Integrated Sustainability Appraisal for the North East Transport Plan 2021-2035

ISA Report

Updated version
following consultation on the Transport Plan

Transport North East Strategy Unit

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Quality information

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Non-Technical Summary

What is an Integrated Sustainability Appraisal?

An Integrated Sustainability Appraisal (ISA) has been carried out to inform the preparation of the emerging North East Transport Plan 2021-2035 (NETP).

ISA is a process that transport authorities such as the North East Joint Transport Committee undertake to inform their transport plans. ISA fulfils the requirements for Strategic Environmental Assessment (SEA)[1] and discharges the duties for Equalities Impact Assessment (EqIA)[2] and Health Impact Assessment (HIA). It also enables issues relating to rural areas to be effectively considered through a rural proofing exercise. Transport authorities use ISA to assess transport plans against a set of sustainability objectives and the baseline developed in consultation with interested parties.

The purpose of the appraisal is to help identify (and so be in a better position to avoid) negative environmental and socio-economic effects. It is also designed to identify opportunities to improve the environmental quality of the North East and the prosperity and quality of life of the region's residents through the NETP. It also helps ensure that equalities and health considerations are considered appropriately through plan development and rural issues are addressed.

What is the North East Transport Plan?

The North East Transport Plan 2021-2035 (NETP) is the first comprehensive transport plan to be developed for the North East region, comprising the local authority areas of Durham, Gateshead, Newcastle Upon Tyne, North Tyneside, Northumberland, South Tyneside and Sunderland. It brings together the region's two local transport authorities (the North East Combined Authority and the North of Tyne Combined Authority) and meets the requirement under the Transport Act 2000 that they produce a single local transport plan via the North East Joint Transport Committee (JTC).

Prior to the NETP, ten-year Local Transport Plans (LTPs) were published in 2011. These did not cover the North East as a whole; instead they presented three separate transport plans focusing on each local transport authority area: Tyne and Wear, Durham and Northumberland.

The NETP, which will comprise an overarching strategy document accompanied by an Implementation Plan, will supersede the LTPs which are set to expire in 2021. It will set out the North East's transport priorities up to 2035 and will communicate opportunities for investment and improvements to the region's transport network. The NETP will form the basis for bids and requests for funding inward transport investment to the region from central government and other sources.

Purpose and content of this ISA Report

This ISA Report accompanies the latest version of the NETP[3] and is the third document to be produced as part of the ISA process. The first document was the ISA Scoping Report[4], which includes information about the North East region's environment and communities and the 'framework' against which the NETP has been assessed. The second document was the ISA Report to accompany the Consultation Draft of the NETP.[5] This accompanied the draft NETP for consultation between November 2020 and January 2021.

The current ISA Report updates the previous ISA Report through considering the updates made to the plan since consultation concluded.

[1] As set out by the Environmental Assessment of Plans and Programmes Regulations 2004
[2] As public sector organisations, the North Tyne Combined Authority and the North East Combined Authority have a duty under the Equality Act 2010 and the associated Public Sector Equality Duty (PSED) to ensure that the objectives and policy options within the NETP eliminate unlawful discrimination (direct and indirect), as well as advancing equality of opportunity.
[3] North East Joint Transport Committee (March 2021) North East Transport Plan 2021-2035
[4] AECOM (April 2020) North East Transport Plan: Integrated Sustainability Appraisal Scoping Report
[5] AECOM (November 2020) Integrated Sustainability Appraisal for the North East Transport Plan 2021-2035, ISA Report: Consultation Version

The purpose of the ISA Report is to:

- Identify, describe and evaluate the likely environmental and socio-economic effects of the NETP and alternatives; and
- Provide an opportunity for statutory consultees, interested parties and the public to offer views on the ISA process carried out to date.

The ISA Report contains:

- An outline of the contents and main objectives of the NETP and its relationship with other relevant policies, plans and programmes;
- Relevant aspects of the current state of the environment and key environmental issues;
- The ISA Framework of objectives and assessment questions against which the NETP has been assessed;
- An assessment of alternative approaches for the NETP;
- The likely significant environmental and socio-economic effects of the NETP;
- The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects as a result of the NETP; and
- The next steps for the NETP and accompanying ISA process.

The information presented in this ISA Report has been presented through ten ISA themes, as follows:

- Biodiversity
- Water and Soil Resources
- Historic Environment
- Landscape
- Air Quality and Noise
- Climate Change and Flood Risk
- Population
- Human Health
- Equalities
- Rurality

Assessment of alternative approaches for the NETP

Assessing options for six different areas of the North East

A central element of the ISA process is the appraisal of 'reasonable alternatives' for the NETP, which should be undertaken in time to inform development of the draft plan. The appraisal of reasonable alternatives is a key requirement of the SEA Regulations.

To address this requirement, a number of alternative approaches have been considered in relation to the delivery of transport infrastructure in the North East. The assessment of reasonable alternatives has informed the preferred strategy for the NETP.

A central role of appraising reasonable alternatives is to help identify the relative sustainability merits of different approaches to delivering enhanced transport provision in the region. In recognition of the diversity of the region, the approach to the appraisal of reasonable alternatives subdivides the North East region into a number of distinct geographical areas.

The six areas are as follows:

- **Tyne and Wear:** This area covers the main Tyne and Wear conurbation, encompassing much of the local authority areas of Newcastle city, North Tyneside, South Tyneside, Sunderland and Gateshead.
- **City of Durham:** This area covers the city of Durham and its surrounding area.
- **Post-industrial communities:** This area incorporates the former coal-mining and steel working areas in the region. This includes the area around Consett, Stanley and Catchgate; the area around Peterlee, Easington, Shotton Colliery and Blackhall Colliery; a corridor between Peterlee and Ferryhill; a corridor along the A182 encompassing South Hetton, Hetton-le-Hole, and Houghton-le-Spring; and the area around Shildon.
- **Market towns:** This area incorporates the larger market towns in the region, including Bishop Auckland, Barnard Castle, Alnwick, Berwick-upon-Tweed, Morpeth and Hexham.
- **Coastal areas**: This area includes coastal areas located to the south and north of the main Tyne and Wear conurbation. It incorporates: the coastal areas between South Shields and Roker, including Marsden, Whitburn and Seaburn; Hendon to Seaham; and Blyth to Amble.
- **Rural areas:** This covers the rural areas of the region, including the rural parts of Northumberland and County Durham. It includes the parts of the region within the Northumberland National Park and the two AONBs (Northumberland Coast AONB and North Pennines AONB).

For each of these areas, a number of options have been identified and subsequently appraised. For all areas a 'do minimum' option is described which would be applied in all circumstances, together with one or more options for additional levels of intervention over and above the do minimum. These options are designed to reflect the key issues facing that area, and the different approaches that can be taken to intervention/investment in transport infrastructure and management.

A summary of the sustainability performance of the options against the ISA themes, including rankings, is presented below. Full appraisal findings are presented in **Chapter 3** of the main body of the ISA Report.

Table NTS1: Rankings of options for Tyne and Wear

Option TW1: Do minimum
Option TW2: Optimise use of existing infrastructure
Option TW3: Initiate more significant interventions, including with regards to the rail, Metro and road network

	Rank of preference		
ISA theme	**TW1**	**TW2**	**TW3**
Biodiversity	**1**	**2**	**3**
Water and Soil Resources	**2**	**1**	**3**
Historic Environment	**2**	**1**	**3**
Landscape	**2**	**1**	**3**
Air Quality and Noise	**2**	**1**	**3**
Climate Change and Flood Risk	**2**	**1**	**2**
Population	**3**	**2**	**1**
Human Health	**3**	**1**	**2**
Equalities	**3**	**2**	**1**
Rurality	**3**	**2**	**1**

Table NTS2: Rankings of options for the city of Durham

Option D1: Do minimum.
Option D2: Make better use of existing transport infrastructure in the city.

	Rank of preference	
ISA theme	**D1**	**D2**
Biodiversity	**1**	**2**
Water and Soil Resources	**=**	**=**
Historic Environment	**2**	**1**
Landscape	**2**	**1**
Air Quality and Noise	**2**	**1**
Climate Change and Flood Risk	**2**	**1**
Population	**2**	**1**
Human Health	**2**	**1**
Equalities	**2**	**1**
Rurality	**2**	**1**

Table NTS3: Rankings of options for post-industrial communities

Option PI1: Do minimum.
Option PI2: Deliver road and rail infrastructure enhancements to support post-industrial communities' connectivity

	Rank of preference	
ISA theme	**PI1**	**PI2**
Biodiversity	**1**	**2**
Water and Soil Resources	**1**	**2**
Historic Environment	**2**	**1**
Landscape	**1**	**2**
Air Quality and Noise	**1**	**2**
Climate Change and Flood Risk	**1**	**2**
Population	**2**	**1**
Human Health	**2**	**1**
Equalities	**2**	**1**
Rurality	**2**	**1**

Table NTS4: Rankings of options relating to coastal areas

Option C1: Do minimum.
Option C2: Support the regeneration of coastal settlements through targeted interventions

	Rank of preference	
ISA theme	**C1**	**C2**
Biodiversity	**1**	**2**
Water and Soil Resources	**=**	**=**
Historic Environment	**2**	**1**
Landscape	**1**	**2**
Air Quality and Noise	**2**	**1**
Climate Change and Flood Risk	**2**	**1**
Population	**2**	**1**
Human Health	**2**	**1**
Equalities	**2**	**1**
Rurality	**N/A**	**N/A**

Table NTS5: Rankings of options relating to market towns

Option MT1: Do minimum.
Option MT2: Optimise the use of existing transport infrastructure

	Rank of preference	
ISA theme	**MT1**	**MT2**
Biodiversity	**1**	**2**
Water and Soil Resources	**1**	**2**
Historic Environment	**2**	**1**
Landscape	**1**	**2**
Air Quality and Noise	**2**	**1**
Climate Change and Flood Risk	**2**	**1**
Population	**2**	**1**
Human Health	**2**	**1**
Equalities	**2**	**1**
Rurality	**2**	**1**

Table NTS6: Rankings of options for rural areas

Option R1: Do minimum
Option R2: Optimise use of existing infrastructure and take a technological approach to transport challenges in rural areas
Option R3: Initiate more significant interventions, including with regards to multimodal interchange

	Rank of preference		
ISA theme	**R1**	**R2**	**R3**
Biodiversity	**1**	**2**	**3**
Water and Soil Resources	**1**	**1**	**3**
Historic Environment	**2**	**1**	**3**
Landscape	**2**	**1**	**3**
Air Quality and Noise	**3**	**1**	**2**
Climate Change and Flood Risk	**3**	**1**	**2**
Population	**3**	**1**	**1**
Human Health	**3**	**1**	**2**
Equalities	**2**	**1**	**3**
Rurality	**3**	**2**	**1**

Assessment of alternative approaches: overall conclusions

The assessment of the options considered as reasonable alternatives for the six areas has shown that in many cases that the 'do minimum' option performs less favourably against the ISA themes. This is given these options will do less to deliver enhancements which will help address some of the key accessibility and social inclusion issues experienced in different parts of the region, or support economic vitality. Whilst in some cases the do minimum options may reduce the potential for direct adverse environmental effects, they also preclude opportunities to deliver key environmental enhancements in the region, including relating to air and noise quality, the quality of the townscape, landscape and the public realm, or relating to the rejuvenation of features and areas of historic environment interest. In addition, the do minimum options limit opportunities for utilising transport infrastructure enhancements to deliver regional, sub-regional or local environmental net gain or for limiting greenhouse gas emissions.

The options which focus to a greater degree on 'soft' measures and demand management measures are less likely than the options supporting physical transport capacity enhancements to lead to direct adverse impacts on key environmental and socio-economic receptors in the region. These options also have the potential to deliver significant environmental enhancements and quality of life benefits through the encouragement of modal shift, a reduction in the need to travel, a limitation in traffic flows and improved traffic management.

The options which propose significant transport capacity enhancements have the potential to have a range of direct impacts on key receptors, including from landtake and impacts on the quality of the public realm. Physical transport capacity enhancements also have the potential to stimulate induced demand, with the potential to lead to direct and indirect impacts on features, areas and networks of environmental sensitivity, air and noise quality and greenhouse gas emissions.

The significance of effects from these interventions will though depend on the design, layout and scale of the schemes, and the mitigation and avoidance measures proposed. It is also recognised that the implementation of appropriate measures to 'lock in' the benefits of physical transport capacity enhancements is possible with the implementation of an appropriate package of complementary 'soft' transport and demand management measures. It is also recognised that such capacity enhancements have the potential to offer environmental benefits and deliver net gain, if designed appropriately.

Appraisal of the current version of the NETP

Chapter 4 of the ISA Report presents appraisal findings in relation to the current version of the NETP.

The appraisal is presented through an assessment of the seven work programmes currently put forward through the NETP. These work programmes are as follows:

1) Helping people to make the right travel choice
2) Upgrading North East Active Travel Infrastructure
3) Bus, ferry and first and last mile
4) Local rail and metro
5) Road infrastructure
6) Maintaining and renewing our transport network
7) National and international connectivity

This is accompanied by an assessment of the 'in-combination' effects of the different work programmes together. In response to the findings of these assessments, a series of proposed mitigation and enhancement measures are also proposed. These are designed to offset the potential significant adverse effects identified and maximise the opportunities for enhancements which are potentially available through the implementation of the NETP.

A summary of the key significant effects identified, and proposed mitigation and enhancement measures, is presented below by ISA theme.[6]

Table NTS7: Summary of likely significant effects and recommendations / proposed mitigation

Biodiversity

Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
Impacts on biodiversity from land take, habitat loss and fragmentation and disturbance from road, rail and public transport schemes proposed through the NETP.	Direct, short, medium and long-term, permanent and negative.	Potential impacts on habitats and species from landtake, loss of vegetation and trees and light pollution should be addressed through appropriate avoidance and mitigation measures. Opportunities to enhance green infrastructure networks along routes should be sought, supporting a premise of environmental net gain and delivering multifunctional benefits. This should be informed at the project level by a robust Environmental Impact Assessment[7] process.
Potential impacts on European designated biodiversity sites from new transport infrastructure schemes.	Direct and indirect, short, medium and long-term, permanent and negative.	Apply the recommendations of the Habitats Regulations Assessment process undertaken alongside the NETP.
Impacts on biodiversity from increased noise, light and air pollution linked to traffic increases resulting from the release of induced demand from new road schemes.	Indirect, medium and long-term, permanent and negative.	Ensure benefits of road improvements are 'locked in' through provision of complementary public transport and walking and cycling measures which limit road traffic increases.

[6] Further mitigation measures are proposed for specific work programmes in the main body of the ISA Report.
[7] Environmental Impact Assessment (EIA) is a process of evaluating the likely environmental impacts of a proposed project or development. It is undertaken in association with the provisions of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017.

Impacts on internationally and nationally designated sites present on the coast from enhancements to the resilience of coastal transport infrastructure.	Direct, short, medium and long-term, permanent and negative.	Biodiversity enhancements should be facilitated alongside network improvements. Key habitats should be retained and the integrity of ecological linkages should be secured. Programmes of works should be developed to help ensure an increased proportion of the SSSIs and other important designated sites present locally are brought into favourable condition.
Impacts of new lighting and signage on nocturnal species.	Direct short and medium term effects, temporary and negative.	New lighting and signage should be designed to minimise impacts on nocturnal species. This should be informed by appropriate ecology surveys.

Water and Soil Resources

Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
Improved management of surface water run off through enhanced maintenance of the road network and the delivery of sustainable drainage schemes alongside new transport infrastructure.	Direct, short, medium and long term, permanent and positive.	New infrastructure should be supported by appropriate drainage systems where necessary, to reduce surface water run-off and maintain or improve attenuation rates. Opportunities to improve strategic sustainable drainage solutions should be sought where possible.
Improvements to soil quality from improved management of surface water run off through enhanced maintenance of the road network and the delivery of sustainable drainage schemes alongside new transport infrastructure.	Direct, medium and long term, permanent and positive.	New infrastructure should be supported by appropriate drainage systems where necessary, to reduce surface water run-off and maintain or improve attenuation rates. Opportunities to improve strategic sustainable drainage solutions should be sought where possible.

Historic Environment

Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
The delivery of new transport infrastructure schemes has the potential to lead to significant impacts on the key assets (including designated and non-designated features and areas) of historic environment interest located in the vicinity of the key routes and areas targeted for interventions.	Direct and indirect, short, medium and long term, permanent and negative.	Transport infrastructure schemes should be accompanied by a comprehensive package of avoidance and mitigation measures, as well as, where possible, enhancement measures. This should be informed at the project level by a robust EIA process. New infrastructure should be designed to facilitate enhancements to the fabric and setting of the historic environment. It should also seek to maximise opportunities for enhancing access to and understanding of the historic environment.
Enhancement to the fabric and setting of the historic environment through improved maintenance regimes.	Direct, short, medium and long term, permanent and positive.	Maintenance regimes should seek to facilitate enhancements to the fabric and setting of designated and undesignated features and areas of historic environment interest.
Enhanced accessibility to, and additional opportunities for enjoyment of the North East's heritage resource.	Direct, short, medium and long term, permanent and positive.	None proposed.

Landscape		
Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
The delivery of new transport infrastructure schemes (in particular, road schemes) has the potential to lead to significant impacts on landscape and townscape character.	Direct and indirect, short, medium and long term, permanent and negative.	Transport infrastructure schemes should be accompanied by a comprehensive package of avoidance and mitigation measures, as well, where possible, enhancement measures. This should be informed at the project level by a robust EIA process. New infrastructure should be designed to limit impacts on landscape and townscape character, and facilitate enhancements.
Enhancement to landscape and townscape character through improved maintenance regimes.	Direct, short, medium and long term, permanent and positive.	Maintenance regimes should seek to facilitate enhancements to the quality of the public realm and local distinctiveness.
Enhanced accessibility to, and additional opportunities for enjoyment of the North East's landscape/townscape resource, including associated with valued landscapes and townscapes.	Direct, short, medium and long term, permanent and positive.	None proposed.
Air Quality and Noise		
Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
Air quality enhancements at key 'pinchpoints' on the network which have existing air quality issues.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Impacts from road schemes on air and noise quality over a wider area, including through the stimulation of induced demand.	Direct and indirect, medium and long term, permanent and negative.	Initiation of complementary measures alongside road capacity enhancements to limit increases in traffic flows resulting from a release of induced demand.
Support for electric vehicles and cleaner fuels, with benefits for air and noise quality.	Indirect, medium and long term, permanent and positive.	None proposed.
Climate Change and Flood Risk		
Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
Limitation of greenhouse gas emissions from transport, including through the stimulation of modal shift from the private car towards public transport and active travel, and enhanced connectivity and smart travel.	Direct and indirect, medium and long term, permanent and positive.	None proposed.
Promotion of electric vehicle use (including through the delivery of a Zero Emissions Vehicle Policy and Strategy), supporting the decarbonisation of the transport network.	Direct and indirect, medium and long term, permanent and positive.	None proposed.

Impacts on greenhouse gas emissions through the release of induced demand from new road schemes.	Direct and indirect, medium and long term, permanent and negative.	Initiation of complementary measures alongside road capacity enhancements to limit increases in traffic flows resulting from a release of induced demand. Identify, assess and integrate measures to further reduce carbon through on or off-site offsetting or sequestration.
Increased resilience of the transport network to the likely effects of climate change.	Direct, medium and long term, permanent and positive.	None proposed.

Population

Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
Improved accessibility to services, facilities and employment opportunities.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Support for a reduction in deprivation from accessibility, congestion and severance issues, and elements relating to social exclusion.	Direct and indirect, medium and long term, permanent and positive.	None proposed.
Enhanced economic opportunities through improved connections with the strategic and local transport network and key employment and growth areas.	Indirect, medium and long term, permanent and positive.	None proposed.
Support for the visitor economy from enhancements in transport infrastructure.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Enhancements to the quality of the neighbourhoods through a reduction of the impact of traffic and congestion.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Enhanced maintenance of the road network, supporting its resilience, with associated benefits for the quality of life of residents.	Direct, medium and long term, permanent and positive.	None proposed.

Human Health

Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
Improved accessibility to health services and leisure and recreational facilities.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Facilitation of healthier lifestyles through the encouragement of active modes of travel.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.

Support for a reduction in deprivation, which is one of the key contributors to poor health and wellbeing in the region.	Direct and indirect, medium and long term, permanent and positive.	None proposed.
Enhancements to the quality of the neighbourhoods through a reduction of the impact of traffic and congestion.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Improvements to road safety.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Benefits for health and wellbeing from air and noise quality enhancements at key 'pinchpoints' on the network.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Impacts on health and wellbeing from road schemes linked to increased traffic flows, including from the stimulation of induced demand over a wider area.	Direct and indirect, medium and long term, permanent and negative.	Incorporate measures within scheme design to improve mobility by walking and cycling, limit severance and initiate green infrastructure enhancements.

Equalities

Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
Improved accessibility for groups with protected characteristics via a range of transport modes.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Reduction of impacts from the transport network on those groups with protected characteristics, including from severance, and contributions to a poor quality public realm.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Improvements to road safety.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Impacts on groups with protected characteristics from effects of road schemes on the quality of the public realm and increased severance.	Direct and indirect, medium and long term, permanent and negative.	Incorporate measures within scheme design to improve mobility, limit severance and initiate green infrastructure enhancements.

Rurality

Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
Enhanced accessibility to the services, facilities and amenities located in the urban areas of the North East from rural areas by all modes of transport.	Direct and indirect, medium and long term, permanent and positive.	None proposed.

Improvements to rural areas' vitality through enhanced connections to key services, facilities and economic and employment opportunities.	Indirect, medium and long term, permanent and positive.	None proposed.
Support for the visitor economy from enhancements in transport infrastructure.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Enhanced maintenance of the road network in rural areas, supporting its resilience.	Direct, medium and long term, permanent and positive.	None proposed.
Limitation of the impacts of transport movements associated with timber and quarrying on rural areas.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.

Overall summary of effects

As highlighted by the tables above, the NETP work programmes have the potential to lead to a range of significant positive environmental and socio-economic effects for the North East. These include relating to: enhanced accessibility; improvements to air and noise quality; enhancements to the quality of the public realm; improvements to road safety; a reduction of severance from the transport network; positive effects on deprivation; improvements to neighbourhood vitality; support for the needs of those living in rural areas; and contributions to the region's economic vitality.

The appraisal has also highlighted that the NETP work programmes have the potential to lead to a number of significant negative effects, if not appropriately avoided or mitigated. These include direct physical impacts on key environmental and socio-economic receptors from new and improved transport infrastructure, and indirect effects relating to the potential for transport infrastructure enhancements to generate increased demand for travel in the region. The significance of these potential negative effects however depend on the extent to which appropriate packages of avoidance and mitigation measures are initiated through the implementation of these programmes.

In response to this, the ISA Report has highlighted a series of avoidance and mitigation measures which could potentially be delivered alongside the work programmes to limit potential negative effects and facilitate enhancements.

Next steps

At adoption of the NETP, an ISA Adoption Statement be published.

This will present:

- The reasons for choosing the preferred measures for the NETP as adopted in the light of other reasonable alternatives dealt with;
- How environmental and socio-economic considerations have been integrated into the NETP;
- How consultation responses have been taken into account; and
- Measures that are to be taken to monitor the significant environmental effects of the NETP.

1. Introduction

Background

1.1 AECOM has been commissioned to undertake an independent Integrated Sustainability Appraisal (ISA) in support of the emerging North East Transport Plan 2021-2035 (NETP).

1.2 The ISA undertakes an integrated assessment that incorporates a Strategic Environmental Assessment (SEA), Equality Impact Assessment (EqIA), Health Impact Assessment (HIA), and Rural Proofing process.[8] This integrated assessment will identify the potential impacts of the NETP on the environment, community and vitality of the North East region, with a view to promoting a more sustainable plan making process.

1.3 This ISA Report accompanies the latest version of the NETP, which was updated following consultation on the draft NETP undertaken between November 2020 and January 2021.

1.4 The NETP highlights the key transport challenges and opportunities in the North East region along with the transport infrastructure that needs to be delivered within the short, medium and longer term. This is with a view to connecting people to good employment opportunities, generating economic growth, whilst enabling the region and its people to move to greener more sustainable ways of travel.

The North East Transport Plan 2021-2035

Overview of the NETP

1.5 The North East Transport Plan 2021-2035 (NETP) is the first comprehensive transport plan to be developed for the North East region, comprising the local authority areas of Durham, Gateshead, Newcastle Upon Tyne, North Tyneside, Northumberland, South Tyneside and Sunderland. It brings together the region's two local transport authorities (the North East Combined Authority and the North of Tyne Combined Authority) and meets the requirement under the Transport Act 2000 that they produce a single local transport plan via the North East Joint Transport Committee (JTC).

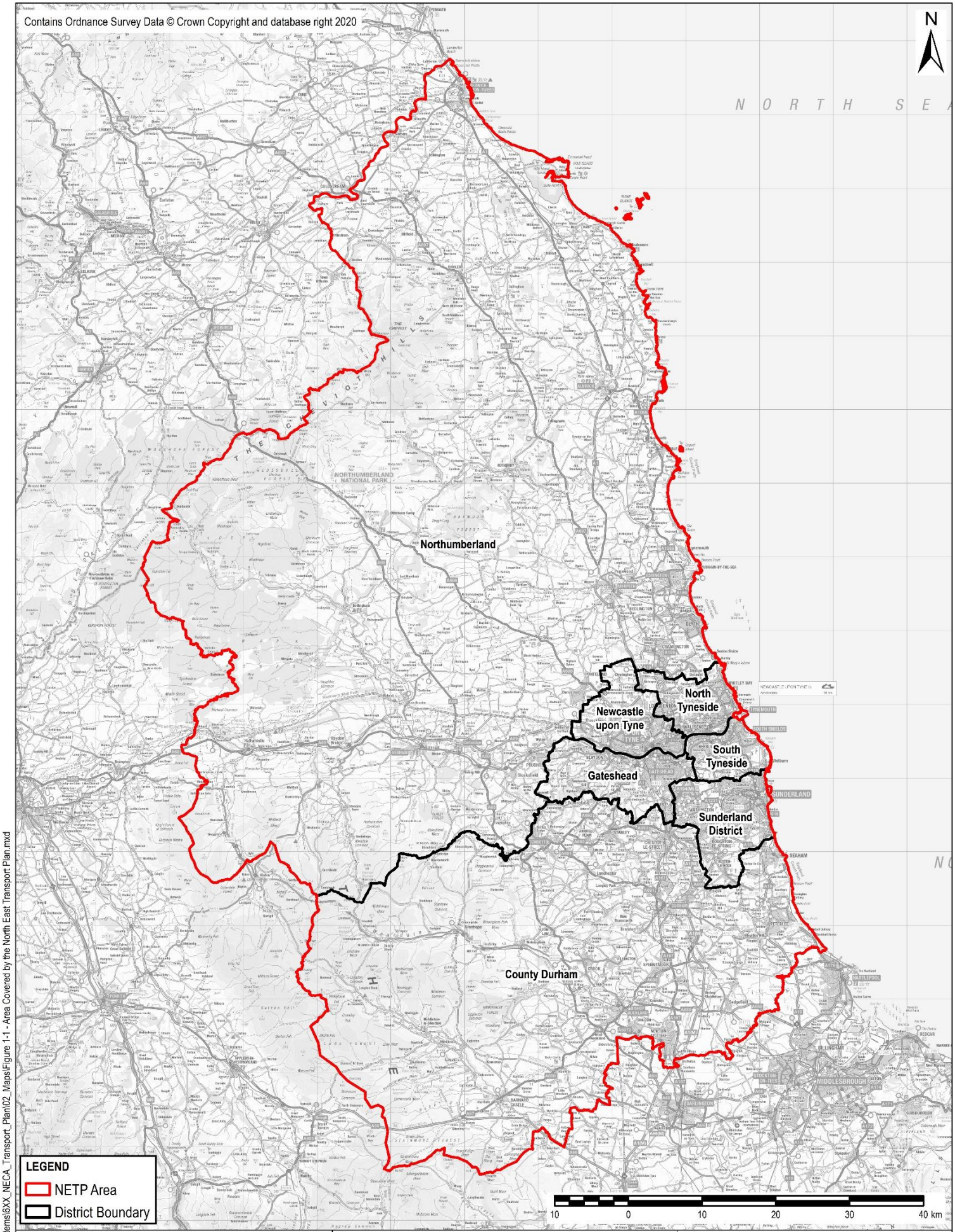
1.6 Prior to the NETP, ten-year Local Transport Plans (LTPs) were published in 2011. These did not cover the North East as a whole; instead they presented three separate transport plans focusing on Tyne and Wear, Durham and Northumberland.

1.7 Given the complexities of travel patterns in the North East, which cross administrative boundaries, the decision was made to prepare a joint transport plan for the whole region. This has been taken forward through the governance of the North East Joint Transport Committee. which represents each of the seven local authorities.

1.8 The NETP, which will comprise an overarching strategy document accompanied by an Implementation Plan, will supersede the LTPs which are set to expire in 2021. It will set out the North East's transport priorities up to 2035 and will communicate opportunities for investment and improvements to the region's transport network. The NETP will form the basis for bids and requests for funding inward transport investment to the region from central government and other sources.

1.9 This NETP builds on the '*Connected North East – Our blueprint*' document published in October 2020, which set out how a connected North East can increase the prosperity, quality of life and health of the region. The aim of the blueprint is to help create and sustain 100,000 more and better jobs in a growing and decarbonised economy, where social and health inequalities are greatly reduced. The NETP is seen as fundamental to achieving these wider regional objectives.

[8] A habitats regulations assessment is also being undertaken to support the development of the NETP; this has been reported on separately to the ISA.



File Name:\\5004 - Information Systems\6XX_NECA_Transport_Plan\02_Maps\Figure 1-1 - Area Covered by the North East Transport Plan.mxd

Project Title/Drawing Title

ISA FOR THE NE TRANSPORT PLAN

AREA COVERED BY THE NE TRANSPORT PLAN

Client: TRANSPORT NORTH EAST STRATEGY UNIT

Drawn	Checked	Approved
CN	TD	NCB
Date	Scale @ A4	Purpose of Issue
16/03/2020	1:650,190	DRAFT
Drawing Number		Rev
FIGURE 1.1		01

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1.10 The NETP is also closely aligned and interfaces with the North East Local Enterprise Partnership (LEP) Strategic Economic Plan and Local Industrial Strategy, central government strategy, as well as all relevant policies and Plans of Transport for the North, the seven North East local authorities and Nexus.

1.11 Key information relating to the NETP is presented in **Table 1.1** below.

Table 1.1: Key facts relating to the North East Transport Plan

Responsible authorities	The North Tyne Combined Authority and the North East Combined Authority. The North Tyne Combined Authority is a legal body that brings together Newcastle City Council, North Tyneside Council, Northumberland County Council under an elected Mayor. The North East Combined Authority (NECA) is a legal body that brings together Durham County Council, Gateshead Council, South Tyneside Council and Sunderland City Council. The plan is being delivered through the North East Joint Transport Committee.
Title of plan	North East Transport Plan 2021-2035
Subject	Transport plan
Purpose	The North East Transport Plan will provide a strategic framework for future transport planning across the seven local authority areas in the North East.
Timescale	To 2035
Area covered by the plan	The plan area covers the administrative area of Newcastle, North Tyneside, Northumberland, County Durham, Gateshead, South Tyneside and Sunderland (see **Figure 1.1**).
Summary of content	The North East Transport Plan will set strategic transport planning policy for the region in the period 2021-2035. It will set out which transport interventions the area intends to deliver during the plan period, and how these schemes will be funded. It will comprise an overarching strategy document, accompanied by an Implementation Plan. The vision and objectives for the NETP are presented in **Figure 1.2**.
Contact point	Andrew Dorrian, Specialist Transport Planner, Transport North East Strategy Unit Andrew.Dorrian@transportnortheast.gov.uk

Vision and objectives for the NETP

1.12 The vision and objectives for the NETP have been endorsed by the leaders of the seven local authorities in the North East as well as the North of Tyne Combined Authority Mayor. They set out the key principles as to what should be achieved by 2035.

1.13 An overview of the vision and objectives for the NETP is presented in **Figure 1.2** below.

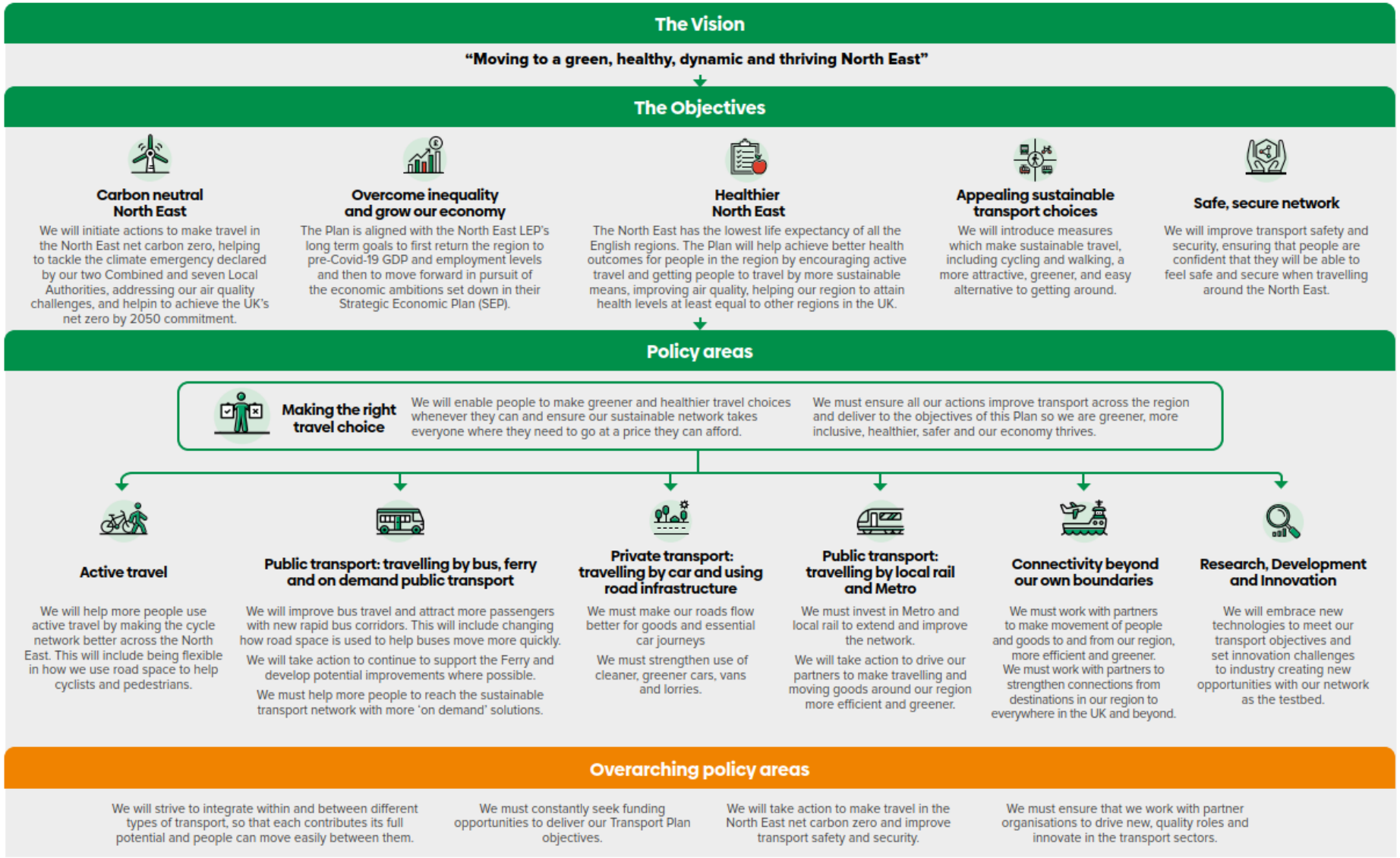


Figure 1.2: Vision and objectives for the NETP

Integrated Sustainability Appraisal explained

1.14 Integrated Sustainability Appraisal (ISA) fulfils the requirements for Strategic Environmental Assessment (SEA) and discharges the duties for Equality Impact Assessment (EqIA) and Health Impact Assessment (HIA). It also incorporates Rural Proofing.

1.15 AECOM has also been commissioned to undertake a Habitats Regulations Assessment (HRA) of the NETP[9]. The findings of the HRA have been reported separately from, but will inform, the ISA.

1.16 An overview of SEA, EqIA, HIA and Rural Proofing is presented below.

Strategic Environmental Assessment (SEA)

1.17 SEA is undertaken to address the procedures prescribed by the Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations) which transpose into national law the EU Strategic Environmental Assessment (SEA) Directive[10]. It also widens the scope of the assessment from focusing on environmental issues to further consider social and economic issues. The SEA Regulations only formally apply to plans and programmes for which there is a statutory requirement; transport plans fall within this definition.

1.18 Two key procedural requirements of the SEA Directive are that:

- When deciding on 'the scope and level of detail of the information' which must be included in the Environmental Report there is a consultation with nationally designated authorities concerned with environmental issues; and
- A report (the 'Environmental Report') is published for consultation alongside the draft plan for consultation that presents an assessment of the draft plan (i.e. discusses 'likely significant effects' that would result from plan implementation) and reasonable alternatives.

Equality Impact Assessment (EqIA)

1.19 As public sector organisations, the North Tyne Combined Authority and the North East Combined Authority have a duty under the Equality Act 2010[11] and the associated Public Sector Equality Duty (PSED) to ensure that the objectives and policy options within the NETP eliminate unlawful discrimination (direct and indirect), as well as advancing equality of opportunity and fostering good relations between those with a protected characteristics[12] and all others. An Equality Impact Assessment (EqIA) is often used by public sector organisations to demonstrate how this duty has been met.

1.20 The Equality Act 2010 legally protects people from discrimination both in the workplace and in wider society. It replaces previous anti-discrimination laws which include the Sex Discrimination Act 1975, Race Relations Act 1976 and the Disability Discrimination Act 1995. The Act ensures that individuals with certain 'protected characteristics' are not indirectly or directly discriminated against. The protected characteristics include:

- **Age:** this refers to persons defined by either a particular age or a range of ages;
- **Disability:** a disabled person is defined as someone who has a physical or mental impairment that has a substantial and long-term adverse effect on his or her ability to carry out normal day-to-day activities;
- **Gender reassignment:** this refers to people who are proposing to undergo, are undergoing, or have undergone a process for the purpose of reassigning their gender identity;

[9] The requirement for HRA is set out within Article 6 of the EC Habitats Directive 1992, and interpreted into British law by the Conservation of Habitats and Species Regulations 2010
[10] Directive 2001/42/EC
[11] Equality Act 2010 [online] available at: http://www.legislation.gov.uk/ukpga/2010/15/contents
[12] Protected characteristics under the Equality Act 2010 include age, sex, marital status, disability, gender reassignment, ethnicity, religion, pregnancy and maternity, sexual orientation and deprived/disadvantaged groups.

- **Marriage and civil partnership:** marriage can be between a man and a woman or between two people of the same sex. Same-sex couples can also have a civil partnership. Civil partners must not be treated less favourably than married couples;
- **Pregnancy and maternity:** pregnancy is the condition of being pregnant or expecting a baby. Maternity refers to the period after the birth. In the non-work context, protection against maternity discrimination is for 26 weeks after giving birth;
- **Race:** the Equality Act 2010 defines race as encompassing colour, nationality (including citizenship) and ethnic or national origins;
- **Religion or belief:** religion means any religion a person follows. Belief means any religious or philosophical belief, and includes those people who have no formal religion or belief;
- **Gender:** this refers to a man or to a woman or a group of people of the same sex, while gender refers to the wider social roles and relationships that structure men's and women's, boys' and girls' lives;
- **Sexual orientation:** a person's sexual orientation relates to their emotional, physical and/or sexual attraction and the expression of that attraction.
- **Socio-economic status:** a person's socio-economic status referring to combined economic and sociological measure of a person's work experience and economic and social position in relation to others, based on income, education, and occupation.

1.21 EqIA aims to assess how a particular policy or service will affect different groups of people with these protected characteristics. The EqIA process identifies alternative approaches which may mitigate adverse impacts; and aims to enhance equality of opportunity and manage relations between different groups of people.

Health Impact Assessment (HIA)

1.22 There are numerous links between planning and health highlighted throughout national policy. For example Paragraph 69 of the National Planning Policy Framework states that the planning system can play an important role in facilitating social interaction and creating healthy, inclusive communities and the National Planning Practice Guidance (NPPG) states that Local Authorities should ensure that health and wellbeing, and health infrastructure are considered within their decision making processes.[13]

1.23 In this context, Health Impact Assessment (HIA) is a process which seeks to ensure that the effect of proposals on both health and health inequalities are considered and responded to during the plan's development process. This is with a view to informing decision-making.

Rural Proofing

1.24 In addition to these three assessments this appraisal will also 'rural proof' the NETP. Rural proofing recognises that rural areas have some significant barriers to economic growth and quality of life improvements which urban areas do not have. These barriers may, for example, include a lack of access to goods and services, more limited public transport services, or fuel poverty exacerbated by more costly fuels. This is particularly relevant for the North East as there are extensive rural areas, mainly in Durham and Northumberland.

1.25 Government guidance states that the aim of rural proofing is to: "*Make sure that the needs and interests of rural people, communities and businesses in England are properly considered*"[14]. This ensures that the action required to ensure fair outcomes from policy/plan delivery across rural and urban areas is determined and addressed in the plan/policy making process.

13 National Planning Practice Guidance. Paragraph: 001 Reference ID: 53-001-20140306 [online] available at: https://www.gov.uk/guidance/health-and-wellbeing

14 Department for environment and rural affairs (Defra) (2013) Rural Proofing Guidance [online] available at: https://www.gov.uk/guidance/rural-proofing-guidance [accessed 27/02/20]

Habitats Regulations Assessment

1.26 A Habitats Regulations Assessment (HRA) will be undertaken parallel to this work. The primary aim of HRA is to ensure the protection of sites that host habitats and species of European importance. This process is set out in Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (the 'Habitats Directive') and the Conservation of Habitats and Species Regulations 2010 (the 'Habitats Regulations).

This ISA Report

1.27 The SEA Regulations require that a report is published for consultation alongside the draft plan that 'identifies, describes and evaluates' the likely significant effects of implementing 'the plan, and reasonable alternatives'. The report must then be taken into account, alongside consultation responses, when finalising the plan.

1.28 In line with the SEA Regulations this report - which for the current ISA comprises the 'ISA Report' – must essentially answer four questions:

- What is the scope of the ISA?
- What has Plan-making / ISA involved up to this point?
    - Preparation of the draft plan must have been informed by at least one earlier plan-making / ISA iteration. 'Reasonable alternatives' must have been assessed.
- What are the assessment findings at this current stage?
    - i.e. in relation to the draft plan.
- What happens next?

1.29 These questions are derived from Schedule 2 of the SEA Regulations, which present 'the information to be provided within the report. **Table 1.2** presents the linkages between the regulatory requirements and the four ISA questions.

Table 1.2: Questions to be answered by the ISA Report in order to meet Regulatory[15] requirements

ISA Report question		In line with Schedule II the report must include…
What is the scope of the ISA?	What is the plan seeking to achieve?	An outline of the contents, main objectives of the plan and relationship with other relevant plans and programmes
	What is the sustainability 'context' and baseline?	The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan The environmental characteristics of areas likely to be significantly affected Any existing environmental **problems** which are relevant to the plan including those relating to any areas of a particular environmental importance
	What are the key issues and objectives that should be a focus?	Key **problems** / **issues** and **objectives** that should be a focus of (i.e. provide a 'framework' for) assessment
What has plan-making / ISA involved up to this point?		Outline reasons for selecting the **alternatives** dealt with (and thus an explanation of the 'reasonableness' of the approach) The likely significant effects associated with **alternatives** Outline reasons for selecting the preferred approach in-light of **alternatives** assessment / a description of how environmental objectives and considerations are reflected in the draft plan.
What are the assessment findings at this current stage?		The likely significant effects associated with **the draft plan** The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects of implementing **the draft plan**
What happens next?		The next steps for plan making / ISA process.

N.B. The right-hand column of Table 1.2 does not quote directly from Schedule II of the Regulations. Rather, it reflects a degree of interpretation.

1.30 In November 2020 the Consultation Draft of the NETP was released for consultation[16]. This was accompanied by a full ISA Report[17], which addressed the above requirements.

1.31 The current ISA Report is an updated version of this earlier ISA Report, and provides sustainability context on the latest version of the NETP.

[15] Environmental Assessment of Plans and Programmes Regulations 2004
[16] Transport North East (November 2020) North East Transport Plan 2021-2035 Consultation Draft
[17] AECOM (November 2020) Integrated Sustainability Appraisal for the North East Transport Plan 2021-2035, ISA Report: Consultation Version

2. What is the scope of the ISA?

ISA Scoping Report

2.1 The SEA Regulations require that '*When deciding on the scope and level of detail of the information that must be included in the Environmental Report, the responsible authority shall consult the consultation bodies*'. In England, the consultation bodies are Natural England, the Environment Agency and Historic England.[18] As such, these authorities were consulted on an ISA Scoping Report in April 2020.

2.2 The information in the Scoping Report was presented by the following ISA themes:

- Biodiversity
- Water and soil resources
- Historic environment
- Landscape
- Air quality and noise
- Climate change and flood risk
- Population
- Human health
- Equalities
- Rural Proofing

2.3 The selected ISA themes incorporate the 'SEA topics' suggested by Annex I (f) of the SEA Directive[19]. These were refined to reflect a broad understanding of the anticipated scope of NETP effects. They also incorporate the aspects considered through the EqIA and Rural Proofing elements of the ISA.

2.4 Comments received on the Scoping Report, and how they have been considered and addressed through the ongoing development of the ISA process, are presented in **Table 2.1**.

[18] In line with Article 6(3).of the SEA Directive, these consultation bodies were selected because 'by reason of their specific environmental responsibilities,[they] are likely to be concerned by the environmental effects of implementing plans and programmes.'

[19] The SEA Directive is 'of a procedural nature' (para 9 of the Directive preamble) and does not set out to prescribe particular issues that should and should not be a focus, beyond requiring a focus on 'the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors' [our emphasis]

Table 2.1 Consultation responses received on the ISA Scoping Report

Consultation response	How the response was considered and addressed
Natural England *Response received via email on 2nd June 2020 from Michael Miller: Lead Sustainable Development Advisor, Northumbria Team*	
Natural England welcomes the comprehensive approach to the Scoping report and notes specific attention to: • Designated and Protected sites, including comprehensive identification of the same. • Biodiversity Strategy and policy Context • Water and Soils Resource Policy context • Landscape Policy Context • Air Quality and Noise Policy Context • Habitats and Species protection, conservation and enhancement.	Comment noted.
We welcome the detailed research approach to the above assessment headings and advocate the flexibility within the report to allow changes should they become necessary.	Comment noted.
Natural England consider the scoping report covers all necessary requirements for the purposes of this report.	Comment noted.
Historic England *Response received via email on 1st June 2020 from Henry Cumbers: Principal Adviser, Historic Environment Planning Adviser (North East and Yorkshire)*	
Page 14, Section 2.18: Historic assets across the region, including two UNESCO assets and a National Park. This bullet point would benefit from revision, replacing the word historic assets with heritage assets as a more universally recognised term. Also UNESCO World Heritage Sites in place of UNESCO assets and National Parks are landscape designations rather than heritage designations and would therefore benefit from being listed separately.	Information has been updated to reflect comment.
In respect of the historic environment and the planning system, the three key European legislative conventions are the UNESCO World Heritage Convention, The Convention for the Protection of the Architectural Heritage of Europe, The European Convention on the Protection of Archaeological Heritage. The Convention on the Value of Cultural Heritage for Society is primarily related to heritage and human rights and democracy. It promotes a wider understanding of heritage and its relationship to communities and society, and therefore has less of a role in relation to transport policy.	Information has been updated to reflect comment.
It is considered that the Culture White Paper is of limited relevance to the North East Transport Plan.	Reference to White Paper has been removed as suggested.
3.50-3.51: Whilst this paragraph contains key messages from the NPPF relating to the historic environment, it also include elements concerning landscape and the natural environment, given the specific focus on the historic environment it may be advisable to amend this paragraph to focus specifically on the conservation and enhancement of the historic environment.	Paragraph has been amended to focus specifically on the conservation and enhancement of the historic environment.
We have it noted that there are 70 conservation areas within Northumberland rather than 71.	This information has been updated.

Consultation response	How the response was considered and addressed
The National Heritage List for England identifies the following number of entries for listed buildings for the authorities comprising the NETP area: • County Durham: 3,108 • North Tyneside: 225 • Gateshead: 248 • South Tyneside: 195 • Northumberland: 5614 • Newcastle upon Tyne: 774 • Sunderland: 375	This information has been updated.
In providing an explanation of scheduling, it should be stated that it is the designation used for sites of an archaeological character of national importance. Current legislation is provided by the Ancient Monuments and Archaeological Areas Act 1979.	Description of scheduling has been revised.
The National Heritage List for England identifies the following number of entries for scheduled monuments for the authorities comprising the NETP area: • County Durham: 233 • North Tyneside: 8 • Gateshead: 16 • South Tyneside: 5 • Northumberland: 975 • Newcastle upon Tyne: 42 • Sunderland: 10	Updated with up-to-date information on scheduled monuments.
The list identifies a number of Registered Parks and Gardens that are not within the North East Region, which include…(*list supplied*)	References to these Registered Parks and Gardens have been removed.
There are 47 registered battlefields in England.	Information updated.
The Heritage at Risk Register contains assets other than listed buildings. The number of assets on 2019 list are as follows: • County Durham: 97 • Gateshead: 8 • Newcastle upon Tyne: 16 • North Tyneside: 1 • South Tyneside: 6 • Sunderland: 13	Comment noted. Information on assets at risk has been updated.
It would be worth stating that transport infrastructure can often be an important historic asset in its own right	Key issues for historic environment have been updated to reflect comment.
Proposed ISA objectives and assessment questions: To be consistent with the NPPF, conserve is preferred over preserve as this acknowledges managed change within the historic environment.	Terminology updated.
Assessment questions: Whilst acknowledging the range of assets identified under the questions of the first objective, a further question should also be provided in relation to Registered Parks and Gardens.	Additional question added: “Conserve and enhance the significance of Registered Parks and Gardens”.
Context review: In addition to legislation, plans programmes and strategies identified at a national level we would advise inclusion of Planning (Listed Buildings and Conservation Areas) Act 1990 and Ancient Monuments and Archaeological Areas Act 1979 which together form the two primary pieces of legislation	This has now been acknowledged.

Consultation response	How the response was considered and addressed
concerning the historic environment within the UK.	
Context review: We would advise including both the World Heritage Site Management Plans for Durham Castle and Cathedral 2017-2023 and Hadrian's Wall Management Plan 2015-2019.	The Management Plans have been added to the policy context review.
Environment Agency	
Response received via email on 15th June 2020 from Lawry Cook Economic Development Specialist	
I really appreciated the amount of detail the scoping report went in to and the level information provided for aspects surrounding rural proofing, biodiversity, and climate change and flood risk.	Comment noted.
A key point within the Proposed ISA Framework which needs to remain is around utilising green infrastructure to increase habitat connectivity across the transport network. As the report states, there is a risk of habitat degradation during transport development, therefore to mitigate that, infrastructure that minimises this is crucial. It is worth referencing that green/blue infrastructure has many co-benefits associated with it that can be attached to other aspects of the proposed framework – water and soil resources, climate change mitigation and flood resilience, air quality and health. It can also be linked back to economic growth and prosperity across the region with more GDP generated from tourism, more resilient businesses and a better state of health and wellbeing. I certainly think there could be a stronger section on green infrastructure with the co-benefits highlighted above.	Comment noted. These elements relating to green and blue infrastructure have been considered through the assessment (including assessment of reasonable alternatives and the draft plan).
The point within the proposed framework on reducing the need to travel is interesting. I suppose the main question and I would have on this is, is it time to diversify transport plans to incorporate other infrastructure such as digital? This feeds into the section on rural proofing, with connectivity being the main issue associated with reduced economic growth in rural areas. There could even be scope for increased rural connectivity in the energy sector to reduce the issues associated with fuel poverty etc.	Digital connectivity has been considered through the assessment, including through options considered as reasonable alternatives for rural areas in the region.
I am really eager to hear about how emissions are not increased from new transport infrastructure, especially with emissions associated from constructing these new assets, on top of those from using them. Is there any scope to consider offsetting emissions? This could be linked to the prospect of Biodiversity Net Gain – create a new habitat that enhances the biodiversity and sequesters the carbon from the development. Again this sort of work could be linked to other aspects of the plan – i.e. flood resilience through green infrastructure.	Elements relating to emissions and possibilities for Biodiversity Net Gain have been considered throughout the appraisal.
Again, really positive points throughout the report and I am excited to see what opportunities this presents for environmental improvements and economic growth across the North East.	Comment noted.
Northumberland National Park Authority	
Response received via email on 2nd June 2020 from Duncan Wise, Visitor Development and Marketing Manager	
The North East Transport Plan – Introduction Emergent Challenges and opportunities from the Covid 19 pandemic. Bullet Point should be modified: "Potential reduction in international tourism and increase in domestic tourism"	Comment fed back to NETP development team

Consultation response	How the response was considered and addressed
Links with other plans and programmes: Additional information should be included on the Northumberland National Park Local Plan.	Provisions of new National Park Local Plan have been considered in the assessment. However, unlike the Scoping Report, detailed information on each authority's Local Plan has not been included in the ISA Report to limit the size of the report.
We are pleased to see reference to the Government's 25 Year Environment Plan in Para 3.58, the NNPA Management Plan in Para 3.59, and a summary of the Aims of the Management Plan in Para 3.60.	Comment noted.
Biodiversity: Generally, we feel that you have covered all the statutory sites and mentioned priority habitats and species in the National Park. We welcome reference in paragraph 4.39 to Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006, but believe it would be appropriate to also highlight the requirements of Section 40 of the NERC Act 2006 within Chapter 4 of the ISA. However, there is no mention of the Government's intention to improve the planning system in England in order to protect the environment (biodiversity net gain) and build places to live and work. This could be referred to and emphasised more in Para 4.45. At a practical level, it would be good to see how management of the transport network can positively improve things for biodiversity. Currently, the need for tidiness is often prioritised over the need to enhance biodiversity e.g. cutting of road verges when they are flowering and removing trees from railway line corridors. We suggest a modification to Para 4.51 to reflect the opportunities to improve bio-diversity through the careful management of these transport corridors.	Comments noted. Opportunities for Biodiversity Net Gain and Government's intention to increase the role of Net Gain have been recognised through the appraisal, including the appraisal of reasonable alternatives and the draft plan. Additional elements with regard to biodiversity enhancements have also been considered through the assessment.
Water and Soil Resources: Para 5.20 – Actions to improve bio-diversity through the careful management of the transport corridors (roads and rail) would also contribute to slowing water run-off.	Comment noted and considered through ISA process.
There is no recognition that the National Park Authority is an independent Local Authority (single-purpose). See our comments on Para 3.25	Comment noted.
Para 6.6 - Threats to Hadrian's Wall identifies "visitors and tourism". However, we also recognise that tourism brings opportunities, so there is a need for balance here. As Hadrian's Wall is a linear monument that passes through urban, peri-urban and rural areas, there are a number of concerns facing the monument from inappropriate development, agriculture and forestry.	Comment noted and considered through ISA process.
We suggest the ISA makes a more formal reference to the Hadrian's Wall World Heritage Site Management Plan.	Reference included.
Para 6.14 –We suggest that you list the 71 Conservation Areas in Northumberland.	Conservation areas have been mapped. Conservation area will be considered as appropriate through the appraisal.
Para 6.25 - Heritage at Risk – Only Listed Buildings are mentioned. Why aren't Scheduled Monuments and historic places such as Registered Parks or Battlefields broken down by each Authority?	Updates to information recognise that Heritage at Risk incorporates a wider range of designations.
After Para 6.25 - The plan needs to take account of undesignated heritage assets as a material consideration in the planning process and vulnerable to harm from inappropriate development including harm to their settings. This undesignated heritage accounts for	The importance of the fabric and setting of undesignated heritage assets has been recognised throughout the ISA process.

Consultation response	How the response was considered and addressed
some 90% of the heritage resource. Greater attention to Grade II buildings also needs to be made, including local heritage assets.	
Para 6.33 – We welcome the inclusion of the positive contribution of careful and well planned transport infrastructure can have on the historic environment, would like to see how the historic environment makes a positive contribution to carefully planned transport infrastructure which avoids harm and contributes to making more attractive places to live and work.	Comment noted. Contribution of transport to the fabric and setting of the historic environment (and vice versa) has been considered throughout the ISA process.
Key Sustainability Issues - A key question for inclusion should be "do the options/proposals take full account of the historic environment, enabling informed, constructive conservation grounded upon sound principles and values, including the contribution the historic environment makes to society, economy and people's health and wellbeing?"	These elements have been considered throughout the ISA process.
Para 7.1 – Summary of Current Baseline. We are pleased to see the National Park's purposes and duty are explained here.	Comment noted.
Para 7.4 – We suggest a modification to list the National Park's special qualities, as outlined in its Management Plan (2016 – 2021).	Section discussing the special qualities has been updated as suggested.
A special quality associated with the sense of tranquillity here in Northumberland National Park is its pristine dark skies, due to the lack of light-pollution. The CPRE Night Blight Report (2016), stated that "Northumberland comes out top with 72% of its skies in the darkest category " Other than a brief mention in Para 7.69 and Para 7.73, there is no indication of their significance, both to the quality of life and wellbeing of residents, and to wildlife, as well as the fact that they contribute to the region's economy with the resultant development of astro-tourism in the last 12 years; all of which could be threatened by the proliferation of badly designed and installed lighting infrastructure associated with transport developments such as street lighting and illuminated highway signs. In 2013, an area of 1400 Km^2 comprising the whole of Northumberland National Park and 70% of the adjacent Kielder Water & Forest Park was designated England's first (and at the time) Europe's largest International Dark Sky Park (aka Northumberland International Dark Sky Park), obliging both the Northumberland County Council and the National Park Authority respectively to monitor and implement measures to minimise light pollution by adhering to the joint Exterior Lighting Master Plan. Government Guidance in the form of Planning Practice Guidance has recently been updated (November 2019) on lighting and advises how the planning system should consider light pollution. Government planning policy is set out in the NPPF (para 180).	Elements highlighted by comment noted. Potential impacts on tranquillity and light pollution have been assessed through the ISA process.
Para 7.17 - Areas of Tranquillity: We suggest you either amend this or add another paragraph to specifically reference the impact of large vehicles such as timber haulage upon the fabric of our rural roads, many of which were not constructed to a specification suited to modern timber haulage vehicles, and the tranquillity of associated villages and hamlets. There is no reference to the Forestry and Timber Industry's North East Timber Transport Forum and their Agreed Routes map.	Additional key issue included. Comment fed back to NETP development team

Consultation response	How the response was considered and addressed
After Para 10.14: Northumberland National Park has an identified need of 160 dwellings over their 20-year planning period 2017-2037, an average of 8 per annum. The National Park's need is not discounted from the figures for the whole of Northumberland (see Para 10.14), used by Northumberland County Council.	Information for Northumberland National Park has been included alongside housing needs for other Local Planning Authorities in the region.
13.29 You have missed the Off-grid electricity issue. - It may well be worth mentioning here that rural Northumberland has the largest off-grid electricity community anywhere in the Country. On site electricity generation can cost up to 3 times as much as that obtained by the local distribution network so contributes towards fuel poverty. Additionally, off-grid communities are likely to miss out on initiatives focused on decarbonising transportation.	Issue now acknowledged in key issues.

Content of the ISA Scoping Report

2.5 Reflecting the requirements of the SEA Regulations, the following information was presented in the Scoping Report for the ten ISA themes:

- **Context review:** This explored the environmental and sustainability 'context' for the ISA/NETP through reviewing high level messages (e.g. internationally, from central government and at the regional level) with a view to establishing the focus for the ISA.
- **Baseline data:** This established the baseline situation in the area in the absence of the NETP (including the future baseline) in order to help identify the plan's likely significant effects.
- **Key issues:** This identified particular problems or opportunities ('issues') that should be a focus of the ISA.

