A6 to Manchester Airport Relief Road

IOM Centre for Health Impact Assessment: Health Impact Assessment

1007/6.15.2/186

October 2013

STOCKPORT METROPOLITAN BOROUGH COUNCIL

MANCHESTER CITY COUNCIL

Cheshire East Council

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- to bring together the various health impact assessment research, consulting and teaching that was taking place between Edinburgh and London; and
- to be an internationally recognised Centre of Excellence in Health Impact Assessment.

CHIA's eight core areas of work are:

- Health impact assessment theory and practice
- Healthy public policy
- Evidence-based analysis and evaluation of the health and wellbeing impacts of policies, plans and projects
- Researching the wider determinants of health and wellbeing
- Tackling environmental and health inequalities
- Healthy urban planning and development

FINAL

TITLE: A6 to Manchester Airport Relief Road (A6MARR) HIA			
IOM STRATEGIC CONSULTING PROJECT NO: 644-00223			
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DRAFTS

Revision Number	Details	Prepared by	Reviewed by	Approved by	Date
03	DRAFT	SV/FS	SV	SV	15-10-2013
02	DRAFT	SV/GD/ED/SW/FS	SV	SV	05-09-2013
01	DRAFT	SV/GD/ED/SW	SV	SV	08-07-2013

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Acknowledgements

We would like to thank and acknowledge the feedback and contribution of the residents who participated in the HIA workshops.

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1 Introduction

1.1.1 Stockport Metropolitan Borough Council (SMBC), Manchester City Council (MCC) and Cheshire East Council (CEC) are jointly promoting the development of the A6 to Manchester Airport Relief Road (A6MARR). The proposal comprises some 10km of, predominantly, dual carriageway linking the A6 south-east of Hazel Grove with Ringway Road at Manchester Airport and incorporates 4km of previously constructed dual carriageway in the form of the A555 where it runs to the south of Cheadle Hulme.

1.1.2 The A6MARR includes a new 2-lane dual carriageway connecting the A6 to Manchester Airport. The scheme bypasses Bramhall, Cheadle Hulme, Hazel Grove, Handforth, Poynton and Wythenshawe District Centres and Gatley and Heald Green Local Centres.

1.1.3 The A6MARR is one element of SEMMMS (2001), South East Manchester Multi Modal Strategy, a strategy which seeks to improve transport provision within the south-eastern part of the Greater Manchester conurbation. Its core objectives are:

- The promotion of environmentally sustainable economic growth;
- The promotion of urban regeneration;
- The improvement of amenity, safety, and health;
- The enhancement of the regional centre, town centres and local and village centres and the Airport; and
- The encouragement of the community and cultural life of the neighbourhood and of social inclusion.

1.1.4 The IOM Centre for Health Impact Assessment (IOM CHIA) has been commissioned by the SEMMMS project team on behalf of the three local authorities to undertake a Health Impact Assessment (HIA) of the A6MARR.

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 The more recent International Association for Impact Assessment's definition of HIA, which updates the earlier Gothenburg Consensus definition, is that HIA is:

> "A combination of procedures, methods and tools that systematically judges the potential, sometimes unintended, effects of a policy, plan, programme or project on the health of a population, including the distribution of those effects within the population, and identifies appropriate actions to manage those effects."[2]

2.2.3 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.

2.2.4 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.

2.2.5 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 inequities/inequalities might be reduced or widened by a proposed plan or project.

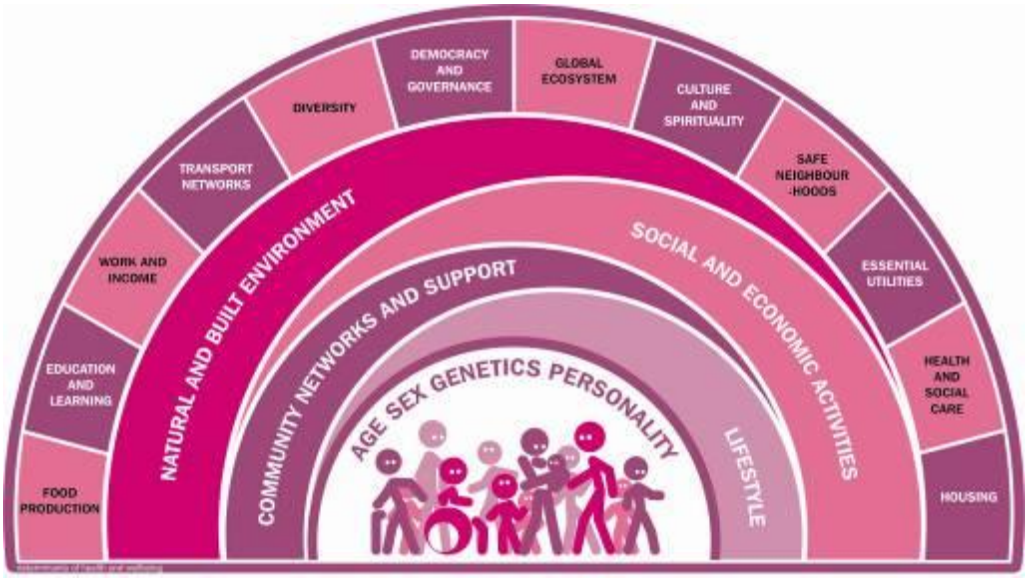
2.2.6 The aim of HIA is to support and add value to the decision-making process by providing a systematic analysis of the potential impacts as well as recommending options, where appropriate, for enhancing the positive impacts, mitigating the negative ones and reducing health inequities/inequalities.

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

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

2.2.7 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 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[3]



2.2.8 HIA therefore uses the following, or similar, 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."[4]

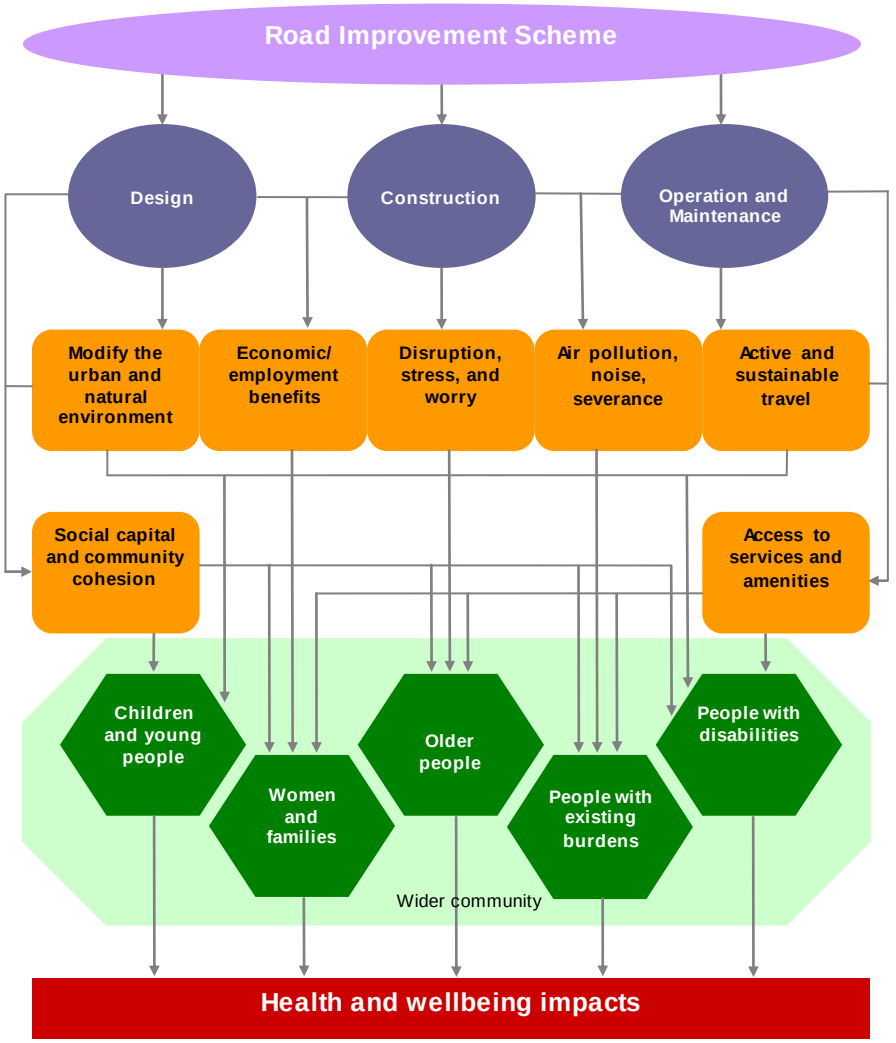
2.2.9 This definition builds on and is complementary to the longer established World Health Organization definition that "Health is a state of complete physical, social and mental wellbeing and not simply the absence of disease or infirmity"[5].

[3] 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.

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

[5] 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.

Figure 2.2: A systems view of a road scheme and the potential health and wellbeing impacts[6]



2.2.10 The general methodology used by IOM is based on established good practice guidance on HIA developed by the Department of Health and the Devolved Countries in the UK and international agencies such as the International Finance Corporation and the International Association for Impact Assessment.[7] [8] [9] [10] [11] [12] [13]

[6] 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.

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

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

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

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

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

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

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

2.2.11 Our methodology has also been informed by the Transport and Health Study Group's guide 'Carrying out a HIA of a transport policy'.[14]

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 the proposal and health and wellbeing impacts.

2.4 General steps in HIA

Screening

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

Scoping

2.4.2 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

2.4.3 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 health and wellbeing impacts and any health inequity/inequalities.

Stakeholder consultation and involvement[15]

2.4.4 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 to engage key stakeholders, in particular local people, in the identification and analysis of the potential health and wellbeing impacts, in the development of mitigation and enhancement measures; and in developing options for monitoring and evaluating the identified impacts.

[14] Transport and Health Study Group and Faculty of Public Health Medicine. (2000). Carrying out a health impact assessment of a transport policy: guidance from the Transport and Health Study Group.

[15] **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

2.4.5 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 qualitative and quantitative models.

Mitigation and enhancement measures

2.4.6 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

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

2.4.8 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 protected and enhanced during the whole lifecycle of a project or plan.

Follow up

2.4.9 This stage involves the active follow up of the project or plan to monitor the actual health impacts, ensure that mitigation and enhancement measures have been put in place and evaluate the effectiveness of the measures after a project or plan is approved.

2.4.10 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 health risk communication plan to ensure that local communities fully understand key health issues, the current scientific evidence, 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 and HIA process itself.

3 Methodology and Scope of this HIA

3.1 Introduction

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

3.1.2 This HIA will be an intermediate level in-depth HIA.[10] This is the most appropriate level of HIA given the other assessments and community and professional stakeholder consultations that have and are continuing to take place. The findings of the other impact assessments and an analysis of existing A6MARR community feedback will be used to inform the HIA. This will be supplemented by some specific focussed HIA-specific community engagement.

3.1.3 The HIA has been informed by and builds on the analysis of the Environmental Impact Assessment (air quality, noise, socio-economic, etc.), community responses from other community consultation activities, the previous HIA Screening Reports and previous responses from a HIA Workshop undertaken a few years ago.

3.2 Screening

3.2.1 SEMMMS Project Team on behalf of Stockport Metropolitan Borough Council (SMBC) undertook a screening which determined that conducting a HIA alongside the EIA would be worthwhile for this A6MARR.

3.3 Aim and objectives of this HIA

3.3.1 The aim of this HIA is to assess the potential positive and negative health and wellbeing impacts of the proposed road improvements on local communities and the wider region.

3.3.2 The specific objectives are to:

- Analyse the health and wellbeing implications of the A6MARR across its life particularly any uneven distribution of impacts between local communities and the wider region;[16]
- Provide a qualitative and, where feasible, quantitative assessment of the potential health and wellbeing impacts; and
- Develop mitigation and enhancement measures to minimise the potential negatives and maximise the potential positives of the A6MARR.

[16] This includes the construction and the short and long term operation phases (and any future modifications that are currently envisaged if appropriate).

3.4 Key tasks for this HIA

3.4.1 Produce a summary baseline community profile with a focus on the social determinants of health and the health and wellbeing status and needs of local communities along the proposed route of the A6MARR.

3.4.2 Produce a summary of existing reviews of evidence on the health and wellbeing impacts of new road developments including any published HIAs on new roads and relief roads.

3.4.3 Facilitate three community workshop events with local communities most likely to be affected by the potential negatives of the A6MARR.

3.4.4 Analyse and prioritise the potential health and wellbeing impacts, through the assessment of the nature, magnitude and likelihood of impacts, using qualitative and where feasible quantitative methods.

3.4.5 Develop mitigation and enhancement measures to minimise the negatives health and wellbeing impacts and maximise the positive public health opportunities of the A6MARR.

3.4.6 Produce draft and final HIA reports.

3.5 Scoping

3.5.1 The Directors of Public Health, or a nominated member of their team, for Stockport, Cheshire East and Manchester reviewed and informed the scope of the HIA.

Study area

3.5.2 There will be three geographic zones of impact/influence that will be considered: [17]

- The area 200m either side of the proposed route of the A6MARR. The area where the potential negatives are likely to be greatest;
- The area 1km either side of the proposed road improvements and encompassing all nearby settlements; and
- The area beyond 1km and up to the administrative boundaries of Stockport, Manchester City and Cheshire East Councils. The area where the potential positives are likely to be greatest.

3.5.3 The above geographic zones lie within the three Councils – Stockport MBC, Manchester City Council and Cheshire East Council - which are the overall geographical areas within which all the important impacts are likely to occur. Each Council has a contiguous clinical commissioning group (previously primary care trusts) serving their area: NHS Stockport; NHS North, Central and South Manchester; and NHS Eastern Cheshire. As of April 2013 these have now become Clinical Commissioning Groups

[17] The zones of impact/influence will be aligned with those used in the transport assessment if needed to enable the transport assessment findings to be considered appropriately in the HIA.

Study population

3.5.4 The key population groups that were considered are:

- Adults and children living, working and undertaking recreational activities within 200m of the road;
- Adults and children living and working within 1km of the road; and
- Adults and children living and working beyond 1km and up to the administrative boundaries of Stockport, Manchester City and Cheshire East Councils. The road will be used by those outside these areas but they are likely to be similar to the impacts for those within the three Council areas.

3.5.5 Other population sub-groups that the HIA focused on are:

- Users of services/amenities; and
- Adults and children living in particularly isolated areas that could be affected by the A6MARR.

3.5.6 The main vulnerable groups that were considered are:

- Children and young people;
- Older people;
- People with disabilities;
- Women;
- Unemployed and low income groups;
- People from minority ethnic backgrounds; and
- People with existing health conditions (with a focus on existing cardiovascular and respiratory disease).

Determinants of health considered

3.5.7 The full list of health outcomes and determinants that are generally considered in HIA are listed below. A review of the previous HIA screening reports and HIA workshop have helped identify the key determinants that should be the main focus for this HIA, these are highlighted below in bold:

- 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 (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; and
- **Land and spatial**

Director of Public Health (DPH) Spatial Planning Framework

3.5.8 The Stockport DPH spatial planning framework was used to consider the health and wellbeing impacts and the proposed mitigation and enhancement measures.[18]

3.6 Baseline assessment and community health profile

3.6.1 The baseline and community profile used ward level data and where appropriate other higher or lower level geographic datasets, e.g. super output area, along the length of the proposed route for the A6MARR.

3.6.2 The key data sources were the following:

- Stockport MBC;
- Manchester City Council;
- Cheshire East Council;
- NHS Stockport;
- NHS Manchester;
- NHS East Cheshire;
- North West Public Health Observatory;
- Department of Health (DH) health profiles; and
- Office for National Statistics (ONS) Neighbourhood Statistics

3.6.3 The profile provides summary information on:

- Attributes of the population: size, age, ethnicity and religion, gender, family structure, employment and economy, education;
- Health: health and wellbeing status, health and social care provision;

[18] Watkins, S. (2011-12). Some key priorities for health and spatial planning. Director of Public Health. Stockport

- Quality of life: deprivation, social capital and community cohesion, crime and safety; and
- Environmental/ built environment conditions: housing; transport and connectivity, land and spatial, shops and retail amenities; culture and leisure.

3.7 Consultation and involvement

3.7.1 The A6MARR conducted two major community consultation programmes: Phase 1 and Phase 2.[19] [20] These consultations identified a range of community concerns including those around health and wellbeing. The key conclusions from these consultations are summarised in Chapter 8 Community Views and Perspectives .

3.7.2 In addition three HIA workshops were undertaken in Hazel Grove (Stockport), Handforth (Cheshire East) and Wythenshawe (Manchester) in February 2013 at various community venues.

3.7.3 These were structured to involve a short presentation of the scheme, what HIA is and key health and wellbeing issues that were being considered followed by a discussion with members of the community who had come to the workshop.

3.8 Evidence and analysis

3.8.1 The evidence review summarises existing key reviews from research reports and past HIAs in the following order:

- Transport related literature reviews focusing on the evidence on new roads and similar road improvements and health;
- Evaluations of the actual health impacts of new roads and similar road improvement schemes; and
- Past HIAs focusing on new roads and relief roads.

3.8.2 The analysis was mostly qualitative using the health impact table shown in Appendix A and identifying the level of potential impacts at construction, and operation phases.

3.8.3 The potential health and wellbeing impacts were compared to a 'Do Nothing' option for the construction and operation phases.

3.8.4 For each potential health and wellbeing impact ten key issues were considered:

- Which population groups are affected and in what way?
- Is the impact (and associated health outcomes/effects) positive, neutral or negative?
- Is the impact permanent or temporary?
- Is the impact reversible or irreversible?

[19] WSP. (2013). SEMMMS A6MARR Phase 1 Public Consultation Report. 1007/9.6/132. March 2013.

[20] WSP. (2013). SEMMMS A6MARR Phase 2 Public Consultation Report. 1007/9.6/150.. March 2013.

- Does the impact increase or decrease with time?
- Does the impact occur over the short, medium or long term?
- Does the impact occur at a local, regional, national or global level?
- Are the impacts direct, indirect and or cumulative?
- Are public health or environmental health standards breached?
- Are mitigating measures available and is it reasonable to require these?

3.9 Recommendations

3.9.1 A set of mitigation and enhancement measures were identified addressing aspects such as:

- Measures to reduce any potential increases in air pollution, noise and severance;
- Protecting provision for pedestrian and cycle access e.g. footpaths, safe crossing points;
- Protecting and enhancing the green character of the route;
- Ensuring local communities are well informed about rerouting plans, timescales, disruptions etc. through an effective communications plan; and
- The potential need for any long term air and noise monitoring.

3.10 Follow up

3.10.1 Possible health indicators that can be used for monitoring the health impacts of the scheme during the construction, and short and long term operation phases (and any future modifications that are currently envisaged) were identified.

3.11 Reporting

3.11.1 The HIA is a standalone report.

3.12 Limitations of this HIA

3.12.1 The main limitations of this HIA were:

- The use of ward level data as being representative of the residents living within 200m of the A6MARR though Census 2011 data was used to develop the baseline and the changes between 2001 and 2011 census data are small; and
- The difficulty in considering the positive and negative impacts at a population level given the range, complexity and diversity of individual level impacts along the A6MARR. Though some individual level impacts for sensitive sites, for example Queensgate School, have been considered.

3.12.2 These limitations though have not affected the overall accuracy of the findings of this HIA but has limited:

- The understanding of existing health and wellbeing related baseline conditions faced by residents living within 200m i.e. whether they are better or worse than the ward level averages and, more importantly where exactly along the A6MARR they are better or worse; and
- The level of depth/detail of the predictions of positive and negative health and wellbeing impacts across the route i.e. the HIA has focused on the general population impacts across the A6MARR.

4 A6MARR Details

4.1 Overview

4.1.1 The proposed scheme comprises a new dual carriageway connecting the A6 to Manchester Airport. The road travels adjacent to Bramhall, Cheadle Hulme, Hazel Grove, Handforth, Poynton and Wythenshawe District Centres and Gatley and Heald Green Local Centres. See Figure 4.1 and Figure 4.2 at the end of this chapter for a map of the route in relation to Stockport, Cheshire East and Manchester.

4.1.2 The new road is approximately 10 kilometres long, predominantly of dual 2-lane carriageway standard, and would include seven new junctions and four improved junctions. It also incorporates a further 4 kilometres of existing A555 dual carriageway to the south of Bramhall (the central section of the scheme). There are four rail crossings in the new sections including the Hazel Grove to Buxton Line, West Coast Main Line (Stockport to Stoke), Styal Line and the Styal Line Northern Airport Spur. A pedestrian and cycle route is proposed for the whole length of the scheme, including retrofitting it to the 4 kilometre existing section of A555.

4.1.3 Seven new junctions and four modified junctions will provide for access from communities close by and for integration of the proposed scheme into the local and wider road network. In addition, new bridges will provide for access beneath or over the dual carriageway where existing roads and railway lines cross the proposed scheme and junctions are not proposed.

4.1.4 A new pedestrian and cycle path catering for pedestrians and cyclists will be introduced alongside the entire length of the dual carriageway, including the existing A555.

4.1.5 Additional footpaths and bridleways will also be provided along parts of the scheme and a number of existing public rights of way will be upgraded from footpath to bridleway status to improve linkages into the existing networks.

4.1.6 The proposed dual carriageway between the A6 and the A555 Styal Road and between the A555 and the B5166 Styal Road will be subject to a speed limit of 50 mph . The current national speed limit will apply to the existing A555. West of the B5166 Styal Road to the tie in to Ringway Road West the speed limit will be 40 mph.

4.1.7 A post and rail fence will mark the highway boundary.

4.2 Main Alignment

A6 to A555

4.2.1 Proposals for the eastern end of the proposed scheme involve the realignment of a 1km long section of the existing A6, Buxton Road, the new alignment being north-east of the existing road. A new light-controlled T-junction will provide for access off and onto the proposed dual carriageway approximately mid-way along the re-aligned section of road. Access to existing housing and other property located along or served by the section of the A6 which will no longer be part of the road will be maintained via new T-junctions at each end of the re-aligned section of the road. 5m high bunds will be introduced along the western margin of the diverted road as part of proposed screening of the road and its associated traffic from the rear of property which fronts onto the existing A6 Buxton Road and located on Cranleigh Drive.

4.2.2 The proposed dual carriageway will follow a south-westerly alignment from its junction with the realigned A6, descending into a deep cutting to pass beneath the existing A6 and Hazel Grove to Buxton railway line where the cutting will be 8m at its deepest. New bridges will carry the existing road and railway over the dual carriageway.

4.2.3 The crossing of the existing A6 Buxton Road and the proposed scheme is located on a relatively sharp curve. The proposed bus bridge will, therefore, be constructed off-line immediately east of the existing road. It will be a 26.1m clear span structure with pre-cast pre-stressed concrete beams and reinforced concrete slab deck supported on contiguous piling abutments.

4.2.4 The new railway bridge will have a clear span of 27.5m. It will comprise a standard Network Rail deck comprising two plate girder beams with transverse girders with the deck supported on pre-cast reinforced concrete full height cantilever abutments. The bridge will have an approximate span of 27.5m.

4.2.5 On passing beneath the railway the dual carriageway will curve to the west, emerging from the cutting south of Old Mill Lane. It will continue in a westerly direction on sidelong cutting within a narrow corridor framed by the tree-lined Norbury Brook to the south and housing on Old Mill Lane, Ashbourne Road and Darley Road to the north. The carriageway will be some 15m south of the nearest garden boundary on Old Mill Lane and between 35-50m south of boundaries on Ashbourne Road and Darley Road. The sidelong cutting will vary in depth from 3.5m to 0.5-1.0m travelling east to west. It will be increased in height to 4m by the introduction of a false cutting as part of the screening of views of the road and its traffic where the dual carriageway will be located south of Darley Road and the sidelong cutting is at its shallowest.

4.2.6 A new bridge over the dual carriageway east of Old Mill Lane will cater for continued access from the lane to fields to the south which would otherwise be severed by the dual carriageway. The bridge will also provide continued access for pedestrians using FP109 as a means of access to a network of rights of way associated with the Norbury Brook and agricultural land south of the urban area. Access to the bridge from FP109 will involve diversion of the PRoW north-east along the top of the cutting above the road and onto embankment to establish the clearance required between the dual carriageway in the cutting below and the bridge. The cutting slope on the west side of the dual carriageway will similarly be heightened by the introduction of an embankment to accommodate access to the bridge. The bridge will be a 26 m clear span structure with pre-cast pre-stressed concrete beams and in-situ reinforced concrete slab deck supported on reinforced concrete abutments on piled foundations.

4.2.7 The alignment of the dual carriageway south of Old Mill Lane will involve the realignment of a 70m section of the Norbury Brook. The new section of watercourse will be constructed to be consistent with the channel width at each end of the diversion and reflect the width of the section which will be displaced to accommodate the dual carriageway. A new bridge for pedestrians using FP62 will be constructed over the eastern end of the diverted watercourse to ensure there will be continued access between the PRoW and FP109. The bridge will be a 21.65 m single span structure with pre-cast pre-stressed concrete beams and in-situ reinforced concrete slab deck supported on reinforced concrete bank seats.

4.2.8 As the proposed scheme approaches and crosses the A523 Macclesfield Road it will encroach into part of the parking area at Brookside Garden Centre. A new at-grade signalised junction will cater for all movements between the new dual carriageway and the A523, Macclesfield Road. The arrangement will include Toucan facilities for cyclists and pedestrians. The introduction of left and right turning lanes catering for access of and onto the dual carriageway at the A523 will involve encroachment into land fronting onto the A-road which forms part of the curtilage to Norbury Hall.

