resources	Combined Effect
	<ul style="list-style-type: none"> <li>- Potential improvements in health by reduced congestion along with improved community connectivity</li> </ul>										
Road users	<ul style="list-style-type: none"> <li>- Changes to views along the existing and surrounding road network, due to the realignment of the offline section, landscape planting and proposed noise barriers</li> <li>- Reduced traffic congestion along the carriageway is likely to improve safety, journey times and improving driver/user stress for route users</li> <li>- Potential improvements in health by reduced congestion along with improved community connectivity</li> </ul>		ü	ü					ü		<p>Potential for both local permanent combined adverse effects during operation from impacts traffic and changes to views. There is also a combined beneficial effect on the health of road users from reduced noise and congestion. With the implementation of mitigation measures set out in the <b>Technical Chapters 5 to 13</b> of this ES the overall combined effects would be <b>minor beneficial</b> and <b>minor adverse (not significant)</b>.</p>
Users of footpaths and public rights of way (walking, cycling and horse riding)	<ul style="list-style-type: none"> <li>- Exposure to increased pollution (NO<sub>2</sub> and PM<sub>10</sub>) from changes to traffic flow, mix and speed</li> <li>- Reduced noise levels for PRow users near to the online section, and increased noise levels for users near to the offline section</li> <li>- Changes to views along recreational routes, due to the offline section, new built features and landscape mitigation. Improvements to PRow including connectivity and safety of crossing the A1 and negative impacts to existing PRow e.g. increased journey times</li> <li>- Potential improvements in health by reduced congestion along with improved community connectivity</li> </ul>	ü	ü	ü					ü		<p>Potential for both local permanent combined adverse effects during operation from impacts on air quality, traffic and changes to views. There is also potential for a combined beneficial effect on users of footpaths from improvements in health from reduced noise and congestion. With the implementation of mitigation measures set out in the <b>Technical Chapters 5 to 13</b> of this ES though there would be minor beneficial effects the overall combined effects would be <b>moderate adverse</b>.</p> <p>This is due to predicted significant visual effects at some PRow, which would also experience amenity, changes to PRow impacting journey time and severance impacts during operation.</p>



Common Sensitive Receptors	Impacts	Air Quality	Noise and Vibration	Landscape and Visual	Cultural Heritage	Biodiversity	Road Drainage and Water	Geology and Soils	Population and Human Health	Material Resources	Combined Effect
Statutory and non-statutory designated ecological sites/local biodiversity	<ul style="list-style-type: none"> <li>- Exposure to increased pollution (NO<sub>x</sub>) within the River Coquet and Coquet Valley Woodlands SSSI from changes to traffic flow, mix and speed</li> <li>- Increased noise levels during operation would result in a disturbance impact on the local biodiversity</li> <li>- Loss of trees and vegetation and impact on the connectivity of wildlife corridors (such as severance of commuting corridors for bats)</li> <li>- Permanent alterations to watercourse habitats, including the demolition, realignment and construction of new culverts</li> </ul>	ü	ü	ü		ü				ü	Potential for local permanent combined adverse effects during operation. These effects would be on water quality and noise levels. Some impacts regarding the removal of vegetation would be temporary until such time where vegetation is established. The combined effect would be <b>minor adverse (not significant)</b> .
Community Facilities	<ul style="list-style-type: none"> <li>- Reduction in noise levels at Tritlington Church of England Aided First School</li> <li>- Adverse impact upon noise levels at Northumbrian Woodland Burials</li> <li>- Exposure to increased pollution (NO<sub>2</sub> and PM<sub>10</sub>) from changes to traffic flow, mix and speed</li> <li>- Change in nature of the view at Tritlington Church of England Aided First School due to introduction of Fenrother Junction</li> <li>- Enhanced amenity for Tritlington Church of England School due to reduction in traffic</li> </ul>	ü	ü	ü					ü		Potential for both beneficial and adverse local permanent combined adverse effects during operation. Visual effects would be mitigated once the proposed landscape planting has matured. The combined effect would be <b>minor adverse (not significant)</b> .

## UPDATED DMRB GUIDANCE

- 15.8.2. When considering the updated DMRB guidance, a number of environmental effects that arise from Part A would have an increased significance. The DMRB sensitivity test has considered the additional significant effects identified as part of the DMRB sensitivity test for Part A **Technical Chapter 5 to 13** (refer to **Appendix 4.5: DMRB Sensitivity Test, Volume 1** of this ES (**Application Document Reference: TR010041/APP/6.1**)) and whether these significant effects would change the outcome of the combined effects assessment. With the application of the updated DMRB guidance, the permanent loss of North Gate House would increase from a moderate adverse effect to large adverse effect. However, this would not change the combined effect on residents during the construction of Part A (refer to **Table 15-4**), which is **moderate to large adverse**.
- 15.8.3. In addition, the total number of significant beneficial noise effects has increased by 11 as a result of application of the updated DMRB guidance. There would also be the potential for one additional significant adverse effect at Northgate Farm if the noise barrier cannot be built at this location, however, it is likely that this property would be eligible for compensation under the Noise Insulation Regulations if this is the case. This would not change the combined effect on residents during the operation of Part A (refer to **Table 15-4**), which is already **major beneficial** and **major adverse** significance.

## 15.9 MITIGATION AND MONITORING

- 15.9.1. Following best practice and the mitigation measures outlined in the **Outline CEMP (Application Document Reference: TR010041/APP/7.3)**, no further likely combined significant residual effects have been identified above the level of significance reported for Part A alone. Therefore, no further mitigation or monitoring is required.

## REFERENCES

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**Ref. 15.1** - The Infrastructure Planning Regulations (Environmental Impact Assessment) Regulations 2017.

**Ref. 15.2** - Department for Transport (2014) National Policy Statement for National Networks: Presented to Parliament pursuant to Section 9 (8) and Section 5 (4) of the Planning Act. Department for Transport (2008) National Policy Statement for National Networks [online]. Available at: <https://www.gov.uk/government/publications/national-policy-statement-for-national-networks> (accessed October 2018).

**Ref. 15.3** - Highways Agency (2008) Design Manual for Roads and Bridges (DMRB). Volume 11 Section 2 Part 5. Published August 2008.

**Ref. 15.4** - The Planning Inspectorate (2015) Advice Note Seventeen. Cumulative Effects Assessment relevant to Nationally Significant Infrastructure Project [online]. Available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/12/Advice-note-17V4.pdf>

**Ref. 15.5** - Highways England (2019) Design Manual for Roads and Bridges, LA 104 Environmental Assessment and Monitoring. Available at: [https://standardsforhighways.co.uk/dmrp/search?discipline=SUSTAINABILITY\\_AND\\_ENVIRONMENT](https://standardsforhighways.co.uk/dmrp/search?discipline=SUSTAINABILITY_AND_ENVIRONMENT)

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