2.6 Drawing on the key issues established through the above process, the Scoping Report presented an ISA Framework of objectives and assessment questions which would be used to assess the draft plan and alternatives. A summary of the key issues and the full ISA Framework is presented below. The context review and baseline data, which has been updated to reflect comments received on the Scoping Report consultation, is presented in **Appendix A**.

Key issues for the ISA and ISA Framework

2.7 The ISA Scoping Report identified a range of sustainability problems / issues that provide the focus of the ISA process. Presented by each of the ten environmental themes, this drew on the review of the sustainability context and baseline.

2.8 The key issues were then translated into an ISA Framework of objectives and assessment questions. The ISA Framework has been used to inform the assessment of likely significant effects on the baseline, as presented in Chapter 4 below. This enables the environmental effects of the NETP and alternatives to be defined and subsequently analysed based on a structured and consistent approach.

2.9 The key issues identified through scoping are presented below. **Table 2.2** subsequently presents the objectives and assessment questions for each ISA theme.

Key issues: Biodiversity

2.10 Transport infrastructure enhancements have the potential to place increasing pressures on habitats and species and ecological networks in the North East.

2.11 There are a large number of internationally designated and nationally designated sites within the North East which are likely to come under increasing pressures from human activity including from transportation.

2.12 A number of the internationally designated nature conservation sites found within the North East have exceeded the critical load for nitrogen and acid deposition.

2.13 There is a need to sensitively manage visitor and recreational access to these areas. While tourism and recreation can provide a significant benefit to the local economy the impact on designated sites through increasing number of visitors should be considered fully. The NETP has a bearing on the impact which visitors may have on such sites.

2.14 Generally there is a slight upward trend in the condition of SSSIs within the North East, however there are still a number of sites particularly in the Tyne and Wear county where they are classed as 'unfavourable no change' or 'unfavourable declining'.

2.15 Wildlife transport corridors provide important wildlife links and facilitate the dispersal of plants and animals creating habitat networks[20]. There are a number of pressures on these corridors associated with:

- Direct loss due to development;
- Simplified landscaping schemes failing to maximise the benefits to wildlife;
- Loss/disturbance due to road improvement schemes;
- Over intensive or lack of management;
- Vulnerable to vandalism, accumulations of litter and fly tipping;
- A number of priority species are killed on busy roads every year, as there are few or no opportunities for their safe crossing;
- Pollution of wetland habitats adjacent to roads from salt and petrochemical runoff can also have detrimental effects;
- Management of village and urban verges for non-native species removes local distinctiveness provided by a wild flora, and will eventually lead to loss of wild flora;
- Tree planting in inappropriate places shades out wildflower rich grassland;
- Salt piles can leach into the surrounding soils; and
- Disused railways becoming multi-user routes could lead to habitat loss, without careful planning of routes.

2.16 The North East should explore opportunities to enhance, and where appropriate, create wildlife corridors in the delivery of transport schemes. This could be achieved through using animal bridges/tunnels across transport corridors to increase wildlife permeability, and be implemented as part of wider green infrastructure initiatives that many Local Authorities are pursuing[21].

Key issues: Water and Soil Resources

2.17 Watercourses in the North East support a range of rare and important species such as fresh water pearl mussel. Physical modifications are a key issue in all three of the catchments within the North East particularly in relation to fish passage. This will need to be taken into consideration in any schemes taken forward under the NETP.

2.18 Urban transport and pollution pressures have been identified as a specific pressure in the Northumbria River Basin District. Schemes taken forward under the NETP should, where possible, seek to improve the existing road drainage. In addition, opportunities to reduce deposition of pollutants on European sites through the encouragement of a model shift and phasing out of older vehicles with poor emissions should be investigated.

[20] Natural England (2014) making space for wildlife [online] available at: publications.naturalengland.org.uk/file/6737795561291776 [accessed 27/02/20]
[21] Further guidance and information on green infrastructure can be found at: http://publications.naturalengland.org.uk/publication/35033

2.19 There is a limited amount of best and most versatile agricultural land within the North East, where this is present it is restricted to low lying areas along river valleys.

Key issues: Historic Environment

2.20 The fabric and setting of heritage assets in the North East are sensitive to enhanced transport infrastructure.

2.21 Transport infrastructure can often be an important historic asset in its own right from prehistoric trackways and Roman roads, to medieval bridges, the development of canals and railways during the industrial revolution and the introduction of motor transport and aviation in the 20th century. To name but a few, examples in the North East include the Grade I listed Central Station in Newcastle, the Grade I listed Barnard Castle Bridge over the River Tees, the Grade II listed Tyne Pedestrian and Cyclist Tunnels, and the historic infrastructure associated with the many ports in the region.

2.22 The historic environment can be impacted from increasing traffic levels through emission levels, congestion, visual impact and noise pollution. There can also be direct or indirect impact from the new development associated with transport infrastructure.

2.23 High levels of visitors to historic sites can be a major economic benefit for local areas, however this can put a number of pressures on these sites including from transport.

2.24 New development need not however be harmful to the significance of a heritage asset, and in the context of the NETP there may be opportunity for new transport infrastructure to enhance the historic settings of localities and better reveal assets' cultural heritage significance.

Key issues: Landscape

2.25 New transport infrastructure has the potential to have an impact on local landscape character.

2.26 A large proportion of the North East is made up of a sparsely populated rural landscape with small nucleated villages accesses only by minor roads. In particular; the Border Moors and Forests, together with the neighbouring Cheviots NCA is sparsely populated with very few major settlements and transport links, and is valued for its dark night skies. Landscape character in these areas are particularly sensitive to change.

2.27 The growth of towns such as Morpeth and Ponteland in Northumberland, pressures to expand villages; and changes in use of farm buildings to residence and business premises has increased the number of privately owned vehicles travelling through the area. This is also corresponding with the upgrades of the A1 and other major transport routes such as the A68, A696 and A697.

2.28 There is a need to ensure that landscape sensitivity is considered in the provision or improvement of transport links. Measures to minimise landscape impacts, such as through planting to provide screening, should be implemented. In urban areas there are opportunities for transport infrastructure developments to incorporate green infrastructure and links to existing and planned greenspace and the open countryside.

2.29 There is a need to sensitively manage visitor and recreational access to the rural landscapes. This will need to include the careful planning of transport routes, and the provision of public transport, walking and cycling to minimise the use of the private car.

2.30 There is a significant impact of large vehicles such as timber haulage vehicles on the fabric of the region's rural roads, many of which were not constructed to a specification suited to modern haulage vehicles, and the tranquillity of associated villages and hamlets.

2.31 There is a need to support dark skies and tranquillity in rural areas, including through the management of lighting in settlements and along transport routes.

Key issues: Air Quality and Noise

2.32 Key issues include the exceedances of air quality objectives within AQMAs in the North East. Transport is the significant contributor to issues in the majority of these AQMAs.

2.33 The presence of Noise Action Plans for a number of major routes within Newcastle upon Tyne and Durham indicating that environmental noise levels are being adversely affected by transport.

Key issues: Climate Change and Flood Risk

2.34 Greenhouse gas emissions from transport have reduced at a lower rate than emissions from industrial/commercial sources and domestic sources. In terms of the proportion of overall emissions which originate from transport in the North East, this has increased in the last ten years.

2.35 There will be an ongoing need to decarbonise the transport sector in the North East to help meet international, national and local commitments and to reflect the declaration of climate emergencies by Local Authorities across the region.

2.36 Climate change has the potential to increase the occurrence of extreme weather events in the North East, with increases in mean summer and winter temperatures, increases in mean precipitation in winter and decreases in mean precipitation in summer. This is likely to increase the risks associated with climate change (including surface water and fluvial flood risk, as well as flooding by sea). This will result in an increased need for resilience and adaptation for transport infrastructure.

Key issues: Population

2.37 Population growth in the North East is lower than that of the England average, and in some council areas is decreasing. All seven councils have a lower proportion of the population within the 0-15, and 25-44 age groups than the national average and in turn there are a proportionally higher number of residents within the 45-59 and 60+ age groups. Supporting a proportional increase of older people within the population is an issue which requires important consideration; especially in an area estimated to have slow population growth.

2.38 The North East has a higher proportion of residents with no formal qualifications than the national average, and in there are also fewer people with level 4 qualifications than the national average, suggesting that there may be barriers to educational opportunities.

2.39 The affordability ratios for the North East are lower than the average ratios for England, showing that homes are more affordable. The majority of NETP council areas also have a higher proportion of residents traveling by bus than national average showing that there is considerable demand for good quality public transport links.

Key issues: Human Health

2.40 The NETP council areas have a higher proportion of households which are deprived in 2 or 3 dimensions than the national deprivation average. This suggests that overall residents within the North East are more likely to experience lower standards of living than in other areas of the country. According to the IMD, relative to the other NETP authority areas, County Durham, South Tyneside, and Sunderland all have on average, higher levels of deprivation while Northumberland and North Tyneside have lower levels of deprivation.

2.41 Although Northumberland and North Tyneside have female life expectancy rates which are slightly more favourable than the national average, throughout the North East male life expectancy is lower - in some cases significantly. Female life expectancy rates are lower or comparable to the national average in the remaining NETP council areas.

2.42 Other health issues include that all NETP council areas have a higher proportion of people who consider themselves to be in bad health than the national average and also a higher proportion of residents whose day to day activities are limited a lot by disability. Sunderland has the highest levels of obesity in the North East at 28.6% of residents compared to the national average of 26.7%.

2.43 Enhancements in walking and cycling networks, including improved linkages to public transport networks, have significant potential to support the health and wellbeing of residents. This will be

supported by green infrastructure enhancements. There are also significant opportunities for enhancements to road safety across the North East.

Key issues: Rural Proofing

2.44 Key issues relating to rurality in the North East Region include as follows:

- Proportionally older populations;
- Disabilities causing more limitations on people's activity than in urban areas;
- Access to, and use of, public transport appears to be lower; and
- Higher levels of deprivation in sparsely populated areas – both urban and rural
- Higher levels of deprivation with regards to the Barriers to Housing and Services domain.
- Northumberland has the largest off-grid electricity community nationally. On site electricity generation can cost up to three times as much as that obtained by the local distribution network so contributes towards fuel poverty. Additionally, off-grid communities are likely to miss out on initiatives focused on decarbonising transportation.

Table 2.2 ISA Framework for the North East Transport Plan 2021-2035

ISA theme	Objectives	Assessment questions – will the option/proposal help to:
Biodiversity	Support the integrity of nationally and locally designated sites.	• Protect the integrity of the internationally designated Ramsar sites, SACs and SPAs in the North East? • Avoid negative impacts, and where possible improve the condition of SSSIs within the North East? • Manage pressures on locally designated sites for biodiversity and geodiversity in the North East? • Maintain, and where possible, enhance the status of NNRs and LNRs in the North East and people's access to these?
	Protect and enhance habitats and species.	• Protect and enhance semi-natural habitats? • Protect and enhance priority habitats, and the habitat of priority species? • Achieve a net gain in biodiversity? • Increase the resilience of the North East's biodiversity to the potential effects of climate change?
	Increase habitat connectivity across the transport network.	• Contribute to the creation of coherent and resilient ecological networks? (i.e. allow passage of wildlife across roads, railway lines, cycle paths through the use of animal bridges/tunnels or support green infrastructure enhancements)?
Water and Soil Resources	Minimise the impact which transport and transport infrastructure has on water quality, and on the physical state of water bodies.	• Support improvements to water quality, including through minimising the impacts of diffuse run off from road surfaces? • Protect surface water and groundwater resources? • Minimise physical alterations to water bodies? • Minimise the impacts to, and where possible enhance the quality of water bodies of strategic significance for water supply?
	Promote the efficient use of land.	• Facilitate the use of previously developed land? • Avoid the development of the best and most versatile agricultural land (Grade 1 to 3a agricultural land)?
	Promote sustainable waste management solutions that encourage the reduction, re-use and recycling of waste during construction.	• Encourage recycling of materials and minimise consumption of resources during construction, operation and maintenance of new transport infrastructure? • Encourage the use of alternative transport methods for the movement of waste in the region?

ISA theme	Objectives	Assessment questions – will the option/proposal help to:
Historic Environment	Conserve and enhance the North East's' cultural heritage resource, including its historic environment and archaeological assets.	• Conserve the outstanding universal value of World Heritage Sites? • Conserve and enhance the significance of buildings and structures of architectural or historic interest, both designated and non-designated, and their setting? • Conserve and enhance the significance of Registered Parks and Gardens? • Conserve and enhance the special interest, character and appearance of conservation areas and their settings? • Conserve and enhance archaeological remains and support the undertaking of archaeological investigations and, where appropriate, recommend mitigation strategies?
	Promote understanding of the North East's cultural heritage resource.	• Support access to, interpretation and understanding of the historic environment?
Landscape	Protect and enhance the character and quality of the North East's landscapes.	• Support the purposes and duty of the Northumberland National Park? • Support the management objectives and special qualities of the AONBs in the North East? • Support the integrity of the LCAs and Heritage Coast in the North East? • Conserve and enhance locally important landscape features? • Improve accessibility by sustainable transport to the North East's landscape and townscape resource, including within the National Park and AONBs?
Air Quality and Noise	Deliver improvements in air quality in the North East.	• Reduce emissions from transport? • Contribute to improvements in air quality within AQMAs? • Promote the use of low emission vehicles? • Promote enhancements to green infrastructure networks to facilitate increased absorption and dissipation of nitrogen dioxide and other pollutants?
	Reduce the impact on environmental noise from transportation sources in areas with Noise Action Plans.	• Will it contribute to lowering noise levels in Noise Action Plan Areas?

ISA theme	Objectives	Assessment questions – will the option/proposal help to:
Climate Change and Flood Risk	Support climate change mitigation in the North East through limiting the contribution of transport to greenhouse gas emissions.	• Limit the increase in the carbon footprint resulting from new transport infrastructure provision? • Promote the use of sustainable modes of transport, including walking, cycling and public transport? • Reduce the need to travel? • Reduce energy consumption from non-renewable resources? • Encourage the update of electric and alternatively fuelled vehicles?
	Support the resilience of the North East's transport networks to the potential effects of climate change.	• Increase the resilience of the transport network to the potential effects of climate change? • Promote a coordinated approach to the management of flood risk across public infrastructure provision? • Improve and extend green infrastructure networks as part of transport infrastructure provision to support adaptation to the potential effects of climate change? • Sustainably manage water run-off, reducing surface water runoff? • Ensure the potential risks associated with climate change are considered through new transport network programmes? • Reduce the impact of extreme weather events on the condition of the road network?
Population	Promote sustainable transport use and reduce the need to travel.	• Encourage modal shift to more sustainable forms of travel? • Reduce the need to travel?
	Cater for existing and future residents' needs as well as the needs of different groups in the community, and improve access to local, high-quality community services and facilities.	• Maintain or enhance the quality of life of residents? • Address the needs of all age groups? • Meet the needs of those living in rural areas? • Improve accessibility of key local facilities, including specialist services for disabled and older people?

ISA theme	Objectives	Assessment questions – will the option/proposal help to:
Health	Improve the health and well-being of the North East's residents.	• Reduce the impacts of air and noise pollution on health? • Promote accessibility to a range of leisure, health and community facilities, for all age groups? • Promote the use of healthier modes of travel? • Reduce health inequalities? • Enhance the provision of, and access to, green infrastructure in the county, in accordance with national standards? • Avoid any negative impacts to the quality and extent of existing recreational assets, such as formal or informal footpaths? • Improve access to the countryside for recreation?
	Improve road safety.	• Improve road safety and reduce road accidents?
	Reduce the community severance effects of transport routes.	• Reduce community severance (i.e. through improved crossing facilities, reduced traffic speeds and reduced traffic levels)?
Equalities	Advance equality of opportunity for all.	• Promote access to transport services for all including those with and without shared Protected Characteristics? • Provide opportunities to foster good relations between groups?
Rurality	Increase access via a range of transport modes for rural communities.	• Improve the sustainable transport network in rural areas (i.e. improvements to public and active travel) whilst also recognising that for some in rural areas the car is still essential for accessibility? • Better enable people with specific needs to access transport and day to day activities?
	Enable economic growth, and employment diversification in rural areas.	• Support diversified economic activities in rural areas? • Enhance access to rural employment opportunities? • Improve people's ability to work or run a business from home?

3. Assessment of reasonable alternatives for the NETP

Reasonable alternatives in ISA

3.1 A key element of the ISA process is the assessment of 'reasonable alternatives' for the NETP. The SEA Regulations[22] are not prescriptive as to what constitutes a reasonable alternative, stating only that the Environmental Report (i.e. ISA Report) should present an appraisal of the '*plan and reasonable alternatives taking into account the objectives and geographical scope of the plan*'.

3.2 The ISA process has therefore assessed a range of potential options as reasonable alternatives, which consider different approaches for six areas within the North East region.

An area-led approach to considering reasonable alternatives

3.3 The NETP covers a large and diverse region, with a wide range of transport challenges. These regional challenges sit within diverse environmental and socio-economic settings.

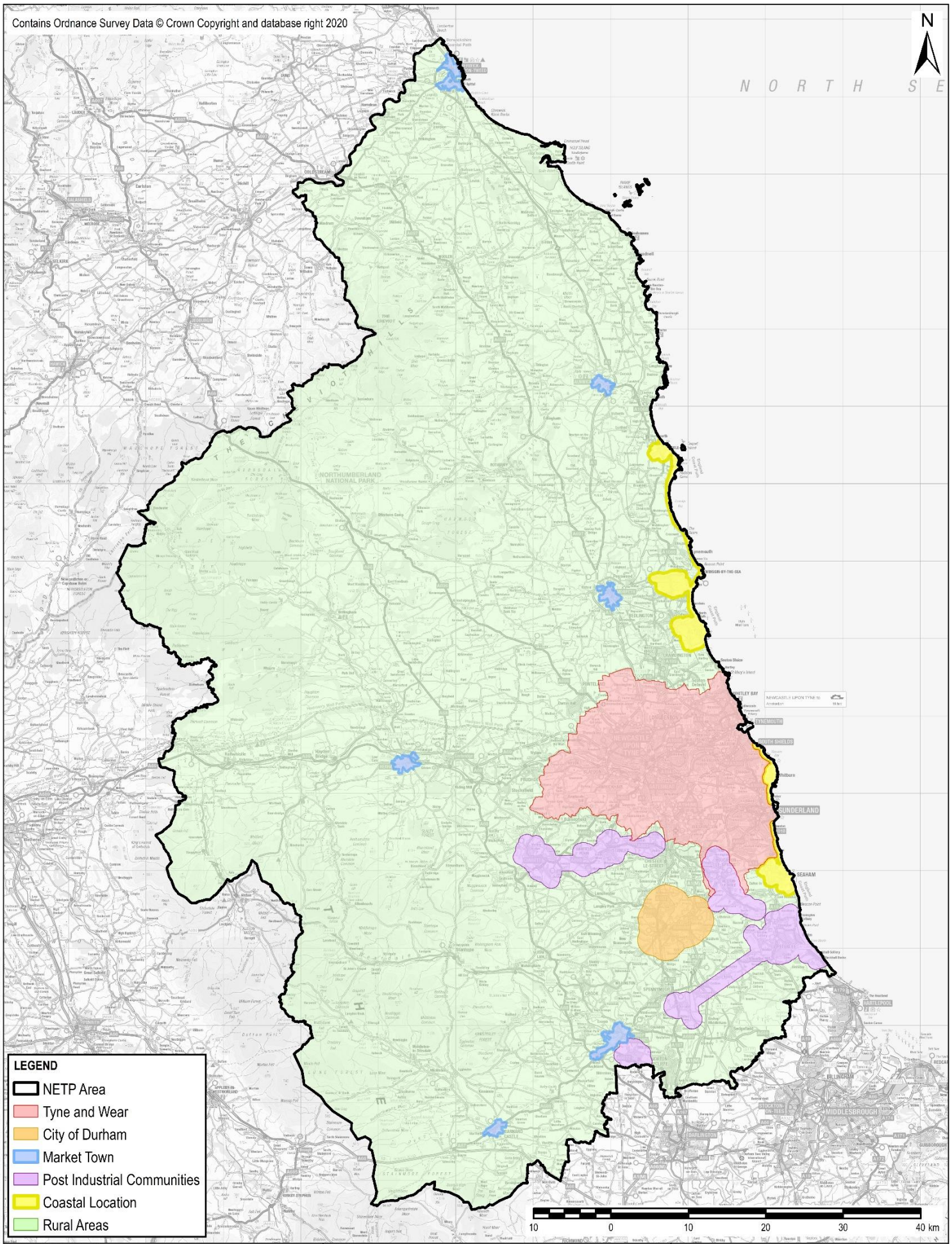
3.4 A central role of appraising reasonable alternatives through the ISA process is to help identify the relative sustainability merits of different approaches to delivering enhanced transport provision in the region. In recognition of the diversity of the region, the approach to the appraisal of reasonable alternatives subdivides the North East region into a number of distinct geographical areas.

3.5 The six areas are as follows:

- **Tyne and Wear:** This area covers the main Tyne and Wear conurbation, encompassing much of the local authority areas of Newcastle city, North Tyneside, South Tyneside, Sunderland and Gateshead.
- **City of Durham:** This area covers the city of Durham and its surrounding area.
- **Post-industrial communities:** This area incorporates the former coal-mining and steel working areas in the region. This includes the area around Consett, Stanley and Catchgate; the area around Peterlee, Easington, Shotton Colliery and Blackhall Colliery; a corridor between Peterlee and Ferryhill; a corridor along the A182 encompassing South Hetton, Hetton-le-Hole, and Houghton-le-Spring; and the area around Shildon.
- **Market towns:** This area incorporates the larger market towns in the region, including Bishop Auckland, Barnard Castle, Alnwick, Berwick-upon-Tweed, Morpeth and Hexham.
- **Coastal areas:** This area includes coastal areas located to the south and north of the main Tyne and Wear conurbation. It incorporates: the coastal areas between South Shields and Roker, including Marsden, Whitburn and Seaburn; Hendon to Seaham; and Blyth to Amble.
- **Rural areas:** This covers the rural areas of the region, including the rural parts of Northumberland and County Durham. It includes the parts of the region within the Northumberland National Park and the two AONBs (Northumberland Coast AONB and North Pennines AONB).

3.6 **Figure 3.1** highlights the broad locations covered by these areas.

[22] Environmental Assessment of Plans and Programmes Regulations 2004



File Name:i:\5004 - Information Systems\60630031_NECA_Transport_Plan\02_Maps\Figure 3-1 - Sub Areas.mxd

Project Title/Drawing Title

ISA FOR THE NE TRANSPORT PLAN

AREAS CONSIDERED THROUGH THE ASSESSMENT OF REASONABLE ALTERNATIVES

Client: TRANSPORT NORTH EAST STRATEGY UNIT

Drawn	Checked	Approved
CN	TD	NCB
Date	Scale @ A4	Purpose of Issue
23/10/2020	1:625,000	FINAL
Drawing Number		Rev
FIGURE 3.1		01

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3.7 For each of these areas a number of options have been identified and subsequently appraised. For all areas a do minimum is described which would be applied in all circumstances, together with one or more options for additional levels of intervention over and above the do minimum. These options are designed to reflect the key issues facing that area, and the different approaches that can be taken to intervention/investment in transport infrastructure and management.

3.8 The detail of the options appraised, and the appraisal findings, are presented below.

Tyne and Wear

3.9 This area (**Figure 3.2**) covers the main Tyne and Wear conurbation, encompassing much of the local authority areas of Newcastle city, North Tyneside, South Tyneside, Sunderland and Gateshead. Three options have been considered as alternatives for the ISA, as follows:

Option TW1: Do minimum

3.10 A do minimum option would rely on committed investment, which would continue. This includes the Transforming Cities Fund package, which would deliver a short-term programme of investments. The Metro would receive a new fleet in 2023 as currently planned and further investment in bus fleets would take place.

Option TW2: Optimise use of existing infrastructure

3.11 This option would comprise enhancements to the existing urban transport network. It would incorporate improved bus services on key corridors, enhancements to walking and cycling linkages, demand management measures and more effective use of Park and Ride provision.

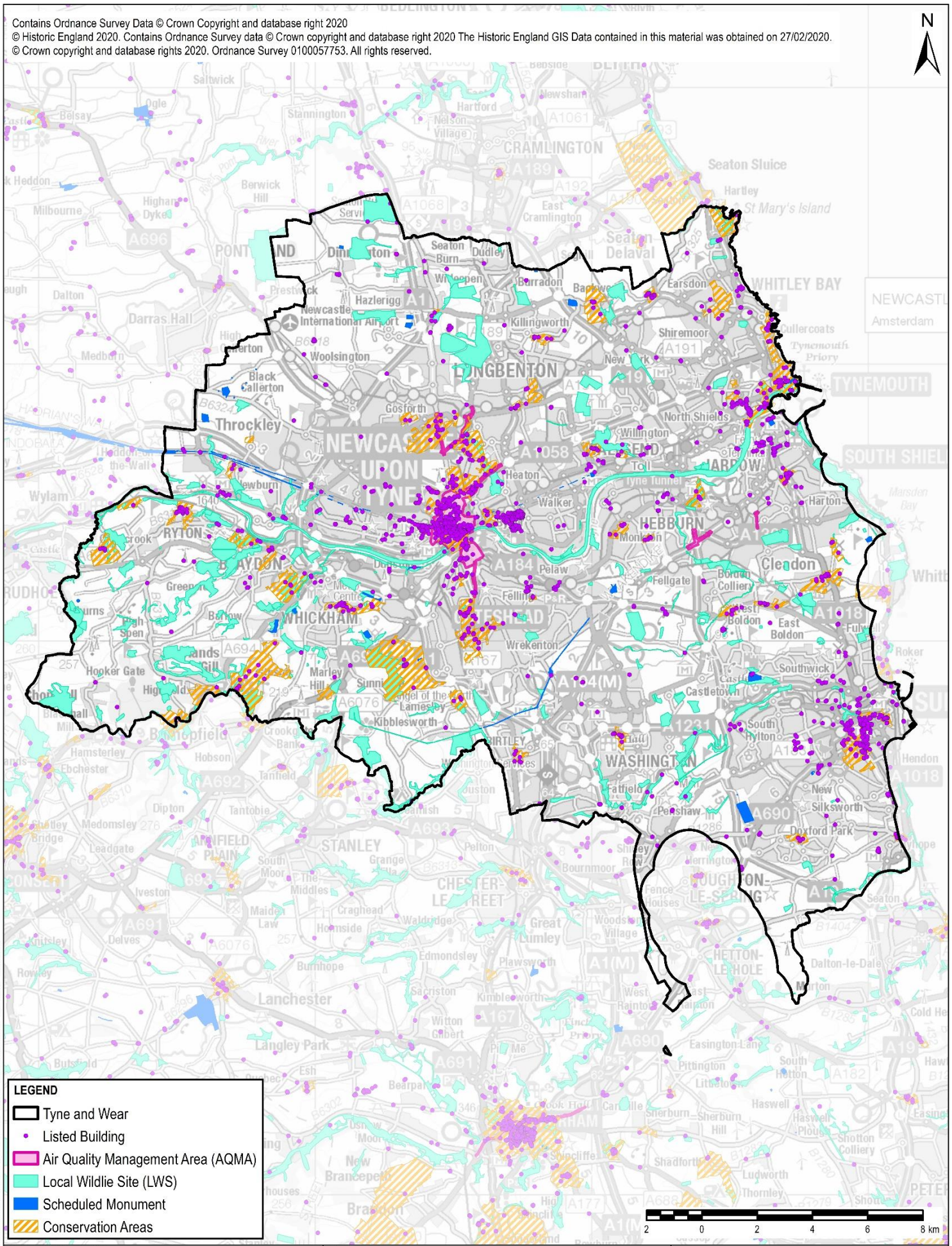
Option TW3: Initiate more significant interventions, including with regards to the rail, Metro and road network

3.12 This option would seek to take forward significant capacity enhancements to the urban transport network. This would include, for example, an expansion of the Metro network (including potentially, new lines), delivery of new local rail lines, and an expansion of Park and Ride provision. In terms of the road network it would initiate significant junction capacity enhancements at key ‘pinchpoints’ and potentially, initiate new local links. There would also be a focus on connectivity across the Tyne.

Appraisal findings

3.13 The following table presents appraisal findings in relation to the three options introduced above. These are organised by the ten ISA themes.

3.14 For each ISA theme, a commentary on the likely effects is presented. Options are also ranked numerically reflecting their relative sustainability performance, with ‘1’ the most favourable ranking and ‘3’ the least favourable ranking.



File Name:i:\5004 - Information Systems\60630031_NECA_Transport_Plan\02_Maps\Figure 3-2 - Tyne and Wear.mxd

Project Title/Drawing Title

ISA FOR THE NE TRANSPORT PLAN

KEY ENVIRONMENTAL CONSTRAINTS: TYNE AND WEAR CONURBATION

Client: TRANSPORT NORTH EAST STRATEGY UNIT

Drawn	Checked	Approved
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Drawing Number		Rev
FIGURE 3.2		01

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Table 3.1: Appraisal of options for Tyne and Wear

Option TW1: Do minimum
Option TW2: Optimise use of existing infrastructure
Option TW3: Initiate more significant interventions, including with regards to the rail, Metro and road network

ISA theme	Discussion of potential effects and relative merits of options	Rank of preference		
		TW1	TW2	TW3
Biodiversity	Key designated sites in the vicinity of the Tyne and Wear urban area include the Northumberland Shore SSSI and Durham Coast SSSI, a number of relatively small SSSIs on the edge of the urban area, and numerous Local Wildlife Sites. Key habitats in the urban area include open mosaic habitats on previously developed land and the following BAP Priority Habitats: wood pasture and parkland; deciduous woodland; good quality semi-improved grassland; and lowland dry acid grassland. Option TW3, through facilitating the delivery of significant new transport infrastructure in the Tyne and Wear urban area, has increased potential to lead to significant effects on biodiversity habitats, species and networks. This includes from land take, habitat loss and fragmentation and disturbance. In this respect Option TW1, which relies on committed investment, and Option TW2, which focuses on enhancing existing transport infrastructure, would lead to fewer physical impacts on key areas of sensitivity. Option TW2 however has the potential to lead to impacts on habitats and ecological networks on existing transport corridors. This is given many existing transport routes are important biodiversity corridors, containing and linking key habitats, and frequently, designated sites. These corridors support a significant number of protected species. As such Option TW2 still has the potential to lead to significant effects without the implementation of appropriate avoidance and mitigation measures. However, the scale of effects is less likely to be significant than those which result from Option TW3. It should be noted though that the delivery of new and enhanced transport infrastructure may support some enhancements to biodiversity networks. For example, the Government's 25-year Environment Plan seeks to embed an environment net gain principle for infrastructure development. In addition, Highways England's Road Investment Strategy states that by 2040 its schemes must deliver a net gain in biodiversity and Network Rail has committed to make a net positive contribution to biodiversity. In this context there is scope for transport infrastructure enhancements to support environmental net gain in Tyne and Wear. This includes through delivering enhancements in the Network Enhancement Zones[23] and Network Expansion Zones[24] identified to the south west, north west and south east of the Tyne and Wear conurbation by Natural England.	**1**	**2**	**3**
Water and Soil Resources	Option TW3, through facilitating the delivery of significant new transport infrastructure, will require larger landtake than Option TW1 and TW2. This has increased potential to lead to the development of previously undeveloped land, including, potentially productive agricultural land. Without mitigation measures, an increased delivery of new transport infrastructure has the potential to have impacts on water and soil quality through increases in surface water run-off. However, no significant impacts on water quality would be anticipated from schemes if the required embedded mitigation measures are incorporated within the construction and operational stage. Option TW2 also offers additional opportunities to deliver enhancements to surface water management on existing transport corridors.	**2**	**1**	**3**

[23] Network Enhancement Zones comprise land within close proximity to existing habitat components that have been identified by Natural England as likely to be suitable for habitat re-creation for the particular habitat.
[24] Network Expansion Zones are areas identified with potential for expanding, linking and joining biodiversity networks.

Option TW1: Do minimum
Option TW2: Optimise use of existing infrastructure
Option TW3: Initiate more significant interventions, including with regards to the rail, Metro and road network

Historic Environment	The Tyne and Wear urban area has a rich historic environment resource, as highlighted by the significant number of features and areas designated for their heritage value. The historic environment of the urban area is also framed by the significant number of undesignated features of heritage value which are vulnerable to change given their lack of statutory and local protections. In addition, transport corridors are often themselves important heritage resources. The urban area also has a rich and diverse archaeological resource. The increased number of 'hard' transport infrastructure schemes likely to be initiated through Option TW3 have the potential to lead to impacts on the key assets (including designated features and areas) located in the vicinity of the key routes and areas targeted for interventions. The significance of effects from these interventions will however depend on design, layout and scale of the schemes, and mitigation and avoidance measures proposed. It should also be noted that well designed schemes have the potential to lead to enhancements to the public realm and the setting of the historic environment. Similarly, measures which help to relieve congestion may support improvements to local distinctiveness and the quality of the public realm, with benefits for the setting of the historic environment. In relation to Option TW2, an approach which focuses to a greater degree on soft measures and demand management measures is less likely to lead to direct adverse impacts on the historic environment and townscape character. The setting of the historic environment also has the potential to benefit from initiatives taken forward through this option by an encouragement of modal shift, a limitation in traffic flows and improved traffic management. This will help limit adverse effects from traffic on the setting of historic environment assets. In this respect a 'do minimum' approach taken forward through Option TW1 has reduced potential to bring similar benefits.	**2**	**1**	**3**
Landscape	Option TW3, through facilitating the delivery of significant new transport infrastructure, has increased potential to have impacts on townscape and landscape character in Tyne and Wear. Option TW1 and TW2, through focusing on the existing urban transport network, is less likely to deliver new infrastructure which has significant impacts on local character, distinctiveness or a sense of place. The significance of effects from schemes initiated by Option TW3 would however depend on the design, layout and scale of the schemes, and the mitigation and avoidance measures proposed. It should also be noted that well designed schemes have the potential to lead to enhancements to the public realm and townscape/landscape character. Similarly, measures which help to relieve congestion may support improvements to local distinctiveness and the quality of the public realm. With regards to Option TW2, an approach which focuses to a greater degree on soft measures and demand management measures is less likely to lead to direct adverse impacts on townscape and landscape character. Local character also has the potential to benefit from initiatives taken forward through this option by an encouragement of modal shift, a limitation in traffic flows and improved traffic management. This will help limit adverse effects from traffic on the townscape and landscape character. In this respect a 'do minimum' approach taken forward through Option TW1 has less potential to initiate measures which bring these benefits.	**2**	**1**	**3**

Option TW1: Do minimum
Option TW2: Optimise use of existing infrastructure
Option TW3: Initiate more significant interventions, including with regards to the rail, Metro and road network

Air Quality and Noise	There are seven AQMAs found within the Tyne and Wear area. Two of these are in Newcastle, one around the B1318 and the A189 between Gosforth and West Jesmond; and a second in central Newcastle stretching to the River Tyne. There is one AQMA in central Gateshead stretching north to the River Tyne. There are also two in South Tyneside; one at Lean Lane around the junction with the B1516 and the A19, and a second in West Harton along Boldon Lane. Through delivering a more comprehensive package of schemes which supports modal shift to alternative modes of transport to the private car, Option TW2 has more potential than Option TW1 to support air and noise quality enhancements in Tyne and Wear. Option TW3, through bringing forward junction capacity enhancements and new road schemes has the potential to lead to air quality enhancements at key 'pinchpoints' on the network which have existing air quality issues. This has the potential to support significant enhancements of air quality at specific locations. However, through contributing to an overall increase in traffic flows on the wider road network, the option has the potential to increase traffic flows over a broader area, including through stimulating induced demand. This may contribute to increases in emissions of the key pollutants which affect air quality over a wider area. For the same reason, the option also has the potential to lead to more significant effects on noise quality.	**2**	**1**	**3**
Climate Change and Flood Risk	Option TW3's promotion of road schemes that relieve congestion and / or increase capacity has the potential effect of releasing demand for vehicle trips currently suppressed. As such the release of this induced demand may lead to increases in greenhouse gas emissions. Option TW2, through delivering a more comprehensive package of schemes that Option TW1, will do more to support modal shift to alternative modes of transport to the private car. As such the option has additional potential to support a limitation of greenhouse gas emissions from transport. In terms of adapting to the effects of climate change, Option TW3, and to a lesser extent, Option TW2, has more potential than Option TW1 to lead to proposals which enhance the resilience of particular locations to climate change. This is given the option will deliver transport schemes with the potential to initiate physical measures which will limit climate change impacts. However, the effect of initiatives depends on detailed interventions, including scheme design and layout, the integration of green infrastructure provision and other measures to help regulate the effects of extreme weather events. Similarly, the effect of initiatives on fluvial, surface water and groundwater flooding depend on scheme design considerations, including location, design and layout and the implementation of measures such as sustainable drainage systems.	**2**	**1**	**2**

Option TW1: Do minimum
Option TW2: Optimise use of existing infrastructure
Option TW3: Initiate more significant interventions, including with regards to the rail, Metro and road network

Population	A do minimum approach promoted through Option TW1 would do less to help address the key socio-economic and quality of life issues influenced by transport in Tyne and Wear. In this context a range of issues are less likely to be addressed without appropriate interventions, including accessibility issues, congestion and severance issues, and elements relating to social exclusion. Option TW2, through providing a focus on improved bus services, enhancements to walking and cycling linkages and demand management measures would do more than Option TW1 and Option TW3 to encourage public transport use and active travel. In addition to supporting social inclusion and community vitality, this will contribute to the quality of life of residents through limiting the impact of traffic and congestion on neighbourhoods and on severance issues. In addition to increasing travel choice through initiating significant transport capacity enhancements, Option TW3 has the potential to lead to a range of economic opportunities through enhancing connections with the strategic and local transport network and key employment and growth areas. This mirrors a core aim of the North East Local Enterprise Partnership and its Strategic Economic Plan, which seek to maximise economic opportunities and enhance the vitality of the region's economy through improvements in transport connectivity.	**3**	**2**	**1**
Human Health	Option TW3, through enabling a reduction of congestion at key bottlenecks on the network, has the potential to reduce the impacts of traffic and congestion on health and wellbeing at these locations. This includes through enhancements to air and noise quality, and improvements in the quality of the public realm. However, a potential stimulation of traffic growth over a larger area due to induced demand has the potential to have wider negative effects on health and wellbeing of residents through impacts on the quality of the public realm and a contribution to air and noise pollution. This does however have the potential to be offset by the additional enhancements to the rail and Metro network facilitated by the option. Option TW2 has increased potential to support modal shift from the private car. This will support healthier modes of travel, including through encouraging active travel modes such as walking and cycling. Through promoting modal shift, and limiting induced demand, it also offers the potential to support air and noise quality enhancements and enhancements to the quality of the public realm. This will support the health and wellbeing of residents. Options TW2 and TW3 have increased potential to facilitate enhancements to multifunctional green infrastructure networks in Tyne and Wear alongside transport infrastructure improvements, including along existing transport corridors. This will provide benefits for health and wellbeing. Option TW1, through initiating a do minimum approach, has the least potential to address the transport issues which adversely affect health and wellbeing.	**3**	**1**	**2**

Option TW1: Do minimum
Option TW2: Optimise use of existing infrastructure
Option TW3: Initiate more significant interventions, including with regards to the rail, Metro and road network

Equalities	Groups with 'protected characteristics' tend to be disproportionately affected by the negative effects of transport infrastructure, including from the physical and severance effects of transport corridors, effects on the quality of the public realm, and the effects of traffic and congestion on health and wellbeing. These groups are also disproportionately affected by accessibility issues. In this context, Option TW2, which seeks to 1) enhance accessibility by public transport and walking and cycling and 2) limit the impact of the private car on the built environment, including through demand management measures, will do more to support the needs of groups with protected characteristics. Whilst a significant expansion of transport capacity proposed through Option TW3 has the potential to support accessibility for certain groups, the option has some potential to impact on equalities groups through stimulating car use. This includes through impacting on the quality of local neighbourhoods and increasing severance issues. In addition, the option has increased potential to impact on the health and wellbeing of these groups through undermining air and noise quality and impacting on road safety. However, it should be noted that the benefits from the more significant interventions through this option, including with regards to the additional enhancements to the rail and Metro network will help offset these potential impacts. With regard to Option TW1, a do minimum approach would do less to help address the key socio-economic and quality of life issues influenced by transport in Tyne and Wear and is less likely to address the transport and accessibility needs of groups with protected characteristics.	**3**	**2**	**1**
Rurality	In the context of rural needs, the performance of the options for Tyne and Wear are closely linked to accessibility from rural areas to this key urban area in the North East. In this respect, the significant enhancement of transport capacity in Tyne and Wear facilitated through Option TW3 would do most of the options to support accessibility to services, facilities and employment opportunities in the Tyne and Wear urban area for those living in rural areas.	**3**	**2**	**1**

City of Durham

3.15 This area (**Figure 3.3**) covers city of Durham and the surrounding area. Two options have been considered as alternatives for the ISA, as follows:

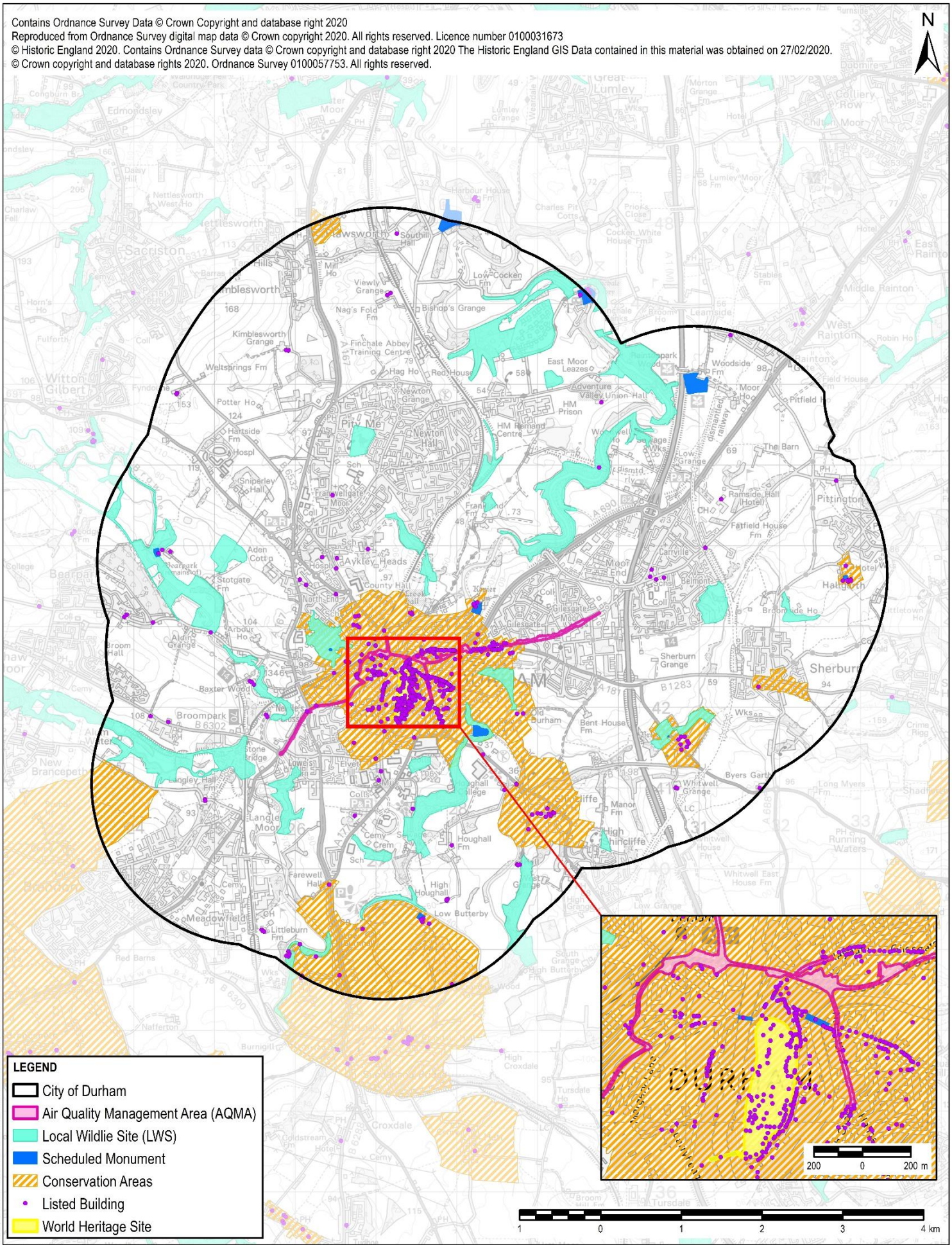
Option D1: Do minimum

3.16 A do minimum option would rely on committed investment, which would continue at a local and strategic level.

Option D2: Make better use of existing transport infrastructure in the city

3.17 This option would seek to deliver measures which maximise the potential of the existing transport network in the city. It is likely to include schemes such as enhanced walking and cycling networks, bus service improvements and demand management measures.

3.18 No major road schemes are included in the options. This recognises the outcomes of the recent examination on the County Durham Plan, which highlighted that the Northern and Western Relief Roads should be removed from the Plan.



File Name:I:\5004 - Information Systems\60630031_NECA_Transport_Plan\02_Maps\Figure 3-3 - City of Durham.mxd

Project Title/Drawing Title

ISA FOR THE NE TRANSPORT PLAN

KEY ENVIRONMENTAL CONSTRAINTS: CITY OF DURHAM

Client: TRANSPORT NORTH EAST STRATEGY UNIT

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FIGURE 3.3		01

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Appraisal findings

3.19 The following table presents appraisal findings in relation to the two options introduced above. These are organised by the ten ISA themes.

3.20 For each ISA theme, a commentary on the likely effects is presented. Options are also ranked numerically reflecting their relative sustainability performance, with '1' the more favourable ranking and '2' the less favourable ranking.

Table 3.2: Appraisal of options relating to the city of Durham

Option D1: Do minimum.
Option D2: Make better use of existing transport infrastructure in the city.

ISA theme	Discussion of potential effects and relative merits of options	Rank of preference	
		D1	D2
Biodiversity	Key designated sites in the vicinity of the city of Durham include the Butterby Oxbow SSSI, the Brasside Pond SSSI, and a number of Local Wildlife Sites. Key habitats in the vicinity of the city include the following BAP Priority Habitats: deciduous woodland; lowland heathland; lowland raised bog; and lowland dry acid grassland. Through delivering additional transport measures, Option D2 has the potential to lead to additional impacts on habitats and ecological networks on existing transport corridors, where any enhancements would be focused. This is given many existing transport routes are important biodiversity corridors, containing and linking key habitats and which support a significant number of protected species. However, the option would not implement significant additional physical infrastructure. The do minimum approach of Option D1 would continue to take forward schemes from committed investment; potential effects though from Option D1 are likely to be more limited than Option D2. Both options however have the potential to lead to effects without the implementation of appropriate avoidance and mitigation measures. It should also be noted that delivery of new and enhanced transport infrastructure may support some enhancements to biodiversity networks. In this context there is scope for transport infrastructure enhancements in the vicinity of the city to support environmental net gain locally. This includes through delivering enhancements in the Network Enhancement Zones and Network Expansion Zones identified to the north, west and south of the city.	**1**	**2**
Water and Soil Resources	In terms of impacts on land and soils resources, given Option D2 would not lead to significant additional landtake in the vicinity of the city, there is unlikely to be a significant difference between the two options in terms of the loss of productive agricultural land. No significant impacts on water quality would be anticipated from schemes linked to the two options if the required embedded mitigation measures are incorporated within the construction and operational stage.	**=**	**=**
Historic Environment	The city of Durham has a rich historic environment resource. This is highlighted by the presence of the Durham Castle and Cathedral World Heritage Site, the coverage of conservation areas over large parts of the city, and the significant number of listed buildings and scheduled monuments present in the area (**Figure 3.3**). In addition, the city has a rich archaeological resource. The significance of direct effects on the historic environment from the interventions taken forward through each option will depend on design, layout and scale of the schemes, and mitigation and avoidance measures proposed. It should also be noted that well designed schemes have the potential to lead to enhancements to the public realm and the setting of the historic environment. Potential effects from both options will though be limited by the limited number of new physical infrastructure schemes taken forward. However, Option D2 will initiate a range of measures which have the potential to deliver a greater degree of modal shift from the private car than Option D1. This includes a combination of measures to encourage public transport use and walking and cycling, as well as demand management measures. In this respect the fabric and setting of the historic environment has additional potential to benefit through modal shift, a limitation in traffic flows and improved traffic management. This will help limit adverse effects from traffic and congestion on the fabric and	**2**	**1**

Option D1: Do minimum.
Option D2: Make better use of existing transport infrastructure in the city.

	setting of historic environment assets. In this respect a 'do minimum' approach taken forward through Option D1 has reduced potential to bring similar benefits.		
Landscape	Both options, through focusing on the existing transport network, are less likely to deliver new physical infrastructure which have significant impacts on local character, distinctiveness or a sense of place. Option D2 will however initiate a range of measures which have the potential to deliver a greater degree of modal shift from the private car than Option D1. This includes a combination of measures to encourage public transport use and walking and cycling, as well as demand management measures. This will support townscape and landscape character through encouraging modal shift, a limitation in traffic flows and improved traffic management. This will help limit adverse effects from traffic and congestion on townscape and landscape character in the vicinity of the city. In this respect a 'do minimum' approach taken forward through Option D1 has less potential to initiate measures which bring these benefits.	**2**	**1**
Air Quality and Noise	Monitoring and detailed assessment of Air Quality in the city of Durham has determined that levels of nitrogen dioxide from road traffic emissions in some areas exceeds the annual mean National Air Quality Objective for nitrogen dioxide. In response to this an AQMA in the city centre that incorporated Highgate, Milburngate and the Gilesgate areas of the city was declared in 2011. This was later extended in 2014 to cover the western part of the city. Through delivering a more comprehensive package of schemes which supports modal shift from the private car to public transport and walking and cycling, Option D2 has more potential than Option D1 to effectively support air and noise quality improvements at key air pollution hotspots in the city. This includes through limiting traffic flows and reducing congestion.	**2**	**1**
Climate Change and Flood Risk	Through delivering a more comprehensive package of schemes which supports modal shift from the private car to public transport and walking and cycling, Option D2 has more potential than Option D1 to effectively support a limitation of greenhouse gas emissions from transport in the city. In terms of adapting to the effects of climate change, the effect of initiatives taken forward through the options depend on detailed interventions, including scheme design and layout, the integration of green infrastructure provision and other measures to help regulate the effects of extreme weather events. Similarly, the effect of initiatives on fluvial, surface water and groundwater flooding depend on scheme design considerations, including design and layout and the implementation of measures such as sustainable drainage systems. As such it is not possible to differentiate between the options at this level of detail in terms of climate change adaptation.	**2**	**1**
Population	Option D2, through delivering additional packages of schemes focusing on walking and cycling network improvements, improved bus services and demand management measures would do more than Option D1 to encourage public transport use and active travel. In addition to supporting social inclusion and community vitality, this will contribute to the quality of life of residents through limiting the impact of traffic and congestion on neighbourhoods and on severance issues. In this respect a do minimum approach promoted through Option D1 would do less to help address socio-economic and quality of life issues influenced by transport in the city; for example, bus service patronage may suffer and the city may do less to benefit from investment at Durham railway station. In addition to increasing travel choice through initiating additional packages of enhancements, Option D2 has the potential to support economic opportunities in the city through enhancing connections with the strategic and local transport network and key employment and growth areas.	**2**	**1**
Human Health	Option D2 has increased potential to support modal shift from the private car. This will support healthier modes of travel, including through encouraging active travel modes such as walking and cycling. Through promoting modal shift, it also offers the potential to support air and noise quality enhancements and enhancements to the quality of the public realm. This will support the health and wellbeing of residents. Option D1, through initiating a do minimum approach, has less potential to address the transport issues which adversely affect health and wellbeing in the city.	**2**	**1**

Option D1: Do minimum.
Option D2: Make better use of existing transport infrastructure in the city.

Equalities	Groups with 'protected characteristics' tend to be disproportionately affected by the negative effects of transport infrastructure, including from the physical and severance effects of transport corridors, effects on the quality of the public realm, and the effects of traffic and congestion on health and wellbeing. These groups are also disproportionately affected by accessibility issues. In this context, Option D2, which seeks to 1) enhance accessibility by public transport and walking and cycling and 2) limit the impact of the private car on the built environment, including through demand management measures, will do more to support the needs of groups with protected characteristics. With regard to Option D1, a do minimum approach would do less to help address the socio-economic and quality of life issues influenced by transport in the city and is less likely to address the transport and accessibility needs of groups with protected characteristics.	**2**	**1**
Rurality	In the context of rural needs, the performance of the options for the city of Durham are closely linked to accessibility from rural areas to the city. In this respect, the more comprehensive measures proposed through Option D2 would do more to support accessibility to services, facilities and employment opportunities in the city from the rural hinterland.	**2**	**1**

Post-industrial communities

3.21 This area (**Figure 3.4**) incorporates the former coal-mining and steel working communities in the region. This includes the area around Consett, Stanley and Catchgate; the area around Peterlee, Easington, Shotton Colliery and Blackhall Colliery; a corridor between Peterlee and Ferryhill; a corridor along the A182 encompassing South Hetton, Hetton-le-Hole, and Houghton-le-Spring; and the area around Shildon.

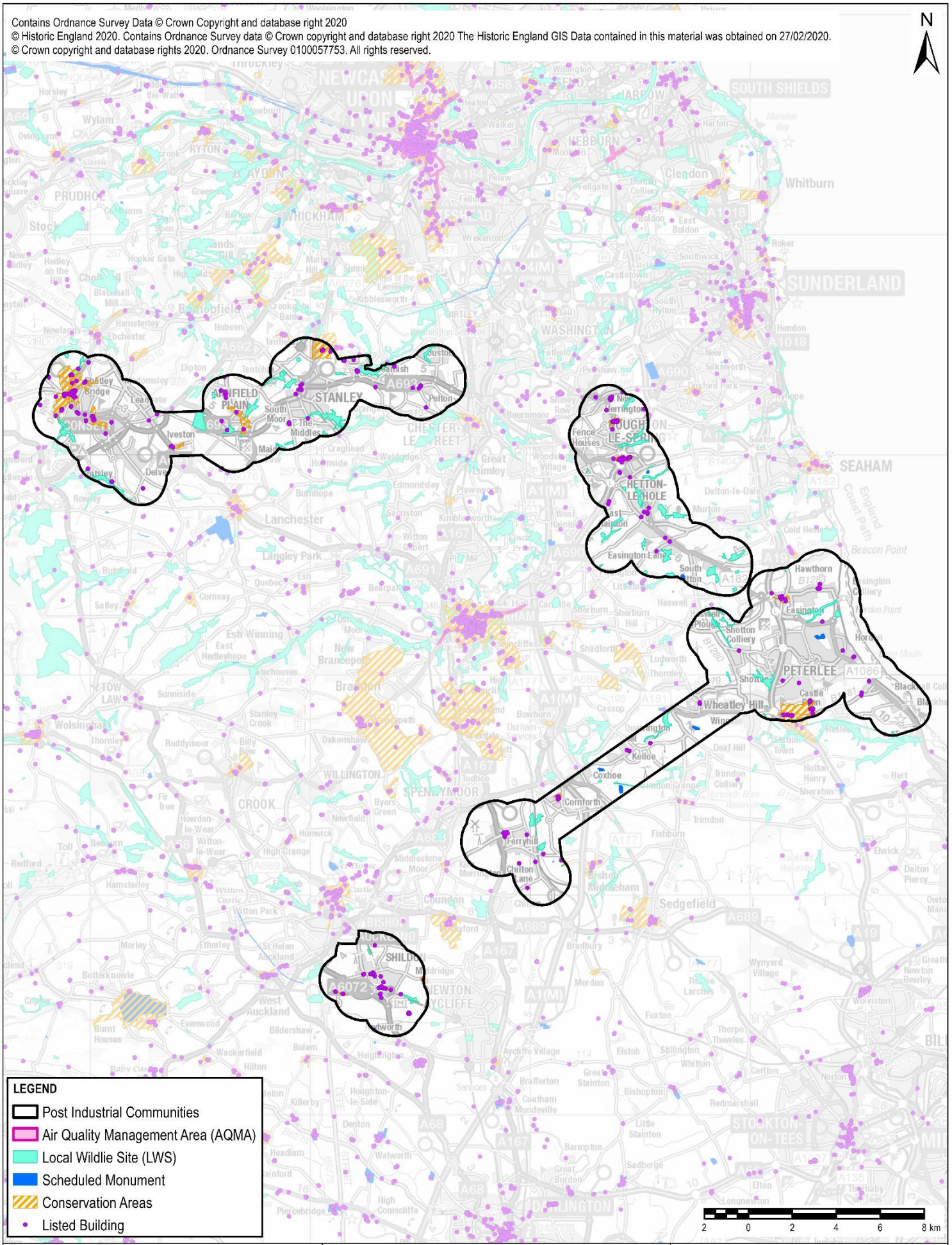
3.22 Two options have been considered as alternatives for the ISA, as follows:

Option PI1: Do minimum

3.23 A do minimum option would rely on committed investment, which would continue at a local and strategic level.

Option PI2: Deliver road and rail infrastructure enhancements to support post-industrial communities' connectivity

3.24 Enhancements would include new and enhanced links to central Newcastle from these communities. In terms of rail infrastructure, this could include the reopening of railway lines (for example the Consett to Newcastle line and the reopening of the Leamside Line from Pelaw junction to Tursdale) and enhancing existing services and delivering improvements to rolling stock. In terms of road schemes, these could include some bypass schemes as well as targeted corridor-based approaches between these communities and other destinations, incorporating enhancements at key 'pinchpoint' junctions.



Project Title/Drawing Title

ISA FOR THE NE TRANSPORT PLAN

KEY ENVIRONMENTAL CONSTRAINTS: POST-INDUSTRIAL COMMUNITIES

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FIGURE 3.4		01

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Appraisal findings

3.25 The following table presents appraisal findings in relation to the two options introduced above. These are organised by the ten ISA themes.

3.26 For each ISA theme, a commentary on the likely effects is presented. Options are also ranked numerically reflecting their relative sustainability performance, with '1' the more favourable ranking and '2' the less favourable ranking.