4.2.9 West of the A523, the proposed dual carriageway will curve to the south-west, north of and following the course of the Norbury Brook and moving away from housing on Sheldon Road and Longnor Road. A 19.6m span bridge will carry the dual carriageway over the Lady Brook, the span being of sufficient width to accommodate the existing channel for the watercourse and diverted footpaths on line.

4.2.10 The dual carriageway will continue in a 6-7m deep cutting reducing in depth to 1-2m as it passes south of housing at Hill Green. A false cutting will be introduced in this location to increase the height of the earthworks and screen the road and its traffic from the housing. The north facing slopes of the false cutting will be profiled with a

maximum gradient of 1:6 in order that most of the land can be returned to agricultural use. FP31 will be diverted to cross over the dual carriageway at the highest point of the false cutting (approximately 7m above carriageway level) via a new bridge providing for pedestrian / equestrian use and access for farm vehicles.

4.2.11 Travelling west, the dual carriageway will pass beneath Woodford Road in a 5m deep cutting. The local road will be raised on low embankment immediately off-line to the south of the existing road between Hill Green Farm and Lower Park with an embankment height of 3m at the abutment walls which will support a new 33.7m clear span skew bridge to provide the required clearance above the dual carriageway. It will then rise at a relatively steep 1:25 gradient as it curves towards the south-west on embankment with a maximum height of 9m at the abutment walls of a proposed new 42m clear span bridge over the WCML. The embankment slopes will be increased in height by the introduction of false cutting adjacent to both sides of the carriageway east of the mainline and along the south side of the carriageway west of the mainline. The resultant outer facing slopes will be graded to a profile of 1:12, to reduce the impact a functionally engineered profile (1:2.5-1:3) would have. Much of the gently profiled outer facing slopes will be returned to agricultural use once the works are complete.

4.2.12 Upon crossing the WCML the proposed scheme will pass south of the Bramhall Oil Terminal as it descends on an embankment of reducing height. It will return to existing ground level in the vicinity of the existing access track to the terminal and then descend into deep cutting as it crosses the northern part of the Moorend Golf Club to tie into the existing A555 where it currently terminates in a roundabout on the A5102 Woodford Road. The golf club will cease to operate.

4.2.13 Access to Bramhall, the western parts of Poynton and Woodford will be provided in the form a new signalised roundabout and link road located east of the A5102 and south of the Bramhall Oil Terminal and modification of the existing roundabout junction between the A5102 and A555. The new roundabout will comprise an elongated arrangement providing for westbound access to west Poynton, Woodford and Bramhall via a new link road between the roundabout and the A5149 Chester Road and then via Chester Road and the A5102, dependant on destination. The roundabout will also provide for the most direct eastbound access to west Poynton. Eastbound access onto the dual carriageway from the three settlements and westbound access from west Poynton will also be via the new link road and roundabout. A dedicated northbound link off the roundabout will cater for access to the Bramhall Oil Terminal. Crossing facilities will be provided for pedestrians and cyclists.

4.2.14 Replacement of the existing roundabout at the eastern end of the A555 will comprise a grade-separated arrangement continuing the alignment of the A555 east with west-facing slip roads catering for eastbound exit from and westbound access onto the dual carriageway from Bramhall and Woodford. There will be signalised T-junctions at the head of the slip roads on the A5102 and Toucan facilities for pedestrians and cyclists. A new 23.6 clear span bridge with concrete superstructure supported on contiguous piled abutment walls will carry the A5102 over the newly constructed continuation of the dual carriageway. Piled walls will continue for approximately 110m east of the new bridge to provide appropriate support for property located immediately each side of the gap in residential development along the A5102 which will be utilised for the continuation of the alignment of the existing A555.

A555

4.2.15 The proposals allow for the use of the existing A555. This will not involve any modification to the alignment of the existing dual carriageway but will require modification of the three junctions currently associated with the existing dual carriageway at the A5102, A34 and B5358. The modifications at the A5102 will be as described above.

4.2.16 Proposals for the A34 junction require no modification to existing structures. The existing roundabout on the A34 will be modified to provide for widened carriageways with traffic signal controls which will also enable Toucan controlled crossing facilities for pedestrians and cyclists to be introduced. North of the junction, the roundabout at the junction of the A34 and B5094 Stanley Road will be modified and traffic signals introduced to improve the management of flows through the junction. Toucan controlled crossing facilities for pedestrians and cyclists will also be maintained.

4.2.17 Proposals at the B5358 Wilmslow Road junction involve continuation of the existing alignment of the A555 beneath the existing bridge linking the dumb bell roundabouts on the B-road and construction of new west-facing slip roads off the two roundabouts.

A555 to Ringway Road

4.2.18 West of the B5358 the dual carriageway will be in cutting reducing in depth from 6m - 7m through the junction to 3m at the eastern boundary of Styal Golf Club.

4.2.19 East of the golf course, FP119 will be diverted via a new 28.6m clear span bridge catering for pedestrian use. Embankments required to achieve the headroom between the footbridge and dual carriageway in cutting below will be approx. 5m high at the bridge abutments.

4.2.20 As the dual carriageway crosses the northern part of the golf course it will curve to the north-west moving out of cutting and onto a 2m high embankment on its approach

to a new bridge over the Styal railway line. The bridge over the railway will have a 30m clear span and will be of pre-cast reinforced concrete construction with full height reinforced concrete abutments on piled foundations. FP7 will be diverted beneath the bridge on the eastern side of the railway.

4.2.21 An at-grade signalised crossroad arrangement will be provided at the junction of the dual carriageway and B5166 Styal Road, incorporating Toucan facilities, for pedestrians and cyclists. The construction of the junction will require the extension of the existing road bridge over the northern airport railway spur. From Styal Road west, the Relief Road runs parallel to the airport rail spur where it will terminate as it merges with the existing Ringway Road/Ringway Road West junction west of Shadowmoss Road. Between Shadowmoss Road and the proposed main alignment, Ringway Road will be stopped up and a new layout arrangement with Shadowmoss Road constructed.

4.3 Cross sections

4.3.1 The dual carriageway will comprise two 7.3m wide carriageways separated by a hard standing central reservation varying in width between 1.8m and 3.9m with a concrete central barrier. Between Styal Road and the tie-in to Ringway Road West, where the speed limit will be 40mph, the carriageways will be separated by a kerbed central reservation varying in width between 3.0m and 5.4m and there will be no central barrier.

4.3.2 Between the A6 and Styal Road, the cycle path will be located adjacent to the eastbound carriageway. It will be 2.5m wide with a 2m soft verge between it and the carriageway and a 1m verge between it and the wider roadside verge. There will be a 2m wide soft verge adjacent to the westbound carriageway.

4.3.3 Between Styal Road and the tie-in to Ringway Road, the cycle path will be directly adjacent to the eastbound carriageway. There will be a soft verge on the outside of the shared cycle path and adjacent to the westbound carriageway.

4.4 Junctions

4.4.1 Table 4.1schedules the 7 new and 4 modified junctions along the line of the proposed dual carriageway and the off-line junction modification proposed on the A34.

Table 4.1 Proposed new and modified junctions

Junction Number	Junction Type	Side Road Link and Works
1	At - grade signalised T-junction	New junction at the proposed A6 diversion
2	At - grade signalised crossroad junction	New junction connecting to the A523 Macclesfield Road
3	At grade signalised T-junction	New junction at the proposed A6 diversion
4	At grade signalised T-junction	New junction at the proposed A6 East tie in with the existing A6
5	At - grade signalised roundabout junction	New junction connecting to the Bramhall Oil Terminal and the proposed link connecting to Chester Road
6	At - grade T-junction	New junction connecting the proposed Chester Road link to Chester Road
7	Grade - separated T-junctions with west facing slips	Modification of existing junction linking the A34 and B5094 Stanley Road to increase capacity
8	Large signalised roundabout junction	Modification of existing junction linking the A34 and B5094 Stanley Road to increase capacity
9	Grade - separated roundabout junction with west facing slips	New junction to replace the existing roundabout connecting the A5102 Woodford Road and the eastern end of the A555
10	Grade - separated junction with mini-roundabouts in a dumbbell arrangement	Modification of the existing junction at the B5358 Wilmslow Road and the western end of the A555, to accommodate new west facing slips
11	New signalised crossroads over the proposed Styal Road over airport spur rail bridge	New junction over the proposed new rail bridge to connect to the B5166 Styal Road

4.5 Earthworks

4.5.1 Table 4.2 summarises the earthworks volumes for different sections of the proposed scheme including topsoil removal and resoil volumes.

Table 4.2 Earthworks

Earthworks Section	Volumes (m^3)		Chainage
	Cutting	Embankment	
Realigned A6 to Hazel Grove to Buxton Railway Bridge	17380	117782	100 – 1389
Hazel Grove to Buxton Railway Bridge to Mill Hill Hollow Bridge	125723	25761	8315 – 9490
Mill Hill Hollow Bridge to West Coast Mainline Rail Over Bridge	247320	341180	9515 – 11915
West Coast Mainline Rail Over Bridge to A555 tie in	391061	252900	11955 – 13819
Existing A555 / A34 Junction	5902	18220	N/A
A555 tie in to Ringway Road tie in	159440	838154	100 - 3365

4.6 Structures

Bridges

4.6.1 There will be 13 bridges including over and under bridges across watercourses, railways, side roads; and public rights of way. These are listed and described in Table 4.3.

Table 4.3 Schedule of proposed structures

Bridge	Description
A6 Bus Bridge	A single span simply supported bridge (semi integral construction) supported on contiguous piling abutments. Clear span between abutments 26.1m. Overall width 7.87m with 3.65m wide roadway, one 1m wide verge and one 2m wide cycleway/footpath. Minimum clearance from carriageway 5.3m. Approx. 1.8m deep superstructure of pre-cast pre-stressed concrete Y beams with reinforced concrete slab deck. Parapet to west verge 1.1m high steel with mesh infill. Parapet to east verge 1.4m high steel with mesh infill.
Hazel Grove to Buxton Railway Bridge	A standard Network Rail deck comprising two plate girder beams with transverse girders connected rigidly to the bottom flanges to form a U frame action. Approximate span 27.5m. Deck supported on precast reinforced concrete full height cantilever abutments. 1.8m high steel parapets.
Mill Lane Pedestrian / Cycle Bridge – Over Relief	A single span simply supported bridge on reinforced concrete abutments on piled foundations. Clear span between abutments 26m. Overall width 5m with 3m wide roadway and 4m clearance between parapets. Minimum clearance from carriageway 5.3m. Approx. 2.14m deep superstructure of

Bridge	Description
Road	pre-cast pre-stressed concrete U beams and in-situ reinforced concrete slab deck. Parapets 1.8m high for equestrian use, steel with lower 600mm solid infill and upper mesh infill.
Mill Lane Pedestrian / Cycle Bridge – Over Norbury Brook	A single span simply supported bridge on reinforced concrete bank seats. Clear span 21.65m. Overall width 4.5m with 3.5m clearance between parapets. Approx. 1.2m deep superstructure of pre-cast pre-stressed concrete TY beams and in-situ reinforced concrete slab deck. Parapets 1.8m above pavement level for equestrian use, steel with lower 600mm solid infill and upper mesh infill.
Norbury Bridge Widening	A single span simply supported widening to the existing structure 116 – Norbury Bridge. Clear span approx. 19m. Width of the widening 13m. Superstructure of precast pre-stressed concrete Y-beams supporting an in-situ reinforced concrete (R.C.) slab deck supported on full height reinforced concrete abutments founded on bored piles. Parapet 1.4m high steel with galvanised mesh infill on footway side of the bridge to accommodate pedestrian and cyclist access
Mill Hill Hollow Bridge	A single span fully integral bridge with a 26 degree skew. Square span 16.2m between abutments. Overall width 26.8m. Minimum clearance from superstructure to footpaths below 7.2m. Approx. 1m deep superstructure of pre-cast pre-stressed concrete beams and slab deck on full height reinforced concrete abutments on piled foundations. Parapet to west verge 1.4m high steel with mesh infill. Parapet to east verge 1.1m high steel with mesh infill.
Mill Hill Hollow Footbridge	The proposed structure would be a single span fully integral bridge. The superstructure would be in the form of a pre-cast pre-stressed concrete beams and slab deck. The bridge superstructure would be supported on a capping beam of an in situ contiguous bored pile full height abutment. The width of the bridge is 4m with a span of 8.05m.
Hill Green Accommodation Bridge	A single span supported on bank seat abutments. Clear span between abutments 27.5m. Overall width 5m with 3m wide roadway and 4m clearance between parapets. Minimum clearance from carriageway 5.3m. Approx. 2m deep superstructure of pre-cast pre-stressed concrete U beam and reinforced concrete slab deck. Parapets 1.8m high for equestrian use, steel with lower 600mm solid infill and upper mesh infill.
Woodford Road Bridge	A single span simply supported on full height reinforced concrete abutments on piled foundations. Clear span between abutments 33.7m. Overall width 12.3m with 7.3m wide roadway and 11.3m clearance between parapets. Minimum clearance from carriageway 5.3m. Approx. 2m deep superstructure of composite plate girder steel beams and reinforced concrete slab deck. Parapets 1.0m high steel with mesh infill.
West Coast Mainline Rail	A single span skew bridge simply supported on full height reinforced concrete abutments and wing walls on piled foundations. Clear span

Bridge	Description
Over Bridge	between abutments 42m. Overall width 25.7m with 2 x7.3m carriageways and 2.6m central reservation and 24.7m clearance between parapets. Minimum clearance from rail track 7.0m. Approx. 2.4m deep superstructure of weathering steel composite plate girder & reinforced concrete slab deck. Parapets 1.8m high steel clad units.
Woodford Junction Bridge	A Single span fully integral skew bridge supported on full height contiguous piled wall abutments. Clear span between abutments 23.6m. Overall width 23.72m... Minimum clearance from proposed dual carriageway 5.3m. Approx. 4.3m deep superstructure comprising stringcourse, pre-cast pre-stressed concrete beams, reinforced concrete slab deck, masking wall and propping beams. Parapet to west verge 1.1m high steel with mesh infill. Parapet to east verge 1.4m high steel with mesh infill.
Dairy House Lane Culvert	A pre-cast reinforced concrete box culvert. The length of the culvert will be 9m with a span of 2.4m
Spath Brook Twin Culvert Extension	An extension of 2 No. 600m diameter pipes with a reinforced concrete headwall and wing walls. The length of the proposed extension is 3m,
Yew Tree Footbridge	A single span simply supported bridge supported on full height reinforced concrete abutments on piled foundations. Clear span between abutments 28.6m. Overall width 4.5m with 3.5m roadway and clearance between parapets. Minimum clearance from proposed dual carriageway approx. 6.2m. Approx1.8m deep superstructure of pre-cast pre-stressed concrete U beams and a reinforced concrete slab deck. Parapets 1.8m high for equestrian use, steel with lower 600mm solid infill and upper mesh infill.
Styal Main Line Over Bridge	A single span composite pre-cast pre-stressed concrete beam and slab deck. The bridge superstructure will be supported on full height reinforced concrete abutments and wing walls on piled foundations. The bridge will be 24.7m wide and have a span of 31.0m
Styal Road Airport Spur Bridge	A single span bridge with a superstructure constructed from pre-cast, pre-stressed beams and reinforced concrete slab integral with the abutment walls. The abutment walls will be constructed on bored pile foundations. The bridge will be 45m wide and have a span of 24m

Retaining Walls

4.6.2 Nine lengths of retaining wall are proposed as detailed in Table 4.4.

Table 4.4 Retaining walls

Retaining Wall	Details
1	It is located approximately 40m from the Woodford Road Bridge at an approximate chainage of 11452. The retaining wall is approximately 21.0m in length and runs parallel to the westbound carriageway. It is required to create an area outside of the main carriageway to locate the pumping station compound. The exposed face of the sheet pile wall will be faced with brick masonry.
2	Two 100m long walls, 10m high to retain the ground adjacent to the Woodford Road Bridge Junction, at chainage 13235, on the West and Eastbound carriageways. The wall will be constructed from bored piles with a brick masonry face. A concrete capping beam and handrail will top the wall.
3	63m long, starting at ground level and rising to height of 3.7m, positioned on the eastbound off slip of the junction between the A555 and the A34. This wall is required to accommodate retain ground in order to accommodate a proposed new footpath/cycle route. A gravity wall section of 21m and a sheet pile wall section of 42m will be faced with brick masonry.
4	A contiguous piled wall is proposed to retain the eastbound slip road off the proposed scheme to the junction with Wilmslow Road (B5358). The total length of the retaining solution is approximately 160m. A capping beam will be formed on top and the face will be brick masonry.
5	Approximately 20m long, 1.8m in height and positioned at Styal Road Electricity Substation in order to minimise encroachment of the embankment into the boundary of the electricity substation. The exposed face of the wall will be faced with brick masonry.
6	21m long, 7m high at the south of the intersection of the proposed scheme and Styal Road. The wall will be a reinforced concrete cantilever wall on bored pile foundations.
7	21m long, 3m high proposed to retain an attenuation pond at approximately chainage of 10294. The wall will be constructed of sheet piles with a steel channel wielded to the top to finish and the face will be brick masonry.
8	244m long, 1.2m high and 70m long and 1.5m high; these two walls will support Dairy House Lane and a widened path respectively, The walls will be constructed with sheet piles and the exposed faces of the wall will be finished with brick masonry.
9	6 m long and 0.8m high for retaining a landing light at approximate chainage 3040. The brick wall will be backfilled to return the landing light foundation.

4.7 Cycletrack, footpaths and bridleways

4.7.1 There are a number of cycle paths, footpaths and bridleways proposed in addition to the cycle track and footpath which will run adjacent to the dual carriageway for the length of the proposed scheme corridor.

4.7.2 There are also a number of sections of existing PRoW which will be stopped up where the alignment severs them and which will be diverted via new sections of footpath, bridleway or cycle path to maintain the right of way.

4.7.3 Footpath (FP) 109 Hazel Grove and Bramhall (HGB) will be partly stopped up at the southern end of Old Mill Lane. A new section of path will be provided involving a 350m long diversion between the lane and crossing over the dual carriageway via the proposed Mill Lane bridge and tying into the existing footpath south of the dual carriageway at its juncture with Poynton with Worth (PW) FP62. There will also be a short diversion on the initial section of PW FP62 travelling south which will cross the realigned Norbury Brook via the proposed Mill Lane Pedestrian / Cycle Bridge – Over Norbury Brook. A spur off the diversion north of the dual carriageway will provide access onto the proposed new cycle path along the length of the proposed scheme.

4.7.4 PW FP3, which also forms part of the Lady Brook Interest Trail, will be partly stopped up at the end of Mill Hill Hollow. Continued access will be provided by a 255m long new section of path which will be available for use by pedestrians and cyclists.. The path will run east from Mill Hill Hollow descending to pass beneath the proposed dual carriageway along the western margin of the Lady Brook via the proposed Mill Hill Hollow Bridge and then climbing to rejoin the existing footpath to the west.

4.7.5 A new section of footpath will be provided along the south side of the dual carriageway between PW FP3 and Woodford Road at the southern end of the modified Woodford Road at Lower Park. The new footpath will be routed along the top of the roadside cutting slopes and onto the approach embankments to the Hill Green accommodation bridge. It will provide for continued access across the line of the dual carriageway for users of PW FP31, FP37 and FP21, in the first two instances via the accommodation bridge and, in the latter case, along the re-aligned Woodford Road.

4.7.6 FP19 HGB will be partly stopped up between the proposed scheme and Woodford Road. A new section of footpath path, some 445m, will run parallel with the proposed scheme at the bottom of the northern embankment slope before crossing, via an underpass, adjacent to the West Coast Mainline and connecting back into FP19 HGB along the bottom of the southern embankment slope.

4.7.7 At the Woodford Oil Terminal, to the north of the proposed scheme, FP14a HGB, FP15 HGB and FP16 HGB will be partly stopped up at varying points along their length. Toucan crossings are proposed to allow NMU to cross the new junction safely and rejoin the footpaths on the southern side of the proposed scheme to access Poynton.

4.7.8 There is no footpath severance of any note to footpaths along the length of the existing A555 but the proposed cycleway and footpath will link with the existing footpath network. Where the A34 crosses the footpaths WFP38A and WFP81 will be slightly re-aligned to tie into the modified junction and the crossing facilities for NMUs will be upgraded.

4.7.9 Yew tree footbridge will increase the length of WFP119 by 327m and cross the proposed scheme just east of Styal Golf Course. WFP7 which forms part of this will be partly stopped up and a new footpath passing under the proposed scheme via the new road over rail bridge crossing the Styal Rail Line will increase its length by 241m.

4.7.10 A new section of footpath will extend MCC FP253 by some 170m and will run south on the eastern side of Styal road before crossing the Styal Road and the northern slip roads of the proposed scheme via a toucan crossing. The footway and cycle track along the Styal Road will be severed by the proposed scheme. Users of this section of road will cross the proposed scheme via the same crossing as those that use MCC FP253.

4.8 Lighting

4.8.1 Lighting will be provided at the new and existing junctions. All new lighting columns will be specified with full cut-off LED lanterns to minimise glare and upward dispersal of light.

4.9 Watercourse diversions

4.9.1 There are two proposed watercourse diversions, one each for the Ox Hey Brook and the Norbury Brook. Approximately 260m of the Ox Hey Brook will be diverted where the proposed new A6 link passes across the southern section of the Hazel Grove golf course.

4.9.2 A section of the Norbury Brook approximately 70m long will be diverted as the watercourse approaches the southern end of Old Mill Lane at approximate chainage 8700. The realignments for both watercourses will be sized to maintain the existing flows, and not increase flood risk downstream.

4.10 Drainage

4.10.1 The proposals provide for 8 drainage networks to address the collection and discharge of road related runoff. Discharge rates for all drainage networks will be attenuated to greenfield run-off rates to minimise downstream flood risk. All networks will be installed with oil separators upstream of any outfalls.

4.10.2 Earthworks drainage, which will be separate to the highway drainage networks will be conveyed via filter drains to the nearest watercourse in the first instance and to the highway drainage network where this is not possible. Earthworks drainage networks will incorporate sumps to remove sand and silt prior to discharge.

4.11 Traffic flows

4.11.1 Predicted traffic flows for the opening year and design year along the proposed dual carriageway between the tie-in on the diverted A6 and Ringway Road prepared by the Highways Forecasting & Analytical Services at Transport for Greater Manchester (HFAS) are summarised in Table 4.5.

Table 4.5 Predicted traffic flows (AADT) along the proposed scheme for the opening and design years

Proposed Scheme Section	Predicted Traffic Flows (AADT) at the Opening Year (2017)		Predicted Traffic Flows (AADT) at the Design Year (2032)	
	Westbound	Eastbound	Westbound	Eastbound
A6 to A523 Macclesfield Road	11550	13350	13850	17450
A523 Macclesfield Road to Chester Road Junction	15100	18200	18800	23400
Chester Road Junction to A5102 Woodford Road	21350	24050	25100	29900
A5102 Woodford Road to A34	27200	31800	33700	40050
A34 to B5358 Wilmslow Road	21750	19950	24950	25950
B5358 Wilmslow Road to B5166 Styal Road	17900	20700	26000	22000
B5166 Styal Road to Ringway Road West	24450	27550	29300	34050

4.12 Traffic mitigation measures

4.12.1 A number of traffic management and mitigation measures will be introduced for parts of the local road network in support of the proposed scheme. Traffic management measures will be subject to sensitivity testing in consultation with the relevant planning authorities to determine the most appropriate solution in each of the locations as outlined below.

A6 Disley to Hazel Grove Golf Club

4.12.2 SMBC, CEC and Derbyshire County Council have committed to working together to develop a modal shift strategy for the A6 to Derbyshire which will complement the public transport enhancements the proposed scheme will secure in terms of increased reliability and efficiency of existing bus services in the corridor.

Threaphurst Land and Torkington Road

4.12.3 The predicted increases in traffic levels on Threaphurst Lane and Torkington Road, to avoid the new junction of the A6 with the proposed scheme, will be mitigated by designating both roads as 'Quiet Lanes'.

Clifford Road

4.12.4 Monitoring has been committed to along Clifford Road in Poynton in order to inform potential mitigation measures in anticipation of predicted increases in traffic levels.

Gillbent Road

4.12.5 Predicted increases in traffic levels on Gillbent Road primarily associated with the proposed junction improvements to the A34/ B5094 Stanley Road junction will be mitigated by the implementation of speed restrictions and / or local access improvements.

Handforth

4.12.6 In Handforth predicted increases in traffic using the centre to avoid congestion at the A34 / Stanley Road roundabout will be deterred from travelling along the B5358 Wilmslow Road by the introduction of local traffic management measures.

Wythenshawe

4.12.7 In the Wythenshawe area traffic levels are predicted to increase along Portway and residential streets south of Simonsway. Local traffic management measures will be introduced on select residential routes to discourage strategic traffic routeing through the Wythenshawe area, whilst retaining local accessibility to Manchester Airport for Wythenshawe residents.

4.13 Construction phase

4.13.1 Subject to approval, it is anticipated construction will commence in 2014 and that the dual carriageway will be open to use in 2017. There will be two main phases of work including a 39 week environmental mitigation period and a 104 week construction period.

4.13.2 Working hours are expected to be 0800hrs to 1800hrs Monday to Friday and 0800hrs to 1300hrs on Saturdays subject to agreement with the relevant Local Authorities. Weekend working will not normally be undertaken. Certain activities may need to be undertaken outside of these normal working hours due to scheduling constraints. In particular this will include construction of the proposed rail crossings where disruption of the rail network must be kept to a minimum.

4.13.3 The principal activities during the 39 week environmental mitigation will be:

- construction of the boundary fence;
- site clearance;
- implementation of certain of the environmental mitigation measures prior to commencement of the main construction contract; and
- topsoil strip and storage.

