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Northumberland Local Transport Plan 3

MAIN HIA REPORT

FINAL DRAFT

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- Healthy public policy
- Evidence-based analysis and evaluation of the health and wellbeing impacts and outcomes of new proposals
- Researching the wider determinants of health and wellbeing
- Tackling environmental and health inequalities
- Healthy urban planning and development
- Urban and rural regeneration and health
- Teaching and training in HIA and healthy public policy

FINAL

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Executive Summary

Introduction

This Health Impact Assessment was commissioned by Northumberland County Council.

The aim of this HIA was to assess the potential positive and negative health and wellbeing impacts of the provisional Northumberland Local Transport Plan 3 (LTP3). The HIA was being carried out alongside a Strategic Environmental Assessment of the provisional LTP3.

The objectives of the HIA were to:

- Analyse the health and wellbeing implications of the proposed LTP3 goals, objectives and interventions particularly inequality/equity issues around provision and access to transport for rural and urban settlements
- Provide a qualitative assessment of the potential health and wellbeing impacts.
- Develop recommendations that will help to minimise the potential negative and maximise the potential positive health and wellbeing impacts of the provisional LTP3.
- Identify suitable health focused indicators to monitor the potential impacts on health and wellbeing alongside the indicators developed for the SEA.

Baseline and Community Profile

Across all the original six Northumberland districts, Alnwick, Berwick-upon-Tweed, Blyth Valley, Castle Morpeth, Tynedale and Wansbeck, the highest proportion of residents are aged 45-64 years. In the rural areas, the second highest proportion of residents are 65 years and over whilst in the urban areas it is 30-44 years. The majority of residents in Northumberland are from a White British background and Christians. Overall married and remarried people make up the biggest proportion of residents with Castle Morpeth having the highest proportion. The proportion of both lone parent households and one person households is highest in Blyth Valley.

Wansbeck has the highest proportion of households with long term limiting illnesses as well as the lowest level of “good” self reported health status. In terms of deprivation, Wansbeck is the most deprived in terms of the Overall Index of Multiple Deprivation. In terms of income, employment, health and disability, education and crime domains, both Wansbeck and Blyth Valley, the urban areas, have the highest deprivation levels. Deprivation in housing and services and living environments is highest across Alnwick, Berwick-upon-Tweed, Castle

Morpeth and Tynedale, the rural areas. Social renting is highest in Blyth Valley and Tynedale and lowest in Castle Morpeth.

The proportion of residents with no qualifications is highest in Wansbeck. Unemployment is highest in Alnwick and Wansbeck. There is no clear pattern in the distribution of occupation groups however Wansbeck has the highest proportion of residents in low income and less skilled occupations.

Rail services are limited to the north-south stretch along the eastern boundary of the county and the east-west stretch along the southern boundary of the county with little provision for settlements in the middle and on the western boundary of the county. There is congestion on many A roads leading to delays.

The most common crime across Northumberland is criminal damage with the highest rates occurring in the South-East area of Northumberland which covers Blyth Valley and Wansbeck.

There are a variety of shops and retail amenities across Northumberland with most of them being within market towns.

Northumberland has a high proportion of contaminated land due to past industrial activity and poor surface water quality mainly due to industrial and agricultural pollution.

Evidence Review

The evidence gathered shows that transport can be both beneficial and negative at global, national, regional and local levels in terms of connectivity and accessibility, active and sustainable living, economic growth, safety, equity and climate change and pollution issues.

The range of interventions proposed in the provisional LTP3 have the potential to improve transport provision in Northumberland however the full potential will only be realised when interventions are integrated and residents have a choice to efficiently combine multiple modes of transport and shift to sustainable ways of travelling.

The general health and wellbeing impacts of the LTP3 are on the following health outcomes and through the health determinants described below.

The three LTP3 relevant Health Outcomes are changes to levels of:

- mental wellbeing
- chronic disease
- injuries and deaths.

The key LTP3 relevant Determinants of Health and Wellbeing (Pathways of Health Impact) are:

- Jobs and economic development
- Access to services and amenities and community severance
- Perceptions of the project e.g. perceived safety and perceived impacts
- Social interaction and recreation
- Social capital, community cohesion and social inclusion
- Physical activity
- Air pollution – particulates, nitrogen oxides, other
- Noise pollution
- Equity/ inequality

Health and wellbeing impacts

Overall, the LTP3 has a strong potential to deliver many major positive health and wellbeing impacts and few negative health and wellbeing impacts for the residents of Northumberland.

Table ES1 provides a summary of the potential health and wellbeing impacts of the LTP3's objectives.

Table ES2 provides a summary of the potential health and wellbeing impacts of the LTP3's proposed interventions.

The positive health and wellbeing impacts are associated with interventions that have the potential to encourage physical activity e.g. improving walk and cycle routes and interventions that encourage use of more sustainable forms of transport e.g. increased frequency and reliability of buses and trains.

The negative health and wellbeing impacts are associated with interventions that have the potential to encourage more private car use e.g. increasing highway capacity and road dualling and interventions that require construction of new transport infrastructure e.g. a new bypass and extending existing train line.

The maximum potential of impacts experienced across Northumberland is likely to depend on the final set of preferred interventions chosen from the proposed set.

Prioritising the intervention themes as follows is likely to be most beneficial to the health and wellbeing of the residents of Northumberland:

- Safer and Healthier Travel
- Improving Access to Services
- Reducing Carbon Emissions
- Supporting Economic Growth
- Quality of Life

Mitigation and enhancement

Highway capacity

Implementation of these interventions would most benefit from the commissioning of a HIA either as a standalone assessment or alongside any proposed Environmental Impact Assessment (EIA).

Junction improvements are likely to be wholly positive and apart from some localised and temporary disruption are likely to have long term positive health and wellbeing impacts.

Bypass roads, road widening and link roads are likely to have significant of negative impacts on those individuals and communities living along these interventions.

Key negatives will be a) uncertainty of whether the scheme will go ahead and whether they will need to relocate; b) potential increases in noise, air pollution, visual intrusion and community severance; and c) maintenance and potential widening of existing inequalities.

Developing a tailored approach including the ability to:

- relocate within the green belt (including planning permission to build a new house);
- good landscaping and planting to screen the road from residents can help to both reduce/filter the visual intrusion, noise and air pollution;
- use of noise abatement technologies; and
- ensuring that existing roads. footpaths, cycleways and bridleways are retained particularly where they connect to residents to key amenities and larger settlements.

Public transport

This set of interventions has the second greatest potential to maximise positive health and wellbeing impacts in the short and long terms.

The key mitigation measure for these is to ensure that the public transport improvements equally benefit those living in poorer communities and that improvements in one part of the public transport system do not lead to reduced services in other parts.

Smarter choices

This set of interventions focuses on behaviour change and this is generally difficult to achieve.

A focus on active approaches e.g. proactive development and monitoring of travel plans for both small and large employers as well as interactive cycle/walking education and activities in schools, neighbourhoods and workplaces is most likely to achieve short and long term behaviour change to more active forms of travel.

This set of interventions will only work well if the Non-Motorised User interventions are well established first.

Freight

This set of interventions is likely to lead to regional level positive health and wellbeing impacts through a reduction in regional level road air pollution and mitigation of the potential impacts of climate change.

Increased rail freight is likely to increase the noise and air pollution from rail freight services particularly if there are increases in night-time journeys. This is likely to negatively affect existing residents living near rail freight lines and stations. Using low noise and electric vehicles is likely to reduce both the noise and air pollution effects.

Non-Motorised Interventions (NMUs)

This set of interventions has the greatest potential to maximise positive health and wellbeing impacts both in the short and long terms.

Ensure that the walking/cycling infrastructure with good safety and maintenance are in place before passive and active forms of marketing and awareness-raising.

Road safety

This set of interventions has the third greatest potential to maximise positive health and wellbeing impacts both in the short and long terms.

Traffic calming measures and improved pedestrian and cycle crossings are likely to have the biggest positive effect on health and wellbeing compared to general or driver education and training and publicity campaigns.

Good traffic calming measures go beyond speed humps but to integrated shared spaces, Home Zones and lower speed limits and perceptual features of the road e.g. road narrowing, chicanes, differing road materials in residential areas and strategic planting, that make motor vehicle drivers slow down in more subtle ways.

Climate change

All the interventions in this theme are important. Those related to walking and cycling routes are most likely to have positive health and wellbeing impacts over the short and long terms.

Miscellaneous

Among this set of interventions improved links between transport and spatial planning, the further development of rural broadband, the wheels to work scheme and support for community transport are likely to have the greatest positive influence on health and wellbeing.

Monitoring & Evaluation

In general, it is difficult to identify routine monitoring health and wellbeing indicators that are:

- sensitive enough to detect the localised changes and
- easy to collect.

This report therefore identifies some possible indirect as well as direct health indicators however some are unlikely to be sensitive enough to detect changes while others will require financial, time and staff resources to collect.

Key health and wellbeing outcome indicators that can be monitored are:

- cardiovascular disease
- diabetes
- obesity
- physical injury
- general wellbeing.

Key determinants of health and wellbeing indicators are:

- Walking
- Cycling
- Community/voluntary transport
- Bus patronage
- Train patronage
- Car use
- Air pollution
- Noise pollution
- Access to bus and train
- Severance

Conclusion

Overall, the proposed set of objectives and interventions strongly align with public health and wellbeing objectives and are likely to have potential positive health and wellbeing impacts on most residents of Northumberland.

These positive health and wellbeing impacts are likely to be realised within the duration of the LTP3, 2011-2026 with a strong potential for these positive impacts to continue beyond this period.

The potential impact of the interventions experienced across Northumberland is likely to depend on the final set of preferred interventions chosen from the proposed set. Prioritising the intervention themes as follows is likely to be most beneficial to the health and wellbeing of the residents of Northumberland:

1. Non Motorised Users
2. Public Transport
3. Road Safety
4. Miscellaneous
5. Climate Change
6. Smarter Choice
7. Freight
8. Highway Capacity

The major negative health and wellbeing impacts are linked to the construction of new roads and rail links and generally occur during the construction phase and on residents who live near the new road or rail routes and the widening of existing road routes. These issues are best considered when more detailed proposals are developed through project-specific environmental and health impact assessments. They are also generally short term, temporary and generally localised.

Table ES1: LTP3 Objectives and Sub-Objectives and their overall potential for positive and/or negative health and wellbeing impacts

(✓ = positive ✗ = negative o = no impact)

LTP3 Objectives	LTP3 Sub-objectives	Potential Health Impact
Goal 1: Support economic growth	• Improve the performance of existing transport networks in those places that show signs of increasing congestion and unreliability • Extend the reach of existing networks where it is needed to meet growing demand	✓✓
Goal 2: Reducing carbon emissions	• Deliver sustainable low carbon travel choices • Strengthen our networks against the effects of climate change and extreme weather events	✓✓
Goal 3: Safer and healthier travel	• Improve safety of the transport network particularly for vulnerable road users • Enable and encourage more physically active and healthy travel	✓✓✓
Goal 4: Improving access to services	• Reduce the barriers preventing people travelling to services and facilities • Reduce the need and distance for people to travel to access services	✓✓✓
Goal 5: Quality of life	• Improving streetscapes and the urban environment	✓✓

Table ES2: LTP3 Interventions and their overall potential for positive and/or negative health and wellbeing impacts

(✓ = positive × = negative o = no impact)

LTP3 Intervention Theme	LTP3 Intervention	Potential Health and Wellbeing Impact	
Highway Capacity	- Morpeth northern bypass	✓✓	××
	- Managing and Maintaining the Network – *Transport asset management*	✓✓	××
	- Blyth Central link road	✓✓	××
	- A193 Cowpen Road corridor, Blyth	✓	××
	- A189 to Battleship Wharf	✓	××
	- A1 improvements	✓	×
	- Increasing network capacity – *A19 (T) junction improvements*	✓	
	- Increasing network capacity – *Telford Bridge, Morpeth*	✓	
Public Transport	- South East Northumberland public transport corridor	✓✓✓	
	- Improving rail travel	✓-✓✓✓	
	- Increase personal safety and security	✓-✓✓	
	- Improve facilities for coach travel	✓✓	
	- Increasing accessibility for the mobility impaired	✓✓-✓✓✓	
	- Improving local bus travel	✓-✓✓✓	
	- Reducing the cost of travel	✓	
	- Widening travel choice	✓	
Smarter Choices	- Travel planning	✓✓✓	
	- Influencing demand	✓✓	
	- Marketing and branding -*Travel awareness campaigns*	✓	
	- Travel planning - *Workplace travel plans*	✓	
	- Sustainable car use - *Car sharing schemes*	✓-✓✓	

LTP3 Intervention Theme	LTP3 Intervention	Potential Health and Wellbeing Impact	
Freight	- Freight	✓	
	- Intra modal freight transport	✓	
Non Motorised Users	Deliver the Sustrans Connect 2 Project		
	- Deliver the Blyth Active Travel scheme	✓✓✓	
	- Active travel choices	✓✓-✓✓✓	
	- Improving travel information	✓-✓✓✓	
	- Hard surfacing and improved drainage on footpaths and cycleways	✓✓✓	
	- Improving walking and cycling for tourist	✓✓	
	- Safer Children and promote cycling	✓✓	
	- Promote cycling	✓✓	
	- Promote walking	✓-✓✓✓	
Road Safety	- Improved safety of the public – transport network	✓-✓✓✓	
Climate Change	- Hard surfacing and improved drainage on footpaths and cycleways	✓✓✓	
	- Capital programme to strengthen infrastructure	✓✓	
	- Maintenance and resurfacing of roads	✓✓	
Miscellaneous	- Reduce the need and distance for people to travel to access services	✓✓✓	
	- Sustainable care use - *Low carbon vehicles*	✓✓	
	- Network management	✓-✓✓	

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1 Introduction

1.1.1 This Health Impact Assessment was commissioned by Northumberland County Council.

1.1.2 The aim of this HIA was to assess the potential positive and negative health and wellbeing impacts of the provisional Northumberland Local Transport Plan 3 (LTP3). The HIA was being carried out alongside a Strategic Environmental Assessment of the provisional LTP3.

1.1.3 The objectives of the HIA were to:

- Analyse the health and wellbeing implications of the proposed LTP3 goals, objectives and interventions particularly inequality/equity issues around provision and access to transport for rural and urban settlements
- Provide a qualitative assessment of the potential health and wellbeing impacts.
- Develop recommendations that will help to minimise the potential negative and maximise the potential positive health and wellbeing impacts of the provisional LTP3.
- Identify suitable health focused indicators to monitor the potential impacts on health and wellbeing alongside the indicators developed for the SEA.

1.1.4 The HIA drew on information and analysis from documents relating to the LTP3 including the Provisional LTP3, the LTP3 evidence base and the LTP3 SEA Scoping Paper.

2 What is Health Impact Assessment

2.1 Introduction

2.1.1 This chapter outlines what health impact assessment (HIA) is and the Institute's ethos and approach to HIA.

2.2 Health Impact Assessment

2.2.1 The international Gothenburg consensus definition of HIA is: "A combination of procedures, methods and tools by which a policy, program or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population[1]."

2.2.2 HIA is a key systematic approach to predicting the magnitude and significance of the possible health and wellbeing impacts, both positive and negative, of new plans and projects.

2.2.3 HIA uses a range of structured and evaluated sources of qualitative and quantitative evidence that includes public and other stakeholders' perceptions and experiences as well as public health, epidemiological, toxicological and medical knowledge.

2.2.4 HIA is particularly concerned with the distribution of effects within a population, as different groups are likely to be affected in different ways, and therefore looks at how health and social inequalities might be reduced or widened by a proposed plan or project.

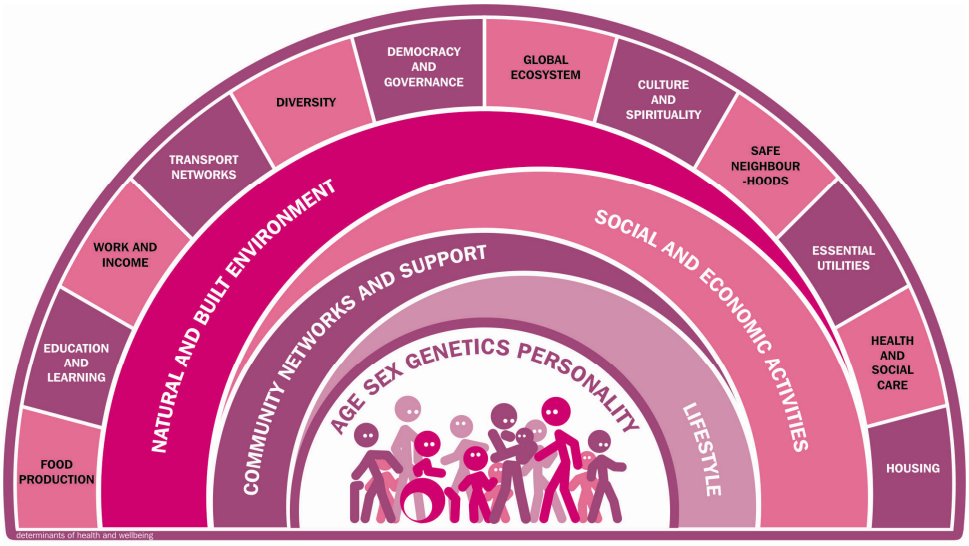
2.2.5 The aim of HIA is to support and add value to the decision-making process by providing a systematic analysis of the potential impacts as well as recommending options, where appropriate, for enhancing the positive impacts, mitigating the negative ones and reducing health inequalities/inequities.

2.2.6 HIA uses both a biomedical and social definition of health, recognising that though illness and disease (mortality and morbidity) are useful ways of measuring health

[1] WHO European Centre for Health Policy. (1999). Health impact assessment: main concepts and suggested approach. Gothenburg consensus paper. WHO Regional Office for Europe.

they need to be fitted within a broader understanding of health and wellbeing to be properly useful (See Figure 2.1).

Figure 2.1: The determinants of health and wellbeing[2]



2.2.7 HIA therefore uses the following World Health Organization psycho-social definition of health: Health is "the extent to which an individual or group is able to realise aspirations and satisfy needs, and to change or cope with the environment. Health is therefore a resource for everyday life, not the objective of living; it is a positive concept, emphasizing social and personal resources, as well as physical capacities[3]."

2.2.8 This definition builds on and is complementary to the longer established World Health Organization definition that "Health is a state of complete physical, social and mental wellbeing and not simply the absence of disease or infirmity[4]".

2.2.9 The general methodology used by IOM is based on established good practice guidance on HIA developed by the English Department of Health and the Devolved Countries in the UK and international agencies such as the International

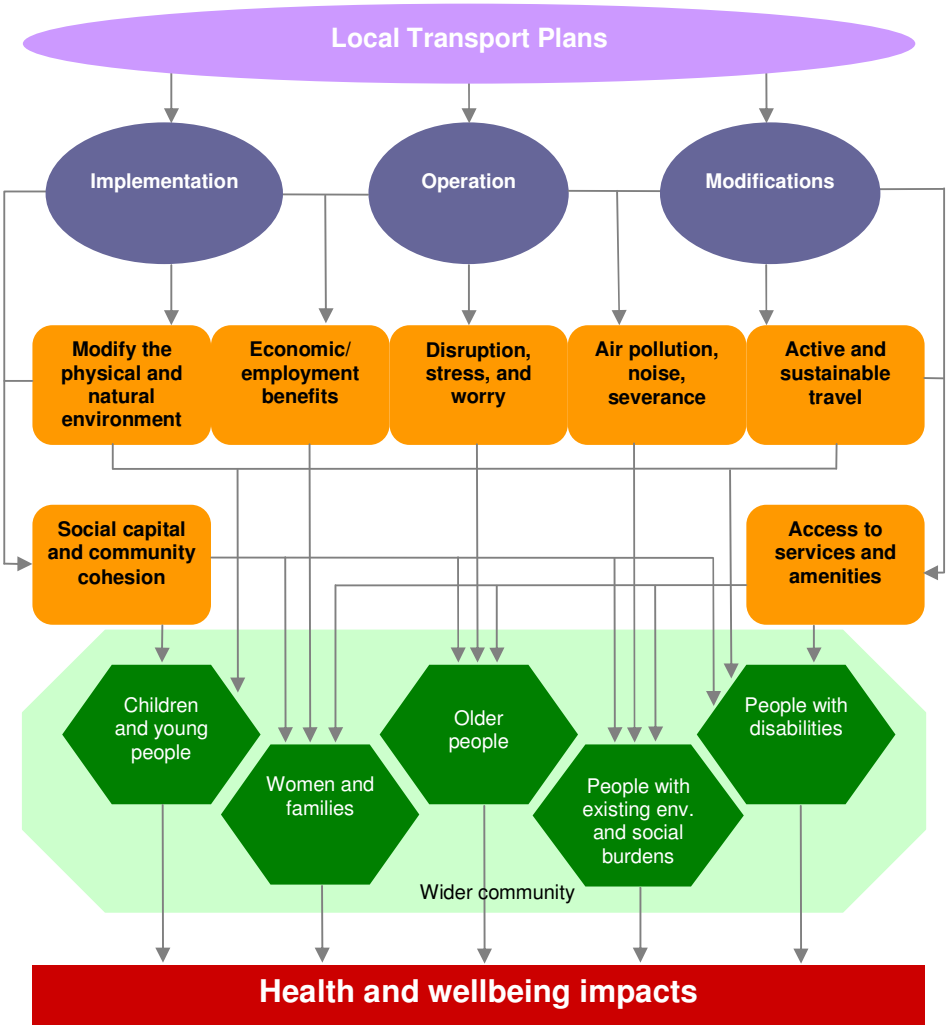
[2] Adapted by Salim Vohra and Dean Biddlecombe. (2006). From Dahlgren G and Whitehead, Policies and strategies to promote social equity in health. Institute of Future Studies. Stockholm. 1991.

[3] World Health Organization. (1984). Health Promotion: A Discussion Document on the Concepts and Principles. WHO Regional Office for Europe. Copenhagen.

[4] World Health Organization. (1948). Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference. New York, 19-22 June 1946, and entered into force on 7 April 1948.

Finance Corporation and the International Association of Impact Assessment.[5] [6] [7] [8] [9] [10] [11]

Fig 2.2: A systems view of a Local Transport Plan and the potential health and wellbeing impacts[12]



[5] Health Development Agency. (2002). Introducing health impact assessment (HIA): informing the decision-making process, England.

[6] NHS Executive. (2000). Resources for HIA: Volumes 1 & 2. England.

[7] Welsh Assembly Government and Health Challenge Wales. (2004). Improving Health and Reducing Inequalities: a practical guide to health impact assessment.

[8] Public Health Institute of Scotland. (2001). HIA: a guide for local authorities; Scottish HIA network; 2001.

[9] International Association for Impact Assessment. Health Impact Assessment International Best Practice Principles. Special Publication Series No. 5. Fargo, USA. 2006.

[10] International Finance Corporation. (2010). Introduction to Health Impact Assessment.

[11] Institute of Public Health in Ireland. (2009). HIA Guidance.

[12] Adapted by Salim Vohra. (2005). From Hirschfield et al; Health impact assessment: measuring the effect of public policy on variation in health. University of Liverpool. 2001.

2.3 A holistic approach to health impacts

2.3.1 This HIA takes a holistic or 'systems view' of potential health impacts and Figure 2.2 shows how this HIA conceptualises the general links between a Local Transport Plan and health and wellbeing impacts.

2.4 HIA steps in Strategic Environmental Assessment (SEA)

Stage A: Setting the context and objectives

2.4.1 Review previous Plan, SEA and related documents.

2.4.2 Develop a set of health and wellbeing focused assessment objectives and potential indicators. These often overlap with the main SEA objectives.

Stage A: Establishing a baseline

2.4.3 Collect health and wellbeing focused baseline information and data including existing health challenges and identifying vulnerable groups.

2.4.4 Review key health evidence.

Stage A: Determine the Scope

2.4.5 Consult Regional and Local Directors of Public Health on the objectives, key health challenges, vulnerable groups and the scope of the assessment

Stage B: Analysing Strategic Alternatives

2.4.6 Analyse the likely health and wellbeing impacts of the Plan against the health-focused assessment objectives.

2.4.7 Identify mitigation and enhancement measures to minimise possible negative health and wellbeing impacts and maximise positive ones.

2.4.8 Identify suitable health and wellbeing indicators to monitor the Plan.

Stage C: Write up the HIA

2.4.9 Develop a draft HIA for the Plan.

Stage D: Consultation and decision-making

2.4.10 Undertake focused stakeholder consultation as part of the main SEA e.g. workshops.

2.4.11 Undertake a wider public consultation as part of the main SEA.

Stage E: Monitoring of implementation

2.4.12 Support the development of a monitoring plan for the likely health impacts.

2.5 General steps in HIA

Screening

2.5.1 This stage assesses the value of carrying out a HIA by examining the importance of a plan or project and the initial significance of any potential health impacts.

Scoping

2.5.2 This stage sets the 'terms of reference' for the HIA i.e. the aspects to be considered, geographical scope, population groups that might need particular focus, what will be excluded from the HIA, how the HIA process will be managed and so on.

Baseline assessment and community profile

2.5.3 This stage uses routine national and local datasets e.g. national census, local surveys, area profiles, and other demographic, social, economic, environmental and health information to develop a community profile, with a strong focus on health and wellbeing issues and the identification of vulnerable groups, as a baseline from which to assess the potential positive and negative impacts and any health inequalities.

Stakeholder consultation and involvement[13]

2.5.4 This stage applies to intermediate and comprehensive HIAs where no previous consultation on a development has taken place. It uses workshops, questionnaires, interviews, surveys and other methods of consultation and involvement. The aim being to engage key stakeholders, in particular local people, in identifying and analysing the potential health and wellbeing impacts; developing mitigation and enhancement measures; and developing options for monitoring and evaluating the identified impacts.