Table 3.3: Appraisal of options relating to post-industrial communities

Option PI1: Do minimum.
Option PI2: Deliver road and rail infrastructure enhancements to support post-industrial communities' connectivity

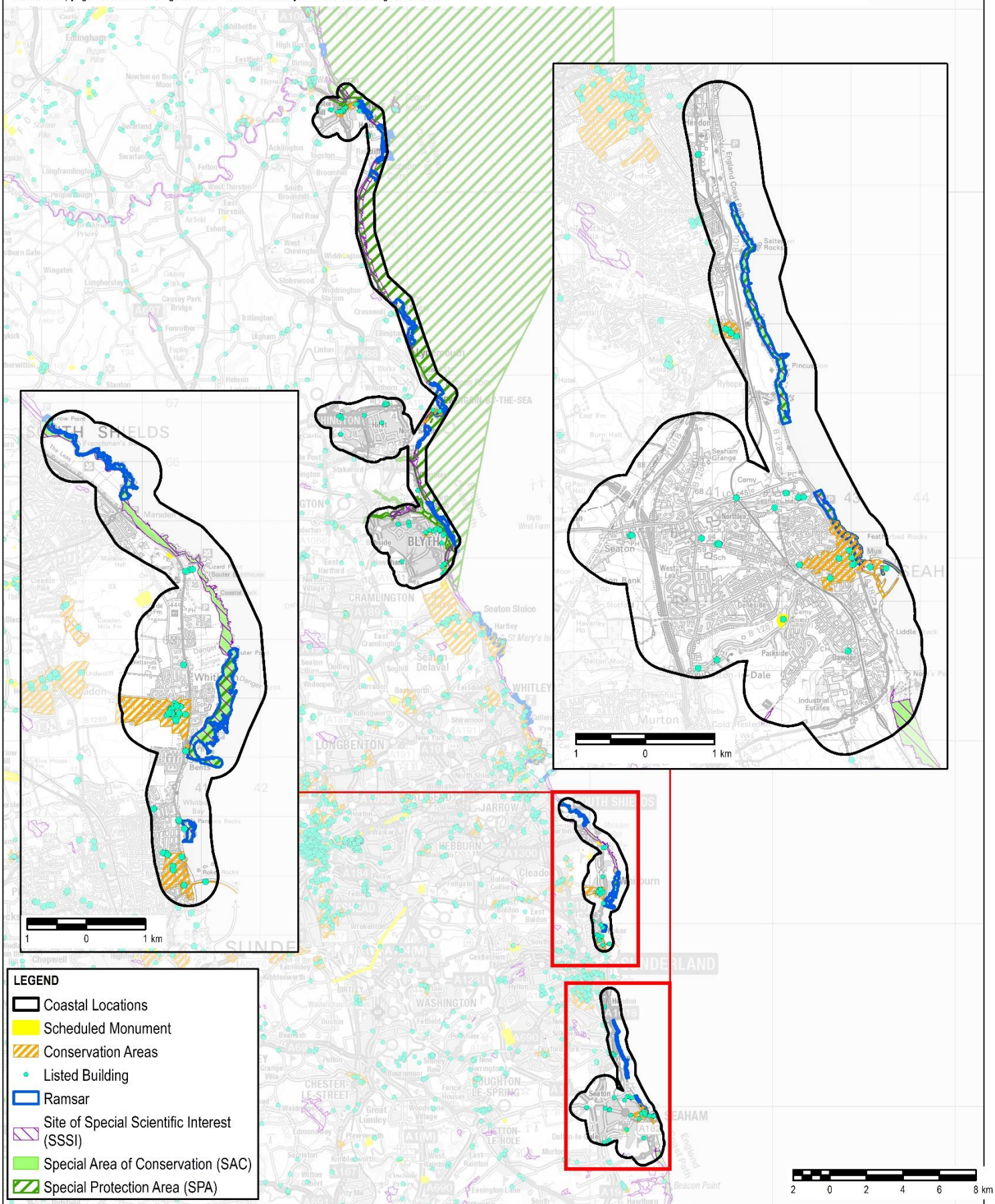
ISA theme	Discussion of potential effects and relative merits of options	Rank of preference	
		PI1	PI2
Biodiversity	Option PI2, through facilitating the delivery of new bypasses and junction improvement schemes has increased potential to lead to significant effects on biodiversity habitats, species and networks. This includes from land take, habitat loss and fragmentation and disturbance. In terms of the reopening of railway lines, existing railway corridors are often important biodiversity corridors, containing and linking key habitats. These corridors support a significant number of protected species. This is highlighted by the designation of some of these corridors as Local Wildlife Sites and the presence of BAP Priority Habitats. As such, the reopening of these lines has significant potential to have impacts on biodiversity through loss of habitat from landtake, habitat fragmentation and disturbance from noise and light pollution. It should be noted though that the delivery of new and enhanced transport infrastructure may support some enhancements to biodiversity networks. For example, the Government's 25-year Environment Plan seeks to embed an environment net gain principle for infrastructure development. In addition, Highways England's Road Investment Strategy states that by 2040 its schemes must deliver a net gain in biodiversity and Network Rail has committed to make a net positive contribution to biodiversity. In this context there is scope for transport infrastructure enhancements to support environmental net gain in some locations. However, this should be carefully managed and been undertaken through a landscape-scale approach.	**1**	**2**
Water and Soil Resources	Option PI2, through facilitating the delivery of significant new transport infrastructure, will require increased landtake. This has increased potential to lead to the development of previously undeveloped land, including, potentially, productive agricultural land. Without mitigation measures, an increased delivery of new transport infrastructure also has the potential to have impacts on water and soil quality through increases in surface water run-off. However, no significant impacts on water quality would be anticipated from schemes if the required embedded mitigation measures are incorporated within the construction and operational stage. Option PI2 also offers additional opportunities to deliver enhancements to surface water management on existing transport corridors.	**1**	**2**
Historic Environment	The communities located in these areas have a rich historic environment resource, as highlighted by the significant number of features and areas designated for their heritage value. This includes associated with the diverse industrial heritage resource linked to the legacy of industrial activities in these areas. The historic environment of these areas is also framed by the significant number of undesignated features of heritage value which are vulnerable to change given their lack of statutory and local protections, and the large number of heritage assets 'at risk'. In addition, these areas have a rich archaeological resource, and existing railway corridors are also often themselves important heritage resources. The increased number of physical transport infrastructure schemes likely to be initiated through Option PI2 have the potential to lead to impacts on the key heritage assets (including designated features and areas) located in the vicinity of the key routes and areas targeted for interventions. This includes from new road schemes and in the vicinity of disused railway lines. The significance of effects	**2**	**1**

Option PI1: Do minimum.
Option PI2: Deliver road and rail infrastructure enhancements to support post-industrial communities' connectivity

	from these interventions will however depend on design, layout and scale of the schemes, and mitigation and avoidance measures proposed. It should also be noted that well designed schemes have the potential to lead to enhancements to the public realm and the setting of the historic environment. Alongside, the reopening of railway lines could be viewed as positive from a heritage assessment given this will rejuvenate their usage. Similarly, measures which help to relieve congestion may support improvements to local distinctiveness and the quality of the public realm, with benefits for the setting of the historic environment. Well-designed transport schemes may also support the reuse and rejuvenation of underutilised designated and undesignated features of historic environment interest or support enhancements to the setting of features and areas of interest.		
Landscape	Option PI2, through facilitating the delivery of significant new transport infrastructure, has increased potential than Option PI1 to have impacts on townscape and landscape character in the vicinity of these areas. This includes through visual impacts, the loss of features which contribute to the distinctiveness of the landscape, impacts on a sense of place, impacts on historic landscape character and impacts on noise pollution. The significance of effects from schemes initiated by the option would however depend on the design, layout and scale of the schemes, and the mitigation and avoidance measures proposed. It should also be noted that well designed schemes have the potential to lead to enhancements to the public realm and townscape/landscape character. Similarly, measures which help to relieve congestion may support improvements to local distinctiveness and the quality of the public realm.	**1**	**2**
Air Quality and Noise	Option PI2, through bringing forward junction capacity enhancements and new road schemes has the potential to lead to air quality enhancements at 'pinchpoints' on the network which have existing air quality issues. This has the potential to support significant enhancements of air quality at specific locations. However, through contributing to an overall increase in traffic flows on the wider road network, the option has the potential to increase traffic flows over a broader area, including through stimulating induced demand. This may contribute to increases in emissions of the key pollutants which affect air quality over a wider area. For the same reason, the option also has the potential to leading to more significant effects on noise quality. The reopening of railways and rail service improvement schemes will help support modal shift from the private car. This will support a limitation of pollutants from transport and have positive effects for noise quality.	**1**	**2**
Climate Change and Flood Risk	Option PI2's promotion of road schemes that relieve congestion and / or increase capacity has the potential effect of releasing demand for vehicle trips currently suppressed. As such the release of this induced demand may lead to increases in greenhouse gas emissions. However, the reopening of railways and rail service improvement schemes will help support modal shift from the private car. This will support a limitation of greenhouse emissions from transport. In terms of adapting to the effects of climate change, Option PI2 has more potential than Option PI1 to lead to proposals which enhance the resilience of particular locations to the effects of climate change. This is given the option will deliver transport schemes with the potential to initiate physical measures which will limit climate change impacts. However, the effect of initiatives depends on detailed interventions, including scheme design and layout, the integration of green infrastructure provision and other measures to help regulate the effects of extreme weather events. Similarly, the effect of initiatives on fluvial, surface water and groundwater flooding depend on scheme design considerations, including location, design and layout and the implementation of measures such as sustainable drainage systems.	**1**	**2**
Population	The post-industrial communities of the region suffer from significant deprivation issues. This is in part linked to accessibility to key services, facilities and employment opportunities. In this respect a do minimum approach promoted through Option PI1 would do less to help address the key socio-economic and quality of life issues influenced by transport in post-industrial communities. In this context a range of issues are less likely to be addressed through this option	**2**	**1**

Option PI1: Do minimum.
Option PI2: Deliver road and rail infrastructure enhancements to support post-industrial communities' connectivity

	without appropriate interventions, including accessibility issues, congestion and severance issues, and elements relating to social exclusion. Option PI2, through proactively initiating a focus on significant rail and road enhancements will help address some of the key accessibility issues seen in the area. This includes relating to the lack of choices relating to public transport and its affordability and reliability (including during off peak times), and existing pressures on the road network. In addition to increasing travel choice through initiating significant transport capacity enhancements, Option PI2 has the potential to lead to a range of economic opportunities through enhancing connections with the strategic and local transport network and key employment and growth areas. This mirrors a core aim of the North East Local Enterprise Partnership and its Strategic Economic Plan, which seek to maximise economic opportunities and enhance the vitality of the region's economy through improvements in transport connectivity.		
Human Health	Option PI2, through enabling a reduction of congestion at key bottlenecks on the network, has the potential to reduce the impacts of traffic and congestion on health and wellbeing at these locations. This includes through enhancements to air and noise quality, and improvements in the quality of the public realm. However, a potential stimulation of traffic growth over a larger area due to induced demand has the potential to have wider negative effects on health and wellbeing of residents through significant impacts on the quality of the public realm and a contribution to air and noise pollution. Through initiating significant rail enhancements in these areas (including through the reopening of disused rail lines), Option PI2 will also support modal shift from the private car to public transport. This will indirectly support healthier modes of travel, including through encouraging active travel modes such as walking and cycling for at least part of journey. Through promoting modal shift, it also offers the potential to support air and noise quality enhancements and enhancements to the quality of the public realm. This will support the health and wellbeing of residents. The option also has increased potential to facilitate enhancements to multifunctional green infrastructure networks in these communities alongside transport infrastructure improvements. This will provide benefits for health and wellbeing. Option PI2 also has the potential to deliver accessibility enhancements which will help reduce some of the causes of deprivation in these communities. This is significant given deprivation levels are a key contributor to health and wellbeing issues.	**2**	**1**
Equalities	A do minimum approach taken forward through Option PI1 would do less to help address the key socio-economic and quality of life issues influenced by transport in the region's post-industrial communities. As such it is less likely to address the transport needs of groups with protected characteristics, groups who are disproportionately affected by accessibility issues. In this context Option PI2, through proactively initiating a focus on significant enhancements by rail and road will help address some of the key accessibility issues seen in the area. This includes relating to the lack of choices relating to public transport and its affordability and reliability (including during off peak times). This will do more to support the needs of groups with protected characteristics. However, groups with protected characteristics tend to be disproportionately affected by the negative effects of transport infrastructure, including from the physical and severance effects of transport corridors, effects on the quality of the public realm, and the effects of traffic and congestion on health and wellbeing. In this respect, the road schemes promoted through Option PI2 may impact on equalities groups through effects on the public realm through a stimulation of car use. This however depends on the extent to which proposals taken forward through this options support enhancements to the public realm through limiting the adverse impacts of the transport network on neighbourhoods.	**2**	**1**
Rurality	The significant rail and road infrastructure enhancements proposed through Option PI2 have increased potential to enhance accessibility from the rural areas surrounding post-industrial communities to key urban areas in the North East. This includes through enhancing rail links and supporting enhancements to the road network. As such Option PI2 will do more to address rural accessibility issues.	**2**	**1**



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Project Title/Drawing Title

ISA FOR THE NE TRANSPORT PLAN

KEY ENVIRONMENTAL CONSTRAINTS: COASTAL AREAS

Client
TRANSPORT NORTH EAST STRATEGY UNIT

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Coastal areas

3.27 This area (**Figure 3.6**) includes coastal areas located to the south and north of the main Tyne and Wear conurbation. It incorporates the coastal areas between South Shields and Roker, including: Marsden, Whitburn and Seaburn; Hendon to Seaham; and Blyth to Amble.

3.28 Two options have been considered as alternatives for the ISA, as follows.

Option C1: Do minimum

3.29 A do minimum option would rely on committed investment, which would continue at a local and strategic level.

Option C2: Support the regeneration of coastal settlements through targeted interventions

3.30 The option would seek to deliver enhanced public transport and active travel infrastructure. Given the coastal location of these settlements, interventions would seek to help relieve pressures on junctions linked to the east-west pattern of movements by car and deliver targeted improvements in unlocking growth sites, supporting the visitor economy, and improving job prospects. The option would also seek to ensure the maintenance and upkeep of key assets.

Appraisal findings

3.31 The following table presents appraisal findings in relation to the two options introduced above. These are organised by the ten ISA themes.

3.32 For each ISA theme, a commentary on the likely effects is presented. Options are also ranked numerically reflecting their relative sustainability performance, with '1' the more favourable ranking and '2' the less favourable ranking.

Table 3.4: Appraisal of options relating to coastal areas

Option C1: Do minimum.
Option C2: Support the regeneration of coastal settlements through targeted interventions

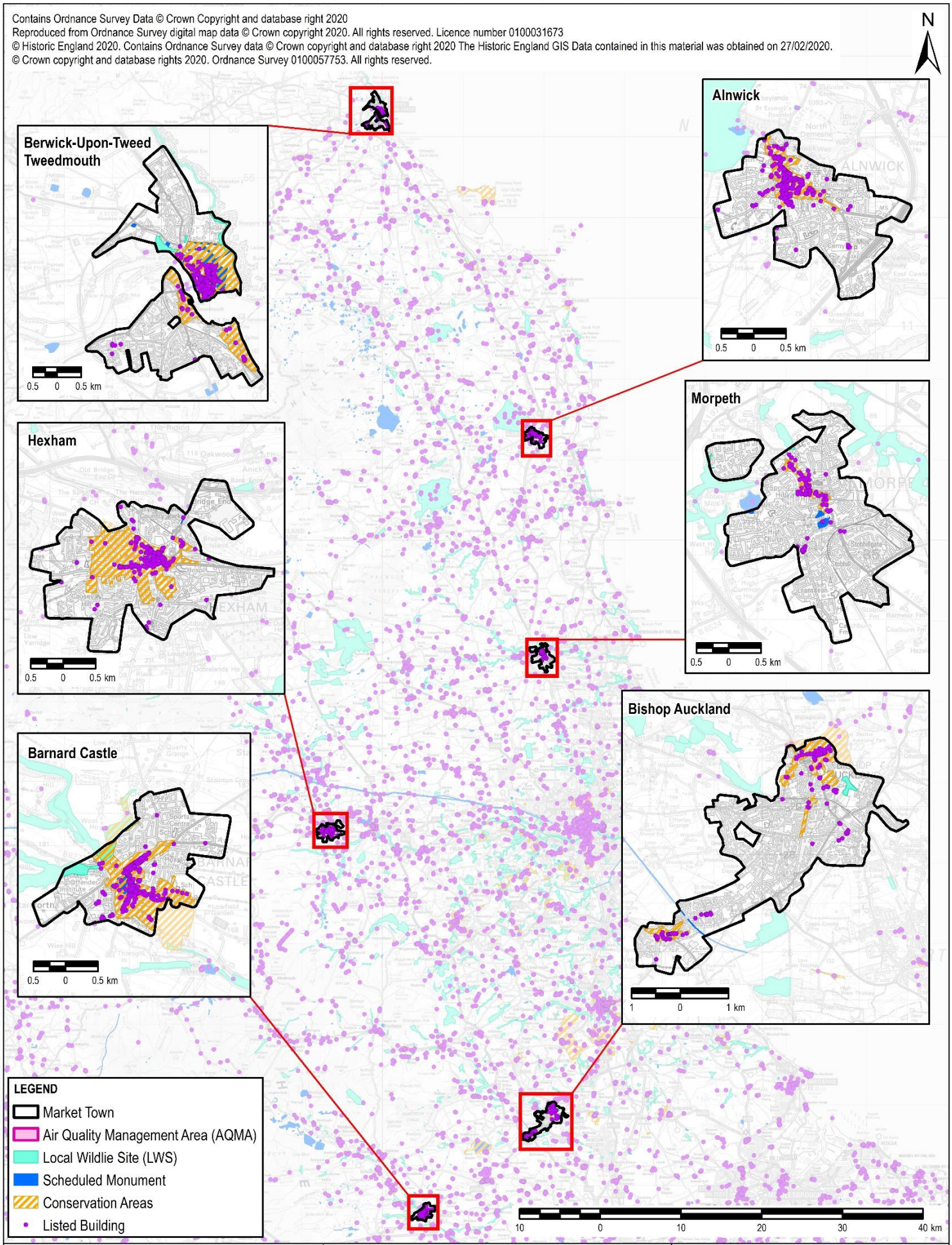
ISA theme	Discussion of potential effects and relative merits of options	Rank of preference	
		C1	C2
Biodiversity	A range of internationally and nationally designated sites are present in the vicinity of the coastal area. This includes the Northumbria Coast SPA, the Durham Coast SAC, the Durham Coast SSSI, the Northumberland Shore SSSI and the Cresswell and Newbiggin Shores SSSI. Through delivering additional transport measures, Option C2 has the potential to lead to additional impacts on habitats and ecological networks on existing transport corridors, where any enhancements would be focused. This is given many existing transport routes are important biodiversity corridors, containing and linking key habitats and which support a significant number of protected species. However, the option would not implement significant additional physical infrastructure, and would be unlikely to take place in locations which would directly affect the internationally and nationally designated sites on the coast. The do minimum approach of Option C1 would continue to take forward schemes from committed investment; however, potential effects from Option C1 have the potential to be more limited than Option C2. Both options though have the potential to lead to effects without the implementation of appropriate avoidance and mitigation measures. It should also be noted that delivery of new and enhanced transport infrastructure may support some enhancements to biodiversity networks. In this context there is scope for transport infrastructure enhancements in coastal areas to support environmental net gain locally. This includes through delivering enhancements in the expansive area of Network Enhancement Zones and Network Expansion Zones identified in the coastal area.	**1**	**2**

Option C1: Do minimum.
Option C2: Support the regeneration of coastal settlements through targeted interventions

Water and Soil Resources	In terms of impacts on land and soils resources, given Option C2 would not lead to significant additional landtake, there is unlikely to be a significant difference between the two options in terms of the loss of productive agricultural land. No significant impacts on water quality would be anticipated from schemes linked to the two options if the required embedded mitigation measures are incorporated within the construction and operational stage.	=	=
Historic Environment	A number of the coastal communities have a rich historic environment resource, as highlighted by clusters of features and areas designated for their heritage value. The Durham Heritage Coast also extends south of Sunderland, which has been designated in part for its distinctive historic coastal landscape. The significance of direct effects on the historic environment from the interventions taken forward through each option will depend on the design, layout and scale of the schemes, and mitigation and avoidance measures proposed. It should also be noted that well designed schemes have the potential to lead to enhancements to the public realm and the setting of the historic environment. Potential effects from both options will though be limited by the limited number of new physical infrastructure schemes taken forward. However, Option C2 will initiate a range of measures which have the potential to deliver a greater degree of modal shift from the private car than Option C1. This includes a combination of measures to encourage public transport use and active travel modes. As such, the fabric and setting of the historic environment has additional potential to benefit through modal shift, a limitation in traffic flows and improved traffic management. This will help limit adverse effects from traffic and congestion on the fabric and setting of historic environment assets. In this respect a 'do minimum' approach taken forward through Option C1 has reduced potential to bring similar benefits.	**2**	**1**
Landscape	Whilst no nationally designated landscapes are located within the area (with the exception of the Northumberland Coast AONB, which is located to the north of Amble), the coastal area has a distinctive landscape and seascape which is valued by residents and visitors. The Durham Heritage Coast also extends south of Sunderland, which has been designated for its distinctive coastal landscape associated with its natural, historical and geological interest. Both options, through focusing on the existing transport network, are less likely to deliver new physical infrastructure which have significant impacts on local character, distinctiveness or a sense of place. Option C2 will however initiate a range of measures which have the potential to deliver a greater degree of modal shift from the private car than Option C1. This includes a combination of measures to encourage public transport use and active travel modes. This will support landscape character through encouraging modal shift, a limitation in traffic flows and improved traffic management. This will help limit adverse effects from traffic and congestion on landscape character in the vicinity of these coastal areas. In this respect a 'do minimum' approach taken forward through Option C1 has less potential to initiate measures which bring these benefits.	**1**	**2**
Air Quality and Noise	Whilst no AQMAs exist in the area (the AQMA in Blyth was revoked in 2012), Option C2 will do more than Option C1 to support air quality at key hotspots. This includes through delivering a more comprehensive package of schemes which supports modal shift from the private car to public transport and walking and cycling.	**2**	**1**
Climate Change and Flood Risk	Through delivering a more comprehensive package of schemes which supports modal shift from the private car to public transport and walking and cycling, Option C2 has more potential than Option C1 to effectively support a limitation of greenhouse gas emissions from transport. In terms of adapting to the effects of climate change, the effect of initiatives taken forward through the options depend on detailed interventions, including scheme design and layout, the integration of green infrastructure provision and other measures to help regulate the effects of extreme weather events. Similarly, the effect of initiatives on fluvial, surface water and groundwater flooding depend on scheme design considerations, including design and layout and the implementation of measures such as sustainable drainage systems.	**2**	**1**

Option C1: Do minimum.
Option C2: Support the regeneration of coastal settlements through targeted interventions

	However, Option C2, through seeking to enhance the resilience of the existing transport network, has the potential to respond more positively to the impacts from climate change relating to coastal change in the area.		
Population	Option C2, through delivering additional packages of schemes with a focus on public transport and active travel enhancements will support social inclusion and community vitality. The option also has the potential to contribute to the quality of life of residents through limiting the impact of traffic and congestion on neighbourhoods and on severance issues. In this respect a do minimum approach promoted through Option C1 would do less to help address some of the key accessibility issues seen in coastal areas. This includes relating to the lack of choices relating to public transport and its affordability and reliability (including during off peak times), and existing pressures on the road network. In addition to increasing travel choice through initiating additional packages of enhancements, Option C2 has the potential to support economic opportunities in coastal areas through enhancing connections with the strategic and local transport network and key employment and growth areas. In this respect, under Option C1, local economic regeneration opportunities could be held back and not delivered with the most sustainable transport choices. The option would also do less to support local high streets or the visitor economy, both of which provide vital contributions to the economic vitality of these coastal areas.	**2**	**1**
Human Health	Option C2 has increased potential to support modal shift from the private car. This will support healthier modes of travel, including through encouraging active travel modes such as walking and cycling. Through promoting modal shift, it also offers the potential to support air and noise quality enhancements and enhancements to the quality of the public realm. This will support the health and wellbeing of residents. Option C1, through initiating a do minimum approach, has less potential to address the transport issues which adversely affect health and wellbeing in coastal areas.	**2**	**1**
Equalities	Groups with 'protected characteristics' tend to be disproportionately affected by the negative effects of transport infrastructure, including from the physical and severance effects of transport corridors, effects on the quality of the public realm, and the effects of traffic and congestion on health and wellbeing. These groups are also disproportionately affected by accessibility issues. In this context, Option C2, which seeks to enhance accessibility by public transport and walking and cycling and deliver increased transport choice will do more to support the needs of groups with protected characteristics. With regards to Option C1, a do minimum approach would do less to help address the socio-economic and quality of life issues influenced by transport in coastal areas and is less likely to address the transport and accessibility needs of groups with protected characteristics.	**2**	**1**
Rurality	Whilst the public transport infrastructure enhancements proposed through Option C2 have increased potential to enhance accessibility from areas surrounding these coastal areas, they are unlikely to have significant benefits for those living in the more rural areas of the North East.	**N/A**	**N/A**



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Project Title/Drawing Title

ISA FOR THE NE TRANSPORT PLAN

KEY ENVIRONMENTAL CONSTRAINTS: MARKET TOWNS

Client: TRANSPORT NORTH EAST STRATEGY UNIT

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CN	TD	NCB
Date	Scale @ A4	Purpose of Issue
23/10/2020	1:600,000	FINAL
Drawing Number		Rev
FIGURE 3.5		01

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Market towns

3.33 This area (**Figure 3.5**) incorporates the larger market towns in the region, including Bishop Auckland, Barnard Castle, Alnwick, Berwick-upon-Tweed, Morpeth and Hexham.

3.34 Two options have been considered as alternatives for the ISA, as follows.

Option MT1: Do minimum

3.35 A do minimum option would rely on committed investment in transport infrastructure in the vicinity of the market towns, which would continue at a local and strategic level.

Option MT2: Optimise use of existing transport infrastructure

3.36 This option would seek to support the region's market towns to make better use of existing transport networks. This includes through delivering measures such as enhancements to bus services, improved road maintenance regimes, electric charging infrastructure and enhanced walking and cycling links. Park and ride could also play a role in some towns. The option would also seek to support the vitality of town centres and the visitor economy.

Appraisal findings

3.37 The following table presents appraisal findings in relation to the two options introduced above. These are organised by the ten ISA themes.

3.38 For each ISA theme, a commentary on the likely effects is presented. Options are also ranked numerically reflecting their relative sustainability performance, with '1' the more favourable ranking and '2' the less favourable ranking.

Table 3.5: Appraisal of options relating to market towns

Option MT1: Do minimum.
Option MT2: Optimise the use of existing transport infrastructure

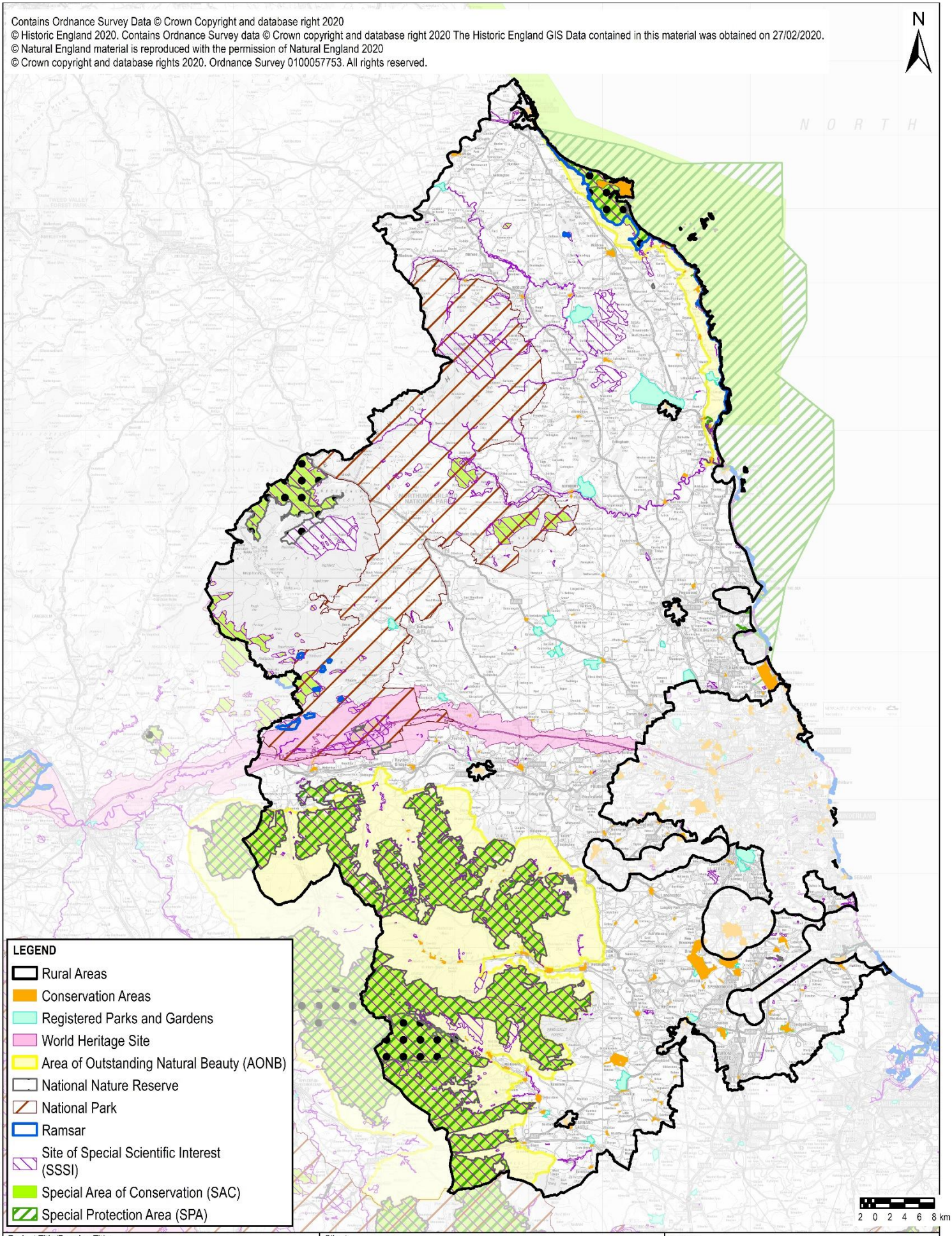
ISA theme	Discussion of potential effects and relative merits of options	Rank of preference	
		MT1	MT2
Biodiversity	In terms of internationally and nationally designated sites present in the vicinity of the market towns, the main concentration of such sites is around Berwick-upon-Tweed, where the Tweed Estuary SAC, the Berwickshire & North Northumberland Coast SAC, the Tweed Catchment Rivers SSSI and the Northumberland Shore SSSI are present locally. The Tyne Watersmeet SSSI is also located to the north west of Hexham. All of the settlements have a range of important biodiversity habitats present locally, including BAP Priority Habitats, and also Local Wildlife Sites. Through delivering a broader range of transport measures, Option MT2 has the potential to lead to additional impacts on habitats and ecological networks in the vicinities of market towns. However, the option would not in most cases implement significant additional physical infrastructure (with the exception of potential additional Park & Ride provision, which may be delivered in a few of the settlements). Alongside, any physical infrastructure would be unlikely to take place in locations which would directly affect the internationally and nationally designated sites or near Berwick-upon-Tweed or Hexham. Both options though have the potential to lead to effects on habitats and species without the implementation of appropriate avoidance and mitigation measures. It should also be noted that delivery of new and enhanced transport infrastructure may support some enhancements to biodiversity networks. In this context there is scope for transport infrastructure enhancements in the vicinities of the market towns to support environmental net gain locally. This includes through delivering enhancements in the numerous Network Enhancement Zones and Network Expansion Zones identified in the vicinities of the six towns.	**1**	**2**
Water and Soil Resources	In terms of impacts on land and soils resources, Option MT2 has the potential to lead to additional land take through the delivery of new Park & Ride provision. This has the potential to lead to land take on productive agricultural land, potentially	**1**	**2**

Option MT1: Do minimum.
Option MT2: Optimise the use of existing transport infrastructure

	leading to the loss of land classified as the best and most versatile agricultural land. No significant impacts on water quality would be anticipated from schemes linked to the two options if the required embedded mitigation measures are incorporated within the construction and operational stage.		
Historic Environment	The market towns have a rich historic environment resource. This is highlighted by the presence of significant clusters of listed features in around the settlements, as well as the presence of conservation areas covering the historic cores of each of the six towns. The significance of direct effects on the historic environment from the interventions taken forward through each option will depend on design, layout and scale of the schemes, and mitigation and avoidance measures proposed. It should also be noted that well designed schemes have the potential to lead to enhancements to the public realm and the setting of the historic environment. Potential effects from both options will though be limited by the relatively limited number of new physical infrastructure schemes taken forward. However, Option MT2 will initiate a range of measures which have the potential to deliver a greater degree of modal shift from the private car than Option MT1. This includes a combination of measures to encourage public transport use and active travel modes. In this respect the fabric and setting of the historic environment has additional potential to benefit through modal shift, a limitation in traffic flows and improved traffic management. This will help limit adverse effects from traffic and congestion on the fabric and setting of historic environment assets. In this respect a 'do minimum' approach taken forward through Option MT1 has reduced potential to bring similar benefits.	**2**	**1**
Landscape	Whilst no nationally designated landscapes are located within the immediate vicinities of the six market towns (with the exception of the coastline to the south east of Berwick-upon-Tweed), the hinterland of each of the towns have a distinctive landscape character which is valued by residents and visitors alike. In addition the towns have a distinctive townscape, as highlighted by the presence of conservation areas in many parts of the towns. Both options, through focusing on the existing transport network, are less likely to deliver new physical infrastructure which have significant impacts on local character, distinctiveness or a sense of place. However, Park & Ride provision potentially taken forward through Option MT2 may lead to negative impacts on landscape character locally. Option MT2 will however initiate a range of measures which have the potential to deliver a greater degree of modal shift from the private car than Option MT1. This includes a combination of measures to encourage public transport use and active travel modes. This will support landscape character in the vicinity of the market towns through encouraging modal shift, a limitation in traffic flows and improved traffic management. In this respect a 'do minimum' approach taken forward through Option MT1 has less potential to initiate measures which bring these benefits.	**1**	**2**
Air Quality and Noise	Whilst no AQMAs exist in the market towns, Option MT2 will do more than Option MT1 to support air quality (and noise quality) at hotspots. This includes through delivering a more comprehensive package of schemes which supports modal shift from the private car to public transport and walking and cycling.	**2**	**1**
Climate Change and Flood Risk	Through delivering a more comprehensive package of schemes which supports modal shift from the private car to public transport and walking and cycling, Option MT2 has more potential than Option MT1 to effectively support a limitation of greenhouse gas emissions from transport. Whilst car travel will remain the predominant choice for many, especially for those accessing the towns from the surrounding rural areas, the option will do more to support modal shift. However, R2's effect on climate change mitigation may be undermined through the option's support for Park & Ride provision. Whilst Park & Ride provision will support modal shift for at least part of users' journey, it also has the potential to encourage car use. However, this option recognises that car travel will remain the predominant choice for many living in rural areas, and such provision has the potential to support modal shift for at least part of the journey. In this respect the detailed location and design of such multi-modal provision should be carefully	**2**	**1**

Option MT1: Do minimum.
Option MT2: Optimise the use of existing transport infrastructure

	considered to ensure that newly generated trips are limited, and benefits maximised. In terms of adapting to the effects of climate change, the effect of initiatives taken forward through the options depend on detailed interventions, including scheme design and layout, the integration of green infrastructure provision and other measures to help regulate the effects of extreme weather events. Similarly, the effect of initiatives on fluvial, surface water and groundwater flooding depend on scheme design considerations, including design and layout and the implementation of measures such as sustainable drainage systems.		
Population	Option MT2, through delivering additional packages of schemes with a focus on public transport and active travel enhancements, will support social inclusion and community vitality. The option also has the potential to contribute to the quality of life of residents through limiting the impact of traffic and congestion on neighbourhoods and on severance issues. In this respect a do minimum approach promoted through Option MT1 would do less to help address some of the key accessibility issues seen in the vicinities of market towns, including from their surrounding hinterlands. This includes relating to the lack of choices relating to public transport, its affordability and reliability (including during off peak times), and existing pressures on the road network. In addition to increasing travel choice through initiating additional packages of enhancements, Option MT2 has the potential to support the economic vitality of market towns through enhancing connections with the strategic and local transport network. In this respect, Option MT1 would do less to support the economic vitality and viability of the six town centres or support their visitor economy.	**2**	**1**
Human Health	Option MT2 has increased potential to support modal shift from the private car. This will support healthier modes of travel, including through encouraging active travel modes such as walking and cycling. Through promoting modal shift, the option also offers the potential to support air and noise quality enhancements and enhancements to the quality of the public realm. This will support the health and wellbeing of residents. Option MT1, through initiating a do minimum approach, has less potential to address the transport issues which adversely affect health and wellbeing in market towns.	**2**	**1**
Equalities	Groups with 'protected characteristics' tend to be disproportionately affected by the negative effects of transport infrastructure, including from the physical and severance effects of transport corridors, effects on the quality of the public realm, and the effects of traffic and congestion on health and wellbeing. These groups are also disproportionately affected by accessibility issues. In this context, Option MT2, which seeks to enhance accessibility by public transport and walking and cycling will do more to support the needs of groups with protected characteristics. With regards to Option MT1, a do minimum approach would do less to help address the socio-economic and quality of life issues influenced by transport in market towns and their catchment areas, and is less likely to address the transport and accessibility needs of groups with protected characteristics.	**2**	**1**
Rurality	The six market towns are key service centres serving their rural hinterlands. In this respect Option MT2 has increased potential to support accessibility from rural areas through delivering an increased range of transport interventions. This includes through investment in rural bus service and improved transport interchange.	**2**	**1**



File Name:I:\5004 - Information Systems\60630031_NECA_Transport_Plan\02_Maps\Figure 3-7 - Rural Areas.mxd

Project Title/Drawing Title

ISA FOR THE NE TRANSPORT PLAN

KEY ENVIRONMENTAL CONSTRAINTS: RURAL

Client: TRANSPORT NORTH EAST STRATEGY UNIT

Drawn	Checked	Approved
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Date	Scale @ A4	Purpose of Issue
23/10/2020	1:650,000	FINAL
Drawing Number		Rev
FIGURE 3.7		01

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Rural areas

3.39 This area (**Figure 3.7**) covers the rural area of the region, including the rural parts of Northumberland and County Durham. It includes the parts of the region within the Northumberland National Park and the two AONBs (Northumberland Coast AONB and North Pennines AONB).

Option R1: Do minimum

3.40 A do minimum option would rely on committed strategic and local level investment, which would continue.

Option R2: Optimise use of existing infrastructure and take a technological approach to transport challenges in rural areas

3.41 This option would seek to make best use of existing infrastructure. It would include measures such as supporting rural bus services, providing an additional impetus on smart travel / 'on demand' community transport, communications enhancements (including broadband and mobile phone infrastructure improvements) and improvements to electric charging infrastructure.

Option R3: Initiate more significant interventions, including with regards to multimodal interchange

3.42 This option would seek to enhance multi-modal interchanges serving rural areas, including through the delivery of new Park and Ride facilities, additional car parking provision at key transport nodes and new walking and cycle links.

Appraisal findings

3.43 The following table presents appraisal findings in relation to the three options introduced above. These are organised by the ten ISA themes.

3.44 For each ISA theme, a commentary on the likely effects is presented. Options are also ranked numerically reflecting their relative sustainability performance, with '1' the most favourable ranking and '3' the least favourable ranking.

Table 3.6: Appraisal of options for rural areas

Option R1: Do minimum

Option R2: Optimise use of existing infrastructure and take a technological approach to transport challenges in rural areas

Option R3: Initiate more significant interventions, including with regards to multimodal interchange

ISA theme	Discussion of potential effects and relative merits of options	Rank of preference		
		R1	R2	R3
Biodiversity	The rural areas of the North East have a significant number of internationally designated sites, including SACs, SPAs and Ramsar sites, and nationally designated sites including SSSIs and National Nature Reserves. These cover a range of internationally and nationally significant habitats and form important components of regional and national ecological networks. In addition, there are numerous areas of biodiversity value which are not covered by statutory designations, which hold a range of important habitats and protected species. Option R3, through initiating more significant transport interventions, including Park & Ride facilities, has increased potential to lead to significant effects on biodiversity habitats, species and networks. This includes from land take, habitat loss and fragmentation and disturbance. In this respect Option R1, which relies on committed investment, and Option R2, which focuses on enhancing existing transport infrastructure with limited physical interventions would lead to fewer physical impacts on key areas of sensitivity. It should be noted though that given the lack of internationally and nationally designated sites in the vicinities of the settlements where such enhancements are likely to take place, significant adverse effects on these sites would be unlikely through Option R3. It should also be noted that the delivery of new and enhanced transport infrastructure may support some enhancements to biodiversity networks. For example, the Government's 25-year Environment Plan seeks to embed an environment net gain principle for infrastructure development. In this context there is scope for the delivery of new transport infrastructure to support environmental net gain in rural areas. This includes through delivering enhancements in the Network Enhancement Zones[25] and Network Expansion Zones[26] identified in many rural areas of the North East by Natural England.	**1**	**2**	**3**
Water and Soil Resources	Option R3, through facilitating the delivery of additional new physical transport infrastructure (including Park & Ride sites), will require increased landtake than Option R1 and R2. This has increased potential to lead to the development of previously undeveloped land, including potentially productive land classified as the best and most versatile agricultural land. Without mitigation measures, additional delivery of new transport infrastructure such as Park & Ride sites has the potential to have impacts on water and soil quality through increases in surface water run-off. However, no significant impacts on water quality would be anticipated from schemes if the required embedded mitigation measures are incorporated within the construction and operational stage.	**1**	**1**	**3**

[25] Network Enhancement Zones comprise land within close proximity to existing habitat components that have been identified by Natural England as likely to be suitable for habitat re-creation for the particular habitat.
26 Network Expansion Zones are areas identified with potential for expanding, linking and joining biodiversity networks.

Option R1: Do minimum

Option R2: Optimise use of existing infrastructure and take a technological approach to transport challenges in rural areas

Option R3: Initiate more significant interventions, including with regards to multimodal interchange

Historic Environment	The rural areas of the North East have a rich historic environment. This is accompanied by distinctive historic landscapes, including the internationally designated Frontiers of the Roman Empire World Heritage Site and the two AONBs designated in the region. The increased number of 'hard' transport infrastructure schemes likely to be initiated through Option R3 have the potential to lead to impacts on the key assets (including designated features and areas) located in the vicinity of the locations targeted for interventions. The significance of effects from these interventions will however depend on design, layout and scale of the schemes, and mitigation and avoidance measures proposed. It should also be noted that well designed schemes have the potential to lead to enhancements to the public realm and the setting of the historic environment. Similarly, measures which help to relieve congestion may support improvements to local distinctiveness and the quality of the public realm, with benefits for the setting of the historic environment. In relation to Option R2, an approach which focuses to a greater degree on soft measures, technological solutions and demand management measures is less likely to lead to direct adverse impacts on the historic environment and historic landscape/townscape character. The setting of the historic environment also has the potential to benefit from initiatives taken forward through this option by an encouragement of modal shift, a limitation in traffic flows and improved traffic management. This will help limit adverse effects from traffic on the setting of historic environment assets. In this respect a 'do minimum' approach taken forward through Option R1 has reduced potential to bring similar benefits.	**2**	**1**	**3**
Landscape	The landscapes of the rural areas of the North East are diverse, incorporating upland areas, forest, limestone plateaus, undulating agricultural landscapes, lowland areas and distinctive coastlines. The value of the landscape is recognised by the presence of the nationally designated landscapes of the Northumberland National Park, the Northumberland Coast AONB and the North Pennines AONB. Whilst, given the likely locations of interventions, the option is unlikely to lead to significant effects on nationally designated landscapes, Option R3, through facilitating the delivery of additional transport infrastructure, including Park & Ride, has additional potential to lead to impacts on landscape character locally. This includes through the loss of features of landscape value, impacts on local distinctiveness and effects on tranquillity. Options R1 and R2, through focusing less on the delivery of physical infrastructure enhancements, are unlikely to deliver transport initiatives which have significant impacts on landscape character. The significance of effects from schemes initiated by Option R3 would however depend on the design, layout and scale of the schemes, and the mitigation and avoidance measures proposed. It should also be noted that well designed schemes have the potential to lead to enhancements to the public realm and local character. Similarly, measures which help to relieve congestion may support improvements to local distinctiveness and the quality of the public realm. With regards to Option R2, an approach which focuses to a greater degree on soft measures, technological solutions and demand management measures is less likely to lead to direct adverse impacts on landscape character. Local character also has the potential to benefit from initiatives taken forward through this option by an encouragement of modal shift, a limitation in traffic flows and improved traffic management. This will help limit adverse effects from traffic on landscape character. In this respect a 'do minimum' approach taken forward through Option R1 has less potential to initiate measures which bring these benefits.	**2**	**1**	**3**

Option R1: Do minimum

Option R2: Optimise use of existing infrastructure and take a technological approach to transport challenges in rural areas

Option R3: Initiate more significant interventions, including with regards to multimodal interchange

Air Quality and Noise	Air quality is not a significant issue for most rural areas in the North East. However, noise quality is a key issue for some rural areas. Options R2 and R3 will do more though than Option R1 to deliver packages of schemes which supports modal shift from the private car to public transport and walking and cycling, with benefits for noise and air quality. Option R3, through introducing new Park & Ride provision at some locations, may however increase noise and air quality issues at locations closer to such facilities. In addition, Option R2, through delivering improved communications infrastructure such as broadband and mobile phone infrastructure enhancements, may do more to reduce the need to travel for key services and facilities. This will support noise and air quality.	**3**	**1**	**2**
Climate Change and Flood Risk	Option R2 has a close focus on technical solutions to transport challenges. Through delivering improved communications infrastructure such as broadband and mobile phone infrastructure enhancements, the option will support a reduction of the need to travel to key services, facilities and opportunities. The option also has a focus on smart travel, community transport and maintaining existing public transport links, and on enhancing electric charging infrastructure. In this context, the option will initiate a range of approaches which will help limit greenhouse gas emissions from rural transport. Option R3, as part of its proposed package of interventions, seeks to deliver enhanced multimodal interchange, including new Park & Ride provision. The overall effect of these interventions on greenhouse gas emissions is uncertain. Whilst Park & Ride provision will support modal shift for at least part of users' journey, it also has the potential to encourage car use. However, this option recognises that car travel will remain the predominant choice for many living in rural areas, and such provision has the potential to support modal shift for at least part of the journey. In this respect the detailed location and design of such multi-modal provision should be carefully considered to ensure that newly generated trips are limited, and benefits maximised. Option R1 will do less to initiate interventions which will limit greenhouse gas emissions from transport in rural areas, including through providing least support to alternative modes of transport to the private car or the decarbonisation of the transport network. As such, Option R2, through combining an approach which seeks to limit the need to travel, promote modal shift from the private car, whilst supporting the decarbonisation of private travel, will do most of the options to support climate change mitigation in rural areas through limiting greenhouse gas emissions from transport. In terms of adapting to the effects of climate change, the effect of initiatives taken forward through the options depend on detailed interventions, including scheme design and layout, the integration of green infrastructure provision and other measures to help regulate the effects of extreme weather events. Similarly, the effect of initiatives on fluvial, surface water and groundwater flooding depend on scheme design considerations, including design and layout and the implementation of measures such as sustainable drainage systems.	**3**	**1**	**2**

Option R1: Do minimum

Option R2: Optimise use of existing infrastructure and take a technological approach to transport challenges in rural areas

Option R3: Initiate more significant interventions, including with regards to multimodal interchange

Population	A 'do minimum' approach promoted through Option R1 would do the least of the options to address the key socio-economic and quality of life issues influenced by transport in rural areas. In this context a range of issues are less likely to be addressed without appropriate interventions, including rural accessibility issues, the availability and affordability of public transport, and social exclusion. Option R2, through seeking to maintain existing rural bus services, support smart travel and 'on demand' community transport, will help support accessibility for those without access to a private car. In addition, through delivering improved communications infrastructure such as broadband and mobile phone infrastructure enhancements, the option will support a reduction of the need to travel to key services, facilities and opportunities, with benefits for social inclusion. Option R3 recognises that car use will remain the predominant and necessary choice for many in rural areas through seeking to enhance multimodal interchange, including potentially through Park & Ride. This will support accessibility for those with access to private transport. Options R2 and R3 will therefore both bring benefits for the quality of life of rural residents. In this context a mixture of the schemes taken forward through these options would be likely to deliver most benefits for those living in rural areas. In addition to increasing travel choice, Options R2 and R3 have the potential to support economic vitality through enhancing connections to key services, facilities and employment opportunities and supporting the visitor economy. Option R2 will also support the diversification of the rural economy through enhancing digital connectivity in rural areas.	**3**	**1**	**1**
Human Health	Health and wellbeing are closely linked to deprivation issues. In this context deprivation in rural areas is directly influenced by accessibility and social exclusion issues. This is highlighted by the higher levels of deprivation seen in rural areas relating to the 'Barriers to Housing and Services' domain. In this respect Options R2 and R3 will do more to deliver accessibility enhancements which will help limit deprivation in rural areas. Option R2, through supporting rural bus services and providing an additional impetus on smart travel / 'on demand' community transport will help enhance accessibility to those without access to a private car. Communications enhancements, including to broadband and mobile phone infrastructure will also help overcome some of the barriers to accessing services and facilities. Taking a different approach, Option R3 recognises that car use will remain the predominant and necessary choice for many in rural areas through seeking to enhance multimodal interchange, including potentially through Park & Ride. This will support accessibility for those with access to private transport. Option R1, through initiating a do minimum approach, has the least potential to address the transport issues which adversely affect health and wellbeing in rural areas	**3**	**1**	**2**

Option R1: Do minimum

Option R2: Optimise use of existing infrastructure and take a technological approach to transport challenges in rural areas

Option R3: Initiate more significant interventions, including with regards to multimodal interchange

Equalities	In rural areas, groups with 'protected characteristics' tend to be disproportionately affected by accessibility issues. For those lacking their own transport, including the young, the elderly, and those with mobility issues, access to services and facilities is a significant challenge. These groups are often the least able to afford high costs of public transport and research shows that, on average, people on lower incomes in rural areas pay a higher proportion of their income on travel costs. In this respect Options R2 and R3 will do more to deliver accessibility enhancements which will support the needs of equalities groups in the rural areas of the North East. Option R2, through supporting rural bus services and providing an additional impetus on smart travel / 'on demand' community transport will help enhance accessibility to those groups without access to a private car. Communications enhancements, including to broadband and mobile phone infrastructure will also help overcome some of the barriers to accessing services and facilities for those with protected characteristics. Option R3 recognises that car use will remain the predominant and necessary choice for many of those with protected characteristics in rural areas through seeking to enhance multimodal interchange, including potentially through Park & Ride. This will support accessibility for those with access to private transport. Option R1, through initiating a do minimum approach, has the least potential to enhance accessibility for those groups with protected characteristics in the rural areas of the North East.	**2**	**1**	**3**
Rurality	A 'do minimum' approach promoted through Option R1 would do the least of the options to address the key socio-economic and quality of life issues influenced by transport in rural areas. In this context a range of issues are less likely to be addressed without appropriate interventions, including rural accessibility issues, the availability and affordability of public transport, and social exclusion. Option R2, through seeking to maintain existing rural bus services, support smart travel and 'on demand' community transport, will help support accessibility for those without access to a private car. In addition, through delivering improved communications infrastructure such as broadband and mobile phone infrastructure enhancements, the option will support a reduction of the need to travel to key services, facilities and opportunities, with benefits for social inclusion in rural areas. Option R3 recognises that car use will remain the predominant and necessary choice for many in rural areas through seeking to enhance multimodal interchange, including potentially through Park & Ride. This will support accessibility for those with access to private transport. Options R2 and R3 will therefore both bring benefits for the quality of life of rural residents. In this context a mixture of the options would be likely to deliver most benefits for those living in rural areas. In addition to increasing travel choice, Options R2 and R3 have the potential to support economic vitality in rural areas through enhancing connections to key services, facilities and employment opportunities and supporting the visitor economy. Option R2 will also support the diversification of the rural economy through enhancing digital connectivity in rural areas.	**3**	**2**	**1**

Overall conclusions

3.45 The assessment of the options considered as reasonable alternatives for the six areas has shown that in many cases that the 'do minimum' option performs less favourably against the ISA themes. This is given these options will do less to deliver enhancements which will help address some of the key accessibility and social inclusion issues experienced in different parts of the region, or support economic vitality. Whilst in some cases the do minimum options may reduce the potential for direct adverse environmental effects, they also preclude opportunities to deliver key environmental enhancements in the region, including relating to air and noise quality, the quality of the townscape, landscape and the public realm, or relating to the rejuvenation of features and areas of historic environment interest. In addition, the do minimum options limit opportunities for utilising transport infrastructure enhancements to deliver regional, sub-regional or local environmental net gain or for limiting greenhouse gas emissions.

3.46 The options which focus to a greater degree on 'soft' measures and demand management measures are less likely than the options supporting physical transport capacity enhancements to lead to direct adverse impacts on key environmental and socio-economic receptors in the region. These options also have the potential to deliver significant environmental enhancements and quality of life benefits through the encouragement of modal shift, a reduction in the need to travel, a limitation in traffic flows and improved traffic management.

3.47 The options which propose significant transport capacity enhancements have the potential to have a range of direct impacts on key receptors, including from landtake and impacts on the quality of the public realm. Physical transport capacity enhancements also have the potential to stimulate induced demand, with the potential to lead to direct and indirect impacts on features, areas and networks of environmental sensitivity, air and noise quality and greenhouse gas emissions.

3.48 The significance of effects from these interventions will though depend on the design, layout and scale of the schemes, and the mitigation and avoidance measures proposed. It is also recognised that the implementation of appropriate measures to 'lock in' the benefits of physical transport capacity enhancements is possible with the implementation of an appropriate package of complementary 'soft' transport and demand management measures. It is also recognised that such capacity enhancements have the potential to offer environmental benefits and deliver net gain, if designed appropriately.

4. Appraisal of the current version of the NETP

Background

4.1 The ISA Report must include:

- The likely significant effects associated with the draft plan approach; and
- The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects of implementing the draft plan approach.

4.2 This chapter of the ISA Report therefore presents appraisal findings in relation to the latest version of the NETP, which was updated following consultation undertaken between November 2020 and January 2021.

4.3 The appraisal is presented through an assessment of the seven work programmes currently put forward through the NETP. This is accompanied by an assessment of the 'in-combination' effects of the different work programmes together. In response to the findings of these assessments, a series of proposed mitigation and enhancement measures are also proposed. These are designed to avoid, reduce or offset the potential significant adverse effects identified and maximise the opportunities for enhancements which are potentially available through the implementation of the NETP.

Current version of the NETP

4.4 The current version of the NETP updates the Consultation Draft that was consulted on in late 2020 and early 2021.

4.5 As discussed above, the current version of the plan presents a vision and strategic objectives for the NETP. To deliver the vision and strategic objectives for the NETP, the current version of the plan sets out seven work programmes. These work programmes propose a number of packages of transport schemes that have been identified as 'shovel ready' for delivery, or can be delivered over the next five years, over the next ten years, or beyond a ten-year period.

4.6 The packages of transport schemes are grouped as follows:

1) Helping people to make the right travel choice
2) Upgrading North East Active Travel Infrastructure
3) Bus, ferry and first and last mile
4) Local rail and metro
5) Road infrastructure
6) Maintaining and renewing our transport network.
7) National and international connectivity

4.7 The schemes taken forward through these work programmes will be implemented through the Implementation Plan accompanying the overall strategy document for the NETP.

4.8 An overview of the preferred approach for the NETP and proposed interventions is presented in **Figure 4.1** and **Figure 4.2**.

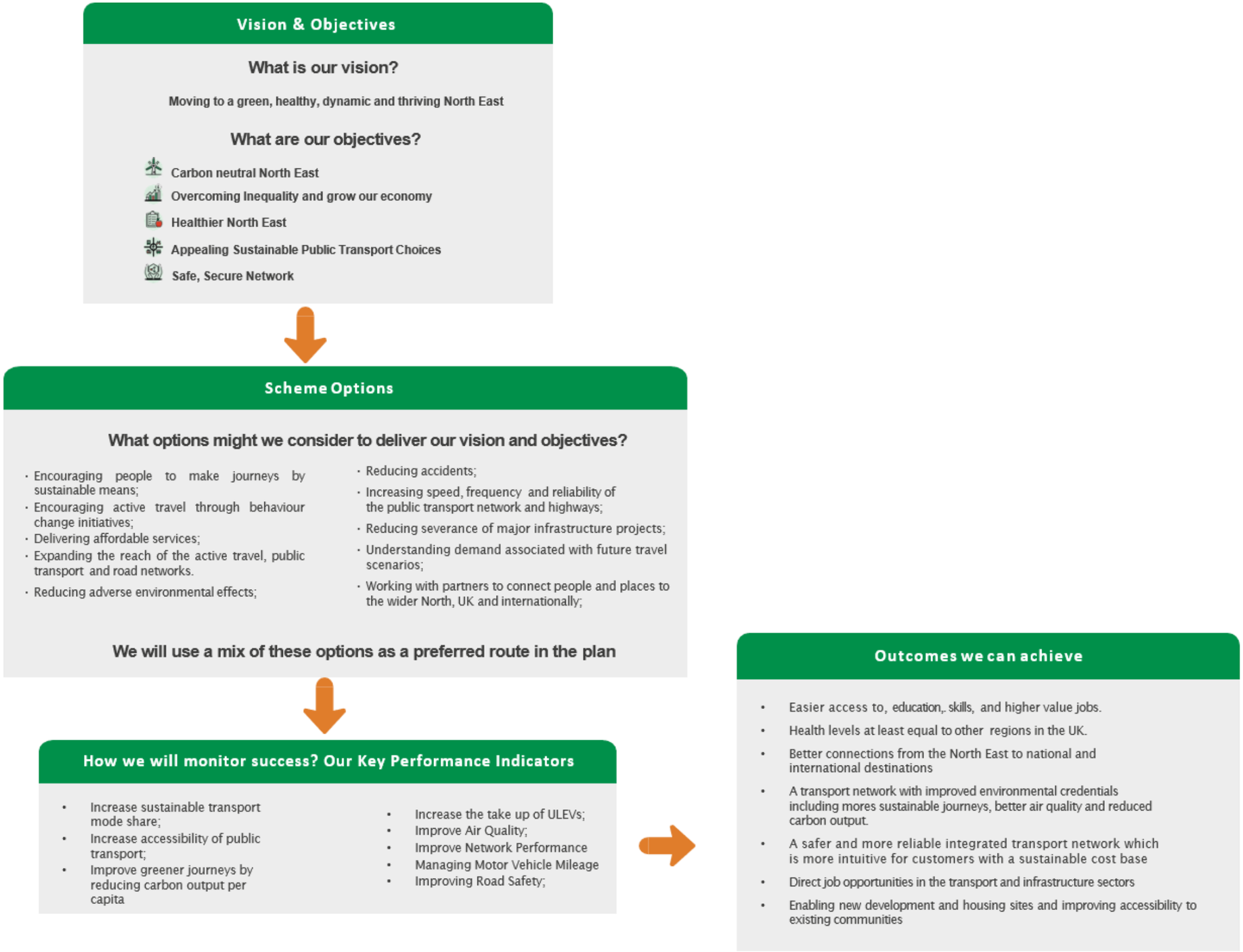

Figure 4.1: Overview of approach taken by the NETP

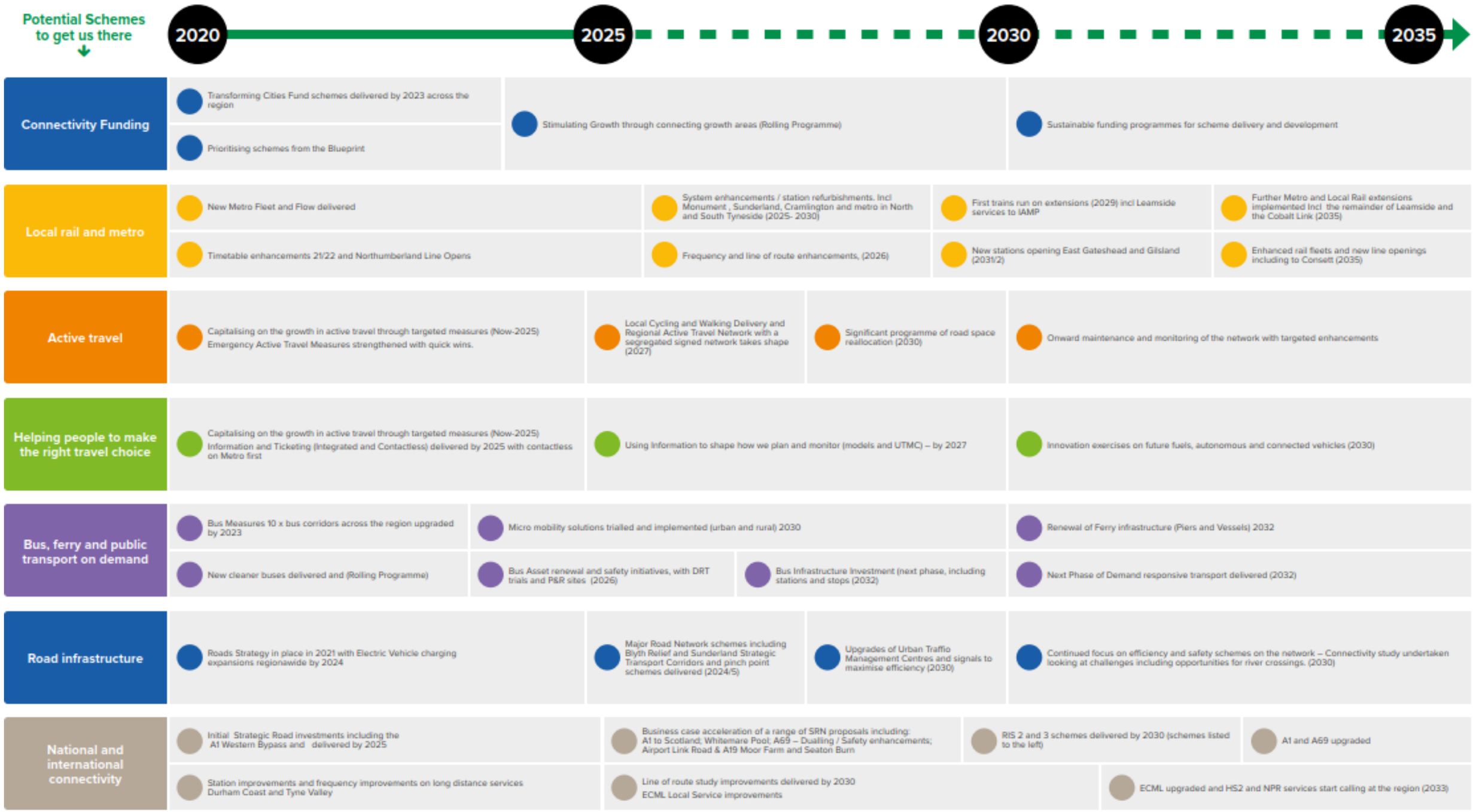

Figure 4.2: Overview of strategic interventions proposed for the NETP

Appraisal of the NETP work programmes

4.9 The following sections presents the appraisal of the current version of the NETP.

4.10 The appraisal identifies and evaluates the likely significant effects of each work programme of schemes on the baseline, informed by the ISA Framework developed through scoping (**Chapter 2**). Findings have been presented through the ten ISA themes developed during scoping:

- Biodiversity
- Water and soil resources
- Historic environment
- Landscape
- Air quality and noise
- Climate change and flood risk
- Population
- Human health
- Equalities
- Rurality

4.11 Under each of the above ISA themes, assessment findings have been discussed for each potential work programme. In response to the assessment findings, potential mitigation measures have also been proposed, and opportunities identified. This is with a view to informing the ongoing development of the work programmes' schemes to implementation.