4.13.4 The principal activities during the 104 week construction period will be:

- enabling works including construction of the main site compound, equipment laydown areas, site access, temporary drainage networks, and temporary service requirements.
- diversion of Statutory Undertakers equipment.
- earthworks including excavation of cut areas, construction of embankments, bunding and finished levels.
- construction of structures including revetment walls, underpasses and bridges.
- piling including sheet and bored piles.
- installation of services including communications and power cabling.
- construction of the drainage networks and associated treatment features.
- pavement construction.
- construction of footpaths, cycle paths and bridleways;
- planting; and
- installation of safety barriers, signs, traffic signals and lighting.

Site access and haul routes

4.13.5 The location of proposed access routes and site access points. The principal roads are indicated below:

- A6 Buxton Road
- A523 Macclesfield Road
- A5102 Woodford Road (between A555 and Chester Rd A5149)
- A5149 Chester Road
- A555
- A34
- Ringway Road West

Traffic management

4.13.6 The proposals will generally involve construction off-line such that there will be minimal disruption to traffic using the existing road network. In a number of locations, where new junctions and tie-ins connect with the existing road network, construction will be phased to minimise traffic disruption. Proposals specific to these locations are outlined below.

A6

4.13.7 Access along the existing A6 will be maintained while the new section of the road is constructed off-line. Once complete, traffic will be diverted onto the new section of the A6 whilst the new dual carriageway between the existing and new section of the road is constructed.

A523 Macclesfield Road

4.13.8 The main alignment will be constructed up to the east and west sides of the A523 Macclesfield Road. Lane closures of the east and west lane could be introduced using temporary traffic signals to construct the tie-in works as required.

Woodford Road crossing

4.13.9 A temporary diversion will be provided to the north of Woodford Road whilst the proposed bridge is constructed off-line but close the line of the existing road. Once the bridge and cutting is complete, traffic will be switched back onto the slightly modified line of local road.

Chester Road Link tie in

4.13.10 The tie in points will be constructed using temporary traffic signals for lane closures as required.

Woodford Road / A555 Junction

4.13.11 The new westbound slips and cutting slopes will be constructed whilst traffic access is maintained at the existing junction. Temporary supports will be erected in order that the eastern half of the bridge can be constructed and access for traffic can be continued along the west side of the road. Traffic will then be switched to the

constructed eastern part of the bridge whilst the western part of the bridge is constructed.

A34/Stanley road Junction

4.13.12 The areas of road widening will be constructed using temporary traffic signals for lane closures as required.

A34/A555 Junction

4.13.13 The areas of road widening will be constructed using temporary traffic signals for lane closures as required.

B5358 Wilmslow Road

4.13.14 The slip roads will be constructed off-line, and the mainline constructed beneath the existing bridge structure with no requirement for traffic management. The slip road tie-in points will be constructed using temporary traffic signals to effect lane closures as required. The relocated Clay Lane junction will be opened prior to the closure of the existing Clay lane junction to allow the continued movement of traffic.

Styal Road Junction

4.13.15 The junction will be constructed in three stages. Bridge widening will involve implementation of rail possessions whilst traffic will continue to use the existing Styal Road. The works above the structures to the east and west will then be completed in two stages using temporary traffic signals to effect lane closures as required.

Ringway Road West tie in

4.13.16 The dual carriageway will be constructed up to the existing Ringway Road West which will remain open to traffic. Traffic travelling along Ringway Road West will then be switched to the eastbound carriageway leading to Styal Road, whilst the new junction arrangement with Shadowmoss Road is constructed. The westbound carriageway will then be opened to traffic.

<u>Earthworks</u>

4.13.17 There will be an overall neutral cut / fill balance, achieved by adjusting the highway levels +/- 500mm at the detailed design phase, eliminating the requirement to import fill from off-site locations or dispose of excess cut materials at licensed waste management facilities. Excavated material will be transported within the site boundaries on unpaved haul routes and designated haul roads from areas of cutting to areas where fill is required to form embankments and bunds.

4.13.18 Contractors compound and working space

4.13.19 Two areas have been identified as potential site compounds. One is adjacent to the existing A34 / A555 junction, the second is adjacent to the proposed Chester Road

link near the Bramhall Oil Terminal. The preferred option will be determined during the detailed design stage.

4.13.20 In addition to the main contractor's compound, a number of smaller satellite offices and lay-down areas will be required at key locations such as where the new structures will be built, 'licence' and 'easement' locations for construction are indicated on. The total area of land required under licence for construction is 26ha.

Surface water run off

4.13.21 Temporary drainage networks will be constructed to attenuate and treat surface water flows from the working areas. At each watercourse, temporary bunding, silt traps and potentially chemical dosing plant will be installed to treat and regulate surface water run-off.

Services

4.13.22 A number of service diversions will be required including the following major diversions:

- 600mm ductile iron water main west of the Hazel Grove to Buxton Railway Line.
- Low voltage, high voltage, and telecommunications cables running alongside the A523 Macclesfield Road.
- Oil pipeline and 700mm cast iron water main close to the proposed new link connecting the proposed scheme to Chester Road.
- 180mm low pressure gas mains and high voltage electricity cables along the B5102 Woodford Road where the new junction linking to the A555 will be constructed.
- 225mm cast iron water main and 4 no. high voltage electricity cables west of the A555 / Wilmslow Road junction
- 450mm medium pressure and 300mm polyethylene gas main running centrally through the Wilmslow Road / A555 dumb bell junction
- 6 no. extra high voltage and 2 no. low voltage cables crossing Styal Road to the electricity sub-station located adjacent to the airport rail spur
- 250mm medium pressure gas main and 180mm low pressure gas main running along Styal Road

4.14 Environmental mitigation

4.14.1 Design proposals which have been included as part of the environmental mitigation for the proposed scheme include:

- landscape proposals comprising mounding, earthworks and planting;

- ecological measures comprising habitat creation, mammal tunnels and design features to continue ecological corridors; and
- measures to mitigate traffic related noise.

Landscape proposals

4.14.2 The landscape proposals comprise a combination of earthworks and planting. They are focused on:

- integration of the proposed scheme and its associated traffic into the local landscape;
- mitigation where important character forming components will be removed to accommodate the proposed scheme;
- mitigation of visual impacts for specific receptors where the assessments have indicated there could otherwise be impacts of relatively high order.

Screen mounding

4.14.3 Where screen mounding is proposed it is used in conjunction with proposed planting. Mounding will typically be 2-5m high with 1 in 3 side slopes graded out to cutting slopes or embankment profiles at either end. The location of the proposed screen mounding and an explanation of its purpose is provided in Table 4.6.

Table 4.6 Screen mounding locations

Location	Reason
Extensive screening at the Eastern end of proposed scheme at the tie-in with the re-aligned A6.	To mitigate visual impacts to properties associated with the existing A6 in High Lane and Hazel Grove
Extensive mounding adjacent to eastbound carriageway between Old Mill Lane and the A523 Macclesfield Road.	To mitigate visual impacts to properties on Mill Lane, Old Mill Lane, Millbrook Ford, Ashbourne Road, Baslow Drive and Darley Road.
Extensive mounding adjacent to the eastbound carriageway from the south-western boundary of Norbury Hall to approximately 150m before the crossing at Mill Hill Hollow.	To mitigate visual impacts on properties associated with Norbury Hall, Sheldon Road, Longnor Road, Elton Drive, Wensley Drive, Malton Drive and Chester Road,
Mounding adjacent to the eastbound carriageway parallel with Mill Hill Farm to the southern edge of Hill Green Farm.	To mitigate visual impacts on properties associated with Woodford Road and Lower Park Crescent,
Mounding adjacent to the westbound and eastbound carriageways from west of Woodford Road to the West Coast	To mitigate visual impacts on Bramhall Golf Club to the north and properties to the south.

Location	Reason
Mainline.	
Mounding on the westbound carriageway between the Manchester to Buxton railway line and the eastern edge of Moorend Golf Course including the junction tie-in with Chester Road.	To mitigate visual impacts on properties associated with Chester Road and the Western Edge of Poynton.
Extensive mounding adjacent to the westbound and eastbound carriageway from the Junction of Wilmslow Road Junction with the A555 to the West Coast Mainline	To mitigate visual impacts on properties close to the proposed Wilmslow Road / A555 junction and on Styal Golf Course and its associated buildings.

Planting

4.14.4 Planting proposals include the introduction of woodland, scrub, stands of open tree planting, species rich hedgerows along the highway boundary and grassland with semi-natural characteristics, Combinations of planting types have been used to reflect and complement existing components and compositions. Mixes for the various woodland, scrub, hedgerow and tree planting types will generally be based on the use of native species. They will be of local provenance where woodland planting is proposed to replace ancient woodland which will be lost at Carr Wood.

A6 – A555

4.14.5 New blocks of woodland planting will be introduced along the western and eastern edges of the new A6 realignment and either side of the main alignment up to the new bridge on the existing A6. Species-rich grassland will be established in association with proposed ponds north of the new section of the A6.

4.14.6 West of the bridge dense woodland planting is proposed to compensate the loss of existing woodland and enclose the Mill Lane Pedestrian / Cycle Bridge. Continuing west, woodland planting will give way to dense linear belts of scrub with intermittent tree planting on proposed roadside mounding to enhance the lower level screening provided by the mounding and establish a link with existing woodland along the brook. South of the dual carriageway amenity grassland will be planted between the road and Norbury Brook.

4.14.7 Between the A523 Macclesfield Road and Mill Hill Hollow, the dual carriageway will be enclosed by woodland planted on the proposed mounding adjacent to the eastbound carriageway and woodland which will extend the existing planting along the Norbury Brook south of the road. The woodland north of the road will reinforce the screening provided by the proposed roadside mounding. The woodland south of the

road will enclose a series of open elongated glades with species-rich grassland through which the proposed bridleway linking the A523 and Mill Hill Hollow will be routed.

4.14.8 Where the dual carriageway crosses over the Lady Brook and breaks through the woodland enclosing the watercourse below Mill Hill Hollow dense woodland will be planted adjacent to both sides of the road. The objective is to reduce the severance of the existing woodland and enclose the complex arrangement of bridge, footpath diversions and attenuation pond where it is cut into the sloping ground rising from the confluence of the Lady Brook, Norbury Brook and Poynton Brook.

4.14.9 West of the crossing, the highway boundary will be defined by newly planted hedgerows to reinstate the enclosure of the fields which will be severed by the alignment of the road. The cutting slopes will be grassed. East of Hill Green woodland panting will be introduced onto the embankment slopes where the accommodation bridge provides continued access for FP 31 over the dual carriageway and will be continued on the false cutting and cutting slopes as the road approaches Woodford Road. This will establish a woodland framework east of the settlement and screen traffic on the dual carriageway from the properties located along the Woodford Road.

4.14.10 West of Woodford Road large-scale woodland planting on the upper part of the extended approach embankment at the crossing of the West Coast Main Line will mask the scale of the embankments. In combination with the false cuttings proposed along both sides of the dual carriageway the woodland will also screen traffic on the elevated road from view for users of the Bramall Golf Course and residents and drivers on Woodford Road to the south.

4.14.11 The woodland planting will be continued on the roadside screen mounds adjacent to the westbound carriageway as the road descends from the bridge over the railway. The embankment slopes to the north side of the road will be planted with dense scrub and tree planting as the road passes south of the oil terminal.

4.14.12 Dense areas of scrub and tree planting will be introduced at the extended junction on the approach to the A5102 Woodford Road to establish a matrix of planting which will frame and contain the complexity of the junction arrangement whilst complementing the form of existing planting associated with the area. The scale of the planting will increase as the dual carriageway approaches the retaining walls at the Woodford Road junction.

A555

4.14.13 Planting along the existing A555 will involve the introduction of narrow woodland belts adjacent to the new west facing slip roads and shrub planting between the dual carriageway and slip roads as the road emerges from beneath the Woodford Road

bridge .. The woodland planting will screen and frame the Woodford Recreation Ground to the north and screen properties on Jenny Lane to the south from views of traffic in the cutting and to the west along the dual carriageway. Scrub and tree planting will also be introduced where the construction of the cycle path adjacent to the eastbound carriageway will involve the removal of some of the dense scrub and woodland edge which is well established along the roadside.

4.14.14 Linear belts of dense shrub planting with groups of trees will be planted at the top of the slip roads linking the A34. This form of planting will also be planted on the eastern slopes of the A34 as it approaches from the north to reinstate planting lost during the localised widening of the A-road.

A555 to Ringway Road West

4.14.15 West of the A555 as far as the Styal Railway planting will comprise a combination of substantial areas of dense scrub with groups of intermittent tree planting, occasional linear belts of woodland and open areas of species-rich grassland associated with a series of new ponds. This will introduce a substantial corridor of diverse habitat types and significant landscape component in the area. The corridor will define the northern boundary of the re-organised Styal Golf Course and combine with proposed roadside mounding to screen the road and its traffic from the urban edge of Heald Green and properties to the south on the fringe of Handforth.

4.14.16 West of the railway planting comprises a simple definition of the corridor with boundary hedgerows as the road becomes part of an ad-hoc mix of land use associated with the rail infrastructure and the airport approaches.

Agricultural handback

4.14.17 There are a number of areas which will be returned to agricultural grassland to enable the areas to be handed back to the landowner following completion of the works. The principal areas are:

- Between the A6 re-alignment and Old Mill Lane;
- South of Hill Green;
- East and west of the WCML;
- In the vicinity of the Chester Road Link;
- On the approach embankments to the Styal Railway; and
- In the vicinity of Moss Nook.

Noise mitigation

4.14.18 The proposed roadside mounding described in Table 4.6 will have the effect of reducing traffic related noise. In addition, low noise surfacing is proposed along the new section of dual carriageway. The assessment of traffic-related noise has also identified a number of locations where it has been concluded additional mitigation to

that which will be provided by the mounding should be included and locations where mounding is not proposed but noise mitigation is to be provided. In these locations the proposals provide for the noise barriers. Table 4.7 identifies the relevant locations and the length and height of barrier proposed.

Noise barriers

Table 4.7 Noise barriers

Location	Height	Length	Carriageway
Buxton Road	1.8	178	Off Scheme
Woodford Road, Poynton	1.8	403	Eastbound
Woodford Road, Poynton	1.8	392	Westbound
Mill Hill Hollow	1.8	255	Eastbound
Mill Hill Hollow	1.8	154	Westbound
W of Macclesfield Road	1.8	396	Eastbound
S of Old Mill Lane	3.0	101	Eastbound
E of Macclesfield Road	3.0	545	Eastbound
E of Woodford Road (Queensgate)	1.8	1034	Eastbound
E of Woodford Road (Queensgate)	1.8	280	Westbound
N of Styal Golf Course	1.8	519	Eastbound
N of Styal Golf Course	1.8	574	Westbound
Ringway Road	1.8	121	Eastbound
S of Old Mill Lane	1.8	81	Eastbound

Construction Environmental Management Plan (CEMP)

4.14.19 Implementation of the mitigation measures and other statutory measures and protocols which will be adopted during construction as part of the detailed construction methods will be formalised and enforced by way of a Construction Environmental Management Plan (CEMP) for the contract. A draft CEMP has been prepared and is shown in the Environmental Statement (ES). It describes the mitigation measures, procedures and processes the contractor will be required to develop in a detailed plan and which the contractor will be required to agree with the relevant local authorities in advance of the commencement of construction.

4.14.20 The CEMP will include:

- a description of each specific element of the construction programme along with the mitigation which will be incorporated to eliminate or reduce the risk of adverse environmental impacts.

- the relevant obligations which are placed on the construction contractor in respect of their commitments to implement the necessary mitigation measures as part of the construction contract, including liaison with third parties and relevant statutory and non-statutory bodies.

4.14.21 The contractor will also be required to develop a detailed Site Waste Management Plan. A draft form that the detailed plan will be required to take is provided in the Environmental Statement (ES).

Figure 4.1: A6MARR route in relation to Stockport, Cheshire East and Manchester [Source: Mouchel]

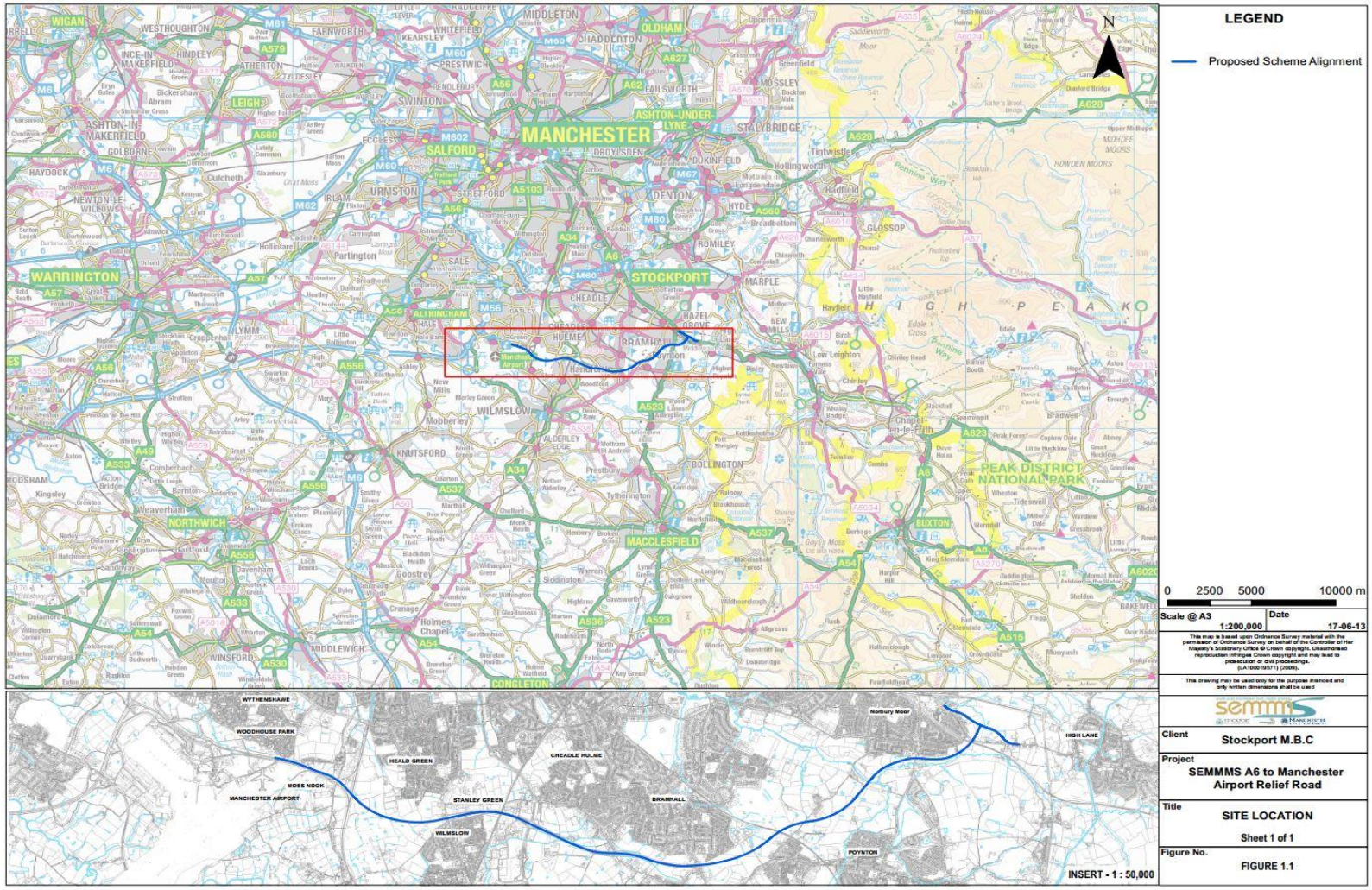


Figure 4.2: A6MARR route in detailed [Source: Mouchel]

5 Policy Context

5.1 Introduction

5.1.1 This chapter summarises the key transport and health related policy context in relation to the A6MARR.

5.2 UK-wide policy

5.2.1 The Carbon Plan: Delivering our low carbon future (DECC 2011)

The plan sets out sustainable travel measures that will help the UK meet its carbon reduction targets. Some of these include promoting the use of public transport, cycling and walking; reduce congestion to improve air quality and health and also boost the local economy.

5.2.2 UK Low Carbon Transition Plan National Strategy for Climate and Energy (DECC 2009)/Low Carbon Transport: A Greener Future (DfT 2009)

The policies in these documents go beyond addressing goals around carbon reduction and addresses issues such as reducing congestion, improving safety, security and health and promoting greater equality of opportunity for everyone. It also highlights the health improvement that can be gained through reduced air and noise pollution by helping people make low carbon travel decisions and investing in initiatives that promote walking and cycling.

5.2.3 The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (DEFRA 2007)

This Strategy acknowledges that road transport is a key source of many air pollutants, particularly in urban areas. It states that traffic management can make a significant contribution to help reduce emissions from road vehicles, for example, schemes which reduce road congestion. In addition, a supplementary publication by DEFRA, Air Pollution: Action in changing climate (2010), takes into account other traffic management measures such as the promotion of low carbon vehicles and use of renewable sources of energy.

5.3 England policy

5.3.1 National Planning Policy Framework (Department for Communities and Local Government 2012)

This document highlights the need for local authorities to work with neighbouring authorities and transport providers to develop strategies for the provision of viable infrastructure necessary to support sustainable development, including large scale facilities

such as transport investment necessary to support strategies for the growth of ports, airports or other major generators of travel demand in their areas.

Two of the core principles outlined in this framework are to:

- Actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable; and
- Take account of and support local strategies to improve health, social and cultural wellbeing for all, and deliver sufficient community and cultural facilities and services to meet local needs.

5.3.2 Making Sustainable Local Transport Happen - Creating Growth, Cutting Carbon (Department for Transport 2011)

This document's vision is for a "transport system that is an engine for economic growth, but one that is also greener and safer and improves quality of life in our communities."

It goes on to suggest that the vision can be achieved is by improving the links that help to move people and goods around and by targeting investment in new projects that promote green growth, a balanced, dynamic low carbon economy that is essential for future prosperity can be built.

The paper highlights the importance of helping people make transport choices that are good for the society as a whole. It goes on to suggest the need to make walking, cycling and use of public transport more attractive as the British Social Attitudes Survey, 2009 indicates that a substantial proportion of drivers would be willing to drive less, particularly for shorter trips if practical alternatives were available.

A concern highlighted in this paper is the issue of congestion and its drag on the economy. The paper states that: a recent study placed the cost of excess delays in urban areas at £10.9 billion per annum (Cabinet Office Strategy Unit et al., 2009). It can also have negative impacts on the amenity and ambience of our town centres, deterring visitors and shoppers who make a vital contribution to the health of our local economies.

5.3.3 Active Travel Strategy (Department of Health; Department for Transport 2010)

This strategy recognises that there is little capacity for road network expansion and there are significant negative impacts to health, safety, the environment and climate change. Therefore it highlights the need to put walking and cycling at the heart of local transport and public health strategies. It discusses how walking and cycling would contribute to improving public health, increasing accessibility, reduce congestion, improve road safety, reduce carbon emissions and improve the local environment.

5.3.4 Noise Policy Statement for England (DEFRA 2010)

This statement sets out the long term vision of promoting good health and a good quality of life through the management of noise. The aim is to effectively manage and control

environmental (including noise from transport) and neighbourhood noise to avoid, minimise and/or mitigate adverse impacts on health and quality of life.

5.3.5 Fair Society, Healthy Lives (The Marmot Review 2010)

This independent review which proposes the most effective evidence based strategies for reducing health inequalities in England recommends the need to 'fully integrate the planning, transport, housing, environmental and health systems to address the social determinants of health in each locality' (Policy Objective E).

Much of what is recommended in this review to reduce health inequalities will also benefit the sustainability agenda e.g. active travel and public transport, reduce carbon-based pollution. Specific transport related measures recommended include: reducing speed limit, providing cycling infrastructure, providing lighting for paths and cycle paths, providing accessible pedestrian crossing and improving public transport.

5.3.6 An analysis of urban transport (Cabinet Office 2009)

This paper reviews the challenges and opportunities for transport in urban areas and sets out a vision for cities and urban areas that rebalances economic benefits with health gains. The impact of transport on the people that live and work in cities involves not just the benefits of mobility but also the economic consequences of congestion, poor air quality, ill health and road accidents. Transport also significantly contributes to the negative experiences of urban streets and public spaces. The evidence suggests the need for a long-term vision for urban transport that:

- Enables mobility by promoting a wider choice of journey;
- Aims to reduce congestion and increase reliability and promotes walking and cycling;
- Improves streets and public spaces to become more enjoyable places to be; and
- Reduces exposure to harmful emissions.

5.4 Local policy

5.4.1 Greater Manchester Local Transport Plan 3 (2011)

This strategy outlines transport objectives through which the growth of Greater Manchester will be supported. These include:

- Prioritising investment in cost-effective major transport interventions that will create maximum economic benefit for Greater Manchester, whilst also ensuring that this improves the social and environmental benefits of the system as a whole;
- Improving access from residential areas, particularly those prioritised for housing growth, to key education and employment areas: particularly the Regional Centre, town centres, Trafford Park and other strategic employment sites;
- Improving surface access to Manchester Airport;

- Improving the efficiency and reliability of transport networks;
- Improving road safety and also enhancing the personal safety and security of travellers on the system; and
- Developing an integrated approach to the transport network and travel demand management that helps to support lower carbon travel across Greater Manchester

The LTP3 discusses the challenges around capacity and reliability of the transport network particularly with the forecast in future significant housing growth. It suggests that the focus in dealing with these challenges is high quality, targeted investment in public transport and other sustainable modes. The strategy also highlights the need to secure targeted investment in new/improved parts of Greater Manchester's strategic road network in order to maintain efficiency across the network as a whole and improve routing and traffic management to more effectively distribute traffic around, instead of through, the city centre.