[13] **Rapid HIAs** are rapid desktop analyses that take days or weeks to carry out usually based on the outcome of a stakeholder workshop. **Intermediate In-depth HIAs** are detailed desktop analyses with some focussed stakeholder consultation or feedback, e.g. stakeholder workshops and interviews that take weeks and months to carry out. **Comprehensive In-depth HIAs** are detailed desktop and survey fieldwork based analyses involving representative consultation of stakeholders through surveys, workshops and interviews that take a year or more to carry out.

Evidence and analysis

2.5.5 This stage involves the collation of key evidence and the systematic analysis of the potential impacts, their significance, the groups likely to be most affected and the strength of the evidence for these impacts through the use of tables, matrices and models.

Mitigation and enhancement measures

2.5.6 This stage involves the identification of a range of measures to minimise the potential negative health effects and maximise the positive health benefits identified in the previous stages.

Health impact statement

2.5.7 This stage produces the final HIA report or health statement.

2.5.8 It involves summarising the key conclusions, options and recommendations emerging from the assessment including identifying, where appropriate, monitoring indicators to ensure that health and wellbeing are maintained during the whole lifecycle of a project or plan.

Follow up

2.5.9 This stage involves the active follow up of the project or plan to monitor and evaluate the project or plan including ensuring that mitigation and enhancement measures have been put in place after a project or plan is approved.

2.5.10 It can also involve: a) the development of a detailed Health Management Plan or Health Action Plan; b) presentation of the findings to key professional stakeholders; c) the development and implementation of a health impact or risk communication plan to ensure that local communities fully understand the findings of the HIA and how and why it was carried out; and d) the evaluation of the effectiveness and value of the HIA process itself.

3 Methodology and Scope

3.1 Introduction

3.1.1 The following sections describe the methodology that was used in this HIA. They describe the scope and process of the HIA i.e. the study area and study population; sources of information to be consulted; approach to consultation; assessment objectives and assessment framework.

3.1.2 The HIA followed the draft consultative guidance on health in SEA published by the Department of Health[14].

3.1.3 The analysis was qualitative and used existing data and information from earlier and concurrent assessment studies and consultations as well as routine data sources.

3.1.4 The HIA was undertaken between August and October 2010.

3.1.5 The key tasks for this HIA were:

- Review of existing information including the previous LTP, current provisional LTP, the SEA and other related documents
- Baseline and community profile of Northumberland focusing on health and wellbeing.
- Rapid review of scientific evidence on the potential impacts of different transport modes on health including any review of published LTP HIAs.
- Assess the compatibility of the LTP's objectives and preferred interventions with the identified health and wellbeing focused objectives as well as an assessment of the nature, magnitude and likelihood of the potential impacts.
- Develop recommendations where feasible to minimise the potential negative and maximise the potential positive health and wellbeing impacts of the provisional LTP3.
- Produce draft and final HIA reports.

[14] Department for Health (2007). draft guidance on health in strategic environmental assessment.

3.2 Screening

3.2.1 Northumberland City Council determined that conducting a HIA alongside the SEA would be worthwhile for the Local Transport Plan 3 (LTP3).

3.3 Scoping

HIA Steering/Advisory Group

3.3.1 Given the very structured and prescribed process for the assessment of LTPs, a HIA Steering/Advisory Group was not considered necessary. Key health stakeholders were instead invited to a joint SEA and HIA consultation workshop to provide feedback on the LTP3.

Study area

3.3.2 The geographic scope of this HIA was the whole of Northumberland.

Study population

3.3.3 The population scope of this HIA was:

- Residents in urban areas
- Residents in rural areas.

3.3.4 The main vulnerable groups that were considered were:

- children and young people
- older people
- people with disabilities
- women
- unemployed and low income groups
- people from minority ethnic backgrounds
- people with existing health conditions

Determinants of health considered

3.3.5 The key determinants of health and wellbeing that were considered were:

- infectious diseases
- non-infectious/chronic diseases (including the effects from air, water, soil and noise pollution)
- nutritional disorders (including obesity)
- physical injury (including poisoning)

- mental health and wellbeing (including nuisance and annoyance effects)
- employment and economy
- housing and shelter
- transport and connectivity
- learning and education
- crime and safety
- health and social care and public services
- shops and retail amenities (i.e. commercial goods and services)
- social capital and community cohesion (including severance)
- spirituality, faith and traditions
- arts and cultural activities
- leisure and recreation
- lifestyle and daily routines (including physical activity)
- governance and public policy
- energy and waste
- land and spatial

3.4 Baseline assessment and community health profile

3.4.1 The baseline assessment and community profile was developed primarily using district level data and building on the existing baseline assessment and community profile work already undertaken for the LTP3.

3.4.2 Other sources of information that were considered were:

- Northumberland Infonet – District profiles
- Northumberland City Council
- Northumberland Care Trust
- Census 2001
- Audit Commission

3.5 Consultation and involvement

3.5.1 One professional stakeholder workshop was undertaken as part of the consultation for the SEA. There was also a public consultation on the draft SEA.

3.6 Evidence

3.6.1 A rapid update to existing reviews on the potential health and wellbeing impacts of different transport modes and LTPs was undertaken with a focus on gathering evidence around the transport interventions developed for Northumberland as highlighted in the provisional LTP3.

3.6.2 Key reviews from research reports and past HIAs were consulted in the following order:

- Transport related literature reviews focusing on the evidence on strategic plans and initiatives and health and wellbeing.
- Past LTP HIAs.
- Any evaluations of the actual health impacts of LTPs.
- General evidence on the impacts of different forms of transport.

3.7 Analysis

3.7.1 As stated previously, the analysis was qualitative. Table 3.1 shows the health and wellbeing focused HIA objectives that were used to assess the LTP3 objectives/goals and the proposed interventions.

3.7.2 The criteria used for the assessment were based on the 6 effect scale used for the main LTP3 Strategic Environmental Assessment (SEA). However in line with stakeholder feedback a wider range of criteria were used to better differentiate between the health and wellbeing impacts of the objectives/goals and the proposed interventions (See Table 3.2 for details of the significance criteria).

3.7.3 Overall, the **Moderate and Major (✖✖ ✓✓ and ✖✖✖ ✓✓✓)** positive and negative health and wellbeing impacts/effects align with the **Significant Adverse (✖✖)** and **Beneficial (✓✓)** criteria levels used in the SEA.

Table 3.1 Health and wellbeing focused objectives and their relationship to key health determinants and SEA themes

	Proposed HIA Objectives	Health Determinants	SEA Issues
1	To reduce the levels of deaths and injuries due to traffic incidents	Transport Safety	Population Human Health
2	To protect and wherever necessary and possible improve local ambient air quality	Natural environment	Air Human Health
3	To maintain and wherever necessary and possible reduce local ambient noise levels	Natural environment	Noise Human Health
4	To promote healthy lifestyles	Health related behaviours e.g. active travel	Human Health
5	To improve choice and use more sustainable modes of transport and wherever possible reduce the need to travel	Natural environment Built environment	Population Material Assets
6	To improve local accessibility of goods, services and amenities and/or reduce community severance	Modes of transport and supporting infrastructure	Population Material Assets
7	To provide fair, equitable access to health, social and welfare services	Access to public support services	Population Material Assets
8	To protect and enhance the accessibility of local green and open spaces	Natural environment Restoration and reduction in stress	Landscape Human Health
9	To protect and wherever possible improve local neighbourhood quality	Natural environment Built environment	Population
10	To protect and wherever possible enhance agricultural land	Fresh food production, sustainability and security	Landscape
11	To support voluntary and community networks, assist social inclusion and ensure community involvement in decision making	Personal social networks and social capital People's perceived control over their lives	Population
12	Maintain high and stable levels of employment and reduce long-term unemployment	Employment	Population
13	To reduce poverty and secure economic inclusion	Income level Distribution of wealth	Population Human Health
14	To improve educational attainment, training and opportunities for lifelong learning and employability	Educational opportunities	Population
15	To reduce crime, disorder and fear of crime	Level of fear of crime	Population Human Health
16	To provide good quality, affordable and sustainable housing	Provision of quality housing	Material Assets
17	To reduce health inequalities and enhance health equity (composite of the objectives above)	Health equity and inequalities	Human Health
18	To provide a positive, safe and healthy environment for children (composite of the objectives above)	Healthy beginnings for children	Population Human Health
19	To improve physical and mental health and wellbeing (composite of the objectives above)	Composite of the determinants above	Human Health

Table 3.2: Definition of significance levels and criteria for potential health and wellbeing impacts and their relation to the SEA impacts/effects

SEA Potential Effect		SEA Criteria
Significant adverse	××	Permanent long term irreversible change or major temporary effect in/on baseline conditions
Negative	×	Temporary, short term reversible change or slight permanent impact in/on baseline conditions
No impact	=	No interaction with baseline environment
No change from baseline	-	No change in baseline environment
Slight beneficial	✓	Slight positive effect on the baseline
Beneficial	✓✓	Significant positive effect on baseline conditions

The criteria below were used to judge the impacts/effects of the objectives/goals and the proposed interventions because it was difficult to assign a magnitude rating for each specific HIA objectives.

HIA Significance Level for Sub-objectives and Interventions	HIA Criteria (used to judge the impact in relation to the individual HIA Objectives)
✓ (positive)	Sub-objective or intervention is likely to have a positive health and wellbeing impact on, and move towards achieving, the specific HIA objective.
× (negative)	Sub-objective or intervention is likely to have a negative health and wellbeing impact on, and move away from achieving, the specific HIA objective.
o (equivalent to = and – in main SEA criteria)	Sub-objective or intervention is likely to have no health and wellbeing impact, and no move towards or away from the HIA objective.
?	It is unclear or uncertain what health and wellbeing impacts the sub-objective or intervention is likely to have.

HIA OVERALL Significance Level for Objectives/Goals and Interventions	HIA Criteria (used to judge the Overall impact/effect)
Major ✓✓✓ ××× (positive or negative)	Health effects are categorised as a major positive if they prevent deaths/prolong lives, reduce/prevent the occurrence of acute or chronic diseases or significantly enhance mental wellbeing would be a major positive. Health effects are categorised as a major negative if they could lead directly to deaths, acute or chronic diseases or mental ill health. The exposures tend to be of high intensity and/or long duration and/or over a wide geographical area and/or likely to affect a large number of people and/or sensitive groups e.g. children/older people. They can affect either or both physical and mental health and either directly or through the wider determinants of health and wellbeing. They can be temporary or permanent in nature. These effects can be important local, district, regional and national considerations. Mitigation measures and detailed design work can reduce the level of negative effect though residual effects are likely to remain.
Moderate ✓✓ ×× (positive or negative)	Health effects are categorised as a moderate positive if they enhance mental wellbeing significantly and/or reduce exacerbations to existing illness and reduce the occurrence of acute or chronic diseases. Health effects are categorised as a moderate negative if the effects are long term nuisance impacts, such as smell and noise, or may lead to exacerbations of existing illness. The negative impacts may be nuisance/quality of life impacts which may affect physical and mental health either directly or through the wider determinants of health. The exposures tend to be of moderate intensity and/or over a relatively localised area and/or of intermittent duration and/or likely to affect a moderate-large number of people or so and/or sensitive groups. The cumulative effect of a set of moderate effects can lead to a major effect. These effects can be important local, district and regional considerations. Mitigation measures and detailed design work can reduce and in some/many cases remove the negative and enhance the positive effects though residual effects are likely to remain.

HIA OVERALL Significance Level for Objectives/Goals and Interventions	HIA Criteria (used to judge the Overall impact/effect)
Minor/Mild ✓ × (positive or negative)	Health effects are categorised as minor/mild whether, positive or negative, if they are generally lower level quality of life or wellbeing impacts. Increases or reductions in noise, odour, visual amenity, etc are examples of such effects. The exposures tend to be of low intensity and/or short/intermittent duration and/or over a small area and/or affect a small number of people. They can be permanent or temporary in nature. These effects can be important local considerations. Mitigation measures and detailed design work can reduce the negative and enhance the positive effects such that there are only some residual effects remaining.

3.7.4 For each potential health impact ten key issues were considered

- Which population groups are affected and in what way?
- Is the effect reversible or irreversible?
- Does the effect occur over the short, medium or long term?
- Is the effect permanent or temporary?
- Does it increase or decrease with time?
- Is it of local, regional or national importance?
- Is it beneficial, neutral or adverse?
- Are health standards or environmental objectives threatened?
- Are mitigating measures available and is it reasonable to require these?
- Are the effects direct, indirect and or cumulative?

3.8 Recommendations

3.8.1 A set of mitigation and enhancement measures were identified to reduce the potential negative and enhance the potential positive health and wellbeing impacts of the LTP3.

3.9 Follow up

3.9.1 Possible indicators that could be used to monitor and evaluate the implementation of the provisional LTP3 were identified.

3.10 Limitations of this HIA

3.10.1 Given the high level nature of the LTP3 and outline nature of the proposed interventions, it was difficult to identify the likelihood and magnitude of the impacts as some impacts were dependent on how the proposed interventions are likely to be implemented.

3.10.2 The strategic nature of the assessment and the focus on health and sustainability objectives also meant that localised construction impacts while discussed are not included in the analysis of the overall health and wellbeing impacts of the LTP3's proposed interventions. Construction issues are best considered when more detailed proposals are developed through project-specific environmental and health impact assessments. They are also generally short term, temporary and generally localised.

4 Northumberland Local Transport Plan 3 (LTP3) Background

4.1 Introduction

4.1.1 This chapter provides background details of the provisional LTP3.

4.2 Background to the proposed scheme

4.2.1 The Transport Act 2000 made it a statutory requirement for local highways authorities to produce Local Transport Plans which are consistent with national and local objectives for highways and transport.

4.3 Aim of the proposal

4.3.2 The Northumberland LTP3 is a strategic document that sets out the main objectives for highways and transport for the 15 year period between 2011 to 2026 in Northumberland and the strategies and policies necessary to achieve them.

4.3.3 The aim of the provisional LTP3 is to outline the local authority's plans for maintaining and improving transport provision in Northumberland during the 15 year period as well as address the Department for Transport's (DfT) five national objectives:

- Tackling climate change;
- Supporting economic growth;
- Promoting equality of opportunity;
- Contributing to better safety, security and health; and
- Improving quality of life.

5 Policy Context

5.1 Introduction

5.1.1 This chapter summarises the key policy context in relation to the Northumberland LTP3.

5.2 National policy

5.2.1 Delivering a sustainable transport system (2008)

This strategy aims for a transport system that:

- contributes to better safety, security and health and longer life expectancy by reducing the risk of death, injury or illness arising from transport and by promoting travel modes that are beneficial to health;
- promotes greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society;
- improves quality of life for transport users and non-transport users and to promote a healthy natural environment;
- supports national economic competitiveness and growth, by delivering reliable and efficient transport networks; and
- reduces transport's emissions of carbon dioxide and other greenhouse gases with the desired outcome of tackling climate change.

5.2.2 Delivering a Sustainable Railway (2007)

This strategy sets out a long term ambition for railway that:

- can handle increasing levels of freight and passenger traffic;
- is safer, more reliable and more efficient;
- can cater for a more diverse, affluent and demanding population; and
- has reduced its own carbon footprint and improved its broader environmental performance.

5.2.3 Securing the Future (2005)

This strategy highlights the importance of the design and use of transport in a way that encourages sustainable consumption and production e.g. use of clean, low carbon vehicles and fuels.

It also encourages the development of freight quality partnerships by local authorities to develop more efficient, safer and cleaner means of distributing local goods.

5.2.4 The Future of Transport: A network for 2030 (2004)

This strategy acknowledges that road transport is responsible for a significant proportion of pollutants that affect air quality and people's health, and disproportionately impacts some communities.

It encourages local authorities and transport operators to make use of demand responsive schemes in areas such as rural areas which are not well served by conventional bus services. It highlights how some authorities have achieved benefits in rural areas by coordinating education, health and social services transport.

Walking and cycling are seen as healthy and enjoyable alternatives particularly for short trips and the strategy acknowledges the need to improve on traffic management and other road safety programmes so that people are safe, feel safer and are encouraged to choose to walk or cycle.

Improvement to road safety is also highlighted and schemes are encouraged to include improvements to junctions, better facilities for pedestrians and cyclists and to redesign roads to reduce traffic speeds and increase driver awareness of pedestrians.

As there is increasing demand for travel, the railway will play an important role in carrying people and freight, providing an alternative to travelling by road. Also highlighted is the importance of bus networks providing flexible and convenient services tailored to local needs as they are crucial for people without access to a car.

5.2.5 Transport and social exclusion: making the connections (2003)

This report examines the links between social exclusion, transport and the location of services. Its focus is on access to opportunities such as work, education and healthcare which have the most impact on life chances. It identifies the fact that people may not be able to access services as a result of social exclusion the way transport is provided, or not provided, can reinforce already existing social exclusion. Some of the transport related barriers to accessing services that are identified include the availability and physical accessibility of transport, the cost of transport and transport safety and security.

5.2.6 Transport 2010, The 10 Year Plan (2000)

This plan outlines the transport issues that face people in both urban and rural areas.

In urban areas, the biggest concerns are traffic congestion, the cost, convenience and reliability of public transport and worries about air pollution, safety and traffic nuisance. Traffic congestion and polluted streets make towns and cities less attractive places in which to live and do business.

In rural areas, people, especially those without the use of a car, are similarly concerned about the lack of reliable, accessible public and community transport and the difficulties this can create in getting to work, health care facilities, shops, schools and other services and amenities.

The plan goes on to suggest that better integration between land use and transport planning at national, regional and local levels will help to promote patterns of development that can be served more effectively by public transport and encourages new planning policies that will seek to increase the transport choices available for local journeys.

Concerns for pedestrians, cyclists, bus passengers and motorists with respect to road safety and poor road conditions were also highlighted. In addition the use of light rail, trams, other rapid transit systems and park and rides were suggested as ways to alleviate traffic pressures and help reduce congestion and pollution.

Some of the health specific targets set out in this plan are as follows:

- to reduce road congestion below current levels by promoting integrated transport solutions and investing in public transport and the road network;

- to improve air quality by meeting National Air Quality Strategy targets;
- to reduce greenhouse gas emissions; and
- to reduce overcrowding on trains.

5.2.7 Planning Policy Statement 1: Sustainable Development (2005)

PPS 1 states that plans and proposals should:

- ensure that the impact of development on the social fabric of communities is considered and taken into account;
- seek to reduce social inequalities;
- address accessibility (both in terms of location and physical access) for all members of the community to jobs, health, housing, education, shops, leisure and community facilities;
- take into account the needs of all the community, including particular requirements relating to age, sex, ethnic background, religion, disability or income;
- deliver safe, healthy and attractive places to live; and
- support the promotion of health and wellbeing by making provision for physical activity.

It also states that in preparing plans and proposals, local authorities should seek to:

- take into account issues such as accessibility and sustainable transport needs;
- provide improved access to services and amenities especially through walking, cycling and public transport; and
- reduce the need to travel and encourage accessible public transport provision to secure more sustainable patterns of transport development.

5.2.8 Planning Policy Statement 4: Planning for Sustainable Economic Growth (2009)

PPS 4 states that planning bodies and authorities (local and regional) should set flexible policies for their centres which are able to respond to changing economic circumstances and encourage, where appropriate, high density development accessible by public transport, walking and cycling.

Accessibility and parking standards should take into account amongst other things the need to:

- promote sustainable transport choices e.g. cycling and walking;
- reduce carbon emissions and work towards the attainment of air quality objectives;
- tackle congestion and public transport accessibility;
- provide appropriate disabled access;
- cater for different business types and sizes; and
- the differing needs of rural and urban areas

5.2.9 Local Transport Plans (LTP) Guidance (2000)

The LTP guidance acknowledges that transport is an important underlying factor affecting health and that LTPs should help to improve health and tackle health inequalities. It encourages authorities to develop close and effective relationship with public health departments at the early stages of devising LTPs.

The over-arching objectives that should inform the LTP are outlined as follows:

- protect and enhance the built and natural environment;
- improve safety for all travellers;
- to contribute to an efficient economy and to support sustainable economic growth in appropriate locations;
- promote accessibility to everyday facilities for all, especially those without a car; and
- promote the integration of all forms of transport and land use planning, leading to a better, more efficient transport system.

5.3 Regional policy

5.3.1 North East of England Regional Spatial Strategy to 2021 (2008)

This Strategy has now been revoked however there are elements worth mentioning which are likely to be included in any future strategies to be produced.

The strategy states that:

Improving connectivity and accessibility within and beyond the Region is one of the four key themes to deliver a renaissance in the North East.

Transport infrastructure has a key role in providing access to employment for all members of society and promoting sustainable patterns of activity, development and movement. The strategy emphasizes the importance of sustainable modes of transport including cycling and walking particularly for local journeys.

Making better use of existing infrastructure, improving the key inter-regional transport connections and improving public transport may encourage behavioural change.

The key objectives for the transport strategy component of the Regional Spatial Strategy are to:

- improve access to markets and contribute to the competitiveness of North East businesses;
- improve sustainable access to the North East for inbound tourism;
- improve access to employment, learning, health facilities and services for all sections of society;
- support the development of a dynamic labour market for North East businesses;
- minimise the impact of the movement of people and goods on the environment and climate change;
- reduce the need to travel, particularly by private modes of transport;
- promote and increase the proportion of journeys made by public transport, cycling and walking including through demand management measures;
- improve connectivity and accessibility between the Tyne & Wear and Tees Valley City-regions;
- improve access and connectivity to the North East's international gateways;
- make best use of resources and existing infrastructure; and
- ensure safe transport networks and infrastructure.

The objectives above are aimed at contributing to the Government's targets of tackling rising congestion; improving rail service performance; providing reliable, accessible local public transport; and improving road safety and air quality.

5.3.2 Better Health, Fairer Health: A strategy for 21st century health and wellbeing in the North East of England (2008)

One of the visions for the North East is "an environment that will be the most conducive to health in the country, maximising its natural resources to the best advantage of its people and designing its economy, buildings, spaces, transport and other infrastructure to maximise health and wellbeing in a sustainable fashion".

In terms of transport, the strategy aims to:

- lobby for cycle lanes to be given 'double yellow line' status to prevent their obstruction by parked vehicles; and for the norm in road building within the region to be the development of separate cycle lanes alongside motor vehicle provision;
- work to establish measures for assessing cost-effectiveness of road and traffic schemes that allocate values in accordance with health and wellbeing objectives, removing the current tilt towards car usage in assessments;
- address the ways in which costs and benefits of new traffic schemes and other urban design issues are calculated to remove biases and perverse incentives that obstruct shifting priority to walking, cycling and public transport;
- develop regional targets to increase walking, cycling and use of public transport, and to ensure high priority is given to developments that increase these modes and discourage car usage.

5.4 Local policy

5.4.1 Joint Community Transport Strategy for Northumberland (2008)

The Strategy highlights the gaps in the transport needs of the people of Northumberland as follows:

Many locations with poor accessibility also coincide with locations where people report not being in good health or having a limiting long term illness.

Employment is concentrated in the urban areas but job seekers are spread across the area and for rural job seekers, transport is much more likely to be the critical factor affecting their ability to access work.

At school level, public transport services in rural areas do not generally provide coverage that would allow students to attend after school activities and then return home independently.

5.5 Policy analysis

5.5.1 Overall, the provisional LTP3 interventions are well aligned with national, regional and local policies.

6 Baseline and Community Profile

6.1 Introduction

6.1.1 This chapter provides a rapid health and wellbeing focused baseline and community profile of Northumberland. It is from this baseline understanding that the predictions on the potential health and wellbeing impacts of the Local Transport Plan 3 have been considered.

6.1.2 The profile covers all six Northumberland districts; Blyth Valley, Wansbeck, Castle Morpeth, Tynedale, Alnwick and Berwick-upon-Tweed (See Figure 6.1).

6.1.3 These six districts are now categorised under three new unitary areas as follows:

- North Northumberland: Alnwick, Berwick-upon-Tweed and Castle Morpeth
- West Northumberland: Tynedale
- South East Northumberland: Blyth Valley and Wansbeck

6.2 Overall

6.2.1 In terms of the 'Adult's Health and Lifestyle' domain, binge drinking and healthy eating in adults are significantly worse than the England averages while the proportion of adults who smoke, obesity in adults and physically active adults are not significantly different from the England averages. The 2010 levels of binge drinking and healthy eating in adults are worse than they were in 2009. However, the trends in all the other indicators remain the same as they were in 2009.