4.12 A commentary of the in-combination effects of the work programmes against each ISA theme is subsequently presented, with additional recommendations/mitigation to cover assessed effects.

Biodiversity

Appraisal of work programmes

4.13 The following table presents an appraisal of the seven work programmes against the Biodiversity ISA theme.

Table 4.1: Appraisal of work programmes: Biodiversity

Work Programme	Appraisal findings	Mitigation and / or enhancement opportunities
1: Helping people to make the right travel choice	The short, medium and long-term schemes proposed through this work programme are largely focused on user experience of more sustainable modes of travel, such as active travel and bus travel. The measures introduced under this programme include; introducing the delivery of a 'School Streets' approach and low-traffic neighbourhoods, delivering cross-modal ticketing and enhanced passenger travel technology (including improved mapping services), traffic management schemes and technology test-bed initiatives. The focus on technology and user experience translates to a limited introduction of physical infrastructure and landtake in terms of the schemes proposed. As a result, no significant effects are anticipated in relation to biodiversity. Ultimately the measures support a reduction in local car journeys to the benefit of air and noise quality, and by this means, minor indirect positive effects are considered likely for biodiversity. However, technology/ signage improvements may need to consider the effects of light pollution at the project-scale.	• Opportunities for 'urban greening' of routes, particularly active travel networks should be sought where possible. • Strategic opportunities to maximise biodiversity net gains should be sought where possible. • Technology and signage improvements should seek to limit impacts on nocturnal species.

2: Upgrading North East Active Travel Infrastructure	The interventions proposed under this work programme range in type but can be broadly grouped as measures to improve and extend active travel routes, and road infrastructure improvements which seek to reduce the dominance of road traffic. This includes physical development that has the potential to affect biodiversity. With most of the proposed schemes focused in the urbanised areas of Newcastle, Gateshead, Sunderland and North and South Tyneside, the potential for effects in relation to European designated sites is limited. Alternatively, a focus here on reducing vehicle use and dominance may support improvements to air quality overall, indirectly benefiting biodiversity. However, there are multiple designated sites, habitats and ecological corridors within these urban areas that have the potential to be affected through habitat fragmentation, increased disturbance and noise, light and air pollution, particularly during the construction phase (where applicable). Notably, a new crossing over the River Derwent (GA46) has the potential to affect habitats and ecology in the area with multiple SSSI habitats associated with the river. It will be important to deliver mitigation alongside development to avoid/ minimise any negative effects arising. New hard surfaces also have the potential to affect water run-off and attenuation rates that may affect habitats. In the more rural areas of County Durham the proposed schemes focus on cycle route improvements, including new tracks and route extensions. These schemes are predominantly focused along existing transport corridors such as the A689, A688, A177 as well as existing cycle routes. NCN1 is notably set a series of works to improve the quality of the route taking into account biodiversity and appearance of the section running between Seaham and Stockton. With further urban greening measures, such as a new tree-lined boulevard in Gateshead (GA04) and public realm improvements in Sunderland (SU29), minor positive effects can be anticipated. It is noted that some of the proposed schemes run in close proximity to European designated sites, and the Habitats Regulations Assessment accompanying the NETP will explore the 'likely significant effects' in greater detail in due course. Ultimately though the focus on promoting alternative modes of travel to the car could bring about positive effects for air quality in the vicinity of designated sites.	• Public realm enhancements should seek to enhance ecological networks through appropriate planting and green infrastructure enhancements, and where possible, employing the premise of environmental net gain.

3: Bus, ferry and first and last mile	A number of significant schemes are proposed through this work package that will result in the development of physical infrastructure with the potential to affect designated biodiversity, as well as local habitats and ecological connectivity. Schemes of particular significance in relation to biodiversity include a proposed new bus station at Blythe (NO09) and the replacement of the South Bank ferry landing (NX23), which are in the vicinity of European designated coastal habitats. Further, significant urban construction works, including additional new bus stations (at Alnwick and Bishop Auckland) and new park and ride facilities (at Team Valley and Slatyford), alongside existing infrastructure upgrades, have the potential to indirectly affect nationally designated habitats associated with SSSIs and more directly affect locally designated habitats. Potential effects include direct habitat loss, habitat fragmentation, increased disturbance, noise, light and air pollution. These effects are likely to be most prominent in the short-term during construction phases. It is noted that some of the proposed schemes run in close proximity to European designated sites. In this context the Habitats Regulations Assessment accompanying the NETP will explore the 'likely significant effects' of these schemes in greater detail in due course. Ultimately though, the focus on promoting alternatives modes of travel to the car could bring about positive effects for air quality in the vicinity of designated sites.	• Development should seek to limit potential impacts on habitats and species from landtake, loss of vegetation and trees and light pollution through appropriate avoidance and mitigation measures. • Opportunities to enhance ecological networks through appropriate planting and green infrastructure enhancements should also be sought where possible.
4: Local rail and Metro	The work package focuses on existing rail infrastructure (including reinstatement of disused lines), with a number of significant proposals, including a new station at East Gateshead, the extension of the Northumberland Line, reinstatement of the Derwent Valley Line from Consett to Newcastle, and new metro stations. Significant car park expansions at rail connection areas in South Tyneside are also proposed. Due to the sensitivity of these transport corridors, enhancements to local rail and Metro networks have the potential to have adverse effects on habitats, species and ecological corridors without the integration of appropriate mitigation and avoidance measures. This may also have impacts on nationally and locally designated sites. Whilst the potential for negative effects through disturbance, noise and light pollution is identified, there is some potential for positive effects also to take place. For example the focus on improving strategic rail connectivity, for example in the Derwent Valley Line, provides significant support for increasing access to key employment areas by more sustainable modes of transport. This is expected to reduce the dominance of vehicle traffic and congestion on roads, which may have indirect positive effects for biodiversity from air and noise quality enhancements and a reduction of impacts from the transport network on local habitats.	• Potential impacts on biodiversity habitats should be considered during scheme development, avoidance and mitigation measures implemented, and opportunities for net gain explored.

5: Road infrastructure	This package provides a focus on road infrastructure upgrades. In the short-term there is a predominant focus on expanding the EV network and supporting planned growth with enabling infrastructure. In the medium to longer term focus shifts to reducing severance with the delivery of new bridges, enabling next generation connectivity, and local bypass schemes. The likely effects of these schemes in relation to European designated sites will be assessed in greater detail through the Habitat Regulations Assessment accompanying the NETP in due course. However, more localised impacts are considered likely. Negative effects can be anticipated in relation to nationally designated SSSIs, locally designated sites and Priority Habitats as a result of habitat loss and fragmentation, disturbance, noise, light and air pollution. Further, road infrastructure improvements ultimately have the potential to attract more road users, which in turn can negatively effect biodiversity, particularly in terms of air quality in the vicinity of designated sites. However, technological advances are also proposed which seek to integrate air quality monitoring and real-time information to the benefit of air quality in the longer-term. Overall however, effects on habitats, species, ecological networks and designated sites will depend on the detailed location and design of schemes, and the integration of biodiversity-friendly design within new infrastructure. Potential effects, including cumulative effects between schemes will need to be carefully considered through the project stage.	• Potential impacts on biodiversity habitats should be considered during scheme development, avoidance and mitigation measures implemented, and opportunities for net gain explored. • Opportunities to enhance green infrastructure networks along routes should also be sought, supporting a premise of environmental net gain and delivering multifunctional benefits. This should be informed at the project level by a robust EIA process.
6: Maintaining and renewing our transport network	This package provides a focus on future funding, targeted decarbonisation solutions and asset energy generation potential, and technological advances. Enhanced maintenance regimes may have impacts on biodiversity assets locally, including from landtake and disturbance. Increasing the resilience of coastal transport infrastructure has the potential to have impacts on internationally and nationally designated sites present on the coast.	• Biodiversity enhancements should be facilitated alongside network improvements. • Development of a programme of works to ensure that SSSIs and other important designated sites are brought into favourable condition.
7: National and international connectivity	This work package focuses on strategic road and rail connection enhancement opportunities to better manage future growth in the region and accelerate existing business cases for strategic interventions. This includes future rail connectivity with High Speed 2 and Northern Powerhouse Rail, as well as a package of measures to address highway pinchpoints (including the A1 Western Bypass, A19 and Sunderland Strategic Transport Corridors and Blyth Relief Road). Effects on habitats, species, ecological networks and designated sites will depend on the detailed location and design of schemes, and the integration of biodiversity-friendly design within new infrastructure. Potential effects, including cumulative effects between schemes will need to be carefully considered through the project stage. Cumulatively, the increased strategic connectivity has the potential to further increase visitor trips and recreational pressures on key areas of biodiversity value in the region, such as coastal habitats, As such, potential cumulative effects will need to be carefully managed.	• Potential impacts on biodiversity habitats should be considered during scheme development, avoidance and mitigation measures implemented, and opportunities for net gain explored. • Strategic connectivity improvements that result in increased visitor and recreational pressures at designated sites will need to be carefully managed.

Key significant effects resulting from the NETP packages: Biodiversity

4.14 The following table sets out the key significant effects resulting from the in-combination effects of NETP packages in relation to the Biodiversity ISA theme.

Table 4.2: Likely significant effects, Biodiversity

Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
Impacts on biodiversity from land take, habitat loss and fragmentation and disturbance from road, rail and public transport schemes proposed through the NETP.	Direct, short, medium and long-term, permanent and negative	Potential impacts on habitats and species from landtake, loss of vegetation and trees and light pollution through should be addressed through appropriate avoidance and mitigation measures. Opportunities to enhance green infrastructure networks along routes should be sought, supporting a premise of environmental net gain and delivering multifunctional benefits. This should be informed at the project level by a robust EIA process.
Potential impacts on European designated biodiversity sites from new transport infrastructure schemes.	Direct and indirect, short, medium and long-term, permanent and negative	Apply the recommendations of the Habitats Regulations Assessment process undertaken alongside the NETP.
Impacts on biodiversity from increased noise, light and air pollution linked to traffic increases resulting from the release of induced demand from new road schemes.	Indirect, medium and long-term, permanent and negative	Ensure benefits of road improvements are 'locked in' through complementary public transport and walking and cycling measures which limit road traffic increases.
Impacts on internationally and nationally designated sites present on the coast from enhancements to the resilience of coastal transport infrastructure.	Direct, short, medium and long-term, permanent and negative	Biodiversity enhancements should be facilitated alongside network improvements. Key habitats should be retained and the integrity of ecological linkages should be secured. Programmes of works should be developed to help ensure an increased proportion of the SSSIs and other important designated sites present locally are brought into favourable condition.
Impacts of new lighting and signage on nocturnal species	Direct short and medium term effects, temporary and negative.	New lighting and signage should be designed to minimise impacts on nocturnal species. This should be informed by appropriate ecology surveys.

Water and Soil Resources

Appraisal of work programmes

4.15 The following table presents an appraisal of the seven work programmes against the Water and Soil Resources ISA theme.

Table 4.3: Appraisal of work programmes: Water and Soil Resources

Work Programme	Appraisal findings	Mitigation and / or enhancement opportunities
1: Helping people to make the right travel choice	The schemes proposed under this work programme largely focus on user experience of more sustainable modes of travel, such as active travel and bus travel. Given the lack of significant physical infrastructure to be delivered through the package no significant effects are anticipated in relation to the Water and Soil Resources ISA theme. Despite this, measures which seek to enhance active travel networks, particularly new or extended routes have the potential to increase the amount of hard surfacing and affect surface water run-off and attenuation rates.	• None proposed
2: Upgrading North East Active Travel Infrastructure	The interventions proposed under this work programme range in type but can be broadly grouped as measures to improve and extend active travel routes, and road infrastructure improvements which seek to reduce the dominance of road traffic. This includes physical infrastructure that has the potential to affect soil and water resources. No significant development is proposed under this programme which would result in significant greenfield loss or significant effects in relation to agricultural land resources. The effects are considered likely to predominantly relate to water quality, as a result of the introduction of hard surfacing requiring the management of surface water run-off and attenuation rates, as well as development in the vicinity of rivers and other waterbodies. Whilst no significant effects are anticipated in this respect, it is recognised that the use of permeable surfaces supported by integrated sustainable drainage systems where appropriate can reduce the potential for minor negative effects arising. Construction Environmental Management Plans (CEMPs) can further contribute to minimising effects arising during construction, particularly relevant to the proposed new crossing at the River Derwent at Metro Green (GA46).	• Promoting the use of Construction Environmental Management Plans (CEMPs). • Use of permeable surfaces in any new or extended routes should be sought where possible. • New infrastructure should be supported by appropriate drainage systems where necessary, to reduce surface water run-off and maintain or improve attenuation rates.
3: Bus, ferry and first and last mile	Whilst its main focus is on improving the quality and functioning of existing transport infrastructure, a number of significant development proposals are included within this package. This includes the development of new bus stations, new park and ride facilities, and rapid transit corridors. It is assumed that key transport interchange locations, such as new bus station and rapid transit corridors will maximise the use of brownfield land opportunities where these exist. The short-term priorities outline intentions to establish a strategy for effective park and ride sites, with potential schemes identified at this stage at Team Valley and Slatyford, again maximising the use of urban land. Should future development sites include greenfield sites then negative effects of greater significance could be anticipated in relation to soil resources. At this stage though, no significant effects are anticipated. It is assumed that appropriate consultation with water companies will occur as the plan progresses, to ensure the timely provision of infrastructure servicing new stations and asset locations. Further, all schemes which propose new development will need to consider the effects of introducing new hard surfacing and manage the effects of surface-water run-off in relation to water quality. Overall, no significant effects are considered likely at this stage.	• New infrastructure should be supported by appropriate drainage systems where necessary, to reduce surface water run-off and maintain or improve attenuation rates.

4: Local rail and Metro	The work package focuses on existing rail infrastructure (including reinstatement of disused lines), with a number of significant proposals, including a new station at East Gateshead, the extension of the Northumberland Line, reinstatement of the Derwent Valley Line from Consett to Newcastle, and new metro stations. Significant car park expansions at rail connection areas in South Tyneside are also proposed. As above, it is assumed that key transport interchange locations, such as new rail and metro stations and associated car parking facilities will maximise the use of brownfield land opportunities where these exist. A significant focus on existing infrastructure across the schemes on the whole minimises the likelihood of significant effects arising in relation to soil resources. Again, it is assumed that appropriate consultation with water companies will occur as the plan progresses, to ensure the timely provision of infrastructure servicing new stations and asset locations. Further, all schemes which propose new development will need to consider the effects of introducing new hard surfacing and manage the effects of surface-water run-off in relation to water quality. Overall, no significant effects are considered likely at this stage.	• New infrastructure should be supported by appropriate drainage systems where necessary, to reduce surface water run-off and maintain or improve attenuation rates.
5: Road infrastructure	This package provides a focus on road infrastructure upgrades. In the short-term there is a predominant focus on expanding the EV network and supporting planned growth with enabling infrastructure. In the medium to longer term focus shifts to reducing severance with the delivery of new bridges, enabling next generation connectivity, and local bypass schemes. The package includes significant development schemes, including a number of new link roads and relief roads, dualling schemes and corridor-based improvements. The associated construction works have the potential for negative effects in relation to soil resources, particularly where works encroach upon greenfield land. Further, new roads and new bridges have potential for effects in relation to water quality through the introduction of hard surfacing affecting water run-off and attenuation rates and potentially water quality. Negative effects can be anticipated in this respect, and it will be important for development to deliver sustainable drainage systems where possible to minimise the effects arising. No significant impacts on water quality are anticipated from schemes if the required embedded mitigation measures are incorporated within the construction stage.	• Provision of sustainable drainage systems should be sought where possible.
6: Maintaining and renewing our transport network	The package has a close focus on enhancing the maintenance of the road network, including to provide greater resilience to climate change. This has the potential to support significant enhancements to water and soil quality given maintenance schemes are likely to incorporate measures to more sustainably manage surface water run off.	• None proposed.
7: National and international connectivity	This work package focuses on strategic road and rail connection enhancement opportunities to better manage future growth in the region and accelerate existing business cases for strategic interventions. This includes future rail connectivity with High Speed 2 and Northern Powerhouse Rail, as well as a package of measures to address highway pinchpoints (including the A1 Western Bypass, A19 and Sunderland Strategic Transport Corridors and Blyth Relief Road). The focus on strategic connectivity and existing infrastructure minimises the likelihood of significant effects arising in relation to both soil and water resources. However, it is recognised that strategic interventions also present opportunities to improve aspects such as drainage and positively affect water quality in this respect. Such strategic opportunities should be capitalised upon where available.	• Opportunities to improve strategic sustainable drainage solutions should be sought where possible.

Key significant effects resulting from the NETP packages: Water and Soil Resources

4.16 The following table sets out the key significant effects resulting from the in-combination effects of NETP packages in relation to the Water and Soil Resources ISA theme.

Table 4.4: Likely significant effects, Water and Soil Resources

Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
Improved management of surface water run off through enhanced maintenance of the road network and the delivery of sustainable drainage schemes alongside new transport infrastructure.	Direct, short, medium and long term, permanent and positive.	New infrastructure should be supported by appropriate drainage systems where necessary, to reduce surface water run-off and maintain or improve attenuation rates. Opportunities to improve strategic sustainable drainage solutions should be sought where possible.
Improvements to soil quality from improved management of surface water run off through enhanced maintenance of the road network and the delivery of sustainable drainage schemes alongside new transport infrastructure.	Direct, medium and long term, permanent and positive.	New infrastructure should be supported by appropriate drainage systems where necessary, to reduce surface water run-off and maintain or improve attenuation rates. Opportunities to improve strategic sustainable drainage solutions should be sought where possible.

Historic Environment

Appraisal of work programmes

4.17 The following table presents an appraisal of the seven work programmes against the Historic Environment ISA theme.

Table 4.5: Appraisal of work programmes: Historic Environment

Work Programme	Appraisal findings	Mitigation and / or enhancement opportunities
1: Helping people to make the right travel choice	The short, medium and long-term schemes proposed for work programme are largely focused on user experience of more sustainable modes of travel, such as active travel and bus travel. As such, no direct impacts on the fabric and setting of the historic environment (including both designated and non-designated heritage assets). However, through encouraging modal shift, a limitation in traffic flows and improved traffic management, the package of measures has the potential to support the setting of historic environment assets, both designated and non-designated, and historic townscapes and landscapes. Minor indirect positive effects could be anticipated in this respect.	• Urban greening measures can support a high-quality public realm and support the setting of the historic environment.

2: Upgrading North East Active Travel Infrastructure	The interventions proposed under this work programme range in type but can be broadly grouped as measures to improve and extend active travel routes, and road infrastructure improvements which seek to reduce the dominance of road traffic. This includes physical development that has the potential to affect the fabric and setting of the historic environment. A significant focus of the package is on extending cycle and pedestrian infrastructure. This has the potential for multiple benefits relating to the historic environment, including through reduced vehicle presence and increased access to and enjoyment of heritage assets and their settings. This is particularly demonstrated through schemes such as the proposed new cycle track along the disused railway between Bishop Auckland and Barnard Castle, which traverses the setting of three Registered Parks and Gardens, and multiple Listed Buildings and Scheduled Monuments, and the development of a cycling and walking route along the Darlington and Stockton railway, which is a route of key importance for railway heritage. Despite this, it is recognised that there is a potential for short-term negative effects during construction (e.g. groundworks and diversions). In light of this, new infrastructure should be designed to support the setting of the historic environment, and maximising opportunities for public realm improvements, including green infrastructure provision, to secure longer term positive effects.	• Development should seek to manage and minimise impacts on the setting of the historic environment during construction phases. • New infrastructure should be designed to support the setting of the historic environment and maximise opportunities for public realm improvements.
3: Bus, ferry and first and last mile	Whilst great focus is paid to improving the quality and functioning of the existing transport infrastructure network, a number of significant development proposals are included within this package. This includes the development of new bus stations, new park and ride facilities, and rapid transit corridors. A number of proposals under this work package are likely to affect different sensitive heritage receptors. Of significance, the proposed South Bank Ferry Landing replacement scheme (NX23) lies close to the 'Frontiers of the Roman Empire' (Hadrian's Wall) World Heritage Site and its buffer zone. Development here has the potential for effects of significance, both positive and negative. Negative effects are likely to predominantly relate to construction phases, provided that high-quality design ensures that in the long-term development supports the setting of the historic environment. However, the South Bank Ferry Terminal replacement could unlock further regeneration and investment in the vicinity of the World Heritage Site, bolstering the rejuvenation of heritage assets in this locality. Proposals such as the new bus stations at Alnwick (NO08) and Bishop Auckland (DU11) are also likely to affect sensitive heritage settings. Similar to above, it will be important to ensure that high-quality design proposals support the setting of the historic environment. However, modal shift facilitated by the package have the potential to support enhancements to the setting of the historic environment and increase access to and enjoyment of key heritage assets. This is particularly relevant for more localised schemes, and within designated conservation areas.	• New infrastructure should be designed to facilitate enhancements to the fabric and setting of the historic environment. It should also seek to maximise opportunities for enhancing access to and understanding of the historic environment.

4: Local rail and Metro	The work package focuses on existing rail infrastructure (including reinstatement of disused lines), with a number of significant proposals, including a new station at East Gateshead, the extension of the Northumberland Line, reinstatement of the Derwent Valley Line from Consett to Newcastle, and new metro stations. Significant car park expansions at rail connection areas in South Tyneside are also proposed. Of significance within this work package, the re-opening of Gilsland Railway Station is proposed, which lies within the buffer zone of the 'Frontiers of the Roman Empire' (Hadrian's Wall) World Heritage Site. Development here has the potential for effects of significance, both positive and negative. Negative effects are likely to predominantly relate to construction phases, provided that high-quality design ensures that in the long-term development supports the setting of the historic environment. Positive effects can also be anticipated as a result of increased access to and enjoyment of designated heritage assets.	• New infrastructure should be designed to facilitate enhancements to the fabric and setting of the historic environment. It should also seek to maximise opportunities for enhancing access to and understanding of the historic environment.
5: Road infrastructure	This package provides a focus on road infrastructure upgrades. In the short-term there is a predominant focus on expanding the EV network and supporting planned growth with enabling infrastructure. In the medium to longer term focus shifts to reducing severance with the delivery of new bridges, enabling next generation connectivity, and local bypass schemes. The delivery of these schemes has the potential to lead to impacts on the key assets (including designated features and areas) located in the vicinity of the key routes and areas targeted for interventions. There are likely to be trade-off effects. For example, bypass routes that alleviate congestion in certain areas to the benefit of certain settings may also introduce new traffic into other areas affecting designated assets and heritage settings in these locations. In addition, improvements on Strategic Transport Corridors (including on the A194, A1018 and A183 in South Tyneside) overs the potential to deliver enhancements to the public realm and the fabric and setting of the historic environment. The significance of effects on the historic environment from the interventions taken forward through this package will depend on design, layout and scale of the schemes, and mitigation and avoidance measures proposed. It should also be noted that well designed schemes have the potential to lead to enhancements to the public realm and the setting of the historic environment.	• Road schemes should be accompanied by a comprehensive package of avoidance and mitigation measures, as well, where possible, enhancement measures. This should be informed at the project level by a robust EIA process. • New infrastructure should be designed to facilitate enhancements to the fabric and setting of the historic environment. It should also seek to maximise opportunities for enhancing access to and understanding of the historic environment.
6: Maintaining and renewing our transport network	Enhancements to maintenance regimes taken forward through this package has the potential to deliver enhancements to the fabric of designated and undesignated features of historic environment interest, including those associated with the transport network. The package also has the potential to support enhancements to the setting of the historic environment, including through improvements to visual amenity and enhancements to noise quality through enhanced road surfacing.	• Maintenance regimes should seek to facilitate enhancements to the fabric and setting of designated and undesignated features and areas of historic environment interest.

7: National and international connectivity	This work package focuses on strategic road and rail connection enhancement opportunities to better manage future growth in the region and accelerate existing business cases for strategic interventions. This includes future rail connectivity with High Speed 2 and Northern Powerhouse Rail, as well as a package of measures to address highway pinchpoints (including the A1 Western Bypass, A19 and Sunderland Strategic Transport Corridors and Blyth Relief Road). The focus on strategic connectivity and existing infrastructure minimises the likelihood of direct significant effects on the historic environment. Cumulatively, the increased strategic connectivity which is sought through this package has the potential to support enhancements in accessibility to key heritage assets in the region, including the World Heritage Sites, Registered Parks and Gardens, city and town centres and other areas of significance for their historic environment interest.	• None proposed.

Key significant effects resulting from the NETP packages: Historic Environment

4.18 The following table sets out the key significant effects resulting from the in-combination effects of NETP packages in relation to the Historic Environment ISA theme.

Table 4.6: Likely significant effects, Historic Environment

Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
The delivery of new transport infrastructure schemes has the potential to lead to significant impacts on the key assets (including designated and non-designated features and areas) of historic environment interest located in the vicinity of the key routes and areas targeted for interventions.	Direct and indirect, short, medium and long term, permanent and negative.	Transport infrastructure schemes should be accompanied by a comprehensive package of avoidance and mitigation measures, as well, where possible, enhancement measures. This should be informed at the project level by a robust EIA process. New infrastructure should be designed to facilitate enhancements to the fabric and setting of the historic environment. It should also seek to maximise opportunities for enhancing access to and understanding of the historic environment.
Enhancement to the fabric and setting of the historic environment through improved maintenance regimes.	Direct, short, medium and long term, permanent and positive.	Maintenance regimes should seek to facilitate enhancements to the fabric and setting of designated and undesignated features and areas of historic environment interest.
Enhanced accessibility to, and additional opportunities for enjoyment of the North East's heritage resource.	Direct, short, medium and long term, permanent and positive.	None proposed.

Landscape

Appraisal of work programmes

4.19 The following table presents an appraisal of the seven work programmes against the Landscape ISA theme.

Table 4.7: Appraisal of work programmes: Landscape

Work Programme	Appraisal findings	Mitigation and / or enhancement opportunities
1: Helping people to make the right travel choice	The short, medium and long-term schemes proposed for work programme are largely focused on user experience of more sustainable modes of travel, such as active travel and bus travel. As such, no direct impacts on the landscape and townscape character. However, through encouraging modal shift, a limitation in traffic flows and improved traffic management, the package of measures has the potential to support the quality of the public realm, local distinctiveness and townscape and landscape character. Minor indirect positive effects could be anticipated in this respect.	• Urban greening measures can support a high-quality public realm and support the setting of the townscape.
2: Upgrading North East Active Travel Infrastructure	The interventions proposed under this work programme range in type but can be broadly grouped as measures to improve and extend active travel routes, and road infrastructure improvements which seek to reduce the dominance of road traffic. This includes physical development that has the potential to affect landscape and townscape character. A significant focus of the package is on extending cycle and pedestrian infrastructure. This has the potential for multiple benefits relating to the landscape and townscape character, including through reduced vehicle presence and increased access to and enjoyment of the public realm. Despite this, it is recognised that there is a potential for short-term negative effects during construction (e.g. groundworks and diversions). In light of this, new infrastructure should be designed to support local character and maximising opportunities for public realm improvements, including green infrastructure provision, to secure longer term positive effects.	• New cycle infrastructure should be designed and located to support high-quality landscape abd townscape settings. • Opportunities for 'urban greening' and green infrastructure enhancements should be sought where possible. • Development should avoid the loss of existing trees and landscape features where possible.

3: Bus, ferry and first and last mile	Whilst the focus of the package is on improving the quality and functioning of the existing infrastructure network, a number of significant development proposals are included within this package. This includes the development of new bus stations, new park and ride facilities, and rapid transit corridors which have significant implications for landscape and townscape character. It is assumed that key transport interchange locations, such as new bus stations and rapid transit corridors will maximise the use of brownfield land opportunities where these exist to improve upon the townscape. Further, development should seek to avoid the loss of trees and existing landscape/ townscape features. Greater emphasis on public realm improvements and urban greening factors in the schemes could enhance the potential for development to lead to positive townscape effects. This will be particularly relevant in the more rural areas of the region, particularly targeted measures within the setting of the AONBs or National Park such as at Alnwick. The short-term priorities outline intentions to establish a strategy for effective park and ride sites, with potential schemes identified at this stage at Team Valley and Slatyford, again maximising the use of urban land. Should future development sites include greenfield sites, then negative effects of additional significance could be anticipated in relation to landscape character, particularly in greenfield sites in the more rural areas of the region and areas within, or within the setting of, designated landscapes.	• New infrastructure should be designed to facilitate enhancements to the quality of the public realm and townscape and landscape character.
4: Local rail and Metro	The work package focuses on existing rail infrastructure (including reinstatement of disused lines), with a number of significant proposals, including a new station at East Gateshead, the extension of the Northumberland Line, reinstatement of the Derwent Valley Line from Consett to Newcastle, and new metro stations. Significant car park expansions at rail connection areas in South Tyneside are also proposed. Similar to above, it is assumed that key transport interchange locations, such as new stations and car parking facilities, will maximise the use of brownfield land opportunities where these exist to improve upon the townscape. Schemes involving greenfield development have the potential for potential negative effects on landscape, particularly those within the setting of distinctive and valued landscapes (such as at Consett, located within the setting of the North Pennines AONB). The reinstatement of disused railway lines and stations (e.g. DU17 & NO04) has the potential tor impact on the historic townscape and landscape, and much of the Metro network has a distinctive historical lineage forming part of the development of townscape character in these locates. High-quality design supported by public realm enhancements and green infrastructure development can support overall long-term positive effects in the re-establishment and enhancement of these routes.	• New and enhanced infrastructure should be designed to facilitate enhancements to the quality of the public realm and townscape and landscape character.

5: Road infrastructure	This package provides a focus on road infrastructure upgrades. In the short-term there is a predominant focus on expanding the EV network and supporting planned growth with enabling infrastructure. In the medium to longer term focus shifts to reducing severance with the delivery of new bridges, enabling next generation connectivity, and local bypass schemes. The package includes significant development schemes, such as new relief and link roads, dualling schemes, new bridges and corridor-based improvements. Given the scale of these schemes, a number of these have the potential to have significant effects on landscape character, particularly those schemes on greenfield land and those that encroach on valued countryside or coastal settings. The significance of effects from schemes taken forward by the package however depend on the design, layout and scale of the schemes, and the mitigation and avoidance measures proposed. It should also be noted that well designed schemes have the potential to lead to enhancements to the public realm and townscape/landscape character. Furthermore, the schemes taken forward through this work package may in some cases contribute to a reduction in severance and contribute to a more cohesive settlement and townscape form. Similarly, measures which help to relieve congestion may support improvements to local distinctiveness and the quality of the public realm.	• Road schemes should be accompanied by a comprehensive package of avoidance and mitigation measures, as well, where possible, enhancement measures. This should be informed at the project level by a robust EIA process. • New infrastructure should be designed to facilitate enhancements to landscape and townscape character.
6: Maintaining and renewing our transport network	Enhancements to maintenance regimes taken forward through this package has the potential to deliver enhancements to landscape and townscape character, including through improvements to visual amenity and enhancements to noise quality through enhanced road surfacing. The package seeks to repair and strengthen key roads underpinning the rural and regional economy. This will support the enjoyment of key tourism destinations in the key designated landscapes of the North East, including the Northumberland National Park (including the International Dark Skies Park) and Hadrian's Wall World Heritage site. It also seeks to limit the impacts from transport of timber extraction and quarrying. This recognises the impact of such activities on the landscape character and quality of the public realm in some rural areas, with associated impacts on the tranquillity of these areas.	• Maintenance regimes should seek to facilitate enhancements to landscape and townscape character.
7: National and international connectivity	This work package focuses on strategic road and rail connection enhancement opportunities to better manage future growth in the region and accelerate existing business cases for strategic interventions. This includes future rail connectivity with High Speed 2 and Northern Powerhouse Rail, as well as a package of measures to address highway pinchpoints (including the A1 Western Bypass, A19 and Sunderland Strategic Transport Corridors and Blyth Relief Road). The focus on strategic connectivity and existing infrastructure minimises the likelihood of direct significant effects on the historic environment. Cumulatively, the increased strategic connectivity which is sought through this package has the potential to support enhancements in accessibility to valued landscapes and townscapes, including with the Northumberland National Park, the two AONBs and the two World Heritage Sites in the region.	• None proposed.

Key significant effects resulting from the NETP packages: Landscape

4.20 The following table sets out the key significant effects resulting from the in-combination effects of NETP packages in relation to the Landscape ISA theme.

Table 4.8: Likely significant effects, Landscape

Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
The delivery of new transport infrastructure schemes (in particular, road schemes) has the potential to lead to significant impacts on landscape and townscape character.	Direct and indirect, short, medium and long term, permanent and negative.	Transport infrastructure schemes should be accompanied by a comprehensive package of avoidance and mitigation measures, as well, where possible, enhancement measures. This should be informed at the project level by a robust EIA process. New infrastructure should be designed to limit impacts on landscape and townscape character, and facilitate enhancements.
Enhancement to landscape and townscape character through improved maintenance regimes.	Direct, short, medium and long term, permanent and positive.	Maintenance regimes should seek to facilitate enhancements to the quality of the public realm and local distinctiveness.
Enhanced accessibility to, and additional opportunities for enjoyment of the North East's landscape/townscape resource, including associated with valued landscapes and townscapes.	Direct, short, medium and long term, permanent and positive.	None proposed.

Air Quality and Noise

Appraisal of work programmes

4.21 The following table presents an appraisal of the seven work programmes against the Air Quality and Noise ISA theme.

Table 4.9: Appraisal of work programmes: Air Quality and Noise

Work Programme	Appraisal findings	Mitigation and / or enhancement opportunities
1: Helping people to make the right travel choice	The schemes proposed under this work programme largely focus on user experience of more sustainable modes of travel, such as active travel and bus travel. A number of schemes proposed in this package (e.g. TNE04, NE10, SU32 and TNE21) will specifically target air quality improvements and improved air quality monitoring and modelling. This is considered likely to lead to significant long-term positive effects. The targeted reduction in vehicle dominance is also considered likely to reduce the impacts of noise, particularly at the neighbourhood scale.	• None proposed.

2: Upgrading North East Active Travel Infrastructure	The interventions proposed under this work programme range in type but can be broadly grouped as measures to improve and extend active travel routes, and road infrastructure improvements which seek to reduce the dominance of road traffic. The measures seek to enhance the use of more sustainable modes of transport, with a predominant focus on walking and cycling routes, that will ultimately support long-term air quality improvements, as well as reduce the noise impacts associated with vehicular traffic. Whilst road infrastructure improvements may attract more road users, the targeted interventions seek to reduce vehicle congestion and traffic, and the associated impacts on air quality. Measures to support urban greening, such as tree-lined streets (GA04) are likely to provide further support for clean air in the long-term, with positive effects are likely in this respect. It is recognised that a greater emphasis on the urban greening of these routes could enhance the significance of these effects.	• None proposed.
3: Bus, ferry and first and last mile	The measures seek to enhance the use of more sustainable modes of transport that will ultimately support long-term air quality improvements, as well as reduce the noise impacts associated with vehicular traffic. Any negative effects arising are likely to be short-term during construction phases, e.g. as a result of road closures or delays causing localised impacts.	• None proposed.
4: Local rail and Metro	The work package focuses on existing rail infrastructure (including reinstatement of disused lines), with a number of significant proposals, including a new station at East Gateshead, the extension of the Northumberland Line, reinstatement of the Derwent Valley Line from Consett to Newcastle, and new metro stations. Significant car park expansions at rail connection areas in South Tyneside are also proposed. The measures seek to enhance the use of more sustainable modes of transport that will ultimately support long-term air quality improvements, as well as reduce the noise impacts associated with vehicular traffic. The expansion of car parking facilities may create more local journeys/ trips in certain locations, with impacts on air quality. Negative effects are also likely to arise in the short-term during construction phases, e.g. as a result of road closures or delays causing localised impacts.	• None proposed.

5: Road infrastructure	This package provides a focus on road infrastructure upgrades. In the short-term there is a predominant focus on expanding the EV network and supporting planned growth with enabling infrastructure. In the medium to longer term focus shifts to reducing severance with the delivery of new bridges, enabling next generation connectivity, and local bypass schemes. Expansion of the EV network will continue to support improved air quality and is also considered likely to reduce the noise impacts associated with vehicular traffic. Of note, the collaborative scheme with Newcastle University to integrate new demand data with real-time air quality modelling and pilot a new and innovative support tool for traffic management (TNE02) is likely deliver long-term positive effects of significance. New road schemes have the potential to lead to air quality enhancements at key 'pinchpoints' on the network which have existing air quality issues. This has the potential to support significant enhancements of air quality at specific locations. However, through contributing to an overall increase in traffic flows on the wider road network, the schemes also have the potential to increase traffic flows over a broader area, including through stimulating induced demand. This may contribute to increases in emissions of the key pollutants which affect air quality over a wider area. For the same reason, the option also has the potential to leading to more significant effects on noise quality. However, it should be noted that proposed multi-modal improvements on Strategic Transport Corridors (including on the A194, A1018 and A183 in South Tyneside) may support air quality enhancements locally. It is recognised that interventions are largely sought to alleviate the impacts of congestion, particularly in the form of relief roads drawing vehicles away from the more congested centres of settlement areas. Residual positive effects are therefore considered likely.	• None proposed.
6: Maintaining and renewing our transport network	This package provides a focus on future funding, targeted decarbonisation solutions and asset energy generation potential, and technological advances, alongside general maintenance measures. The schemes also seek to support the move to more sustainable, cleaner fuels which will ultimately reduce harmful emissions and particulates from vehicle usage. Enhanced maintenance regimes also have the potential to limit noise pollution from the road network.	• None proposed
7: National and international connectivity	This work package focuses on strategic road and rail connection enhancement opportunities to better manage future growth in the region and accelerate existing business cases for strategic interventions. This includes future rail connectivity with High Speed 2 and Northern Powerhouse Rail, as well as a package of measures to address highway pinchpoints (including the A1 Western Bypass, A19 and Sunderland Strategic Transport Corridors and Blyth Relief Road). Enhanced strategic connectivity, particularly linkages to high speed rail, provides opportunities to support more sustainable cross-country travel, particularly with key destinations further afield, such as London, which provide significant economic links. This is likely to lead to minor positive effects for air quality. However, it is also recognised that strategic highways infrastructure improvements may also attract more road users.	• None proposed

Key significant effects resulting from the NETP packages: Air Quality and Noise

4.22 The following table sets out the key significant effects resulting from the in-combination effects of NETP packages in relation to the Air Quality and Noise ISA theme.

Table 4.10: Likely significant effects, Air Quality and Noise

Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
Air quality enhancements at key 'pinchpoints' on the network which have existing air quality issues.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Impacts from road schemes on air and noise quality over a wider area, including through the stimulation of induced demand.	Direct and indirect, medium and long term, permanent and negative.	Initiation of complementary measures alongside road capacity enhancements to limit increases in traffic flows resulting from a release of induced demand.
Support for electric vehicles and cleaner fuels, with benefits for air and noise quality.	Indirect, medium and long term, permanent and positive.	None proposed.

Climate Change and Flood Risk

Appraisal of work programmes

4.23 The following table presents an appraisal of the seven work programmes against the Climate Change and Flood Risk ISA theme.

Table 4.11: Appraisal of work programmes: Climate Change and Flood Risk

Work Programme	Appraisal findings	Mitigation and / or enhancement opportunities
1: Helping people to make the right travel choice	The short, medium and long-term schemes proposed to address this work programme are largely focused on user experience of more sustainable modes of travel, such as active travel and bus travel. The measures introduced under this programme include; introducing 'School Streets' and low-traffic neighbourhoods, delivering cross-modal ticketing and enhanced passenger travel technology (including improved mapping services), traffic management schemes and technology test-bed initiatives. The focus on technology and user experience translates to the limited delivery of physical infrastructure in terms of the schemes proposed. As a result, no significant effects are anticipated in relation to flood risk. The expansion of technological transport solutions and focus on smart travel and improved connectivity is likely to initiate a range of approaches that will help to limit greenhouse gas emissions and contribute towards aims for carbon neutrality. The focus on installing more sustainable travel behaviours, particularly within the young is also likely to bolster climate change mitigation. Long-term positive effects are anticipated in this respect. A number of schemes proposed in this package (e.g. TNE04, NE10, SU32 and TNE21) will specifically target air quality improvements and improved air quality monitoring and modelling, which is considered likely to further support climate resilience.	• None proposed

2: Upgrading North East Active Travel Infrastructure	The interventions proposed under this work programme range in type but can be broadly grouped as measures to improve and extend active travel routes, and road infrastructure improvements which seek to reduce the dominance of road traffic. The significant focus on extending and improving both cycle and pedestrian access under this work package is considered likely to reduce vehicle use, particularly with regards to local trips and commuter journeys. This will support a limitation of greenhouse gas emissions from transport. Despite this, the introduction of new hard surfacing will need to consider the effects of surface-water run-off in terms of flood risk. The use of permeable surfaces should be prioritised where possible. More broadly, in terms of adapting to the effects of climate change, the effect of initiatives taken forward through the package depend on detailed interventions, including scheme design and layout, the integration of green infrastructure provision (e.g. tree-lined streets – GA04) and other measures to help regulate the effects of extreme weather events. Similarly, the effect of initiatives on fluvial, surface water and groundwater flooding depend on scheme design considerations, including design and layout and the implementation of measures such as sustainable drainage systems.	• Transport infrastructure should seek to prioritise the use of permeable surfaces. • Any introduction of new hard surfacing will need to consider the effects of run-off on surface water flood risk. • Opportunities to improve and extend green infrastructure provision alongside the development of transport infrastructure should be sought.
3: Bus, ferry and first and last mile	The measures seek to enhance the use of more sustainable modes of transport that will ultimately support a limitation of greenhouse gas emissions associated with vehicular traffic. This will support climate change mitigation The overall effect of new Park & Ride provision on greenhouse gas emissions is uncertain. Whilst Park & Ride provision will support modal shift for at least part of users' journey, it also has the potential to encourage car use. However, this recognises that car travel will remain the predominant choice for many, including those living in rural areas, and such provision has the potential to support modal shift for at least part of the journey. In this respect the detailed location and design of such multi-modal provision should be carefully considered to ensure that newly generated trips are limited, and benefits maximised.	• The detailed location and design of such multi-modal provision should be carefully considered to ensure that newly generated trips are limited, and benefits maximised.
4: Local rail and Metro	The work package focuses on existing rail infrastructure (including reinstatement of disused lines), with a number of significant proposals, including a new station at East Gateshead, the extension of the Northumberland Line, reinstatement of the Derwent Valley Line from Consett to Newcastle, and new metro stations. Significant car park expansions at rail connection areas in South Tyneside are also proposed. The measures seek to enhance the use of more sustainable modes of transport that will ultimately support modal shift and long-term climate resilience and enhance the accessibility of growth locations. However, the expansion of car parking facilities may encourage car use and create more local journeys/ trips in certain locations. In terms of adapting to the effects of climate change, the effect of initiatives taken forward through the package depend on detailed interventions, including scheme design and layout, the integration of green infrastructure provision (e.g. tree-lined streets – GA04) and other measures to help regulate the effects of extreme weather events. Similarly, the effect of initiatives on fluvial, surface water and groundwater flooding depend on scheme design considerations, including design and layout and the implementation of measures such as sustainable drainage systems.	• Transport infrastructure should seek to prioritise the use of permeable surfaces. • Any introduction of new hard surfacing will need to consider the effects of run-off on surface water flood risk. • Opportunities to improve and extend green infrastructure provision alongside the development of transport infrastructure should be sought.

5: Road infrastructure	This package provides a focus on road infrastructure upgrades. In the short-term there is a predominant focus on expanding the EV network and supporting planned growth with enabling infrastructure. In the medium to longer term focus shifts to reducing severance with the delivery of new bridges, enabling next generation connectivity, and local bypass schemes. The expansion of the EV network and focus on smart travel will support a limitation of greenhouse gas emissions from the private vehicle and contribute towards aims for carbon neutrality. Long-term positive effects are anticipated in this respect. This will be supported through the NETP's commitment to deliver a Zero Emission Vehicle Policy, which seeks to further develop and expand the North East's EV charging network, and to increase the number of plug-in vehicles in the region. This will be further reinforced by the NETP's commitment to deliver a Roads and Zero Emission Vehicle Strategy. This may be supported by the delivery of multimodal enhancements on Strategic Transport Corridors (including on the A194, A1018 and A183 in South Tyneside), which support modal shift. However, the promotion of road schemes that relieve congestion and / or increase capacity has the potential effect of releasing demand for vehicle trips currently suppressed. As such, the release of this induced demand may lead to increases in greenhouse gas emissions. In terms of adapting to the effects of climate change, the effect of initiatives taken forward through the package depend on detailed interventions, including scheme design and layout, the integration of green infrastructure provision and other measures to help regulate the effects of extreme weather events. Similarly, the effect of initiatives on fluvial, surface water and groundwater flooding depend on scheme design considerations, including design and layout and the implementation of measures such as sustainable drainage systems. It is recognised that a greater emphasis on the urban greening of these routes could enhance the significance of these effects.	• Comprehensive monitoring of greenhouse gas emissions from transport. • Identify, assess and integrate measures to further reduce carbon through on or off-site offsetting or sequestration. • Opportunities to improve and extend green infrastructure provision alongside the development of transport infrastructure should be sought.
6: Maintaining and renewing our transport network	The package proposes a number of maintenance schemes targeted at existing infrastructure. This has the potential to support the effective management of surface run off, contribute to flood risk management, and increase the resilience of the transport network to extreme weather events. The maintenance schemes further seek to address issues arising as a result of climate change, including areas affected by subsistence (DU19). In this respect, the work package will help increase the resilience of the region's transport network to the likely effects of climate change, with significant long-term positive effects anticipated. The package also provides a focus on targeted decarbonisation solutions and asset energy generation potential, which will support efforts to move to carbon neutrality in the coming years.	• Development should seek to deliver sustainable drainage solutions and enhancements alongside maintenance works where possible.

7: National and international connectivity	This work package focuses on strategic road and rail connection enhancement opportunities to better manage future growth in the region and accelerate existing business cases for strategic interventions. This includes future rail connectivity with High Speed 2 and Northern Powerhouse Rail, as well as a package of measures to address highway pinchpoints (including the A1 Western Bypass, A19 and Sunderland Strategic Transport Corridors and Blyth Relief Road). Enhanced strategic connectivity, particularly linkages to high speed rail, provides opportunities to support more sustainable cross-country travel, particularly with key destinations further afield, such as London, which provide significant economic links. This is likely to support a limitation of greenhouse gas emissions. However, it is also recognised that strategic highways infrastructure improvements may also attract more road users, and enhanced strategic connectivity may increase longer distance travel. This will have implications for greenhouse gas emissions.	• None proposed

Key significant effects resulting from the NETP packages: Climate Change and Flood Risk

4.24 The following table sets out the key significant effects resulting from the in-combination effects of NETP packages in relation to the Climate Change and Flood Risk ISA theme.

Table 4.12: Likely significant effects, Climate Change and Flood Risk

Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
Limitation of greenhouse gas emissions from transport, including through the stimulation of modal shift from the private car towards public transport and active travel, and enhanced connectivity and smart travel.	Direct and indirect, medium and long term, permanent and positive.	None proposed.
Promotion of electric vehicle use, including through the delivery of a Zero Emissions Vehicle Policy and Strategy, supporting the decarbonisation of the transport network.	Direct and indirect, medium and long term, permanent and positive.	None proposed.
Impacts on greenhouse gas emissions through the release of induced demand from new road schemes.	Direct and indirect, medium and long term, permanent and negative.	Initiation of complementary measures alongside road capacity enhancements to limit increases in traffic flows resulting from a release of induced demand. Identify, assess and integrate measures to further reduce carbon through on or off-site offsetting or sequestration.
Increased resilience of the transport network to the likely effects of climate change.	Direct, medium and long term, permanent and positive.	None proposed.

Population

Appraisal of work programmes

4.25 The following table presents an appraisal of the seven work programmes against the Population ISA theme.

Table 4.13: Appraisal of work programmes: Population

Work Programme	Appraisal findings	Mitigation and / or enhancement opportunities
1: Helping people to make the right travel choice	The short, medium and long-term schemes proposed to address this work programme are largely focused on user experience of more sustainable modes of travel, such as active travel and bus travel. The measures introduced under this programme include; introducing 'School Streets' and low-traffic neighbourhoods, delivering cross-modal ticketing and enhanced passenger travel technology (including improved mapping services), traffic management schemes and technology test-bed initiatives. The schemes are likely to benefit residents and passengers with improved accessibility (particularly in terms of more local journeys such as school runs), a move towards more seamless journeys for multi-modal travel, and higher-quality user experience. The package supports technological advances, such as enhanced mapping and real-time information which will support residents in travel planning with improved journey times. Technological advances further provide the opportunity to give users information on the environmental impact of their transport choices, shaping their future travel decisions. Schemes under this programme make targeted efforts to enhance social and behaviour change initiatives, including bolstering community engagement through schemes such as ambassadors for walking and cycling initiatives (e.g. TNE23). Further schemes targeting promotion of active travel in schools (e.g. TNE05) can contribute to development of lifelong healthy travel behaviours for future generations. In this respect package provides significant support for residents in addressing behaviour change and reducing the dominance of traffic to support high-quality neighbourhoods and improved public safety. As a result, significant long-term positive effects are considered likely.	• Promote high-quality public realm and green infrastructure improvements alongside active travel opportunities to maximise benefits in relation to resident health and wellbeing.

2: Upgrading North East Active Travel Infrastructure	The interventions proposed under this work programme range in type but can be broadly grouped as measures to improve and extend active travel routes, and road infrastructure improvements which seek to reduce the dominance of road traffic. The focus on improved active travel connections is likely to benefit residents with increased accessibility and support active and healthy lifestyles. New and extended cycle routes will also provide better connections between settlements, particularly with key employment locations. Measures such as the new crossing over the River Derwent at Metro Green seek to reduce severance and increase permeability for pedestrians and cyclists. Further measures to deliver green infrastructure and biodiversity enhancements (e.g. GA04 and DU16) and public realm improvements (SU29) are likely to benefit residents with high-quality routes and amenity spaces. Schemes such as the proposed new cycle track along the disused railway between Bishop Auckland and Barnard Castle and the development of a cycling and walking route along the Darlington and Stockton railway will further increase access to and enjoyment of the historic environment for residents. Significant positive effects are therefore anticipated for residents under this work package.	• None proposed.
3: Bus, ferry and first and last mile	The work package provides significant support for the enhancement and upgrading of the existing infrastructure network to reduce congestion in the network, improve journey times and support multi-modal travel. The work package includes the development of new bus stations, new park and ride facilities, and rapid transit corridors. New bus stations and park and ride facilities are expected to provide residents with improved access to key central locations. Coupled with bus priority measures, residents should be provided more direct and quicker access to key employment locations and service centres. Further, this will contribute to a limitation of traffic and congestion in urban centres, allowing residents to move more freely and safely through these locations. Significant positive effects can therefore be anticipated. The South Bank Ferry Terminal replacement could unlock further regeneration and investment in the vicinity of the World Heritage Site, bolstering the local economy and heritage values. Minor long-term positive effects are anticipated in this respect.	• Maximise opportunities to unlock further investment in local areas and key regional economies and tourism attractions, including the Hadrian's Wall World Heritage Site.
4: Local rail and Metro	The work package focuses on existing rail infrastructure (including reinstatement of disused lines), with a number of significant proposals, including a new station at East Gateshead, the extension of the Northumberland Line, reinstatement of the Derwent Valley Line from Consett to Newcastle, and new metro stations. Significant car park expansions at rail connection areas in South Tyneside are also proposed. Improved and extended rail connectivity is likely to benefit residents with improved accessibility to key employment areas, service locations and tourism/ leisure attractions. This includes improved connections between the rural and urban areas of the region (e.g. through the reinstatement of the Derwent Valley Line from Consett to Newcastle). Significant long-term positive effects can be anticipated in this respect. The extended rail coverage can further contribute to reducing traffic and congestion, particularly within urban centres, supporting ease of pedestrian movement and increased safety.	• Maximise opportunities to encourage inward investment and growth in areas of improved rail transport access.

5: Road infrastructure	This package provides a focus on road infrastructure upgrades. In the short-term there is a predominant focus on expanding the EV network and supporting planned growth with enabling infrastructure. In the medium to longer term focus shifts to reducing severance with the delivery of new bridges, enabling next generation connectivity, local bypass schemes, new active travel routes and the delivery of multi modal enhancements on Strategic Transport Corridors (including on the A194, A1018 and A183 in South Tyneside). The focus on reduced severance will therefore increase local accessibility for residents and improve settlement connectivity. Furthermore, new bypass schemes are likely to support town and village centres by alleviating the pressures of congestion within them. Bypass schemes are outlined for many areas including; Ponteland, Blyth, Farringdon and Barnard Castle. New link roads, dualling schemes and junction improvements will further improve access and relieve congestion in certain locations across the region and along key strategic transport corridors. In addition to increasing travel choice through initiating significant transport capacity enhancements, the package has the potential to lead to a range of economic opportunities through enhancing connections with the strategic and local transport network and key employment and growth areas. This mirrors a core aim of the North East Local Enterprise Partnership and its Strategic Economic Plan, which seek to maximise economic opportunities and enhance the vitality of the region's economy through improvements in transport connectivity.	• None proposed.
6: Maintaining and renewing our transport network	This package provides a focus on future funding, targeted decarbonisation solutions and asset energy generation potential, and technological advances, alongside a focus on enhanced maintenance measures for the road network. The package will ensure the general upkeep of the existing network to support continued access to employment areas, service centres and tourism/ leisure attractions. This includes along coastal roads which suffer from coastal erosion and in areas with issues associated with ongoing landslip and subsidence. Furthermore, the schemes seek to ensure that key roads underpinning the rural and regional economy are repaired and strengthened where necessary – including those providing access to key tourist destinations such as Hadrian's Wall World Heritage Site, Northumberland National Park and the International Dark Skies Park. The focus on future funding, and opportunities to generate income and capital will support continued investment and growth in the transport network and deliver against key transport priorities for the future. In this respect, long-term positive effects are anticipated with regards to the quality of life of residents.	• None proposed.
7: National and international connectivity	This work package focuses on strategic road and rail connection enhancement opportunities to better manage future growth in the region and accelerate existing business cases for strategic interventions. This includes future rail connectivity with High Speed 2 and Northern Powerhouse Rail, as well as a package of measures to address highway pinchpoints (including the A1 Western Bypass, A19 and Sunderland Strategic Transport Corridors and Blyth Relief Road). Cumulatively this can support increased accessibility within and beyond the region for residents, unlocking further employment and leisure opportunities.	• None proposed.

Key significant effects resulting from the NETP packages: Population

4.26 The following table sets out the key significant effects resulting from the in-combination effects of NETP packages in relation to the Population ISA theme.

Table 4.14: Likely significant effects, Population

Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
Improved accessibility to services, facilities and employment opportunities.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Support for a reduction in deprivation from accessibility, congestion and severance issues, and elements relating to social exclusion.	Direct and indirect, medium and long term, permanent and positive.	None proposed.
Enhanced economic opportunities through improved connections with the strategic and local transport network and key employment and growth areas.	Indirect, medium and long term, permanent and positive.	None proposed.
Support for the visitor economy from enhancements in transport infrastructure.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Enhancements to the quality of the neighbourhoods through a reduction of the impact of traffic and congestion.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Enhanced maintenance of the road network, supporting its resilience, with associated benefits for the quality of life of residents.	Direct, medium and long term, permanent and positive.	None proposed.

Human health

Appraisal of work programmes

4.27 The following table presents an appraisal of the seven work programmes against the Human Health ISA theme.

Table 4.15: Appraisal of work programmes: Human Health

Work Programme	Appraisal findings	Mitigation and / or enhancement opportunities
1: Helping people to make the right travel choice	The short, medium and long-term schemes proposed to address this work programme are largely focused on user experience of more sustainable modes of travel, such as active travel and bus travel. The measures introduced under this programme include; introducing 'School Streets' and low-traffic neighbourhoods, delivering cross-modal ticketing and enhanced passenger travel technology (including improved mapping services), traffic management schemes and technology test-bed initiatives. Schemes under this work programme include targeted plans to integrate initiatives between the NHS, Public Health Directors and Transport North East (TNE31), with a view to encouraging activity and healthy behaviours. Further schemes target promotion of active travel in schools (e.g. TNE05). These measures will promote healthier lifestyles and support road safety. Recognising the recovery from the Covid-19 pandemic, the measures proposed also include initiatives to reduce the need for physical contact when using the transport network, including with ticket machines, barriers and physical cash. A number of schemes proposed in this package (e.g. TNE04, NE10, SU32 and TNE21) specifically target air quality improvements and improved air quality monitoring and modelling. The targeted reduction in vehicle dominance is also considered likely to reduce the impacts of noise, particularly at the neighbourhood scale. A reduction of air and noise quality issues will support health and wellbeing. Considering the above, long-term positive effects are considered likely overall.	• Promote high-quality public realm and green infrastructure improvements alongside active travel opportunities to maximise benefits in relation to resident health and wellbeing.
2: Upgrading North East Active Travel Infrastructure	The interventions proposed under this work programme range in type but can be broadly grouped as measures to improve and extend active travel routes, and road infrastructure improvements which seek to reduce the dominance of road traffic. A significant focus of the package is on increasing the coverage and quality of cycle routes and active travel connections. This will promote health and wellbeing through supporting healthy and active lifestyles, and increasing access to green infrastructure networks and the countryside. The measures will also support road safety. Opportunities to link these routes with key regional green and blue infrastructure and heritage assets (for example through the proposed new Bishop Auckland to Barnard Castle track – scheme DU24 and the development of a cycling and walking route along the Darlington and Stockton railway – scheme DU32) are likely to further enhance wellbeing benefits for residents. Through promoting modal shift, the package also offers the potential to support air and noise quality enhancements and enhancements to the quality of the public realm. This will support the health and wellbeing of residents.	• Maximise opportunities to link new active travel routes with existing green/ open and recreational spaces and features of heritage interest.