Highlighted in the strategy are the further opportunities for increasing cycling to work, particularly by improving the environment for cyclists along key routes to major employment destinations, by re-routing general traffic, reallocating road space to buses and cyclists and investing in cycle infrastructure and parking.

5.4.2 Cheshire East Local Transport Plan (2011)

This strategy outlines a series of LTP objectives which aim to make explicit the areas where transport can make a positive contribution and also where it would be likely to hinder achievement if under-performance is not addressed. The seven objectives are:

Objective 1 (Congestion): Minimise congestion and improve the overall efficiency of the highway network;

Objective 2 (Accessibility): Improve accessibility to key services (employment, education, health, shopping and leisure) and reduce the need to travel;

Objective 3 (Maintenance): Improve maintenance of the highway and transport network;

Objective 4 (Community): Support community involvement and decision-making;

Objective 5 (Health): Support active and healthy lifestyles;

Objective 6 (Environment): Protect and enhance the local and global natural environment (including environmental assets such as biodiversity, geodiversity, soils and protected landscapes); and

Objective 7 (Safety): Improve road safety for all users and increase personal and community safety.

6 Community Health and Wellbeing Profile

6.1 Introduction

6.1.1 This chapter provides a summary health and wellbeing focused baseline assessment and community profile of Stockport, Cheshire East and Manchester, and the wards within these Councils, that the A6MARR lies within (See Table 6.1 and Figure 6.1). It is from this baseline understanding that the predictions on the potential health and wellbeing impacts of the A6MARR have been considered.

6.1.2 Given the large size of Manchester coupled with it having only one ward affected compared to Stockport and Cheshire East this chapter focuses on ward level and Super Output Area data wherever possible.

6.1.3 Health care services are provided by NHS Manchester, NHS Stockport and NHS East Cheshire. Crime and safety services are provided by the Greater Manchester and Cheshire Police Services.

6.1.4 Figure 6.2 and Figure 6.3 show a satellite and overhead street and settlement Google Maps view of the area within which the A6MARR is located.

6.1.5 The wards within which the A6MARR will be located and two wards that are close to and likely to be affected by the A6MARR are shown in Table 6.1.

Table 6.1: Wards within/near which the A6MARR lies

Stockport	Cheshire East	Manchester
Marple South	Poynton East and Pott Shrigley *(formerly part of Poynton)*	Woodhouse Park
Hazel Grove	Poynton West and Adlington *(formerly part of Prestbury and Tytherington and Poynton)*	
Stepping Hill	Handforth *(formerly part of Wilmslow North)*	
Bramhall North	Wilmslow Dean Row *(formerly part of Wilmslow North)*	
Bramhall South	Wilmslow Lacey Green *(formerly part of Wilmslow South)*	
Cheadle Hulme South		
Heald Green		

Wards in brackets are the former ward boundaries which have been used in the 2001 census.

Figure 6.1: Outline overview map of the A6MARR route and the wards that it would be located in [Source: Mouchel]

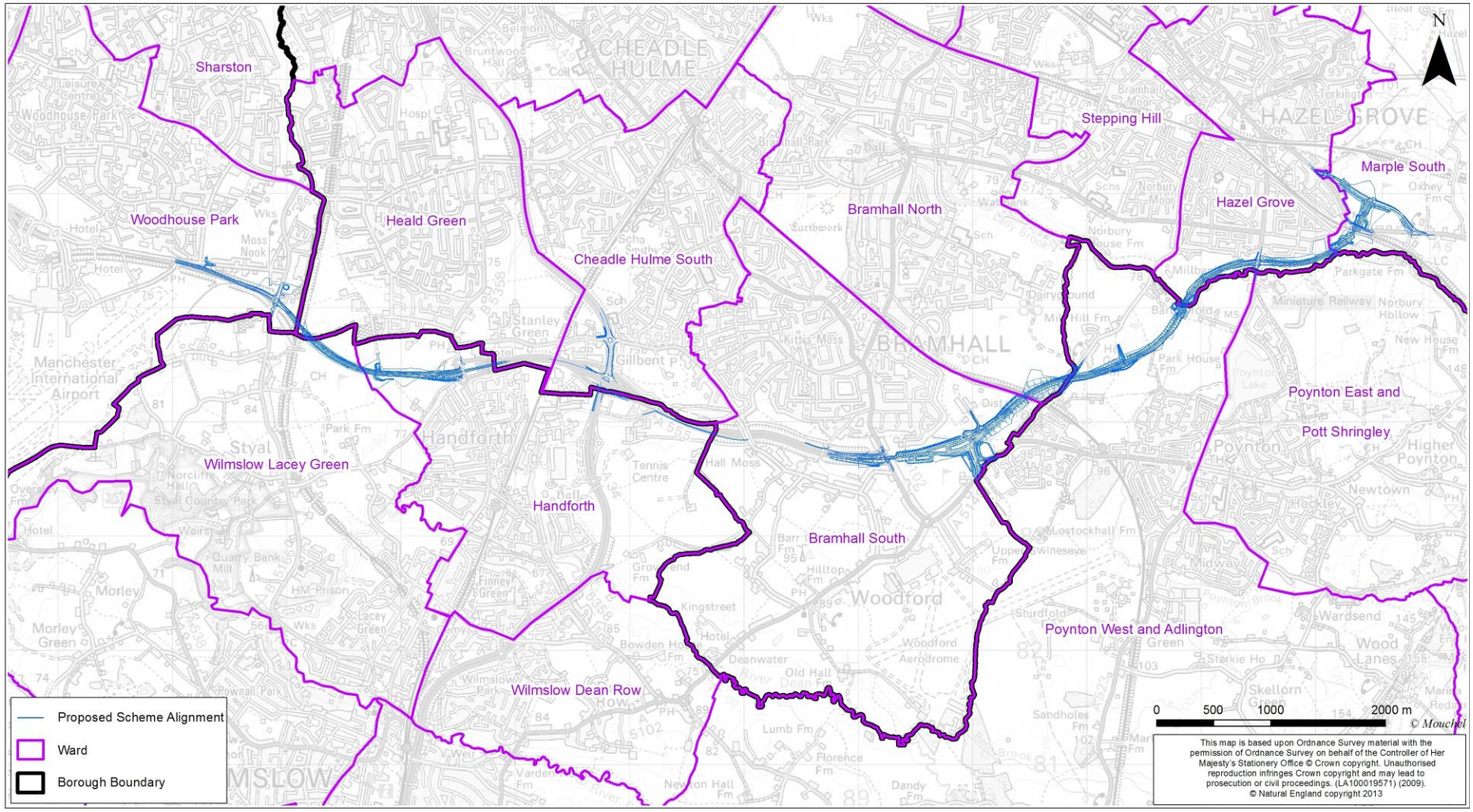
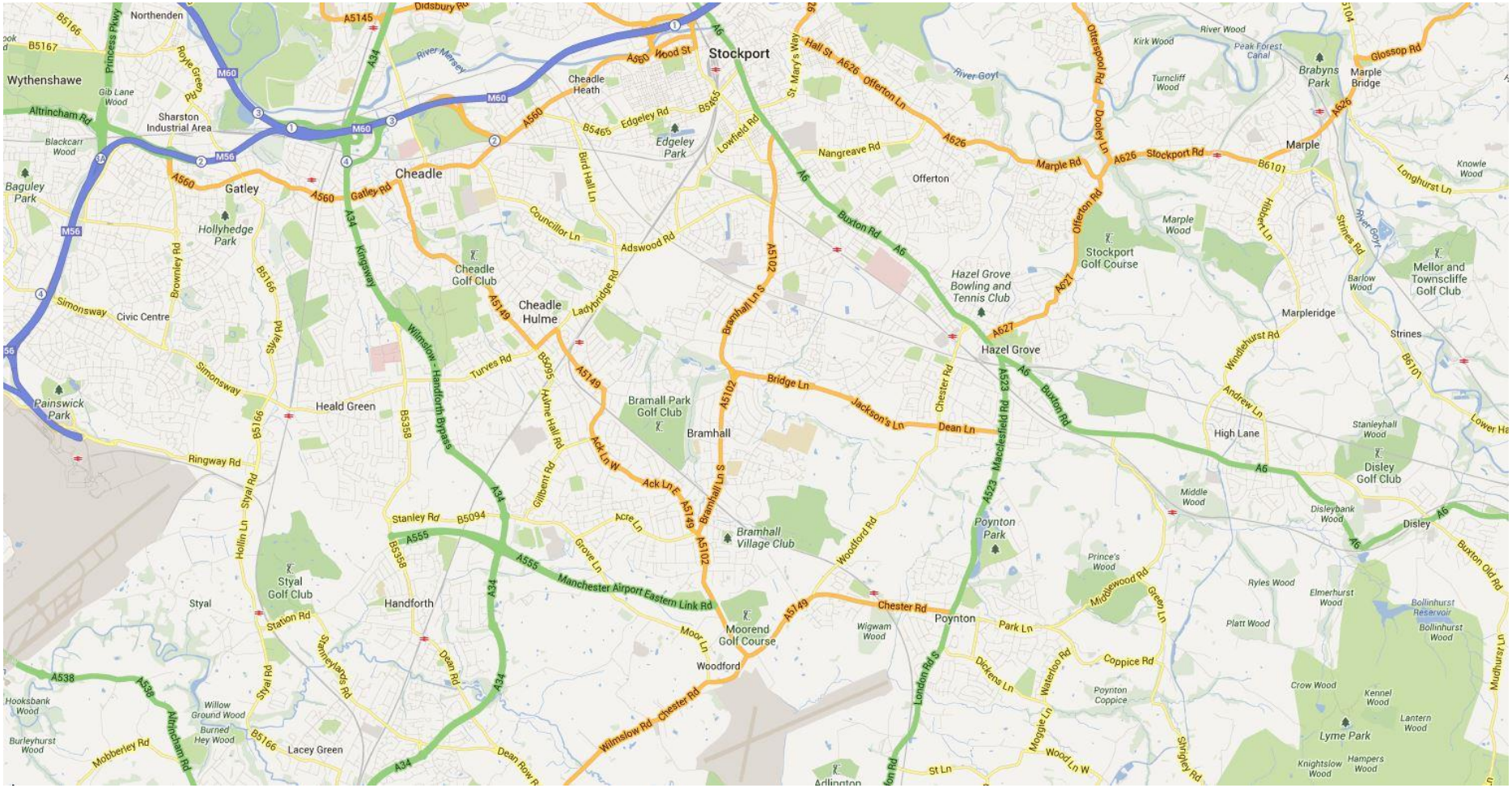


Figure 6.2: Satellite map of the road, settlements and land that the A6MARR would be located along [Source: Google 2013]

Figure 6.3: Outline map of the road, settlements and land that the A6MARR would be located along [Source: Google 2013]



6.2 Councils' summary health and wellbeing profile[21] [22] [23]

6.2.1 Stockport scores well on most health and wellbeing indicators being significantly better than or not different from the England average. It has lower levels of deprivation, children in poverty, statutory homelessness and violent crime. It also has lower levels of obese children aged 10-11 years old and adults, drug misuse, diagnosed diabetes, tuberculosis, acute sexually transmitted infections and road traffic injuries and deaths. A higher proportion of children in Stockport have also achieved 5A*-C grades at GCSE.

6.2.2 However, Stockport has higher levels of smoking in pregnancy and alcohol specific hospital stays in under 18s, malignant melanoma (skin cancer), hospital stays for self-harm and hospital stays for alcohol related harm. Long term unemployment was significantly higher than the England average in 2011 but in 2012 is now in line with the England average.

6.2.3 Similarly, Cheshire East scores well on most health and wellbeing indicators being significantly better than or not different from the England average. It has lower levels of deprivation, children in poverty, statutory homelessness, violent crime and long term unemployment. It also has lower levels of obese children aged 10-11 years, under 18s teenage pregnancy, adults smoking, obese adults, hospital stays for alcohol related harm, drug misuse, tuberculosis and acute sexually transmitted infections. In addition, it has higher male and female life expectancy and fewer smoking related deaths and early deaths from heart disease and stroke. It also has a higher proportion of children who have achieved 5A*-C grades at GCSE.

6.2.4 However, Cheshire East has higher levels of smoking in pregnancy, alcohol specific hospital stays in under 18s, hospital stays for self-harm and road injuries and deaths.

6.2.5 In contrast, Manchester scores poorly on most health and wellbeing indicators being significantly worse than the England average. It has higher levels of deprivation, children in poverty, statutory homelessness, GCSE achievement, violent crime, long term unemployment, obese children, alcohol specific hospital stays in under 18s, teenage pregnancy in under 18s, adults smoking, hospital stays for self-harm and alcohol related harm, drug misuse, tuberculosis, acute sexually transmitted infections, infant deaths, smoking related deaths and early deaths from heart disease, stroke and cancer.

6.2.6 Manchester scores positively on only three health and wellbeing indicators. It has lower levels of obese adults, malignant melanoma and road injuries and deaths.

6.2.7 Overall, Cheshire East has significant issues in relation to road injuries and deaths and hospitals stays for self-harm (more prevalent in teenagers and young adults). All three areas

[21] Department of Health. (2012). Health Profile 2012: Stockport.

[22] Department of Health. (2012). Health Profile 2012: Cheshire East.

[23] Department of Health. (2012). Health Profile 2012: Manchester.

have issues with under-age drinking and smoking in pregnancy. Cheshire does best in terms of population wellbeing followed reasonably closely by Stockport with Manchester being much worse than the other two areas. However this overall picture disguises more localised deprivations which is shown in Figure 6.16.

6.3 Population characteristics

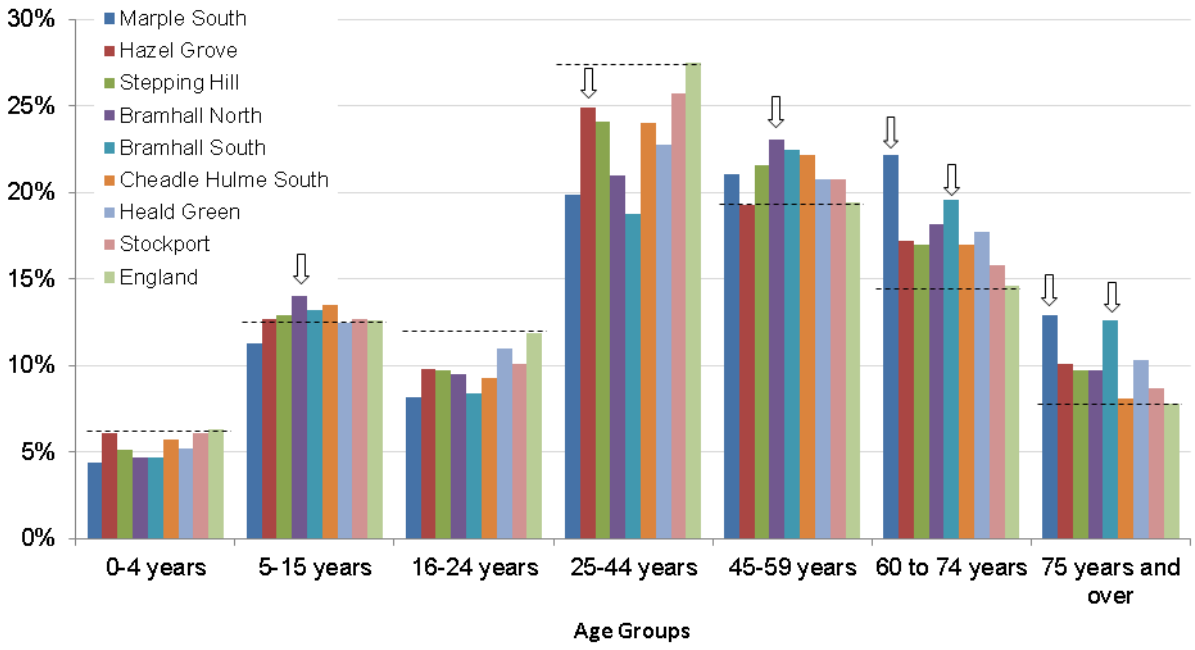
6.3.1 There are approximately 283,000 residents in Stockport, 370,000 in Cheshire East and 503,000 in Manchester (2011 Census).[24]

Stockport

6.3.2 The mean age in Stockport is 41 years with the seven Stockport wards under consideration having a mean age between 41.3-46.2 years i.e. slightly or quite a lot older than the Stockport population as a whole.

6.3.3 Figure 6.4, Marple South and Bramhall South have the highest proportion of over 60 year olds, though all the seven wards have a higher proportion of residents who are over 45 years of age and above (except for Hazel Grove where the proportion of 45-59 years olds is in line with the England average). All seven wards have a lower proportion of 16-44 years olds than the Stockport and England averages (except for Heald Green which has a higher proportion of 16-24 year olds than the Stockport average though not the England average).

Figure 6.4: Proportion of residents by age group in the seven Stockport wards compared to Stockport and England as a whole [Source: ONS 2011 Census]



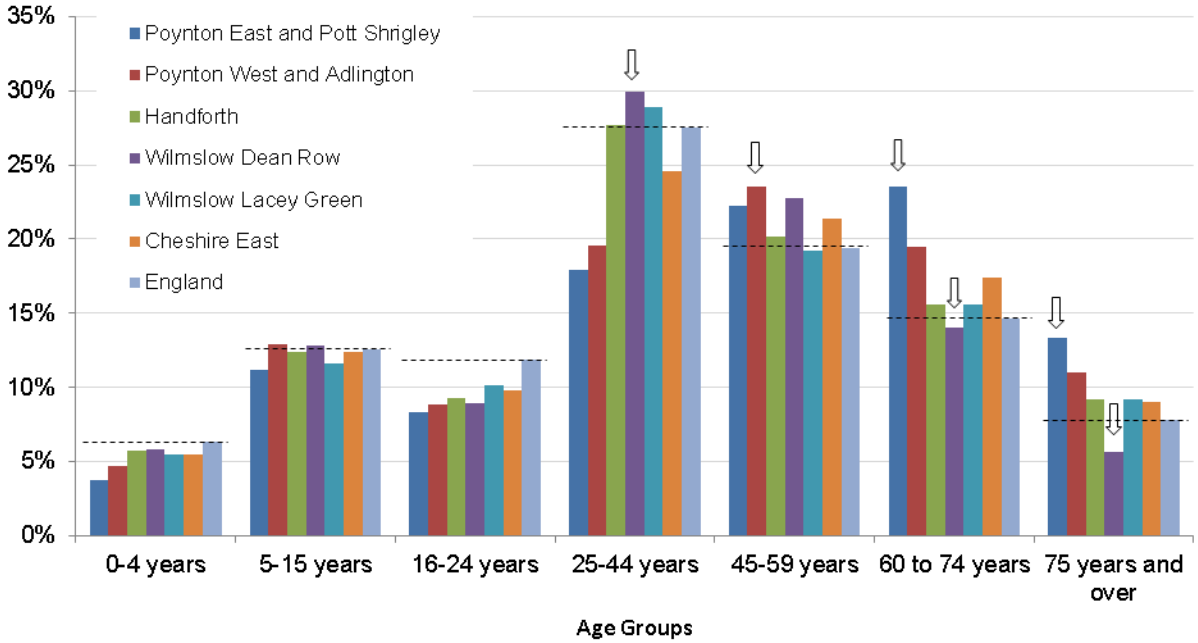
[24] Office for National Statistics. (2011). Neighbourhood Statistics. URL http://www.neighbourhood.statistics.gov.uk

Cheshire East

6.3.4 The mean age in Cheshire East is 42 years with the five Cheshire East wards under consideration having a mean age between 41.3-46.2 years i.e. slightly younger or slightly to quite a lot older than the Cheshire East population as a whole.

6.3.5 As shown in Figure 6.5, similar to the Stockport wards, the five Cheshire East ward residents also have an older age profile with Poynton East and Pott Shrigley, Poynton West and Adlington, Handforth and Wilmslow Lacey Green having a higher proportion of residents who are over 45 years and over. Wilmslow Dean Row has a younger age profile with a higher proportion of those aged 25-44 years and a lower proportion of those aged 60 years and over.

Figure 6.5: Proportion of residents by age group in the five Cheshire East wards compared to Cheshire East and England as a whole [Source: ONS 2011 Census]

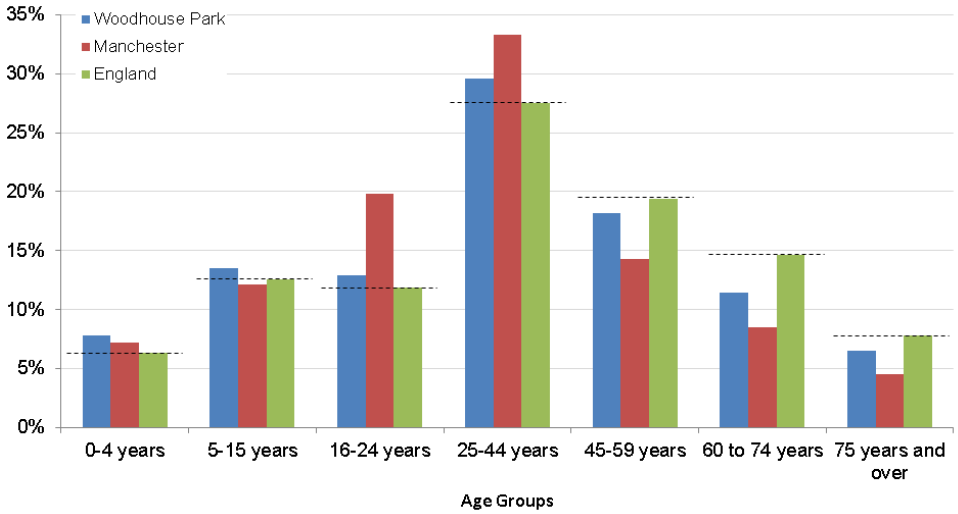


Manchester

6.3.6 The mean age in Manchester is 33 years with the one Manchester ward having a mean age of 36 years i.e. older than the Manchester population as a whole.

6.3.7 In contrast to both Stockport and Cheshire East, the one Manchester ward under consideration has an age profile that is younger with a higher proportion of residents 0-44 years of age.

Figure 6.6 Proportion of residents by age group in the one Manchester ward compared to Manchester and England as a whole [Source: ONS 2011 Census]



6.4 Ethnic profile

6.4.1 In Stockport, 77-93% of the residents of the seven wards under consideration are from a White background (English/Welsh/Scottish/Northern Irish/British). There is greater ethnic diversity as you move from east to west from Marple South, Hazel Grove and Stepping Hill (92-96% White) to Bramhall North, Cheadle Hulme South (88% White) and Heald Green (77% White). Heald Green has the highest ethnic diversity (12% from Pakistani, 2% from Indian, 1% from Bangladeshi, 1% from Chinese and 1% from Arab ethnic backgrounds).

6.4.2 In Cheshire East, 83-97% of the residents of the five wards under consideration in Cheshire East are from a White background (English/Welsh/Scottish/Northern Irish/British). Wilmslow Lacey Green has the highest ethnic diversity (3% from Pakistani and 3% from Indian backgrounds).

6.4.3 In Woodhouse Park ward in Manchester, 81% of the residents are from a White background (English/Welsh/Scottish/Northern Irish/British) with a lower proportion of residents from other ethnic backgrounds compared to Manchester as a whole (59% from a White background).

6.5 Religion

6.5.1 Across the seven wards under consideration in Stockport, between 61-70% of the residents are Christians and 17-24% do not believe in any religion. The proportions follow a similar pattern to ethnic diversity with 13% of Heald Green, 4% of Cheadle Hulme South and 3% of Bramhall North being Muslim. 2% of residents of Bramhall North and Cheadle Hulme South and almost 1% of residents of Bramhall South, Heald Green are Hindu. Approximately half a percent of residents of Bramhall North, Bramhall South, Cheadle Hulme South and Heald Green are Jewish.

6.5.2 Across the five wards under consideration in Cheshire East between 62-71% of the residents are Christians and 21-26% do not believe in any religion. Five percent of Wilmslow Dean Row, 3% of Handforth and 2% of Wilmslow Lacey Green are Muslim. Two percent of Wilmslow Dean Row and 1% of Handforth and Wilmslow Lacey Green are Hindu.

6.5.3 In Woodhouse Park ward in Manchester, 65% are Christian, 23% do not believe in any religion and 2.5% Muslim.

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 are likely to have.

Stockport

6.6.2 Of the seven Stockport wards under consideration, the highest number of residents are married or in a registered same sex civil partnership (SSCP) (see Figure 6.7). Hence, the proportion of married couple households (with or without children) average 40% (36-45%) (see Figure 6.8). This is higher than the 34% all Stockport average. It ranges from Bramhall South with 45% to Marple South and Hazel Grove with 36%.

6.6.3 Single people form the next highest number of residents (see Figure 6.7); single person households across the 7 Stockport wards average is 28% (24-32%) (see Figure 6.8). This is lower than the 30% all Stockport average. It ranges from Marple South with 32% to Bramhall South with 22%. The number of not living as a couple but married or in a registered SSCP, separated and divorced residents average 9% (7-10%). This is lower than the 10% all Stockport average. It ranges from 10% in Stepping Hill to 7% in Bramhall South.

6.6.4 The proportion of lone parent households average 9% (7-10%) (see Figure 6.7). This is lower than the 11% all Stockport average. It ranges from Hazel Grove, Stepping Hill and Bramhall South with 10% each to Bramhall South with 7%.

6.6.5 The proportion of over 65 year old households (one person or family all aged over 65 years) average 28% (24-33%) (see Figure 6.8). This is higher than the 23% all Stockport average. It ranges from Cheadle Hulme South with 24% to Marple South and Bramhall South 33% each.