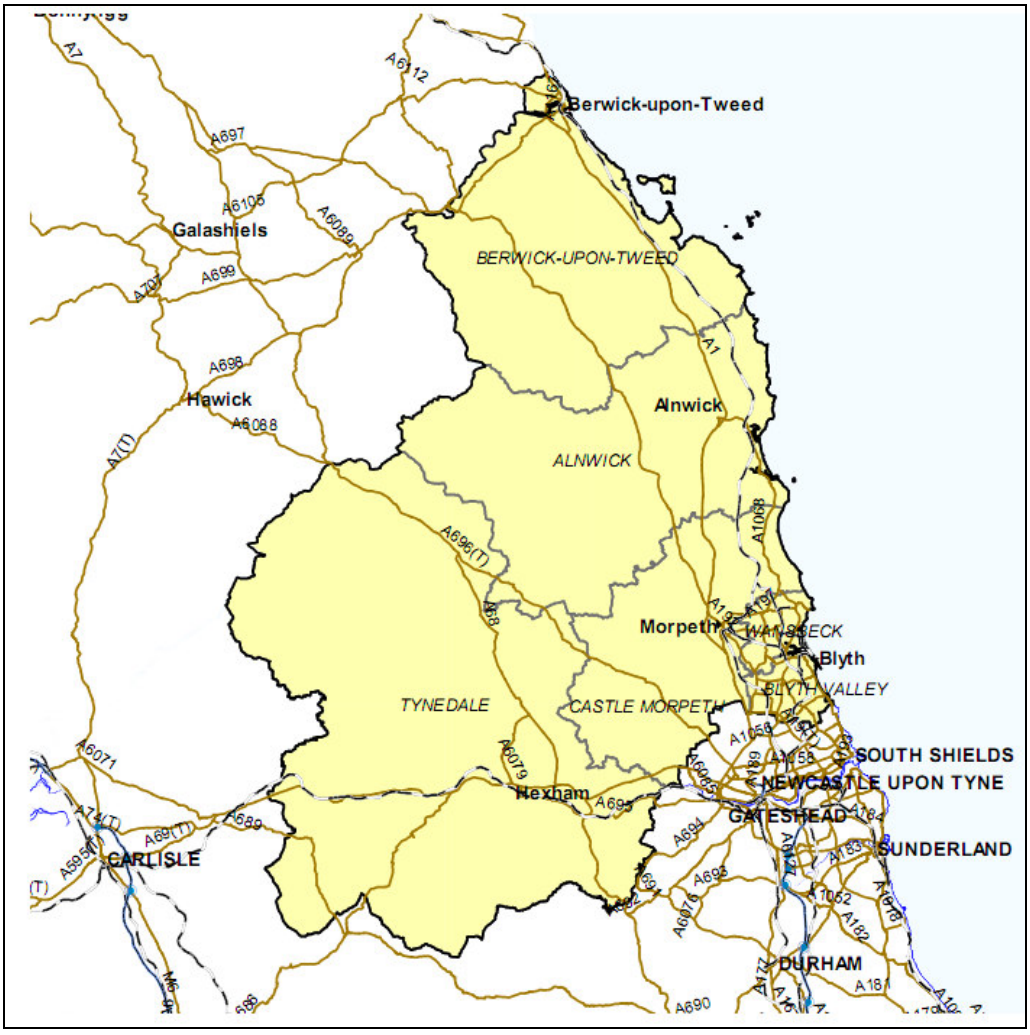
6.2.2 In terms of the 'Disease and Poor Health' domain, rates of hospital stays for alcohol related harm and people diagnosed with diabetes are significantly worse than the England averages. While the number of people on incapacity benefits because of mental illness and the rates of hip fracture in over 65s are not significantly different from the England averages. This trend is broadly better than the 2009 profile where the number of people on incapacity benefits because of mental illness and rates of hip fracture in over 65s were significantly worse than

the England averages. Hospital stays for alcohol related harm and people diagnosed with diabetes were the same in 2009 as they are in 2010.

6.2.3 In terms of the 'Life Expectancy and Causes of Death' domain, road injuries and deaths, life expectancy in females and death from smoking are significantly worse than the England averages. However, life expectancy in males, infant deaths, early deaths from cancers, heart disease and stroke are not significantly different from the England averages. These trends remain the same as they were in 2009.

6.2.4 Health and wellbeing priorities for Northumberland are to address and monitor health inequalities within the county and to tackle binge drinking and the rate of hospital stays for alcohol related harm.

Figure 6.1: Districts in Northumberland [Source: Department of Health, Area Health Profiles]



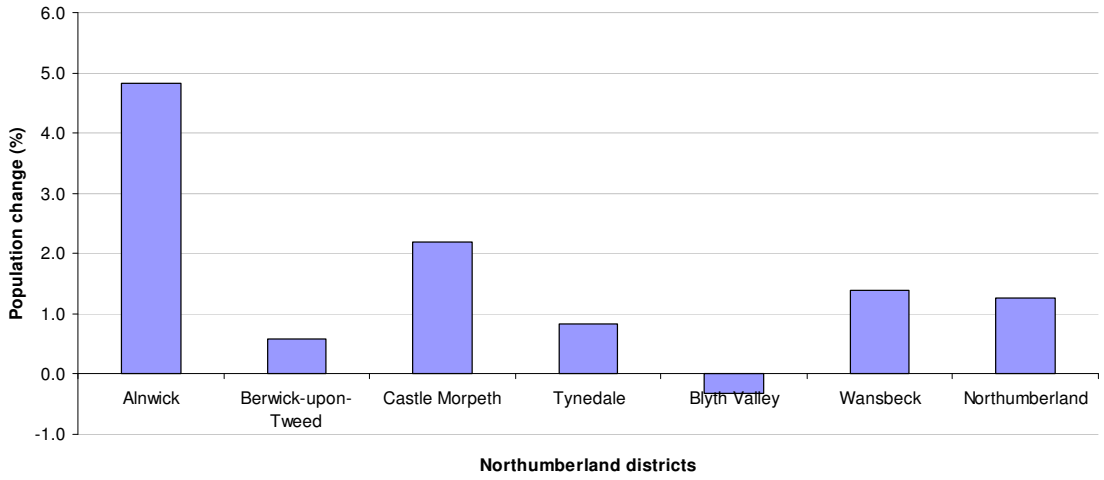
6.3 Population characteristics [15]

6.3.1 There are approximately 311,000 residents in Northumberland compared to 2,580,000 in the North East and 51,810,000 in England as a whole.

6.3.2 Of the original six districts in Northumberland, Blyth Valley is the most populated with 81,000 residents followed by Wansbeck, 62,000; Tynedale, 59,000; Castle Morpeth 50,000; Alnwick, 33,000 and Berwick-upon-Tweed, 26,000.

6.3.3 However, population growth between 2001 and 2009 was greatest in Alnwick, with a 5% increase and lowest in Blyth Valley with a 0.3% decrease (See Figure 6.2).

Figure 6.2: Change in population in the six Northumberland districts between 2001 and 2009 [Source: ONS]



6.3.4 Northumberland generally has an older and ageing population.

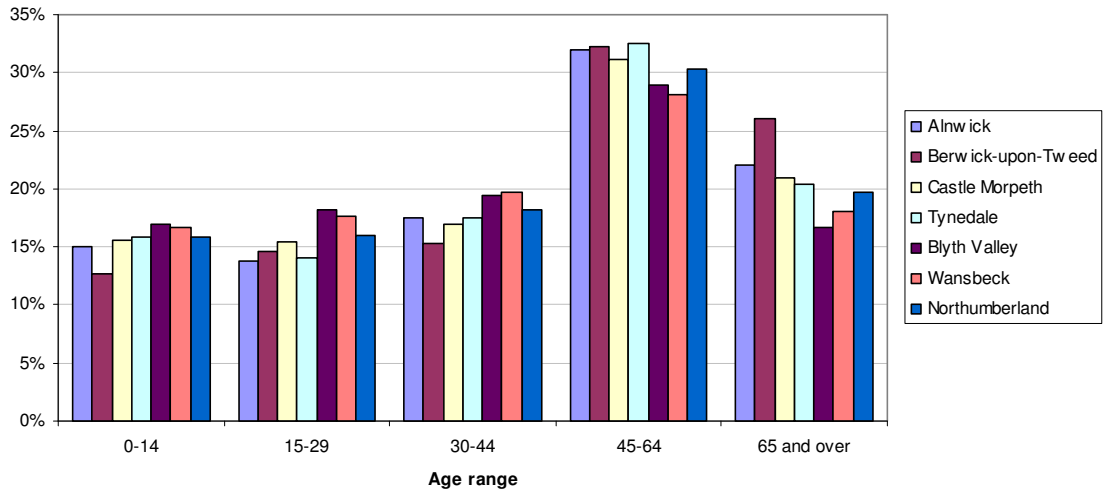
6.3.5 The highest proportion of residents in all six districts, are between 45-64 years of age. It ranges from Tynedale with 33% to Wansbeck with 25%. This compares to 30% in Northumberland and 25% in England as a whole.

6.3.6 In the rural districts of Alnwick, Berwick-upon-Tweed, Castle Morpeth and Tynedale, the second highest proportion of residents are 65 years and over ranging from Berwick-upon-Tweed with 26% to Tynedale with 20%. While in the

[15] Population and age figures quoted are ONS mid year estimates for 2009

urban districts of Blyth Valley and Wansbeck, the second highest proportion of residents are in the 30-44 age range, Wansbeck with 20% and Blyth Valley with 19%. The rural trend is similar to Northumberland as a whole (See Figure 6.3).

Figure 6.3: Proportion of residents in Northumberland by age [Source: Office for National Statistics i.e. ONS]



6.4 Ethnic profile

6.4.1 The majority of residents in all six districts are from a White background. This ranges from 98.1% in Castle Morpeth to 99.6% in Berwick-upon-Tweed. This compares to 99% in Northumberland and 87% in England as a whole.

6.5 Religion

6.5.1 The majority of residents in the original six districts are Christians. This ranges from 80% in Blyth Valley to 83% in Alnwick. This compares to 81% in Northumberland and 72% in England as a whole.

6.6 Family structure

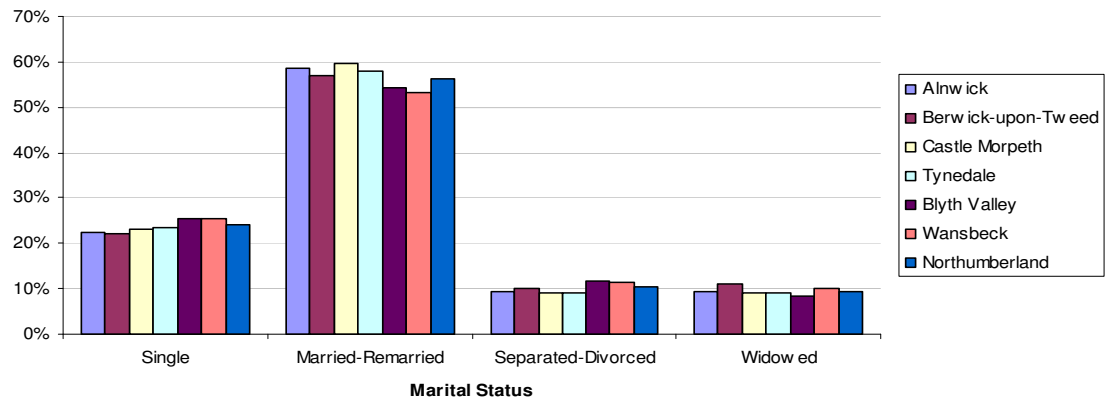
6.6.1 Marital status and household composition provide a good indication of the family structure and the likely personal and social care networks that residents of an area have (See Figures 6.4 and 6.5).

6.6.2 The majority of residents in all six districts in Northumberland are married or remarried. This ranges from Castle Morpeth with 60% to Wansbeck with 53% and compares to 56% in Northumberland and 51% in England as a whole.

6.6.3 Single people form the next highest proportion of residents, ranging from Blyth Valley with 26% to Alnwick and Berwick-upon-Tweed each with 22%. This compares to 24% in Northumberland and 30% in England as a whole.

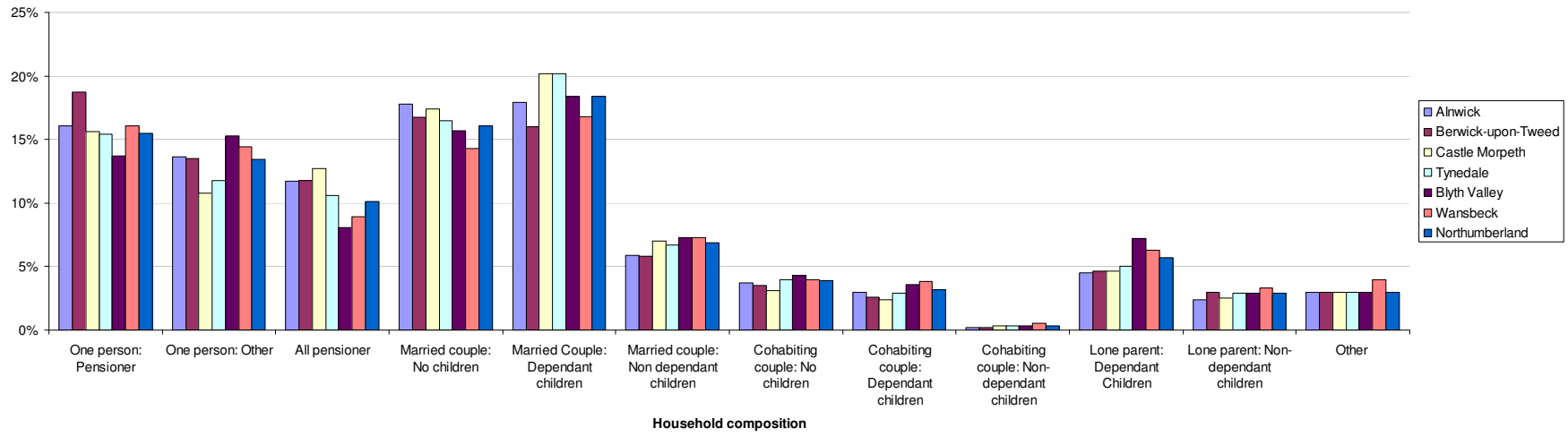
6.6.4 There are roughly the same proportion of separated/divorced residents and widowed residents in Northumberland. However, Blyth Valley has highest proportion of separated/divorced residents, 12% and Castle Morpeth and Tynedale have the lowest, 9%. While Berwick-upon-Tweed has the highest proportion of widowed residents, 11% and Blyth Valley has the lowest, 8%.

Figure 6.4: Proportion of residents by marital status [Source: ONS]



6.6.5 Similar to marital status, married couple households are most common in all the six Northumberland districts particularly married couple households with dependant children. Castle Morpeth and Tynedale have the highest proportion of married couple households with children (dependant and non-dependant), 27% while Berwick-upon-Tweed has the lowest, 22%. This compares to 25% in Northumberland and 24% in England as a whole.

Figure 6.5: Household composition in Northumberland [Source: ONS]



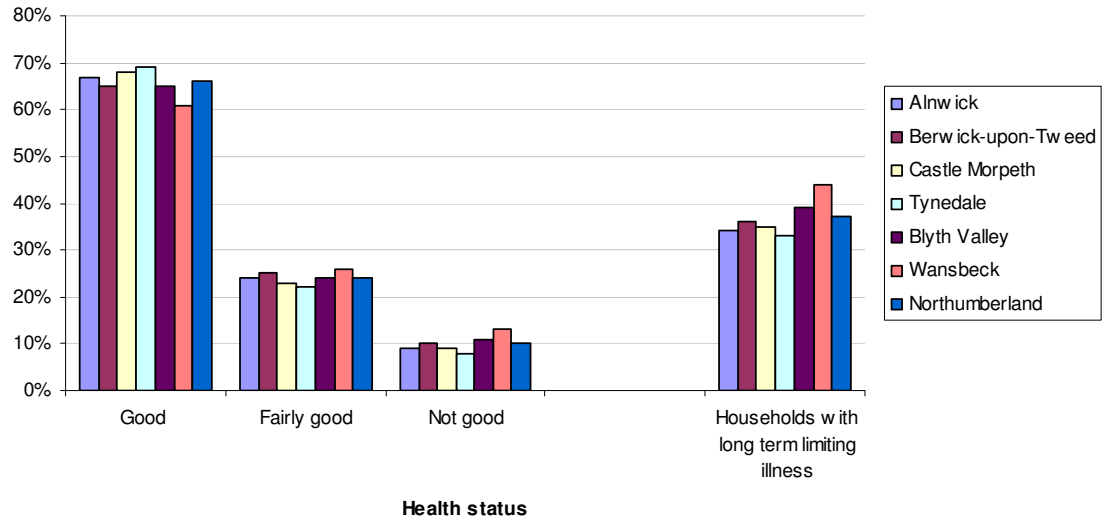
6.6.6 There are a high proportion of pensioner households in Northumberland. This ranges from Berwick-upon-Tweed with 19% to Blyth Valley with 14% and compares to 16% of Northumberland and 14% of England as a whole. While 'all pensioner households' range from Castle Morpeth with 13% to Blyth Valley with 8% and compares to 10% in Northumberland and 9% in England as a whole.

6.6.7 The proportion of lone parent households (with dependant and non-dependant children) is highest in Blyth Valley with 10% (urban area) and lowest in Alnwick with 7% (rural area). This compares to 9% each in Northumberland and England as a whole.

6.7 Health and wellbeing status

6.7.1 The proportion of residents who report their health as not good is highest in Wansbeck, 13% followed by 11% in Blyth Valley (both urban areas), 10% in Berwick-upon-Tweed, 9% in both Alnwick and Castle Morpeth and 8% in Tynedale. This compares to 10% in Northumberland and 9% in England as a whole.

Figure 6.6: Perceived health status and long term limiting illness in Northumberland [Source: ONS]



6.7.2 The proportion of household with long term limiting illness is highest in Wansbeck, 44%, followed by 39% in Blyth Valley, 36% in Berwick-upon-Tweed, 35% in Castle

Morpeth, 34% in Alnwick and 33% in Tynedale. This compares to 37% in Northumberland and 34% in England as a whole.

6.8 Deprivation, social capital and community cohesion

6.8.1 Deprivation refers to problems caused by a general lack of resources and opportunities and not just a lack of money. It is a wider concept than poverty and includes health status, level of education, access to services, living conditions and the state of the local environment.

6.8.2 2007 Indices of Multiple Deprivation ranks the original six Northumberland districts as follows. The lowest value means most deprived and the highest value means least deprived.

- Wansbeck (46, most deprived) urban area
- Blyth Valley (80) urban area
- Berwick-upon-Tweed (133) rural area
- Alnwick (206) rural area
- Castle Morpeth (223) rural area
- Tynedale (244, least deprived) rural area

6.8.3 In terms of the Overall, Income, Employment, Health and Disability, Education, Skills and Training and Crime Indices of Multiple deprivation, Blyth Valley and Wansbeck, the urban areas have the greatest number of Lower Super Output Areas in the 20% most deprived category (See Figure 6.7). While Housing and the Services and Living Environment deprivation, is more widely spread across the remaining four rural districts.

6.8.4 Between 2004 and 2007, the overall index of multiple deprivation has improved, with the percentage of Northumberland Super Output Areas (SOAs) in the most deprived rankings reducing from 29% in 2004 to 26% in 2007.

6.8.5 Figure 6.8 shows the changes in the overall index of multiple deprivation in Northumberland between 2004 and 2007.

6.8.6 The percentage of Northumberland residents who think that people being attacked because of their skin colour, ethnic origin or religion is a big problem in their local area is 11%.

6.8.7 The percentage of Northumberland residents who think that, for their local area, community activities have got better is 83%.

Figure 6.7: Overall Index of Multiple Deprivation map of Northumberland [Source: Northumberland Infonet 2007]

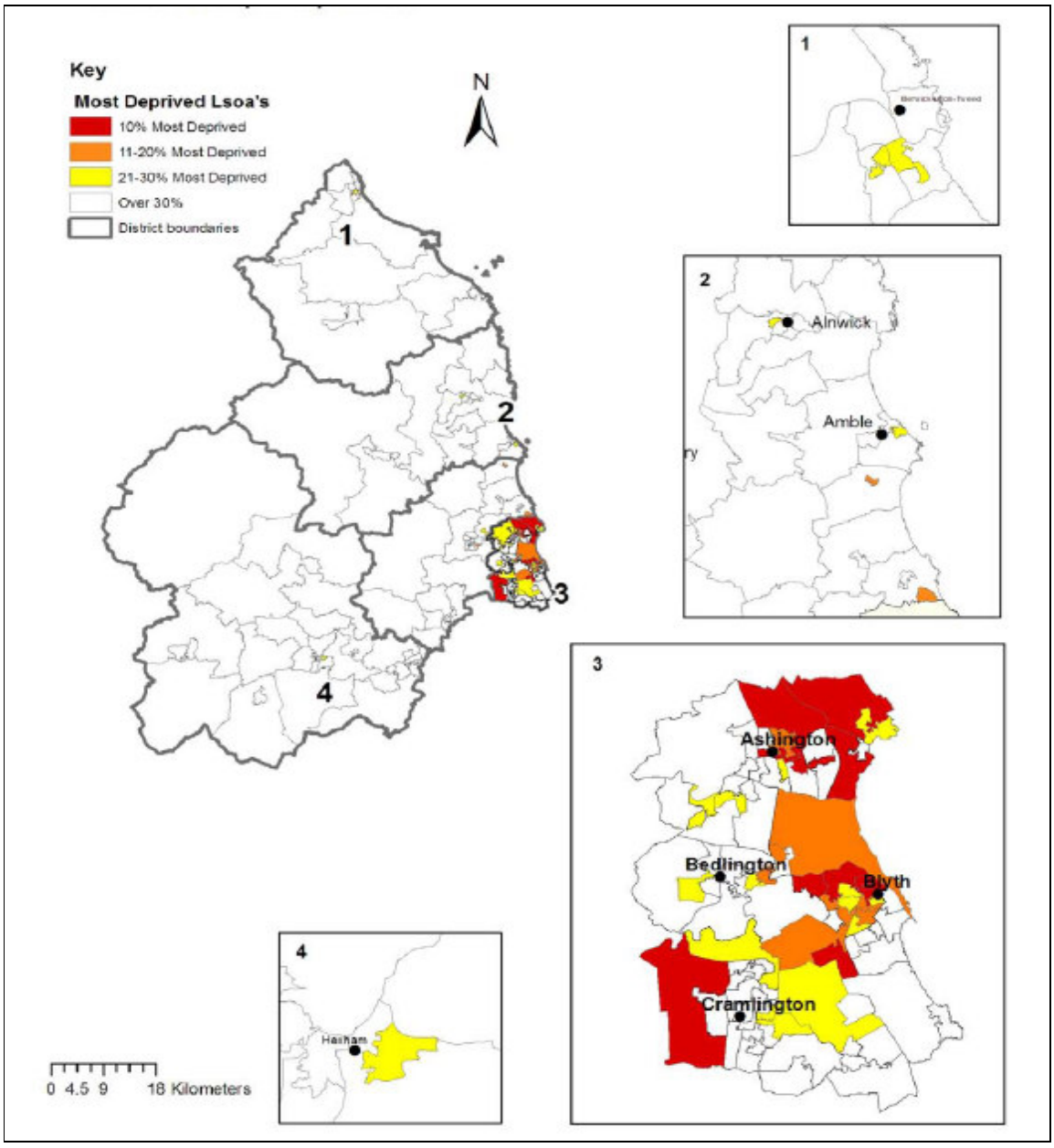
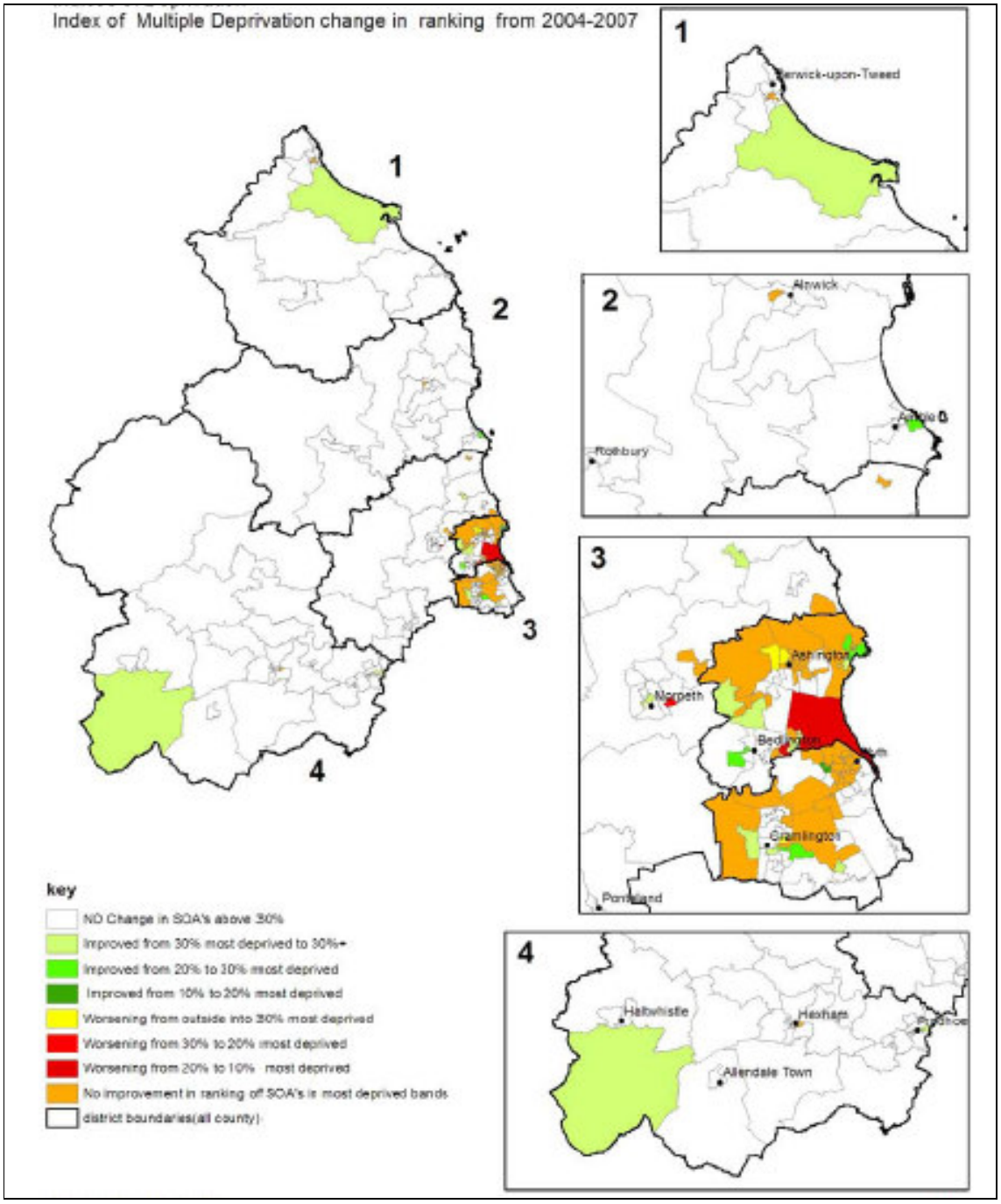


Figure 6.8: Changes in overall Index of Multiple Deprivation map of Northumberland [Source: Northumberland Infonet 2007]



6.9 Housing

6.9.1 The Audit Commission rated Northumberland County Council's strategic housing services as fair with a 1* rating on a scale of (0 – 3)*. Some of the council's strengths include social rented housing meeting government's decent homes

standards most of the time and the Council's success in preventing homelessness by making it easy to apply for social rented housing.