3: Bus, ferry and first and last mile	The proposed schemes provide significant focus on extending and improving the quality of sustainable transport corridors. Proposals include the development of new bus stations, new park and ride facilities, and improvements to bus and rapid transit corridors. These measures will support resident access to healthcare services, recreational/leisure facilities and employment opportunities. Given deprivation issues (which are a key contributor to health and wellbeing in the region) are closely linked to accessibility issues (particularly in less well-connected areas such as the rural areas and post-industrial communities of the North East), these measures will support health and wellbeing. Through promoting modal shift, the package also offers the potential to support air and noise quality enhancements and enhancements to the quality of the public realm. This will support the health and wellbeing of residents.	• None proposed.
4: Local rail and Metro	The work package focuses on existing rail infrastructure (including the reinstatement of disused lines), with a number of significant proposals, including a new station at East Gateshead, the extension of the Northumberland Line, reinstatement of the Derwent Valley Line from Consett to Newcastle, and new metro stations. Significant car park expansions at rail connection areas in South Tyneside are also proposed. These measures will support resident access to healthcare services, recreational/leisure facilities and employment opportunities. Given deprivation issues (which are a key contributor to health and wellbeing in the region) are closely linked to accessibility issues (particularly in less well-connected areas such as the rural areas and post-industrial communities of the North East), these measures will support health and wellbeing. Through promoting modal shift to rail and Metro, the package also offers the potential to support air and noise quality enhancements and enhancements to the quality of the public realm. This will support the health and wellbeing of residents.	• Opportunities to improve and extend green infrastructure provision alongside the development of transport infrastructure should be sought.
5: Road infrastructure	This package provides a focus on road infrastructure upgrades. In the short-term there is a predominant focus on expanding the EV network and supporting planned growth with enabling infrastructure. In the medium to longer term focus shifts to reducing severance with the delivery of new bridges, enabling next generation connectivity, and local bypass schemes. These measures will support resident access to healthcare services, recreational/leisure facilities and employment opportunities. Through enabling a reduction of congestion at key bottlenecks on the network, through enhancements to active travel routes, and multi modal improvements on Strategic Transport Corridors, the package the potential to reduce the impacts of traffic and congestion on health and wellbeing at a number of locations. This includes through enhancements to air and noise quality, and improvements in the quality of the public realm. However, a potential stimulation of traffic growth over a larger area due to induced demand has the potential to have wider negative effects on health and wellbeing of residents through impacts on the quality of the public realm and a contribution to air and noise pollution.	• Maximise opportunities to increase road safety where possible. • Road capacity enhancements should be accompanied by measures to ‘lock in’ benefits for traffic flows and congestion levels. • Opportunities to improve and extend green infrastructure provision alongside the development of transport infrastructure should be sought.

6: Maintaining and renewing our transport network	This package provides a focus on future funding, targeted decarbonisation solutions and asset energy generation potential, and technological advances, alongside an enhancement of maintenance measures. The schemes also seek to support the move to more sustainable, cleaner fuels which will ultimately reduce harmful emissions and particulates from vehicle usage. This will support air quality. Enhanced maintenance regimes also have the potential to limit noise pollution from the road network. Positive impacts on air and noise quality from these measures are therefore anticipated to support health and wellbeing.	• None proposed.
7: National and international connectivity	This work package focuses on strategic road and rail connection enhancement opportunities to better manage future growth in the region and accelerate existing business cases for strategic interventions. This includes future rail connectivity with High Speed 2 and Northern Powerhouse Rail, as well as a package of measures to address highway pinchpoints (including the A1 Western Bypass, A19 and Sunderland Strategic Transport Corridors and Blyth Relief Road). Cumulatively this can support increased accessibility within and beyond the region for residents. This has the potential to support health and wellbeing.	• None proposed.

Key significant effects resulting from the NETP packages: Human Health

4.28 The following table sets out the key significant effects resulting from the in-combination effects of NETP packages in relation to the Human Health ISA theme.

Table 4.16: Likely significant effects, Human Health

Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
Improved accessibility to health services and leisure and recreational facilities.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Facilitation of healthier lifestyles through the encouragement of active modes of travel.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Support for a reduction in deprivation, which is one of the key contributors to poor health and wellbeing in the region.	Direct and indirect, medium and long term, permanent and positive.	None proposed.
Enhancements to the quality of the neighbourhoods through a reduction of the impact of traffic and congestion.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Improvements to road safety.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Benefits for health and wellbeing from air and noise quality enhancements at key ‘pinchpoints’ on the network.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Impacts on health and wellbeing from road schemes linked to increased traffic flows, including from the stimulation of induced demand over a wider area.	Direct and indirect, medium and long term, permanent and negative.	Incorporate measures within scheme design to improve mobility by walking and cycling, limit severance and initiate green infrastructure enhancements.

Equalities

Appraisal of work programmes

4.29 The following table presents an appraisal of the seven work programmes against the Equalities ISA theme.

Table 4.17: Appraisal of work programmes: Equalities

Work Programme	Appraisal findings	Mitigation and / or enhancement opportunities
1: Helping people to make the right travel choice	The short, medium and long-term schemes proposed to address this work programme are largely focused on user experience of more sustainable modes of travel, such as active travel and bus travel. The measures introduced under this programme include; introducing 'School Streets' and low-traffic neighbourhoods and specifically targeting the young with behaviour change initiatives. Further schemes delivering cross-modal ticketing and enhanced passenger travel technology (including improved mapping services), traffic management schemes and technology test-bed initiatives are likely to increase accessibility and improve journey planning. Schemes under this work programme include targeted plans integrating initiatives between the NHS, Public Health Directors and Transport North East (TNE31) which seek to encourage health benefits. These measures are likely to particularly benefit groups with 'protected characteristics' who tend to be disproportionately affected by accessibility issues. For those lacking their own transport, including the young, the elderly, and those with mobility issues, access to services and facilities is a significant challenge. These groups are often the least able to afford high costs of public transport and research shows that, on average, people on lower incomes in rural areas pay a higher proportion of their income on travel costs.	• None proposed.
2: Upgrading North East Active Travel Infrastructure	Groups with 'protected characteristics' tend to be disproportionately affected by the negative effects of transport infrastructure, including from the physical and severance effects of transport corridors, effects on the quality of the public realm, road safety issues and the effects of traffic and congestion on health and wellbeing. These groups are also disproportionately affected by accessibility issues. The interventions proposed under this work programme range in type but can be broadly grouped as measures to improve and extend active travel routes, and road infrastructure improvements which seek to reduce the dominance of road traffic. These interventions are therefore likely to have particular benefits for groups with protected characteristics.	• Encourage design which supports the needs of mobility-impaired groups.
3: Bus, ferry and first and last mile	The work package provides significant support for the enhancement and upgrading of the existing infrastructure network to reduce congestion in the network, improve journey times and support multi-modal travel. The work package includes the development of new bus stations, new park and ride facilities, and rapid transit corridors. This is likely to benefit groups with 'protected characteristics' who tend to be disproportionately affected by accessibility issues. For those lacking their own transport, including the young, the elderly, and those with mobility issues, access to services and facilities is a significant challenge. These groups are often the least able to afford high costs of public transport and research shows that, on average, people on lower incomes in rural areas pay a higher proportion of their income on travel costs.	• Maximise opportunities to increase sustainable transport access for more vulnerable groups such as the elderly and disabled.

4: Local rail and Metro	The work package focuses on existing rail infrastructure (including reinstatement of disused lines), with a number of significant proposals, including a new station at East Gateshead, the extension of the Northumberland Line, reinstatement of the Derwent Valley Line from Consett to Newcastle, and new metro stations. Significant car park expansions at rail connection areas in South Tyneside are also proposed. For those lacking their own transport, including the young, the elderly, and those with mobility issues, access to services and facilities is a significant challenge. These groups are often the least able to afford high costs of public transport and research shows that, on average, people on lower incomes in rural areas pay a higher proportion of their income on travel costs. These measures are therefore likely to benefit groups with 'protected characteristics' who tend to be disproportionately affected by accessibility issues.	• None proposed.
5: Road infrastructure	This package provides a focus on road infrastructure upgrades. In the short-term there is a predominant focus on expanding the EV network and supporting planned growth with enabling infrastructure. In the medium to longer term focus shifts to reducing severance with the delivery of new bridges, enabling next generation connectivity, and local bypass schemes. Enhancements to the quality of the built environment facilitated by road schemes, enhancements to active travel routes, and multi modal enhancements on Strategic Transport Corridors are likely to support groups with 'protected characteristics' who tend to be disproportionately affected by the negative effects of transport infrastructure, including from the physical and severance effects of transport corridors, effects on the quality of the public realm, and the effects of traffic and congestion on health and wellbeing. However, a potential stimulation of traffic growth over a larger area due to induced demand has the potential to have wider negative effects on the needs of groups with protected characteristics through impacts on the quality of the public realm, severance issues and a contribution to air and noise pollution.	• Maximise opportunities to increase road safety, particularly for more vulnerable groups such as the elderly and disabled.
6: Maintaining and renewing our transport network	Groups with 'protected characteristics' tend to be disproportionately affected by the negative effects of transport infrastructure, including from the physical and severance effects of transport corridors, effects on the quality of the public realm, road safety issues and the effects of traffic and congestion on health and wellbeing. As such, enhanced maintenance of the transport network facilitated by the package has the potential to help improve the usability of the transport network and reduce some of the negative effects of the network on those with protected characteristics.	• Maximise opportunities to increase road safety, particularly for more vulnerable groups such as the elderly and disabled.
7: National and international connectivity	This work package focuses on strategic road and rail connection enhancement opportunities to better manage future growth in the region and accelerate existing business cases for strategic interventions. This includes future rail connectivity with High Speed 2 and Northern Powerhouse Rail, as well as a package of measures to address highway pinchpoints (including the A1 Western Bypass, A19 and Sunderland Strategic Transport Corridors and Blyth Relief Road). Cumulatively this can support increased accessibility within and beyond the region for residents. This has the potential to support the accessibility needs of groups with protected characteristics.	• None proposed.

Key significant effects resulting from the NETP packages: Equalities

4.30 The following table sets out the key significant effects resulting from the in-combination effects of NETP packages in relation to the Equalities ISA theme.

Table 4.18: Likely significant effects, Equalities

Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
Improved accessibility for groups with protected characteristics via a range of transport modes.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Reduction of impacts from the transport network on those groups with protected characteristics, including from severance, and contributions to a poor quality public realm.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Improvements to road safety.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Impacts on groups with protected characteristics from effects of road schemes on the quality of the public realm and increased severance.	Direct and indirect, medium and long term, permanent and negative.	Incorporate measures within scheme design to improve mobility, limit severance and initiate green infrastructure enhancements.

Rurality

Appraisal of work programmes

4.31 The following table presents an appraisal of the seven work programmes against the Rurality ISA theme.

Table 4.19: Appraisal of work programmes: Rurality

Work Programme	Appraisal findings	Mitigation and / or enhancement opportunities
1: Helping people to make the right travel choice	The measures will offer a more flexible approach to public transport provision and increase the accessibility and ease of use of the public transport network in rural areas. This includes through enhancing linkages between transport modes (including car and public transport), the provision of enhanced information for users, simplification of ticketing and soft measures such as travel plans. More effective management of the highways network and the provision of enhanced information for users will also support those travelling by private car, which will continue to comprise a key transport mode for those living in rural areas. The encouragement of car clubs will enable access to mobility opportunities that would not otherwise be accessible and have the potential to reduce individuals' expenditure on transport use through reducing the need for the private car. Car clubs also provide opportunities to increase the use of public transport use through the greater flexibility enabled by making a car available as an option rather than a first choice. These elements therefore have the potential to bring a range of benefits for the quality of life of residents and support social inclusion, which is a key issue in rural areas. Intelligent transport networks also will support accessibility through implementing systems which balance the needs of public transport users and pedestrians / cyclists with the needs of private car users.	• None proposed.

2: Upgrading North East Active Travel Infrastructure	Enhancements to the rural cycle network promoted by the work package will promote accessibility to services, facilities and amenities by cycle, with benefits for the quality of life of rural residents. Improvements in cycle infrastructure also has the potential to support the visitor economy in rural areas. Enhancements of urban walking and cycle networks will increase travel choice for those living in rural areas who travel into the towns and cities of the region, and will support accessibility through promoting the ease of multi-modal transport use. Enhancements to the active travel network through enhanced information provision, active travel programmes, behavioural change initiatives and cycle parking improvements will also support the use of active travel modes for those living in rural areas, with benefits for health and wellbeing and accessibility.	• None proposed.
3: Bus, ferry and first and last mile	The package of measures will support rural accessibility by enhancing the quality of rural bus networks and links to urban areas from rural areas. This includes through the implementation of bus infrastructure enhancements, priority schemes, performance enhancement measures and behaviour change programmes. Establishing a strategy for effective park and ride sites and enhancements to existing and new multi-modal park and ride schemes will also support accessibility for those with access to private transport in rural areas. This recognises that car use will remain the predominant and necessary choice for many in rural areas.	• None proposed.
4: Local rail and Metro	The package of measures will support rural accessibility through enhancing rail and Metro networks and the quality of services in the region. This includes through enhancing accessibility from rural areas to the services, facilities, amenities and employment/economic opportunities available in the urban areas of the North East. Recognising that such stations are key nodes for those travelling from rural areas into the urban areas of the North East, and to destinations further afield, enhancements to multi modal interchanges and car parking at railway and metro stations also have the potential to have significant positive effects on accessibility for those living in rural areas.	• None proposed.
5: Road infrastructure	The package will initiate a range of road network enhancements. Recognising that car use will remain the predominant and necessary choice for many in rural areas, this will support accessibility for those living in rural areas, including to the amenities and opportunities available in the region's market towns and urban areas. The schemes also have in some cases the potential to support accessibility by non-car modes. In this respect a number of the road schemes seek to reduce severance for non-car users and enhance public transport connectivity. The measures may also in some cases support enhancements to the quality of the public realm through supporting a reduction in localised congestion in some rural locations. The package also has the potential to support economic vitality in rural areas through enhancing connections to key services, facilities and employment opportunities and supporting the visitor economy.	• None proposed.

6: Maintaining and renewing our transport network	The package seeks to repair and strengthen key roads underpinning the rural and regional economy. This will help support access to key tourism destinations in the rural part of the North East, including Hadrian's Wall World Heritage site and Northumberland National Park (including the International Dark Skies Park), with benefits for the visitor economy. It also seeks to limit the impacts from transport of timber extraction and quarrying. This recognises the impact of such activities on the landscape character and quality of the public realm in some rural areas, with associated impacts on the rurality and tranquillity of these areas. More broadly, enhanced maintenance of the road network in rural areas will support the resilience of transport links in rural areas and help overcome some of the barriers to accessibility associated with a poorly maintained network.	• None proposed.
7: National and international connectivity	Enhanced strategic-level investment in the transport network will support accessibility for those living in rural areas to key urban centres in the region and further afield. The package also has the potential to support economic vitality in rural areas through enhancing connections to key services, facilities and employment opportunities and supporting the visitor economy.	• None proposed.

Key significant effects resulting from the NETP packages: Rurality

4.32 The following table sets out the key significant effects resulting from the in-combination effects of NETP packages in relation to the Rurality ISA theme.

Table 4.20: Likely significant effects, Rurality

Likely significant effect	*Effect dimensions*	*Recommendations, mitigation*
Enhanced accessibility to the services, facilities and amenities located in the urban areas of the North East from rural areas by all modes of transport.	Direct and indirect, medium and long term, permanent and positive.	None proposed.
Improvements to rural areas' vitality through enhanced connections to key services, facilities and economic and employment opportunities.	Indirect, medium and long term, permanent and positive.	None proposed.
Support for the visitor economy from enhancements in transport infrastructure.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.
Enhanced maintenance of the road network in rural areas, supporting its resilience.	Direct, medium and long term, permanent and positive.	None proposed.
Limitation of the impacts of transport movements associated with timber and quarrying on rural areas.	Direct and indirect, short, medium and long term, permanent and positive.	None proposed.

Cumulative effects with other plans and programmes

4.33 Cumulative effects occur from the combined impacts of policies and proposals on specific areas or sensitive receptors.

4.34 In the context of ISA, cumulative effects can arise as a result of the in-combination and synergistic effects of a plan's policies and proposals. Comprising 'intra-plan' effects, these interactions have been discussed above in the evaluation of the in-combination and synergistic[27] effects of the various work programmes of the NETP.

4.35 Cumulative effects can also result from the combined impacts of a plan with impacts of another plan, or the 'inter-plan' effects. These can affect the same receptor, resulting in in-combination or synergistic effects. The NETP therefore has the potential to combine with other planned or on-going activities in the vicinity of the North East to result in cumulative effects.

4.36 For example, the in-combination effects of NETP proposals with the development proposed through the adopted or emerging Local Plans for the Local Planning Authorities in the North East have the potential to lead to cumulative effects. This includes relating to housing and employment growth proposed through the adopted or emerging Local Plan documents for:

- Newcastle upon Tyne;
- Gateshead;
- Sunderland;
- North Tyneside;
- South Tyneside;
- County Durham;
- Northumberland; and
- Northumberland National Park.

Furthermore, the combination of NETP proposals and other proposals and activities being taken forward within and outside the North East region has the potential to lead to cumulative effects. Examples include:

- Proposals taken forward through the provisions of the North East Strategic Economic Plan
- Minerals proposals
- Proposals to increase visitor numbers to Northumberland National Park, the World Heritage Sites and AONBs in the North East
- Investment in the East Coast Mainline
- Development of the Northern Powerhouse Rail network
- Progression of HS2
- Upgrades to the strategic road network, including the A1, A1(M) and A19
- Proposed expansion of Newcastle Airport to facilitate growth from 5.4 million passengers in 2017 to 9.4 million in 2035
- Port capacity expansion
- Activities designed to enhance sub-regional green infrastructure networks

[27] Synergistic effects arise between two or more factors to produces an effect greater than the sum of their individual effects.

In this context, potential effects (both positive and negative) which may occur as a result of the in-combination effects of the NETP and other plans and proposals include the following:

- Increases in traffic flows and congestion from the in-combination effects of development and transport capacity enhancements, with potential impacts on air and noise quality, landscape and townscape character and the setting of the historic environment. However, the in-combination effects of proposals on enhancing public transport and pedestrian and cycle infrastructure may help limit potential negative effects and secure positive effects in this regard.
- Cumulative impacts on ecological networks. This is from the in-combination effects of new development and associated infrastructure on habitats and biodiversity corridors. However, enhancements to green infrastructure provision facilitated through plan proposals and other projects in the area, as well as an increased focus on biodiversity net gain also have significant potential to support local, sub-regional and regional ecological networks.
- Cumulative and synergistic impacts on greenhouse gas emissions from growth areas and the NETP proposals which support them.
- Impacts from a release of induced demand for transport from the in-combination effects of the NETP and Nationally Significant Infrastructure Projects.
- Impacts on flood risk from the in-combination effects of new development, including relating to surface water and fluvial flooding.
- Enhancements to regional green infrastructure networks.
- Improvements in accessibility resulting from the in-combination effects of enhancements to public transport and walking and cycling networks and public realm enhancements.

For many potential cumulative effects, the policy approaches proposed by the various plans and programmes will help reduce the significance of these in-combination impacts. However, monitoring for the plans and programmes will be a key means of ensuring that unforeseen adverse environmental and socio-economic effects are highlighted, and remedial action can be taken where adverse effects arise.

5. What are the next steps?

Introduction

5.1 This section of the ISA Report explains next steps that will be taken as part of the plan-making / ISA process.

Plan finalisation

5.2 This ISA Report has been prepared to accompany the latest version of the NETP, which updated following consultation on the draft plan in later 2020 and early 2021.

5.3 SEA Regulations 16.3c)(iii) and 16.4 require that a 'statement' be made available to accompany the plan, as soon as possible after the adoption of the plan or programme. The purpose of the ISA Statement is to outline how the ISA process has influenced and informed the NETP development process and demonstrate how consultation on the ISA has been taken into account.

5.4 As the regulations outline, the statement should contain the following information:

- The reasons for choosing the preferred measures for the NETP as adopted in the light of other reasonable alternatives dealt with;
- How environmental considerations have been integrated into the NETP;
- How consultation responses have been taken into account; and
- Measures that are to be taken to monitor the significant environmental effects of the NETP.

5.5 To meet these requirements, an ISA Adoption Statement will be published with the adopted version of the North East Transport Plan.

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Appendix A Policy and plan review and baseline information

Policy context

Biodiversity policy context

Key messages from the National Planning Policy Framework (NPPF) in relation to biodiversity include:

- One of the three overarching objectives of the NPPF is an environmental objective to *'contribute to protecting and enhancing our natural, built and historic environment' including by 'helping to improve biodiversity.'*
- *'Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value[…], take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scape across local authority boundaries.'*
- *'Planning policies and decisions should contribute to and enhance the natural and local environment by: protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with the statutory status or identified quality in the development plan); and minimising impacts on and providing net gains for biodiversity, including establishing coherent ecological networks that are more resilient to current and future pressures.'*
- *'To protect and enhance biodiversity and geodiversity, plans should:*

  a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and

  b) Promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity'.

The Natural Environment White Paper (NEWP)[28] sets out the importance of a healthy, functioning natural environment to sustained economic growth, prospering communities and personal well-being. It was in part a response to the UK's failure to halt and reverse the decline in biodiversity by 2010 and it signalled a move away from the traditional approach of protecting biodiversity in nature reserves to adopting a landscape approach to protecting and enhancing biodiversity. The NEWP also aims to create a green economy in which economic growth and the health of our natural resources sustain each other and markets, business and Government better reflect the value of nature. It includes commitments to:

- Halt biodiversity loss, support functioning ecosystems and establish coherent ecological networks by 2020;
- Establish a new voluntary approach to biodiversity offsetting to be tested in pilot areas;
- Enable partnerships of local authorities, local communities and landowners, the private sector and conservation organisations to establish new Nature Improvement Areas; and
- Address barriers to using green infrastructure to promote sustainable growth.

Reflecting the commitments within the Natural Environment White Paper and the EU Biodiversity Strategy, 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services' aims to *'halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people'*[29].

[28] DEFRA (2012) The Natural Choice: securing the value of nature (Natural Environment White Paper) [online] available at: <http://www.official-documents.gov.uk/document/cm80/8082/8082.pdf> [accessed 21/02/20]
[29] DEFRA (2011): 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services', [online] Available to download from: <https://www.gov.uk/government/publications/biodiversity-2020-a-strategy-for-england-s-wildlife-and-ecosystem-services> [accessed 21/02/20]

The recently published 25 Year Environment Plan[30] sets out the Government's environmental plan of action over the next quarter century, in the context of Brexit. The Plan aims to tackle the growing problems of waste and soil degradation, improving social justice through tackling pollution and promoting the mental and physical health benefits of the natural world. It also sets out how the Government will address the effects of climate change. These aims are supported by a range of policies which are focused on the following six key areas:

- Using and managing land sustainably;
- Recovering nature and enhancing the beauty of landscapes;
- Connecting people with the environment to improve health and wellbeing;
- Increasing resource efficiency, and reducing pollution and waste;
- Securing clean, productive and biologically diverse seas and oceans; and
- Protecting and improving the global environment.

In this context, Goal 3 'Thriving plants and wildlife' and the policies contained within Chapter 2 'Recovering nature and enhancing the beauty of landscapes' and Chapter 5 'Securing clean, productive and biologically diverse seas and oceans' directly relate to the Biodiversity theme.

Published in June 2015, the Highways England (HE) Biodiversity Plan[31] identifies the approach which HE is taking to meet the challenge of a national decline in biodiversity. The Plan contains five specific outcomes, with a series of related actions. These outcomes aim to provide the most support for biodiversity across the HE networks, and include:

- Outcome 1: HE and our suppliers are equipped to produce good biodiversity performance;
- Outcome 2: The Strategic Road Network is managed to support biodiversity;
- Outcome 3: We have delivered biodiversity enhancements whilst implementing a capital programme of network improvements;
- Outcome 4: We have addressed the legacy of biodiversity problems on out network via a targeted programme of investment; and
- Outcome 5: We are fully transparent about our biodiversity performance (achieved via the production of annual progress reports).

The 2020 Biodiversity Strategy

The 2020 Biodiversity Strategy was published by Defra in 2011. It is a national strategy for England's wildlife and ecosystem services; and builds on the Natural Environment White Paper to provide a comprehensive picture of how international and EU commitments are being implemented. It was published in summer 2011. It sets out the strategic direction for biodiversity policy for the next decade on land (including rivers and lakes) and at sea. A series of goals have been set as part of this strategy:

- better wildlife habitats – quality goals for priority habitat and Sites of Special Scientific Interest (SSSIs);
- more, bigger and less fragmented areas for wildlife – an increase in priority habitats by at least 200,000ha;
- the restoration of 15% of degraded ecosystems – as a contribution to climate change mitigation and adaptation establishing a Marine Protected Area network managing and harvesting fish sustainably;
- marine plans in place by 2022;

[30] HM GOV (2018) A Green Future: Our 25 Year Plan to Improve the Environment [online] available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf [accessed 21/02/20]
[31] Highways England (2015): 'Biodiversity Plan', [online] available to access via: <https://www.gov.uk/government/publications/biodiversity-plan> last accessed [21/02/20]

- an overall improvement in status of our wildlife and prevention of further human induced extinctions of known threatened species; and
- significantly more people engaged in biodiversity issues, aware of its value and taking positive action.

Water and soil resources policy context

The EU's Soil Thematic Strategy[32] presents a strategy for protecting soil resources in Europe. The main aim of the strategy is to minimise soil degradation and limit associated detrimental effects linked to water quality and quantity, human health, climate change, biodiversity, and food safety.

The Water Framework Directive (WFD) drives a catchment-based approach to water management. In England and Wales there are 100 water catchments and it is Defra's intention to establish a 'framework for integrated catchment management' across England. The Environment Agency is establishing 'Significant Water Management Issues' and recently presented second River Basin Management Plans to ministers. The plans seek to deliver the objectives of the WFD namely:

- Enhance the status and prevent the further deterioration of aquatic ecosystems and associated wetlands which depend on aquatic ecosystems;
- Promote the sustainable use of water;
- Reduce the pollution of water, especially by 'priority' and 'priority hazardous' substances; and
- Ensure the progressive reduction of groundwater pollution.

Key messages from the NPPF include:

- '*Planning policies and decisions should contribute to and enhance the natural and local environment by:*
  - *i. protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils; and*
  - *ii. recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland.'*
- Prevent new or existing development from being *'adversely affected'* by the presence of *'unacceptable levels'* of soil pollution or land instability and be willing to remediate and mitigate *'despoiled, degraded, derelict, contaminated and unstable land, where appropriate'.*
- *'Planning policies and decisions should promote an effective use of land in meeting the need for homes and other uses, while safeguarding and improving the environment and ensuring safe and healthy living conditions. Strategic policies should set out a clear strategy for accommodating objectively assessed needs, in a way that makes as much use as possible of previously-developed or 'brownfield' land.'*
- *'Encourage multiple benefits from both urban and rural land, including through mixed use schemes and taking opportunities to achieve net environmental gains.'*
- Planning policies and decisions should *'give substantial weight to the value of using suitable brownfield land within settlements for homes and other identified needs'*, and *'promote and support the development of under-utilised land and buildings.'*
- Taking a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for water supply.
- Prevent new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of water pollution.
- The government has produced a separate plan that specifically deals with planning policy in relation to waste management; this should be read in conjunction with the NPPF.

[32] European Commission (2006) Soil Thematic Policy [online] available at: <http://ec.europa.eu/environment/soil/index_en.htm> [accessed 27/02/20]

Along with the policies contained within Chapter 1 'Using and managing land sustainably' and Chapter 4 'Increasing resource efficiency, and reducing pollution and waste', Goal 2 'Clean and plentiful water', Goal 5 'Using resources from nature more sustainably and efficiently' and Goal 8 'Minimising waste' of the Government's 'A Green Future: Our 25 Year Plan to Improve the Environment' directly relates to the water and soil resources theme.

Other key documents at the national level include Safeguarding our Soils: A Strategy for England[33], which sets out a vision for soil use in England, and the Water White Paper[34], which sets out the Government's vision for a more resilient water sector. It states the measures that will be taken to tackle issues such as poorly performing ecosystems, and the combined impacts of climate change and population growth on stressed water resources. In terms of waste management, the Government Review of Waste Policy in England[35] recognises that environmental benefits and economic growth can be the result of a more sustainable approach to the use of materials.

Historic environment policy context

The three key European legislative conventions are the UNESCO World Heritage Convention (1972), The Convention for the Protection of the Architectural Heritage of Europe (1985), and The European Convention on the Protection of Archaeological Heritage (1992).

The Planning (Listed Buildings and Conservation Areas) Act 1990 and Ancient Monuments and Archaeological Areas Act 1979 together form the two primary pieces of legislation concerning the historic environment within the UK.

The Heritage Statement (2017)[36] replaces the 2010 Statement on the Historic Environment for England and sets out the Government's vision for supporting the heritage sector to help it to protect and care for heritage and the historic environment in the coming years, in order to maximise the economic and social impact of heritage and to ensure that everyone can enjoy and benefit from it.

Key messages from the National Planning Policy Framework (NPPF) include:

- Strategic policies should set out an overall strategy making provision for *'conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure.'*
- Planning policies and decisions should ensure that developments *'are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation of change (such as increased densities).'*
- Heritage assets should be recognised as an '*irreplaceable resource'* that should be conserved in a *'manner appropriate to their significance'*, taking account of '*the wider social, cultural, economic and environmental benefits'* of conservation, whilst also recognising the positive contribution new development can make to local character and distinctiveness.
- Plans should set out a 'positive strategy' for the *'conservation and enjoyment of the historic environment'*, including those heritage assets that are most at risk.
- *'When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance.'*

The policies contained within Chapter 2 'Recovering nature and enhancing the beauty of landscapes' and Goal 6 'Enhanced beauty, heritage and engagement with the natural environment' of the

[33] Defra (2009) Safeguarding our Soils: A strategy for England [online] available at: <https://www.gov.uk/government/publications/safeguarding-our-soils-a-strategy-for-england> [accessed 21/02/20]
[34] Defra (2011) Water for life (The Water White Paper) [online] available at <http://www.official-documents.gov.uk/document/cm82/8230/8230.pdf> [accessed 21/02/20]
[35] Defra (2011) Government Review of Waste Policy in England [online] available at: <http://www.defra.gov.uk/publications/files/pb13540-waste-policy-review110614.pdf> [accessed 21/02/20]
[36] Department for Digital, Culture, Media and Sport (2017) Heritage Statement [online], available at: https://www.gov.uk/government/publications/the-heritage-statement-2017

Government's ''A Green Future: Our 25 Year Plan to Improve the Environment' directly relates to the Landscape and Historic Environment SEA theme.

Historic England is the statutory body that helps people care for, enjoy and celebrate England's spectacular historic environment. Guidance and advice notes provide essential information for local planning authorities, neighbourhood groups, developers, consultants, landowners and other interested parties on historic environment considerations, and are regularly reviewed and updated in light of legislative changes. The following guidance and advice notes are particularly relevant and should be read in conjunction with the others.

Conservation Area Designation, Appraisal and Management: Historic England Advice Note 1 (February 2019)[37] outlines ways to manage change that conserves and enhances historic areas in order to positively contribute to sustainable development. Principally, the advice note emphasises the importance of:

- Understanding the different types of special architectural and historic interest which underpin the designations; and
- Recognising the value of implementing controls through the appraisal and/or management plan which positively contribute to the significance and value of conservation areas.

Sustainability Appraisal (SA) and Strategic Environment Assessment (SEA): Historic England Advice Note 8 (December 2016)[38] provides support to all stakeholders involved in assessing the effects of certain plans and programmes on the historic environment. It offers advice on heritage considerations during each stage of the SA/SEA process and helps to establish the basis for robust and comprehensive assessments.

Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (2nd Edition) (December 2017)[39] provides general advice on understanding setting, and how it may contribute to the significance of heritage assets and allow that significance to be appreciated, as well as advice on how views can contribute to setting. Specifically, Part 2 of the advice note outlines a five stepped approach to conducting a broad assessment of setting:

- Step 1: Identify which heritage assets and their settings are affected;
- Step 2: Asses the degree to which these settings make a contribution to the significance of the heritage asset(s) or allow significance to be appreciated;
- Step 3: Assess the effects of the proposed development, whether beneficial or harmful, on that significance or on the ability to appreciate it;
- Step 4: Explore ways to maximise enhancement and avoid or minimise harm; and
- Step 5: Make and document the decision and monitor outcomes.

In terms of the two World Heritage Sites in the North East, the Management Plans for Durham Castle and Cathedral 2017-2023 and Hadrian's Wall Management Plan 2015-2019 are the key documents which set out the approach to the management of these sites.

Landscape policy context

The European Landscape Convention of the Council of Europe, known as the Florence Convention promotes the protection, management and planning of European landscapes and organises European co-operation on landscape issues. The European Landscape Convention introduced a Europe-wide concept centring on the quality of landscape protection, management and planning and covering the entire territory, not just outstanding landscapes.

Key messages from the National Planning Policy Framework (NPPF) (2019) include:

[37] Historic England (2019): 'Conservation Area Designation, Appraisal and Management: Advice Note 1', [online] available at: < https://historicengland.org.uk/images-books/publications/conservation-area-appraisal-designation-management-advice-note-1/heag-268-conservation-area-appraisal-designation-management/> [accessed 21/02/20]
[38] Historic England (2016): 'SA and SEA: Advice Note 8' [online] available at: <https://historicengland.org.uk/images-books/publications/sustainability-appraisal-and-strategic-environmental-assessment-advice-note-8/> [accessed 21/02/20]
[39] Historic England (2017): 'Setting of Heritage Assets: 2nd Edition', [online] available to download via: <https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/> [accessed 21/02/20]

- Give great weight to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas and should be given great weight in National Parks and the Broads. The scale and extent of development within these designated areas should be limited.
- Strategic policies should set out an overall strategy making provision for 'conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure.
- Planning policies and decisions should ensure that developments 'are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation of change (such as increased densities).
- Planning policies and decisions should contribute to and enhance the natural and local environment by:
    - protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils;
    - recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland; and
    - remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.
- Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to these issues.

The Government's 25 Year Environment Plan (2018) sets out a strategy for managing and enhancing the natural environment. Chapter 2 is dedicated to recovering nature and enhancing the beauty of landscapes, with the main focus on reviewing the National Park's and Areas of Outstanding Natural Beauty (AONBs) in order to better conserve and enhance landscapes. Along with the policies contained within Chapter 2, Goal 6 'Enhanced beauty, heritage and engagement with the natural environment' directly relates to the Landscape SA theme.

Northumberland National Park Authority has a duty to prepare a National Park Management Plan as the framework for the delivery of the National Park statutory purposes and duty. The Management Plan sets out the guiding principles, vision, objectives and actions for managing the National Park.

The Northumberland National Park Management Plan 2016-2021 was adopted in 2016, and is currently being updated. The key aims of the Management Plan are as follows:

- Aim 1: A Welcoming Park To put people and their connections with the landscape at the heart of the National Park.
- Aim 2: A Distinctive Place To manage, conserve and enhance the distinctive natural and cultural qualities of the National Park.
- Aim 3: A Living, Working Landscape for Now and the Future To adapt to change by applying new approaches, together with traditional techniques.
- Aim 4: Thriving Communities To ensure the thriving and vibrant communities have a strong sense of place and an economy grounded in the natural and cultural qualities of the National Park.
- Aim 5: A Valued Asset To ensure the National Park is valued as a local, regional and national asset, with influence beyond its boundaries that is worth looking after now and for generations to come.

Each AONB management unit is required to prepare and keep updated a Management Plan for the respective AONB.

The North Pennines AONB Management Plan 2019-2024[40] sets out the following '2030 Vision':

- There is wide recognition of the breadth of services and benefits provided for society through conserving our biodiversity, landscape and natural processes, and our cultural heritage.
- There is greater connectivity of priority habitats and it is enhanced by improvements in condition and ecological function. Work to restore our moors to fully functioning wetland ecosystems is complete and they are richer in wildlife.
- Declines in biodiversity have slowed, or have halted and are reversing.
- Local action for climate change adaptation and mitigation (eg. through peatland restoration) means the area is playing its full part in national efforts.
- Management of land allows opportunities for more natural processes to develop, over larger areas, including greater native woodland cover.
- Coniferous woodlands from the 20th century have been restructured and make a more positive contribution to the landscape and biodiversity; new well-designed and appropriately located mixed woodlands provide income for land managers.
- Action on pollution from abandoned metal mines has lead to an increase in water quality.
- High Nature Value farming prospers and farmers are well-rewarded for the public goods they produce, including more species-rich hay meadows, wading birds, pollinators and public access. The area has been at the forefront of shaping new Environmental Land Management Schemes which have sustained nature and farming.
- There are closer partnerships between conservation bodies and land managers of all kinds, focused on delivering more for nature together.
- The tourism industry is both environmentally responsible and economically sustainable, with a wealth of nature and culture-related things to see and do.
- A greater diversity of people are easily, safely and confidently exploring the area on foot, on horseback and by bike.
- The North Pennines is a much-used outdoor classroom, which inspires young and old.
- The area's historic environment is increasingly better understood, conserved and celebrated.
- Communities are increasingly proud of their natural and cultural heritage and are active in conserving and celebrating it.
- Development takes place to a high standard, meeting community need and contributing to the area's quality and character.
- The North Pennines AONB and UNESCO Global Geopark is increasingly recognised at a national level as an exemplar of what Protected Landscapes can do for conservation, local communities and local economies.

The Northumberland Coast AONB Management is currently being updated.[41] The 'Vision for 2040' set out by the consultation version of the Management Plan is as follows:

"*A sense of remoteness and wildness is maintained, with wide open coastal and sea views, a naturally functioning coastline rich in wildlife, and a clear distinction between settlements and open countryside. The AONB is a living, working area with a celebrated history and culture, and a vibrant present in which social and economic wellbeing is successfully integrated with the conservation and enhancement of the special qualities of the area*."

The aims of the Northumberland Coast Management Plan are as follows:

[40] North Pennines AONB (2019) North Pennines AONB Management Plan 2019-24 https://www.northpennines.org.uk/wp-content/uploads/2019/06/MPlan-220719-webres.pdf
[41] Northumberland Coast Area of Outstanding Natural Beauty Draft Management Plan 2020-2024 http://www.northumberlandcoastaonb.org/public-consultation-opens-on-plan-for-the-northumberland-coast/b295

- Aim 1: To ensure that the natural beauty and special qualities of the AONB are conserved and enhanced.
- Aim 2: To ensure that the communities in and around the AONB are thriving places to live and work.
- Aim 3: The designation of 'Area of Outstanding Natural Beauty' and the special qualities of the Area are understood and valued for their contribution to life in the wider region and are seen as being worthy of protection.
- Aim 4: The AONB provides a high quality, clean environment that is welcoming and accessible to all.

Air quality and noise policy context

The Clean Air Strategy released in 2019 sets out the Government plans for dealing with all sources of air pollution. The strategy sets out proposals in detail and indicates how devolved administrations intend to make their share of emissions reductions, and complements the Industrial Strategy, Clean Growth Strategy and 25 Year Environment Plan.

Key messages from the National Planning Policy Framework (NPPF) include:

- *'Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.'*
- *'Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health.'*
- *New and existing developments should be prevented from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of air pollution.*

Published in January 2018 by the UK Government, 'A Green Future: Our 25 Year Plan to Improve the Environment'[42] sets out a number of goals and policies in order to help the natural world regain and retain good health. In this context, Goal 1 'Clean Air' and the policies contained within 'Chapter 4: Increasing resource efficiency and reducing pollution and waste' within the 25 year plan directly relate to the air quality ISA theme.

Local Authorities are required under Section 82 of the Environment Act (1995) to monitor air quality across the district, report regularly to DEFRA, and take action where nationally set levels are likely to be exceeded. Monitoring is undertaken to assess levels of nitrogen dioxide (NO_2), sulphur dioxide (SO_2), ozone (O_3), benzene (C_6H_6) and particulates (PM_{10}). Where exceedances exist, areas are declared as Air Quality Management Areas (AQMAs) and local authorities are required to produce an Air Quality Action Plan (AQAP) to improve air quality in the area.

A series of air quality directions made by the Government have required local authorities with concentrations of NO_2 forecast to exceed legal limits to consider whether establishment of clean air zones / low emission zones would deliver a way to meet air quality targets in the shortest possible time. These were delivered under the Environment Act 1995 in order to meet the obligations placed upon the UK under the EU Ambient Air Quality Directive 2017.

[42] HM GOV (2018) A Green Future: Our 25 Year Plan to Improve the Environment [online] available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf [accessed 21/02/20]

Gateshead Council, Newcastle City Council and North Tyneside Council were provided with a legal direction in 2017, which was revised in mid-2019.[43] This was a legal order requiring the three local authorities to produce a feasibility study to identify measures to deliver compliance with legal limits for nitrogen dioxide in the Authorities' administrative areas, with a view to this being the first stage in identifying, exploring, analysing and developing options for measures which the Councils would implement to deliver compliance in the shortest possible time. Subsequent to this direction, a series of options were developed, evaluated and consulted on. Final proposals were then consulted on in October 2019. This resulted in the intention to introduce a charging Clean Air Zone covering Newcastle city centre affecting non-compliant buses, coaches, taxis (both Hackney Carriages and private hire vehicles), heavy goods vehicles and vans, to be enforced from 2021.

Climate change and flood risk policy context

In May 2019, the UK Parliament declared a climate emergency, with a view to explicitly acknowledging that human activities are significantly affecting the climate, and actions to mitigate and adapt to climate change should be paramount. This declaration has been mirrored by the authorities covering the North East, as follows:

- Newcastle City Council: Declared a climate emergency in April 2019, with the aim of making the city carbon neutral by 2030.
- North Tyneside Council: Declared a climate emergency in June 2019, with the aim of reducing the council's carbon footprint by 50% by 2027.
- Northumberland County Council: Declared a climate emergency in June 2019, with the aim of becoming carbon neutral by 2030
- Durham County Council: Declared a climate emergency in February 2019. Seeks to reduce emissions from Durham County Council's operations by 80% from 2008/09 levels by 2030 and is investigating what further actions are necessary to make County Durham carbon neutral by 2050.
- Gateshead Council: Declared a climate emergency in May 2019, with the aim of becoming carbon neutral by 2030.
- South Tyneside Council: Declared a climate emergency in July 2019, with the aim of becoming carbon neutral by 2030.
- Sunderland City Council: Declared a climate emergency in March 2019, with the aim of becoming carbon neutral by 2030.

The UK Climate Change Act[44] was passed in 2008 and established a framework to develop an economically credible emissions reduction path. It also highlighted the role it would take in contributing to collective action to tackle climate change under the Kyoto Protocol, and more recently as part of the UN-led Paris Agreement.

The Climate Change Act includes the following:

- Commits the UK government by law to reducing greenhouse gas emissions by at least 100% of 1990 levels (net zero) by 2050. This includes reducing emissions from the devolved administrations (Scotland, Wales and Northern Ireland), which currently account for about 20% of the UK's emissions. The 100% target was based on advice from the CCC's 2019 report, '*Net Zero – The UK's contribution to stopping global warming'* and introduced into law through the Climate Change Act 2008 (2050 Target Amendment) Order 2019.
- The Act requires the Government to set legally binding 'carbon budgets'. A carbon budget is a cap on the amount of greenhouse gases emitted in the UK over a five-year period. The carbon budgets are designed to reflect the cost-effective path to achieving the UK's long-term objectives. The first five carbon budgets have been put into legislation and run up to 2032.

[43] Environment Act 1995 (Gateshead Council, Newcastle City Council and North Tyneside Council) Air Quality Direction 2019 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/817394/air-quality-direction-tyneside.pdf

[44] GOV.UK (2008): 'Climate Change Act 2008', [online] available at: <http://www.legislation.gov.uk/ukpga/2008/27/contents> [accessed 21/02/20]

- The Committee on Climate Change was set up to advise the Government on emissions targets, and report to Parliament on progress made in reducing greenhouse gas emissions.
- The Act requires the Government to assess the risks and opportunities from climate change for the UK, and to prepare for them. The Committee on Climate Change's Adaptation Sub-Committee advises on these climate change risks and assesses progress towards tackling them. The associated National Adaptation Programme requires the Government to assess the risks to the UK from climate change, prepare a strategy to address them, and encourage key organisations to do the same.

The UK Climate Change Risk Assessment is published on a 5-yearly cycle in accordance with the requirements of the Climate Change Act 2008. It required the Government to compile an assessment of the risks for the UK arising from climate change, and then to develop an adaptation programme to address those risks and deliver resilience to climate change on the ground. For both the 2012 and the 2017 UK Climate Change Risk Assessment, the Adaptation Sub-Committee commissioned an evidence report aiming to understand the current and future climate risks and opportunities. The evidence report contains six priority risk areas requiring additional action in the next five years, see below[45] :

- Flooding and coastal change risks to communities, businesses and infrastructure;
- Risks to health, well-being and productivity from high temperatures;
- Risk of shortages in the public water supply, and for agriculture, energy generation and industry;
- Risks to natural capital, including terrestrial, coastal, marine and freshwater ecosystems, soils and biodiversity;
- Risks to domestic and international food production and trade; and
- New and emerging pests and diseases, and invasive non-native species, affecting people, plants and animals.

The Committee of Climate Change published a 2012 report entitled 'How Local Authorities Can Reduce Emissions and Manage Climate Change Risk'[46] which emphasises the crucial role councils have in helping the UK meet its carbon targets and preparing for the impacts of climate change. It outlines specific opportunities for reducing emissions and highlights good practice examples from Local Authorities.

The Clean Air Strategy[47] released in 2019 sets out the Government plans for dealing with all sources of air pollution. The strategy sets out proposals in detail and indicates how devolved administrations intend to make their share of emissions reductions, and complements the Industrial Strategy, Clean Growth Strategy and 25 Year Environment Plan.

Key messages from the National Planning Policy Framework (NPPF) include:

- One of the three overarching objectives of the NPPF is an environmental objective to '*contribute to protecting and enhancing our natural, built and historic environment' including by 'mitigating and adapting to climate change' and 'moving to a low carbon economy.' 'The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.'*
- *'Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures. Policies should support appropriate measures to ensure the future resilience of communities and*

[45] GOV UK: 'UK Climate Change Risk Assessment Report January 2017', [online] available at: <https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-2017> [accessed 21/02/20]
[46] CCC (2012) 'How local authorities can reduce emissions and manage climate risks' [online] available at: https://www.theccc.org.uk/publication/how-local-authorities-can-reduce-emissions-and-manage-climate-risks/
[47]

infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.'

- *'Local planning authorities should support community-led initiatives for renewable and low carbon energy, including developments outside areas identified in local plans or other strategic policies that are being taken forward through neighbourhood planning.'*
- *Direct development away from areas at highest risk of flooding (whether existing or future). 'Where development is necessary, it should be made safe for its lifetime without increasing flood risk elsewhere.'*

The Flood and Water Management Act[48] highlights that alternatives to traditional engineering approaches to flood risk management include:

- Incorporating greater resilience measures into the design of new buildings, and retro-fitting properties at risk (including historic buildings);
- Utilising the environment in order to reduce flooding, for example through the management of land to reduce runoff and through harnessing the ability of wetlands to store water;
- Identifying areas suitable for inundation and water storage to reduce the risk of flooding elsewhere;
- Planning to roll back development in coastal areas to avoid damage from flooding or coastal erosion; and
- Creating sustainable drainage systems (SuDS).[49]

Population policy context

Key messages from the NPPF include:

- One of the three overarching objectives of the NPPF is a social objective to; *'support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural wellbeing.'*
- To support the Government's objective of significantly boosting the supply of housing, strategic policies *'should be informed by a local housing need assessment, conducted using the standard method in national planning guidance. In addition to the local housing need figure, any needs that cannot be met within neighbouring areas should also be taken into account in establishing the amount of housing to be planned for.'*
- The size, type and tenure of housing needed for different groups in the community should be assessed and reflected in planning policies. Where a need for affordable housing is identified, planning policies should specify the type of affordable housing required, and expect it to be met on-site where possible.
- Recognise the important contribution of small and medium sized development sites in meeting housing needs. Local Plans should identify land to accommodate at least 10% of their housing requirement on sites no larger than one hectare, and neighbourhood planning groups should also consider the opportunities for allocating small and medium-sized sites.
- In rural areas, planning policies and decisions should be responsive to local circumstances and plan housing development to reflect local needs, particularly for affordable housing, including through rural exception sites where appropriate. Authorities should consider whether allowing some market housing would facilitate the provision of affordable housing to meet local needs.

[48] Flood and Water Management Act (2010) [online] available at: <http://www.legislation.gov.uk/ukpga/2010/29/contents> [accessed 21/02/20]
[49] N.B. The provision of Schedule 3 to the Flood and Water Management Act 2010 came into force on the 1st of October 2012 and makes it mandatory for any development in England or Wales to incorporate SuDs.

- Promote the retention and development of local services and community facilities such as local shops, meeting places, sports venues, open space, cultural buildings, public houses and places of worship.
- Ensure that developments create safe and accessible environments where crime and disorder, and the fear of crime, do not undermine quality of life or community cohesion. Places should contain clear and legible pedestrian routes, and high-quality public spaces, which encourage the active and continual use of public areas.
- Ensuring that there is a *'sufficient choice of school places'* and taking *a 'proactive, positive and collaborative approach'* to bringing forward *'development that will widen choice in education'.*

The 'Ready for Ageing?' report, published by the Select Committee on Public Service and Demographic Change[50] warns that society is underprepared for an ageing population. The report states that *'longer lives can be a great benefit, but there has been a collective failure to address the implications and without urgent action this great boon could turn into a series of miserable crises'*. The report recognises that the supply of specialist housing for the older generation is insufficient for the demand. There is a need for central and local Government, housing associations, and house builders to ensure that these housing needs are better addressed, giving as much priority to promoting an adequate market of social housing for the older generation as is given to the younger generation.

Human health policy context

Key messages from the NPPF include:

- One of the three overarching objectives of the NPPF is a social objective to; *'support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural wellbeing.'*
- *'Planning policies and decisions should aim to achieve healthy, inclusive and safe places which enable and support healthy lifestyles, especially where this would address identified local health and wellbeing needs – for example through the provision of safe and accessible green infrastructure, sports facilities, local shops, access to healthier food, allotments and layouts that encourage walking and cycling.'*
- Policies and decisions should take into account and support the delivery of local strategies to improve health, social and cultural well-being for all sections of the community.
- Access to a network of high-quality open spaces and opportunities for sport and physical activity is important for the health and wellbeing of communities. Development should avoid building on existing open space, sports and recreational buildings and land, including playing fields.
- Promote the retention and development of local services and community facilities such as local shops, meeting places, sports venues, cultural buildings, public houses and places of worship.

In relation to other key national messages in relation to health, Fair Society, Healthy Lives[51] ('The Marmot Review') investigated health inequalities in England and the actions needed in order to tackle them. Subsequently, a supplementary report was prepared providing additional evidence relating to spatial planning and health on the basis that that there is: "overwhelming evidence that health and environmental inequalities are inexorably linked and that poor environments contribute significantly to poor health and health inequalities".

[50] Select Committee on Public Service and Demographic Change (2013) Ready for Ageing? [online] available at: <http://www.parliament.uk/business/committees/committees-a-z/lords-select/public-services-committee/report-ready-for-ageing/> [accessed 21/02/20]

[51] The Marmot Review (2011) The Marmot Review: Implications for Spatial Planning [online] available to download from: < https://www.nice.org.uk/media/default/About/what-we-do/NICE-guidance/NICE-guidelines/Public-health-guidelines/Additional-publications/Spatial-planning/the-marmot-review-implications-for-spatial-planning.pdf > [accessed 21/02/20]

The increasing role that local level authorities are expected to play in providing health outcomes is demonstrated by recent government legislation. The Health and Social Care Act 2012 transferred responsibility for public health from the NHS to local government, giving local authorities a duty to improve the health of the people who live in their areas. This will require a more holistic approach to health across all local government functions.

Baseline

Biodiversity: Summary of Current Baseline

European designated sites

Special Areas of Conservation

Special Areas of Conservation (SACs) are protected sites designated under the EC Habitats Directive (Council Directive 92/43/EEC). Article 3 of the Habitats Directive requires the establishment of a European network of conservation sites to conserve the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended). These listed habitat types and species are those considered to be most in need of conservation at a European level (excluding birds). Of the Annex I habitat types, 78 are believed to occur in the UK. Of the Annex II species, 43 are native to, and normally resident in, the UK.

There are 18 SACs within or partly within the North East; these are illustrated in **Figure 4.1.**

These SACs are predominantly located on the western boundaries of Northumberland and County Durham within the Pennines and Cheviot HIlls. However, there are also a number located on the North Sea coastlines of County Durham and Northumberland.

Information on the qualifying features of the SACs located within the North East is outlined below.

Border Mires, Kielder Butterburn

Border Mires, Kielder – Butterburn is made up of several individual sites running north-east from Carlisle. Collectively, these sites contain a wide range of bog-moss Sphagnum species, for example 11 on Caudbeck alone, along with an almost equally large number of Carex species. The transition mire element of these sites is relatively small, but is an important component of one of the least-damaged and more valuable species-rich mire complexes in England.

Berwickshire and North Northumberland Coast

This is an extensive and diverse stretch of coastline in north-east England and south-east Scotland. There is variation in the distribution of features of interest along the coast. Stretches of the coast in England support a very extensive range of intertidal mudflats and sandflats; large shallow inlets and bays; reefs; and submerged or partially submerged sea caves.

Castle Eden Dene

Castle Eden Dene in north-east England represents the most extensive northerly native occurrence of yew Taxus baccata woods in the UK. Extensive yew groves are found in association with ash-elm Fraxinus-Ulmus woodland and it is the only site selected for yew woodland on magnesian limestone in north-east England.

Durham Coast

The Durham Coast is the only example of vegetated sea cliffs on magnesian limestone exposures in the UK. These cliffs extend along the North Sea coast for over 20 km from South Shields southwards to Blackhall Rocks. Their vegetation is unique in the British Isles and consists of a complex mosaic of Para maritime, mesotrophic and calcicolous grasslands, tall-herb fen, seepage flushes and wind-pruned scrub.

Ford Moss

Ford Moss is a largely intact 46 ha bog in undulating topography in the rain-shadow of the Cheviot Hills. Although partially drained, the re-wetted surface contains many waterlogged areas with species typical of peat-formation. Thus, although there are drier purple moor-grass Molinia caerulea-dominated parts, it is considered to be predominantly active raised bog. There is a 12 m depth of peat within the confining basin. The vegetation includes species of raised bog as well as poor-fen, which is also indicated in places by the presence of white sedge Carex curta where water runs into the bog from the surrounding slopes.

Harbottle Moors

At a little under 400 m altitude, Harbottle Moors is a relatively low-lying example of upland European dry heath. Situated on Carboniferous rocks, the heathland community is dominated by heather Calluna vulgaris with some crowberry Empetrum nigrum, bilberry Vaccinium myrtillus and bracken Pteridium aquilinum. Some areas are relatively species-rich, with up to six different dwarf shrub species being found. This may suggest a fairly un-intensive management history with regard to grazing and burning.

Moor House Upper Teesdales

This large site in northern England consists of an upland complex on limestone and gritstone, with enclosed hay meadows and pastures as well as large tracts of mountain and moorland, with varied and extensive mires and flushes, acid and calcareous grasslands, and dwarf shrub heaths. Other valued habitats present include an upland water body, cliffs and screes of varying chemistry and the largest stands of juniper in England.

Newham Fen

Newham is a lowland short sedge fen in north-east England, a part of the UK in which alkaline fens are rare. The site is an example of basin fen, developed from the hydroseral succession of a small lake. The main fen community is black bog-rush – blunt-flowered rush (Schoenus nigricans – Juncus subnodulosus) mire and bottle sedge Carex rostrata –Calliergon cuspidatum/giganteum (moss) mire, and there are transitions to tall-herb fen grassland and woodland. A number of rare species occur at this site, including coralroot orchid Corallorhiza trifida and round-leaved wintergreen Pyrola rotundifolia.

North Northumberland Dunes

This site consists of a number of dune systems on the north-east coast of England. The embryonic shifting dune vegetation is both extensive and varied, with examples of all themain embryonic dune types. Lyme-grass Leymus arenarius communities are particularly strongly represented, but sand couch Elytrigia juncea communities and strandline species are also present. Most of the dune systems are accreting and forming suitable conditions for the development of shifting dunes with marram. Climbing dunes can occur on steep rocky coasts, as found at Bamburgh.

North Pennine Dales Meadows

This site contains a series of isolated fields within several north Pennine and Cumbria valleys, and encompasses the range of variation exhibited by mountain hay meadows in the UK. The grasslands included within the site exhibit very limited effects of agricultural improvement and show good conservation of structure and function. A wide range of rare and local meadow species are contained within the meadows, including globeflower Trollius europaeus, the lady's-mantles Alchemilla acutiloba, A. monticola and A. subcrenata, and spignel Meum athamanticum.

North Pennine Moors

The North Pennine Moors (along with the North York Moors) hold much of the upland heathland of northern England. At higher altitudes and to the wetter west and north of the site complex, the heaths grade into extensive areas of 7130 blanket bogs. The North Pennine Moors includes one major stand of juniper scrub in Swaledale as well as a number of small and isolated localities.

Roman Wall Loughs

Roman Wall Loughs comprises three natural eutrophic (nutrient-rich) lakes; Crag, Broomleeand Greenlee Loughs. Together the loughs contain 11 species of pondweed Potamogeton including P. lucens, P. pusillus, and P. obtusifolius. P. gramineus occurs in all three loughs in an unusual association with stone worts Chara spp. The nationally-rare autumnal water starwort Callitriche hermaphroditica occurs in Crag Lough. Shore weed Littorella uniflora grows in Broomlee and Greenlee Loughs, and greater bladderwort Utricularia vulgaris in the latter.

River Tweed

The River Tweed drains a large catchment on the east coast of the UK, with sub-catchments in both Scotland and England. It shows a strong nutrient gradient along its length, with oligotrophic (nutrient-poor) conditions in its headwaters, and nutrient-rich lowland conditions just before it enters the sea at Berwick. The river has a high ecological diversity which reflects the mixed geology of the catchment. Stream water-crowfoot Ranunculus penicillatus ssp. pseudofluitans, a species of southern rivers and streams, here occurs at its most northerly location as does fan-leaved water-crowfoot R. circinatus, along with river water-crowfoot R. fluitans, common water-crowfoot R. aquatilis, pond water-crowfoot R. peltatus and a range of hybrids.

River Eden

The River Eden flows through the Eden District of Cumbria. It consists of tidal rivers, estuaries, mud flats, sand flats, lagoons, inland water bodies, bogs, marshes, water fringed vegetation, fens and broad-leaved deciduous woodlad. It supports a number of Annex I habitats including oligotrophic to mesotrophic standing waters, water courses of plain to montane levels and alluvial forests with Alnus glutinosa and Fraxinus excelsior. Annex II species include austropotamobius pallipes, petromyzon marinus, lampetra planeri, lampetra fluviatilis, salmo salar, cottus gobio and lutra.

Simonside Hills

This site comprises part of the Simonside Hills, a sandstone-ridge in central Northumberland. It is particularly important for the extent of heather Calluna vulgaris moorland which grades into blanket mire on wetter ground. A large proportion of the dry heather moorland is managed by rotational burning for grouse and this has produced a characteristic pattern of even-aged stands of heather with few accompanying species.