Figure 6.7: Proportion of residents by living arrangement in the seven Stockport wards compared to Stockport and England as a whole [Source: ONS 2011 Census]

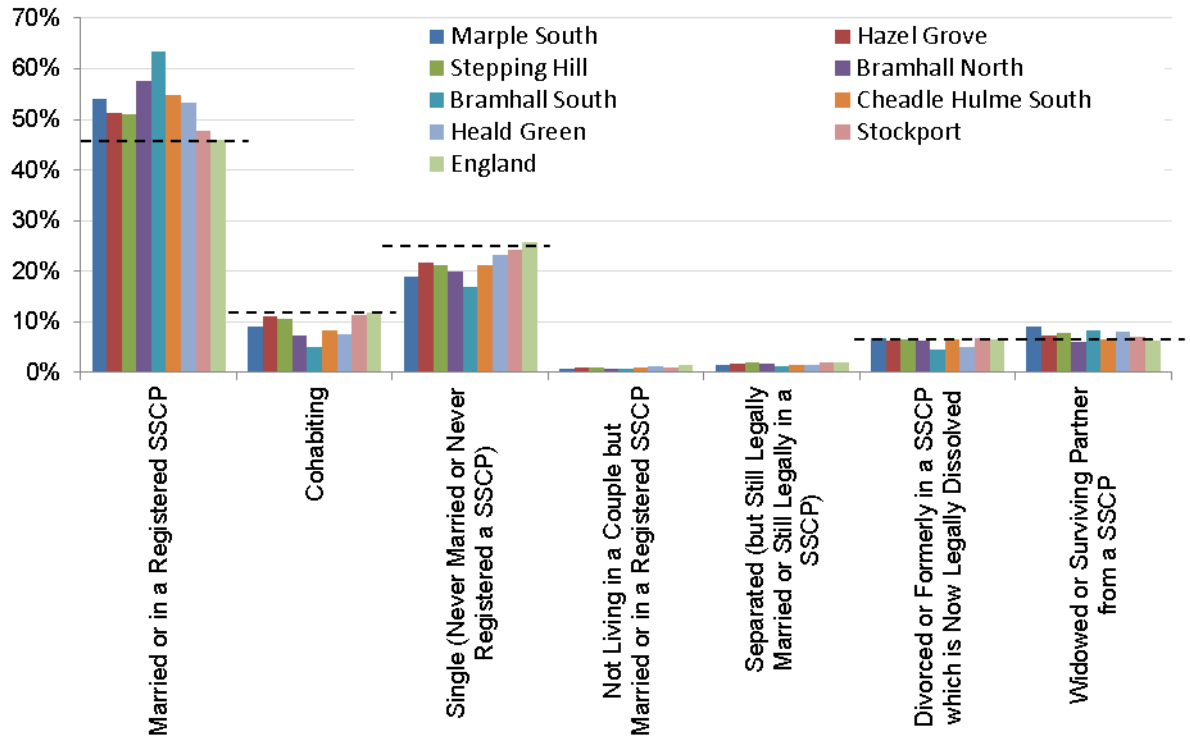


Figure 6.8 Proportion of households by household composition in the seven Stockport wards compared to Stockport and England as a whole [Source: ONS 2011 Census]

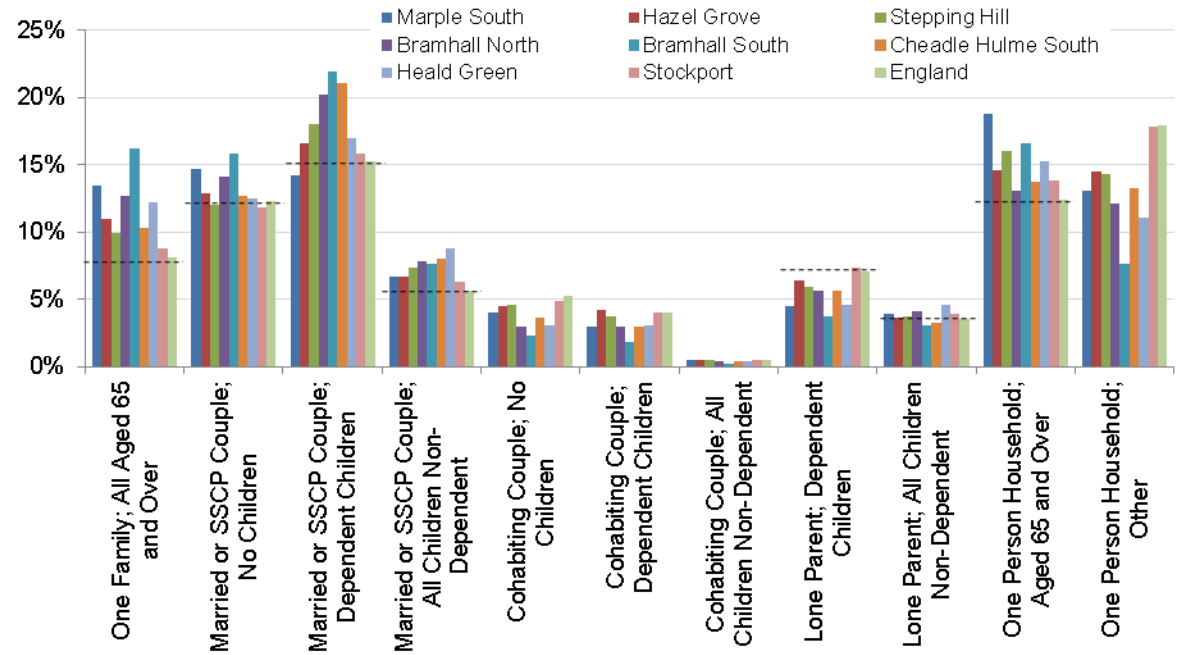


Figure 6.9: Proportion of residents by living arrangement in the five Cheshire East wards compared to Cheshire East and England as a whole [Source: ONS]

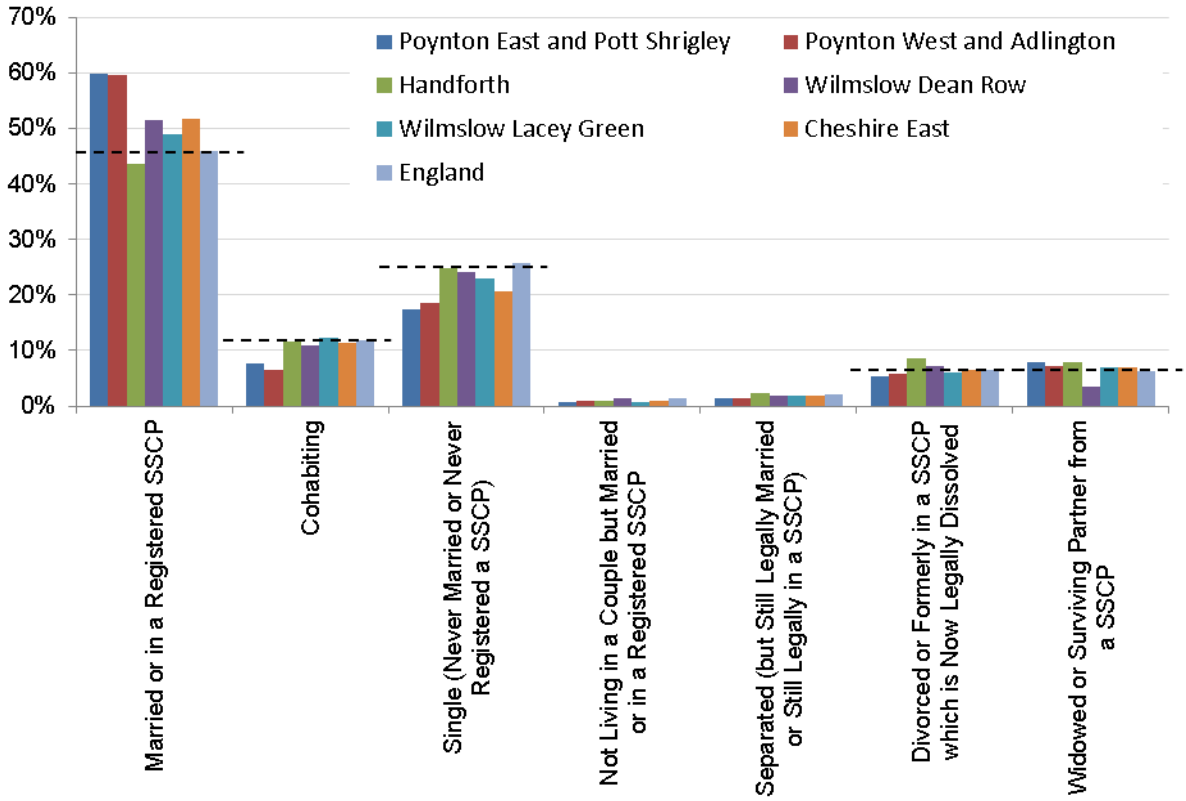
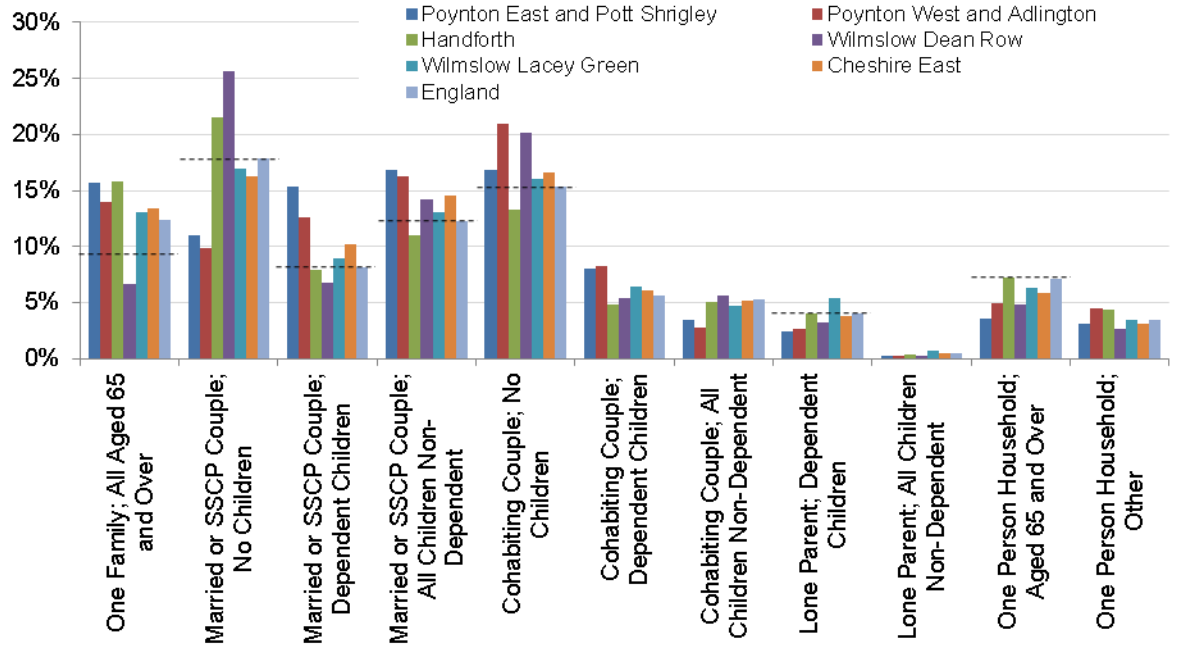


Figure 6.10: Proportion of households by household composition in the five Cheshire East wards compared to Cheshire East and England as a whole [Source: ONS 2011 Census]



Cheshire East

6.6.6 Similar to the seven Stockport wards, the highest number of residents in the five Cheshire East wards under consideration are married or in a registered same sex civil partnership (SSCP) (see Figure 6.9). Hence, the proportion of married couple households (with or without children) average 42% (39-47%) (see Figure 6.10). This is higher than the 41% all Cheshire East average. It ranges from Wilmslow Dean Row with 47% to Poynton West and Adlington and Wilmslow Lacey Green with 38%.

6.6.7 Single people (never married or never registered SSCP) form the next highest number of residents (see Figure 6.9); single person households average 9% (7-12%). This is the same as the all Cheshire East average. It ranges from 12% in Handforth to 7% in Poynton East and Pott Shrigley. The number of not living as a couple but married or in a registered SSCP, separated and divorced residents average is 9% (7-12%). This is the same as the all Cheshire East average. It ranges from 12% in Handforth to 7% in Poynton East and Pott Shrigley.

6.6.8 The proportion of lone parent households average 4% (3-6%) (see Figure 6.8). This is the same as the all Cheshire East average. It ranges from Wilmslow Lacey Green with 6% to Poynton East and Pott Shrigley and Poynton West and Adlington with 3% each.

6.6.9 The proportion of over 65 year old households (one person or family all aged over 65 years) average 18% (12-23%) (see Figure 6.10). This is lower than the 19% all Cheshire East average. It ranges from 23% in Handforth to 12% in Wilmslow Dean Row.

Figure 6.11: Proportion of residents by living arrangement in the one Manchester ward compared to Manchester and England as a whole [Source: ONS 2011 Census]

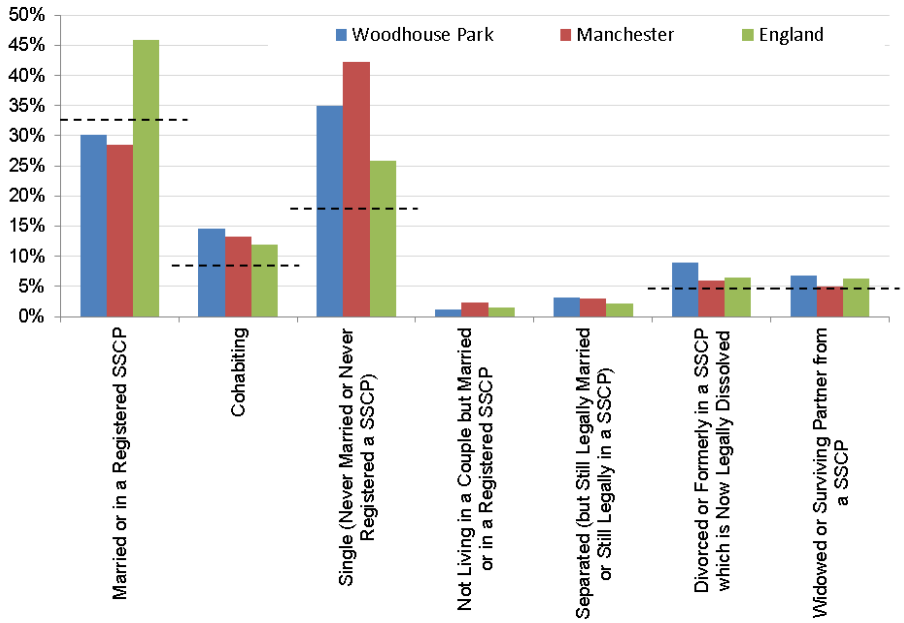
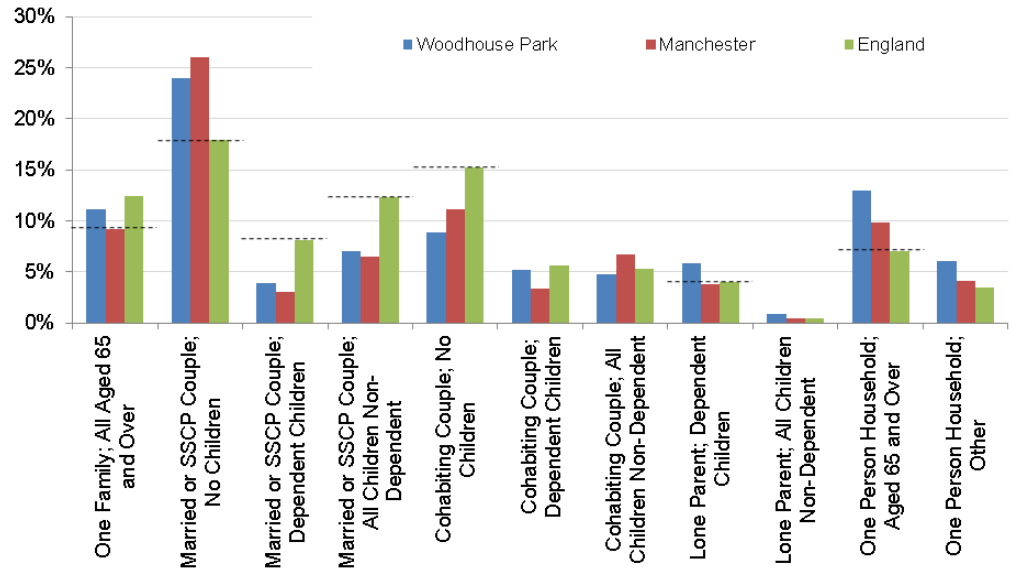


Figure 6.12: Proportion of households by household composition in the one Manchester ward compared to Manchester and England as a whole [Source: ONS 2011 Census]



Manchester

6.6.10 In contrast to pattern in the Stockport and Cheshire East wards, the highest number of residents in Woodhouse Park ward in Manchester are single (35% compared to 42% for Manchester and 26% for England; see Figure 6.11); the proportion of single person households average 19% (see Figure 6.12). This is higher than the 14% all Manchester average. The proportion of not living as a couple but married or in a registered SSCP, separated and divorced residents is 13%. This is higher than the 11% Manchester and 10% England averages.

6.6.11 Married people form the next highest proportion of residents (30%). Married couple households (with or without dependent children) represent 35% of the resident population. This is similar to the 36% all Manchester average.

6.6.12 The proportion of lone parent households is 7% (see Figure 6.12). This is higher than the 4% all Manchester average.

6.6.13 The proportion of all pensioner households is 24% (see Figure 6.10). This is higher than the 19% all Manchester average.

6.7 Health and wellbeing status

6.7.1 Of the seven Stockport wards under consideration:

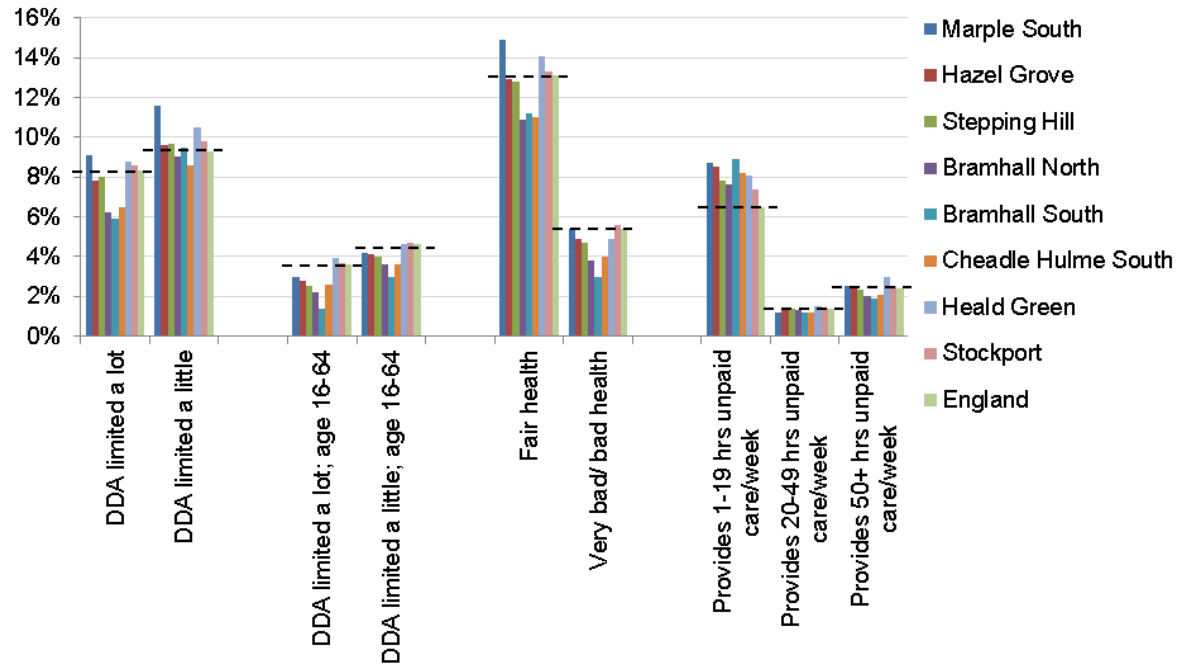
6.7.1.1 Marple South and Heald Green have the highest proportion of residents with a lot or a little limitation to day-to-day activities (DDA) which is similar to or slightly higher than the Stockport and England averages. Bramhall South, Bramhall North and Cheadle Hulme South residents have the least limitation to their day-to-day activities. However all the wards, except Heald Green, have a lower proportion of

DDA limitation in residents aged 16-64 years than the Stockport and England averages.

6.7.1.2 Marple South and Heald Green have a higher proportion of residents who perceive their health to be fair (15% and 14%) compared to the Stockport and England averages. All the wards except for Marple South, have a lower proportion of residents who perceive their health to be very bad/bad (3-5% compared to a Stockport and England average of 5.5%). Again Bramhall South, Bramhall North and Cheadle Hulme South have the lowest proportion of residents who consider their health to be fair or very bad/bad.

6.7.1.3 All the wards have a higher proportion of residents who provide 1-19 hours of unpaid care and slightly lower or a similar proportion of residents providing 20-49 and 50 plus hours of unpaid care than the Stockport and England averages. Heald Green has the highest proportion of residents that provide unpaid care in all three time categories.

Figure 6.13 Limitations to day to day activities (DDA), perceived health status and hours of unpaid care provided in the seven Stockport wards compared to Stockport and England as a whole [Source: ONS 2011 Census]



6.7.2 Of the five Cheshire East wards under consideration:

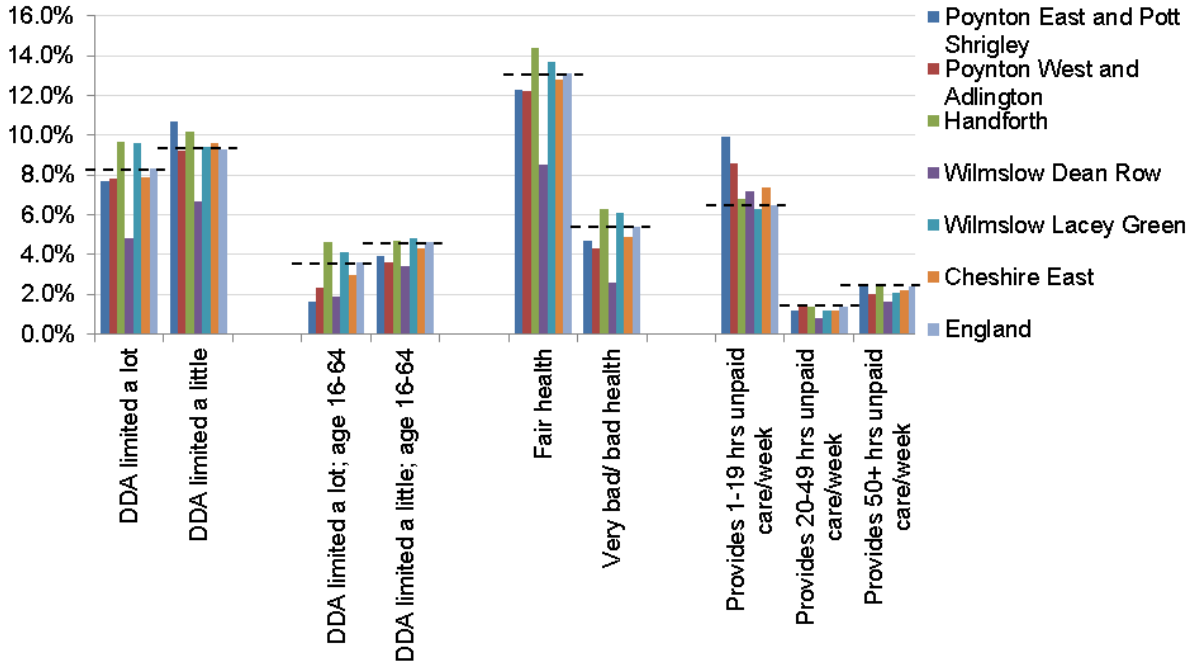
6.7.2.1 Handforth and Wilmslow Lacey Green have the highest proportion of residents with a lot of limitation to day-to-day activities (DDA) which is higher than the Cheshire East and England averages. Handforth, Poynton East and Pott Shrigley and Wilmslow Lacey Green have the highest proportion of residents with a little limitation to DDA which is higher than or similar to the Cheshire East and England averages. Handforth and Wilmslow Lacey Green have a higher proportion of DDA

limitation in residents aged 16-64 years than the Cheshire East and England averages. Wilmslow Dean Row residents have the least limitation to their day-to-day activities.

6.7.2.2 Handforth and Wilmslow Lacey Green have a higher proportion of residents who perceive their health to be fair (14.5% and 13.7%) and very bad/bad (6% each) compared to the Cheshire East and England averages. Wilmslow Dean Row has the lowest proportion of residents who consider their health to be fair or very bad/bad.

6.7.2.3 Poynton East and Pott Shrigley and Poynton West and Adlington have a higher proportion of residents who provide 1-19 hours of unpaid care. Poynton East and Pott Shrigley and Handforth have slightly higher proportion of residents providing 50 plus hours of unpaid care than the Cheshire East and England averages.

Figure 6.14 Limitations to day to day activities (DDA), perceived health status and hours of unpaid care provided in the five Cheshire East wards compared to Cheshire east and England as a whole [Source: ONS 2011 Census]



6.7.3 Of the one Manchester ward under consideration:

6.7.3.1 Woodhouse Park has a higher proportion of residents with a lot of and a little limitation to day-to-day activities (DDA) than the Manchester and England averages. It also has a higher proportion of DDA limitation in residents aged 16-64 years than the Manchester and England averages.