6.9.2 Social renting is highest in Blyth Valley and Tynedale, 27% each whilst it is lowest in Castle Morpeth, 14%.

6.9.3 In terms of housing types, in all Northumberland districts, flats are the least common although a higher proportion of flats are located in the urban areas, Blyth Valley (13%) and Wansbeck (11%). Detached houses are most common in rural areas with the highest proportions in Castle Morpeth, 38% and Tynedale, 33%.

6.9.4 The average house price in Northumberland is £181,000 with terrace houses selling for £118,500, semi-detached houses selling for £139,600, detached houses selling for £305,000 and flats selling for £104,600[16].

6.10 Education

6.10.1 The proportion of residents with no educational qualifications is highest in Wansbeck, 38%, followed by Berwick-upon-Tweed, 35%, Blyth Valley, 33% Alnwick, 29% and Castle Morpeth and Tynedale, 26%. This compares to 31% in Northumberland and 29% in England as a whole (See Figure 6.10).[17]

6.10.2 In general, for Levels 1, 2, 3 and other qualifications, each district has similar proportions of residents with these qualifications.

6.10.3 However, for Level 4/5 qualifications, the proportions of residents with these qualifications range from 11% and 12% in Blyth Valley and Wansbeck to 25% and 26% in Tynedale and Castle Morpeth. This compares to 18% in Northumberland and 20% in England as a whole.

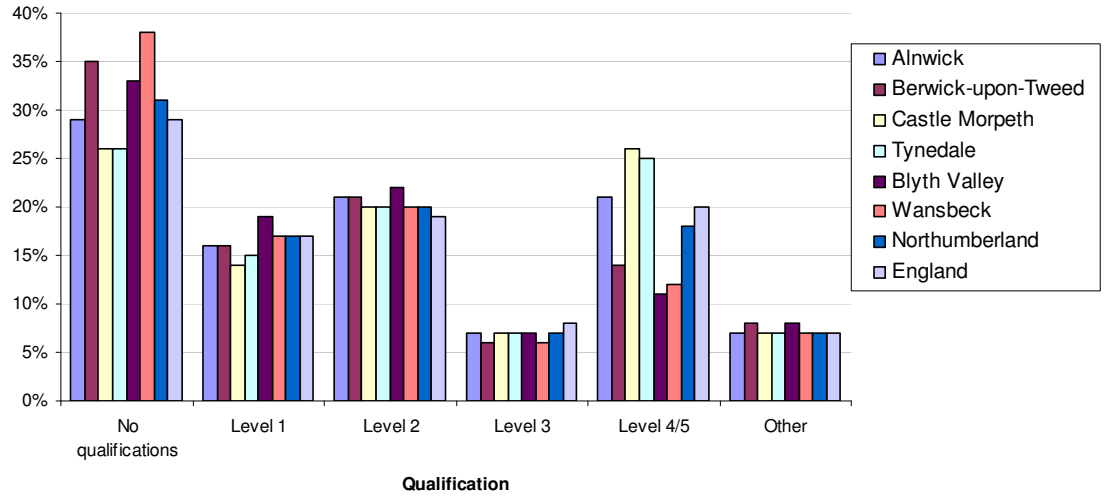
6.10.4 In 2006, attainment in Key Stage 3 English in the six districts were 83% in Castle Morpeth, 82% in Berwick-upon-Tweed and Tynedale, 75% in Blyth Valley, 71% in

[16] Land Registry of England and Wales. Figures for England and Wales are for the period January to March 2010

[17] Level 1: 1+'O' level passes; 1+ CSE/GCSE any grades; NVQ level 1; or Foundation level GNVQ
Level 2: 5+'O' level passes; 5+ CSE (grade 1's); 5+GCSEs (grades A-C); School Certificate; 1+'A' levels/'AS' levels; NVQ level 2; or Intermediate GNVQ
Level 3: 2+ 'A' levels; 4+ 'AS' levels; Higher School Certificate; NVQ level 3; or Advanced GNVQ
Level 4/5: First Degree, Higher Degree, NVQ levels 4 and 5; HNC; HND; Qualified Teacher Status; Qualified Medical Doctor; Qualified Dentist; Qualified Nurse; Midwife; or Health Visitor

Alnwick and 69% in Wansbeck. This compares to 76% in Northumberland as a whole.

Figure 6.10: Proportion of residents who have qualifications [Source: ONS]



6.10.5 In 2006, attainment in Key Stage 3 Maths in the six districts was 88% in Castle Morpeth and Tynedale, 82% in Alnwick and Berwick-upon-Tweed, 77% in Blyth Valley and 73% in Wansbeck. This compares to 81% in Northumberland as a whole.

6.10.6 In 2006, the proportion of children who achieved 5+ GCSEs grades A* - C in the original six districts were 77% in Castle Morpeth, 70% in Tynedale, 69% in Berwick-upon-Tweed, 59% in Blyth Valley, 55% in Alnwick and 49% in Wansbeck. This compares to 62% in Northumberland.

6.11 Employment and Economy

6.11.1 The proportion of unemployed residents is highest in Alnwick and Wansbeck, 5%, followed by 4% each in Berwick-upon-Tweed and Blyth Valley and 3% each in Castle Morpeth and Tynedale. This compares to 4% in Northumberland and 3% in England as a whole.

6.11.2 The proportion of permanently sick/disabled residents is highest in Wansbeck, 10%, followed by 9% each in Alnwick and Blyth Valley, 6% each in Berwick-upon-

Tweed and Castle Morpeth and 5% in Tynedale. This compares to 7% in Northumberland and 5% in England as a whole.

6.11.3 The proportion of residents looking after a family is highest in Alnwick, 7%, with the rest of the districts Berwick-upon-Tweed, Blyth Valley, Castle Morpeth, Tynedale and Wansbeck having 6%. This compares to 6% in Northumberland and 7% in England as a whole.

Figure 6.11: Employment and unemployment in the six Northumberland Districts [Source: ONS]

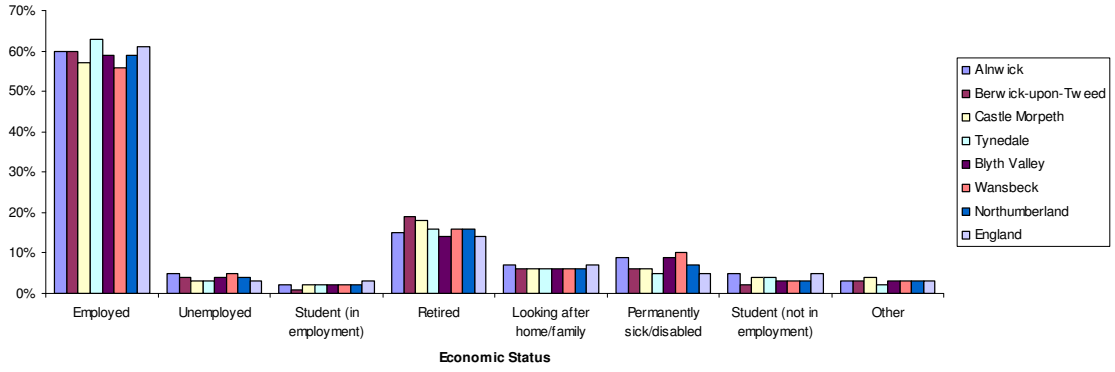
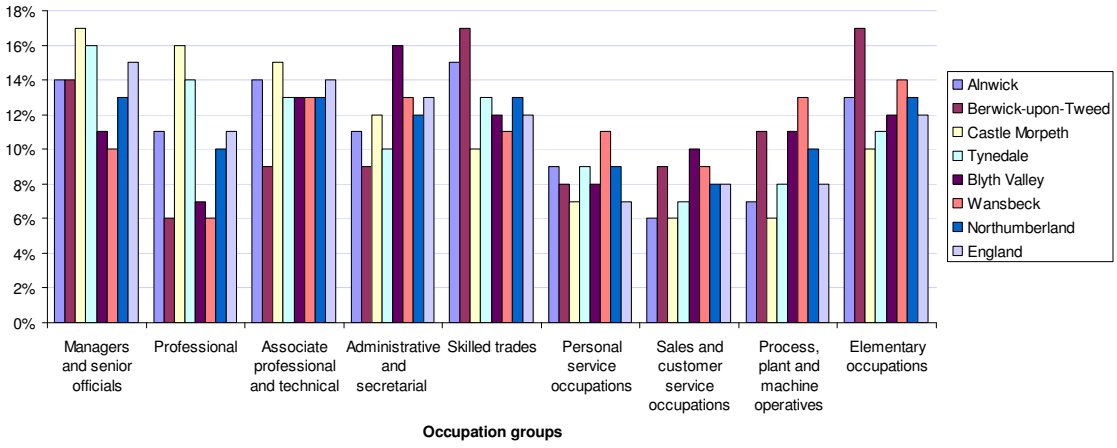


Figure 6.12: Occupation groups in the six Northumberland Districts [Source: ONS]



6.11.4 The proportion of retired residents is highest in Berwick-upon-Tweed, 19%, followed by Castle Morpeth with 18%, Tynedale and Wansbeck with 16% each,

Alnwick with 15%, and Blyth Valley with 14%. This compares to 16% in Northumberland and 14% in England as a whole.

6.11.5 There is no clear pattern to the types of occupations that residents in the districts of Northumberland work (Figure 6.12).

6.11.6 Castle Morpeth has the highest proportion of high income occupations such as manager and senior official, 17%, professional and associate professional, 16%, and technical 15%, which are all higher than the Northumberland and national averages in each of these occupation groups.

6.11.7 Blyth Valley, urban area, has the highest proportion of administrative/secretarial, 16%, and sales/customer service occupations, 10%, compared to 12% and 8% in Northumberland and 13% and 8% in England as a whole.

6.11.8 Berwick-upon-Tweed has the highest proportion of skilled trade and elementary occupations, 17% each, compared to 13% each in Northumberland and 12% each in England as a whole.

6.11.9 Wansbeck, urban area, has the highest proportion of personal service, 11%, and process, plant/machine operatives occupations, 13%, compared to 9% and 10% in Northumberland and 7% and 8% in England as a whole.

6.12 Transport and connectivity

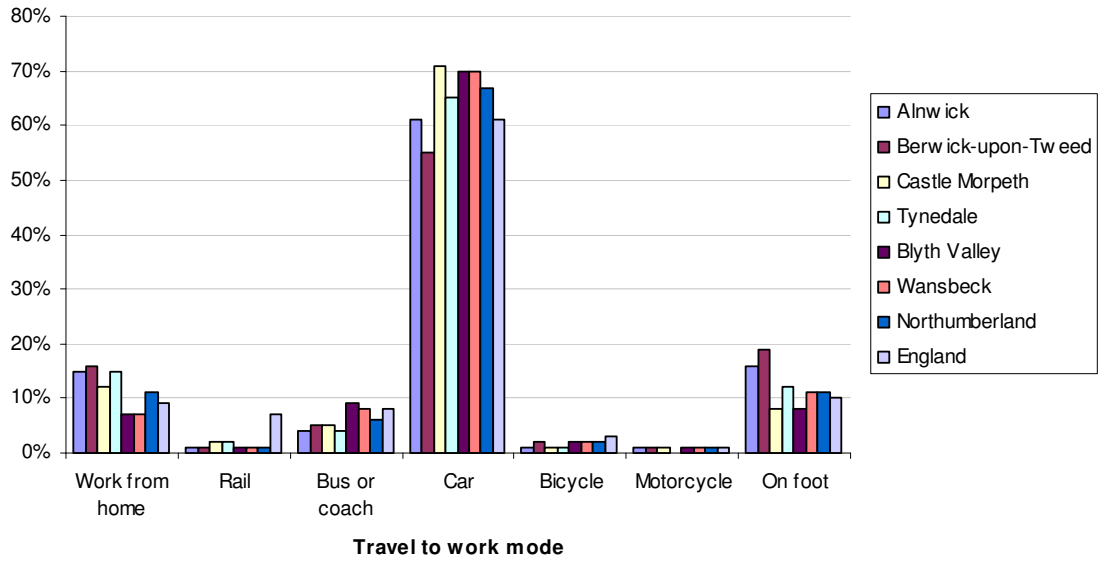
6.12.1 Northumberland is served by 2 train lines, the East Coast Mainline which runs between London and Scotland and passes along the eastern borders of Berwick-upon-Tweed and Alnwick and through Castle Morpeth, Blyth Valley and Wansbeck. And the local Tyne Valley line which connects the west of Northumberland with Gateshead and Newcastle City Centre and passes through Tynedale district only.

6.12.2 There is also a network of bus routes connecting areas within Northumberland and Tyne and Wear. Several congestion issues around some of the A roads lead to frequent delays in the bus services provided.

6.12.3 Car ownership is highest in Castle Morpeth and lowest in Wansbeck. As expected, travel to work by car is also highest in Castle Morpeth, 71% however, although car ownership is lowest in Wansbeck, 70% of residents travel to work by car. Instead

the proportion of residents who travel to work by car is lowest in Berwick-upon-Tweed, 55%. This compares to 67% in Northumberland and 61% in England as a whole (See Figure 6.13).

Figure 6.13: Travel to work in the six Northumberland Districts [Source: ONS]



6.12.4 The proportion of residents that travel to work on foot is highest in Berwick-upon-Tweed, 19%, and lowest in Blyth Valley and Castle Morpeth, 8% each. This compares to 11% in Northumberland and 10% in England as a whole.

6.12.5 Overall, CO_2 emissions by road transport in Northumberland have increased by 1%, from 22% in 2005 to 23% in 2007 with Alnwick and Berwick-upon-Tweed being the main contributors.

6.12.6 Northumberland has three national cycle routes, two regional cycle routes and an extensive network of footpaths and bridleways.

6.12.7 Two of the top three priorities for improvement for residents in Northumberland are the quality of roads and pavements and the cleanliness of streets. 79% of Northumberland residents think that public transport has got better or stayed the same while only 46% think that traffic congestion has got better or stayed the same.

6.13 Health and social care

6.13.1 There are two local hospitals within Northumberland and various community services across the county which are provided by Northumberland Care Trust.

6.13.2 In 2008/2009, Northumberland Care Trust *fully met 55%, almost met 39% and partly met 6% of the 44 healthcare standards* set out by the Care Quality Commission.

6.13.3 Social care for adults is through a care management service operated by Northumberland Care Trust in partnership with Northumberland County Council.

6.13.4 The most recent annual performance assessment for adult social care services rated Northumberland as a whole on the following outcomes:

Outcome	Performing
Improved health and wellbeing	Excellently
Improved quality of life	Well
Making a positive contribution	Excellently
Increased choice and control	Well
Freedom from discrimination and harassment	Well
Economic wellbeing	Well
Maintaining personal dignity and respect	Well

6.14 Crime and safety

6.14.1 Crime and safety profiles in Northumberland have been classified into the three new unitary areas:

- North Northumberland covering Castle Morpeth, Alnwick and Berwick-upon-Tweed
- West Northumberland covering Tynedale
- South-East Northumberland covering Blyth Valley and Wansbeck

6.14.2 Overall, the proportion of crime is highest in the urban South-East area, 73%, followed by the North area, 46%, and the West area, 30%. This compares to 54% in Northumberland as a whole.

6.14.3 The most common crime in all three areas is criminal damage. This is highest in the South-East area, 21%, followed by the North area, 12% and the West area, 7%. This compares to 15% in Northumberland as a whole.

6.14.4 The top three antisocial behaviour issues in the North, West and South-East areas are:

- Rowdiness and /or nuisance
- Nuisance and inappropriate use of vehicles
- Malicious Communications

6.14.5 Data extrapolated from Mosaic about Fear of Crime, shows that 23% of residents in the South East area are very worried about being a victim of crime compared to 5% in the North area and 2% in the West area.

6.14.6 The Audit Commission survey found that the population of Northumberland residents who feel fairly or very safe outside during the day is almost 98% while 70% feel fairly or very safe outside after dark.

6.14.7 The population of Northumberland residents who think that vandalism, graffiti and other deliberate damage to property is a big problem in their local area is 24%.

6.14.8 The population of Northumberland residents who think that people using or dealing drugs is a big problem in their local area is 59%.

6.14.9 The population of Northumberland residents who think that people being rowdy or drunk in public spaces is a big problem in their local area is just under 42%.

6.15 Shops and retail services

6.15.1 There are several town centres that provide for shopping and retail across Northumberland. Eight are located in the North of Northumberland in Castle Morpeth, Alnwick and Berwick-upon-Tweed districts; six are located in the South-East of Northumberland in Blyth Valley and Wansbeck districts and four are located in the West of Northumberland in Tynedale district.

6.15.2 Most of the shopping and retail facilities offered are market town centres and are characterised by a large proportion of independent retailers.

6.15.3 Accessibility to the majority of the shopping and retail facilities in all three Northumberland areas was highly rated. However, public transport accessibility and frequency to Rothbury and Alnwick Town Centres in the North of Northumberland and Newbiggin Town Centre in the South-East were rated low.

6.15.4 Additionally, in the north of Northumberland, issues were raised around the quality of footpaths, road safety and difficulty in crossing roads in Berwick Town Centre.

6.16 Arts and cultural activities

6.16.1 Northumberland has a number of venues and arts centres including museums and galleries which exhibit collections of some of the historic towns in Northumberland such as Berwick-upon-Tweed.

6.16.2 The proportion of Northumberland residents who, in terms of their local area, think that activities for teenagers have got better or stayed the same is 57%; and those that think that cultural facilities have got better or stayed the same are about 78%.

6.17 Leisure and Recreation

6.17.1 There are a variety of leisure and recreation venues and activities provided in Northumberland. These include equipped play areas as well as football, tennis and cricket pitches. Most of the leisure and recreation facilities are located in the South-East of Northumberland, the urban areas of Blyth Valley and Wansbeck.

6.17.2 The proportion of Northumberland residents who, in terms of their local area, think that sports and leisure facilities have got better or stayed the same is 89%; and those that think that facilities for young children have gotten better or stayed the same are about 73%.

6.18 Land and spatial

6.18.1 66% of household waste in Northumberland is sent to landfill with 24% of household waste being recycled. A very low level of household waste is composted or used to recover heat and power, 9% and 1% (compared to the national average).

6.18.2 The percentage of Northumberland residents who think that parks and open spaces in their local area have got better or stayed the same is 86%.

6.18.3 According to the SEA scoping report, the Northumbria River Basin District which Northumberland is a part of, has various water quality issues such as pollution from water industry sewage works, agriculture, mines and urban sources. Only 43% of the surface waters are classified as good quality.

6.18.4 Northumberland has a number of contaminated sites due to past industrial activities such as quarries, landfills, tanneries and gas works.

6.19 Summary of community profile

6.19.1 Across **all the original six Northumberland districts**, Alnwick, Berwick-upon-Tweed, Blyth Valley, Castle Morpeth, Tynedale and Wansbeck, **the highest proportion of residents are aged 45-64 years**.

6.19.2 **In the rural areas**, the **second highest proportion of residents are 65 years and over** whilst in the **urban areas it is 30-44 years**.

6.19.3 The **majority of residents** in Northumberland are from a **White British** background and **Christians**.

6.19.4 Overall **married and remarried people** make up the biggest proportion of residents with **Castle Morpeth having the highest proportion**.

6.19.5 The proportion of both **lone parent households** and **one person households** is **highest in Blyth Valley**.

6.19.6 **Wansbeck** has the **highest proportion of households with long term limiting illnesses** as well as the lowest level of “good” self reported health status.

6.19.7 In terms of deprivation, **Wansbeck** is the **most deprived** in terms of the **Overall Index of Multiple Deprivation**.

6.19.8 In terms of **income, employment, health and disability, education and crime domains**, both **Wansbeck and Blyth Valley**, the urban areas, have the **highest deprivation levels**.

6.19.9 **Deprivation in housing and services and living environments** is **highest** across **Alnwick, Berwick-upon-Tweed, Castle Morpeth and Tynedale,** the rural areas.

6.19.10 **Social renting** is **highest in Blyth Valley and Tynedale** and **lowest** in **Castle Morpeth**.

6.19.11 The proportion of residents with no qualifications is highest in Wansbeck.

6.19.12 Unemployment is highest in Alnwick and Wansbeck.

6.19.13 There is no clear pattern in the distribution of occupation groups however **Wansbeck** has the **highest proportion of residents in low income and less skilled occupations**.

6.19.14 **Rail services** are **limited to** the **north-south stretch along** the **eastern boundary** of the county and the **east-west stretch along** the **southern boundary** of the county with **little provision** for settlements **in the middle** and on the **western boundary** of the county.

6.19.15 There is congestion on many A roads leading to delays.

6.19.16 The **most common crime** across Northumberland is **criminal damage** with the **highest rates occurring in the South-East area of Northumberland which covers Blyth Valley and Wansbeck.**

6.19.17 There are a **variety of shops and retail amenities** across Northumberland with **most of them being within market towns**.

6.19.18 Northumberland has a **high proportion of contaminated land due to past industrial activity** and **poor surface water quality mainly due to industrial and agricultural pollution**.

7 Evidence about Transport Health and Wellbeing Impacts

7.1 Introduction

7.1.1 This chapter provides a summary of the key evidence on the potential impacts of a Local Transport Plan on health and wellbeing.

7.1.2 The chapter begins by examining current research on how people across the life course and different social groups rely on transport. It then moves on to outline the potential health impact for each of the key themes below which relate to the interventions proposed in the LTP3.

7.1.3 The key themes are:

- Active travel schemes and networks
- Public transport
- Community transport schemes
- Road dualling and road improvements
- Road Safety (including traffic injury)
- Air Pollution
- Noise Pollution
- Increasing highway capacity
- Promoting rail freight
- Travel awareness campaigns (education and marketing)
- Transport Governance
- Climate change

7.1.4 The general health impacts of transport are through:

7.1.4.1 Health outcomes:[18]

- Mental wellbeing
- Chronic disease - initiation or exacerbation

[18] Transport and Health Study Group, Faculty of Public Health Medicine. (2000). Carrying out a HIA of a transport policy.

- Injuries and deaths

7.1.4.2 Health Determinants (pathways of health impact):

- Jobs and economic development
- Access to services and amenities and community severance[19]
- Perceptions of the project e.g. perceived safety and perceived impacts
- Social interaction and recreation
- Social capital, community cohesion and social inclusion
- Physical activity
- Air pollution – particulates, nitrogen oxides, other
- Noise pollution
- Equity/ inequality

7.1.5 The above are all potential health and wellbeing related impacts of the LTP3.

7.2 General mobility patterns across the life course and among different social groups[20]

7.2.1 People's relationship with transport is dynamic and changes across the life course from child, young adult, adult and older person because of changes in lifestyle.

7.2.2 Primary school children's travel is supervised and constrained by their parents/caregivers concerns about safety. They most likely get to school or other amenities by walking or by car. Parent's use of a car generally reflects the time pressures they have in taking their children to school before heading off for work.

7.2.3 Older primary and secondary school children become more independent and can use local buses independently. The younger age groups tend to find bus journeys positive, exciting and adventurous. The older age groups as their travel experiences and transport needs develop tend to become dissatisfied with the

[19] Community severance in the UK transport assessment system is defined as: "The separation of residents from facilities and services they use within their community caused by new and improved roads or by changes in traffic flows." Highways Agency, Design Manual for Roads and Bridges, 2010. Volume 11, Section 3, Chapter 5: Community Severance.

[20] Department for Transport. (2006). Evidence base review on mobility: choices and barriers for different social groups. Centre for Research in Social Policy.

quality and provision of public transport services. This marks an important shift in perceptions towards public transport.

7.2.4 In their late teens (16 years and above) young people's transport needs expand to encompass work, training, further education, leisure, social and other activities. Their needs become more complex. And they are likely to travel further and at night. It is at this time that they begin to see car driving as the optimum mode of travel. Key barriers for young people are personal safety, school policies and the availability, reliability and cost of public transport.

7.2.5 In adulthood, travel is largely focused around responsibilities such as the need to travel to work, escort children, do the shopping and other household chores. There is a decline in younger adults (20s – 50s) making trips to visit friends and a greater use of the car while there is an increase in visits to friends and a reduction in the use of the car in older adults over the age of 50. However, there are important differences across different social groups as described in the following paragraphs 7.2.6-7.2.10. There is strong support for public transport with 17% of people feeling that better public transport would improve their job prospects and 29% that it would positively impact on their social life. However there is also some resistance to public transport use among some adults. Key mediating factors include range of services, journey times, quality and perceived safety of facilities and cost. 20% of households without access to a car reported some difficulty in accessing medical care and supermarkets.

7.2.6 Adults on low incomes are more likely to be dependent on public transport and hence more vulnerable to public transport problems particularly the lack of availability of public transport services (this tends to be rated as more important than the cost of public transport). 13% of people of working age said that they had decided not to apply for a particular job in the last 12 months because of transport problems.

7.2.7 Adults from black and minority ethnic (BME) groups are more likely to be dependent on public transport and less likely to find that bus services fit into their daily and yearly activity patterns. Older people from BME groups may also have additional information and language needs. Fear of racial violence can be a key barrier to access.

7.2.8 Women are more likely to travel for social, family and personal reasons. Women are less likely to have access to a car and more likely to travel by bus than men. Key barriers to their use of public transport are the difficulties of getting on and off public transport with children and the unreliability of bus services. Women are also more likely to be concerned about personal safety. Public transport is often seen as a last resort and not convenient. One key barrier identified was the unhelpful attitude of public transport staff alongside difficulties with getting on and off with children, unreliability of the services and personal safety concerns. Lack of transport can be a major barrier for women to access healthcare services and leisure amenities e.g. missing appointments or prioritising children's healthcare needs and foregoing their own need for healthcare visits.