Thrislington

Thrislington contains one of the most important stands of primary Magnesian Limestone grassland in Britain. Although a comparatively small site it nonetheless contains the largest of the few surviving examples of these blue-moor-grass – small scabious (Sesleria caerulea – Scabiosa columbaria) grasslands. A variety of grassland communities occur over this substrate, most notable, and completely restricted to the Durham Magnesian Limestone, are those characterised by blue moor-grass and small scabious Scabiosa columbaria.

Tweed Estuary

The Tweed Estuary is a complex estuary, which discharges into the North Sea. It is a long narrow estuary, which is still largely natural and undisturbed, with excellent water quality throughout. At its mouth there are substantial sandbanks and some areas of rocky shore. Further upstream, large areas of estuarine boulders and cobbles overlie sediment flats and extend into subtidal areas of the channel. Sheltered estuarine mud and sandflats occur away from the fast-flowing river channel. A wide range of intertidal sediments occurs within the estuary. These range from exposed east-facing sandy shores at the estuary mouth, including its sheltering sand-spit, to muddy gravels where the river is actively eroding the banks. The most exposed sandy shores are subject both to wave action and, in places, the scouring action of the out-flowing river; their mobile infauna (mainly crustaceans such as Eurydice pulchra and Bathyporeia spp. and a few polychaetes) and ephemeral algae reflect these conditions. Species and habitat diversity rises with increasing shelter, until increasingly low-salinity estuarine conditions upstream lead to naturally low infaunal diversity, dominated by characteristic species that are tolerant of brackish-water conditions.

Tyne and Allen River Gravel

This site in north-east England encompasses the most extensive, structurally varied and species-rich examples of riverine Calaminarian grasslands in the UK. The river gravels contain a range of structural types, ranging from a highly toxic, sparsely vegetated area with abundant lichens through to closed willow/alder Salix/Alnus woodland. In addition, the site is of considerable functional interest for the series of fossilised river channel features. Spring sandwort Minuartia verna and thrift Armeria maritima are particularly abundant, and there are several rare species, including Young's helleborine Epipactis youngiana, which has its main UK population at this site.

Special Protection Areas

Special Protection Areas (SPAs) are internationally protected sites classified in accordance with Council Directive 2009/147/EEC. They are classified for rare and vulnerable birds (as listed on Annex I of the Directive), and for regularly occurring migratory species.

There are eight SPAs within or partially within the North East, which are also illustrated on **Figure 4.1**. These are predominantly located in the south west corner of Northumberland and the west side of County Durham. There are also two SPAs located on the north east coast of Northumberland.

Coquet Island

Coquet Island is located 1 km off the coast of Northumberland. This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance. During the breeding season, the area regularly supports 33,448 individual seabirds including: Black-headed Gull Larus ridibundus, Puffin Fratercula arctica, Arctic Tern Sterna paradisaea, Common Tern Sterna hirundo, Roseate Tern Sterna dougallii, Sandwich Tern Sterna sandvicensis.

Farne Islands

The Farne Islands are a group of low-lying islands between 2-6 km off the coast of Northumberland. The islands are important as nesting areas for birds, especially terns, gulls and auks which are of European importance. The seabirds feed outside the SPA in the nearby waters, as well as more distantly in the North Sea. During the breeding season, the area regularly supports 142,490 individual seabirds including: Kittiwake Rissa tridactyla, Shag Phalacrocorax aristotelis, Cormorant Phalacrocorax carbo, Puffin Fratercula arctica, Guillemot Uria aalge, Arctic Tern Sterna paradisaea, Common Tern Sterna hirundo, Roseate Tern Sterna dougallii, Sandwich Tern Sterna sandvicensis.

Holburn Lake and Moss

The SPA of Holburn Lake and Moss is located about 5 km inland from the coast of Northumberland in north-east England. The site comprises part of a lowland raised mire and parts of the adjacent slopes that form its catchment area. The south-western outflow to the mire was dammed in 1934 to create Holburn Lake

Lindisfarne

Lindisfarne is situated off the Northumberland coast near Berwick-upon-Tweed. As well as the island of Lindisfarne (Holy Island), the site includes extensive mud-flats south of Holy Island and at Budle Bay. The area comprises a range of coastal habitats, including rocky shore, sand dunes, saltmarsh and intertidal sand- and mud-flats he area qualifies under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl, including: Pink-footed Goose Anser brachyrhynchus, Golden Plover Pluvialis apricaria, Bar-tailed Godwit Limosa lapponica, Greylag Goose Anser, Light-bellied Brent Goose Branta bernicla hrota, Wigeon Anas penelope, Whooper Swan Cygnus, Knot Calidris canutus, Redshank Tringa totanus, Shelduck Tadorna, Eider Somateria mollissima, Common Scoter Melanitta nigra, Ringed Plover Charadrius hiaticula, Lapwing Vanellus, Dunlin Calidris alpina, Grey Plover Pluvialis squatarola.

Northumbria Coast

The Northumbria Coast SPA includes much of the coastline between the Tweed and Tees Estuaries in north-east England. The site consists of mainly discrete sections of rocky shore with associated boulder and cobble beaches. The SPA also includes parts of three artificial pier structures and a small

section of sandy beach. In summer, the site supports important numbers of breeding Little Tern Sterna albifrons, whilst in winter the mixture of rocky and sandy shore supports large number of Turnstone Arenaria interpres and Purple Sandpiper Calidris maritima.

North Pennine Moors

The North Pennine Moors SPA is situated in Cumbria, County Durham, Northumberland and North Yorkshire and includes parts of the moorland massif between the Tyne Gap (Hexham) and the Ribble-Aire corridor (Skipton). It encompasses extensive tracts of semi-natural moorland habitats. The site is of European importance for several upland breeding species, including birds of prey and waders. The southern end of the SPA is within 10 km of the South Pennine Moors SPA which supports a similar assemblage of upland breeding species. North Pennine Moors subsumes Moor House SPA, a site subject to separate classification.

Teesmouth & Cleveland Coast

The Teesmouth and Cleveland Coast SPA is a wetland of European importance, comprising intertidal sand and mudflats, rocky shore, saltmarsh, freshwater marsh and sand dunes. Large numbers of waterbirds feed and roost on the site in winter and during passage periods; in summer Little Terns breed on the sandy beaches within the site. The existing Teesmouth and Cleveland Coast SPA was classified on 15 August 1995. However, an extension to that area has been recommended to enlarge the area within the Tees Estuary and along part of the foreshore to the north because of the site's European ornithological interest.

Northumberland Marine

Northumberland Marine SPA is located on the Northumberland coast between Blyth and BerwickUpon-Tweed. The coastal parts of the site consist of sandy bays separated by rocky headlands backed by dunes or soft and hard cliffs. There are extensive areas of inter-tidal rocky reef, long sandy beaches at Beadnell, Embleton and Druridge Bay and extensive sand and mud flats at Budle Bay and Fenham Flats at Lindisfarne. Discrete areas of intertidal mudflats and estuarine channels are also included where the site extends into the Aln, Coquet, Wansbeck and Blyth estuaries. The open coast habitats extend into the subtidal zone, where large shallow inlets and bays and extensive rocky reefs are present. Further offshore, soft sediments predominate.

Ramsar sites

The Convention on Wetlands of International Importance (the Ramsar Convention) is the intergovernmental treaty that provides the framework for the conservation and wise use of wetlands and their resources. The convention was adopted in 1971 and came into force in 1975. In the UK, the initial emphasis was on selecting sites of importance to waterbirds, and consequently, many Ramsar Sites were also designated as Special Protection Areas (SPA) under the European Birds Directive (79/409/EEC). There are four Ramsar sites within or partially within the North East which are outlined in **Figure 4.1**.

Sites of Special Scientific Interest

Sites of special scientific interest (SSSIs) are protected by national legislation to conserve their wildlife or geology. 98.47% of sites in the North East are at favourable or unfavourable recovering status. The percentage of sites within each county that make up the North East, at each status is set out in the table below. Tyne and Wear has the highest percentage of sites (7.14%) in unfavourable declining status, however it also has the highest percentage of sites in favourable condition.

Table: Percentage of SSSIs within the North East within each status designation

	% of favourable or unfavourable recovering	Favourable	Unfavourable recovering	Unfavourable no change	Unfavourable declining	Destroyed
North East	98.47%	22.98%	75.98%	0.90%	0.62%	0.01%
County Durham	97.96%	12.81%	85.15%	0.99%	1.03%	0.03%
Northumberland	98.98%	30.97%	68.01%	0.79%	0.24%	0.00%
Tyne and Wear	92.28%	72.08%	20.20%	0.58%	7.14%	0.00%

National Nature Reserves

National Nature Reserves (NNRs) were established to protect some of the most important habitats, species and geology, and to provide 'outdoor laboratories' for research. The majority of NNRs offer opportunities to schools, specialist interest groups and the public to experience wildlife and to learn about nature conservation. There are 15 NNRs within the North East, concentrated in County Durham and Northumberland. These are illustrated in **Figure 4.1.**

Local Nature Reserves

Local Nature Reserves (LNRs) are places with wildlife or geological features that are of special interest locally. They offer people opportunities to study and experience nature. There are 84 LNRs within the North East.

Habitats and species

UK Biodiversity Action Plan (UKBAP) priority habitats cover a wide range of semi-natural habitat types, and were those that were identified as being the most threatened and requiring conservation action under the UK Biodiversity Action Plan (UK BAP). UKBAP was succeeded by the 'UK Post-2010 Biodiversity Framework' in July 2012. The UK list of priority habitats, however, remains an important reference source and has been used to help draw up statutory lists of priority habitats in England, as required under Section 41 (England) of the Natural Environment and Rural Communities (NERC) Act 2006.

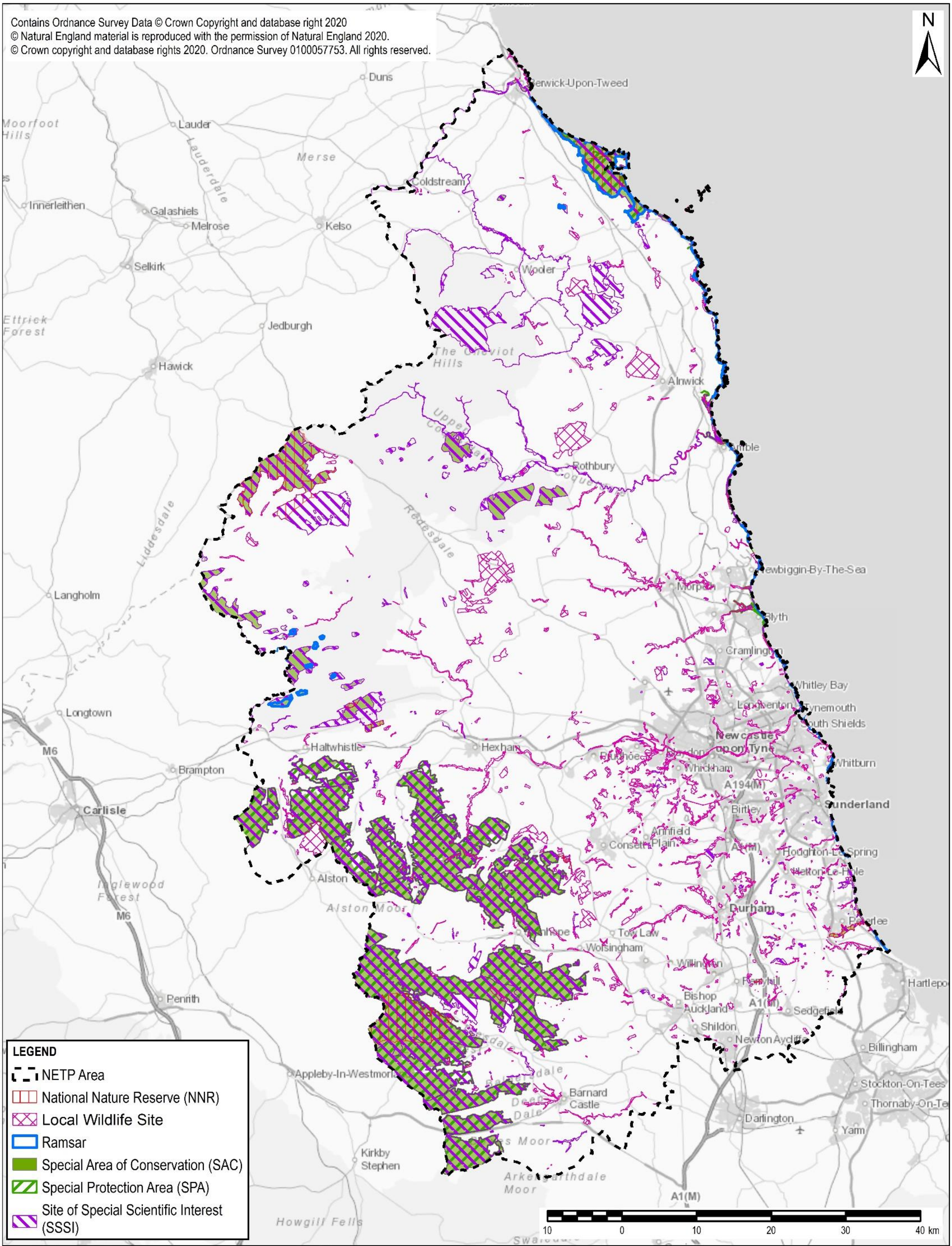
Local Biodiversity Action Plans (LBAPs) identify local priorities for biodiversity conservation and work to deliver agreed actions and targets for specific habitats and species. LBAPs are delivered through wide local partnerships that involve wildlife organisations, local authorities, businesses and other interested parties. The location of the BAP Priority Habitats in the North East are illustrated in **Figure 4.2**.

Ancient woodland

In England, ancient woodlands are defined as areas which have been continuously wooded since at least 1600 AD; and which display a high content of native species, typically of semi-natural or planted origin.[52] Ancient woodlands hold both very high biodiversity and cultural/historical value.

Ancient woodland is located throughout some of the North East as isolated stands. These are found in County Durham, Northumberland; and Gateshead.

[52] Natural England/Forestry Commission (2014) [online] available at: https://www.gov.uk/ancient-woodland-and-veteran-trees-protection-surveys-licences [accessed 27/02/20]



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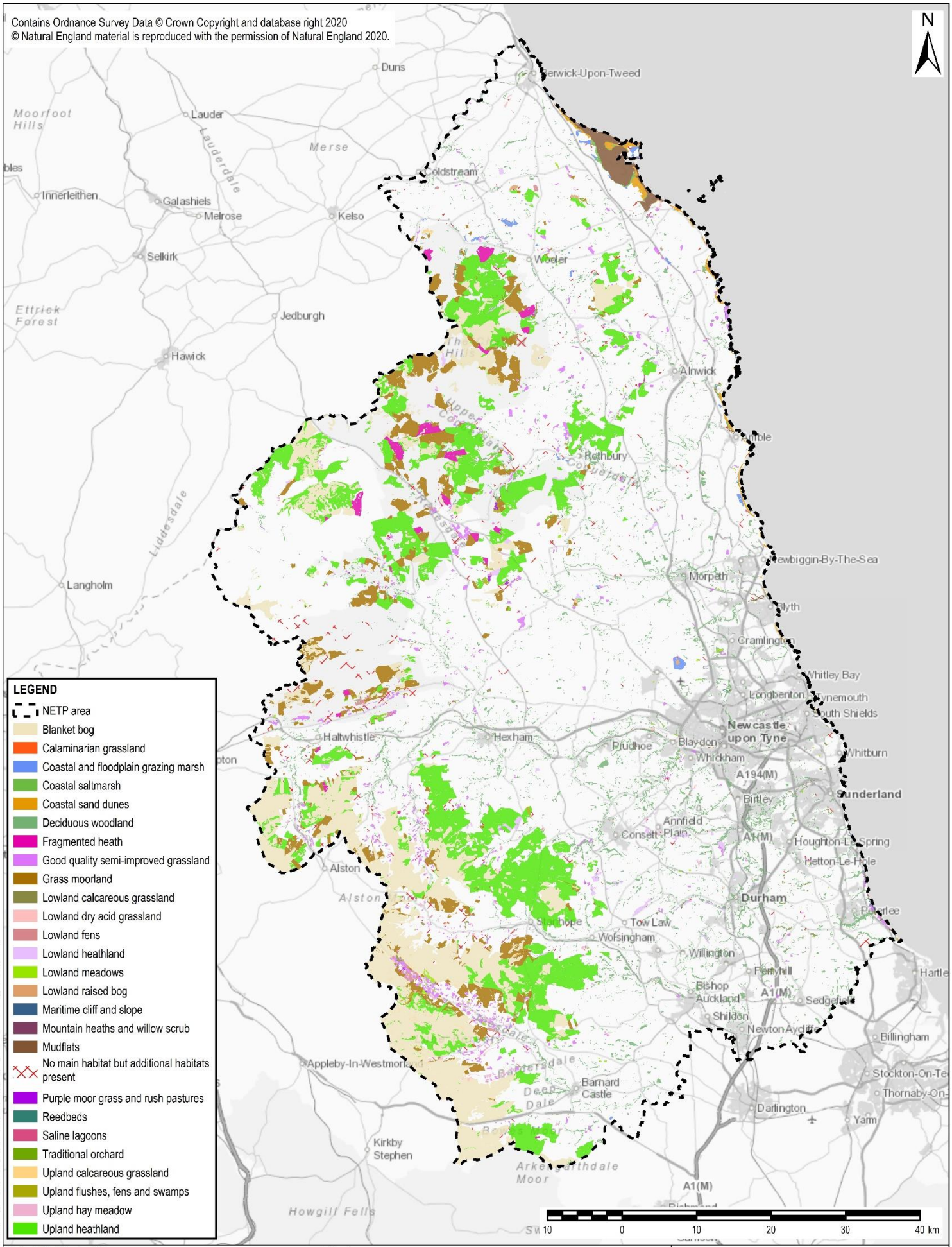

LEGEND

- NETP area
- Blanket bog
- Calaminarian grassland
- Coastal and floodplain grazing marsh
- Coastal saltmarsh
- Coastal sand dunes
- Deciduous woodland
- Fragmented heath
- Good quality semi-improved grassland
- Grass moorland
- Lowland calcareous grassland
- Lowland dry acid grassland
- Lowland fens
- Lowland heathland
- Lowland meadows
- Lowland raised bog
- Maritime cliff and slope
- Mountain heaths and willow scrub
- Mudflats
- No main habitat but additional habitats present
- Purple moor grass and rush pastures
- Reedbeds
- Saline lagoons
- Traditional orchard
- Upland calcareous grassland
- Upland flushes, fens and swamps
- Upland hay meadow
- Upland heathland

Project Title/Drawing Title

ISA FOR THE NE TRANSPORT PLAN

BIODIVERSITY ACTION PLAN
PRIORITY HABITATS

Client: TRANSPORT NORTH EAST STRATEGY UNIT

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Biodiversity: Summary of Future Baseline

Habitats and species will potentially face increasing pressures from future housing, employment and infrastructure delivery within the North East, with the potential for negative impacts on the wider ecological network. This may include a loss of habitats and impacts on biodiversity networks. The potential impacts on biodiversity from climate change are likely to include changes in habitat, changes in species distribution, changes in hydrology, changes in ecosystem functioning and a range of others.

Internationally and nationally designated sites are particularly sensitive to air quality issues and recreational pressures. In regards to air quality, exceeding critical values for air pollutants may result in changes to the chemical status of habitat substrate, accelerating or damaging plant growth, altering vegetation structure and composition and thereby affecting the quality and availability of nesting, feeding or roosting habitats. Additionally, the nature, scale, timing and duration of some human activities can result in the disturbance of birds (i.e. – the notifying features of the European protected sites within the North East) at a level that may substantially affect their behaviour, and consequently affect the long-term viability of their populations.

The NETP presents an opportunity to maximise benefits for biodiversity by including consideration of important habitats, species, undesignated sites, and connections between designated sites and undesignated sites at a localised scale, and at an early stage of planning for future enhancements to transport infrastructure.

Water and Soil Resources: Summary of Current Baseline

Surface and Groundwater

The North East falls within the Northumbria River Basin District (RBD) which covers an area of 9,029km^2.

The RBD is divided into four catchments: Northumberland, Tyne, Wear and Tees. The Tees is the longest river in the RBD, and the Tyne has the largest catchment area. Other major rivers include the Wear, Aln and Coquet rivers. The RBD has 170km of coastline (much of which is designated as SAC, SPA and Ramsar). 25km^2 of estuaries and 34 designated bathing waters, as well as many important marine species and habitats. The Northumberland, Tyne and Wear catchments all fall within the North East.

Northumberland

The Northumberland catchment extends southwards from Berwick-upon-Tweed down to the Blyth Valley, with the Cheviot Hills to the west and the North Sea to the east. It includes Holy Island and the Farne Islands, both internationally recognised for their native wildlife.

The Northumberland Rivers catchment contains two groundwater bodies. Of these, The Devonian and Lower Carboniferous groundwater body has been classified as being at good chemical and quantitative status. The Carboniferous Limestone and Coal Measures groundwater body has been classified as being at poor chemical status (due to impact on surface waters from discharges from abandoned mine workings) and good quantitative status.

There are 95 river water bodies and seven lakes in the catchment. 22 are artificial or heavily modified. 42% of rivers currently achieve good or better ecological status/potential. 41% of rivers assessed for biology are at good or better biological status, with 30% at poor biological status, and 3% at bad status.

Physical modifications are a key issue for the ecological value of the catchment, especially in relation to land drainage, flood protection, urbanisation and water storage and supply.

Tyne

The rivers North and South Tyne rise in the rural Cheviot and North Pennine hills respectively, and converge at Warden. From Warden the Tyne flows through Hexham and Corbridge and on towards the large Tyneside conurbation. The Northern Tyne area is mostly covered by the Northumberland

National Park. The catchment includes areas of recognised national importance for nature conservation such as upland bogs and river shingle sites.

Many of the rivers have a high conservation and ecological value, supporting salmon, sea and brown trout, as well as coarse fish. The Tyne is one of the best salmon rivers in England and populations of otters and pearl mussels are also recorded in the catchment.

The Tyne catchment contains two groundwater bodies. The Tyne Carboniferous Limestone groundwater body and the Tyne Carboniferous Limestone and Coal Measures groundwater body have both been classified as being at poor chemical but good quantitative status. The failure to meet good status is predominantly due to historic mining, both coal and metal. Kielder Water, to the northwest of the area, is one of Northern Europe's largest man-made lakes and supports major water abstractions.

There are 116 river water bodies and 19 lakes in the catchment. 49 are artificial or heavily modified. 50% of rivers (456 km or 45% of river length) currently achieve good or better ecological status/potential. 51% of rivers assessed for biology are at good or better biological status now, with 12% at poor biological status, and there are no rivers assessed for biology at bad status.

Physical modifications are a key issue in relation to the passage of fish, urbanisation and water storage and supply. Disused mines are also a key pressure within the Tyne catchment.

Wear

This catchment covers the River Wear, which runs from the Pennines in the east then flows west to the estuary through Sunderland, and also includes southern coastal streams. The fish populations of the River Wear and its tributaries are generally of a high quality, with a good distribution of salmon and trout, and coarse fish in the lower and middle reaches.

The Wear catchment contains two groundwater bodies. The Wear Magnesian Limestone groundwater body has been classified as being at poor chemical and quantitative status. The Wear Carboniferous limestone and Coal Measures groundwater body has been classified as being at poor chemical but good quantitative status. Pressures are having an impact on the quality of the principal aquifer in this catchment, namely the Magnesian Limestone. This aquifer is the sole supply of potable water for Hartlepool and it fails the specific test due to rising trends in sulphate.

There are 68 river water bodies and 16 lakes in the catchment. 32 are artificial or heavily modified. 15% of rivers (60 km or 10% of river length) currently achieve good or better ecological status/potential. 22% of rivers assessed for biology are at good or better biological status now, with 35% at poor biological status, and 10% at bad status.

Point source releases from sewage works and combined sewage outfalls are key reasons for failures in the Wear catchment. Physical modifications that impede fish passage and water storage and abstraction also play a key role in determining the status of rivers and lakes in this catchment.

Pressures on water resources

Urban transport and pollution pressures have been identified as a specific pressure in the Northumbria River Basin District. There are 34 river water bodies at risk or probably at risk from urban diffuse pollution. Pollution issues related to the urban environment and transport networks include:

- A range of pollutants which are present in run-off from roads including contaminated sediment, metals, and organic substances;
- Air emissions from vehicles which are then deposited to water or land (and in some cases can cause acidification);
- Pesticides used to control weeds on roads, pavements, railway tracks and other amenity areas such as parks and playing fields;
- Run-off from air strips that may contain de-icers and pesticides to control weeds; and
- Dredging and maintenance of navigable waterways that can result in water quality issues from suspended solids and leaching of contaminants from the sediment.

Soil

Agricultural land

The Agricultural Land Classification (ALC) classifies land into size grades (plus 'non-agricultural land' and 'urban'), where Grades 1 to 3a are recognised as being the 'best and most versatile' land and Grades 3b to 5 of poorer quality. In this context, there is a need to avoid loss of higher quality 'best and most versatile' agricultural land.

A detailed classification has not been undertaken for the majority of the North East. As such, there is a need to rely on the national 'Provisional Agricultural Land Quality' dataset. The Provisional Agricultural Land Quality dataset shows that the majority of the western side of the North East is designated as Grade 5 land and non-agricultural land. The eastern side of Northumberland is predominantly covered by Grade 3, with pockets Grade 2 land located along the Scottish border, the east coast, and in the south. There are also small areas of land designated as urban. County Durham is predominantly covered by Grade 3 land with smaller pockets of Grade 2 land, and urban areas. The remaining councils within the Plan are covered predominantly by land classified as urban, but also with areas of Grade 3 outside of the major conurbations. Without the subset grading (3a or 3b) it is not possible to tell at this stage whether the Grade 3 agricultural land is considered to be 'best and most versatile'. It is also important to note that the national dataset is of very low resolution, and may not necessarily provide an accurate reflection of the agricultural land quality within the North East. Agricultural land classification in the North East is illustrated on **Figure 5.1**.

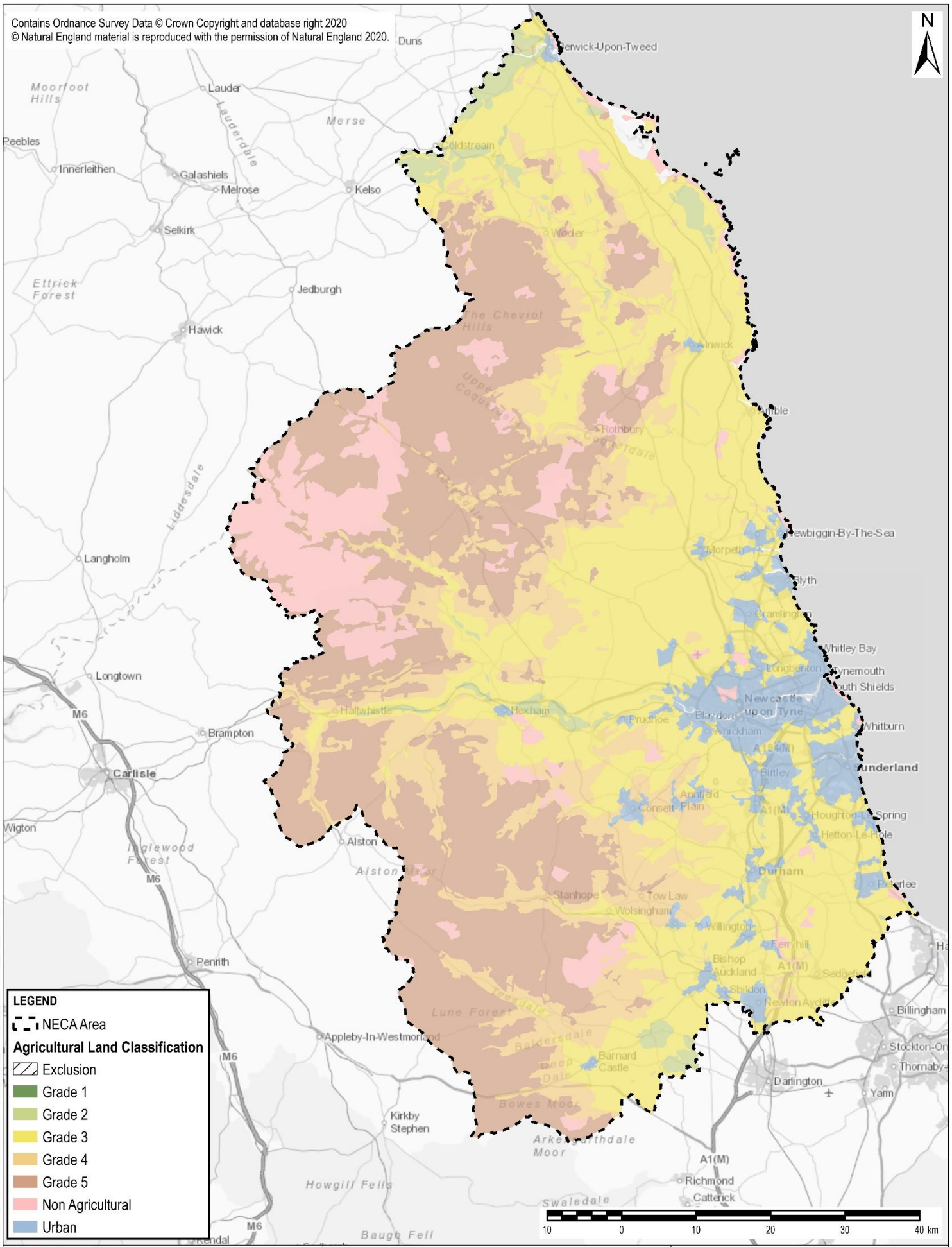
Contaminated Land

Contaminated land is used to describe land that is polluted by heavy metals, oils and tars, chemical substances, gases, asbestos or radioactive substances and it is land that could significantly harm people or protected species and cause pollution of surface waters or groundwater. There are a number of historical and active landfill sites throughout the North East with higher concentrations of contaminated land within the towns and cities in Tyne and Wear.

Water and Soil Resources: Summary of Future Baseline

Quality of surface waters is likely to improve slowly, in line with measures in the Northumbria River Basin Management Plan. However, population growth in most areas, development and climate change is likely to increase pressure on WFD objectives and water resources. Climate change could increase flooding which could lead to adverse effects on water quality from overflowing of storm water drains and leaching of contaminated soils into surface waters.

An increased number and severity of extreme rainfall events associated with climate change may lead to increased soil erosion. Contaminated areas will remain, however as development continues on previously developed land, contaminated areas will continue to be remediated. In addition legislation and pollution prevention measures should prevent new areas of land from becoming contaminated from new developments.



Project Title/Drawing Title

ISA FOR THE NE TRANSPORT PLAN

AGRICULTRAL LAND CLASSIFICATION

Client: TRANSPORT NORTH EAST STRATEGY UNIT

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FIGURE 4.3		01

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Historic Environment: Summary of Future Baseline

World Heritage Sites

The United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Sites are places, monuments or buildings which have been recognised as of "outstanding universal value" to humanity. There are two such World Heritage Sites within the North East: Frontiers of the Roman Empire: Hadrian's Wall[53], which extends across the North East from Wallsend to the west coast running parallel with the A69; and Durham Castle and Cathedral, which is located within Durham. The location of these sites are presented in **Figure 6.1**.

Frontiers of the Roman Empire- Hadrian's Wall World Heritage Site

The 'Roman Limes' represents the border line of the Roman Empire at its greatest extent in the 2nd century AD. It stretched over 5,000 km from the Atlantic coast of northern Britain, through Europe to the Black Sea, and from there to the Red Sea and across North Africa to the Atlantic coast. The remains of the Limes today consist of vestiges of built walls, ditches, forts, fortresses, watchtowers and civilian settlements. Certain elements of the line have been excavated, some reconstructed and a few destroyed. The 118-km-long Hadrian's Wall was built on the orders of the Emperor Hadrian c. AD 122 at the northernmost limits of the Roman province of Britannia. It is a striking example of the organization of a military zone and illustrates the defensive techniques and geopolitical strategies of ancient Rome. The Antonine Wall, a 60-km long fortification in Scotland was started by Emperor Antonius Pius in 142 AD as a defense against the "barbarians" of the north. It constitutes the northwestern-most portion of the Roman Limes.

A detailed description of the Outstanding Universal Value of the Hadrian's Wall WHS is presented at the following location:

https://whc.unesco.org/en/list/430/

Attributes are aspects of a World Heritage Site which are associated with, or express, its Outstanding Universal Value (OUV). The Attributes help to articulate that OUV and, within the decision-making process, they should assist the assessment of the impact of any proposed change to the site or in its immediate vicinity.

The key attributes of the Hadrian's Wall World Heritage Site are as follows:

- Hadrian's Wall is a frontier which was designed and constructed to protect the Roman Empire. It is a symbol of a common heritage.
- In its engineering and construction it illustrates the technological and organisational ability of the Roman Empire, and is a reflection of the way that resources were deployed by the Roman army.
- Hadrian's Wall displays the complexity and variety of the elements of the frontier system, their inter-relationships, and the relative completeness of the system as a whole.
- The frontier was occupied by the Romans for three centuries; its remains therefore display considerable evidence of repair, rebuilding, re-use, re-planning, and decay.
- The retrievable archaeological information that survives - in the form of buried structures, artefacts, ecofacts, and data about the palaeo-environment - is still extensive and is a significant attribute of the OUV.
- The setting of the WHS offers the opportunity to understand and appreciate Roman military planning and operations.
- The settlements associated with the frontier illustrate the impact and attraction of the Roman economy.

[53] UNESCO (2018) Hadiran's Wall Management Plan [online] available at: http://hadrianswallcountry.co.uk/hadrians-wall-management-plan [accessed 27/02/20]

- The course and extent of the frontier zone, its massive size, and its infrastructure, all influenced the subsequent development of the landscape, both in open country and in urban areas.
- Extensive stretches of the frontier within urban areas, and some other discrete associated elements, are not yet designated as Scheduled Monuments; they are therefore not included in the WHS but they represent an associated attribute of considerable significance which is worthy of protection.

UNESCO has identified the impact of visitors and tourism as a threat to the conservation state of Hadrian's Wall[54].

Durham Castle and Cathedral World Heritage Site

Durham Cathedral was built in the late 11th and early 12th centuries to house the relics of St Cuthbert (evangelizer of Northumbria) and the Venerable Bede. It attests to the importance of the early Benedictine monastic community and is the largest and finest example of Norman architecture in England. The innovative audacity of its vaulting foreshadowed Gothic architecture. Behind the cathedral stands the castle, an ancient Norman fortress which was the residence of the prince-bishops of Durham

The key elements of the World Heritage Site's Oustanding Universal Value are as follows:

- Significance 1: The Site's exceptional architecture demonstrating architectural innovation
- Significance 2: The visual drama of the Cathedral and Castle on the Peninsula and the associations with notions of romantic beauty.
- Significance 3: The physical expression of the spiritual and secular powers of the medieval Bishops Palatine that the defended complex provides.
- Significance 4: The relics and material culture of the three Saints, (Cuthbert, Bede, and Oswald) buried at the Site
- Significance 5. The continuity of use and ownership over the past 1000 Years as a place of religious worship, learning and residence
- Significance 6: The Site's role as a political statement of Norman power Imposed upon a subjugate nation, as one of the country's most powerful symbols of the Norman conquest of Britain
- Significance 7: The importance of the Site's archaeological remains, which are directly related to its history and continuity of use over the past 1000 years.
- Significance 8: The Cultural and Religious Traditions and Historical Memories Associated with the Relics of St Cuthbert and the Venerable Bede, and with the Continuity of Use and Ownership over the Past Millennium.

A detailed description of the Outstanding Universal Value of the Durham Castle and Cathedral World Heritage Site is presented at the following location:

https://whc.unesco.org/en/list/370/

Threats to Durham Castle and Cathedral include[55]:

- The expansion of development onto existing historic open spaces or landscape zones impacting on the World Heritage Site or its approaches and the underestimation the heritage significance of the landscape areas fringing the city core;
- New buildings of sufficient mass or height to impinge on views to and from or including the site;
- Major skyline developments or major developments impinging on the backdrop to the World Heritage Site;

[54] UNECSO (2020) Reporting and modelling [online] available at: http://whc.unesco.org/en/118/ [accessed 27/02/20]
[55] Durham County Council (2017) Durham Castle and Cathedral World Heritage Site Management Plan 2017-2023 [online] available at: < https://www.durhamworldheritagesite.com/files/Durham%20WHS%20Management%20Plan%202017.pdf> [accessed 27/02/20]

- Quality of development impacting on the integrity of views from, and of the site. Cumulative minor changes in historic areas close to World Heritage Site degrading the quality of approaches and townscape relationship to the World Heritage Site;
- Unmanaged tree areas being drawn into use as landscape mitigation against harm to the World Heritage Site by development without ensuring adequate analysis and continuing care; and
- New developments can impact on the dark setting of the World Heritage Site.

Conservation areas

Conservation areas are designated because of their special architectural and historic interest.[56] Conservation area appraisals are a tool to demonstrate the area's special interest, explaining the reasons for designation and providing a greater understanding and articulation of its character - mentioned within the 'Conservation Area Designation, Appraisal and Management' advice note by Historic England. Ideally, appraisals should be regularly reviewed as part of the management of the conservation area and can be developed into a management plan. Distribution of Conservation Areas within the North East are as follows:

There are 72 conservation areas in Tyne and Wear, distributed as follows:

- Gateshead: 22
- Newcastle: 12
- North Tyneside: 17
- South Tyneside: 11
- Sunderland: 14

There are 93 conservation areas in Country Durham, distributed as follows:

- Chester-le-Street: 2
- Derwentside: 16
- City of Durham: 14
- Easington: 4
- Sedgefield: 15
- Teesdale: 22
- Wear Valley: 20

There are 70 conservation areas in Northumberland.

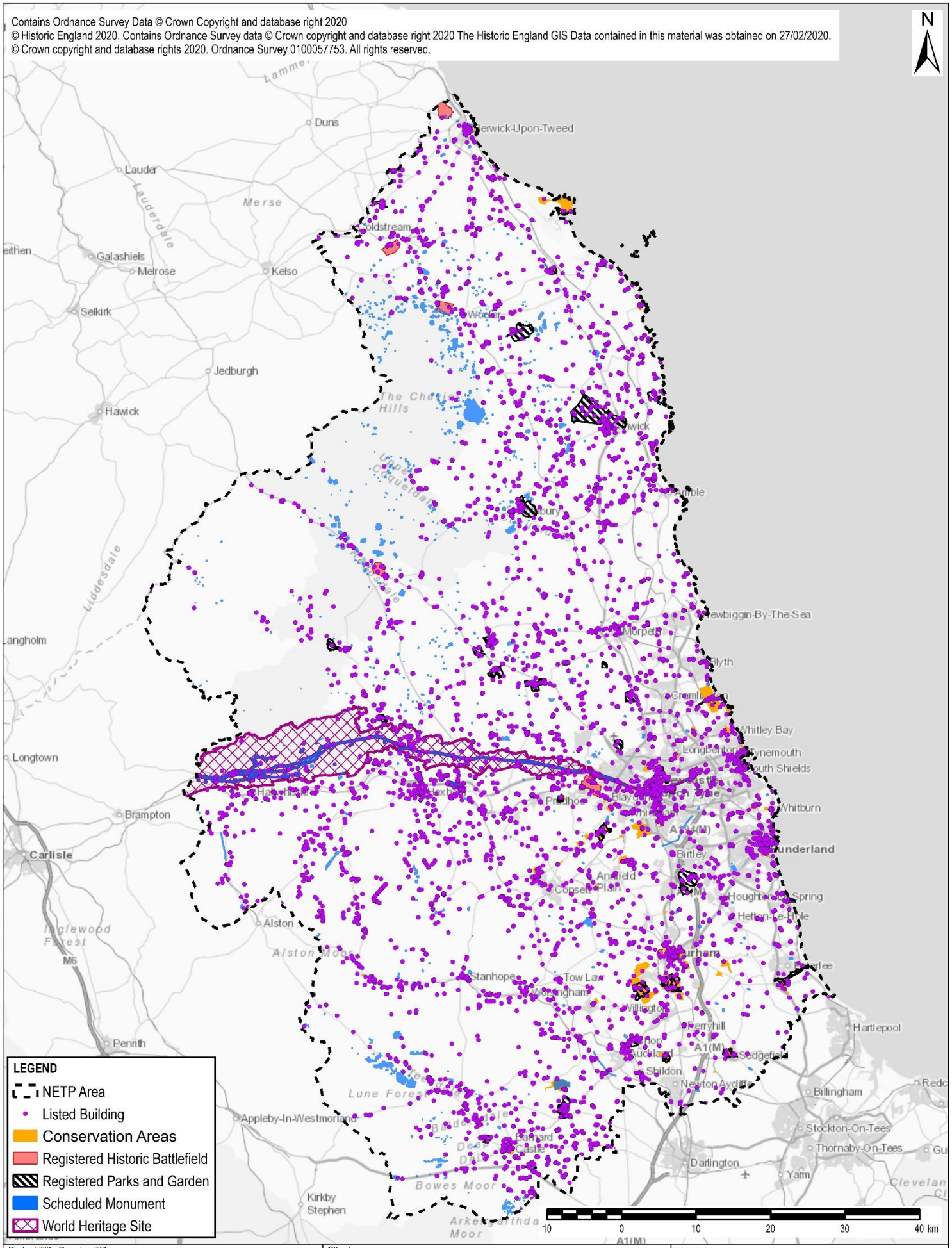
Listed buildings

A listed building is one which has been placed on the Statutory List of Buildings of Special Architectural or Historic Interest.

There are three categories of listed buildings:

- Grade I buildings are of exceptional interest, only 2.5% of listed buildings are Grade I.
- Grade II* buildings are particularly important buildings of more than special interest; 5.5% of listed buildings are Grade II*.
- Grade II buildings are of special interest; 92% of all listed buildings are in this class.

[56] Historic England (2019): 'Conservation Areas', [online] available at: <https://historicengland.org.uk/listing/what-is-designation/local/conservation-areas/> [accessed 20/09/19]



LEGEND

- NETP Area
- Listed Building
- Conservation Areas
- Registered Historic Battlefield
- Registered Parks and Garden
- Scheduled Monument
- World Heritage Site

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Project Title/Drawing Title

ISA FOR THE NE TRANSPORT PLAN

HISTORIC ENVIRONMENT DESIGNATIONS

Client: TRANSPORT NORTH EAST STRATEGY UNIT

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FIGURE 6.1		01

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There are a total of 10,539 of listed buildings within the North East. This number is split between the Local Authority areas as follows:

- County Durham: 3,108
- North Tyneside: 225
- Gateshead: 248
- South Tyneside: 195
- Northumberland: 5,614
- Newcastle upon Tyne: 774
- Sunderland: 375

Scheduled monuments

Scheduling is the designation used for sites of an archaeological character of national importance Current legislation is provided by the Ancient Monuments and Archaeological Areas Act 1979.

The National Heritage List for England identifies the following number of entries for scheduled monuments for the authorities in the North East region:

- County Durham: 233
- North Tyneside: 8
- Gateshead: 16
- South Tyneside: 5
- Northumberland: 975
- Newcastle upon Tyne: 42
- Sunderland: 10

Registered Parks and Gardens

Under Section 8C of the Historic Buildings and Ancient Monuments Act 1953 (inserted by section 33 of, and paragraph 10 of Section 4, to the National Heritage Act 1983) Historic England has compiled a Register of Parks and Gardens of special historic interest in England.

The table below lists the Registered Historic Parks and Gardens which are within the North East.

Table: Registered Historic Parks and Gardens in the North East

Registered Historic Parks and Gardens	
• Tillmouth Park Grade II* • Althorp Grade II* • Lindisfarne Castle Grade II • The Rookery Grade II • Belford Hall Grade II • Chillingham Grade II • Howick Hall Grade II • Alnwick Castle Grade II • Cragside Grade I • Hesleyside Grade II • Wallington Grade II* • Kirkharle Hall Grade II	• Newcastle General Cemetery Grade II* • Jesmond Dene, Armstrong and Heaton Parks Grade II • North and South Marine Parks and Bents Park Grade II • Saltwell Park Grade II • Gibside Grade I • Roker Park Grade II • Mowbray Park Grade II • Lambton Castle Grade II • Lumley Castle Grade II • Old Durham Gardens Grade II

- Capheaton Grade II
- Belsay Hall Grade I
- St Mary's Hospital, Stannington, Grade II
- Blagdon Grade II
- Seaton Delaval
- Woolsington Park Grade II
- Nunwick Grade II
- St Andrew's Cemetery Grade II
- The Hexham Parks Grade II
- Bradley Park Grade II
- St John's Cemetery Grade II
- Westgate Hill Cemetery Grade II
- Leazes Park Grade II
- Lartington Hall Grade II
- Croxdale Hall Grade II*
- Burn Hall Grade II
- Brancepeth Castle Grade II
- Pasmore Pavilion Grade II
- The Castle, Castle Eden, Grade II
- Ceddesfeld Hall Gardens Grade II
- Hardwick Park Grade II*
- Windlestone Hall Grade II
- Auckland Castle Park Grade II*
- Ramshaw Hall Garden Grade II
- Raby Castle Grade II*
- Rokeby Park Grade II*
- Bowes Museum Grade II

Registered Battlefields

The Historic England Register of Historic Battlefields identifies 47 important English battlefields. Its purpose is to offer them protection and to promote a better understanding of their significance. These maps are intended to be the starting point for battlefield conservation and interpretation by identifying the most visually sensitive areas. The following six Registered Battlefields are within the North East:

- Battle of Halidon Hill 1333;
- Battle of Flodden 1513;
- Battle of Homildon Hill 1402;
- Battle of Otterburn 1388;
- Battle of Newburn Ford 1640; and
- Battle of Neville's Cross 1346.

Heritage at Risk

Historic England has a programme known as the Heritage at Risk Programme, this Programme collecting information on the condition of built heritage in the United Kingdom to determine of the sites most at risk and most in need of safeguarding for the future.

Since 2008, as part of this Programme, Historic England has released an annual Heritage at Risk Register. The Heritage at Risk Register highlights the Grade I and Grade II* listed buildings, and scheduled monuments, conservation areas, wreck sites and registered parks and gardens in England deemed to be 'at risk'. It is worth noting that Grade II buildings are not included on the list.

The North East has 141 listed buildings currently listed on the Heritage at Risk Register (2019), these are split between council areas as follows:

- County Durham: 97
- Gateshead: 8
- Newcastle upon Tyne: 16
- North Tyneside: 1
- South Tyneside: 6
- Sunderland: 13

Historic Environment: Summary of Future Baseline

New housing, employment and infrastructure provision within the North East has the potential to impact on the fabric and setting of cultural heritage assets; for example through inappropriate design and layout. It should be noted, however, that existing historic environment designations offer a degree of protection to cultural heritage assets and their settings, and there are a range of existing initiatives to enhance the historic environment of the region.

Increasing traffic levels associated with an increase in population has the potential to negatively impact heritage assets. In urban areas this can be from vibration affecting the structural integrity of vulnerable buildings, emissions, and from the provision of street furniture affecting the setting of assets.

New development need not however be harmful to the significance of a heritage asset, and in the context of the NETP there may be opportunity for new transport infrastructure to enhance the historic settings of localities and better reveal assets' cultural heritage significance.

The number of heritage assets at risk is likely to continue to decrease in line with national trends; however funding sources will continue to be a constraint on this.

Landscape: Summary of Current Baseline

Northumberland National Park

National Parks are designated by Natural England under the provisions of The National Parks and Access to the Countryside Act, 1949, and have two statutory purposes:

- To conserve and enhance their natural beauty, wildlife and cultural heritage; and
- To promote opportunities for the public understanding and enjoyment of these special qualities.

National Park Authorities also have a duty, in taking forward the two purposes to:

- Seek to foster the economic and social well-being of local communities within the National Park.

Northumberland National Park was designated in 1956 and has a current population of approximately 2,000 people within its 1,030km^2 boundaries, which extend from Hadrian's Wall in the south to the Cheviots in the north (**Figure 7.1**). The National Park contains a number of cultural heritage assets, including Hadrian's Wall, remains of ancient settlements, prehistoric and medieval landscapes and burial monuments.

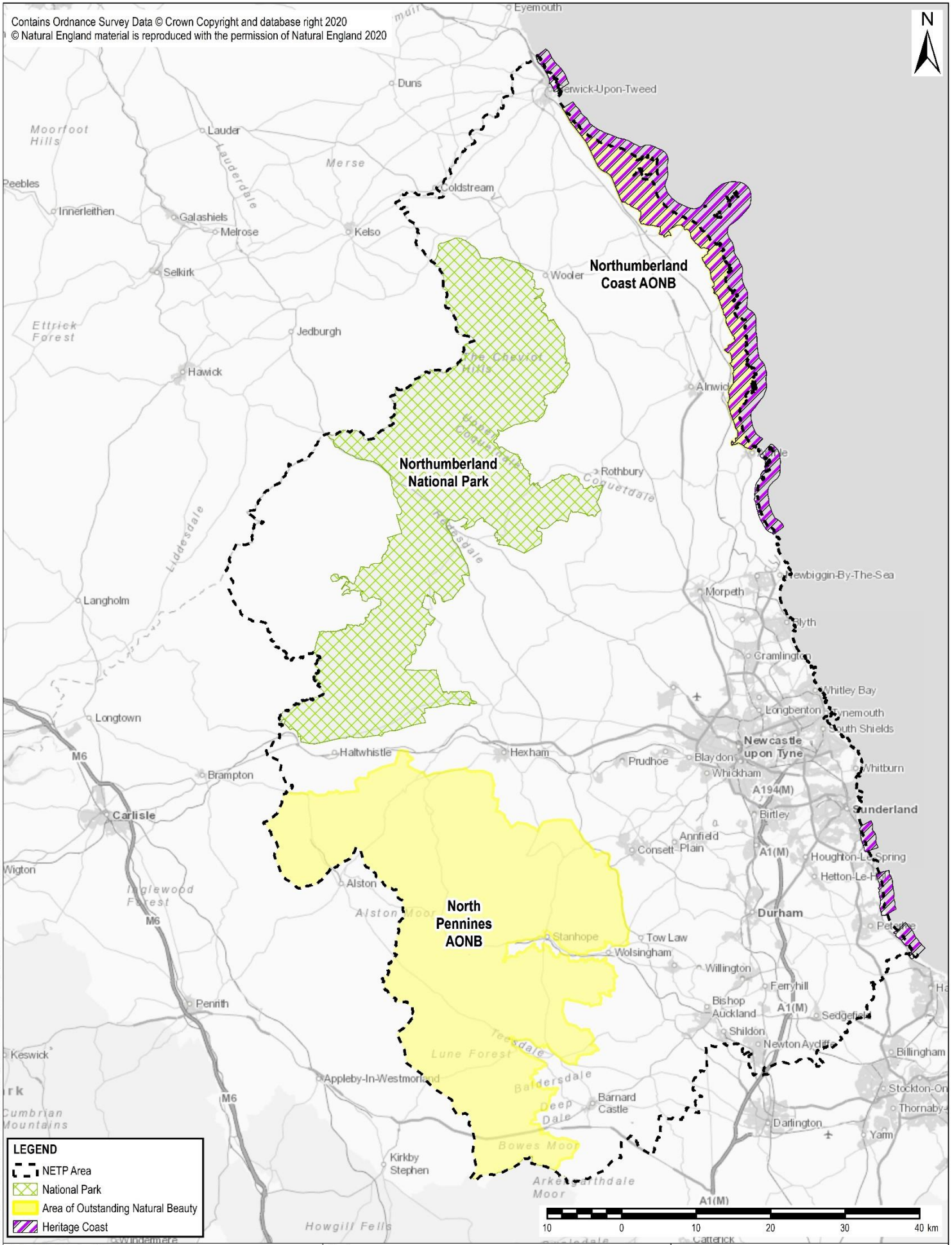
Each National Park in England, Wales and Scotland has an aim and purpose to promote understanding and enjoyment of the 'special qualities' of their area. The defined special qualities of the Northumberland National Park are as follows:

- Distinctive Landscape Character
- Rich Cultural Heritage
- Landscape Rich in Biodiversity and Geology
- True Sense of Tranquillity

More specifically, the special qualities of the National Park comprise the following elements:

- The landscape is ancient - and includes remains from the Stone Age, 7,000 years ago, and medieval buildings which illustrate this border country's history.
- The park is home to a World Heritage site - Hadrian's Wall - it's a stunning example of the dramatic legacy the Roman Empire left in the area.
- The community in the park has deep roots - and the cultural identity of the local people is reflected in their speech, traditions, folklore, knowledge and skills.

- The Cheviot Hills are home to ancient hill forts and pure rivers - and a landscape that even today seems barely touched by human intrusion.
- People come here to be inspired and to seek spiritual refreshment - those tranquil views and far horizons are good for the soul.
- The valleys of the North Tyne and Redesdale were once home of the Border Reivers - the wild landscape now supports habitats suitable for rare species such as red squirrel.
- It's an area rich in biodiversity - Northumberland National Park boasts a wide range of other rare or important species and habitats, for example curlew.
- The park offers a diverse landscape - from upland rivers and burns to ancient woodlands, upland hay meadows to blanket bogs and heather moorland.
- Extensive areas of the national park have been designated for their international importance for nature conservation such as Special Areas of Conservation and Ramsar sites.
- It's a geologically important landscape, too - there are five Sites of Special Scientific Interest designated for their geological importance, from the Cheviot volcanic and glacial features in the north to the Whin Sill intrusion and escarpments in the south.



File Name:I:\5004 - Information Systems\6XX_NECA_Transport_Plan\02_Maps\Figure 7-1 - Nationally Designated and Defined Landscapes.mxd

Project Title/Drawing Title

ISA FOR THE NE TRANSPORT PLAN

NATIONALLY DESIGNATED AND DEFINED LANDSCAPES IN THE NORTH EAST

Client: TRANSPORT NORTH EAST STRATEGY UNIT

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FIGURE 7.1		01

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Areas of Outstanding Natural Beauty

Areas of Outstanding Natural Beauty (AONBs) are designated by the Government for the purpose of ensuring that the special qualities of the finest landscapes in England, Wales and Northern Ireland are conserved and enhanced. The primary purpose of the AONB designation is to conserve and enhance the natural beauty of the area, as confirmed by Section 82 of the Countryside and Right of Way Act 2000 (CRoW Act). There are two AONBs designated within the North East which are outlined below and are illustrated in **Figure 7.1**.

Northumberland Coast AONB

The Northumberland Coast was designated as an AONB in 1958 under the national parks and access to countryside act 1949. It comprises a narrow coastal strip extending between Warwick in the south and Berwick-upon-Tweed in the north.

The following list of special qualities define the unique 'natural beauty' for which the Northumberland Coast AONB is designated as a nationally important protected landscape:

- Dramatic natural coastline of rocky headlands and cliffs contrasting with extensive sweeping sandy beaches and dynamic sand dune systems;
- Dramatic coastal and riverside setting of iconic historic and cultural landmark features which provide localised vertical emphasis within a predominantly horizontal landscape and seascape;
- Remote historic, cultural and spiritual qualities and ecclesiastical associations of the Holy Island of Lindisfarne;
- Distinctive rocky Farne Islands archipelago feature in many coastal views;
- Distinctive traditional coastal fishing villages clustered around small harbours;
- Views inland to the rounded sandstone hills and Cheviot Hills provide a dramatic and dynamic backdrop to the coast;
- Feeling of exposure and tranquillity on the flat, low lying open coastal plain and windswept coast, with sparse tree cover, huge skies and wide seascape views; and
- A number of nationally important geological sites occur within the boundary, including Loughoughton Quarry SSSI, Howick to Seaton Point SSSI, Bamburgh Coast and Hills SSSI and the Castlepoint to Cullernose Point SSSI.

North Pennines AONB

The designation of the North Pennines AONB was confirmed in 1988 and at 1983km^2, it is the second largest of the 40 AONBs in England and Wales. One of the most remote and unspoilt places in England, it lies between the National Parks of the Lake District, the Yorkshire Dales and Northumberland. The AONB crosses the boundaries of two English Regions, being in both the North East and the North West. It lies mostly within the political boundaries of Durham, Northumberland and Cumbria County Councils, with 2.6km^2 in North Yorkshire around Tan Hill. The North Pennines AONB is Britain's first European Geopark and a founding member of the Global Geoparks Network.

The North Pennines AONB comprises a landscape of open heather moors and peatlands, dales and hay meadows, upland rivers, wooded areas, rural communities, mining and industrial heritage and distinctive flora and fauna.

The defined special qualities of the North Pennines AONB[57] are linked to the following:

- Has 40% of the UK's upland hay meadows;
- Contains 30% of England's upland heathland and 27% of its blanket bog;
- Is home to 80% of England's black grouse;
- Is a place to see short-eared owl, ring ouzel, snipe and redshank;

[57] North Pennines AONB (2020) Special qualities [online] available at: https://www.northpennines.org.uk/whats-special/ [accessed 27/02/20]

- Has important habitats – 36% of the AONB is designated as Sites of Special Scientific Interest;
- Has red squirrels, otters and rare arctic alpine plants;
- Is the upland England's hotspot for breeding wading birds;
- Enjoys peace, tranquillity and fabulous night skies; and
- Boasts England's biggest waterfall – High Force in Upper Teesdale.

National Trails

There are two National Trails within the North East. These are the Pennine Way, which runs for 270 miles from Edale to the Border Inn; and the Kirk Yetholm and Hadrian's Wall Path, which runs for 86 miles from Segedenum Roman Fort, Wallsend and The Bank's Promenade, Bownes-on-Solway.

Durham Heritage Coast

Heritage Coasts were established to conserve the best stretches of undeveloped coast in England. The national policy framework and objectives for heritage coasts were developed by the Countryside Commission, a predecessor of Natural England, and ratified by government. Heritage coasts are 'defined' rather than designated, so there is not a statutory designation process like that associated with national parks and AONBs.

The Durham Heritage Coast is located within the North East, covering the part of the coast from Sunderland to Hartlepool. The Heritage Coast is a coastal landscape of magnesian limestone grasslands, cliffs, pebble and sandy beaches stretching between the two main conurbations of Tyne and Wear and Teesside.

Until the late 1990s the area was one of the most heavily polluted coastlines in Britain, the legacy of over a hundred years of dumping colliery waste from its six coal mines along the beaches, and of quarrying and subsequent landfill throughout the 20th Century. Wildlife, habitats and the landscape suffered heavily, discouraging visitors and leaving the local communities with little sense of pride. Parts of the coast became derelict and suffered from vandalism and misuse, excluded from mainstream use and appreciation.

A partnership of fourteen organisations came together between 1997-2002 to regenerate the coast of County Durham. The Turning The Tide Partnership successfully regenerated and cleaned up the coastal strip through a £10 million programme of environmental improvements. Following this the Heritage Coast Partnership has worked for over ten years to provide integrated management and continuing investment in gateway sites, habitat and access amelioration, interpretation, awareness raising and engagement. In recognition of the considerable improvements in the quality of the coastal landscape and the restored magnesian limestone grasslands, dunes, cliffs and stacks, the area was defined as a Heritage Coast in March 2001.

Areas of Tranquillity

Paragraph 180 of the NPPF notes that planning policies and decisions should aim to : "identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason."

Northumbria University, on behalf of CPRE, developed methodology for mapping areas of tranquillity[58]. While urban centres within the North East have low levels of tranquillity, many of the rural areas - particularly those with landscape areas which are protected nationally such as National Parks and AONBs - have high levels of tranquillity. It should be noted that such protected areas will continue to be offered protection through other designations. However, the maps show that major trunk roads can have significant effects for tranquillity in rural areas and therefore the affect which this transport plan has on tranquillity of rural areas should be considered further as part of the SEA process.

[58] The countryside charity (2020) CPRE interactive tranquillity map [online] available at: https://www.cpre.org.uk/resources/tranquility-map-england/ [accessed 27/02/20]

National Character Areas

National Character Areas (NCAs) are landscape areas which share similar characteristics, following natural lines in the landscape rather than administrative boundaries. Developed by Natural England, NCA profiles describe the natural and cultural features that shape each of these landscapes, providing a broad context to their character[59]. There is a total of 159 NCAs in England, 14 of which are in the North East. These are described below and outlined in **Figure 7.2**.