6.7.3.2 Woodhouse Park has a higher proportion of residents who perceive their health to be fair (17%) and very bad/bad (10%) than the Manchester and England averages.

6.7.3.3 Woodhouse Park has a higher proportion of residents (4%) providing 50 plus hours of unpaid care every week than the Manchester and England averages.

Figure 6.15 Limitations to day to day activities (DDA), perceived health status and hours of unpaid care provided in the one Manchester ward compared to Manchester and England as a whole [Source: ONS 2011 Census]

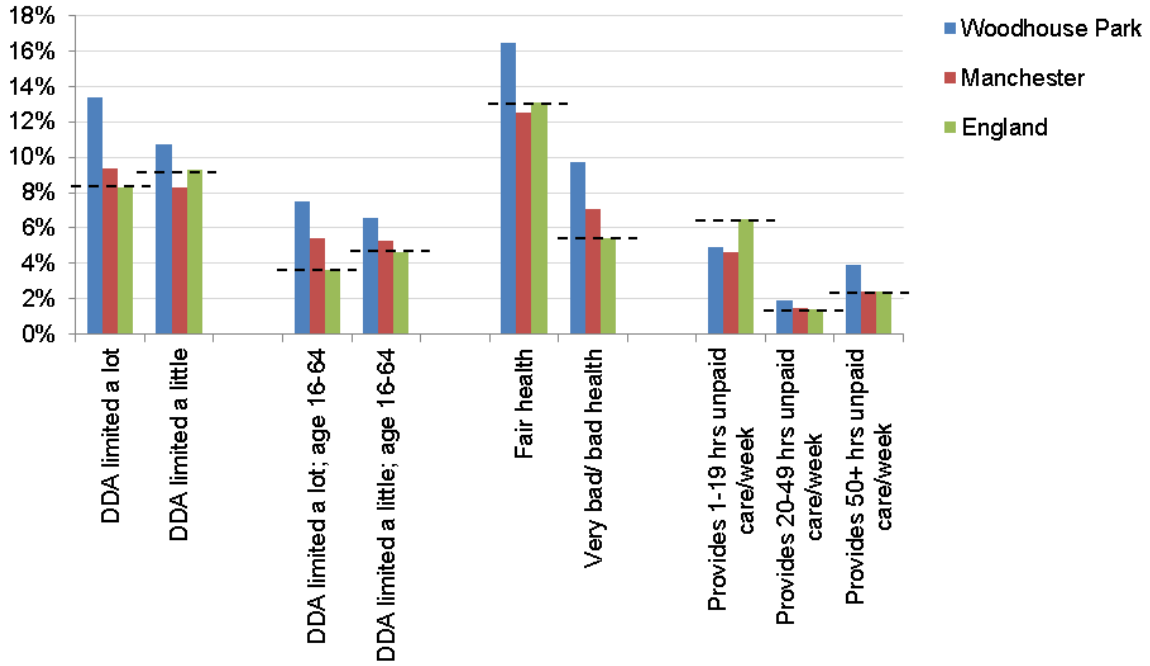


Figure 6.16 Map of Overall Deprivation by quintile (five equal groups) by Lower Super Output Area (LSOA) across the seven Stockport wards, five Cheshire East wards and one Manchester ward [Source: UK Department of Communities and Local Government, 2010]

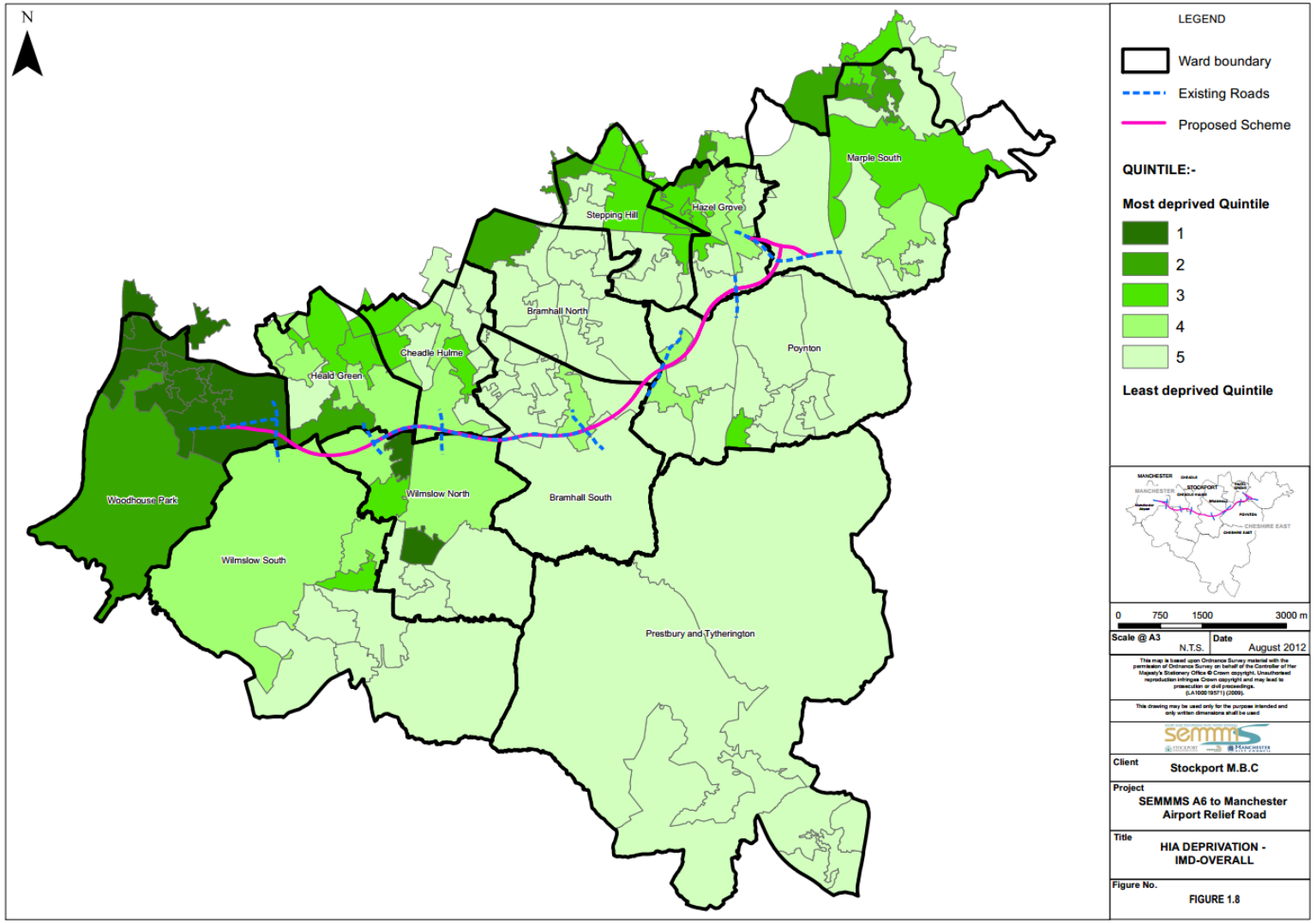


Figure 6.17 Map of Health Deprivation by quintile (five equal groups) by Lower Super Output Area (LSOA) across the seven Stockport wards, five Cheshire East wards and one Manchester ward [Source: UK Department of Communities and Local Government, 2010]

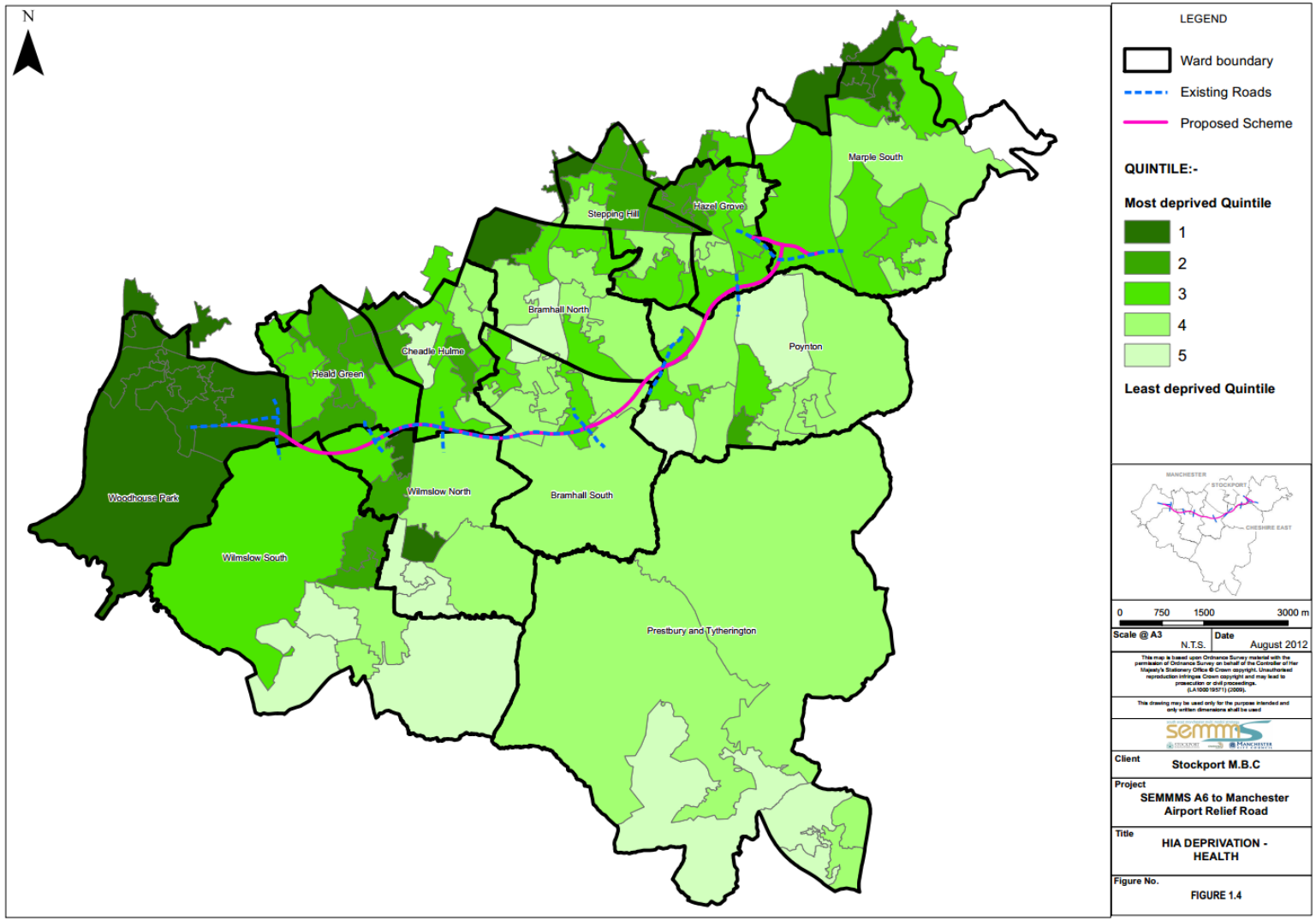
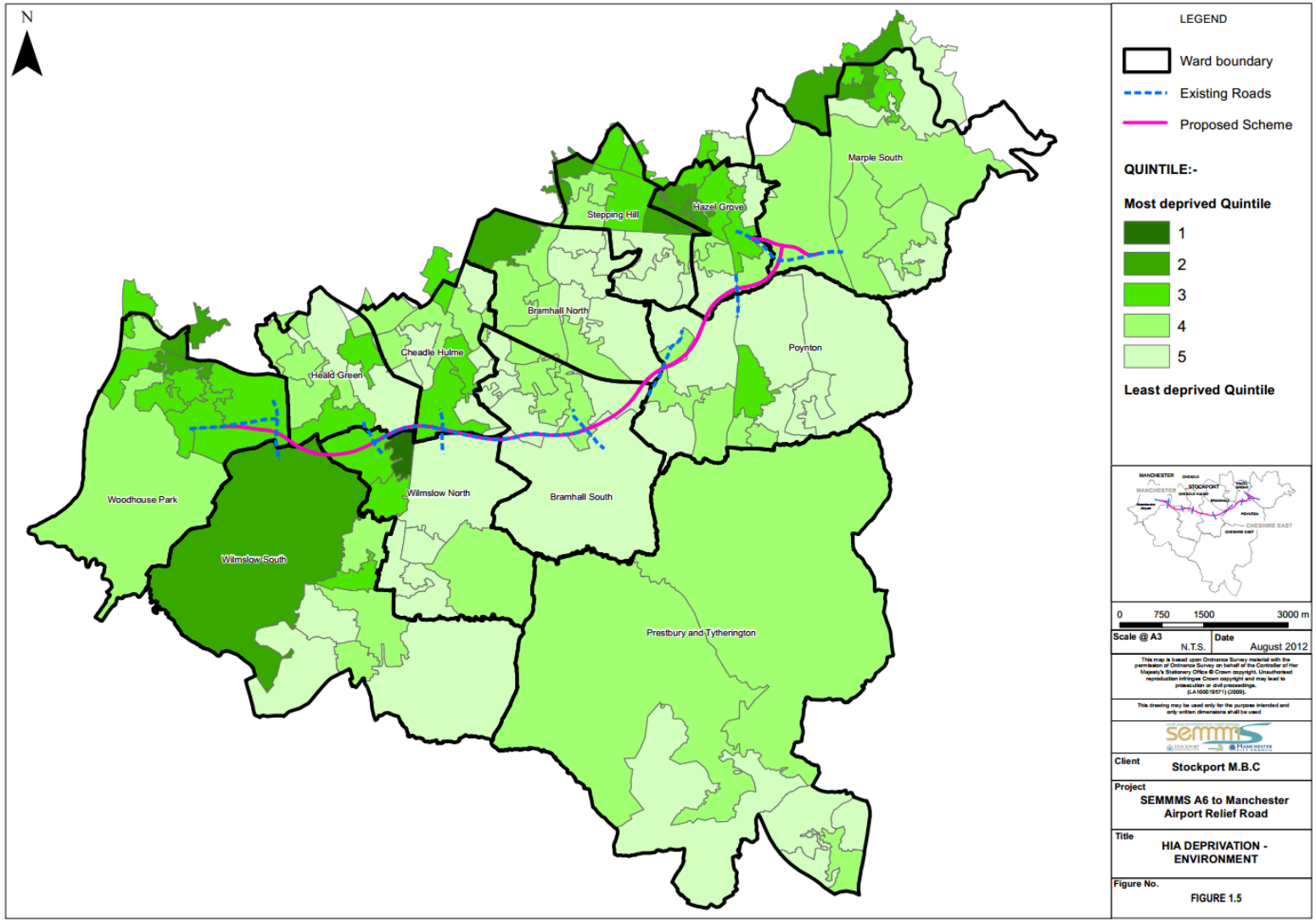


Figure 6.18 Map of Environmental Deprivation by quintile (five equal groups) by Lower Super Output Area (LSOA) across the seven Stockport wards, five Cheshire East wards and one Manchester ward [Source: UK Department of Communities and Local Government, 2010]



6.8 Deprivation

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.[25]

6.8.2 Figure 6.16, Figure 6.17 and Figure 6.18 show the level of Overall, Health and Environmental Deprivation by quintile (five equal groups) by Lower Super Output Area (LSOA) across the seven Stockport wards, five Cheshire East wards and one Manchester ward. Super Output Areas were designed to improve the reporting of small area statistics and are built up from groups of Output Areas. Lower Layer Super Output Areas are generally the smallest scale that routine statistics go down to. they are geographical areas that have between 1,000-3,000 people and between 400-1,200 households.

6.8.3 The majority of areas along the A6MARR route are not deprived. However, there is greater deprivation at the western end of the A6MARR – Woodhouse Park, (Wythenshawe, Manchester); Heald Green (Stockport; and Handforth), Wilmslow North (Cheshire East).

6.9 Housing

6.9.1 In the seven Stockport wards under consideration:

6.9.1.1 The average home ownership (owned outright or with a mortgage/loan is 85%; ranging from 81% in Hazel Grove to 92% in Bramhall South (compared to the Stockport and England averages of 73% and 63%).

6.9.1.2 The average proportion of social renting is 6%; ranging from 2% in Bramhall South to 10% in Marple South (compared to the Stockport and England averages of 14% and 18%).

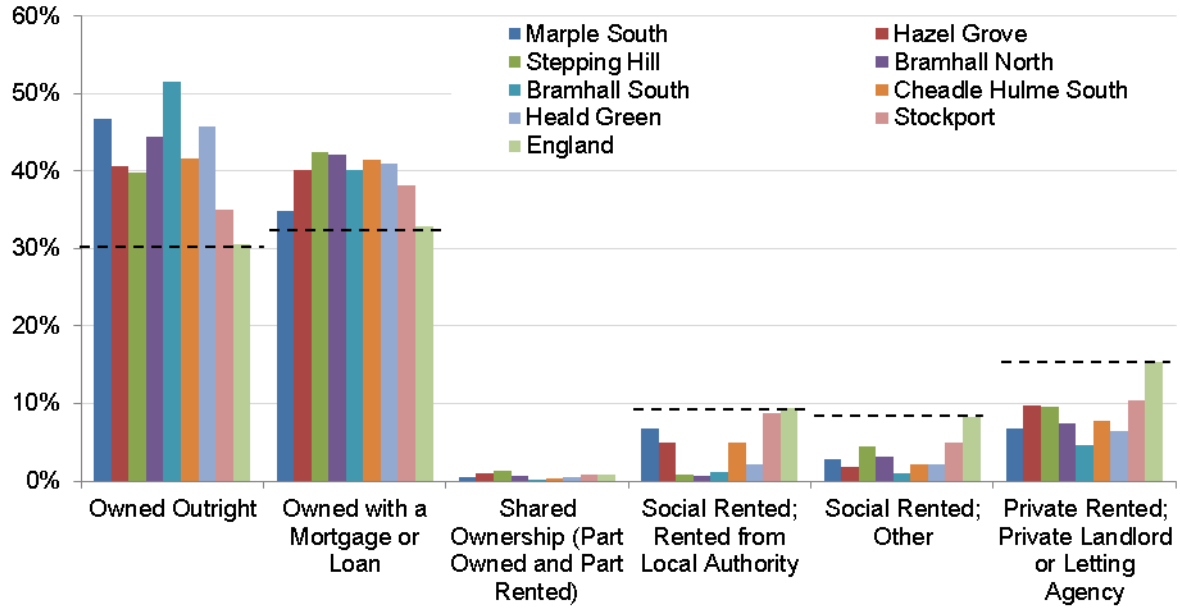
6.9.1.3 The majority of the residents live in semi-detached houses (43%) followed by detached houses (35%), terraced houses (12%) and flats (10%). This is compared to Stockport as a whole where majority of residents live in semi-detached houses (42%) followed by terraced houses (21%), detached houses (21%) and flats (15%).

6.9.1.4 The average house price in Stockport is £190,000 with detached houses selling for £309,000, semi-detached houses selling for £179,000, terraced houses selling for £137,000 and flats selling for £121,000.[26]

[25] Department of Communities and Local Government. (2010). English Indices of Deprivation 2010.

[26] Land Registry of England and Wales, Crown copyright. The information above is based on figures provided by the Land Registry of England and Wales. Figures for England and Wales are for the period January to March 2012.

Figure 6.19 Proportion of resident by tenure in the seven Stockport wards compared to Stockport and England as a whole [Source: ONS 2011 Census]



In the five Cheshire East wards under consideration:

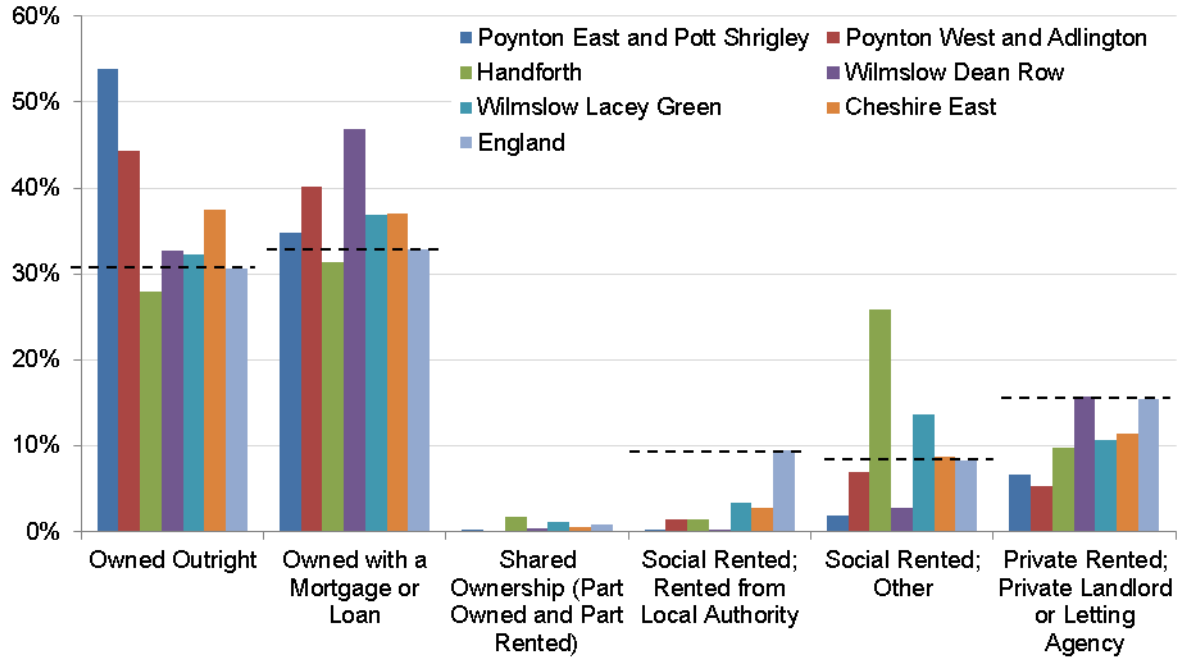
6.9.1.5 The average proportion of residents who own their homes is 76% (see Figure 6.20). This is higher than the 75% all Cheshire East average. It ranges from Poynton and Pott Shrigley with 89% to Wilmslow Lacey Green with 69%.

6.9.1.6 The average proportion of social renting is 12%. This is higher than the 11% all Cheshire East average. It ranges from Wilmslow Lacey Green with 17% to Poynton and Pott Shrigley with 2%.

6.9.1.7 The majority of residents live in detached houses (39%) followed by semi-detached houses (29%), terraced houses (19%) and flats (13%). This trend is similar to Cheshire East as a whole where the proportion of residents by housing type is as follows – detached houses (36%), semi-detached houses (33%), terraced houses (21%) and flats (10%). Handforth has the highest proportion of terraced housing (31%) and flats (23%).

6.9.1.8 The average house price in Cheshire East is £217,000 with detached houses selling for £343,000, semi-detached houses selling for £182,000, terrace houses selling for £137,000 and flats selling for £141,000.

Figure 6.20 Proportion of resident by tenure in the five Cheshire East wards compared to Cheshire East and England as a whole [Source: ONS 2011 Census]



6.9.2 The majority of residents in the one Manchester ward under consideration (Woodhouse Park):

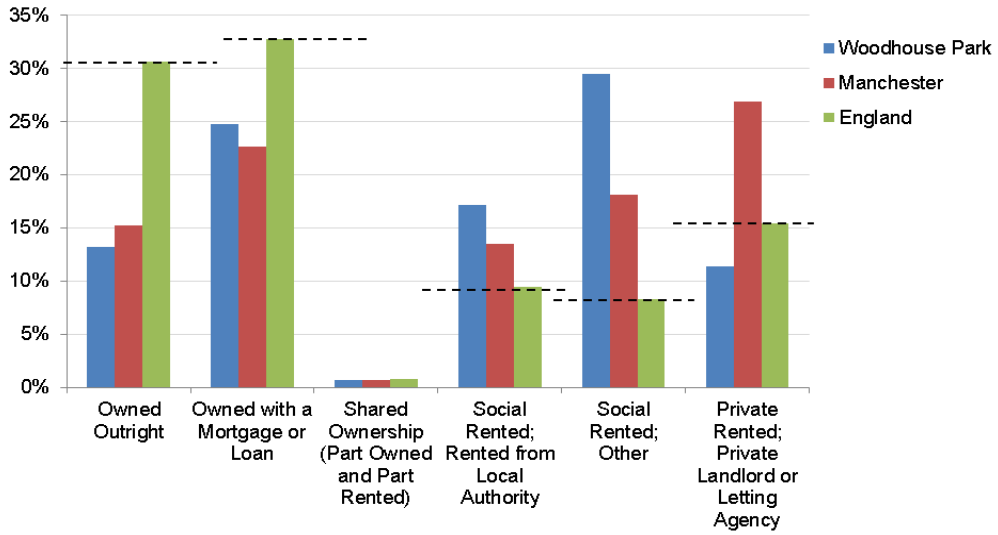
6.9.2.1 The proportion of residents who own their homes is 38% (See Figure 6.21). This is the same as the 38% all Manchester average.

6.9.2.2 The average proportion of social renting is 47%. This is higher than the 32% all Manchester average.

6.9.2.3 The majority of residents live in terraced houses (40%) followed by semi-detached houses (33%), flats (22%) and detached houses (5%). This trend is similar to Manchester as a whole where the proportion of residents by housing type is as follows – terraced houses (30%), semi-detached houses (31%), flats (33%) and detached houses (5%).