7.2.9 Adults with disabilities are less likely to drive and more dependent on public or community transport and lifts from family and friends (escorted travel). However, 43% travel by local bus. Disabled people often find public transport inaccessible and can find a lack of flexibility in services e.g. having to ring in advance for assistance or negotiating with other passengers who take up the wheelchair space. There can also be concerns about being able to complete the whole journey safely and with good accessibility including through the wider street environment. As of 2003 only 29% of buses met disability standards and this is seen as an important structural barrier to the mobility of disabled people. In one recent survey, 50% of disabled people had turned down a job offer because of lack of accessible transport. Disabled entrepreneurs cited a similar barrier in relation to entering and sustaining self-employment. 21% stated that inaccessible transport had limited their educational and training opportunities.

7.2.10 For older people travel needs focus on shopping, personal business (notably healthcare) and on visiting friends. Older people become less likely to drive and more likely to use public transport. Maintaining independence and accessing essential services and social opportunities are crucial to older people's quality of life. A lack of transport can mean difficulty in accessing services and facilities, e.g. healthcare, and can lead to loneliness and social isolation. As people become elderly use of public transport and car driving becomes difficult due to declining physical fitness. They therefore become more dependent on assisted forms of transport e.g. special mobility schemes, regular visits from family and friends. They become even more vulnerable to social exclusion and have even greater difficulties accessing services and amenities independently. 39% of older people

without a car and who have never used public transport experienced multiple social exclusion.

7.3 Active travel schemes and networks

7.3.1 For activities such as walking and cycling, the availability and accessibility of cycle and pedestrian networks have the potential to encourage active travel as part of everyday life as the lack of accessible active travel infrastructure and facilities have been identified as a deterrent to a physically active lifestyle.[21] [22]

7.3.2 Established health benefits of physical activity include increased life expectancy and reduced risk of coronary heart disease as well as other chronic diseases such as hypertension, stroke, diabetes, osteoporosis and some cancers. There is also some evidence that physical activity can enhance mental health through higher self esteem, enhanced moods and improved cognitive function.[23] [23]

7.3.3 A UK survey which compared the profile of cyclists using National Cycling Networks (safe and attractive cycle routes on traffic free paths, quiet lanes or traffic calmed roads) to traditional on-road cycling suggested that the National Cycling Networks have encouraged people especially those from key vulnerable and equalities groups e.g. women, children and the retired to cycle more and thus increase social inclusion. Figures show an approximate increase in cycling of 10% for women, 12% for children and 5% for the retired.[24]

7.3.4 A US survey on walking trail access, use and effects, found that 55% of people who used the trails reported that they had increased their amount of walking since they began using the trail. 87% of trail users felt very safe when using the trails compared to 1% who felt unsafe. The most highly ranked feature of the trails was their scenic beauty (19%) followed by being a free place to exercise (18%) and then being a convenient location (15%).[25] Building multi-use trails can lead to short- and long-term increases in walking and cycling, especially on urban-area

[21] C.L.Craig et al. (2002). Exploring the effects of the physical activity: A study examining walking to work. American Journal of Preventative Medicine.

[22] The UK National Cycle Network: an assessment of the benefits of a sustainable transport infrastructure (2003). World Transport Policy and Practice.

[23] R.C.Brownson et al. (2000). Promoting physical activity in rural communities: walking trail access, use and effect. American Journal of Preventative Medicine.

trails and trails that connect population with desirable destinations, including key services and amenities.[24]

7.3.5 A cost benefit analysis of physical activity using cycle/pedestrian trails in the US suggests that the monetary gain in health benefits (related to using the trails) outweigh the cost of the construction and operation of the trails. It estimated that for every $1 invested in trails the estimated savings in medical costs was $2.94.[25]

7.3.6 One of the factors influencing whether children walk or cycle to school is parents' perceptions of travel routes e.g. distance, traffic and crime between home and school.[26] An Australian survey found that children aged 10 to 12 years were less likely to walk or cycle at least 3 times a week to destinations e.g. school or parks, if their parents believed they had to cross several roads to get to these places.[27]

7.3.7 An international survey with 11 participating countries found that residents of neighbourhoods where most of the streets had footpaths were 46% more likely to get moderate-to-vigorous physical activity at least five days a week for at least 30 minutes each day than those who lived where there were few or no footpaths on the streets.[28]

7.4 Public transport

7.4.1 Travel patterns have been identified to have either positive or negative impacts on physical and mental health and wellbeing. Increased investment in and use of public transport has been linked with increased physical activity, reduced vehicle emissions, and improved access to services, amenities and opportunities.[29]

[24] NICE Public Health Collaborating Centre. (2006). Physical activity and the environment: Review One: Transport.

[25] G. Wang et al. (2005). A cost benefit analysis of physical activity using bike/pedestrian trails. Health Promotion Practice.

[26] J. Kerr et al. (2006). Active commuting to school: associations with environment and parental concerns. Medicine and Science in Sports and Exercise.

[27] A. Timperio et al. (2004). Perceptions about the local neighbourhood and walking and cycling among children. Preventative Medicine

[28] Active Living Research (2009). Active transportation: making the link from transportation to physical activity and obesity.

[29] American Public Transport Association (2002). Conserving Energy and Preserving the environment: the role of public transportation.

7.4.2 Poor public transport is an additional burden that is likely to widen inequalities for those already suffering others forms of disadvantage. Two Joseph Rowntree Foundation (JRF) research studies identified that poor public transport affected the following and new public transport initiatives improved the following[30]

- access to high quality education
- public order, particularly in relation to youth disaffection
- the social integration of older people
- access to adequate health care facilities
- the take-up of employment.

7.4.3 Inadequate transport provision may add to social exclusion among already vulnerable groups, i.e. those who are unemployed, elderly, sick, on low incomes, and women with children.[31]

7.4.4 Public transport journeys involve on average ten minutes of walking to and from bus stops or station for a one way journey which encourages increased levels of physical activity. Therefore people who use public transport are likely to meet the minimum daily physical activity requirements for adults.[32]

7.4.5 A US study which compared the levels of physical activity associated with car and public transport commuting reported that train commuters walked 30% more than car commuters. Therefore people who used public transport were less likely to be inactive and potentially obese than those who did not.[33]

7.4.6 The proximity to public transport stops and stations is linked to increased use of public transport and increased levels of physical activity. A US study found that 19% more residents used the rail system after a new rail stop opened in their area.[30]

[30] Joseph Rowntree Foundation. (2001). Transport, the environment and social exclusion.

[31] Hilary Thomson, Ruth Jepson, Fintan Hurley and Margaret Douglas. (2008). Assessing the unintended health impacts of road transport policies and interventions: translating research evidence for use in policy and practice. BMC Public Health

[32] Scottish Needs Assessment Programme (2000). Health impact assessment of the City of Edinburgh Council's Urban Transport Strategy.

[33] R. Wener, G. Evans. (2007). A Morning stroll – levels of physical activity in car and mass transit commuting. Environment and Behaviour

7.5 Community transport schemes

7.5.1 Community transport schemes have the potential to promote social inclusion and equality of opportunity by offering accessible and affordable transport solutions for a range of community groups e.g. people in rural and isolated communities, school children, hospital patients, the elderly and people with disabilities who would otherwise be unable to access conventional public transport.[34]

7.5.2 A Joseph Rowntree Foundation study focused on subsidised transport in deprived areas demonstrated that there are indeed benefits of new bus services in terms of: a) supporting people to take up new jobs and maintain existing jobs; b) accessing health and social care services; and c) wider quality of life benefits enabling them to access leisure facilities and do more with their leisure time.[35]

7.5.3 Devon County Council developed a scheme which involved the use of community transport for getting non emergency patients to and from hospitals and freeing up ambulance transport for emergency patients resulted in a more efficient use of capacity and funding.[36]

7.5.4 In East Riding Council, collaborative working between the Council and Ambulance Service on the use of council, ambulance and community transport vehicles achieved service improvements and reduced the environmental impacts associated with delivering transport services because of more effective service delivery.[36]

7.6 Road dualling and road improvements (including bypasses)

7.6.1 Egan et al (2003) conducted a systematic review of 32 papers on the health effects of new roads. They found that out-of-town bypasses (roads which are designed to take road traffic away from populated urban areas) decrease injuries on main roads through or around towns, although more robust evidence is needed on potential effects on secondary roads. They also found that out-of-town bypasses reduce disturbance and community severance in towns but increase them elsewhere. There is some suggestion that, following the opening of a bypass, injury crashes in smaller surrounding roads and intersections may increase. This

[34] Department for Transport (2010). Community Transport: LTP Best Practice Guidance

[35] Joseph Rowntree Foundation. (2008). Value of transport in deprived areas.

could be due to drivers using short cuts or 'rat-running'. Major connecting roads (joining 2 urban areas, relieving older connecting road networks) are associated with significant decreases in accident injuries, but there is no evidence regarding the effects on rural residents.[36]

7.6.2 Levels of disturbance fall in areas where traffic is diverted from an existing through road onto a new bypass road. Disturbance from noise, vibrations, fumes and dirt fall on both main and secondary roads in the bypassed area.[37] Congestion and low average vehicle speeds generally increases the emission of air pollutants. Hence initiatives that reduce congestion and increase average vehicle speeds can reduce local air pollution levels.[38]

7.6.3 New roads and/or increases in traffic on existing roads can become an actual or perceived barrier to movement across the road. There is evidence to suggest that busy roads can reduce the number of social interactions and social relationships across it. A San Francisco study found that residents in a street/road with light traffic (2000 vehicles per day) had three times as many friends in the same street/road and twice as many acquaintances as residents in streets/roads with heavy traffic (16,000 vehicles per day).[39] This in turn is likely to have some potential adverse effects on wellbeing and opportunities for the enhancement of wellbeing. An out-of-town bypass may therefore reduce severance, levels of air pollution and noise for residents on existing roads while increasing them for those living near the bypass. A bypass can increase accessibility to services and amenities for many people. Altered road layouts and the restriction or closing of roads (and thereby diverting traffic to other roads) will impact differently depending on where individuals live. Similarly road junction closures are likely to increase severance and reduce accessibility for some people while reducing air and noise pollution for those living near the closed junction.

[36] Egan, M., Petticrew, M., Ogilvie, D., Hamilton, V. New Roads and Human Health: A systematic review. American Journal of Public Health. September 2003, Vol. 93, No.9, 1463-1471.

[37] Health Scotland, MRC SPHSU and IOM. 2007. Health impact assessment of transport initiatives: a guide.

[38] Institute of Public Health in Ireland. 2005. Health impacts of transport: a review.

[39] Appleyard D. 1981. Liveable Streets. University of California Press.

7.7 Road Safety

7.7.1 Road traffic incidents are not only an important cause of death and disability but also have wider health effects on both the individuals involved and the community where these incidents occur. Studies suggest that people's perception of safety in communities where incidents occur, changes and may be a barrier to how people move around especially for young people and the elderly whose access to social networks, services and amenities may reduce due to safety concerns. Mental health and wellbeing issues such as phobic travel anxiety, post traumatic stress disorder, general anxiety and depression have also been observed in people following a road traffic incident.[40]

7.7.2 There is evidence that the survival rate of a pedestrian involved in a road traffic incident increases from 15% if hit by a vehicle at 40mph to 95% if hit at 20mph. Further research has also shown that a 1mph change in overall average speed results in a 5% change in accidents and a 7% change in fatalities.[41] [42]

7.7.3 A review of the effects of urban traffic calming schemes suggested an overall beneficial effect with a 15% reduction in incidents causing injuries across the area subject to traffic calming. There was a greater effect on local roads, a 34% reduction compared to an 8% reduction on main roads.[41] Other benefits of traffic calming measures include increased walking and cycling and enhanced opportunities for the use of outdoor spaces which may encourage social interactions.[34]

7.7.4 A review of the effect of speed limit reductions particularly the effect of 30km/h speed zones showed an 8% reduction in all levels of injury and an 18% reduction in personal injury.[41]

7.7.5 A review of the effects of public lighting on accidents suggested a 15%-35% reduction in night time accidents as a result of public lighting interventions with fatal incidents reduced by 65%. The greatest effects were observed in rural areas compared to urban areas.[41]

[40] Institute of Public Health in Ireland (2005). Health impacts of transport: a review

[41] Parliamentary Office of Science and Technology (2006). Low carbon private vehicles.

[42] The City of Edinburgh Council (1999). Interim Local Transport Strategy 2000 to 2003

7.8 Increasing highway capacity

7.8.1 Increasing highway capacity creates the potential for an increased number of vehicles and hence increased traffic, noise and air pollution. There is a potential for congestion if the increase in the number of vehicles creates slow moving traffic however if the increased capacity enables free flowing traffic then congestion and the associated air pollution effects may be reduced.

7.8.2 As stated previously, there is evidence to suggest that busy roads can reduce the number of social interactions and social relationships across it.[40] Reduced social interaction can affect social support especially for the elderly which could increase the risk of depression.[34]

7.8.3 Downs (1992) formulated a theory to explain the difficulty of trying to remove peak-hour congestion from highways. He states that in response to an increase in capacity three immediate effects occur: [43]

- drivers using alternative routes begin to use the expanded highway;
- those previously travelling at off-peak times (either immediately before or after the peak) shift to peak times; and
- public transport users shift to driving their vehicles.

7.8.4 Mogridge et al (1987) adds another reason to the Downs-Thomson paradox where road capacity increases can actually make overall congestion on the road worse. He states that when there is a shift from public transport to cars because of a new/expanded road this causes a disinvestment in public transport by the operator through a reduction in the frequency of a service or the raising of fares to cover costs. This creates a vicious spiral where more public transport passengers move to using cars, ultimately leading to the closure of the public transport service which in turn leads to congestion on the new/expanded road that is worse than before.[44]

[43] Downs, Anthony, Stuck in Traffic: Coping with Peak-Hour Traffic Congestion, The Brookings Institution: Washington, DC. 1992.

[44] Mogridge, M.J.H. Holden, D.J. Bird, J. and Terzis G.C. "The Downs–Thomson paradox and the transportation planning process". International Journal of Transportation Economics, 14,pp. 283–311, 1987

7.9 Air Pollution

7.9.1 There is a substantial body of evidence on the adverse health effects of air pollution from motor vehicles.[45] [46] There are small but measurable increases in:

- premature deaths from cardio-respiratory disease;
- exacerbations of existing respiratory illness and an increase in hospital admissions because of it;
- an increase in respiratory symptoms; and
- reductions in lung function.

7.9.2 There is conflicting evidence on whether in-car levels of air pollution are higher or lower than background and pedestrian levels. Contextual factors e.g. urban/traffic density, climatic factors, barriers between roads and proximity to the road when walking, are likely to be an important factor in exposure. Some studies have identified in-vehicle concentrations of air pollution can be 1.5 to 5 times higher than general background levels.[47] Others have observed and modelled that pedestrians are exposed to higher concentrations than those in cars.[48] [49] [50]

7.9.3 As stated previously, congestion and low average vehicle speeds generally increases the emission of air pollutants and the levels of local air pollution. Hence initiatives that reduce congestion and increase average vehicle speeds can reduce local air pollution levels.[51]

7.10 Noise Pollution

7.10.1 Noise pollution consistently ranks high on the list of people's neighbourhood concerns with noise from road transport being the major source, followed by

[45] Health Scotland, MRC SPHSU and IOM. 2007. Health impact assessment of transport initiatives: a guide.

[46] World Health Organization. 2005. Health effects of transport related air pollution.

[47] Gulliver J and Brigg D. 2004. Personal exposure to particulate air pollution in transport microenvironments. Atmospheric Environment.

[48] Briggs DJ et al. 2008. Effects of travel mode on exposures to particulate air pollution. Environment International.

[49] De Nazelle A et al. 2009. The built environment and health: impacts of pedestrian-friendly designs on air pollution exposure. Science & Total Environment.

[50] Sharman J. 2005. Clinicians prescribing exercise: is air pollution a hazard? Med. J. Aus.

[51] Institute of Public Health in Ireland. 2005. Health impacts of transport: a review.

aircraft and railway noise. Evidence suggests that for every doubling of transport intensity, noise levels increase by 3 decibels (dB).[52]

7.10.2 Road traffic noise generally ranges between 50-80 decibels. This is enough to cause annoyance, interference with speech and sleep disturbance in some adults and children. These effects are thought to occur as physiological and cognitive responses to the stress caused by hearing road traffic noise. Noise may also deter some people from walking or cycling on busy roads. [53] Noise can also reduce helpfulness and social behaviours.

7.10.3 Annoyance from road traffic is likely to be the most widespread and important health effect. Other health effects such as heart disease have not been conclusively linked with noise pollution. Planning the location of sources of noise away from communities, and limiting noise production through removing or reducing traffic on certain routes or reducing speeds are potential ways of protecting people from noise. Limiting the transmission and reception of noise by using noise barriers and sound proofing are other useful approaches to reducing noise exposure.

7.10.4 Seto et al (2007) investigated the spatial distribution of community noise exposures and annoyance in San Francisco. Traffic data from the City of San Francisco were used to model noise exposure by neighbourhood and road type. The authors found that urban noise increased 6.7 dB ($p < 0.001$) with a 10-fold increase in street traffic, with important contributors to noise being bus and heavy truck traffic. They also found that living along arterial streets also increased the risk of annoyance by 40%.[54]

[52] den Boer L.C and Schroten A. (2007).Traffic noise reduction in Europe: Health effects, social costs and technical and policy options to reduce road and rail traffic noise.

[53] Health Scotland, MRC SPHSU and IOM. 2007. Health impact assessment of transport initiatives: a guide.

[54] Seto E.Y.W., Holt A., Rivard T., Bhatia R. Spatial distribution of traffic induced noise exposures in a US city: an analytic tool for assessing the health impacts of urban planning decisions. International Journal of Health Geographics 2007, 6:24.

7.11 Promoting rail freight

7.11.1 Evidence shows that air and noise pollution from railway freight is lower than road freight.[55] [56]

7.11.2 Reductions in air pollution depend on how the trains are powered. Electric powered trains generate less air pollution. UK rail freight produces 70% less carbon dioxide emissions than the equivalent road journey and the heaviest UK trains can remove 160 Heavy Goods Vehicles (HGVs) from the roads. Therefore there is an increased potential for the use of rail for freight transportation to considerably reduce air pollution.[56]

7.11.3 Reductions in noise pollution occur because railway noise is generally intermittent whereas noise from road traffic tends to be fairly constant. However, estimates of noise created by individual passing trains, is generally higher. Therefore, promoting rail freight has the potential to cause noise annoyance and nuisance especially to residents living close to rail lines however the frequency of the noise generated is likely to be less.[56]

7.11.4 Promoting rail freight may also reduce the number of long distance road freight journeys. This is likely to improve road safety as evidence suggests that HGVs are over 3 times more likely to be involved in fatal accidents and be considerably more dangerous to road users than cars.[57]

7.12 Travel awareness campaigns (education and marketing)

7.12.1 A review on the use of mass media campaigns to change health behaviour suggest that mass media can produce positive changes or prevent negative changes in health related behaviours across large populations. [57]

7.12.2 The review showed that campaigns aimed at changing physical activity behaviours yielded short term increases in physical activity, mainly in highly motivated individuals. Success has been seen with community-wide walking campaigns

[55] Organisation for Economic Cooperation and Development (1997). The environmental effects of freight.

[56] http://www.freightonrail.org.uk/HotTopicsExaminingBenefitsOfRailFreightComparedWithMega%20trucks.htm Accessed on 14th October 2010.

[57] Wakefield. A.M et. al (2010). Use of mass media campaigns to change health behaviour. The Lancet

targeting adults especially those over 50 years and children between 9 and 13 years old.[58]

7.12.3 Other evidence shows that road safety campaigns have promoted reductions in the frequency of road accidents and deaths through increased use of seat belts, helmets for cyclists, speed limit reduction, driver fatigue and drink driving.[58]

7.12.4 A review on the influence of "soft" measures such as travel awareness campaigns, travel plans and car sharing schemes on travel demand suggest that for every £1 spent on well designed "soft" measures, there is a £10 benefit in the reduction of traffic congestion alone.[58]

7.12.5 A case study of the Bittern rail line between Norwich and Sheringham in Norfolk showed that a combination of effective marketing and upgrading of stations, a bus/rail link and other improvements led to a year-on-year growth of over 7% a year and a total of 40% over five years.[59]

7.12.6 An awareness campaign was launched by the Highways Agency and Great Eastern Railways in 1998 which included poster, moving billboard, bus sides, radio and newspaper advertisements and was aimed at persuading people to use trains rather than cars for trips along the A12 corridor near Chelmsford. The evaluation of the campaign showed the following: [59]

- Awareness of Great Eastern services amongst non-users increased by 11%
- Within a year, business at Chelmsford Station increased by 12% with a 17% increase in the sale of standard return tickets and up to 31% increase in the sale of weekly season tickets.

7.12.7 Walk to school week as part of a travel campaign in Hertfordshire has seen the number of schools participating rise from 130 in 1994 to 201 in 2001 and a much larger increase in participating pupils from 18,000 to 52,000 in the same period.[59]

7.12.8 An evaluation of the Hertfordshire walk to school week campaign as part of the EU project TAPESTRY showed that there was a small increase of 1.3% in the proportion of school children walking to school at least once a week in the schools that took part in the campaign and a 1.3% decline in the schools that had never taken part in the campaign.[59]

[58] Department for Transport (2004). Smarter Choices – changing the way we travel.

7.12.9 Feedback from locally implemented transport campaigns emphasize the need for supportive policies and infrastructure that improve public transport service levels, traffic calming, pedestrianisation, cycle networks etc alongside the campaigns in order for them to be successful. It is also observed that success rates are lower for habitual campaigns such as those that encourage continuing physical activity compared to one off campaigns.[58] [59]

7.13 Transport Governance[59]

7.13.1 There is currently very little evidence on the health impacts of transport governance however a review of Metropolitan Transport Governance shows that through governance there is the potential to:

- effectively achieve a range of multi-modal planning, integration and delivery of public transport by strengthening cross boundary consensus on transport priorities;
- ensure that transport delivery supports revitalisation of city centres, other regeneration and wider urban renaissance agendas;
- develop and disseminate best practice and innovation in transport schemes such as school transport, demand responsive transport and light rail.

7.13.2 The review also states that the development of effective arrangements for urban transport planning, delivery and operations with a particular focus on public transport services has been a consistent factor in successfully addressing problems of urban transport delivery worldwide.

7.13.3 The achievements of the Metropolitan Transport Governance authorities and executives show that through governance, issues around inequalities and social inclusion can be tackled. This is achieved through the provision for schemes such as concessionary fares for the elderly and people with disabilities; Demand Response Transport that links rural and urban areas; and improvements to public transport stations and stops.

[59] Passenger Transport Executive Group. (2007). Review of reform options for Metropolitan Transport Governance.

7.14 Climate Change

7.14.1 Transport has both local and global impacts and contributes to global climate change through emissions of carbon dioxide, hydrocarbons and nitrous oxides. Fuel type and efficiency of combustion determine the contribution of transport to climate change.

7.14.2 Increasing levels of carbon dioxide and other greenhouse gases is likely to produce significant long term changes to local, regional and global weather patterns. In the context of the UK these are likely to be: [60]

- Warmer summer (with the strong potential for heatwaves)
- Milder wetter winters
- Floods and droughts
- Extreme weather events e.g. thunderstorms and hurricanes

7.14.3 In temperate countries, deaths rates during the winter season have tended to be higher than those in the summer however this may/is likely to change with more deaths related to heat stroke. [61]

7.14.4 Changes in air quality from air pollutants and intense pollen seasons associated with climate change may exacerbate existing cardio-respiratory diseases.[62]

7.14.5 Increased incidence of floods and droughts is likely to affect agricultural land use which will affect the quality and availability of affordable food production. This has an indirect impact on levels of nutrition or malnutrition.[62]

7.14.6 Issues surrounding water shortage and quality are likely to intensify in situations where there is drought or reduced rainfall. This is likely to have an impact on sanitation and transmission of water borne diseases.[62]

7.14.7 There is an indirect link between climate change and disease transmission as increasing temperatures may provide opportunities for disease vectors, such as mosquitoes and malaria, to increase replication rates and change their infection and survival patterns.[62]

[60] Health Protection Agency. Health effects of climate change in the UK 2008. 2008.

[61] WHO. Climate change and human health. http://www.searo.who.int/en/Section260/Section2468_14932.htm

7.14.8 This means that the choice of transportation modes in the UK will determine in part the potential contribution of transport to climate change and the health effects these are likely to cause. Research suggests that climate change will have its greatest effects on poorer communities who contribute less to the cause of climate change. Climate change has the potential to increase health inequity.[62]

7.15 Conclusion

7.15.1 The evidence gathered shows that transport can be both beneficial and negative at global, national, regional and local levels in terms of connectivity and accessibility, active and sustainable living, economic growth, safety, equity and climate change and pollution issues.

7.15.2 The range of interventions proposed in the provisional LTP3 have the potential to improve transport provision in Northumberland however the full potential will only be realised when interventions are integrated and residents have a choice to efficiently combine multiple modes of transport and shift to sustainable ways of travelling.

[62] Lancet and UCL Institute for Global Health Commission (2009). Managing the health effects of climate change.

8 Health Impacts of the LTP3 Objectives and Interventions

8.1 Introduction

8.1.1 The analysis of the health impacts involved first an analysis of the interactions between the proposed LTP3 objectives and the HIA objectives followed by an analysis of the proposed LTP3 interventions against the HIA objectives.

8.1.2 The analysis has considered the overall impacts across the whole life of the LTP3.

8.1.3 The HIA objectives used in the analysis took into account the wider determinants of health and wellbeing likely to be affected by the LTP3.