North Northumberland Coastal Plain

The North Northumberland Coastal Plain is a narrow, windswept strip that runs from the Anglo-Scottish border south to the mouth of the River Coquet, bounded by the sea to the east and the Northumberland Sandstone Hills to the west.

The gently undulating inland plain is dominated by arable farming, with large, regular fields bounded by gappy hedgerows and in some places grey sandstone walls, with some pasture for beef cattle and sheep. Woodland cover is sparse and predominantly confined to the river valleys that meander across the coastal plain and the estate woodlands around Howick.

The dramatic coastline is exceptionally varied, with rocky headlands and cliffs contrasting with long, sweeping sandy beaches backed by dunes, and extensive intertidal mudflats and salt marsh around Lindisfarne. The nationally important Whin Sill outcrops both inland and at the coast, supporting rare Whin grassland, and forming the distinctive rocky Farne Islands offshore.

Northumberland Sandstones Hills

The Northumberland Sandstone Hills curve across central Northumberland in a series of distinctive flat-topped ridges which provide panoramic views of the Cheviots and the coast.

The ridgetops and upper slopes are covered with heather and grass moorland broken by large geometric blocks of conifer. Below this is pasture with some arable cultivation on the lower and dip slopes, broadleaved woodland on scarp slopes and along watercourses and a few notable parklands.

There are relatively few major roads but two of the three principal crossborder routes pass through this NCA with the A1 skirting around the eastern edge and the A68 cutting through to the south. Other key transport routes include the A696 and A697 linking the rural border communities to Tyneside and the A1. These transport links play an important role in the haulage of timber from this and adjacent NCAs to processing destinations and provide access for military vehicle convoys to the Otterburn Military Training Area.

Cheviot Fringe

The Cheviot Fringe NCA is a tranquil, undulating, lowland landscape, framed by the Cheviots NCA to the west and the Northumberland Sandstone Hills NCA to the east. The western edge falls within the Northumberland National Park and encompasses the edge of the Cheviot Hills. The importance of glacial processes in shaping this landscape is shown by the extensive array of glacial lake and fan deposits, sinuous ridges, eskers, kames and kettle holes. Weathering of the underlying bedrock combined with the widespread blanket of glacial and alluvial deposits have resulted in fertile soils that support the agriculture which dominates this area, and the river valleys provide much of the North East region's sand and gravel resources.

The vales to the south are a patchwork of arable farmland, pasture and meadows with the regular field pattern still strong, delineated by hedgerows punctuated with trees. To the north, arable cultivation dominates and the fields are flatter and larger with fewer hedgerows. Conifer blocks and shelterbelts are prominent in the landscape with broadleaved woodland predominantly along watercourses.

Cheviots

The distinctive, smooth, rounded hills of the Cheviots NCA are part of the remote upland chain of the Northumberland moors which form the northern end of the Northumberland National Park. They rise

[59] Natural England (2020) National Character Areas [online] available at: http://publications.naturalengland.org.uk/category/587130 [accessed 27/02/20]

steeply above the lowland belt of the Cheviot Fringe NCA to the north and east and the Border Moors and Forests NCA to the south. To the west, the rounded hills cascade into southern Scotland but the NCA is bounded by the Scottish border that follows a high natural ridgeline.

The distinct igneous geology has formed a sinuous cluster of rounded hills with tors on some hill tops, rocky outcrops and scree slopes on the northern flanks, and many other glacial and post-glacial features.

The wild, open upland landscape is dominated by rolling moorlands; there are extensive mosaics of heath, blanket bog and grassland, managed for sheep and cattle rearing and, grouse moors. Areas in the southern end of the NCA are also in use for military training. Large conifer plantations occur on some of the upper slopes, interrupting the smooth lines of the landscape.

Border Moors and Forests

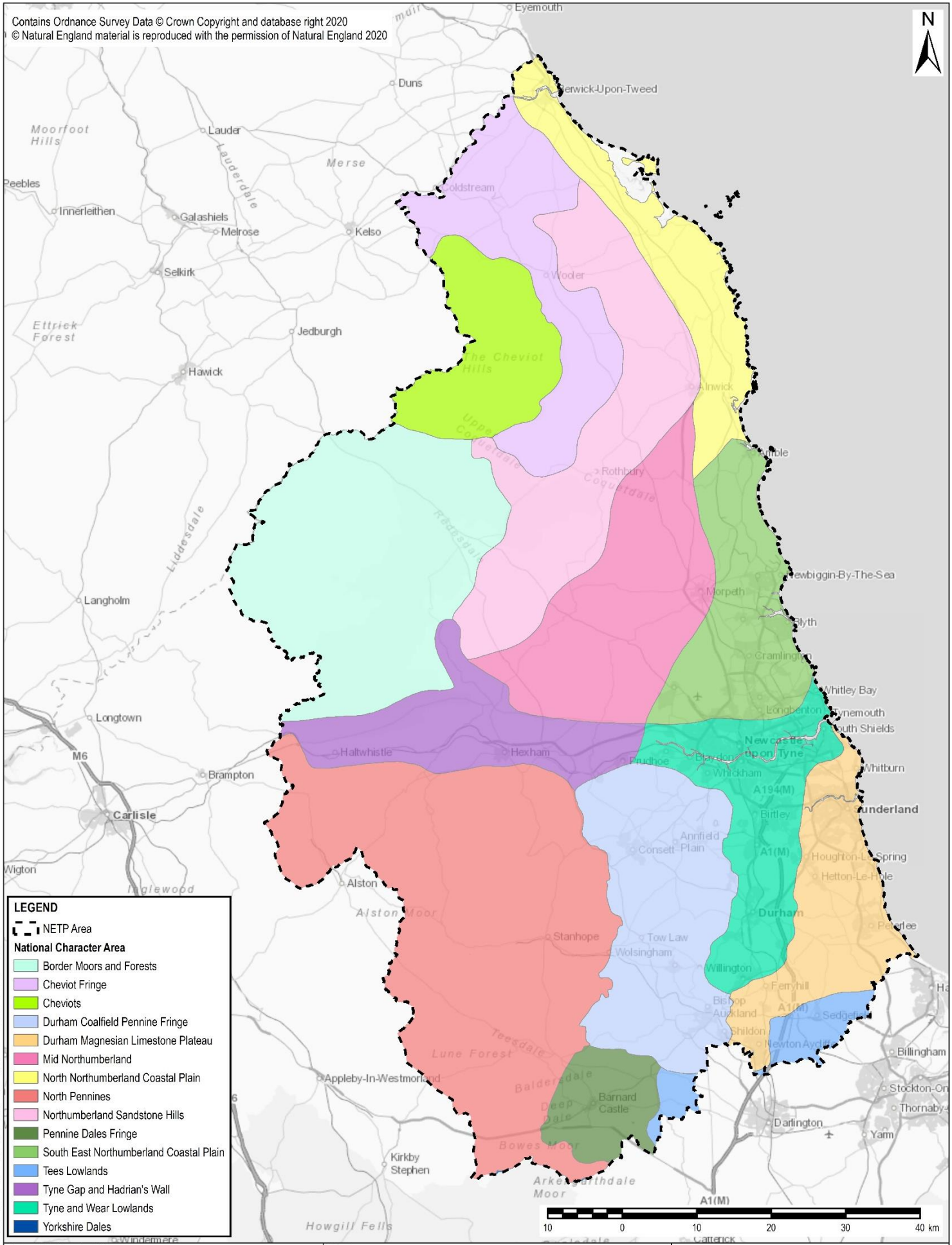
The Border Moors and Forests NCA consists of an extensive, sparsely populated upland plateau, with long-distance views and a strong sense of remoteness and tranquillity. The rivers North Tyne and Rede form wide valleys through the uplands, while the rivers Lyne and Irthing flow south-west to the Solway Firth. The underlying geology consists of Carboniferous deposits which have weathered differentially to form craggy outcrops, with subsequent glacial and fluvial deposition. The high altitude and climatic conditions led to the build-up of peat deposits and the formation of a large expanse of upland mire habitats, much of which is internationally designated as Border Mires, Kielder–Butterburn Special Area of Conservation. Kielder Water, a large, winding reservoir at the head of the North Tyne Valley which also forms a prominent feature in the landscape. The uplands are drained by small rivers in enclosed valleys, with the larger valleys sheltering upland hay meadows, scattered farmsteads and copses of broadleaved woodland. Much of the south-eastern area lies within Northumberland National Park. Military training areas also occupy large tracts of land.

Owing to the remote upland nature of the area, there are very few major transport links. The A68, which follows the Rede Valley, is the only principal route passing through the area, linking the Tyne Valley to the south with the Scottish Borders to the north.

North Pennines

The North Pennines NCA, at the northern end of the Pennine ridge, has a distinct identity, with its remote upland moorlands divided by quiet dales. It is characterised by a sense of remoteness, with few settlements, slow change and cultural continuity. It comprises some of the highest and most exposed moorland summits in England, with several major rivers, including the South Tyne, Wear and Tees, draining out to the north,east and south-east. There are dramatic and panoramic views both across the moorlands and outwards, especially towards the west. The area's natural beauty is reflected in the fact that 88% of it has been designated as the North Pennines Area of Outstanding Natural Beauty (AONB).

Transport routes are limited, due the topography, with the main roads following the valley floors. However, much of the area (61%) is open access land, and there are over 2,000 km of public rights of way, including three national trails (the Pennine Way, the Pennine Bridleway and a small stretch of the Hadrian's Wall Path). These, and the quiet roads, make the area a popular destination for walkers and, increasingly, for cyclists, with the popular Coast 2 Coast cycle route crossing the area.



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Project Title/Drawing Title

ISA FOR THE NE TRANSPORT PLAN

NATIONAL CHARACTER AREAS IN THE NORTH EAST

Client: TRANSPORT NORTH EAST STRATEGY UNIT

Drawn	Checked	Approved
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Date	Scale @ A4	Purpose of Issue
13/03/2020	1:650,000	DRAFT
Drawing Number		Rev
FIGURE 7.2		01

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Tyne Gap and Hadrian's Wall

This narrow, distinctive corridor centred on the River Tyne separates the uplands of the North Pennines NCA from the Border Moors and Forests NCA. Westwards are views of pastoral landscapes of the Solway Basin and Eden Valley NCAs and eastwards a more urban character prevails with views of the conurbation of Newcastle in the Tyne and Wear Lowlands NCA.

The Tyne valley is underlain by sedimentary Carboniferous rocks comprising a repetitive succession of limestones, sandstones, shales and intrusion of horizontal, igneous rock dolerite. Also, the prominent, intruded igneous Whin Sill formation forms a dramatic escarpment on which Hadrian's Wall is built. A mosaic of arable and pasture land, conifer plantations and well-wooded valley sides occur, along with the fertile lowland corridor of the river flood plain. Here, flat, arable fields contrast with the larger-scale upper slopes of valleys. In the west, cattle and sheep graze large areas of rough pasture, divided by walls and fences, merging to mixed and arable land in the east. A well-wooded mosaic of deciduous, mixed and coniferous woodland provides habitat for priority species – red squirrel and woodland birds. Broadleaved woodland on steeper slopes lines the rivers.

Mid Northumberland

Mid Northumberland is an intermediate plateau of gently undulating farmland which forms a transitional area between the Northumberland Sandstone Hills to the west and the low-lying coastal plain to the east. A series of ridges and enclosed river valleys in the northern part of the area open out into a broader, flatter landscape in the south. Hadrian's Wall World Heritage Site forms the southern border to the NCA.

The area is dissected by several small rivers which flow eastwards to the sea. The River Coquet flows down from the Cheviots, while the rivers Font, Wansbeck and Blyth and their tributaries wind down from the sandstone hills and upland pastures through wooded valleys and lowland arable areas. Within this predominantly farmed landscape there are many small woodlands and shelterbelts, and a few areas of open water, relatively infrequent within Northumberland.

The A68 and A696 transport corridors reflect the general west-to-east connectivity and the A1 and A697 create a strong north–south link.

South East Northumberland Coastal Plain

The South East Northumberland Coastal Plain is a flat, low-lying strip along the coast of the North Sea, extending from north Tyneside in the south to Amble and the Coquet Estuary in the north. It is largely urbanised in the south and more rural to the north, with large fields, restored and active open cast coal mines and a coast of rocky headlands and wide, sandy bays. Rural areas support mixed farming, with fields divided by low, often gappy hedgerows and few trees. The underlying geology has had a significant effect on the character of the area.

The coast supports a wide diversity of habitats including sand dunes, maritime cliffs and slopes, coastal and flood plain grazing marsh and mudflats. The area supports a diverse range of marine species and ecosystems as a consequence of its geological diversity and the natural variation in the sediment loading of the water. The rivers Blyth, Wansbeck, Coquet, Pont and Seaton Burn drain through the coastal plain from the uplands to the west into the North Sea to the east, often passing through incised valleys with fragments of ancient woodland. They support rich wildlife, including white-clawed crayfish, otter, water vole and salmonids, and are important for recreation (walking, fishing and wildlife watching), water abstraction and sense of place.

Tyne and Wear Lowlands

Tyne and Wear Lowlands NCA is an area of gently undulating or rolling land, incised by the valleys of the major rivers and their tributaries. It is densely populated and heavily influenced by urban settlement, industry and infrastructure. Between settlements there are wide stretches of agricultural land. The undulating land and broad valleys of the Tyne and Wear Lowlands are underlain almost entirely by Coal Measures rocks of Upper Carboniferous age. Mineral extraction has played a considerable role in the area and the legacy of coal mining remains evident in the landscape, although much restoration has occurred in recent years. Spoil heaps have been restored to pastures, mixed/coniferous plantations, amenity ponds and lakes (former open cast mines) and accessible

green spaces such as country parks, and new networks of footpaths and cycle routes have been created along former wagonways.

Newcastle upon Tyne and the surrounding settlements cover a large area in the north of the NCA. Newcastle lies on the site of the Pons Aelius, a Roman fort on Hadrian's Wall, at a strategic crossing point of the River Tyne. Hadrian's Wall, which extends north-west from this NCA, is a World Heritage Site and the Hadrian's Wall Path National Trail provides recreational opportunities for visitors and local people.

Durham Magnesian Limestone Plateau

The Durham Magnesian Limestone Plateau is an open, agricultural landscape with sharply defined boundaries in the form of a steep limestone escarpment to the west and a dramatic coast of limestone cliffs, headlands and bays to the east. The River Wear cuts across the north of the area, flowing into the sea at Sunderland, and the River Skerne drains into the Tees Lowlands to the south. Rural land cover consists of arable land and grazing pasture, with small, isolated areas of wildlife-rich habitat such as Magnesian Limestone grassland and ancient woodland in the narrow valleys (or denes) running down to the coast. The area has been strongly shaped by its industry, with coal mining and quarrying in particular leaving a very clear mark on local landscapes and identity. Settlements range from larger urban areas such as Sunderland to the north and ex-mining towns with their distinctive terraces to the south and east, to scattered traditional stone villages built around village greens on the plateau and 'New Towns' such as Peterlee and Newton Aycliffe.

Transport routes such as the A19 and the coastal railway form prominent features in the landscape and provide links to the north and south, but also detract from tranquillity and create physical and psychological barriers to public access.

Durham Coalfield Pennine Fringe

The Durham Coalfield Pennine Fringe NCA is a transitional landscape between the North Pennines NCA to the west and the Tyne and Wear Lowlands NCA to the east. It is formed by a series of broad ridges, separated by river valleys, with a strong west–east grain. Some 3 per cent (2,252 ha) of the NCA lies within the North Pennines Area of Outstanding Natural Beauty, and 204 ha falls within the North Pennine Moors Special Area of Conservation and Special Protection Area, designated for its habitats (including dry heath, blanket bog and old sessile oak woodland) and upland breeding birds (including golden plover, curlew, dunlin, hen harrier and merlin). The west is more upland in character, with large, open, regular fields bounded by drystone walls or fences, and is primarily used for sheep and cattle grazing. In the east the farmed landscape becomes more mixed, with arable crops grown on the richer land, and more irregular fields divided by hedges rather than walls. Networks of hedges and strips of woodland in river valleys and alongside streams, combined with shelterbelts and large conifer plantations, give parts of the area a well-wooded appearance.

Pennine Dales Fringe

The Pennine Dales Fringe NCA lies between the uplands of the Pennines to the west, and the Magnesian Limestone ridge and arable lowlands to the east. The land has a varied topography of exposed upland moorland fringes and plateaux dropping to lower foothills, separated by major river valleys and incised by numerous minor tributary valleys. It is underlain by Yoredale rocks in the north (limestone, sandstone and mudstone) and Millstone Grit in the south. It is a transitional landscape between upland and lowland. Drystone walls are common in the west while hedges, often thick and tall with frequent hedgerow trees, are more prevalent at lower elevations in the east. Broad valleys, widening to the east, with their more fertile soils support arable crops, while steeper, higher land in the west supports predominantly livestock farming.

Broadleaved woodlands (many of them of ancient origin), coniferous and mixed plantations, and numerous small woods and hedgerow trees all contribute to the well-wooded character of the area. Hamlets, villages and small market towns are particularly distinctive, with strong visual unity, being built in local Millstone Grit Group and Yoredale Group stone in the west and Magnesian Limestone in the east.

Transport links include a number of major roads including the A66, A684 and A59, connecting major settlements to the east and west of the Pennine uplands. Several long-distance walking routes pass through the area, including the Coast to Coast path, Ebor Way, Nidderdale Way and Teesdale Way.

Tees Lowlands

The Tees Lowlands NCA forms a broad, open plain dominated by the meandering lower reaches of the River Tees and its tributaries, with wide views to distant hills. The large conurbation around the Lower Tees and Teesmouth contrasts with the rural area to the south and west, which is largely agricultural in character. These areas are in close proximity to heavy industry, which has developed due to the estuary's strategic location close to; mineral reserves, a network of main roads, railways and Teesport. Industrial installations form a dramatic skyline when viewed from the surrounding hills. Early successional grasslands and scrub have also emerged on previously developed land; these brownfield sites have significant biodiversity value.

There are a number of major transport corridors through the NCA. The East Coast Main Line railway, the A1(M) motorway and A19 trunk road provide links to the south, and northwards to the Tyne and Wear conurbations and beyond.

Local landscape character areas

Detailed local landscape studies have been carried out in Northumberland and Durham.

Northumberland Landscape Character Assessment

The Northumberland Landscape Character Assessment[60] presents a consolidated landscape character assessment for the whole County. This breaks Northumberland down into landscape character types and landscape character areas. Detailed descriptions of each landscape character type and character area are given. These are arranged by the refined NCA into which they fall. **Figure 7.3** outlines the landscape character areas within the NCAs.

The Landscape Character Assessment also defines key principles and guidelines relating to landscape and land uses. The assessment recognises that all landscapes are dynamic, undergoing changes both natural and human-influenced.

Each landscape character type within Northumberland has been divided into three broad categories based on three guiding principles: protect, manage and plan.

The landscapes which have been identified for protection are the most valued landscapes in the county. They include the coastal landscapes and seascapes which comprise the Northumberland Coast AONB, the foothills which form the setting to the Cheviots, and the dales of the North Pennines AONB, as well as other sensitive river valley landscapes. Protection does not imply preservation, but rather conservation of key landscape qualities. It is recognised that these landscapes are not static, but evolving. They will undergo change in future, but change within these landscapes requires more careful management.

[60] Land use consultants (2010) Northumberland Landscape Character Assessment [online] available at: < https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Planning-and-Building/planning%20policy/Studies%20and%20Evidence%20Reports/Landscape%20Green%20Spaces%20Studies/1.%20Landscape%20Character/Landscape-Character-Part-A.pdf> [accessed 27/02/20]

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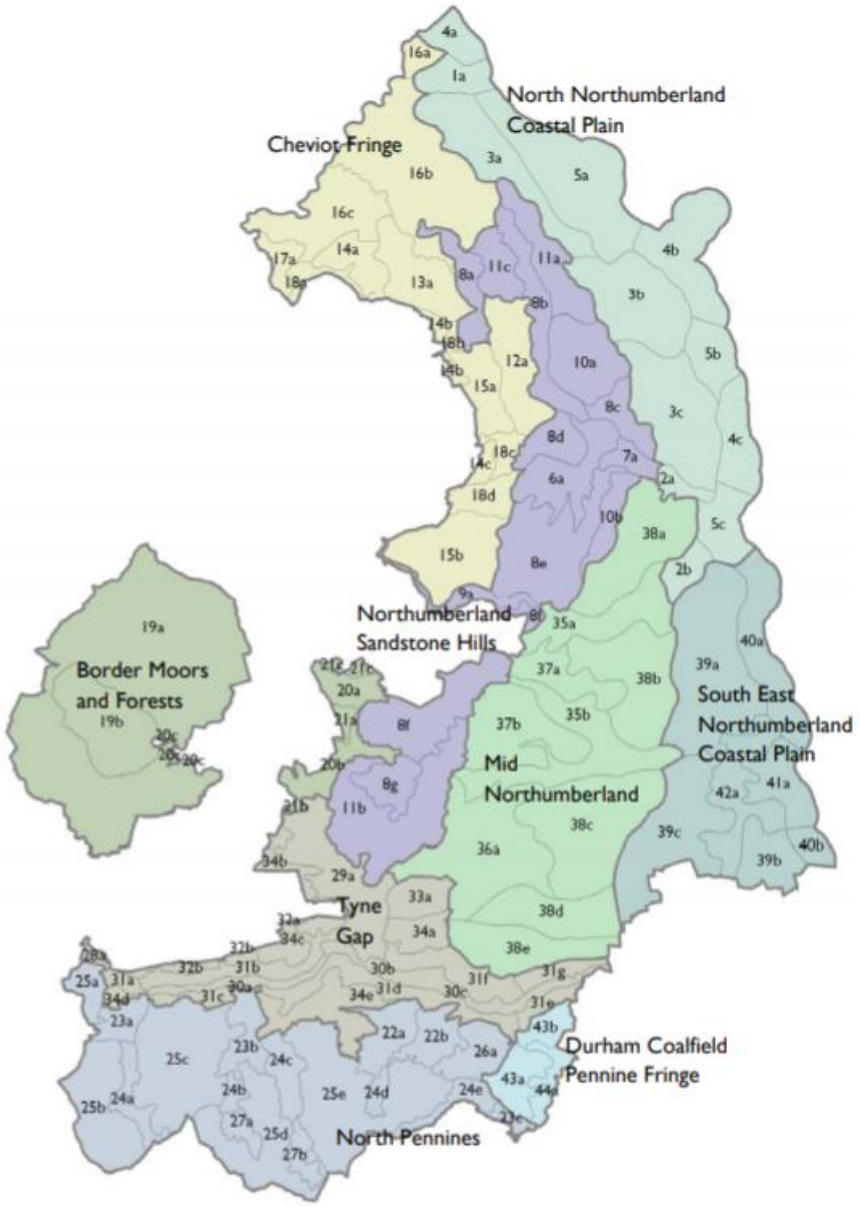


Figure 7.3: Landscape character areas within Northumberland

The landscapes which have been identified for management are agricultural and upland areas, and reflect the working rural landscapes of Northumberland. While they are often highly valued at a local level, these landscapes generally have a greater ability to absorb change, without significant detriment to their innate character. However, there remains a need to ensure that the character of these landscapes is maintained, and that changes are sympathetic and sustainable. The key qualities of these landscapes may still require a degree of protection, although there is greater scope for planning some change.

Planning has been identified as the guiding principle for landscapes in the south-east of the county, the forested uplands, and areas of intensive arable farming or former mineral extraction. These landscapes have already been heavily modified by the actions of people, and positive action is required to restore or enhance these areas. Again, there needs to be recognition of the underlying key qualities of the landscape, albeit that these may have been compromised in the past. Not all change will be beneficial, and management is required to ensure that change is sustainable, and results in a strengthening of landscape character.

Further information on the landscape character areas within Northumberland can be found in the Northumberland Landscape Character Assessment.[61]

Landscape Character Assessment for Northumberland National Park

An update of the Northumberland National Park Landscape Character Assessment was completed in Jun 2019.[62]

The assessment adopts a holistic approach that considers the landscapes of Northumberland National Park as a mosaic of different landscapes character types and landscape character areas, each with particular characteristics and subject to particular forces for change. It is intended to provide an understanding of the area's landscape, through characterisation, together with advice on landscape change, through the preparation of strategy and guidelines material.

The landscape character areas in the National Park are a unique, geographically specific, units of a particular landscape character type, which share the same elements as the landscape character type, but at the same time have their own individual character and identity.

Figure 7.4 below highlights the Landscape Character Areas in the National Park. The Landscape Character Assessment presents detailed overviews of these areas.

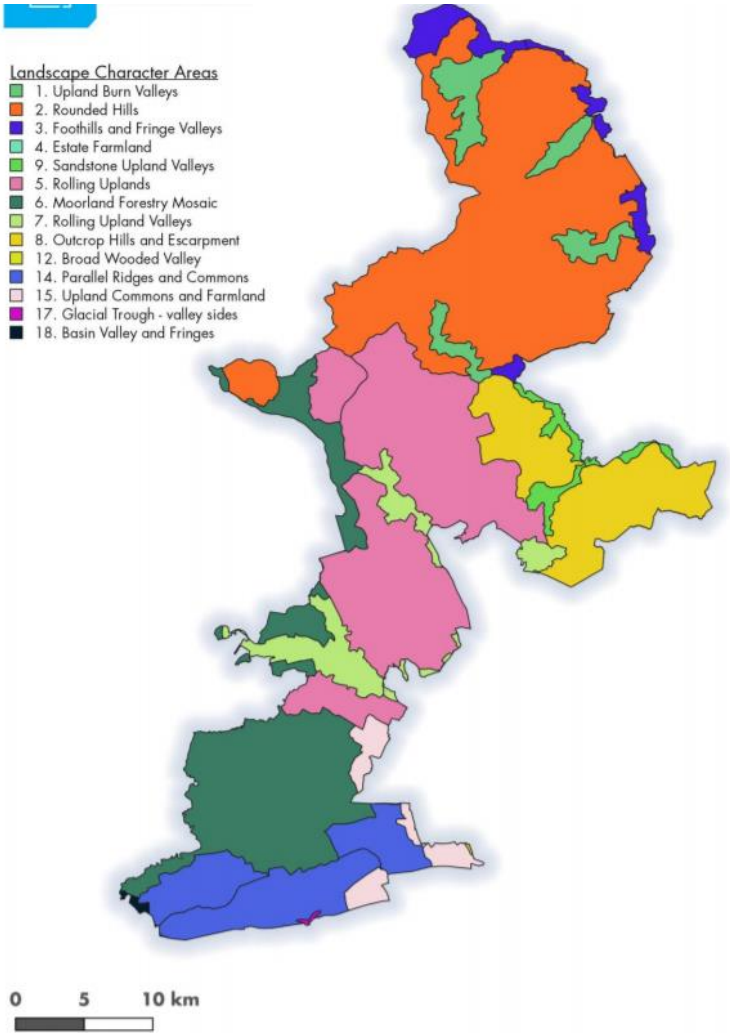


Figure 7.4: Landscape character types in the Northumberland National Park (from *Landscape Character Assessment for the Northumberland National Park*)

[61] Land use consultants (2010) Northumberland Landscape Character Assessment [online] available at: < https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Planning-and-Building/planning%20policy/Studies%20and%20Evidence%20Reports/Landscape%20Green%20Spaces%20Studies/1.%20Landscape%20Character/Landscape-Character-Part-A.pdf> [accessed 05/03/20]

[62] Alison Farmer Associates (June 2019) Update of Landscape Character Assessment for Northumberland National Park [online] available at: <https://nnp-tacdesign.netdna-ssl.com/wp-content/uploads/2019/09/NNPA-022-Landscape-Character-Assessment.pdf> [accessed 03/10/20]

Durham Landscape Character Assessment

The County Durham Landscape Character Assessment[63] identifies landscape types and character areas at three different levels - the regional, the sub-regional and the local.

County Character Areas are based on Natural England's Countryside Character Areas. There are 6 Countryside Character Areas in County Durham, all of which extend beyond its administrative boundaries. These are outlined in **Figure 7.5** below.

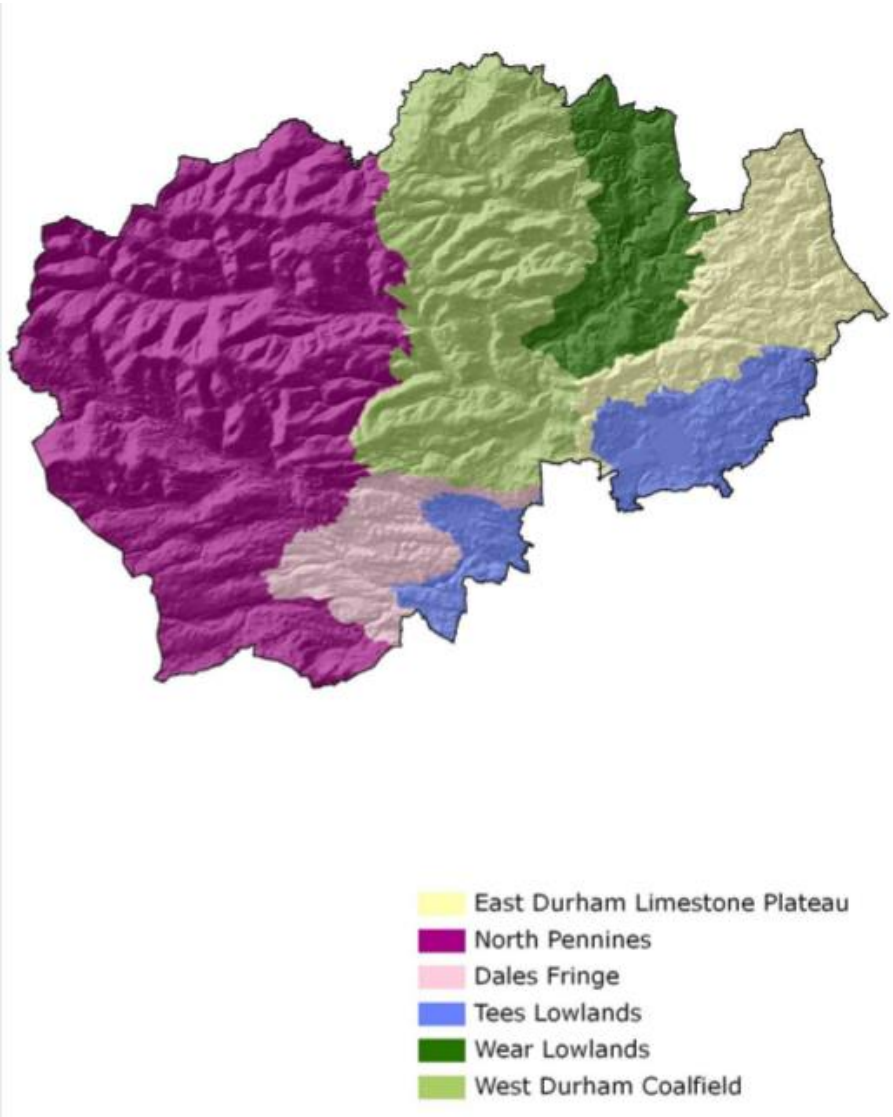


Figure 7.5: County Character Areas in Durham

Broad Landscape Types are landscapes with similar patterns of geology, soils, vegetation, land use, settlement and field patterns identified at a broad sub-regional level. As with County Character Areas, the boundaries between Broad Landscape Types are not always precise, as the change between one landscape and another can be gradual and progressive. The Broad Landscape Types are outlined in **Figure 7.6** below.

Further information on Landscape Character Areas and Landscape Types can be found in the County Durham Landscape Character Assessment.[64]

[63] Durham County Council (no date) The Landscape Classification [online] available at: < http://www.durhamlandscape.info/media/13393/County-Durham-Landscape-Character-Assessment-Classification/pdf/CDLCAClassification.pdf> [accessed 28/02/2020]
[64] Durham County Council (no date) The Landscape Classification [online] available at: < http://www.durhamlandscape.info/media/13393/County-Durham-Landscape-Character-Assessment-Classification/pdf/CDLCAClassification.pdf> [accessed 05/03/2020]

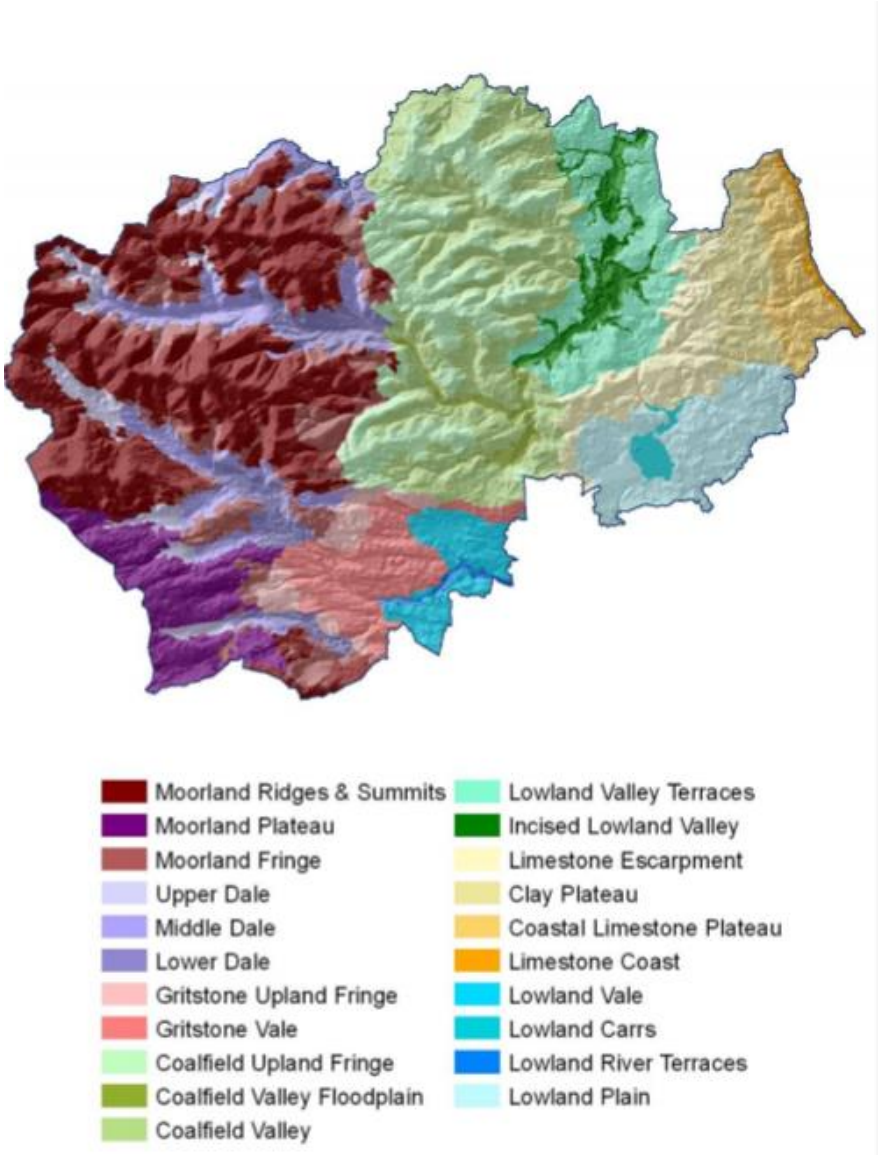


Figure 7.6: Broad Landscape Types in Durham

The County Durham Landscape Strategy[65] sets out an agenda for managing change in the future to help conserve and enhance what is valued most about the landscape while allowing it to evolve to meet new challenges.

Within the strategy, key issues on Durham landscape are discussed. Climate Change is a key issue that is discussed. Climate has a fundamental influence on landscape character. Much of the variety in the Durham landscape comes from the differences in climate between the colder wetter uplands of the west and the warmer, drier lowlands of the east. These differences affect both the natural vegetation and the way the land is managed and farmed. There is increasing evidence that the climate is changing due to a combination of natural forces and human activities, and particularly the production of 'greenhouse' gasses like carbon dioxide. Even with concerted action at a global scale it is likely that the climate will continue to change and this will bring new challenges to the landscape.

Other issues relating to the landscape character relate to biodiversity decline, conserving and restoring biodiversity, conserving geodiversity, conserving the historic environment and providing green infrastructure to access the countryside.

Within the strategy, objectives that relate to green infrastructure include:

[65] Durham County Council (2008) The County Durham Landscape Strategy [online] available at: < http://www.durhamlandscape.info/media/16093/County-Durham-Landscape-Strategy-Introduction/pdf/DURHAMLANDSCAPESTRATEGY2008Introduction.pdf> [accessed 28/02/20]

- To promote the development of integrated Green Space and Green Infrastructure Strategies, and particularly for the semi-rural landscapes of the former coalfield areas;
- To ensure that development in the rural urban fringe is sustainable and where appropriate delivers wider environmental and social benefits;
- To promote the development of a coherent network of footpaths, green spaces, quiet lanes and greenways in the countryside around towns;
- To support and encourage the creation of natural green-space and community woodlands close to settlements;
- To support and encourage environmental improvement works in and around the county's towns and villages; and
- To support sustainable land management initiatives in the rural urban fringe.

Landscape: Summary of Future Baseline

New housing, employment and infrastructure provision has the potential to lead to incremental but small changes in landscape and townscape character and quality in the region. This includes from the loss of landscape features and areas with an important visual amenity value.

Increasing traffic levels associated with an increase in population has the potential to negatively impact landscape character.

Air Quality and Noise: Summary of Current Baseline

Air Quality

Petrol and diesel-engine motor vehicles emit a wide variety of pollutants, principally carbon monoxide (CO), nitrogen oxide (NO), nitrogen dioxide ($N0_2$), volatile organic compounds (VOCs) and particulate matter (PM_{10} and $PM_{2.5}$), which have an increasing impact on urban air quality.

Emissions of PM_{10} and $PM_{2.5}$ in the UK have been generally falling since the 1990s. This decline has been attributable to a move away from coal to gas in both electricity generation and domestic and commercial combustion, and the introduction of emission standards for road vehicles. In England, 83% of AQMA designations are now associated with road transport.

There are a total of seven AQMAs found within the North East. Two of these are in Newcastle, one around the B1318 and the A189 between Gosforth and West Jesmond; and a second in central Newcastle stretching to the River Tyne. There is one AQMA in central Gateshead stretching north to the River Tyne. There are also two in South Tyneside; one at Lean Lane around the junction with the B1516 and the A19, and a second in West Harton along Boldon Lane.

Within County Durham there are two AQMAs: along Pelton Fell Road in Chester-Le-Street; and in central Durham along Sunderland Road (A181) from Framwellgate in the west to Gilesgate Moor in the east.

The location of AQMAs in the North East are illustrated in **Figure 8.1**.

These AQMAs are all subject to ongoing monitoring. In Newcastle the most recent Air Quality Annual Status Report[66] produced in 2018 showed that the concentration of pollutants within the AQMA still exceed the annual mean concentration objective for NO_2 at both the City Centre AQMA and Gosforth AQMA.

Air quality in the Gosforth AQMA has overall improved slightly, with two of the six monitoring locations below the NO_2 annual mean objective in 2017 compared to 2016. However, two monitoring locations continue to record NO_2 concentrations in exceedance of the annual mean objective.

[66] Newcastle City Council (2018) 2018 Air Quality Annual Status Report [online] available at: < https://www.newcastle.gov.uk/sites/default/files/Air%20Quality%20Annual%20Status%20Report%202018.pdf> [accessed 28/02/20]

The trends recorded at City Centre AQMA show improvement at some locations and deterioration at others in terms of air quality. Outside, but close to, the City Centre AQMA, one monitoring location (DT32, City Road) continues to exceed the annual mean objective for NO_2. The exceedance outside the City Centre AQMA is an indication that the AQMA boundary may need to be amended.

In Gateshead, monitoring of NO_2 concentrations within and near the Town Centre AQMA indicated that most locations achieved objectives during 2005, but that there were some isolated exceedances, both inside and outside of the AQMA. In 2011 & 2012 the levels of NO_2 in Gateshead Town Centre fell slightly below the annual mean air quality objective, but not significantly.[67] Since 2011, the levels of NO_2 have fallen below the air quality annual mean objective and the monitoring data for 2017 shows that NO_2 levels continue to remain below the annual mean objective level within the AQMA. The monitoring data also indicates that there are no exceedances of the annual mean objective outside of the AQMA[68].

An AQMA was also declared in Portobello, Birtley in 2008, again this was due to measured levels of NO_2 exceeding the annual mean objective level of 40µg/m^3. As air quality showed a sustained improvement and fell below the annual mean objective, the Portobello AQMA was revoked in 2012 following a Detailed Assessment[69].

There has been continued compliance with national air quality objective levels for nitrogen dioxide at Lindisfarne Roundabout/ Leam Lane and at the Boldon Lane/Stanhope Road AQMAs in South Tyneside.[70]

The Chester-le-Street AQMA in Durham saw no exceedances in NO_2 in 2017 and it is proposed that the AQMA is now revoked. Whereas eight sites within the Durham City AQMA have recorded exceedances of the annual mean objective in 2017[71].

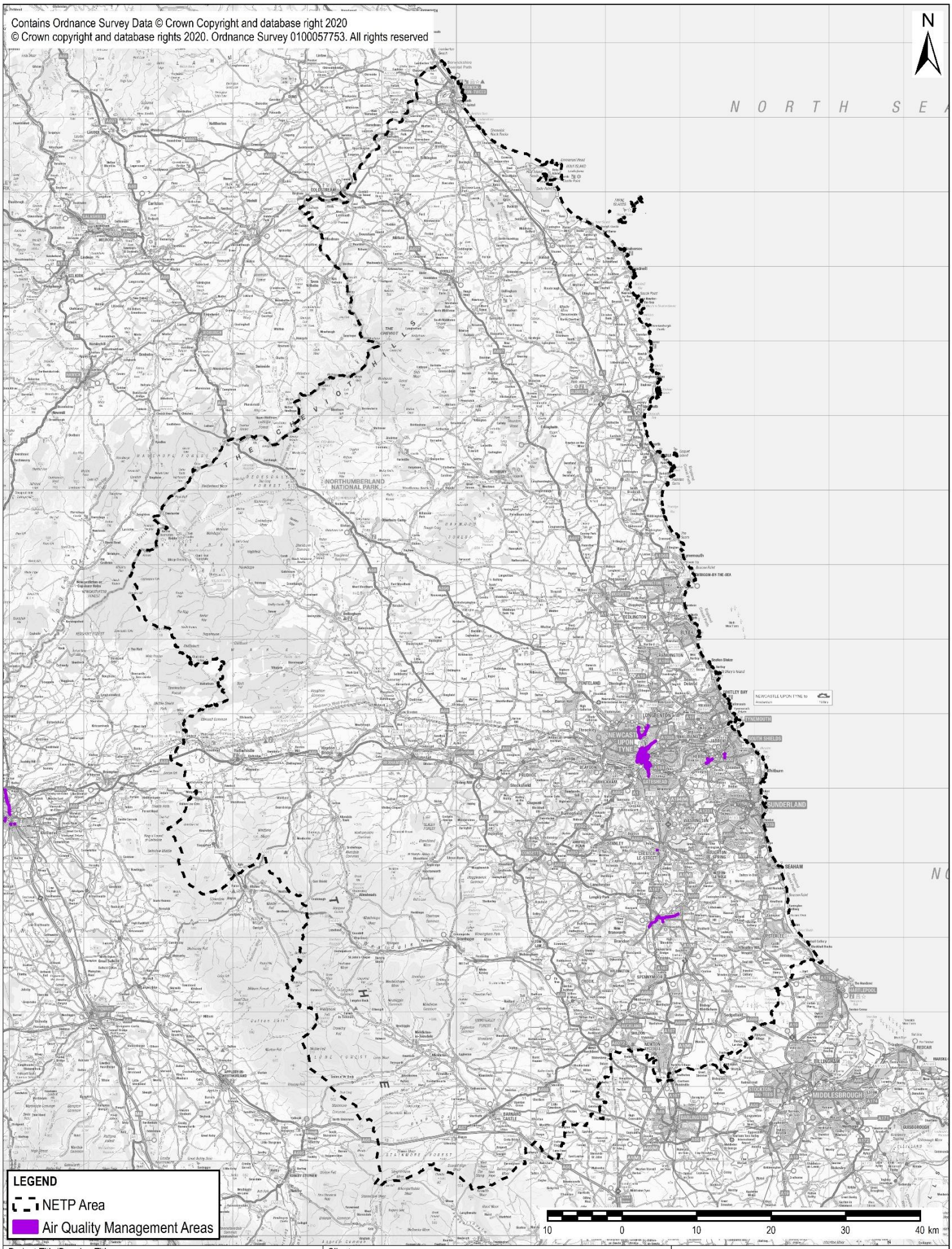
Monitoring data obtained from each of the North East's local authorities has shown that there are still significant air quality problems related to NO_2.

In addition to impacts on human health, air pollution from both local and diffuse sources can impact on ecological receptors through acid and nitrogen deposition. Ecological receptors include any living organisms other than humans, the habitat which supports such organisms or natural resources which could be adversely affected by environmental contaminations. For the purposes of this SEA and the Transport Plan, those of most significance are those which have national and European statutory designation.

Noise

Noise Action Plans have been identified for a number of major routes within Newcastle upon Tyne and Durham. Noise Action Plans are designed to assist in the management of environmental noise providing the direction of travel for managing noise; however, they do not propose any specific noise mitigation measures. Noise Action plans have been identified at specific locations along the A69, A1, A167, A191, A1058, A194, A184, A1018, A19, A690, A690 and the A1(M). Noise also has potential to impact on designated sites of European and national importance such as SSSIs, SACs and SPAs both directly and indirectly.

[67] Gateshead Council (2020) Air quality and pollution [online] available at: http://www.gateshead.gov.uk/Environment%20and%20Waste/protection/AirQuality/home.aspx [accessed 28/02/20]
[68] Gateshead Council (2018) Air Quality Annual Status Report (ASR) [online] available at: < https://www.gateshead.gov.uk/media/9230/2018-Air-Quality-Annual-Status-Report-ASR-/pdf/ASR_2018_Final.pdf?m=636681311264630000> [accessed 28/02/20]
[69] Gateshead Council (2018) Air Quality Annual Status Report (ASR) [online] available at: < https://www.gateshead.gov.uk/media/9230/2018-Air-Quality-Annual-Status-Report-ASR-/pdf/ASR_2018_Final.pdf?m=636681311264630000> [accessed 28/02/20]
[70] South Tyneside Council (2018) 2018 Air Quality Annual Status Report (ASR) [online] available at: <https://www.southtyneside.gov.uk/article/36142/Air-quality> [accessed 28/02/20]
[71] Durham County Council (2018) 2018 Air Quality Annual Status Report (ASR) [online] available at: https://www.durham.gov.uk/media/24209/2017-Air-Quality-Annual-Status-Report-ASR-/pdf/2017AirQualityStatusReport.pdf [accessed 29/02/20]



File Name:i:\5004 - Information Systems\6XX_NECA_Transport_Plan\02_Maps\Figure 8-1 - Air Quality Management Areas.mxd

Project Title/Drawing Title

ISA FOR THE NE TRANSPORT PLAN

AIR QUALITY MANAGEMENT AREAS

Client TRANSPORT NORTH EAST STRATEGY UNIT

Drawn	Checked	Approved
CN	JW	NCB
Date	Scale @ A4	Purpose of Issue
13/03/2020	1:650,000	DRAFT
Drawing Number		Rev
FIGURE 8.1		01

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Air Quality and Noise: Summary of Future Baseline

There are a number of areas, particularly within the major conurbations of Newcastle upon Tyne, South Tyneside, and Durham City where the concentrations of pollutants are higher than mean annual government set objectives, and consequently there are AQMAs in place. Due to the presence of AQMAs these areas are likely to see a management of the concentrations of air pollutants in the future.

Nationally there has been a downward trend in NO_2 pollution although this decline has not been as much as previously expected. The reasons for this are complex and being investigated by Defra. One contributing factor is that although newer vehicles have higher European emissions standards, the proportion of diesel vehicles in use in the UK has increased significantly (in 2000 only 14% of new cars sold in the UK were diesel but by 2010 this proportion had risen to 46%). Diesel vehicles have higher NO_2 emissions than petrol vehicles.

Final proposals were consulted on in October 2019 for the delivery of measures to improve air quality in Newcastle, Gateshead and North Tyneside in response to the air quality direction received from the Secretary of State (discussed above in section 0). This resulted in the intention to introduce a charging Clean Air Zone covering Newcastle city centre affecting non-compliant buses, coaches, taxis (both Hackney Carriages and private hire vehicles), heavy goods vehicles and vans, to be enforced from 2021. This has the potential to lead to changes in concentrations of air quality pollutants in Newcastle city centre and the surrounding areas.

An ongoing increase in the use of electric and plug-in hybrid vehicles has the potential to reduce emissions from transport. More stringent emission standards on manufacturers and the bringing forward of the ban on the sale of new petrol, diesel and hybrid cars to 2035 (and potentially to 2032) by the UK Government will help accelerate this trend.

Durham and Newcastle upon Tyne have a number of Noise Action Plans in place along A roads. This means that currently objective limits on ambient noise set by government are being exceeded; however these are likely to be managed with action plans in place.

Climate Change and Flood Risk: Summary of Current Baseline

The main source of greenhouse gas emissions from the transport sector is the use of petrol and diesel in road transport. The Department of Energy and Climate Change 2013 'UK Greenhouse Gas Emissions, Final Figures, February 2013' report[72] identifies that between 1990 and 2013 there was relatively little overall change in the level of greenhouse gas emissions from the transport sector. It identifies that there was a slight increase up to 2007 and a slight decrease from 2008 onwards.

Source data from the Department of Energy and Climate Change suggests that the North East has higher per capita emissions in comparison to England as a whole since 2005. The North East has also seen a 54.3% reduction in the percentage of total emissions per capita between 2005 and 2016, greater than the reductions for England (37.6%).

The table below sets out the carbon dioxide emissions for industry, domestic, and transport sources, for each year from 2005 to 2013 in the North East. It also sets out the total per capita emissions per year and per capita emissions for road transport. As can be seen, there has been a steady decline in CO_2 emissions across all sectors. The area of largest decline has been in the industrial and commercial sectors (49.2% decrease) while the smallest decline has been in the transport sector (13.2% decrease). Of the local authorities in the North East, South Tyneside has the lowest carbon dioxide emissions from transport and Country Durham the highest.

[72] The Department of Energy and Climate Change (2013) UK Greenhouse Gas Emissions, Final Figures, [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/407432/20150203_2013_Final_Emissions_statistics.pdf [accessed 28/02/20]

Table: CO_2 emissions from the North East by source and year

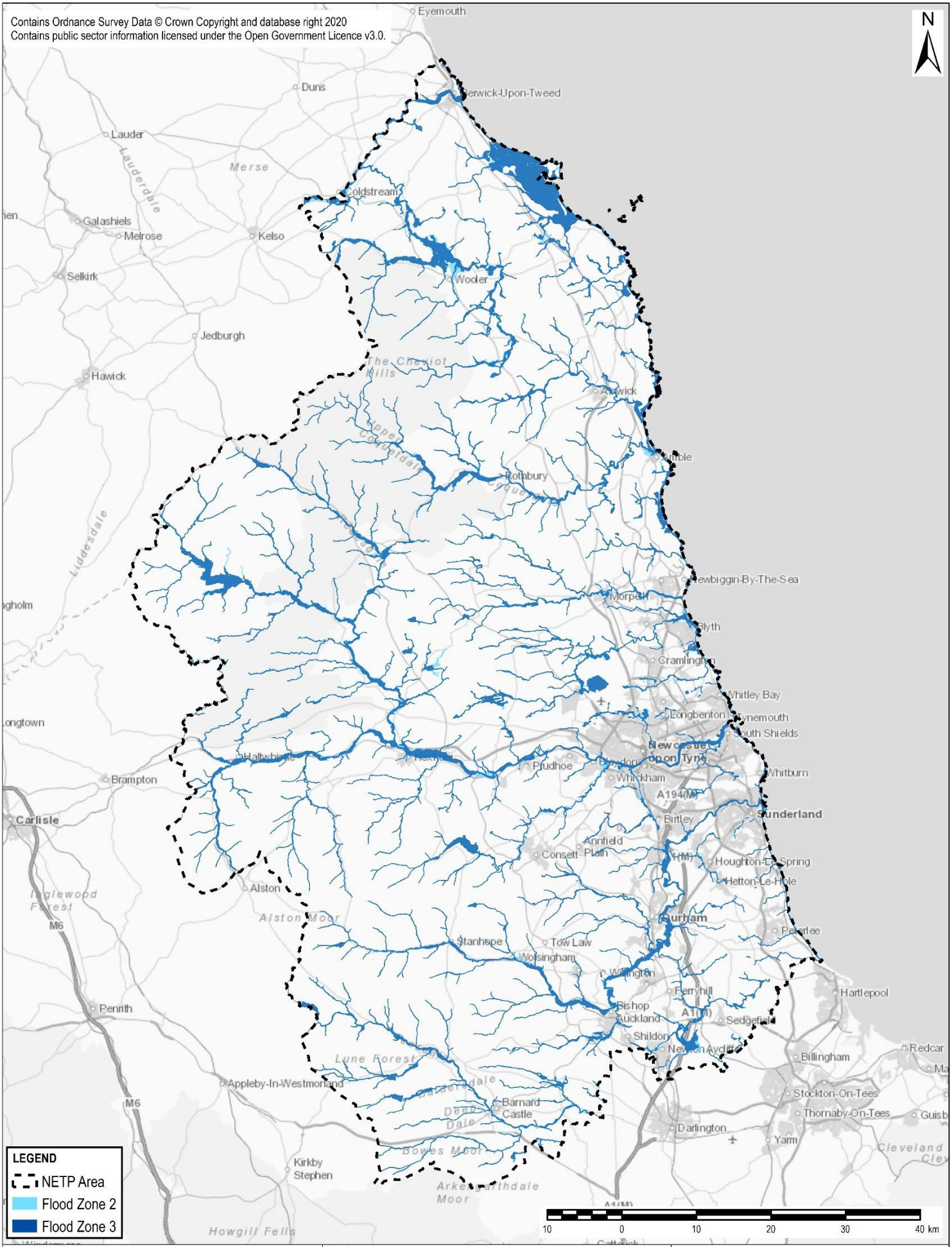
Year	Industrial and commercial	Domestic	Transport	Of which roads	Total	Transport per capita	Road Trans-port per capita	Total per capita
	Total carbon dioxide emissions (Kilotonnes CO_2)					Per capita emissions (tonnes CO_2)		
2005	8,846	4,993	3,636	3,530	17,475	1.921	1.864	9.230
2006	8,774	4,930	3,582	3,474	17,285	1.888	1.831	9.111
2007	8,490	4,734	3,606	3,500	16,830	1.893	1.837	8.833
2008	8,411	4,748	3,429	3,323	16,588	1.795	1.739	8.681
2009	7,365	4,254	3,319	3,215	14,937	1.732	1.678	7.795
2010	7,825	4,540	3,275	3,170	15,640	1.701	1.646	8.120
2011	7,474	3,946	3,230	3,127	14,650	1.671	1.618	7.577
2012	6,789	4,258	3,207	3,103	14,255	1.654	1.601	7.353
2013	4,494	4,203	3,159	3,058	11,855	1.624	1.572	6.094
Total Percentage Change	-49.2%	-15.9%	-13.2%	-13.4%	-32.2%	-15.8%	-15.7%	-33.9%

Carbon dioxide from different sources of transport emissions varies between the councils within the North East and is dependent on the infrastructure present within the area, for example there are no carbon dioxide emissions from motorways within Northumberland or North Tyneside as there are no motorways within either of these areas. The table below sets out the carbon dioxide emissions from the transport sources in each of the council areas.

Table: CO_2 emissions by transport type within each local authority area

	Transport sources kt CO_2 per year					
	Road Transport (A roads)	Road Transport (Motorways)	Road Transport (Minor Roads)	Diesel Railways	Transport Other	Transport Total
County Durham	433.9	217.5	248.4	34.5	4.3	938.6
Gateshead	196.4	24.4	184.5	3.8	1.3	410.4
Newcastle	185.4	10.8	191.9	3.8	11.7	438
North Tyneside	148.5	-	132.1	4.6	1.3	286.4
Northumberland	431.4	-	123.0	34.4	2.8	591.6
South Tyneside	94.1	3.1	76.2	2.3	0.6	176.2
Sunderland	202.1	9.9	182.9	0.9	1.5	397.2

Figure 9.1 sets out the risk of flooding from rivers and sea in each of the seven council areas which make up the North East.



Project Title/Drawing Title

ISA FOR THE NE TRANSPORT PLAN

FLOOD RISK ZONES

Client	TRANSPORT NORTH EAST STRATEGY UNIT	
Drawn: CN	Checked: TD	Approved: NCB
Date: 13/03/2020	Scale @ A4: 1:650,000	Purpose of Issue: DRAFT
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File Name:\\5004 - Information Systems\6XX_NECA_Transport_Plan\02_Maps\Figure 9-1 - Flood Risk Zones.mxd

Climate Change and Flood Risk: Summary of Future Baseline

Climate change has the potential to increase the occurrence of extreme weather events in the North East with increases in mean summer and winter temperatures, increases in mean precipitation in winter and decreases in mean precipitation in summer. At a regional level the UK Climate Projections (UKCP18) team have estimated that the average temperature may increase by 1.5°C and 2.5°C in summer and winter, respectively; and that by the 2050's, under a medium emissions scenario – mean winter precipitation may increase by 30%[73].

This is likely to increase the risks associated with climate change such surface water flooding. Additionally, climate change is predicted to cause rises in sea levels which will increase the risk of flooding from the sea in coastal areas. As such there will be an increased need for resilience and adaptation. It is likely that the risk of flooding to areas set out in **Figure 9.1** will increase in severity and periodicity.

Climate change also has the potential for significant impacts on various habitats located within the North East. The Inter Agency Climate Change Forum produced a report on the summary of impacts to biodiversity[74] within the UK as a result of climate change. The report notes that assessing the impacts of climate change on terrestrial and freshwater biodiversity is not easy, as plants and animals are influenced by other pressures, such as atmospheric pollution and land use, and different factors can work in combination to bring about change. However, changes are beginning to be observed across a range of species and habitats in the UK that have been related to climate change. It notes that one of the primary observed impacts of climate change upon species within the UK has been a northward movement of many warmth-loving species, and some retreat of northerly distributed species. There have also been concomitant changes in abundance observed in some cases.

In terms of climate change mitigation, per capita emissions are likely to decrease as energy efficiency measures, renewable energy production and new technologies become more widely adopted. However, road transport and domestic sources are likely to be increasing contributors proportionally.

An ongoing increase in the use of electric and plug-in hybrid vehicles has the potential to reduce emissions from transport. More stringent emission standards on manufacturers and the bringing forward of the ban on the sale of new petrol, diesel and hybrid cars to 2035 (and potentially to 2032) by the UK Government will help accelerate this trend.

Population: Summary of Current Baseline

Population change

According to the most recent census data available, between the 2001 and 2011 census, the population growth seen in each of the administrative areas covering the North East is lower than that of the England average. Newcastle upon Tyne has shown the largest increase in population at 7.37%, this is 0.53% lower than that of the national average. In comparison Northumberland, County Durham, and Gateshead have shown a much slower population growth of 2.80%, 3.86%, and 4.53% respectively. The population in South Tyneside and Sunderland decreased by 3.05% and 1.89% respectively since the 2001 census. This is shown in the table below.