6.9.2.4 The average house price in Manchester is £149,000 with detached houses selling for £261,000, semi-detached houses selling for £169,000, terrace houses selling for £122,000 and flats selling for £143,000. [21]

Figure 6.21 Proportion of resident by tenure in the one Manchester ward compared to Manchester and England as a whole [Source: ONS 2011 Census]



6.10 Education

6.10.1 In 2012/13 the proportion of pupils achieving Level 4 or above in Key Stage 2 English and Maths teacher assessments respectively is shown in Table 6.2. [27] The table shows that Stockport and Cheshire East children at Key Stage 2 do better than the England average with girls doing better than boys in English and boys achieving the same level or better than girls at maths.

Table 6.2 Level 4 and 5 Key Stage 2 achievement in English and Math in Stockport, Cheshire East and Manchester [Source: Department of Education]

Local Authority	Level 4 and above average percentage (Boy:Girl %)		Level 5 and above average percentage	
	English	Maths	English	Maths
Stockport	88% (84:92)	89% (88:90)	43% (35:51)	47% (49:45)
Cheshire East	91% (88:93)	90% (90:89)	47% (40:54)	49% (51:48)
Manchester	83% (80:87)	84% (84:85)	32% (27:38)	36% (37:35)
England	86% (83:90)	87% (86:87)	38% (32:45)	42% (43:40)

[27] Department for Education https://www.gov.uk/government/publications/national-curriculum-assessments-at-key-stage-2-in-england-2012-to-2013-provisional Accessed 05 October 2013

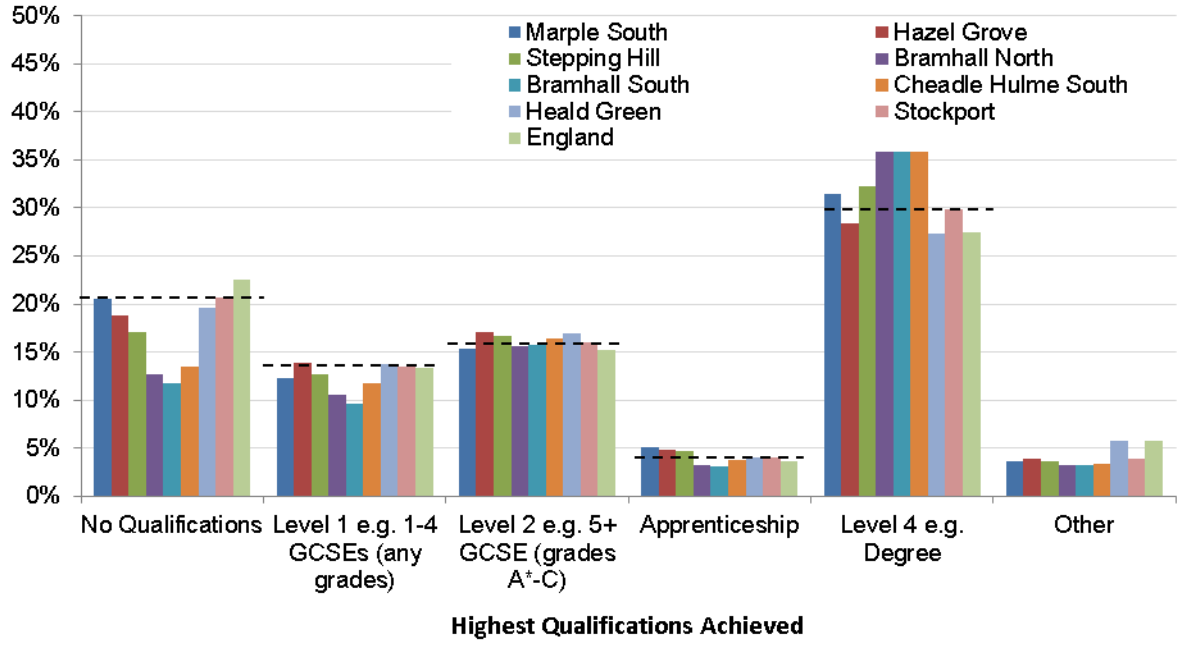
6.10.2 In the seven Stockport wards under consideration:

6.10.2.1 The average proportion of residents with no qualifications is 16% (see **Error! Reference source not found.**). This is 5% lower than the 21% all Stockport average. It ranges from Marple South with 21% to Bramhall South with 12%.

6.10.2.2 The average proportion of residents with Level 1 qualifications is 2% lower than the all Stockport average (12%, range 10-14%); Level 2 and Apprenticeship qualifications are the same as the Stockport average (16%, range 15-17% and 4%, range 3-5%); and Level 4 qualifications is 5% higher (35%, range 27-45%)

6.10.2.3 Marple South and Hazel Grove have a high proportion of residents with no, Level 1 and Apprenticeship qualifications. Bramhall North, Bramhall South and Cheadle Hulme South have the lowest proportion of residents with no and Level 1 qualifications as well as the highest proportion of residents with Level 4 qualifications.

Figure 6.22: Proportion of residents by highest qualification achieved in the seven Stockport wards compared to Stockport and England as a whole [Source: ONS 2011 Census][28]



[28] Level 1 qualifications cover: 1-4 O Levels/CSE/GCSEs (any grades), Entry Level, Foundation Diploma, NVQ level 1, Foundation GNVQ, Basic/Essential Skills

Level 2 qualifications cover: 5+ O Level (Passes)/CSEs (Grade 1)/GCSEs (Grades A*-C), School Certificate, 1 A Level/ 2-3 AS Levels/VCEs, Intermediate/Higher Diploma, Welsh Baccalaureate Intermediate Diploma, NVQ level 2, Intermediate GNVQ, City and Guilds Craft, BTEC First/General Diploma, RSA Diploma 13 Apprenticeship.

Level 4 and above qualifications cover: Degree (BA, BSc), Higher Degree (MA, PhD, PGCE), NVQ Level 4-5, HNC, HND, RSA Higher Diploma, BTEC Higher level, Professional Qualifications (Teaching, Nursing, Accountancy).

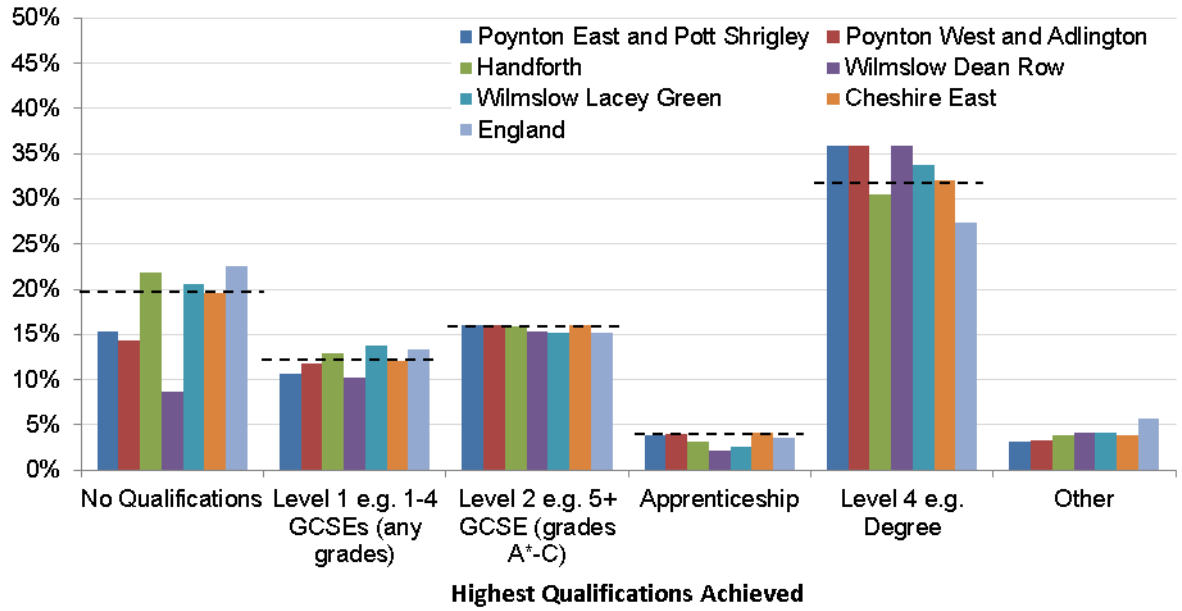
6.10.3 In the five Cheshire East wards under consideration:

6.10.3.1 The average proportion of residents with no qualification is 16% (see Figure 6.23). This is 4% lower than the 20% all Cheshire East average. It ranges from Wilmslow Lacey Green with 21% to Wilmslow Dean Row with 9%.

6.10.3.2 The average proportion of residents with Level 1 and Level 2 qualifications are the same as the Cheshire East average (12%, range 10-14% and 16%, range 15-16%); Apprenticeship qualifications are 1% lower than the Cheshire East average (3%, 2-4%); and Level 4 qualifications are 6% higher than the Cheshire East average (38%, range 31-47%).

6.10.3.3 Handforth and Wilmslow Lacey Green have the highest proportion of residents with no and level 1 qualifications. Wilmslow Dean Row, Poynton East and Pott Shrigley, Poynton West and Adlington, and Wilmslow Lacey Green have the highest proportion of residents with level 4 qualifications.

Figure 6.23: Proportion of residents by highest qualification achieved in the five Cheshire East wards compared to Cheshire East and England as a whole [Source: ONS 2011 Census][27]

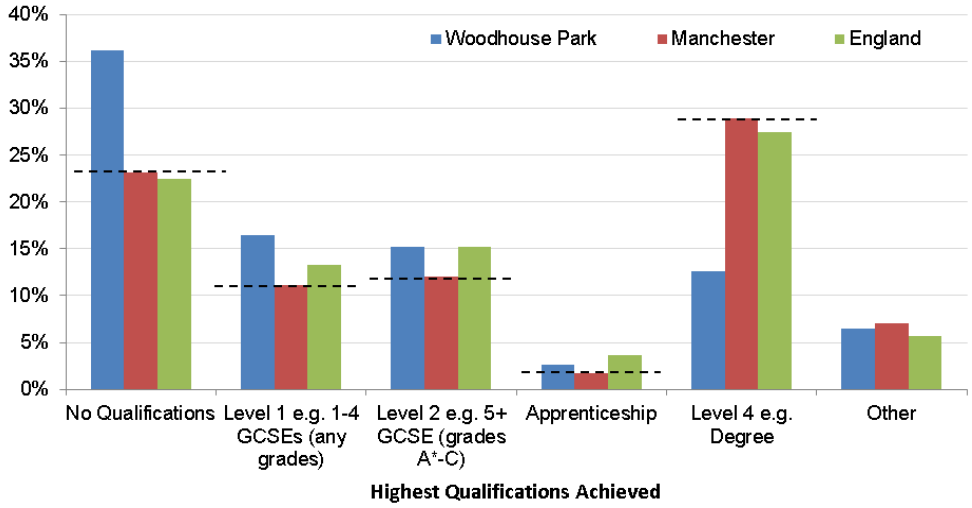


6.10.4 In the one Manchester ward under consideration:

6.10.4.1 The highest proportion of residents in Woodhouse Park ward have no qualification, 36% (see Figure 6.24). This is significantly higher than the 23% all Manchester average.

6.10.4.2 The next highest proportion of resident's have attained Level 1 (16%) and Level 2 (15%) qualifications which are 4% and 3% higher than the Manchester averages with Level 4 (13%) qualifications 16% lower than the Manchester average.

Figure 6.24 Proportion of residents by highest qualification achieved in the one Manchester ward compared to Manchester and England as a whole [Source: ONS 2011 Census] [27]



6.11 Employment and Economy

6.11.1 In the seven Stockport wards under consideration:

6.11.1.1 The average proportion of unemployed residents is 3%. This is lower than the 4% all Stockport average. It ranges from Heald Green with 3.4% to Bramhall South with 2% (see Figure 6.21).

6.11.1.2 The top five occupational groups are (see Figure 6.26):

- Professional (22%; range 17-27%; higher than the 20% all Stockport average)
- Managers, directors and senior officials (14%; range 11-18%%; higher than the 11% all Stockport average)
- Associate professional and technical (14%; range 13-15%; higher than the 13% all Stockport average)
- Administrative and secretarial (13%; range 12-14%; higher than the 13% all Stockport average)
- Skilled trades (9%; range 6-12% lower than the 10% all Stockport average)

6.11.1.3 Bramhall South followed by Bramhall North have the highest proportion of residents in professional, managerial and associate professional occupations. Heald Green, Hazel Grove and Marple South have the highest proportion of residents in sales/customer service, process/plant/machinery operation and elementary occupations.

6.11.1.4 The top five industrial sectors that residents are employed in are:

- Wholesale and retail trade, repair of motor vehicles (16%, range 15-19%; similar to the all Stockport average)

- Human health and social work activities (14%, range 12-16%; similar to the all Stockport average)
- Education (11%, range 9-13%; similar to the all Stockport average)
- Professional, scientific and technical activities (9%, range 7-12%; higher than the 7% all Stockport average)
- Manufacturing (8%, range 7-10%; slightly lower than the 8.5% all Stockport average)

Figure 6.25: Residents' employment status in the seven Stockport wards compared to Stockport and England as a whole [Source: ONS 2011 Census]

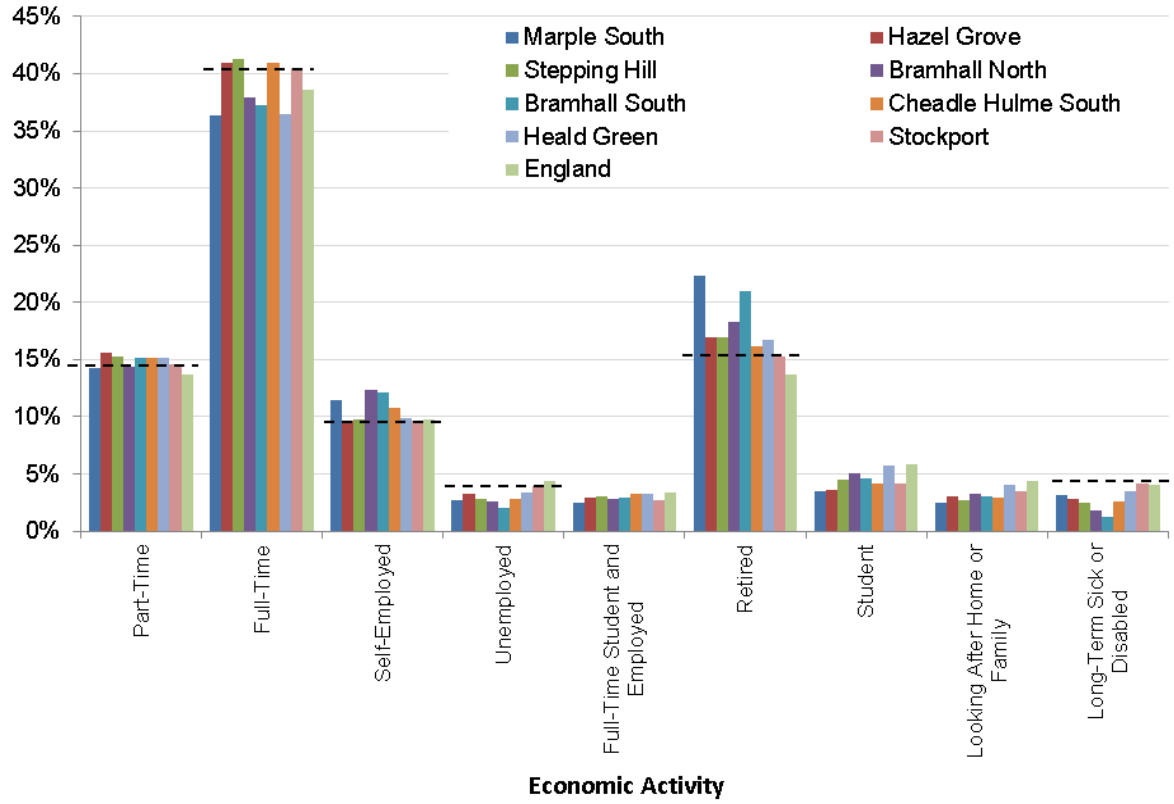
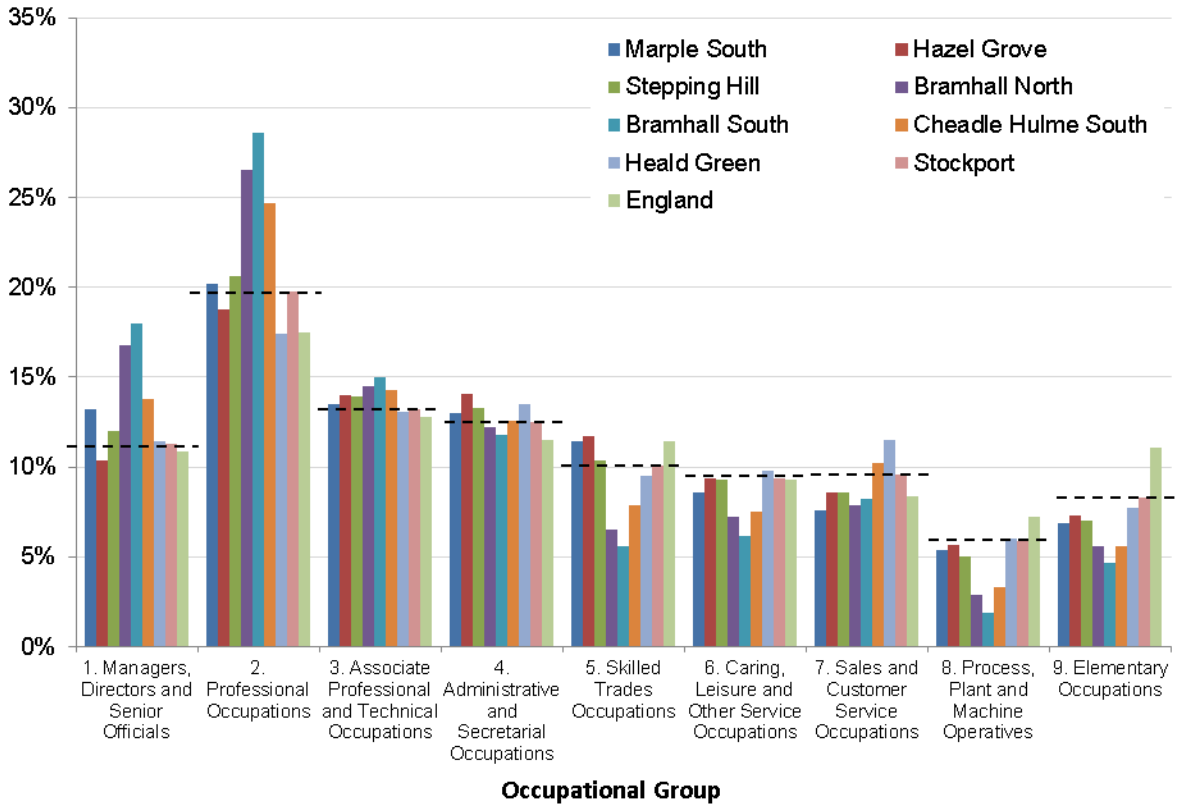


Figure 6.26: Residents' occupational group in the seven Stockport wards compared to Stockport and England as a whole [Source: ONS 2011 Census]



6.11.2 In the five Cheshire east wards under consideration:

6.11.2.1 The average proportion of unemployed residents in the 4 Cheshire East wards under consideration is 3%. This is the same as the all Cheshire East average. It ranges from Pott Shrigley with 2% to Wilmslow Lacey Green and Handforth with 4% (see Figure 6.27).

6.11.2.2 The top five occupational groups are (see Figure 6.24):

- Professional (23%, range 19-26%; higher than the 20% all Cheshire East average);
- Associate professional and technical (16%, range 13-19%; higher than the 13% all Cheshire East average);
- Managers, directors and senior officials (15%, range 12-16%; higher than the 14% all Cheshire East average);
- Administrative and secretarial (11%, range 5-9%; lower than the 10% all Cheshire East average); and
- Caring, leisure and other skilled (9%, range 7-11%; lower than the 11% all Cheshire East average).

6.11.2.3 Wilmslow Dean Row, Poynton East and Pott Shrigley, and Poynton West and Adlington have the highest proportion of residents in professional, associate professional and managerial occupations. Handforth has the highest proportion of

residents in sales/customer service, elementary and plant/process/machinery operation occupations.

6.11.2.4 The top five industrial sectors that residents are employed in are:

- Wholesale and retail trade, repair of motor vehicles (16%, range 15-18%; similar to the all Cheshire East average);
- Human health and social work activities (12%, range 11-14%; similar to the all Cheshire East average);
- Professional, scientific and technical activities (10%, range 8-12%; which is higher than the 10% all Cheshire East average);
- Education (10%, range 8-11%; which is similar to the all Cheshire East average); and
- Manufacturing (8%, range 7-9%; which is lower than the 12% all Cheshire East average.

Figure 6.27 Residents' employment status in the five Cheshire East wards compared to Cheshire East and England as a whole [Source: ONS 2011 Census]

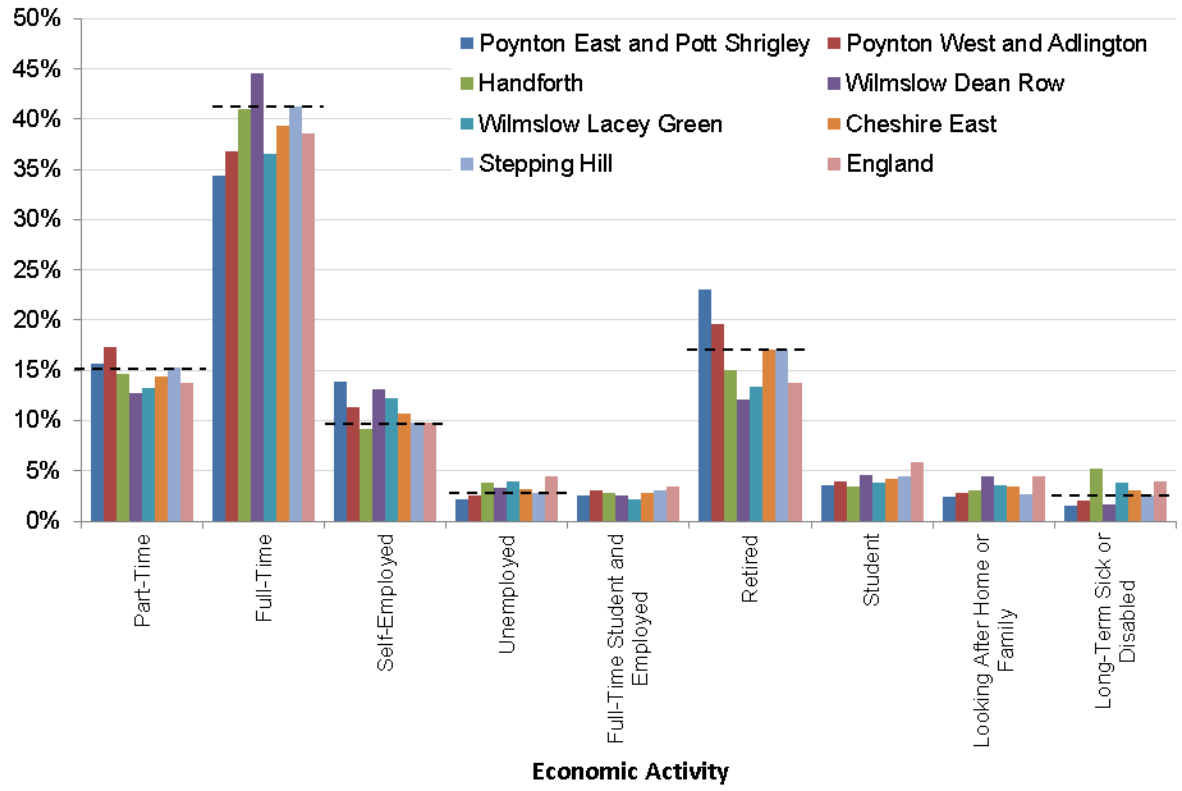
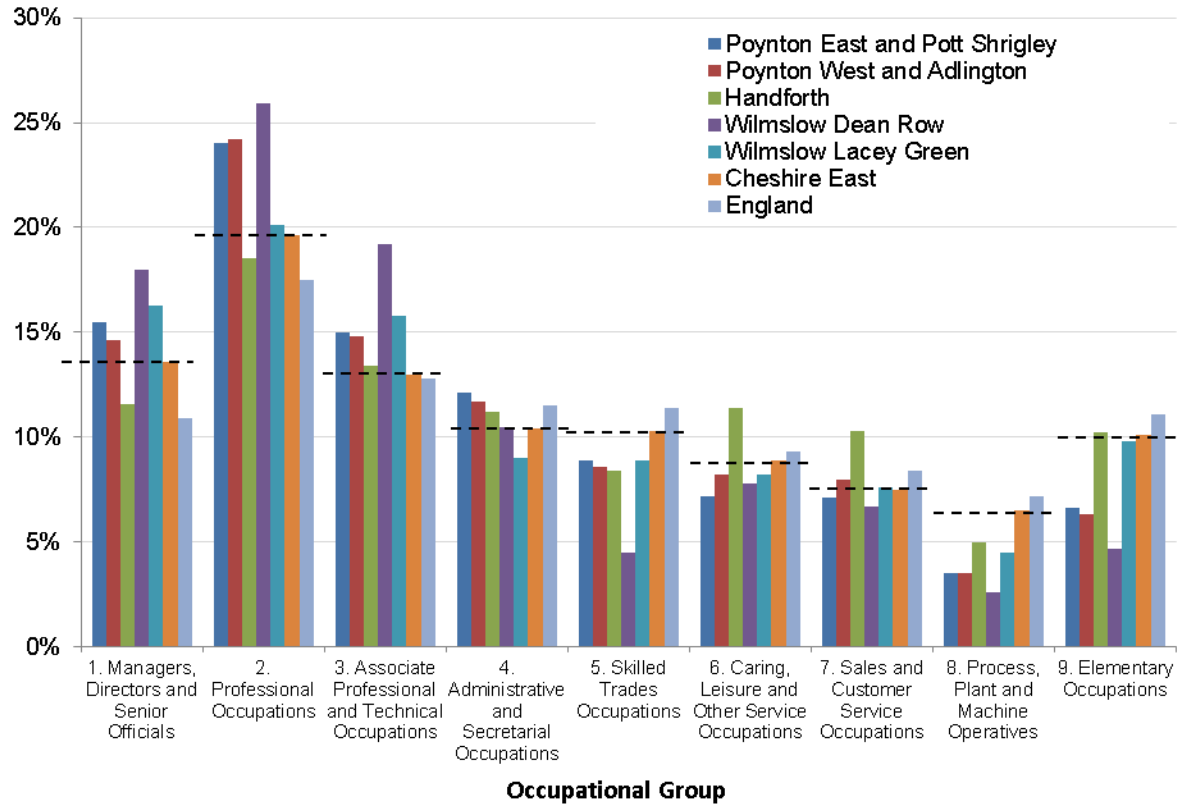


Figure 6.28 Residents' occupational group in the five Cheshire East wards compared to Cheshire East and England as a whole [Source: ONS 2011 Census]



6.11.3 In the one Manchester ward under consideration:

6.11.3.1 The proportion of unemployed residents in Woodhouse Park ward in Manchester is 7%. This is higher than the 6% all Manchester average (see Figure 6.29).