8.1.4 The LTP3 interventions were initially grouped into 8 intervention themes. However following a review by Northumberland County Council, these interventions have been regrouped into 5 broader intervention themes. The new intervention groups overlap and merge across the original intervention themes as follows:

Original Intervention Themes	Final Intervention Themes
Highway Capacity	Supporting Economic Growth
Public Transport	Supporting Economic Growth Improving Access to Services Reducing Carbon Emissions
Smarter Choice	Reducing Carbon Emissions Safer and Healthier Travel
Freight	Supporting Economic Growth
Non Motorised Users	Safer and Healthier Travel Improving Access to Services Reducing Carbon Emissions Supporting Economic Growth
Road Safety	Safer and Healthier Travel
Climate Change	Reducing Carbon Emissions
Miscellaneous	Supporting Economic Growth Improving Access to Services Reducing Carbon Emissions

N.B. No specific interventions have been identified for the Quality Of Life Transport Goal, as this goal relates to those issues already identified for the other Transport Goals; many of the interventions for the other Transport Goal will have a positive impact on Quality Of Life.

8.1.5 Similarly, the LTP3 detailed list of specific interventions however following a review these have been converted into a more general set of final LTP3 interventions. These are shown in Table 8.2 alongside the original LTP3 interventions.

8.1.6 The analysis of health impacts has been conducted on the original detailed list of specific interventions and shown in Table 8.2 and in more detail in Appendix C.

8.1.7 Only those interventions with moderate to major positive and/or negative health and wellbeing impacts have been discussed in this chapter.

8.1.8 Tables 8.1 and 8.2 provide summary tables of the likely health and wellbeing impacts of the LTP3 objectives and interventions respectively. Appendix B and C provide detailed health impact tables for the proposed LTP3 objectives and interventions.

Table 8.1 LTP3 Objectives and Sub-Objectives and their overall potential for positive and/or negative health and wellbeing impacts

(✓ = positive ✗ = negative o = no impact)

LTP3 Objectives	LTP3 Sub-objectives	Potential Health Impact
Goal 1: Support economic growth	• Improve the performance of existing transport networks in those places that show signs of increasing congestion and unreliability • Extend the reach of existing networks where it is needed to meet growing demand	✓✓
Goal 2: Reducing carbon emissions	• Deliver sustainable low carbon travel choices • Strengthen our networks against the effects of climate change and extreme weather events	✓✓
Goal 3: Safer and healthier travel	• Improve safety of the transport network particularly for vulnerable road users • Enable and encourage more physically active and healthy travel	✓✓✓
Goal 4: Improving access to services	• Reduce the barriers preventing people travelling to services and facilities • Reduce the need and distance for people to travel to access services	✓✓✓
Goal 5: Quality of life	• Improving streetscapes and the urban environment	✓✓

8.2 Health impacts of the LTP3 objectives (See also Table 8.1 & Appendix B)

8.2.1 Overall, ***LTP Goal 1: Support economic growth*** **has the potential to have moderate positive health and wellbeing impacts**.

8.2.1.1 *Improving the performance of existing transport networks in places that show signs of increasing congestion and unreliability,* is likely to contribute to: reductions in localised pockets of high air pollution due to reduced congestion and better traffic flow; improving access to goods, services and amenities because of more efficient goods deliveries and quicker journeys to services and amenities (including health, social care and welfare services for residents using key local routes); maintaining stable levels of employment and reducing long term unemployment; and reducing poverty and securing economic inclusion. This sub-objective therefore has the potential to improve physical and mental health and wellbeing and reduce health inequalities.

8.2.1.2 *Extending the reach of existing networks where needed to meet growing demand,* is likely to contribute to: improving access to goods, services and amenities (including health, social and welfare services) because residents in hard to reach areas are likely to have more connections to these services and amenities; maintaining stable levels of employment and reducing long term unemployment; reducing poverty and securing economic inclusion; and residents being able to take up educational training and opportunities for lifelong learning and employability because residents have the ability to travel further for work and education. However, it is also likely to contribute to an increase in residents being exposed to more road traffic which could increase the levels of deaths and injuries due to traffic incidents. Air and noise pollution are also likely to increase and potentially reduce air quality and increase ambient noise levels with increasing transport provision on the extended transport networks. This sub-objective therefore has the potential to improve physical and mental health and wellbeing and reduce health inequalities; though there are significant negative impacts if car use increases.

8.2.2 Overall, ***LTP Goal 2: Reducing carbon emissions*** **has the potential to have moderate positive health and wellbeing impacts**.

8.2.2.1 *Delivering sustainable low carbon travel choices,* is likely to contribute to: improving air quality and reducing ambient noise levels through the use of low emission vehicles; and promoting healthy lifestyles as active travel is likely to be part of the mix of low carbon travel choices. This sub-objective therefore has the potential to improve physical and mental health and wellbeing; provide a positive, safe and healthy environment for children; and reduce health inequalities.

8.2.2.2 *Strengthening the networks against the effects of climate change and extreme weather events,* is likely to contribute to: reducing deaths and injuries due to traffic incidents; and improving access to goods, services and amenities (including health, social care and welfare services). This sub-objective therefore has the potential to improve physical and mental health and wellbeing; provide a positive, safe and healthy environment for children; and reduce health inequalities.

8.2.3 Overall, ***LTP Goal 3: Safer and healthier travel*** **has the potential to have major positive health and wellbeing impacts**.

8.2.3.1 *Improving safety of the transport network particularly for vulnerable road users*, is likely to contribute to: reducing deaths and injuries due to traffic incidents; improving access to goods, services and amenities (including access to health, social and welfare services); promoting healthy lifestyles; supporting community networks and assisting social inclusion as users, especially vulnerable users, feel more confident about using public transport, walking and cycling; reducing crime and disorder or the fear of crime through safety measures such as CCTV. This sub-objective therefore has the potential to improve physical and mental health and wellbeing; provide a positive, safe and healthy environment for children; and reduce health inequalities.

8.2.3.2 *Enabling and encouraging more physically active and healthy travel*, is likely to contribute to: reducing deaths and injuries due to traffic incidents; improvements in air quality and reductions in noise levels through reduced

car usage; promoting healthy lifestyles; and supporting community networks and assist social inclusion as more people are out and about in neighbourhoods. However, more walking and cycling may lead to a short term increase in deaths and injuries. Although over time, the risk of deaths and injuries due to traffic incidents is likely to decline as people become used to more cyclists and pedestrians. This sub-objective therefore has the potential to improve physical and mental health and wellbeing and provide a positive, safe and healthy environment for children.

8.2.4 Overall, ***LTP Goal 4: Improving access to services*** **has the potential to have major positive health and wellbeing impacts**.

8.2.4.1 *Reducing barriers that prevent people travelling to services and facilities,* is likely to contribute to: improving access to goods, services and amenities (including health, social and welfare services); promoting healthy lifestyles through greater use of public transport, walking and cycling; supporting community networks and social inclusion; maintaining stable levels of employment and reducing long term unemployment; reducing poverty and securing economic inclusion; and residents being able to take up educational training and opportunities for lifelong learning and employability. This sub-objective therefore has the potential to improve physical and mental health and wellbeing; provide a positive, safe and healthy environment for children; and reduce health inequalities.

8.2.4.2 *Reducing the need and distance for people to travel to access services,* is likely to contribute to: *reducing* deaths and injuries from traffic incidents; improving local air quality, reducing ambient noise levels, improving access to goods, services and amenities (including health, social and welfare services); and promoting healthy lifestyles. This sub-objective therefore has the potential to improve physical and mental health and wellbeing; provide a positive, safe and healthy environment for children; and reduce health inequalities.

8.2.5 Overall, ***LTP Goal 5: Quality of life*** **has the potential to have moderate positive health and wellbeing impacts**.

8.2.5.1 *Improving streetscapes and the urban environment*, is likely to contribute to: reducing deaths and injuries due to traffic incidents; and promoting healthy lifestyles as attractive environment are likely to encourage more walking and cycling and outdoor play; reducing crime, disorder or fear of crime through increased natural surveillance from busy local environments. This sub-objective therefore has the potential to improve physical and mental health and wellbeing; provide a positive, safe and healthy environment for children; and reduce health inequalities.

Table 8.2 LTP3 Interventions and their overall potential for positive and/or negative health and wellbeing impacts

(✓ = positive × = negative o = no impact)

LTP3 Intervention Theme	Original LTP3 Intervention	New LTP3 Intervention	Potential Health Impact	
Highway Capacity	Morpeth northern bypass	- Morpeth northern bypass	✓✓	××
	General highway capacity improvement	- Managing and Maintaining the Network – *Transport asset management*	✓✓	××
	Blyth Central link road	- Blyth Central link road	✓✓	××
	-	- A193 Cowpen Road corridor, Blyth	✓	××
	-	- A189 to Battleship Wharf	✓	××
	A1 dualling	- A1 improvements	✓	×
	A19 junction improvements	- Increasing network capacity – *A19 (T) junction improvements*	✓	
	Telford Bridge junction improvements	- Increasing network capacity – *Telford Bridge, Morpeth*	✓	
Public Transport	Reopening of the Ashington Blyth and Tyne railway line	- South East Northumberland public transport corridor	✓✓✓	
	More local train services on the East Coast main line	- Improving rail travel	✓✓✓	
	Extra peak hour public transport services	- Improving rail travel	✓✓	
	Passenger Assistance Personnel	- Improving rail travel	✓✓	
	Improve access to train stations	- Improving rail travel - Increasing accessibility for the mobility impaired	✓✓	
	Bus stop improvements	- Improving local bus travel - Increasing accessibility for the mobility impaired	✓✓	

LTP3 Intervention Theme	Original LTP3 Intervention	New LTP3 Intervention	Potential Health Impact	
Public Transport continued	Improve security to stations and stops	- Increase personal safety and security	✓✓	
	Improve coach parking	- Improve facilities for coach travel	✓✓	
	Improve vehicle quality	- Increasing accessibility for the mobility impaired	✓✓	
	Low emission public transport vehicles	- Sustainable car use – *Car sharing schemes*	✓✓	
	Strengthen relationships between Northumberland City Council and operators	- Improving local bus travel - Improving rail travel	✓✓	
	Real time information at stations and stops	- Improving local bus travel - Improving rail travel	✓	
	Up to date timetabling at stations and stops	- Improving local bus travel - Improving rail travel	✓	
	Greater car parking facilities at train stations	- Improving rail travel	✓	
	Improve safety on board public transport	- Increase personal safety and security	✓	
	Ticketing options	- Widening travel choice - Reducing the cost of travel	✓	
	Public transport marketing	- Widening travel choice	✓	
	Fast ticketing machines at stations and stops	- Improving rail travel	o	
	Interactive journey planners/timetables at stations and interchanges	- Improving rail travel	o	
Smarter Choices	Local authority monitoring and support for travel plans	- Travel planning	✓✓✓	
	Promoting/supporting flexible working practices	- Influencing demand	✓✓	
	Travel awareness campaigns	- Marketing and branding – *Travel awareness campaigns*	✓	

LTP3 Intervention Theme	Original LTP3 Intervention	New LTP3 Intervention	Potential Health Impact	
Smarter choices continued	Cycle/walking education in schools, workplaces and communities	- Travel planning- Workplace travel plans	✓	
	Promotion of car clubs and car sharing	- Sustainable car use – *Car sharing schemes*	✓	
Freight	Efficient rail freight network operation	- Freight - Intra modal freight transport	✓	
	Promote rail freight	- Freight - Intra modal freight transport	✓	
	Freight consolidation	- Freight	✓	
	Address congestion on highway network on approach to Port of Blyth	- Intra modal freight transport	✓	
	Develop freight quality partnerships	- Freight	✓	
Non Motorised Users	Develop CONNECT 2 programme	Deliver the Sustrans Connect 2 Project		
	Work with Sustrans to develop active travel schemes	- Deliver the Blyth Active Travel scheme	✓✓✓	
	Continuous walking/cycling routes	- Active travel choices - Promote walking	✓✓✓	
	Improved signing (for pedestrian and cycle routes)	- Improving travel information	✓✓✓	
	Improvements to security and maintenance of footpaths and cycleways	- Hard surfacing and improved drainage on footpaths and cycleways	✓✓✓	
	Roll out cycle hubs across Northumberland	- Improving walking and cycling for tourist - Active travel choices	✓✓	

LTP3 Intervention Theme	Original LTP3 Intervention	New LTP3 Intervention	Potential Health Impact	
Non-motorised users continued	Continue to support bikeability	- Safer Children and promote cycling	✓✓	
	Cycle parking and facilities at public transport stations and key destinations	- Promote cycling	✓✓	
	Walk/cycle campaigns	- Promote walking - Promote cycling	✓	
	Walk and cycling maps	- Improving travel information	✓	
Road Safety	Traffic calming measures	- Improved safety of the public – transport network	✓✓✓	
	Increased/improved pedestrian and toucan crossings	- Improved safety of the public – transport network	✓✓✓	
	Education and training	- Improved safety of the public – transport network	✓✓	
	Safer routes to school	- Improved safety of the public – transport network	✓✓	
	Publicity campaigns	- Improved safety of the public – transport network	✓	
	Driver training	- Improved safety of the public – transport network	✓	
Climate Change	Hard surfacing and improved drainage on footpaths and cycleways	- Hard surfacing and improved drainage on footpaths and cycleways	✓✓✓	
	Capital programme to strengthen infrastructure	- Capital programme to strengthen infrastructure	✓✓	
	Regular maintenance and resurfacing of roads	-Maintenance and resurfacing of roads	✓✓	
Miscellaneous	Spatial planning linked to transport policy	-Reduce the need and distance for people to travel to access services	✓✓✓	
	Improve broadband connectivity and telephone communications	-Reduce the need and distance for people to travel to access services	✓✓✓	

LTP3 Intervention Theme	Original LTP3 Intervention	New LTP3 Intervention	Potential Health Impact	
Miscellaneous continued	Support community transport organisations	- Improving local bus travel - Increasing accessibility for the mobility impaired	✓✓✓	
	EV charging points	- Sustainable care use - *Low carbon vehicles*	✓✓	
	Greater parking enforcement	- Network management	✓✓	
	Identify taxi waiting areas and enforce TRO's to avoid delay to public transport	- Network management	✓	
	Schemes to improve signing	- Network management	✓	

8.3 Health impacts of the key proposed LTP3 interventions (See also Table 8.2 & Appendix C)

8.3.1 Only interventions with moderate to major positive and/or negative health impacts are described below.

8.3.2 **Morpeth Northern Bypass is likely to have both moderate positive and moderate negative health and wellbeing impacts.** The positive health and wellbeing impacts are likely to affect the residents of Morpeth because the traffic not going through Morpeth is likely to contribute to reduced air pollution, noise levels and community severance in Morpeth. The negative health and wellbeing impacts are likely to affect residents living in the areas which the bypass will go through. These residents are likely to be affected by increased air pollution, noise and community severance.

8.3.3 **Managing and Maintaining the Network is likely to have both moderate positive and moderate negative health and wellbeing impacts.** The positive impacts are likely to be from better traffic flows leading to improved accessibility to goods, services and amenities and a reduced risk of traffic incidents and deaths because of interventions such as improved road junctions. The negative impacts are likely to be from increased air pollution, noise levels and community severance because of the likely increase in the number of vehicles and increase in land take from existing agricultural, residential and commercial land.

8.3.4 **Blyth Central Link Road is likely to have both moderate positive and moderate negative health and wellbeing impacts.** The positive impacts are likely to be from better traffic flows leading to improved accessibility to goods, services and amenities; a reduced risk of traffic incidents and deaths because of interventions such as improved road junctions; and enabling the development of new housing and the growth of Blyth. The negative impacts are likely to be from increased air pollution, noise levels and community severance because of the likely increase in the number of vehicles and increase in land take from existing agricultural, residential and commercial land.

8.3.5 **Interventions focused on increasing the service provided by public transport are likely to have moderate to major positive health and wellbeing impacts,** *e.g. reopening of the Ashington Blyth and Tyne railway line (South East Northumberland public transport corridor); more local train services on the East Coast main line and extra peak hour public transport services.* This is because these interventions are likely to encourage a modal shift for those who commute by car and provide more choice of sustainable modes of transport especially for those without a car. For those on low income/unemployed this is also likely to improve their local access to jobs, goods and services. The extra services at peak time are likely to also improve journey ambience and generate greater use of public transport which is likely to contribute to a reduction in air pollution.

8.3.6 **Interventions focused on station maintenance and management are likely to have moderate positive health and wellbeing impacts,** *e.g. Passenger Assistance Personnel; improve access to train stations; bus stop improvements; improve security to stations and stops and improved coach parking*. This is because, these interventions are likely to enhance the local neighbourhoods and therefore increase perceived safety and also improve accessibility particularly for people with disabilities, the elderly and people with young children. Also there is a potential for the increased security and improved public transport stations and stops to show a commitment to providing good quality public transport and thereby increase confidence in using public transport. Improved coach parking is likely to increase tourist coach trips into Northumberland, reduce the number of inappropriate coach parking and potentially reduce the number of tourists coming by car.

8.3.7 **Interventions focused on public transport vehicles are likely to have moderate positive health and wellbeing impacts,** *i.e. improve vehicle quality and low emission public transport vehicles.* This is because these interventions are likely to increase bus use; particularly from people with disabilities, the elderly and people with young children. There is also likely to be improved local air quality especially in poor areas which tend to have the worst air quality.

8.3.8 **Strengthening relationships between travel regulators and travel operators is likely to have moderate positive health and wellbeing impacts,** e.g. between Northumberland City Council and operators. This is because good relationships are likely to ensure that social good is considered alongside profitability in the creation and closure of routes so that unprofitable but important

routes particularly for poor or rural communities are served and continue to be by buses.

8.3.9 **Local authority monitoring and support for travel plans is likely to have a major positive health and wellbeing impact.** This is because this intervention is likely to generate a strategic insight into how staff in public and private sector organisations travel and enables identification of opportunities such as cycle and walk schemes and travel loans to create a modal shift to more sustainable modes of travel in employed staff within these organisations.

8.3.10 **Promoting/supporting flexible working practices is likely to have a moderate positive health and wellbeing impact.** This is because this intervention enables employees to adopt flexible travel behaviours such as walking and cycling and use of public transport without being penalised for being late or going home early. It is also likely that employees can fit in family activities around work and therefore enhance family relationships particularly for children. This is also likely to reduce congestion on roads and rail at peak times.

8.3.11 **Interventions focused on both walking and cycling and improvements to security and maintenance of footpaths and cycleways, are likely to have major positive health and wellbeing impacts,** *e.g. work with Sustrans to develop active travel schemes, continuous walking/cycling routes, improved signing (for pedestrian and cycle routes).* This is because these interventions have the potential to increase walking and cycling by a) actively targeting residents through a range of active travel schemes/activities, b) providing increased numbers of continuous routes with good clear regular signage along safe and short routes, c) increasing residents perception of safety about walking and cycling routes and d) providing high quality routes with good ambience because they are clean, even and accessible.

8.3.12 **Interventions focused on cycling only are likely to have moderate positive health and wellbeing impacts,** *e.g. roll out cycle hubs across Northumberland, continue to support bikeability and cycle parking and facilities at public transport stations and key destinations.* Rolling out cycle hubs is focused more on tourists. This is likely to increase active travel in tourists however there is an increased potential for cycle injuries as the tourists are not familiar with the locality. Supporting bikeability amongst school children is likely to increase uptake of cycling by children though this is heavily influenced by parents' perceptions of

children cycling and road safety. Ensuring the safety of stored bikes is also likely to encourage regular cycling especially amongst people who would not cycle because of concerns about having their bikes stolen because of inadequate cycle parking provision.

8.3.13 **Interventions focused on structural measures for road safety are likely to have major positive health and wellbeing impacts,** *e.g. traffic calming measures and increased/improved pedestrian and toucan crossings*. These interventions are likely to reduce traffic speeds and traffic flows and therefore have the potential to reduce the risk of traffic incidents, reduce noise and encourage walking, cycling and social interactions particularly in poorer communities.

8.3.14 **Interventions focused on raising awareness about road safety are likely to have moderate positive health and wellbeing impacts,** *e.g. education and training and safer routes to school.* Targeted education and training for communities affected by road traffic incidents has the potential to reduce road traffic incidents. Creating safer routes to school has the potential to reduce the risk of traffic incidents, reduce noise and encourage walking cycling and interactions amongst school children however how children get to school is heavily influenced by their parents.

8.3.15 **Interventions focused on climate change are likely to have moderate to major positive health and wellbeing impacts,** e.g. *capital programme to strengthen infrastructure, regular maintenance and resurfacing of roads and hard surfacing and improved drainage on footpaths and cycleways*. Climate change has the potential to disrupt all types of transportation. Therefore ensuring that key infrastructure, roads, rail networks, footpaths and cycleways are improved, strengthened and maintained to withstand the effects of climate change will reduce the potential long term health impacts due to loss of access because of freak weather events and associated economic disruption.

8.3.16 **Interventions that can reduce the need and distance for people to travel to access services are likely to have major positive health and wellbeing impacts,** *e.g. spatial planning linked to transport policy, improve broadband connectivity and telephone communications and support community transport organisations*. Good strategic spatial planning identifies key opportunities and constraints in potentially minimising negative and maximising positive impacts. The ability to work from home and teleconferencing from improved broadband

connectivity and telephone communications is likely to reduce the need to travel and consequently reduce traffic incidents, air pollution, noise and enhance social interactions (social capital) especially with family and general educational opportunities. Supporting community transport organisations is likely to enhance social capital and community cohesion particularly for those from poorer background and those without access to a car.

8.3.17 **Interventions focused on sustainable car use and network management are likely to have moderate positive health and wellbeing impacts,** e.g. EV charging points and greater parking enforcement. This is because the wide spread use of electric vehicles by residents and businesses is likely to reduce air pollution. While greater parking enforcement is likely to improve public transport movement thereby encouraging the use of public transport and walking.

8.4 Equity impacts

8.4.1 **The set of LTP3 objectives, sub-objectives and interventions proposed have the strong potential to contribute to reducing health and social inequalities.** Objectives and interventions around the following key issues have the greatest potential to reduce health inequalities and enhance health equity.

8.4.2 Public transport: the prioritisation of public transport over private transport will help to reduce health inequalities in terms of enhancing social and economic inclusion for people without cars and those on low incomes. It will enable these groups in particular to have better access to local goods, services and amenities as well as to job and education opportunities further away especially if there is a good integration across public transport services (i.e. across buses and trains).

8.4.3 Non motorised users: providing the infrastructure that makes it attractive and easier to walk or cycle to access goods, services and amenities locally will help to reduce health inequalities. This is particularly beneficial in rural areas where public transport provision is generally lower than in urban areas. Having short and safe walk and cycle routes can improve connectivity and enhance social inclusion as well as improve physical and mental health and wellbeing through physical activity.

8.4.4 Road safety: Poor communities tend to be worst affected by road traffic deaths and injuries because of their likely increased exposure to road traffic. Therefore,

road safety measures have the potential to enhance the safety of residents in poorer communities. Targeted education and training in communities worst affected by road traffic incidents is also likely to reduce road traffic deaths and injuries.

8.5 Long term and cumulative impacts

8.5.1 Due to the strategic nature of the LTP3 and the 15 year period it covers, it is difficult to identify specific areas within the LTP3 interventions where long term and cumulative impacts are likely to arise except to say that the positive impacts are overlapping and synergistic with each other as are the negative health and wellbeing impacts.

8.5.2 However, some of the factors that may help determine where potential cumulative impacts may be experienced include:

8.5.3 Final preferred set of interventions: A set of interventions that prioritises public transport and active travel over private transport related interventions is likely to have major long term and cumulative positive health and wellbeing impacts because it encourages people to use more sustainable forms of transport, be physically active, helps towards reducing local air and noise pollution and increases the likelihood of positive social interactions.

8.5.4 Implementing interventions: In most cases there may be temporary negative impacts associated with the implementation of each intervention e.g. the construction phase of new roads, road dualling, junction improvement works, extension of existing rail links, building new rail links, etc. Therefore implementing several interventions simultaneously has the potential to affect a wider range of determinants of health and increase the combined temporary cumulative negative health and wellbeing impacts.

8.5.5 Links to other counties and regional transport initiatives: This is particularly important where interventions have a potential to interface with regional transport networks. Residents living on the boundary of Northumberland connecting to surrounding counties are likely to be most affected from cumulative impacts if there are other proposed developments. Therefore interventions for such areas should be appropriately phased. In addition, connections between walking, cycling,

rail, waterway and road routes across adjacent counties is likely to enhance the modal shift and levels of active travel in Northumberland and the region as a whole.

8.6 Conclusion

8.6.1 **Overall, the LTP3 has a strong potential to deliver many major positive health and wellbeing impacts and few negative health and wellbeing impacts for the residents of Northumberland.**

8.6.2 The positive health and wellbeing impacts are associated with interventions that have the potential to encourage physical activity e.g. improving walk and cycle routes and interventions that encourage use of more sustainable forms of transport e.g. increased frequency and reliability of buses and trains.

8.6.3 The negative health and wellbeing impacts are associated with interventions that have the potential to encourage more private car use e.g. increasing highway capacity and road dualling and interventions that require construction of new transport infrastructure e.g. road dualling, a new bypass and extending an existing train line.

8.6.4 The maximum potential of impacts experienced across Northumberland is likely to depend on the final set of preferred interventions chosen from the proposed set. Prioritising the intervention themes as follows is likely to be most beneficial to the health and wellbeing of the residents of Northumberland:

- Safer and Healthier Travel
- Improving Access to Services
- Reducing Carbon Emissions
- Supporting Economic Growth
- Quality of Life

8.6.5 The next chapter recommends some key enhancement and mitigation measures to maximise the potential positive health and wellbeing impacts and minimise the potential negative impacts.

9 Mitigation and Enhancement

9.1 Introduction

9.1.1 Overall, the set of potential LTP3 interventions are very good. However, how the final set of agreed upon LTP3 options are implemented will have a significant influence on the likely positive and negative health and wellbeing impacts that are likely to emerge.