[73] Data released 26th November 2018 [online] available at: https://www.metoffice.gov.uk/research/collaboration/ukcp [accessed 28/02/20]
[74] Natural England have produced a national biodiversity climate change vulnerability model which provides more information on a spatially explicit assessment of the relative vulnerability of priority habitats. Available [online] at: http://publications.naturalengland.org.uk/publication/5069081749225472 [accessed 28/02/20]

Table: Population change 2001 – 2011

Date	England	County Dur-ham	Gates-head	Newcastle upon Tyne	North Tyneside	Northumberland	South Tyneside	Sunderland
2001	49,138,831	493,470	191,151	259,536	191,659	307,190	152,785	280,807
2011	53,012,456	513,242	200,214	280,177	200,801	316,028	148,127	275,506
Population Change 2001-2011	+7.9%	+3.85%	+4.53%	+7.37%	+4.56%	+2.80%	-3.05%	-1.89%

The table below outlines the population gender structure, and density of the population for the North East. With the exception of Newcastle upon Tyne, all areas have a slightly higher proportion of females compared to males. Northumberland has the lowest population density (0.6 people per ha) while Newcastle upon Tyne has the highest (25.2 people per ha). The average for the North East is 2.5 people per ha.

Table: Population gender structure / population density

	Male	Female	Total	Area (ha)	Density (people per ha)
North East	957,800	994,700	1,952,500	786,221	2.5
County Durham	254,200	263,600	517,800	223,270	2.3
Northumberland	154,300	161,700	316,000	507,835	0.6
Tyne and Wear	549,200	569,500	1,118,700	55,116	20.3
Gateshead	98,400	102,100	200,500	14,408	13.9
Newcastle upon Tyne	146,100	143,700	289,800	11,512	25.2
North Tyneside	98,000	104,800	202,700	8,518	23.8
South Tyneside	71,800	76,900	148,700	6,715	22.1
Sunderland	134,900	142,000	276,900	13,964	19.8

Age structure

The population age structure varies across the North East. All seven local authorities have a slightly lower proportion of the population within the 0-15 age group than the national average of 19%. North Tyneside, Gateshead, and South Tyneside all have 18% while the remainder have 17%. The majority of councils within the North East are comparable with the national average of residents within the 16-24 age group (12%); however both North Tyneside and Northumberland have a slightly lower proportion of residents within this group (10%). In contrast, Newcastle upon Tyne shows significantly more (20%).

The England average for the proportion of the population within the 25-44 age group is 28% and the North East average is 25%. All North East authorities show a lower proportion than the national average. Gateshead, Newcastle upon Tyne and North Tyneside are broadly comparable to the national average (27%), while South Tyneside, Sunderland, and County Durham all have a lower proportion, which is comparable to the North East average (25%). Northumberland shows the lowest number of residents in this age group (23%).

The national average within the 45-59 age group is 19% and the North East average is 21%. With the exception of Newcastle upon Tyne (17%) all other North East councils have a higher proportion of residents within this age category than the national average; of these Northumberland has the highest at 28%. This same pattern occurs in the 60+ age group; the England average for this group is 22%.

Newcastle has a lower proportion than this (19%), while the rest all have higher percentages. Northumberland again has the highest proportion (28%). This is shown in the table below.

Table: Age structure[75]

	England	North East	County Durham	Gates-head	Newcastle upon Tyne	North Tyneside	Northumberland	South Tyneside	Sunderland
0-15	19%	18%	17%	18%	17%	18%	17%	18%	17%
16-24	12%	12%	12%	11%	20%	10%	10%	11%	12%
25-44	28%	25%	25%	27%	27%	27%	23%	25%	25%
45-59	19%	21%	21%	20%	17%	21%	23%	22%	21%
60+	22%	24%	25%	24%	19%	24%	28%	25%	24%

Housing

Sunderland, South Tyneside, Newcastle upon Tyne, and Gateshead all have a lower percentage of the population owning properties than the national average. In contrast, all of the North East local authorities have a higher percentage of the population living in socially rented housing than the national average. With the exception of Newcastle upon Tyne, all local authorities also have a lower percentage of residents living in privately rented housing than the national average.

The ratio of median house price to median gross annual workplace-based earnings illustrates the relationship between the average income in the area to average house price in the area; the affordability ratio for the local council areas compared with the national average of 8 in 2018 was as follows[76]:

- County Durham: 4.48
- South Tyneside: 5.78
- Gateshead: 5.32
- Sunderland: 4.86
- Newcastle upon Tyne: 5.75
- Northumberland: 6.61
- North Tyneside: 6.12
- England: 8

The affordability ratios all councils within the North East are less than the average ratio of 8 for England. This suggests that homes are more affordable for local people in these areas than the national average.

It will be important that plan-making anticipates future demand for development and facilitates the delivery of housing and employment sites. A review of the most recent strategic housing market assessments (SHMA) are outlined below.

County Durham

The County Durham SHMA 2018[77] identified a housing need of 1,287 dwellings per annum. The recent average level of completions has been 1,308 dwellings per annum.

75 ONS (2011) Census 2011, Age structure (KS102EW)

76 Office for National Statistics (2018) House price to workplace-based earnings ration [online] available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/housing/datasets/ratioofhousepricetoworkplacebasedearningslowerquartileandmedian> [accessed 05/03/2020]

77 Opinion Research Services (2018) County Durham Strategic Housing Market Assessment 2018 [online] [accessed 28/02/20]

Gateshead and Newcastle

The Gateshead & Newcastle upon Tyne SHMA 2017[78] identified an annual need for Gateshead over the period 2015-30 of 535 dwellings per annum and 1,040 dwellings per annum for Newcastle upon Tyne for the same period.

North Tyneside

The SHMA for North Tyneside[79] identifies an OAHN of 792 dwellings per annum. This compares to an average annual completion rate of 425 over the period 2009/2010 – 2012/2013. The scale of delivery required to meet OAHN is a c. 86% increase in the historic average.

Northumberland

The Northumberland SHMA[80] which was partially updated in 2018 identifies a minimum local housing need of 717 dwellings per annum over the 10-year period 2016-2026. However, a need for 885 dwellings each year has been established in order to match the Council's ambitions.

South Tyneside

The SHMA for South Tyneside[81] identifies a housing need of 494 dwellings per annum over the period 2008-2033. This compares to an average annual completion rate of 480 per year between 2007/2008 – 2011/2012. The scale of delivery should be much the same as historic completions.

Sunderland

The SHMA for Sunderland[82] identifies a housing need of 768 dwellings per annum over the period 2015-2033. In 2015/2016 there were 889 net housing completions and in 2014/2015 there were 907 net housing completions.

Northumberland National Park

Northumberland National Park has an identified need of 160 dwellings over their 20-year planning period 2017-2037, an average of 8 per annum.

Education

The table below shows the highest level of qualification achieved by residents in the local authority areas compared with the England average.

Table: Highest level of qualification[83]

Date	County Durham	Gates-head	Newcastle upon Tyne	North Tyneside	Northumberland	South Tyneside	Sunderland	North East	England
No qualifications	27.5%	28.0%	23.6%	23.7%	23.9%	28.0%	29.1%	26.5%	22.5%
Level 1 qualifications	13.4%	14.3%	11.3%	14.0%	13.7%	14.6%	15.5%	13.7%	13.3%

[78] Opinion Research Services (2017) Gateshead & Newcastle upon Tyne Strategic Housing Market Assessment 2078 [online] available at: < https://www.gateshead.gov.uk/media/7831/Strategic-Housing-Market-Assessment-SHMA-/pdf/SHMA-09-2017-gateshead-newcastle.pdf?m=636619965701470000> [accessed 28/02/20]
[79] North Tyneside Council (2014) *2014 Strategic Housing Market Assessment North Tyneside Council Final Report* [online] available at: https://my.northtyneside.gov.uk/sites/default/files/web-page-related-files/Strategic%20Housing%20assessment.pdf [accessed 03/03/2020]
[80] Northumberland County Council (2018) Partial SHMA Update [online] available at: < https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Planning-and-Building/planning%20policy/Studies%20and%20Evidence%20Reports/Housing%20Studies/2.%20SHMA/NCC-SHMA-June-2018.pdf> [accessed 02/03/2020]
[81] South Tyneside Council (2013) Strategic Housing Market Assessment [online] available at: < https://www.southtyneside.gov.uk/article/36020/Supporting-Documentation-and-Evidence-Base-Studies> [accessed 02/03/2020]
[82] Sunderland City Council (2017) Strategic Housing Market Assessment [online] available at: < https://www.sunderland.gov.uk/media/20441/Sunderland-Strategic-Housing-Market-Assessment-Update-2017-/pdf/22_Sunderland_Strategic_Housing_Market_Assessment_Update_(2017).pdf?m=636646119703700000> [accessed 02/03/20]
[83] ONS (2011) Census 2011, Highest Level of Qualification (QS501EW)

Date	County Durham	Gates-head	Newcastle upon Tyne	North Tyneside	Northumberland	South Tyneside	Sunderland	North East	England
Level 2 qualifications	16.0%	15.5%	12.5%	16.1%	16.5%	16.2%	16.2%	15.7%	15.2%
Apprentice-ship	4.2%	5.2%	3.4%	5.3%	4.5%	6.1%	5.0%	4.7%	3.6%
Level 3 qualifications	13.6%	11.3%	17.1%	11.9%	12.1%	12.0%	12.0%	13.1%	12.4%
Level 4 & above	21.5%	21.5%	27.2%	25.3%	25.6%	19.2%	18.2%	22.2%	27.4%
Other qualifications	13.4%	4.1%	4.9%	3.7%	3.8%	3.9%	4.0%	4.1%	5.7%

All council areas have a higher proportion of residents with no qualifications than the national average of 22.5%. South Tyneside has the highest proportion of residents with no qualifications (29.1%) with Newcastle upon Tyne and North Tyneside having an only slightly higher proportion than the national average (23.7%).

The national average for residents with Level 4 or above qualifications is 27.4%. In Newcastle upon Tyne, 27.2% of residents hold level 4 or above qualifications and as such, is broadly comparable with national averages. In contrast, the remainder of North East council areas have a lower proportion of residents holding level 4 qualifications. In particular, South Tyneside and Sunderland show a much lower proportion - 19.2% and 18.2% respectively - of residents with the highest levels of qualifications.

In comparison, with the exception of Newcastle, which is comparable with the national average, all council areas show a higher proportion of residents who have undertaken apprenticeships.

Employment

The table below demonstrates the occupation of working-age residents. The overall occupation profile suggests that there are fewer managers, directors and senior officials in the North East than the national average; and with the exception of Newcastle upon Tyne and North Tyneside, there are also fewer professional occupations.

Table: Employment occupation of residents aged 16-74[84]

	County Durham	Gates-head	Newc-astle upon Tyne	North Tyne-side	Northu-mberland	South Tyne-side	Sunder-land	North East	England
Managers, directors and senior officials	8.9%	8.4%	8.0%	8.5%	10.5%	7.8%	7.6%	8.6%	10.9%
Professional occupations	14.5%	15.2%	20.4%	17.7%	15.5%	13.2%	12.2%	15.2%	17.5%
Associate professional and technical occupations	10.7%	11.4%	10.8%	12.1%	11.5%	11.0%	9.9%	11.0%	12.8%
Administrative and secretarial occupations	11.3%	13.0%	11.3%	14.5%	11.5%	13.1%	12.7%	11.9%	11.5%
Skilled trades occupations	12.6%	11.4%	9.4%	10.5%	13.0%	12.6%	12.1%	11.9%	11.4%
Caring, leisure and other service occupations	10.3%	9.4%	9.0%	9.0%	10.6%	10.4%	10.0%	10.2%	9.3%
Sales and customer	9.2%	11.1%	11.4%	10.7%	8.6%	10.6%	12.3%	10.4%	8.4%

[84] ONS (2011) *Industry 2011* (KS608EW) [online] available at: http://www.nomisweb.co.uk/query/construct/submit.asp?forward=yes&menuopt=201&subcomp

service occupations									
Process plant and machine operatives	10.2%	8.3%	6.3%	6.9%	7.8%	9.5%	9.9%	8.7%	7.2%
Elementary occupations	12.3%	11.8%	13.4%	10.1%	11.0%	11.7%	13.3%	12.2%	11.1%

In contrast, with the exception of Newcastle upon Tyne and North Tyneside, there are higher proportions of people working in sales and customer service occupations, and also process plant and machine operatives than the national average.

Access and modes of transport

The table below illustrates the various methods employed by those commuting to work. The majority of council areas have lower proportions of residents working from home than national averages. In contrast Northumberland has a higher proportion of working residents who are employed from home compared to the North East and national averages. South Tyneside and Newcastle upon Tyne both show lower proportions of residents commuting by car than the national average. This may reflect that these are large conurbations with more comprehensive public transport networks.

In contrast, the remainder of the areas either have a similar proportion of residents commuting by car to the national average (Gateshead, North Tyneside) or higher than national average proportion of residents commuting by car. The majority of North East council areas also have a higher proportion of residents traveling by bus than national average. Regarding active travel all council areas have lower than national average bicycle use. In this respect, Gateshead, Northumberland, and Sunderland show the lowest level of bike use. In contrast travel by foot is broadly comparable to national average.

Table: Method of travel to work[85]

	County Durham	Gateshead	New-castle upon Tyne	North Tyne-side	Northumberland	South Tyne-side	Sunderland	North East	England
Work from home	4.2%	3.1%	3.3%	3.4%	6.3%	2.4%	2.5%	3.7%	5.4%
Underground, metro, light rail, tram	0.1%	4.7%	5.4%	9.0%	0.5%	8.9%	2.3%	2.5%	4.1%
Train	0.9%	0.8%	1.2%	1.5%	1.3%	1.7%	0.8%	1.2%	5.3%
Bus, minibus or coach	6.1%	15.4%	18.6%	9.1%	5.2%	9.7%	12.7%	9.3%	7.5%
Taxi	0.7%	0.5%	0.9%	0.8%	0.4%	0.5%	0.7%	0.8%	0.5%
Motorcycle/ scooter/ moped	0.5%	0.4%	0.3%	0.5%	0.5%	0.5%	0.4%	0.4%	0.8%
Car or van	67.7%	57.4%	47.6%	57.5%	65.4%	56.6%	60.9%	61.7%	57.0%
Bicycle	1.0%	1.5%	2.8%	2.5%	1.5%	2.2%	1.3%	1.8%	3.0%
On foot	10.4%	9.2%	13.4%	8.3%	11.5%	9.4%	9.8%	10.6%	10.7%
Other method	0.6%	0.6%	0.7%	1.0%	1.0%	2.0%	0.8%	0.9%	0.6%

[85] ONS (2011) Census 2011, Method of Travel to Work (QS701EW)

Population: Summary of Future Baseline

The slow rate of population growth in the North East, and in some areas, population decline is likely to continue. This will exacerbate the comparatively older population age structure than national average. As such it is important to support, create, and maintain future employment opportunities in the area to ensure older residents are supported, and the population age structure remains balanced. An effective transport system across the counties has a strong role to play ensuring a strong local economy and encouraging young people to move to, and stay within, the area.

Human Health: Summary of Current Baseline

Deprivation

Deprivation can directly affect people's health, and as such is an important determinant of general health of the population. There are a number of methods for estimating levels of deprivation. The 2011 census statistics measure deprivation across four 'dimensions' of deprivation[86] including: any member of a household not a full-time student is either unemployed or long-term sick; education (no person in the household has at least level 2 education, and no person aged 16-18 is a full-time student); health and disability (any person in the household has general health 'bad or 'very bad' or has a long term health problem); and housing (household's accommodation is either overcrowded, with an occupancy rating -1 or less, or is in a shared dwelling, or has no central heating).

Table: Households by deprivation dimensions

	Not deprived in any dimension	Deprived in 1 dimension	Deprived in 2 dimensions	Deprived in 3 dimensions	Deprived in 4 dimensions
County Durham	39.3%	30.8%	23.2%	6.4%	0.3%
Gateshead	38.8%	31.2%	22.6%	6.9%	0.4%
Newcastle	40.5%	31.2%	20.7%	6.9%	0.6%
North Tyneside	43.4%	31.1%	20.0%	5.2%	0.4%
Northumberland	43.6%	32.4%	19.3%	4.4%	0.3%
South Tyneside	36.5%	32.3%	23.7%	7.0%	0.5%
Sunderland	35.7%	31.9%	24.4%	7.4%	0.5%
North East	39.7%	31.6%	22.0%	6.3%	0.4%
England	42.5%	32.7%	19.1%	5.1%	0.5%

The table above shows household deprivation information across the North East, and England averages. Northumberland and North Tyneside have proportionally fewer households which are deprived in any dimension compared to the national average, while the remainder of the North East council areas have proportionally more. As such, all council areas have more households deprived in 2 and 3 dimensions than the national average. This suggests that overall, residents within the North East are more likely to experience deprivation than in other areas of the country.

Deprivation can also be measured using the English Indices of Deprivation (IMD)[87] which is a relative measure of deprivation mapped at the Lower Super Output (LSOA). LSOAs are statistical geographical areas with an average of approximately 1,500 residents.

[86] ONS (2011) Census 2011, Households by Deprivation Dimensions, 2011 (QS119EW)
[87] DCLG (2015) English indices of deprivation 2015 [online] available at: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015

There are 32,844 LSOAs in England. These are ranked from most deprived to least deprived whereby the LSOA with a rank of 1 is the most deprived, and the LSOA with a rank of 32,844 is the least deprived.

This information can then be divided into ten equal groups and displayed as deciles. LSOAs in decile 1 fall within the most deprived 10% of LSOAs nationally and LSOAs in decile 10 fall within the least deprived 10% of LSOAs nationally.

Figure 11.1 displays the average LSOA deprivation level across the North East authorities as deciles. County Durham, South Tyneside, and Sunderland all have a score of 4 which shows, on average, that the LSOAs within these authorities are in the 40% most deprived nationally. Newcastle and Gateshead both show slightly lower levels of deprivation as they sit on average within the 5th decile, while North Tyneside and Northumberland show the lowest levels of deprivation as these sit within the 6th decile.

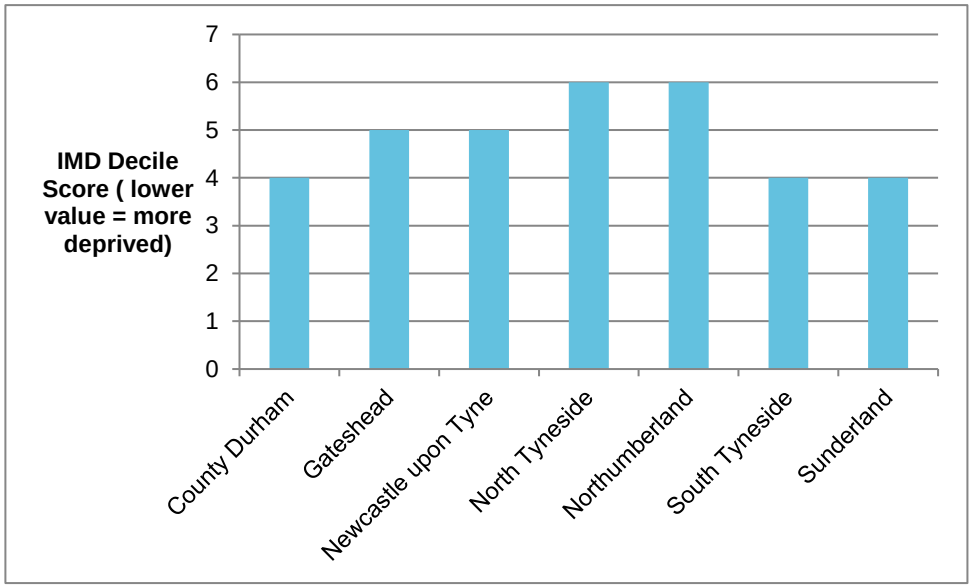


Figure 11.1: Average LSOA deprivation score across the North East authority areas

The values given here are averages across the whole of each council area, and as such, there will be LSOAs within each of these authorities with higher levels or lower levels of deprivation than these averages would suggest.

Figure 13.1 below presents a map of the overall distribution of Indices of Multiple Deprivation in the North East.

Life expectancy

Figure 11.2 shows the life expectancy at birth for males and females across the North East council areas and England averages.

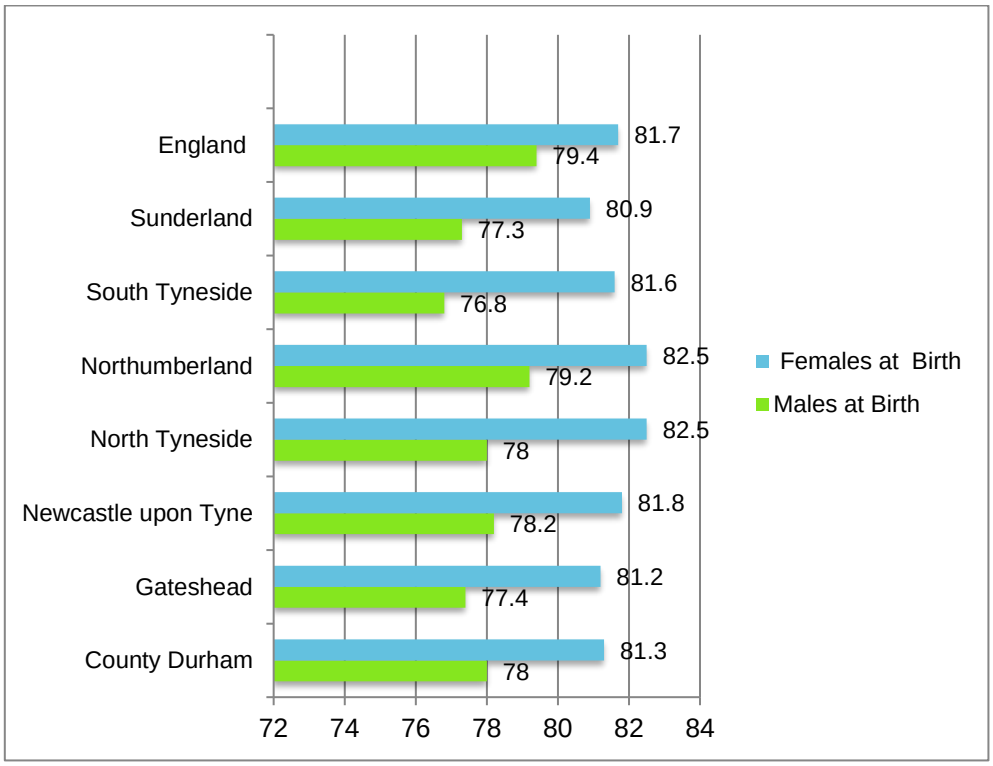


Figure 11.2: Life expectancy at birth for males and females[88]

Northumberland and North Tyneside both have female life expectancy rates which are slightly longer than the national average, with a male life expectancy which is slightly shorter. The remainder of the North East council areas all have female life expectancy rates which are slightly shorter or comparable to the national average whereas male life expectancy is significantly shorter. South Tyneside is the area with the lowest male life expectancy, which is 2.6 years shorter than the national average.

Proportion of the population in good health

Figure 11.3 displays the proportion of the population within each category of health. With the exception of Newcastle, all areas have a lower proportion of residents who consider themselves to be in very good health than the national average. Correspondingly all areas have a higher proportion of people who consider themselves to be in bad health. Sunderland has the highest proportion of residents who consider themselves in bad, or very bad health.

Broadly speaking there is a similar proportion of people in fair health across all areas and this is slightly above the national average.

[88] Public Health England (2013) *Health Profiles* [online] available at: http://fingertips.phe.org.uk/profile/health-profiles/data#page/0/gid/1938132695/pat/6/par/E12000001/ati/101/are/E06000047/iid/90641/age/1/sex/4

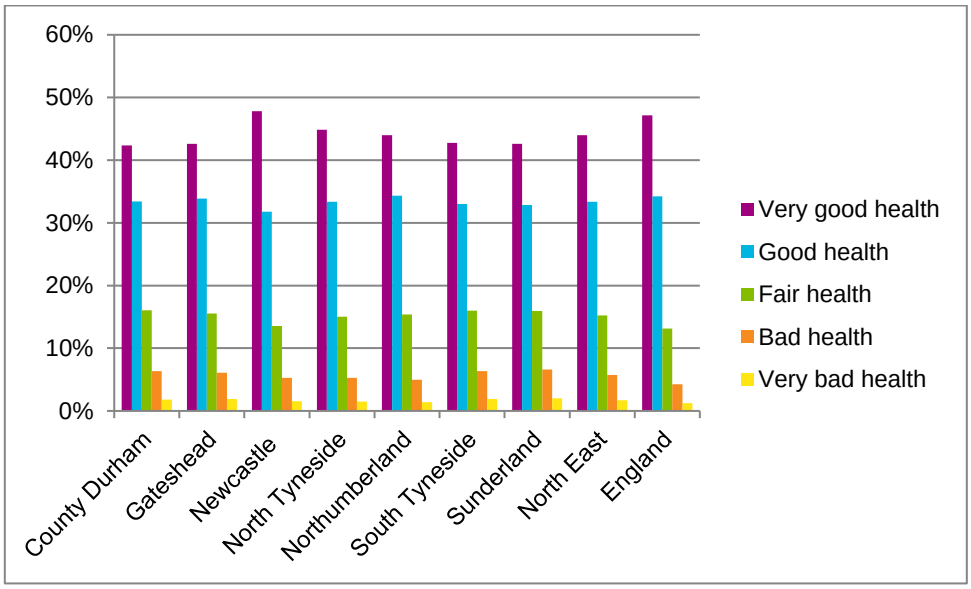


Figure 11.3 Population within each health category

Disability

The table below displays the prevalence of disability across residents in the North East council areas, as well as the North East and England averages. All council areas have a higher proportion of residents than the national average whose day to day activities are limited a lot by disability. Correspondingly all council areas have a lower proportion of residents whose day to day activities are not limited by disability than the national average.

Table: Disability[89]

	Day-to-day activities limited a lot	Day-to-day activities limited a little	Day-to-day activities not limited
County Durham	12%	11%	76%
Gateshead	11%	11%	78%
Newcastle upon Tyne	10%	9%	81%
North Tyneside	10%	11%	79%
South Tyneside	12%	11%	77%
Sunderland	12%	11%	77%
North East	11%	11%	78%
England	8%	9%	82%

Obesity

The table below shows the proportion of adults classed as obese, and those that smoke in the North East and in England. Newcastle upon Tyne has a significantly lower proportion (20.5%) of obese adults than the national average (26.7%). North Tyneside and Northumberland also have slightly lower proportions of obese adults than national averages. In contrast, the remainder of the council areas all have a higher than national average proportion of obese adults. Sunderland has the highest levels of obesity at 28.6% of residents.

[89] ONS (2011) Census 2011, QS303EW - Long-term health problem or disability

Table: Adult obesity and smoking levels[90]

	County Durham	Gates-head	New-castle upon Tyne	North Tynesid e	Northu mberlan d	South Tynesid e	Sunder-land	North East	England
Adult Obesity	27.3%	27.2%	20.5%	25.4%	26.3%	27.5%	28.6%	26.7%	27.3%
Adult Smokers	20.6%	21.0%	19.6%	18.6%	16.5%	19.5%	22.8%	18.0%	20.6%

In Northumberland 16.5% of residents smoke. This is lower than the national average of 18.0%. However, the other North East council areas have proportionally higher levels of smoking than the national average. Sunderland has the highest proportion with 22.8% of residents smoking.

Human Health: Summary of Future Baseline

Between 2000 and 2013 Life expectancy at birth in the North East increased by 2.4 years for females and 3.5 years for males.[91] This increase in life expectancy is likely to continue (although it should be noted that recently, improvements have stalled). With a proportionally older population ailments associated with age such as cancer and dementia are likely to place an increasing burden on health care[92].

An ageing population may increase the prevalence of disability in the population – which is currently higher than the national average; and the high proportion of smoking and obesity in some parts of the North East may also increase burden on healthcare. Deprivation in the North East council areas is also higher than the national average, and without improved access to socio-economic opportunities in the area, this may continue.

Equalities baseline

The baseline provides a profile of people within the North East with Protected Characteristics and provides an evidence base for particular issues identified that are likely to affect these groups. The baseline data draws on the population and health data discussed above, with additional information also included.

Age: young people and older people

All seven North East council areas have a slightly lower proportion of young people (less than 15 years old) in their population structures than the national average of 19%. The majority of council areas within the North East are comparable with the national average of residents within the 16-24 age group (12%); however both North Tyneside and Northumberland have a slightly lower proportion of residents within this group (10%). In contrast, Newcastle upon Tyne shows a significantly higher proportion (20%).

The national average within the 45-59 age group is 19% and the North East average is 21%. With the exception of Newcastle upon Tyne (17%) all other council areas have a higher proportion of residents within this age category than the national average; of these Northumberland has the highest at 28%.

The same pattern occurs in the proportion of the population over the age of 60; the England average for this age group is 22%, while Newcastle has a lower proportion than this (19%), the remainder of the North East council areas have a higher number of old people within their population structures. Northumberland again has the highest proportion (28%).

In summary, North East council areas generally have a lower proportion of younger people and a higher proportion of older people than the national average. The exception to this is the conurbation of

[90] Public Health England (2014) *Health Profiles* [online] available at: http://fingertips.phe.org.uk/profile/health-profiles/data#page/0/gid/1938132694/pat/6/par/E12000001/ati/101/are/E06000047/iid/90641/age/1/sex/4
[91] Ibid23
[92] Select Committee on Public Service and Demographic Change (2013) Ready for Ageing? [online] available at: http://www.parliament.uk/business/committees/committees-a-z/lords-select/public-services-committee/report-ready-for-ageing/

Newcastle upon Tyne, which has a significantly higher proportion of younger people and a slightly lower proportion of older people than the national average.

BAME

With the exception of Newcastle upon Tyne, the council areas in the North East have a significantly higher proportion of residents who identify as white British than the national average. Subsequently there are a proportionally lower number of residents belonging to a BAME group in the majority of the council areas than the national average; however, Newcastle has comparable, and in some cases higher numbers, of residents identifying as Bangladeshi, 'other' Asian, or Arab than the national average. Additionally, Newcastle also has a significantly higher Chinese population (2.15%) compared to the national average of 0.72%. This is presented in the table below.

Table: Ethnic Groups[93]

	County Durham	Gates-head	New-castle upon Tyne	North Tyne-side	Northu m-berland	South Tyne-side	Sunder-land	North East	England
White: British	96.58%	94.08%	81.92%	95.09%	97.17%	95.07%	94.81%	93.63%	79.75%
White: Irish	0.24%	0.30%	0.65%	0.30%	0.26%	0.21%	0.22%	0.31%	0.98%
White: Gypsy or Irish Traveller	0.09%	0.04%	0.06%	0.01%	0.05%	0.01%	0.03%	0.06%	0.10%
White: Other White	1.25%	1.85%	2.86%	1.23%	0.94%	0.65%	0.87%	1.33%	4.58%
White and Black Caribbean	0.19%	0.21%	0.30%	0.22%	0.16%	0.22%	0.20%	0.23%	0.78%
White and Black African	0.06%	0.13%	0.31%	0.19%	0.07%	0.15%	0.09%	0.14%	0.30%
White and Asian	0.21%	0.26%	0.57%	0.30%	0.20%	0.30%	0.22%	0.31%	0.63%
Other Mixed	0.14%	0.18%	0.35%	0.19%	0.10%	0.22%	0.14%	0.19%	0.53%
Asian/ Asian British: Indian	0.27%	0.46%	1.81%	0.55%	0.30%	0.43%	0.63%	0.61%	2.63%
Asian/ Asian British: Pakistani	0.09%	0.31%	2.27%	0.16%	0.11%	0.29%	0.24%	0.76%	2.10%
Asian/ Asian British: Bangladeshi	0.05%	0.12%	1.67%	0.34%	0.09%	1.04%	0.75%	0.42%	0.82%
Asian/Asian British: Chinese	0.31%	0.53%	2.15%	0.43%	0.14%	0.16%	0.56%	0.55%	0.72%

[93] ONS (2011) - KS201EW - Ethnic group [online] available at: http://www.nomisweb.co.uk/home/search.aspx?context=&term=KS201EW

	County Durham	Gates-head	New-castle upon Tyne	North Tyne-side	Northu m-berland	South Tyne-side	Sunder-land	North East	England
Asian/Asian British: Other	0.23%	0.45%	1.76%	0.42%	0.20%	0.31%	0.48%	0.53%	1.55%
Black /Black British: African	0.09%	0.45%	1.66%	0.29%	0.06%	0.21%	0.39%	0.42%	1.84%
Black/ /Black British: Caribbean	0.03%	0.04%	0.08%	0.05%	0.04%	0.04%	0.04%	0.05%	1.11%
Black /Black British: Other Black	0.02%	0.04%	0.10%	0.03%	0.01%	0.03%	0.04%	0.04%	0.52%
Arab	0.09%	0.14%	0.93%	0.09%	0.02%	0.38%	0.11%	0.23%	0.42%
Any other ethnic group	0.07%	0.40%	0.53%	0.12%	0.06%	0.27%	0.20%	0.20%	0.62%

Disabled people

All council areas in the North East have a higher proportion of residents whose day to day activities are limited a lot by disability than the national average. The areas which have particularly high prevalence of disability are Sunderland, South Tyneside, and County Durham. These all have disability rates 4% higher than the national average.

Newcastle upon Tyne has a higher proportion of people whose day to day activities are not limited by disability than the national average; however the remainder of the council areas in the North East have a lower proportion of residents whose day to day activities are not limited by disability than the national average. The table below displays the prevalence of disability across residents in the North East.

Sex/gender

The Equalities Act requires the assessment to investigate different barriers to, and potential for, advancing equality of opportunities for all across genders. The table below shows that the majority of council areas in the North East have a similar proportion of male to females as the national average (49% male, 51% female). However, although Newcastle has an even split between the genders, both North Tyneside and South Tyneside show a slightly lower number of males (48%) and correspondingly higher proportion of females (51%).

Table: Population structure, male to female numbers

Council area	Males	Females
County Durham	49%	51%
Gateshead	49%	51%
Newcastle upon Tyne	50%	50%
North Tyneside	48%	52%
Northumberland	49%	51%
South Tyneside	48%	52%
Sunderland	49%	51%
North East	49%	51%
England	49%	51%

The Equalities Act also requires the public authority to protect the rights of and advance equality of opportunity for those who have undergone gender reassignment. However, there is currently no data on this available for the North East. Regarding the estimation of the proportion of Transgender people within a population; a 2008 report[94] produced for the European Region of the International Lesbian and Gay Association notes:

"There is simply no publicly available statistical data on which to make a firm statement. Estimates range from about 1 in 11,000 to as many as 1 in 20 in the male population"

The report notes that there are many difficulties in getting an accurate population measurement, such as defining the criteria by which the population is measured. On this basis it is likely that a detailed population figure can only be attained through survey work. In the context of the NETP, it is unlikely that people having undergone gender reassignment/ transgender people will experience significant equalities effects.

Sexual orientation

The Plan will also need to consider equalities effects on the lesbian, gay, bisexual population of the North East area. The ONS Integrated Household Survey (IHS) recently introduced questions on sexual orientation. Experimental data from the 2014 survey indicates that across the UK, 1.1% of adults identify as gay or lesbian, 0.5% as bisexual, and 0.3% as 'other'. London as a region has the largest proportion of adults identifying as Lesbian, Gay, or Bisexual (LGB), at 3.2%. However no data specific to the North East is available from this survey.[95] It is unlikely that groups with this protected characteristic will experience significant equality effects from the NETP.

Religion

The table below shows the proportion of residents belonging to different religious groups located in the council areas of the North East, the North East region as a whole, and England. With the exception of Newcastle upon Tyne, councils within the North East have a higher proportion of residents identifying as Christian than the national average of 59.38%. In contrast, Newcastle upon Tyne and North Tyneside both have a higher proportion of residents who identify has having no religion compared to the North East and national averages. Broadly speaking, there are lower proportions of residents belonging to other religions across the North East than the national average; however Newcastle upon Tyne has a higher proportion of Muslim residents (6.27%) than the North East (1.8%) and England (5.02%).

[94]Transgender EuroStudy: Legal Survey and Focus on the Transgender Experience of Health Care (2008) [online] available at: http://www.pfc.org.uk/pdf/eurostudy.pdf

[95] ONS (2014) Integrated Household Survey, January to December 2013: Experimental Statistics, [online] available at: http://www.ons.gov.uk/ons/dcp171778_379565.pdf

Table: Religious Groups[96]

	County Durham	Gateshead	Newcastle upon Tyne	North Tyneside	Northumberland	South Tyneside	Sunderland	North East	England
Christian	72.04%	66.97%	56.44%	63.84%	68.56%	70.27%	70.29%	67.52%	59.38%
Buddhist	0.20%	0.21%	0.61%	0.22%	0.18%	0.15%	0.20%	0.24%	0.45%
Hindu	0.12%	0.25%	1.12%	0.26%	0.11%	0.17%	0.22%	0.30%	1.52%
Jewish	0.04%	1.50%	0.24%	0.05%	0.05%	0.04%	0.03%	0.17%	0.49%
Muslim	0.38%	1.05%	6.27%	0.74%	0.32%	1.93%	1.32%	1.80%	5.02%
Sikh	0.12%	0.18%	0.44%	0.18%	0.16%	0.29%	0.30%	0.23%	0.79%
Other religion	0.30%	0.26%	0.27%	0.26%	0.31%	0.24%	0.19%	0.26%	0.43%
No religion	20.90%	23.85%	28.32%	28.09%	23.93%	21.09%	21.91%	23.40%	24.74%
Religion not stated	5.92%	5.73%	6.30%	6.37%	6.38%	5.82%	5.55%	6.08%	7.18%

Rurality Baseline

Spatial pattern of rural and urban areas

The following section provides an overview of the rural-urban classification, or the 'rurality'. This term refers to the extent to which an area has been classed as urban or rural. For the purposes of this report the 2011 Rural-Urban Classification for output areas in England has been used.[97]

The 2011 Rural-Urban Classification classed urban areas as those which are connected built up areas identified by Ordnance Survey mapping, and that have resident populations above 10,000 people. Rural areas are those that are not urban, i.e. consisting of settlements below 10,000 people, or are open countryside. **Figure 13.2** displays the 'rurality' of the North East. This is shown at the Lower Super Output Area (LSOA) scale and has been split into urban and rural areas, both sparse and not sparse. The hierarchal structure of this classification is shown in **Figure 13.1**.

[96]ONS (2011) - KS209EW – Religion [online] available at: http://www.nomisweb.co.uk/home/search.aspx?context=&term=religion

[97] Office for National Statistics (2011) Rural Urban Classification [online] available at: https://www.gov.uk/government/collections/rural-urban-classification [accessed 05/03/20]

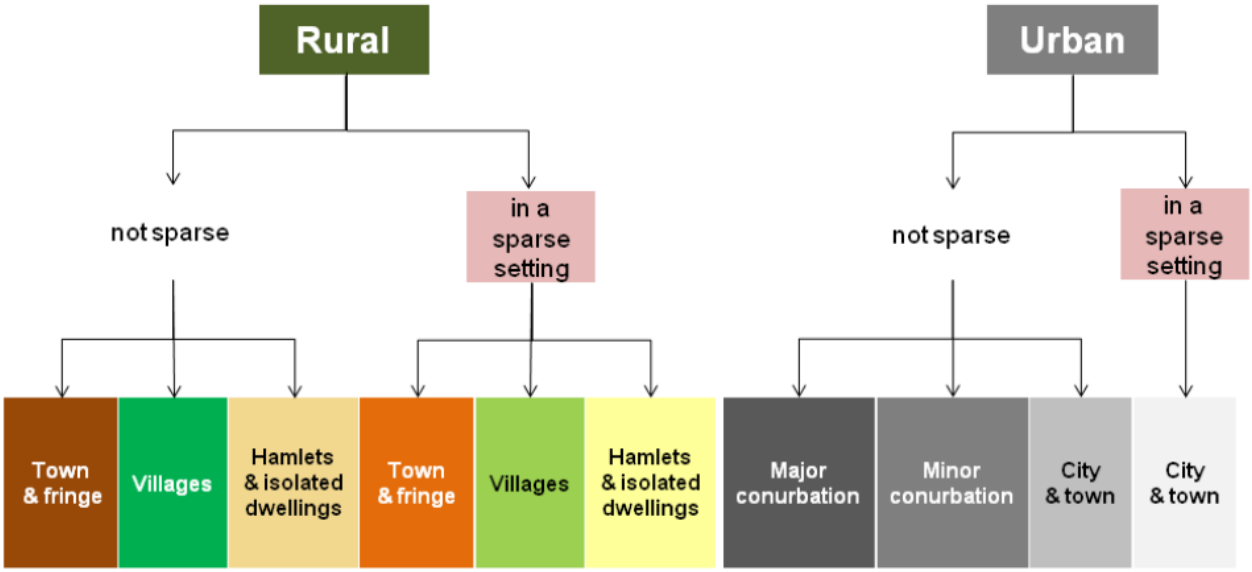


Figure 13.1: Hierarchy of the 2011 Rural-Urban Classification[98]

Northumberland shows the highest proportion of land area which is classified as 'rural', 'sparse' and less sparse village hamlet' and 'isolated dwellings', as well as 'sparse town and fringe' comprising the majority of the county. County Durham shows the next highest proportion of rurality, and with the highest proportion of 'less sparse town and fringe' settlements.

Sunderland, with the exception of a small area of less sparse town and fringe, is entirely covered by land classed as urban. South Tyneside is classed as entirely urban, while the majority of North Tyneside is also urban with small areas of town and fringe. Newcastle upon Tyne and Gateshead are composed predominantly of urban areas with smaller areas classed as less sparse town and fringe, and less sparse village hamlets and isolated dwellings.

[98] Office for National Statistics (2013) The 2011 Rural-Urban Classification For Small Area Geographies: A User Guide and Frequently Asked Questions (v1.0) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/239478/RUC11user_guide_28_Aug.pdf [accessed 05/03/20]

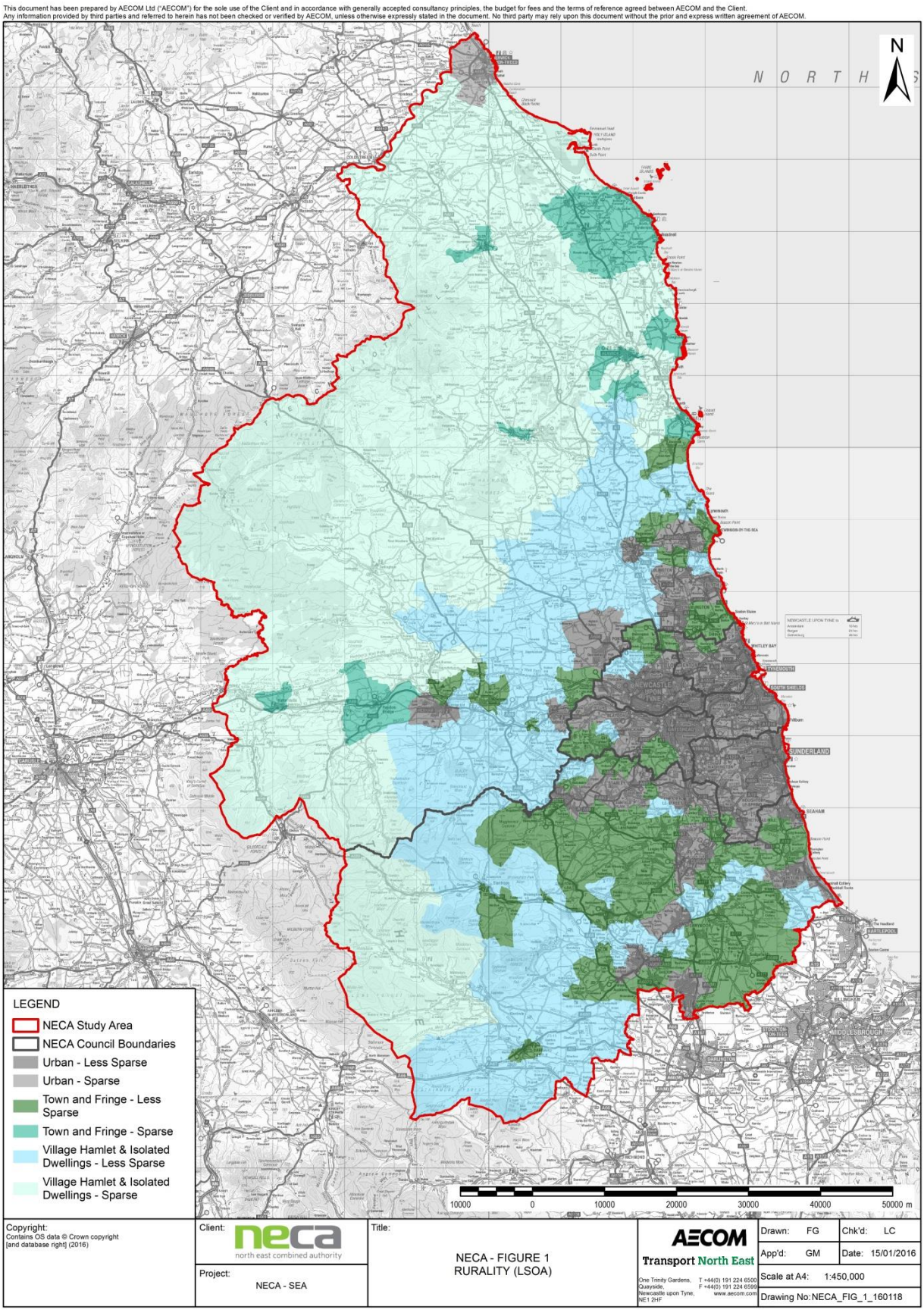


Figure 13.2: Rurality of the North East

Method of travel to work

The table below shows the methods of travel to work within the North East and national averages, split between urban and rural residents. Headline findings show that across the board more residents in rural areas work from home than in urban areas. The largest proportions of these are found in County Durham, Northumberland and Gateshead. Car usage is also higher across rural council areas than those in urban areas. A higher proportion of residents are generally found to travel on foot or by bicycle in urban areas than rural ones – which may be a reflection of shorter travel times and distances. With the exception of North Tyneside, bus travel is also lower in rural areas.

Table: Rural/urban methods of travel to work

Urban methods of travel to work

	County Durham	Gates-head	Newcastle upon Tyne	North Tyne-side	Northum berland	South Tyne-side	Sunder-land	England
Work from home	3.3%	2.9%	3.3%	3.4%	3.8%	2.4%	2.5%	4.5%
Underground/metro/tram	0.2%	5.1%	5.4%	9.3%	0.4%	8.9%	2.3%	4.9%
Train	1.0%	0.8%	1.2%	1.6%	1.2%	1.8%	0.8%	5.8%
Bus, minibus or coach	6.3%	15.6%	18.7%	8.9%	6.3%	9.7%	12.7%	8.6%
Taxi	0.8%	0.5%	0.9%	0.9%	0.5%	0.5%	0.7%	0.6%
Motorcycle/scooter/moped	0.4%	0.4%	0.3%	0.5%	0.5%	0.5%	0.4%	0.8%
Car or van	65.9%	56.6%	47.3%	57.1%	65.2%	56.6%	60.8%	54.5%
Bicycle	1.2%	1.5%	2.8%	2.5%	1.7%	2.2%	1.3%	3.2%
On foot	12.2%	9.5%	13.6%	8.5%	12.4%	9.4%	9.8%	11.3%
Other method	0.7%	0.6%	0.7%	1.1%	0.8%	2.0%	0.8%	0.6%

Rural methods of travel to work

	County Durham	Gates-head	Newcastle upon Tyne	North Tyne-side	Northum berland	South Tyne-side	Sunder-land	England
Work from home	5.3%	5.6%	4.4%	3.2%	9.0%	4.2%	4.9%	9.5%
Underground/metro/tram	0.1%	0.4%	3.3%	2.4%	0.5%	7.4%	0.0%	0.3%
Train	0.7%	0.6%	0.8%	0.5%	1.4%	0.7%	0.6%	3.1%
Bus, minibus or coach	5.9%	12.4%	12.4%	13.1%	4.0%	8.1%	9.6%	2.4%
Taxi	0.5%	0.5%	0.6%	0.4%	0.3%	0.4%	0.4%	0.2%
Motorcycle/scooter/moped	0.5%	0.6%	0.5%	0.8%	0.5%	1.1%	0.1%	0.7%
Car or van	69.7%	66.4%	62.8%	66.3%	65.6%	57.0%	70.5%	68.6%
Bicycle	0.7%	1.2%	1.7%	1.9%	1.2%	2.5%	1.2%	1.7%
On foot	8.4%	5.3%	6.5%	4.4%	10.6%	9.9%	4.3%	8.2%
Other method	0.6%	0.6%	1.3%	0.8%	1.1%	1.4%	0.7%	0.7%

Population age structure

The table below displays the population structure across the North East and in England for both rural and urban areas. Headline findings show that across all council areas within the North East there is a lower proportion of the population in the 0-15 age group in rural areas than urban ones, with the exception of South Tyneside. This difference is most pronounced in Sunderland and Northumberland.

This trend continues through the 16-24 and 25-44 age groups. In contrast there are slightly more residents in the 45-59 age group in rural areas than urban ones, and significantly more over the age of 60. This difference is most pronounced in Newcastle upon Tyne, North Tyneside and Sunderland.

Table: Rural/urban population structure

Urban Population Structure

	County Durham	Gates-head	Newcastle upon Tyne	North Tyneside	Northumberland	South Tyneside	Sunderland	England
0-15	17.1%	17.8%	17.1%	17.9%	18.0%	17.5%	17.5%	19%
16-24	13.9%	11.0%	20.0%	10.0%	10.5%	11.5%	12.4%	12%
25-44	24.7%	27.6%	26.8%	27.1%	23.9%	24.5%	25.3%	28%
45-59	20.4%	20.0%	17.4%	21.3%	21.6%	21.9%	21.2%	19%
60+	23.8%	23.6%	18.7%	23.7%	26.0%	24.6%	23.5%	22%

Rural Population Structure

	County Durham	Gateshead	Newcastle upon Tyne	North Tyneside	Northumberland	South Tyneside	Sunderland	England
0-15	17.2%	16.8%	17.8%	15.9%	15.9%	18.5%	13.7%	19%
16-24	10.1%	9.7%	9.0%	8.1%	8.9%	13.5%	8.4%	12%
25-44	24.7%	23.6%	25.3%	22.7%	21.6%	26.1%	23.4%	28%
45-59	21.9%	22.4%	21.1%	20.7%	23.6%	20.8%	24.5%	19%
60+	26.2%	27.4%	26.8%	32.6%	29.9%	21.1%	29.9%	22%

Prevalence of disability

The table below displays the extent to which disability limits day to day activities in the North East and in England, for both rural and urban areas. With the exception of South Tyneside, across the board more residents feel that their day to day activities are not limited by disability in urban areas than in rural areas. While conversely, With the exception of South Tyneside, a slightly higher proportion of residents living in rural areas feel that their day to day activities are limited a lot by disability when compared to those living in urban areas. South Tyneside is again the exception to this, as a higher proportion of urban residents feel that their day to day activities are limited a lot by disability than in rural South Tyneside.

Table: Rural/urban disability prevalence

Urban disability prevalence			
	Day-to-day activities limited a lot	**Day-to-day activities limited a little**	**Day-to-day activities not limited**
County Durham	12.1%	11.2%	76.7%
Gateshead	11.4%	10.7%	77.9%
Newcastle upon Tyne	9.5%	9.2%	81.3%
North Tyneside	10.1%	10.4%	79.5%
South Tyneside	12.3%	11.0%	76.7%
Sunderland	12.4%	11.0%	76.6%
England	8.4%	9.2%	82.4%
Rural disability prevalence			
	Day-to-day activities limited a lot	**Day-to-day activities limited a little**	**Day-to-day activities not limited**
County Durham	12.5%	11.6%	75.9%
Gateshead	11.8%	11.2%	77.1%
Newcastle upon Tyne	11.6%	11.4%	77.0%
North Tyneside	10.7%	12.7%	76.5%
South Tyneside	8.7%	8.7%	82.7%
Sunderland	12.6%	11.0%	76.4%
England	7.8%	10.0%	82.2%

Using ONS statistics, deprivation is discussed in the context of household deprivation dimensions which measure deprivation across four 'dimensions' of deprivation[99] including: any member of a household not a full-time student who is either unemployed or long-term sick; education; health and disability; and housing deprivation. The table below sets out these deprivation dimensions in the North East for both rural and urban households.

Headline findings from this data show that Northumberland, South Tyneside, and Sunderland all have slightly higher proportions of rural households which do not experience any dimension of deprivation compared with urban ones. In contrast County Durham, Newcastle, North Tyneside, and Gateshead all have higher proportions of urban households which do not experience any dimension of deprivation compared with rural ones.

[99] ONS (2011) Census 2011, Households by Deprivation Dimensions, 2011 (QS119EW)

Looking at data for households which are deprived in 3 and 4 dimensions, across the board urban areas show higher proportions of deprived households, this difference is most marked in Gateshead and South Tyneside.

Table: Rural/urban household deprivation dimensions

Urban deprivation					
	Not deprived in any dimension	**Deprived in 1 dimension**	**Deprived in 2 dimensions**	**Deprived in 3 dimensions**	**Deprived in 4 dimensions**
County Durham	39.4%	30.7%	23.1%	6.5%	0.3%
Gateshead	38.7%	31.2%	22.6%	7.1%	0.5%
Newcastle	40.6%	31.1%	20.7%	6.9%	0.7%
North Tyneside	43.5%	30.9%	19.9%	5.3%	0.4%
Northumberland	42.3%	32.0%	20.2%	5.2%	0.3%
South Tyneside	36.5%	32.3%	23.7%	7.0%	0.5%
Sunderland	35.7%	31.9%	24.4%	7.5%	0.5%
Rural deprivation					
	Not deprived in any dimension	**Deprived in 1 dimension**	**Deprived in 2 dimensions**	**Deprived in 3 dimensions**	**Deprived in 4 dimensions**
County Durham	39.2%	30.9%	23.3%	6.3%	0.3%
Gateshead	40.3%	31.9%	22.1%	5.3%	0.3%
Newcastle	39.9%	32.1%	22.1%	5.6%	0.4%
North Tyneside	41.0%	34.2%	21.2%	3.5%	0.1%
Northumberland	45.2%	32.8%	18.2%	3.6%	0.2%
South Tyneside	37.9%	35.2%	23.3%	3.6%	0.0%
Sunderland	38.4%	34.2%	21.5%	6.0%	0.0%

Deprivation can also be measured by the Index of Multiple deprivation (IMD). This is an overall relative measure of deprivation created by combining seven domains of deprivation (Income Deprivation; Employment Deprivation; Education, Skills and Training Deprivation; Health Deprivation and Disability; Crime; Barriers to Housing and Services; and Living Environment Deprivation).

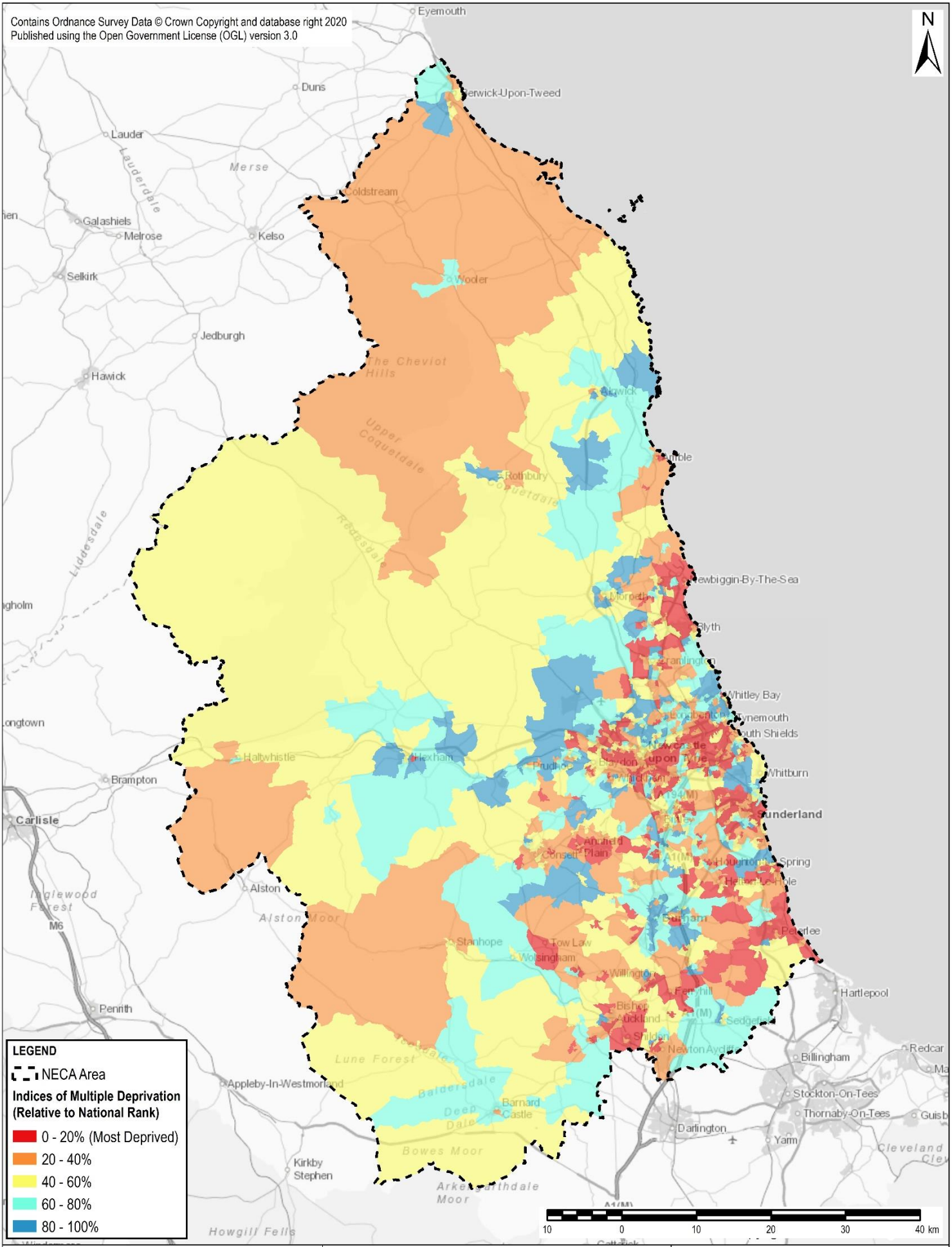
Figure 13.1 displays IMD scores as deciles at the LSOA scale. The deciles are calculated by ranking the 32,844 LSOAs in England from most deprived to least deprived and dividing them into 10 equal

groups. LSOAs in decile 1 fall within the most deprived 10% of LSOAs nationally and LSOAs in decile 10 fall within the least deprived 10% of LSOAs nationally.

As shown in **Figure 13.1** the highest levels of deprivation are concentrated in the south east of the North East, in particular in the 'sparse urban' areas of Sunderland, South Tyneside, and Newcastle upon Tyne, which contain LSOAs that fall within the most 20% deprived nationally.

In Northumberland there are large areas of 'less sparse village hamlet & isolated dwellings', and in County Durham there are larger areas of 'less sparse town and fringes' which both show much lower levels of deprivation. Many of these areas are in the least 30% deprived LSOAs nationally. Conversely, in much of northern Northumberland there are many LSOAs classed as 'sparse village hamlet & isolated dwellings' which are in the 40% most deprived nationally. This particularly relates to the However, this masks significant deprivation issues with regards to access to services and facilities, as reflected by higher IMD scores relating to the 'Barriers to Housing and Services' domain.

From this it can be seen that, generally, areas that are rural but 'less sparse' typically show the lowest levels of deprivation.



LEGEND

- NECA Area
- **Indices of Multiple Deprivation (Relative to National Rank)**
  - 0 - 20% (Most Deprived)
  - 20 - 40%
  - 40 - 60%
  - 60 - 80%
  - 80 - 100%

File Name:I:\5004 - Information Systems\6XX_NECA_Transport_Plan\02_Maps\Figure 13-1 - Indices of Multiple Deprivation.mxd

Project Title/Drawing Title

ISA FOR THE NE TRANSPORT PLAN

INDICES OF MULTIPLE DEPRIVATION

Client: TRANSPORT NORTH EAST STRATEGY UNIT

Drawn	Checked	Approved
CN	TD	NCB
Date	Scale @ A4	Purpose of Issue
13/03/2020	1:650,000	DRAFT

Drawing Number: FIGURE 13.1

Rev: 01

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