9.1.2 The mitigation and enhancement measures described in this section therefore focus on what could be done to ensure that the implementation of the LTP3 maximises positive and minimises negative health and wellbeing impacts as well as reduce health inequalities.

9.1.3 This set of mitigation and enhancement measures should inform, be read alongside and implemented in conjunction with measures suggested by any other assessments.

9.2 Highway capacity

9.2.1 Implementation of these interventions would most benefit from the commissioning of a HIA either as a standalone assessment or alongside any proposed Environmental Impact Assessment (EIA).

9.2.2 Junction improvements are likely to be wholly positive and apart from some localised and temporary disruption are likely to have long term positive health and wellbeing impacts.

9.2.3 Bypass roads, road widening and link roads are likely to have significant of negative impacts on those individuals and communities living along these interventions.

9.2.4 Key negatives will be a) uncertainty of whether the scheme will go ahead and whether they will need to relocate; b) potential increases in noise, air pollution, visual intrusion and community severance; and c) maintenance and potential widening of existing inequalities.

9.2.5 Developing a tailored approach including the ability to:

- relocate within the green belt (including planning permission to build a new house);
- good landscaping and planting to screen the road from residents can help to both reduce/filter the visual intrusion, noise and air pollution;
- use of noise abatement technologies; and
- ensuring that existing roads. footpaths, cycleways and bridleways are retained particularly where they connect to residents to key amenities and larger settlements.

9.3 Public transport

9.3.1 This set of interventions has the second greatest potential to maximise positive health and wellbeing impacts in the short and long terms.

9.3.2 The key mitigation measure for these is to ensure that the public transport improvements equally benefit those living in poorer communities and that improvements in one part of the public transport system do not lead to reduced services in other parts.

9.4 Smarter choices

9.4.1 This set of interventions focuses on behaviour change and this is generally difficult to achieve.

9.4.2 A focus on active approaches e.g. proactive development and monitoring of travel plans for both small and large employers as well as interactive cycle/walking education and activities in schools, neighbourhoods and workplaces is most likely to achieve short and long term behaviour change to more active forms of travel.

9.4.3 This set of interventions will only work well if the Non-Motorised User interventions are well established first.

9.5 Freight

9.5.1 This set of interventions is likely to lead to regional level positive health and wellbeing impacts through a reduction in regional level road air pollution and mitigation of the potential impacts of climate change.

9.5.2 Increased rail freight is likely to increase the noise and air pollution from rail freight services particularly if there are increases in night-time journeys. This is likely to negatively affect existing residents living near rail freight lines and stations. Using low noise and electric vehicles is likely to reduce both the noise and air pollution effects.

9.6 Non-Motorised Interventions (NMUs)

9.6.1 This set of interventions has the greatest potential to maximise positive health and wellbeing impacts both in the short and long terms.

9.6.2 Ensure that the walking/cycling infrastructure with good safety and maintenance are in place before passive and active forms of marketing and awareness-raising.

9.6.3 Link this set of interventions to those in the Public Transport theme.

9.7 Road safety

9.7.1 This set of interventions has the third greatest potential to maximise positive health and wellbeing impacts both in the short and long terms.

9.7.2 Traffic calming measures and improved pedestrian and cycle crossings are likely to have the biggest positive effect on health and wellbeing compared to general or driver education and training and publicity campaigns.

9.7.3 Good traffic calming measures go beyond speed humps but to integrated shared spaces, Home Zones and lower speed limits and perceptual features of the road e.g. road narrowing, chicanes, differing road materials in residential areas and strategic planting, that make motor vehicle drivers slow down in more subtle ways.

9.8 Climate change

9.8.1 All the interventions in this theme are important. Those related to walking and cycling routes are most likely to have positive health and wellbeing impacts over the short and long terms.

9.9 Miscellaneous

9.9.1 Among this set of interventions improved links between transport and spatial planning, the further development of rural broadband, the wheels to work scheme and support for community transport are likely to have the greatest positive influence on health and wellbeing.

10 Monitoring and Evaluation

10.1 Introduction

10.1.1 This Chapter suggests some useful indicators that could be used to monitor and evaluate the health impacts. These feed into the main indicator set developed in the SEA report.

10.1.2 In general, it is difficult to identify routine monitoring health and wellbeing indicators that are:

a. sensitive enough to detect the localised changes and

b. easy to collect.

10.1.3 This report therefore identifies some possible indirect as well as direct health indicators however some are unlikely to be sensitive enough to detect changes while others will require financial, time and staff resources to collect.

10.2 Suggested monitoring and evaluation indicators

Indicator	Sub-indicator	Data collected	Recommended Lead Agencies
Health and wellbeing outcomes			
Cardiovascular disease (health outcome)	Adults Urban/Rural/Deprived Area	Prevalence and incidence of heart disease in Northumberland	Primary Care Trust
Diabetes (health outcome)	Adults/Children Urban/Rural/Deprived Area	Prevalence and incidence of diabetes in Northumberland	Primary Care Trust
Obesity (health outcome)	Adults/Children Urban/Rural/Deprived Area	Prevalence of obesity and overweight in children	Primary Care Trust
Physical Injury (health outcome)	Adults/Children Urban/Rural/Deprived Area	Levels of traffic related injuries and deaths	Police Primary Care Trust
Wellbeing (health outcome)	Adults Urban/Rural/Deprived Area	Levels of wellbeing (Warwick-Edinburgh Scale)	Primary Care Trust County Council
Health and wellbeing determinants			
Walking	Adults/Children/ People with disabilities Urban/Rural/Deprived Area	Levels of walking for transport (to work, school or shops) Levels of walking for leisure	County Council

Indicator	Sub-indicator	Data collected	Recommended Lead Agencies
		Average distance travelled by foot per person per year	
Cycling	Adults/Children/ People with disabilities Urban/Rural/Deprived Area	Levels of cycling for transport (% of adults/children travelling to work, school and shops) Levels of cycling for leisure Average distance travelled by cycle per person per year	County Council
Community/Voluntary Transport	Adults/Children/ People with disabilities Urban/Rural/Deprived Area	Numbers of people/journeys using community/ voluntary transport	County Council
Bus patronage	Adults/Children/ People with disabilities Urban/Rural/Deprived Area	Levels of bus use for transport (to work, school and shops) Levels of bus use for leisure Percentage of bus users satisfied with the bus network Numbers of people taking up concessionary fare schemes Average distance travelled by bus per person per year	Bus companies County Council

Indicator	Sub-indicator	Data collected	Recommended Lead Agencies
Train patronage	Adults Children People with disabilities	Levels of train use for transport (to work, school and shops) Levels of train use for leisure Numbers of people taking up concessionary fare schemes Average distance travelled by train per person per year	Train Companies County Council
Car Use	Adults/Children/ People with disabilities Urban/Rural/Deprived Area	Reduction in travel by car (% reduction in car use to work, school and shops)	County Council
Air Pollution	Urban/Rural/Deprived Area	Levels of air pollution	County Council
Noise	Urban/Rural/Deprived Area	Levels of noise pollution Number of complaints regarding traffic noise	County Council
Access to bus and train	Urban/Rural/Deprived Area	Distance from home to nearest bus stop Distance from home to nearest rail station	County Council
Severance	Urban/Rural/Deprived Area	Number of safe crossing points per km of road Average speed and volume of traffic per km of road	County Council

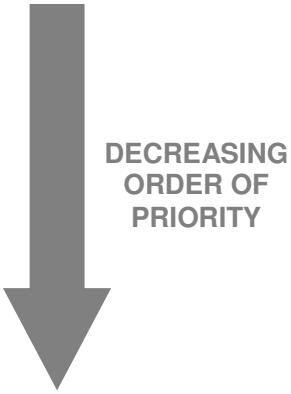
11 Conclusion

11.1.1 Overall, the proposed set of objectives and interventions strongly align with public health and wellbeing objectives and are likely to have potential positive health and wellbeing impacts on most residents of Northumberland.

11.1.2 These positive health and wellbeing impacts are likely to be realised within the duration of the LTP3, 2011-2026 with a strong potential for these positive impacts to continue beyond this period.

11.1.3 The potential impact of the interventions experienced across Northumberland is likely to depend on the final set of preferred interventions chosen from the proposed set. Prioritising the intervention themes as follows is likely to be most beneficial to the health and wellbeing of the residents of Northumberland:

- Non Motorised Users
- Public Transport
- Road Safety
- Miscellaneous
- Climate Change
- Smarter Choice
- Freight
- Highway Capacity



11.1.4 The major negative health and wellbeing impacts are linked to the construction of new roads and rail links and generally occur during the construction phase and on residents who live near the new road or rail routes and the widening of existing road routes. These issues are best considered when more detailed proposals are developed through project-specific environmental and health impact assessments. They are also generally short term, temporary and generally localised.

Appendix A:

Search Strategy for the Evidence Review

APPENDIX A

Aims of review

The review was conducted to identify the potential positive and negative health and wellbeing impacts around the transport interventions developed for Northumberland as highlighted in the provisional LTP3.

Background

The research on transport and health is extensive and a systematic review was not within the scope of this HIA or likely to be useful given the range of existing reviews available.

Review methods

1. Review of existing reviews on transport and health focusing on:
    - Active travel schemes and networks
    - Public transport
    - Community transport schemes
    - Road dualling and road improvements
    - Road Safety (including traffic injury)
    - Air Pollution
    - Noise Pollution
    - Increasing highway capacity
    - Promoting rail freight
    - Travel awareness campaigns (education and marketing)
    - Transport Governance
    - Climate change

2. Review of primary research literature including case studies evaluating the effectiveness of transport interventions.

Search Years

Literature since 1990.

Language

Only English language documents were considered.

Continued next page.

Inclusion or exclusion criteria

Abstracts were reviewed to identify the relevance of the reports in the context of the proposed LTP3 themes and interventions.

Evaluation of quality

We did not conduct a systematic quality review of the studies and articles identified in the review as this was beyond the scope of this rapid HIA. However where possible, we did focus on impacts that were identified as important by more than one report or study.

Appendix B:

Health Impact Table for the LTP3 Objectives

APPENDIX B

Health impact tables for the LTP3 Objectives

Significance Level for Sub-objectives and Interventions	Criteria against HIA Objectives
✓ **(positive)**	Sub-objective or intervention is likely to have a positive health and wellbeing impact on, and move towards achieving, the specific HIA objective.
× **(negative)**	Sub-objective or intervention is likely to have a negative health and wellbeing impact on, and move away from achieving, the specific HIA objective.
o	Sub-objective or intervention is likely to have no health and wellbeing impact, and no move towards or away from the HIA objective.
?	It is unclear or uncertain what health and wellbeing impacts the sub-objective or intervention is likely to have.

OVERALL Significance Level for Objectives/Goals and Interventions	Criteria (overall)
Major ✓✓✓ ××× **(positive or negative)**	Health effects are categorised as a major positive if they prevent deaths/prolong lives, reduce/prevent the occurrence of acute or chronic diseases or significantly enhance mental wellbeing would be a major positive. Health effects are categorised as a major negative if they could lead directly to deaths, acute or chronic diseases or mental ill health. The exposures tend to be of high intensity and/or long duration and/or over a wide geographical area and/or likely to affect a large number of people and/or sensitive groups e.g. children/older people. They can affect either or both physical and mental health and either directly or through the wider determinants of health and wellbeing. They can be temporary or permanent in nature. These effects can be important local, district, regional and national considerations. Mitigation measures and detailed design work can reduce the level of negative effect though

OVERALL Significance Level for Objectives/Goals and Interventions	Criteria (overall)
	residual effects are likely to remain.
Moderate ✓✓ ✖✖ **(positive or negative)**	Health effects are categorised as a moderate positive if they enhance mental wellbeing significantly and/or reduce exacerbations to existing illness and reduce the occurrence of acute or chronic diseases. Health effects are categorised as a moderate negative if the effects are long term nuisance impacts, such smell and noise, or may lead to exacerbations of existing illness. The negative impacts may be nuisance/quality of life impacts which may affect physical and mental health either directly or through the wider determinants of health. The exposures tend to be of moderate intensity and/or over a relatively localised area and/or of intermittent duration and/or likely to affect a moderate-large number of people or so and/or sensitive groups. The cumulative effect of a set of moderate effects can lead to a major effect. These effects can be important local, district and regional considerations. Mitigation measures and detailed design work can reduce and in some/many cases remove the negative and enhance the positive effects though residual effects are likely to remain.
Minor/Mild ✓ ✖ **(positive or negative)**	Health effects are categorised as minor/mild whether, positive or negative, if they are generally lower level quality of life or wellbeing impacts. Increases or reductions in noise, odour, visual amenity, etc are examples of such effects. The exposures tend to be of low intensity and/or short/intermittent duration and/or over a small area and/or affect a small number of people. They can be permanent or temporary in nature. These effects can be important local considerations. Mitigation measures and detailed design work can reduce the negative and enhance the positive effects such that there are only some residual effects remaining.

Health Impact Analysis of the LTP3 Objectives

Goal 1: Support Economic Growth

	LTP GOAL 1: SUPPORT ECONOMIC GROWTH: Support Northumberland's economic competitiveness and growth by delivering reliable and efficient transport networks	
	LTP OBJECTIVES	
	1. EXISTING NETWORKS	2. ADDITIONAL CAPACITY
	Improve the performance of existing transport networks in those places that show signs of increasing congestion and unreliability	Extend the reach of existing networks where it is needed to meet growing demand (including to new housing)
To reduce the levels of deaths and injuries due to traffic incidents	o	o/×
To protect and wherever necessary and possible improve local ambient air quality	✓	×
To maintain and wherever necessary and possible reduce local ambient noise levels	o	×
To promote healthy lifestyles	o	o
To improve choice and use more sustainable modes of transport and wherever possible reduce the need to travel	o	o
To improve local accessibility of goods, services and amenities and/or reduce community severance	✓	✓
To provide fair, equitable access to health, social and welfare services	✓	✓
To protect and enhance the accessibility of local green and open spaces	o	o
To protect and wherever possible improve local neighbourhood quality	o	o
To protect and wherever possible enhance agricultural land	o	o

	LTP GOAL 1: SUPPORT ECONOMIC GROWTH: Support Northumberland's economic competitiveness and growth by delivering reliable and efficient transport networks	
	LTP OBJECTIVES	
	1. EXISTING NETWORKS	2. ADDITIONAL CAPACITY
	Improve the performance of existing transport networks in those places that show signs of increasing congestion and unreliability	Extend the reach of existing networks where it is needed to meet growing demand (including to new housing)
To support voluntary and community networks, assist social inclusion and/or ensure community involvement in decision making	o	o
Maintain high and stable levels of employment and/or reduce long-term unemployment	✓	✓
To reduce poverty and secure economic inclusion	✓	✓
To improve educational attainment, training and opportunities for lifelong learning and employability	o	✓
To reduce crime, disorder and fear of crime	o	o/×
To provide good quality, affordable and sustainable housing	o	✓
To reduce health inequalities and enhance health equity (composite of the objectives above)	✓	✓
To provide a positive, safe and healthy environment for children (composite of the objectives above)	o	o
To improve physical and mental health and wellbeing (composite of the objectives above)	✓✓	✓✓

Goal 2: Reducing Carbon Emissions

	LTP GOAL 2: REDUCING CARBON EMISSIONS Minimise the environmental impact of transport by reducing carbon emissions and addressing the challenge of climate change	
	LTP OBJECTIVES	
	1. SUSTAINABLE TRAVEL CHOICES	2. NETWORK RESILIENCE
	Deliver sustainable low carbon travel choices	Strengthen our networks against the effects of climate change and extreme weather events
To reduce the levels of deaths and injuries due to traffic incidents	o	✓
To protect and wherever necessary and possible improve local ambient air quality	✓	o
To maintain and wherever necessary and possible reduce local ambient noise levels	✓	o
To promote healthy lifestyles	✓	o
To improve choice and use more sustainable modes of transport and wherever possible reduce the need to travel	✓	o
To improve local accessibility of goods, services and amenities and/or reduce community severance	o	✓
To provide fair, equitable access to health, social and welfare services	o	✓
To protect and enhance the accessibility of local green and open spaces	o	o
To protect and wherever possible improve local neighbourhood quality	o	o
To protect and wherever possible enhance agricultural land	o	o

	LTP GOAL 2: REDUCING CARBON EMISSIONS Minimise the environmental impact of transport by reducing carbon emissions and addressing the challenge of climate change	
	LTP OBJECTIVES	
	1. SUSTAINABLE TRAVEL CHOICES	2. NETWORK RESILIENCE
	Deliver sustainable low carbon travel choices	Strengthen our networks against the effects of climate change and extreme weather events
To support voluntary and community networks, assist social inclusion and/or ensure community involvement in decision making	o	o
Maintain high and stable levels of employment and reduce long-term unemployment	o	o
To reduce poverty and secure economic inclusion	o	o
To improve educational attainment, training and opportunities for lifelong learning and employability	o	o
To reduce crime, disorder and fear of crime	o	o
To provide good quality, affordable and sustainable housing	o	o
To reduce health inequalities and enhance health equity (composite of the objectives above)	✓	✓
To provide a positive, safe and healthy environment for children (composite of the objectives above)	✓	✓
To improve physical and mental health and wellbeing (composite of the objectives above)	✓✓	✓✓

Goal 3: Safer and Healthier Travel

	LTP GOAL 3: SAFER AND HEALTHIER TRAVEL Improve transport safety and security and promote healthier travel	
	LTP OBJECTIVES	
	1. VULNERABLE ROAD USERS	2. ACTIVE TRAVEL
	Improve safety of the transport network particularly for vulnerable road users	Enable and encourage more physically active and healthy travel
To reduce the levels of deaths and injuries due to traffic incidents	✓	×/✓
To protect and wherever necessary and possible improve local ambient air quality	o	✓
To maintain and wherever necessary and possible reduce local ambient noise levels	o	✓
To promote healthy lifestyles	✓	✓
To improve choice and use more sustainable modes of transport and wherever possible reduce the need to travel	o	✓
To improve local accessibility of goods, services and amenities and/or reduce community severance	✓	✓
To provide fair, equitable access to health, social and welfare services	✓	o
To protect and enhance the accessibility of local green and open spaces	o	o
To protect and wherever possible improve local neighbourhood quality	o	o
To protect and wherever possible enhance agricultural land	o	o
To support voluntary and community networks, assist social inclusion and/or ensure community	✓	✓

	LTP GOAL 3: SAFER AND HEALTHIER TRAVEL Improve transport safety and security and promote healthier travel	
	LTP OBJECTIVES	
	1. VULNERABLE ROAD USERS	2. ACTIVE TRAVEL
	Improve safety of the transport network particularly for vulnerable road users	Enable and encourage more physically active and healthy travel
involvement in decision making		
Maintain high and stable levels of employment and reduce long-term unemployment	o	o
To reduce poverty and secure economic inclusion	o	o
To improve educational attainment, training and opportunities for lifelong learning and employability	o	o
To reduce crime, disorder and fear of crime	✓	✓
To provide good quality, affordable and sustainable housing	o	o
To reduce health inequalities and enhance health equity (composite of the objectives above)	✓	✓
To provide a positive, safe and healthy environment for children (composite of the objectives above)	✓	✓
To improve physical and mental health and wellbeing (composite of the objectives above)	✓✓✓	✓✓✓

Goal 4: Improving access to services

	LTP GOAL 4: IMPROVING ACCESS TO SERVICES Promote greater equality of opportunity by improving peoples' access to services	
	LTP OBJECTIVES	
	1, BARRIERS TO TRAVEL	2. NEED TO TRAVEL
	Reduce the barriers preventing people travelling to services and facilities	Reduce the need and distance for people to travel to access services
To reduce the levels of deaths and injuries due to traffic incidents	o	✓
To protect and wherever necessary and possible improve local ambient air quality	o	✓
To maintain and wherever necessary and possible reduce local ambient noise levels	o	✓
To promote healthy lifestyles	✓	✓
To improve choice and use more sustainable modes of transport and wherever possible reduce the need to travel	✓	✓
To improve local accessibility of goods, services and amenities and/or reduce community severance	✓	✓
To provide fair, equitable access to health, social and welfare services	✓	✓
To protect and enhance the accessibility of local green and open spaces	o	o
To protect and wherever possible improve local neighbourhood quality	o	o
To protect and wherever possible enhance agricultural land	o	o
To support voluntary and community networks, assist social inclusion and/or ensure community involvement in decision making	✓	o

	LTP GOAL 4: IMPROVING ACCESS TO SERVICES Promote greater equality of opportunity by improving peoples' access to services	
	LTP OBJECTIVES	
	1, BARRIERS TO TRAVEL	2. NEED TO TRAVEL
	Reduce the barriers preventing people travelling to services and facilities	Reduce the need and distance for people to travel to access services
Maintain high and stable levels of employment and reduce long-term unemployment	✓	o
To reduce poverty and secure economic inclusion	✓	o
To improve educational attainment, training and opportunities for lifelong learning and employability	✓	o
To reduce crime, disorder and fear of crime	o	o
To provide good quality, affordable and sustainable housing	o	o
To reduce health inequalities and enhance health equity (composite of the objectives above)	✓	✓
To provide a positive, safe and healthy environment for children (composite of the objectives above)	✓	✓
To improve physical and mental health and wellbeing (composite of the objectives above)	✓✓✓	✓✓✓

Goal 5: Quality of life

	LTP GOAL 5: QUALITY OF LIFE
	LTP OBJECTIVES
	1. PUBLIC REALM
	Improving streetscapes and the urban environment
To reduce the levels of deaths and injuries due to traffic incidents	o/✓
To protect and wherever necessary and possible improve local ambient air quality	o
To maintain and wherever necessary and possible reduce local ambient noise levels	o
To promote healthy lifestyles	✓
To improve choice and use more sustainable modes of transport and wherever possible reduce the need to travel	✓
To improve local accessibility of goods, services and amenities and/or reduce community severance	o
To provide fair, equitable access to health, social and welfare services	o
To protect and enhance the accessibility of local green and open spaces	✓
To protect and wherever possible improve local neighbourhood quality	✓
To protect and wherever possible enhance agricultural land	o
To support voluntary and community networks, assist social inclusion and/or ensure community involvement in decision making	o
Maintain high and stable levels of employment and reduce long-term unemployment	o
To reduce poverty and secure economic inclusion	o
To improve educational attainment, training and opportunities for lifelong learning and employability	o
To reduce crime, disorder and fear of crime	✓

	LTP GOAL 5: QUALITY OF LIFE
	LTP OBJECTIVES
	1. PUBLIC REALM
	Improving streetscapes and the urban environment
To provide good quality, affordable and sustainable housing	o
To reduce health inequalities and enhance health equity (composite of the objectives above)	✓
To provide a positive, safe and healthy environment for children (composite of the objectives above)	✓
To improve physical and mental health and wellbeing (composite of the objectives above)	✓✓

Appendix C:
Health Impact Table for the LTP3 Proposed Interventions

APPENDIX C

Health impact tables for the LTP3 Proposed Interventions

Significance Level for Sub-objectives and Interventions	Criteria against HIA Objectives
✓ **(positive)**	Sub-objective or intervention is likely to have a positive health and wellbeing impact on, and move towards achieving, the specific HIA objective.
× **(negative)**	Sub-objective or intervention is likely to have a negative health and wellbeing impact on, and move away from achieving, the specific HIA objective.
o	Sub-objective or intervention is likely to have no health and wellbeing impact, and no move towards or away from the HIA objective.
?	It is unclear or uncertain what health and wellbeing impacts the sub-objective or intervention is likely to have.

OVERALL Significance Level for Objectives/Goals and Interventions	Criteria (overall)
Major ✓✓✓ ××× **(positive or negative)**	Health effects are categorised as a major positive if they prevent deaths/prolong lives, reduce/prevent the occurrence of acute or chronic diseases or significantly enhance mental wellbeing would be a major positive. Health effects are categorised as a major negative if they could lead directly to deaths, acute or chronic diseases or mental ill health. The exposures tend to be of high intensity and/or long duration and/or over a wide geographical area and/or likely to affect a large number of people and/or sensitive groups e.g. children/older people. They can affect either or both physical and mental health and either directly or through the wider determinants of health and wellbeing. They can be temporary or permanent in nature. These effects can be important local, district, regional and national considerations. Mitigation measures and detailed design work can reduce the level of negative effect though residual effects are likely to remain.

OVERALL Significance Level for Objectives/Goals and Interventions	Criteria (overall)
Moderate ✓✓ ✖✖ **(positive or negative)**	Health effects are categorised as a moderate positive if they enhance mental wellbeing significantly and/or reduce exacerbations to existing illness and reduce the occurrence of acute or chronic diseases. Health effects are categorised as a moderate negative if the effects are long term nuisance impacts, such smell and noise, or may lead to exacerbations of existing illness. The negative impacts may be nuisance/quality of life impacts which may affect physical and mental health either directly or through the wider determinants of health. The exposures tend to be of moderate intensity and/or over a relatively localised area and/or of intermittent duration and/or likely to affect a moderate-large number of people or so and/or sensitive groups. The cumulative effect of a set of moderate effects can lead to a major effect. These effects can be important local, district and regional considerations. Mitigation measures and detailed design work can reduce and in some/many cases remove the negative and enhance the positive effects though residual effects are likely to remain.
Minor/Mild ✓ ✖ **(positive or negative)**	Health effects are categorised as minor/mild whether, positive or negative, if they are generally lower level quality of life or wellbeing impacts. Increases or reductions in noise, odour, visual amenity, etc are examples of such effects. The exposures tend to be of low intensity and/or short/intermittent duration and/or over a small area and/or affect a small number of people. They can be permanent or temporary in nature. These effects can be important local considerations. Mitigation measures and detailed design work can reduce the negative and enhance the positive effects such that there are only some residual effects remaining.

Highway Capacity Interventions

HIA Objectives

	Highway Capacity Interventions	To reduce the levels of deaths and injuries due to traffic incidents	To protect and wherever necessary and possible improve local ambient air quality	To maintain and wherever necessary and possible reduce local ambient noise levels	To promote healthy lifestyles	To improve choice and use more sustainable modes of transport and wherever possible reduce the need to travel	To improve local accessibility of goods, services and amenities and/or reduce community severance	To provide fair, equitable access to health, social and welfare services	To protect and enhance the accessibility of local green and open spaces	To protect and wherever possible improve local neighbourhood quality	To protect and wherever possible enhance agricultural land	To support voluntary and community networks, assist social inclusion and ensure community involvement in decision making	Maintain high and stable levels of employment and reduce long-term unemployment	To reduce poverty and secure economic inclusion	To improve educational attainment, training and opportunities for lifelong learning and employability	To reduce crime, disorder and fear of crime	To provide good quality, affordable and sustainable housing	To reduce health inequalities and enhance health equity (composite)	To provide a positive, safe and healthy environment for children (composite)	To improve physical and mental health and wellbeing (composite)	Comments
1	A1 Dualling	✓	×	×	×	×	✓×	o	o	×	×	o	o	o	o	o	o	o	o	✓×	Dual carriageways tend to have increased levels of traffic flow but a reduced risk of traffic accidents because of reduced and improved junctions. There will also be a better flow of traffic leading to improved access to goods and services. However the road dualling will require additional, likely agricultural, land and increase community severance along the dualled route.
2	Morpeth Northern Bypass	✓	✓×	✓×	×	×	✓×	o	×	✓×	×	✓×	o	o	o	o	o	o	✓×	✓✓××	The bypass will have positive health benefits for people in Morpeth by reducing the flow of traffic and hence reduce air pollution, noise and community severance. However the new bypass road will cut through the rural area around Morpeth increasing air pollution, noise and community severance.
3	A19 Junction Improvements	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	✓	The junction improvement is likely to enhance road safety leading to fewer deaths and injuries.
4	Telford Bridge Junction Improvements	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	✓	The junction improvement is likely to enhance road safety leading to fewer deaths and injuries.
5	Blyth Central Link Road	×	×	×	×	×	✓×	o	×	✓×	×	×	o	o	o	o	✓	o	✓×	✓✓××	The link road will improve accessibility but will also increase community severance along the route.
6	A193 Cowpen Road Corridor, Blyth	×	×	×	×	×	✓×	o	×	×	×	×✓	o	o	o	o	✓	o	✓×	✓✓××	The road improvements will reduce congestion however the construction of a new link road is likely to increase traffic and community severance in the area.
7	A189 to Battleship Wharf	o	×	×	×	×	✓×	o	o	×	×	o	o	o	o	o	o	o	o	✓××	Road linking an industrial/ green technology development site.
8	General Highway Capacity Improvement	×	×	×	×	o	✓×	o	×	×	×	o	o	o	o	o	o	o	o	✓××	General highway capacity improvements will have similar positive and negative health impacts to those listed above.

Public Transport Interventions

HIA Objectives

	Public Transport Interventions	To reduce the levels of deaths and injuries due to traffic incidents	To protect and wherever necessary and possible improve local ambient air quality	To maintain and wherever necessary and possible reduce local ambient noise levels	To promote healthy lifestyles	To improve choice and use more sustainable modes of transport and wherever possible reduce the need to travel	To improve local accessibility of goods, services and amenities and/or reduce community severance	To provide fair, equitable access to health, social and welfare services	To protect and enhance the accessibility of local green and open spaces	To protect and wherever possible improve local neighbourhood quality	To protect and wherever possible enhance agricultural land	To support voluntary and community networks, assist social inclusion and ensure community involvement in decision making	Maintain high and stable levels of employment and reduce long-term unemployment	To reduce poverty and secure economic inclusion	To improve educational attainment, training and opportunities for lifelong learning and employability	To reduce crime, disorder and fear of crime	To provide good quality, affordable and sustainable housing	To reduce health inequalities and enhance health equity (composite)	To provide a positive, safe and healthy environment for children (composite)	To improve physical and mental health and wellbeing (composite)	Comment
9	Reopening of the Ashington Blyth and Tyne Railway Line	✓	✓	o	✓	✓	o	o	o	o	o	o	✓	✓	o	o	o	✓	✓	✓✓✓	The reopened train route is likely to encourage a modal shift and importantly provide transport for those without a car. The trains on the route will produce similar levels of noise to road transport but reduced air emissions. The route is also likely to increase employment opportunities particularly for those on low incomes/unemployed and potentially a faster route for those with a car.
10	More local train services on the East Coast Main Line	✓	✓	o	✓	✓	✓	o	o	o	o	o	✓	✓	o	o	o	✓	✓	✓✓✓	Trains stopping at local stations will improve access to jobs, goods and services for residents living around these local stations. This will be particularly important for those on low income/unemployed. It may also generate some modal shift for those who commute by car.
11	Real Time Information at stations and stops	o	o	o	✓	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	✓	Real time public transport information is likely to increase their use as potential passengers will know when services will arrive at stations or stops.
12	Up to date timetabling at stations and stops	o	o	o	✓	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	✓	Up to date public transport information is likely to increase their use as potential passengers will know when services will arrive at stations or stops.
13	Passenger Assistance Personnel	o	o	o	✓	✓	o	o	o	o	o	o	o	o	o	✓	o	✓	✓	✓✓	Passenger assistance personnel are likely to increase perceived safety and increase the confidence of people with disabilities, elderly people and people with young children.
14	Fast ticketing machines at stations and stops	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	Fast ticketing, while good to have, is unlikely to have any effects on health and wellbeing.
15	Interactive journey planners/timetables at stations and interchanges	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	Real time and up to date public transport information alongside assistance personnel are likely to be better used than interactive journey planners/timetables.

	Public Transport Interventions	To reduce the levels of deaths and injuries due to traffic incidents	To protect and wherever necessary and possible improve local ambient air quality	To maintain and wherever necessary and possible reduce local ambient noise levels	To promote healthy lifestyles	To improve choice and use more sustainable modes of transport and wherever possible reduce the need to travel	To improve local accessibility of goods, services and amenities and/or reduce community severance	To provide fair, equitable access to health, social and welfare services	To protect and enhance the accessibility of local green and open spaces	To protect and wherever possible improve local neighbourhood quality	To protect and wherever possible enhance agricultural land	To support voluntary and community networks, assist social inclusion and ensure community involvement in decision making	Maintain high and stable levels of employment and reduce long-term unemployment	To reduce poverty and secure economic inclusion	To improve educational attainment, training and opportunities for lifelong learning and employability	To reduce crime, disorder and fear of crime	To provide good quality, affordable and sustainable housing	To reduce health inequalities and enhance health equity (composite)	To provide a positive, safe and healthy environment for children (composite)	To improve physical and mental health and wellbeing (composite)	Comment
16	Greater car parking facilities at train stations	✓	✓	✓	✓	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	✔	Car parking has the potential to create a modal shift to trains particularly for commuting.
17	Improve access to train stations	o	o	o	✓	✓	o	o	o	o	o	o	o	o	o	o	o	✓	✓	✔✔	Accessibility should also consider toilets and warm seating areas. This is likely to be particularly beneficial for people with disabilities, elderly people and people with young children.
18	Bus stop improvements	o	o	o	✓	✓	o	o	o	✓	o	o	o	o	o	✓	o	✓	✓	✔✔	Improved bus stops will show commitment to providing good quality bus services and thereby increase confidence in using public transport (and hence increase use), improve perceived safety and enhance the neighbourhood environment.
19	Improve station and stop security	o	o	o	✓	✓	o	o	o	✓	o	o	o	o	o	✓	o	✓	✓	✔✔	Improved security will show commitment to providing good quality public transport services and thereby increase confidence in using public transport (and hence increase use), improve perceived safety and enhance the neighbourhood environment.
20	Improve safety on board public transport	o	o	o	✓	✓	o	o	o	✓	o	o	o	o	o	✓	o	✓	✓	✔	Improved security will show commitment to providing good quality public transport services and thereby increase confidence in using public transport (and hence increase use) and improve perceived safety.
21	Extra peak hour public transport services	✓	✓	o	✓	✓	✓	✓	o	o	o	o	o	o	o	o	o	✓	✓	✔✔	It is more likely to generate a modal shift amongst people commuting by car because it improves journey ambience.
22	Ticketing options	o	o	o	o	✓	o	o	o	o	o	o	o	✓	o	o	o	✓	o	✔	Multi modal ticketing and fare reductions are likely to increase use of public transport particularly among low income groups.
23	Improve vehicle quality	o	o	o	✓	✓	o	o	o	o	o	o	o	✓	o	o	o	✓	✓	✔✔	Having more accessible buses is likely to increase bus use for people with disabilities, elderly people and people with young children.
24	Public Transport Marketing	o	o	o	✓	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	✔	Marketing will have the most effect alongside other interventions.

	Public Transport Interventions	To reduce the levels of deaths and injuries due to traffic incidents	To protect and wherever necessary and possible improve local ambient air quality	To maintain and wherever necessary and possible reduce local ambient noise levels	To promote healthy lifestyles	To improve choice and use more sustainable modes of transport and wherever possible reduce the need to travel	To improve local accessibility of goods, services and amenities and/or reduce community severance	To provide fair, equitable access to health, social and welfare services	To protect and enhance the accessibility of local green and open spaces	To protect and wherever possible improve local neighbourhood quality	To protect and wherever possible enhance agricultural land	To support voluntary and community networks, assist social inclusion and ensure community involvement in decision making	Maintain high and stable levels of employment and reduce long-term unemployment	To reduce poverty and secure economic inclusion	To improve educational attainment, training and opportunities for lifelong learning and employability	To reduce crime, disorder and fear of crime	To provide good quality, affordable and sustainable housing	To reduce health inequalities and enhance health equity (composite)	To provide a positive, safe and healthy environment for children (composite)	To improve physical and mental health and wellbeing (composite)	Comment
25	Low emission public transport vehicles	o	✓	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	✓	✓	✓✓	Low emission vehicles will improve air quality potentially in the poorest areas which tend to have the worst air quality.
27	Improved coach parking	✓	✓	✓	✓	✓	o	o	o	✓	o	o	o	o	o	o	o	o	✓	✓✓	Improved coach parking is likely to improve the number of tourist coaches coming to Northumberland (hence reduce number of tourists coming by car) and reduce coach parking in inappropriate places.
28	Strengthened relationships between NCC and operators	o	o	o	o	o	o	o	o	✓	o	o	o	✓	o	o	o	✓	✓	✓✓	Good relationships can ensure that social objectives are considered alongside profit and loss objectives.

Smarter Choices Interventions

HIA Objectives

	Smarter Choices Interventions	To reduce the levels of deaths and injuries due to traffic incidents	To protect and wherever necessary and possible improve local ambient air quality	To maintain and wherever necessary and possible reduce local ambient noise levels	To promote healthy lifestyles	To improve choice and use more sustainable modes of transport and wherever possible reduce the need to travel	To improve local accessibility of goods, services and amenities and/or reduce community severance	To provide fair, equitable access to health, social and welfare services	To protect and enhance the accessibility of local green and open spaces	To protect and wherever possible improve local neighbourhood quality	To protect and wherever possible enhance agricultural land	To support voluntary and community networks, assist social inclusion and ensure community involvement in decision making	Maintain high and stable levels of employment and reduce long-term unemployment	To reduce poverty and secure economic inclusion	To improve educational attainment, training and opportunities for lifelong learning and employability	To reduce crime, disorder and fear of crime	To provide good quality, affordable and sustainable housing	To reduce health inequalities and enhance health equity (composite)	To provide a positive, safe and healthy environment for children (composite)	To improve physical and mental health and wellbeing (composite)	Comment
29	Local Authority monitoring and support for Travel Plans	✓	✓	✓	✓	✓	o	✓	o	✓	o	✓	o	o	o	✓	o	✓	✓	✓✓✓	Supporting and managing travel plans can help to generate a strategic travel perspective in organisations in Northumberland.
30	Travel awareness campaigns	o	o	o	✓	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	✓	Marketing will have the most effect alongside other interventions.
31	Cycle/walking education in schools, workplaces and communities	o	o	o	✓	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	✓	Education like marketing will have the most effect alongside other interventions.
32	Promote/support flexible working practices	o	o	o	✓	✓	o	✓	o	o	o	✓	o	✓	✓	o	o	✓	✓	✓✓	Flexible working practices enable people to meet family and other responsibilities as well as use active travel and public transport without being penalised for being late or going home early.
33	Promotion of car clubs and car sharing	o	o	o	✓	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	✓	This will be most effective where resources are put into coordinating and financially supporting such clubs and schemes.

Freight Interventions

HIA Objectives

	Freight Interventions	To reduce the levels of deaths and injuries due to traffic incidents	To protect and wherever necessary and possible improve local ambient air quality	To maintain and wherever necessary and possible reduce local ambient noise levels	To promote healthy lifestyles	To improve choice and use more sustainable modes of transport and wherever possible reduce the need to travel	To improve local accessibility of goods, services and amenities and/or reduce community severance	To provide fair, equitable access to health, social and welfare services	To protect and enhance the accessibility of local green and open spaces	To protect and wherever possible improve local neighbourhood quality	To protect and wherever possible enhance agricultural land	To support voluntary and community networks, assist social inclusion and ensure community involvement in decision making	Maintain high and stable levels of employment and reduce long-term unemployment	To reduce poverty and secure economic inclusion	To improve educational attainment, training and opportunities for lifelong learning and employability	To reduce crime, disorder and fear of crime	To provide good quality, affordable and sustainable housing	To reduce health inequalities and enhance health equity (composite)	To provide a positive, safe and healthy environment for children (composite)	To improve physical and mental health and wellbeing (composite)	Comment
34	Efficient rail freight network operation	✓	✓	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	✓	✔	A more efficient and effective network could potentially reduce freight road traffic and thereby reduce air and noise pollution. However you will still need lorries from the freight depot to the supermarket/shops.
35	Promote rail freight	✓	✓	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	✓	✔	A more efficient and effective network could potentially reduce freight road traffic and thereby reduce air and noise pollution. However you will still need lorries from the freight depot to the supermarket/shops.
36	Freight consolidation	o	✓	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	✓	✔	A more efficient and effective network could potentially reduce freight road traffic and thereby reduce air and noise pollution. However you will still need lorries from the freight depot to the supermarket/shops.
37	Address congestion on highway network on approach to Port of Blyth	o	✓	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	✓	✔	A more efficient and effective network could potentially reduce freight road traffic and thereby reduce air and noise pollution. However you will still need lorries from the freight depot to the supermarket/shops.
38	Develop freight quality partnerships	✓	✓	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	✓	✔	A more efficient and effective network could potentially reduce freight road traffic and thereby reduce air and noise pollution. However you will still need lorries from the freight depot to the supermarket/shops.

Non-Motorised Users (NMUs) Interventions

HIA Objectives

	Non-Motorised Users NMUs) Interventions	To reduce the levels of deaths and injuries due to traffic incidents	To protect and wherever necessary and possible improve local ambient air quality	To maintain and wherever necessary and possible reduce local ambient noise levels	To promote healthy lifestyles	To improve choice and use more sustainable modes of transport and wherever possible reduce the need to travel	To improve local accessibility of goods, services and amenities and/or reduce community severance	To provide fair, equitable access to health, social and welfare services	To protect and enhance the accessibility of local green and open spaces	To protect and wherever possible improve local neighbourhood quality	To protect and wherever possible enhance agricultural land	To support voluntary and community networks, assist social inclusion and ensure community involvement in decision making	Maintain high and stable levels of employment and reduce long-term unemployment	To reduce poverty and secure economic inclusion	To improve educational attainment, training and opportunities for lifelong learning and employability	To reduce crime, disorder and fear of crime	To provide good quality, affordable and sustainable housing	To reduce health inequalities and enhance health equity (composite)	To provide a positive, safe and healthy environment for children (composite)	**To improve physical and mental health and wellbeing (composite)**	**Comment**
39	Develop CONNECT 2 programme	✓✖	✓	✓	✓	✓	✓	✓	✓	✓	o	✓	o	✓	o	✓	o	✓	✓	✓✓✓	This is likely to have strong positive health benefits however there may be short term negatives due to greater cycle/walking related injuries.
40	Roll out cycle hubs across Northumberland	✖	✓	✓	✓	✓	o	o	✓	✓	o	o	o	o	o	o	o	o	o	✓✓	This intervention is focused more on tourists and is likely to have positive health benefits though there is an increased potential for cycle injuries in the short and long term.
41	Work with Sustrans to develop active travel schemes	✓✖	✓	✓	✓	✓	✓	✓	✓	✓	o	✓	o	✓	o	✓	o	✓	✓	✓✓✓	Actively targeting residents through a range of activities is likely to increase walking and cycling both short and long term.
42	Continue to support bikeability	✓	✓	✓	✓	✓	o	o	✓	o	o	o	o	o	o	o	o	✓	✓	✓✓	Teaching children to learn to cycle will increase cycling both now and in the future. However cycling by children is heavily influenced by parental perceptions on cycling and safety.
43	Continuous walking/cycling routes	✓	✓	✓	✓	✓	✓	✓	✓	✓	o	✓	o	✓	o	✓	o	✓	✓	✓✓✓	The greater the numbers of continuous routes to key destinations, the more likely people are to walk and cycle.
44	Walk/cycle campaigns	o	o	o	✓	o	o	o	o	o	o	✓	o	o	o	o	o	o	o	✓	Marketing will have the most effect alongside other interventions.
45	Cycling parking and facilities at pt stations and key destinations	o	✓	✓	✓	✓	✓	✓	✓	✓	o	o	o	o	o	o	o	o	✓	✓✓	Cycle parking is important in ensuring that bikes are not stolen and therefore encourages regular cycling.
46	Improve signing (PEDESTRIAN AND CYCLE ROUTES)	✓	✓	✓	✓	✓	✓	✓	✓	✓	o	o	o	o	o	✓	o	✓	✓	✓✓✓	Having good clear regular signage along safe and short routes is likely to encourage most walking and cycling.
47	Walking and cycling maps	o	o	o	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	o	✓	Information dissemination will have the most effect alongside other interventions.
48	Improvements to security and maintenance of footpaths and cycleways	✓	✓	✓	✓	✓	✓	✓	✓	✓	o	✓	o	✓	o	✓	o	✓	✓	✓✓✓	Having secure and well maintained routes is likely to encourage the most walking and cycling.

Road Safety Interventions

HIA Objectives

	Road Safety Interventions	To reduce the levels of deaths and injuries due to traffic incidents	To protect and wherever necessary and possible improve local ambient air quality	To maintain and wherever necessary and possible reduce local ambient noise levels	To promote healthy lifestyles	To improve choice and use more sustainable modes of transport and wherever possible reduce the need to travel	To improve local accessibility of goods, services and amenities and/or reduce community severance	To provide fair, equitable access to health, social and welfare services	To protect and enhance the accessibility of local green and open spaces	To protect and wherever possible improve local neighbourhood quality	To protect and wherever possible enhance agricultural land	To support voluntary and community networks, assist social inclusion and ensure community involvement in decision making	Maintain high and stable levels of employment and reduce long-term unemployment	To reduce poverty and secure economic inclusion	To improve educational attainment, training and opportunities for lifelong learning and employability	To reduce crime, disorder and fear of crime	To provide good quality, affordable and sustainable housing	To reduce health inequalities and enhance health equity (composite)	To provide a positive, safe and healthy environment for children (composite)	**To improve physical and mental health and wellbeing (composite)**	**Comments**
49	Education and training	✓	o	o	✓	o	o	o	o	o	o	o	o	o	o	o	o	✓	✓	✓✓	Education and training has the potential to reduce road traffic incidents particularly for those from poorer backgrounds and children.
50	Publicity campaigns	✓	o	o	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	✓	✓	Publicity campaigns have the potential to reduce road traffic incidents generally and therefore may not influence health inequalities.
51	Traffic calming measures	✓	o	✓	✓	o	o	o	o	✓	o	✓	o	o	o	o	o	✓	✓	✓✓✓	As traffic measures are structural changes, they have strong potential to reduce traffic speeds and traffic flows and thereby reduce the risk of traffic incidents, reduce noise and enhance walking, cycling and social interactions particularly in poorer communities.
52	Safer routes to school	✓	o	o	✓	✓	o	o	o	✓	o	o	o	o	o	o	o	✓	✓	✓✓	Creating safer routes to schools have similar benefits to traffic calming measures however parents are a key determinant to how children get to school.
53	Increased/improved pedestrian and toucan crossings	✓	o	o	✓	✓	o	o	o	✓	o	✓	o	o	o	o	o	✓	✓	✓✓✓	As crossings are structural changes, they have strong potential to reduce traffic speeds and traffic flows and thereby reduce the risk of traffic incidents and enhance walking, cycling and social interactions particularly in poorer communities.
54	Driver training	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	✓	✓	✓	Driver training has the potential to reduce traffic incidents. Fuel efficient driving may have the potential to reduce air emissions though these are likely to be small.

Climate Change Interventions

	Climate Change Interventions	To reduce the levels of deaths and injuries due to traffic incidents	To protect and wherever necessary and possible improve local ambient air quality	To maintain and wherever necessary and possible reduce local ambient noise levels	To promote healthy lifestyles	To improve choice and use more sustainable modes of transport and wherever possible reduce the need to travel	To improve local accessibility of goods, services and amenities and/or reduce community severance	To provide fair, equitable access to health, social and welfare services	To protect and enhance the accessibility of local green and open spaces	To protect and wherever possible improve local neighbourhood quality	To protect and wherever possible enhance agricultural land	To support voluntary and community networks, assist social inclusion and ensure community involvement in decision making	Maintain high and stable levels of employment and reduce long-term unemployment	To reduce poverty and secure economic inclusion	To improve educational attainment, training and opportunities for lifelong learning and employability	To reduce crime, disorder and fear of crime	To provide good quality, affordable and sustainable housing	To reduce health inequalities and enhance health equity (composite)	To provide a positive, safe and healthy environment for children (composite)	**To improve physical and mental health and wellbeing (composite)**	**Comment**
	HIA Objectives																				
55	Capital programme to strengthen infrastructure	✓	o	o	o	o	✓	o	o	✓	o	o	✓	o	o	o	o	o	✓	✔✔	Climate change has the potential to disrupt all types of transportation. Therefore ensuring that key infrastructure is strengthened to withstand climate change effects will reduce the potential health impacts and economic disruption.
56	Regular maintenance and resurfacing of roads	✓	o	o	o	o	✓	o	o	✓	o	o	✓	o	o	o	o	o	✓	✔✔	Climate change has the potential to disrupt all types of transportation. Therefore ensuring that roads are maintained to withstand climate change effects will reduce the potential health impacts (e.g. access to services) and economic disruption.
57	Hard surfacing and improved drainage on footpaths and cycleways	✓	✓	✓	✓	✓	✓	✓	✓	✓	o	✓	o	✓	o	✓	o	✓	✓	✔✔✔	Climate change has the potential to disrupt all types of transportation. Therefore ensuring that footpaths/cycleways can withstand climate change effects will reduce the potential health impacts and economic disruption particularly for poorer communities.

Miscellaneous Interventions

HIA Objectives

	Miscellaneous	To reduce the levels of deaths and injuries due to traffic incidents	To protect and wherever necessary and possible improve local ambient air quality	To maintain and wherever necessary and possible reduce local ambient noise levels	To promote healthy lifestyles	To improve choice and use more sustainable modes of transport and wherever possible reduce the need to travel	To improve local accessibility of goods, services and amenities and/or reduce community severance	To provide fair, equitable access to health, social and welfare services	To protect and enhance the accessibility of local green and open spaces	To protect and wherever possible improve local neighbourhood quality	To protect and wherever possible enhance agricultural land	To support voluntary and community networks, assist social inclusion and ensure community involvement in decision making	Maintain high and stable levels of employment and reduce long-term unemployment	To reduce poverty and secure economic inclusion	To improve educational attainment, training and opportunities for lifelong learning and employability	To reduce crime, disorder and fear of crime	To provide good quality, affordable and sustainable housing	To reduce health inequalities and enhance health equity (composite)	To provide a positive, safe and healthy environment for children (composite)	To improve physical and mental health and wellbeing (composite)	Comment
58	Improve broadband connectivity and telephone communications	✓	✓	✓	✓✕	✓	o	o	o	o	o	✓	✓	✓	✓	o	o	✓	✓	✓✓✓	The ability to work from home and teleconferencing is likely to reduce the need to travel and consequently reduce traffic incidents, air pollution, noise and enhance social capital, educational opportunities and time spent with children.
59	Spatial planning linked to transport policy	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓✓✓	Good strategic planning can minimise potential negative impacts and maximise the potential positive impacts by identifying key constraints and opportunities.
60	EV charging points	o	✓	✓	o	✓	o	o	o	o	o	o	o	o	o	o	o	o	✓	✓✓	Widespread use of electric vehicles by residents and businesses is likely to reduce air pollution.
61	Support community transport organisations	o	o	o	✓	✓	✓	✓	✓	o	o	✓	o	✓	o	o	o	✓	✓	✓✓✓	Supporting community transport is likely to get people out doing social and community activities particularly those from poorer backgrounds, people with disabilities and those without access to transport.
62	Greater parking enforcement	o	o	o	✓	✓	✓	o	o	✓	o	o	o	o	o	o	o	o	✓	✓✓	Greater parking enforcement is likely to improve public transport movement and increase walking and the use of public transport.
63	Identify taxi waiting areas and enforce TRO's to avoid delay to public transport	o	o	o	o	✓	✓	o	o	✓	o	o	o	o	o	o	o	o	✓	✓	Having identifiable taxi waiting areas and ensuring that taxis do not conflict with public transport is likely to increase the use of public transport.
64	Schemes to improve signing (for vehicular road users)	✓	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	✓	May reduce traffic incidents linked to lack of or inappropriate signage.

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