6.11.3.2 The top five occupational groups are (see Figure 6.26):

- Elementary (20%; higher than the 15% all Manchester average);
- Caring, leisure and other services (14%, higher than the 10% all Manchester average);
- Sales and customer service (13%, higher than the 11% all Manchester average);
- Administrative and secretarial (11%; higher than the 10% all Manchester average); and
- Skilled trades (11%; higher than the 8% all Manchester average).

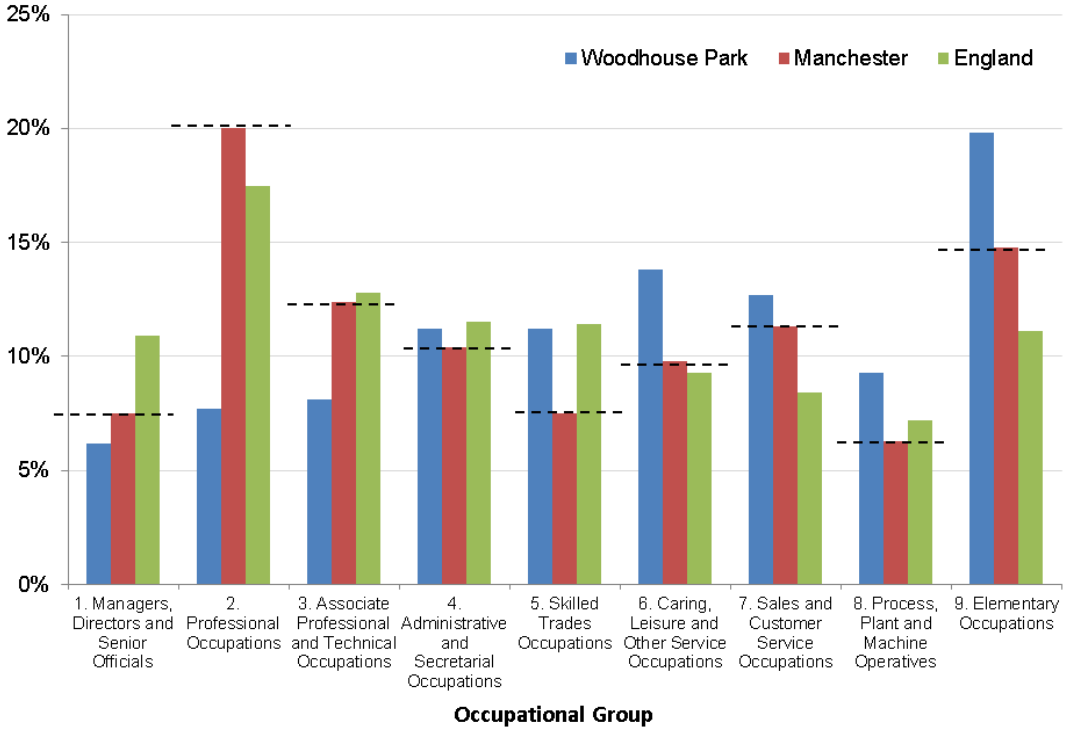
6.11.4 The top five industrial sectors that residents are employed in are:

- Wholesale and retail trade, repair of motor vehicles (17%; higher than the 16% all Manchester average);
- Human health and social work activities (15%; higher than the 14% all Manchester average);
- Accommodation and food services (12%; higher than the 9% all Manchester average);
- Transport and storage (11%; double the 5% all Manchester average); and

- Administrative and support service activities (9%; higher than the 7% all Manchester average)

Figure 6.29: Residents' employment status in the one Manchester ward compared to Manchester and England as a whole [Source: ONS 2011 Census]

Figure 6. Residents' occupational group in the one Manchester ward compared to Manchester and England as a whole [Source: ONS 2011 Census]



6.12 Transport and connectivity

6.12.1 In the seven Stockport wards under consideration, the average proportion of households with no access to a car or van is 13%. This is lower than the 22% all Stockport average. It ranges from Stepping Hill with 17% to Bramhall North and Bramhall South with 9%.

6.12.2 The average proportion of households with access to one or two car/s or van/s is 42% and 35%. This is lower than the 43% all Stockport average for one car or van but higher than the 28% all Stockport average for two cars or vans. Considering both one and two car households the average across the wards is 77% which is higher than the 71% all Stockport average; ranging from Hazel Grove with 74%to Bramhall North and Bramhall South with 80%.

6.12.3 The average proportion of residents who travel to work by car or van in the 7 Stockport wards is 49% (driver or passenger). This is higher than the 47% all Stockport average. It ranges from Cheadle Hulme South with 52% to Marple South and Stepping Hill with 47%. Only 5% travel by foot, 4% by train, 3% by bus and 1% by bicycle.

6.12.4 In the five Cheshire East wards under consideration, the average proportion of households with no access to a car or van is 13%. This is lower than the 16% all Cheshire East average. It ranges from Handforth with 24% to Wilmslow Dean Row with 6%.

6.12.5 The average proportion of households with access to one or two car/s or van/s is 40% and 36%. This is lower than the 41% all Cheshire East average for one car or van but higher than the 33% all Cheshire East average for two cars or vans. Considering both one and two car households the average across the wards is 76% which is higher than the 74% all Cheshire East average; ranging from 70% in Handforth to Wilmslow Dean Row with 82%.

6.12.6 The average proportion of residents who travel to work by car or van in the 5 Cheshire East wards is 50%. This is higher than the 49% all Cheshire East average. It ranges from Wilmslow Dean Row with 56% to Wilmslow Lacey Green with 45%. Only 6% travel by foot, 3% by train, 1% by bus and 1% by bicycle.

6.12.7 In Woodhouse Park ward in Manchester, the proportion of households with no access to a car or van is 45%. This is similar to the all Manchester average.

6.12.8 The proportion of households with access to one or two car/s or van/s is 41% and 12%. These are similar to the all Manchester averages.

6.12.9 The proportion of residents who travel to work by car or van is 34%. This is higher than the 28% all Manchester average. While 10% travel by bus, 8% by foot, 3% by bicycle and 1% each by train and taxi.

6.13 Health and social care

6.13.1 Healthcare services in Stockport, Cheshire East and Manchester are provided by NHS Stockport, NHA Eastern Cheshire and NHS Manchester Clinical Commissioning Groups respectively. These have recently come into being following a reorganisation of primary y care trusts to clinical commissioning groups.

6.13.2 In all three areas, the most common causes of death are circulatory diseases, followed by cancer and respiratory diseases.

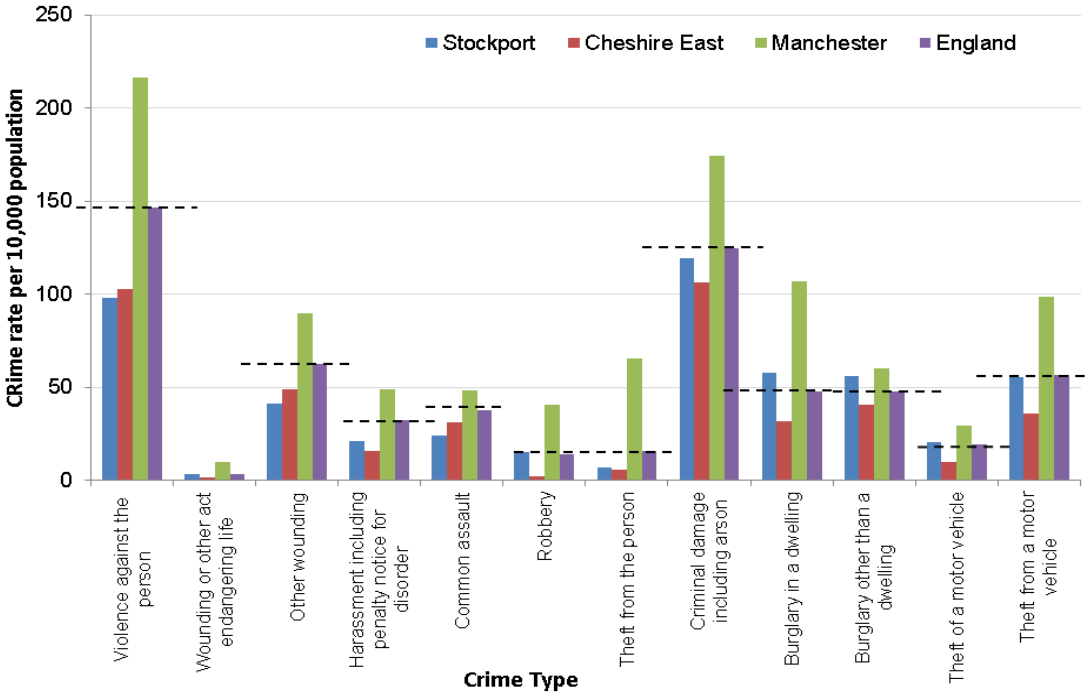
6.14 Crime and safety

6.14.1 In 2010/11, the total crime rate per 10,000 population in Stockport, Cheshire East and Manchester is 520, 433 and 990 respectively. In each offence category, the crime rates are consistently highest for Manchester and mostly lowest for Cheshire East (see Figure 6.30).

6.14.2 Across the three local authorities (Stockport, Cheshire East and Manchester) the top six key crime issues are:

- Criminal damage including arson
- Violence against the person
- Burglary in a dwelling
- Burglary other than a dwelling
- Theft from a motor vehicle
- Other wounding

Figure 6.30 Crime types and rates in Stockport, Cheshire East and Manchester [Source: ONS]



6.15 Shops and retail services

6.15.1 There are retail centres located north and south of the A6MARR corridor. Also there are a few businesses found along some sections of the A6MARR.

6.16 Arts and cultural activities

6.16.1 Arts and cultural activities are focused around the major urban areas with a wide variety of theatres, museums, galleries, arts and language centres in Stockport, Cheshire East and Manchester.

6.17 Leisure and Recreation

6.17.1 There are a number of leisure and recreation facilities along the entire length of the A6MARR. The key facilities are:

- Ladybrook Valley Interest Trail
- Four golf courses (Hazel Grove, Moorend, Bramhall and Styal)
- Water bodies/courses (Norbury Brook, Poynton Lake, Poynton Brook, Lady Brook, Gatley Brook, Baguley Brook, River Dean)
- Cycle routes (Sustrans Regional Cycle Route 85 and National Route 55)
- Public Rights of Way network
- Woodford Park

6.17.2 There is also a well-established network of local roads that provide access between communities and a range of associated facilities such as sports fields, churches and other community recreational areas which are located to the north and south of the A6MARR.

6.18 Land and spatial

6.18.1 A large proportion of the land around the A6MARR is designated as greenbelt.

6.18.2 There is also a substantial amount of agricultural land found along the entire length of the A6MARR.

6.19 Summary of community health and wellbeing profile

6.19.1 The population across the 7 Stockport and 4 Cheshire East wards are an older population compared to the Manchester ward which has a young population.

6.19.2 The majority of residents in these wards are from a White background and Christian.

6.19.3 A high proportion of residents in the Stockport and Cheshire East wards are married. However in the Manchester ward the highest proportion of residents are single.

6.19.4 There is considerable variation in both self-perceived health status and limitations to day-to-day activities. Marple South and Heald Green in Stockport; Handforth and Wilmslow Lacey Green in Cheshire East; and Woodhouse Park in Manchester have high proportions of residents who perceived their health to be fair or bad and who have a lot or a little limitation in their day-to-day activities.

6.19.5 The majority of areas along the A6MARR route are not deprived. the wards with the greatest deprivation are Woodhouse Park, (Wythenshawe, Manchester); Heald Green, Cheadle Hulme South and Hazel Grove (Stockport); and Handforth and Wilmslow Lacey Green (Cheshire East) are the most deprived.

6.19.6 The majority of residents in the Stockport and Cheshire East wards under consideration own their homes whilst majority of residents in the Manchester ward under consideration are in socially rented homes.

6.19.7 For the wards under consideration, a greater proportion of residents live in semi-detached house in the Stockport wards; live in detached houses in the Cheshire East wards; and live in terraced houses in the Manchester ward.

6.19.8 The educational attainment of children in Key Stage 2 is highest in Cheshire East and lowest in Manchester.

6.19.9 The proportion of residents with no qualifications is highest in the Manchester Ward. The majority of residents in the Stockport and Cheshire East wards under consideration have Level 4/5 (higher education) qualifications.

6.19.10 Unemployment is highest in the Manchester ward. In contrast, the Stockport and Cheshire East wards have similar levels of low unemployment.

6.19.11 A greater proportion of residents in the Stockport wards work in professional; manager, director and senior official; and associate professional and technical occupations. The top three industry sectors they work in are the wholesale, retail trade and repair of motor vehicles; human health and social work activities; and education sectors.

6.19.12 A greater proportion of residents in the Cheshire East wards work in professional; associate professional and technical occupations; and manager, director and senior official occupations. The top three industry sectors they work in wholesale, retail trade and repair of motor vehicles; human health and social work activities; and professional, scientific and technical activity sectors.

6.19.13 A greater proportion of residents in the Manchester ward work in elementary; caring, leisure and other services; and sales and customer service. The top three industry sectors they work in are wholesale, retail trade and repair of motor vehicles industries; human health and social work activities; and accommodation and food services sectors.

6.19.14 The majority of residents in the wards under consideration in Stockport, Cheshire East and Manchester travel to work by car or van, although the proportion in the Manchester ward is lowest compared to that in Stockport and Cheshire East which have similar proportions.

6.19.15 The six most common crimes across Stockport, Cheshire East and Manchester are criminal damage including arson, violence against the person, burglary in a dwelling, burglary other than a dwelling, theft from a motor vehicle and other wounding. However of the three local authority areas, Manchester has consistently higher rates for all six crimes than Stockport and Cheshire East.

7 Evidence on the Health & Wellbeing Impacts of Roads

7.1 Introduction

7.1.1 This chapter provides a summary of the key evidence on the health and wellbeing impacts of roads and road improvement schemes; with a particular focus on road dualling and bypass schemes where evidence was available.

7.1.2 In general, transport (particularly road transport) affects the following health and wellbeing outcomes and determinants (pathways of health impact):

7.1.2.1 Key health outcomes:[29]

- Mental health and wellbeing;
- Chronic disease; and
- Injuries and deaths.

7.1.2.2 Key health determinants:

- Access to services and amenities;
- Jobs and economic development;
- Social inclusion and exclusion;
- Physical activity;
- Traffic incidents (accidents);
- Air pollution;
- Noise pollution;
- Perceptions of the project; and
- Equity/ inequality.

7.2 Evidence for the health effects of roads in general [30]

7.2.1 Access to services and amenities

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

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

7.2.1.1 The key value of roads is enabling and enhancing access to all kinds of services and amenities, for example supermarkets, banks, post offices, health centres, leisure facilities and parks. All these are health protecting and promoting resources. [31] [32]

7.2.1.2 Roads enable the provision of local public and private transport modes such as buses and cars as well as enable walking and cycling through the provision of pedestrian, cycle and bridal paths. [33]

7.2.1.3 Improving road infrastructure can therefore have positive health and wellbeing impacts by improving access to services and amenities, especially where existing access, in and around the improved road infrastructure, is maintained and enhanced.

7.2.1.4 Some improvements to road infrastructure, for example, new roads/rail or road widening, can create physical barriers, termed severance that can reduce accessibility to some services and amenities. They do this by severing existing roads and transport connections or making travel more difficult.[34]

7.2.2 Jobs and economic development

7.2.2.1 There are a number of ways that transport, particularly roads, affects jobs and economic development. These include:

- Providing jobs related to building and maintaining transport infrastructure;
- Improving the accessibility of jobs located further away; and
- Making places more attractive and viable locations for new and existing businesses.

7.2.2.2 Jobs and economic development affect health and wellbeing, positively or negatively, by influencing self-esteem; personal growth and development; sense of belonging; levels of income and wealth; levels of education; type, quality and range of social networks; and socio-economic status.[35]

7.2.2.3 A French study suggested that on average an investment of €150 million in roads creates 3,200 jobs of which 37% are directly related to road construction works,

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

[32] Acheson, D. (1998). Independent inquiry into inequalities in health

[33] Acheson, D. (1998). Independent inquiry into inequalities in health

[34] 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.

[35] The Royal Australasian College of Physicians; The Australasian Faculty of Occupational and Environmental Medicine. (2010). Realising the health benefits of work.

18% to activities prior to construction, 20% to the production of construction materials and 25% resulting from construction-related investment.[36]

7.2.2.4 Reviews on travel patterns to work associated with the European economy moving from manufacturing to services - a move that is likely to increase more opportunities for tele-working and decrease road freights - suggests that there continues to be an increase in demand for road transport. In addition, in 2004, two thirds of new jobs created in Europe were in the suburbs, where cars are often the main means of commuting.[37]

7.2.2.5 Investment in roads can promote economic growth by improving local and regional economies, through:[38]

- Unlocking inaccessible sites for development;
- Effects on labour market catchment areas and hence on labour costs;
- Stimulation of inward investment;
- Increases in output resulting from lower costs of production;
- Triggering economic growth which in turn stimulates further growth; and
- The reorganisation or rationalisation of production, distribution and land use.

7.2.2.6 However, the size and nature of economic growth that can be attributed to investments such as road construction is debated in the literature with some arguing that public road construction leads to high rates of social return, measured in terms of economic growth and productivity improvement, whilst others argue that the rate of return is much lower where a well-developed transport system is already in place. It is therefore likely that the rate of return on road infrastructure projects depend on the local social, economic and environmental context and the type of project being commissioned. [39] [40] [41]

7.2.2.7 In addition, some studies have shown that since roads operate in two directions, greater benefits can both flow into and out of a community e.g. that local residents travel further out to access shops, services and amenities potentially leading to the reduced use of local shops, services and amenities as well as residents from

[36] IRF Research Council. (2007). The socio-economic benefits of roads in Europe

[37] IRF Research Council. (2007). The socio-economic benefits of roads in Europe

[38] Standing Advisory Committee on Trunk Road Appraisal (SACTRA). (1997). Transport and the economy

[39] IRF Research Council. (2007). The socio-economic benefits of roads in Europe

[40] Standing Advisory Committee on Trunk Road Appraisal (SACTRA). (1997). Transport and the economy

[41] Delta Regional Authority. (2006). Delta Development Highway System Plan

other areas coming into/through a locality and increasing the use of local shops, services and amenities.[42] [43]

7.2.3 Social inclusion and exclusion

7.2.3.1 Besides physical separation, traffic can also create a social separation. New roads and/or increases in traffic on existing roads can become an actual and 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. People living on streets with heavy traffic have fewer neighbourhood friends and acquaintances than counterparts living on streets with lighter traffic flow. It has also been shown that people living in neighbourhoods which are "walkable" score higher on measures of social capital than their counterparts living in car-dependent neighbourhoods.[44] [45]

7.2.3.2 Inadequate public transport provision can also create social exclusion, especially among already vulnerable groups, such as those who are unemployed/on low incomes, older people, those with existing health conditions, single parents/ carers of young children.[46]

7.2.3.3 Low levels of social support have been linked to a two fold increase in deaths from all causes and a four-fold increase in deaths from heart disease.[47] Positive social relationships and networks have a protective effect on health and wellbeing because they promote individual and community resilience through promoting social support, the pooling of social and economic resources and reduced negative impacts of social and environmental stressors. Good social support networks appear to be most important for vulnerable groups such as older people and children. [48]

7.2.4 Physical Activity

7.2.4.1 There has been a growing realisation of the importance of physical activity and active modes of travel in maintaining and improving both physical and mental health and wellbeing. Key health benefits include improved mental health;

[42] Standing Advisory Committee on Trunk Road Appraisal (SACTRA). (1997). Transport and the economy

[43] Royal Commission on Environmental Pollution. (1994). Transport and the environment

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

[45] Appleyard D. (1981). Liveable Streets. University of California Press.

[46] 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. 8:339.

[47] Greenwood, D.C. et al. (1996). Coronary heart disease: a review of the role of psychosocial stress and social support. Journal of public health medicine. 18: 221–231.

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

reduced cardiovascular disease; reduced likelihood of obesity; and improved physical functioning.[49]

7.2.4.2 Transport infrastructure projects therefore have the potential to promote or hinder active travel via walking, cycling and the use of public transport. There is evidence to show that providing safe crossing places; pedestrian and cycle paths; an attractive physical environment; sheltered bus stops and park and ride/share schemes can make walking, cycling and the use of public transport more appealing travel modes. [50]

7.2.5 Provision of walking and cycling infrastructure

7.2.5.1 The presence of walking and cycling infrastructure such as footpaths, cycle lanes and pedestrian crossings have been shown to have many benefits for both users and the rest of the community.[51] These benefits impact on health both directly for example through increased physical activity and less premature deaths cause by respiratory diseases linked to air pollution and indirectly through increased accessibility and connectivity.

7.2.5.2 Investment in walking and cycling infrastructure also addresses some of the barriers to the uptake of walking and cycling. For example, safety is increased through the provision of facilities that protect pedestrians and cyclists from high impact speed. Also when the walking and cycling infrastructure is fully integrated to connect to other transport modes especially public transport, it makes walking and cycling convenient and an attractive mode of travel. [52] [53]

7.2.5.3 In the UK, the development of the National Cycle Network (NCN) has shown that declining levels of active travel related to infrastructure can be reversed. Between 2000 and 2005, cycling trips on the NCN increased by 187% from 41 million trips per year to 117 million trips per year whilst walking has increased by 135% from 49 million trips per year to 115 million trips per year.[54]

7.2.5.4 In Berlin, Copenhagen and Amsterdam, an annual cycling infrastructure funding of $6, $13 and $39 respectively per resident resulted in a 10%, 20% and 35% increase in cycling as a choice of sustainable travel. [55]

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

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

[51] Political Economy Research Institute (PERI).University of Massachusetts Amherst. (2011). Pedestrian and bicycle infrastructure: a national study of employment impacts.

[52] The Transport and Health Study Group. (2011). Health on the move2 – Policies for health promoting transport.

[53] UNEP. (2010). Share the road: investment in walking and cycling road infrastructure

[54] Sustrans. Information Sheet FH10. The value of investment in active travel – why we should invest in walking and cycling routes

[55] UNEP. (2010). Share the road: investment in walking and cycling road infrastructure

7.2.5.5 Also some European interventions have suggested that redesigning of roads to include cycle paths have achieved a high modal shift to cycling and reduced traffic incidents. For example in Copenhagen, cycling infrastructure has led to 37% increase in cycling to school and work while in the Netherlands, between 1980 and 1997, cycling increased by 50% and injuries and fatalities decreased significantly. Likewise in Denmark, there was a 35% reduction in deaths amongst cyclists by providing cycling lanes alongside urban roads [56]

7.2.5.6 Providing walking and cycle infrastructure can reduce also congestion since bicycles need less than a third and pedestrians only a sixth of the road space that is used by a car.[57]

7.2.5.7 It is suggested that improved infrastructure that encourages walking and cycling can lead to lower greenhouse gas emissions. [58] [59] For example, in cities where public transport, walking and cycling accounts for over 55% of the mode of transport, on average, their CO2 emissions from passenger transport is reduced by 2.4T annually compared to cities where road (private) transport accounts for 75% of the mode of transport used.[60]

7.2.5.8 In Bogota, between 2000 and 2007, the CicloRuta, one of the most extensive cycle path networks worldwide which runs over 340km and connects with major bus routes, parks and community centres, was estimated to cumulatively reduce CO_2 emissions by over 36kT of CO_2eq based on 7% of users shifting away from car use and an increase from 0.2% to 4% in cycling between 2000 and 2007. [61]

7.2.5.9 In terms of economic benefits of walking and cycling infrastructure, an economic benefit to cost ratio of 19:1 has been estimated as the average returns for a range of walking and cycling infrastructure construction and modification projects across the UK. [62]

7.2.5.10 Research suggest that in cities where walking and cycling is greater, their per capita energy use is lower and therefore there is less dependence on fossil fuels and less pressure on scarce resources such as land[63] which indirectly are beneficial to health and wellbeing.

[56] UNEP. (2010). Share the road: investment in walking and cycling road infrastructure

[57] UNEP. (2010). Share the road: investment in walking and cycling road infrastructure

[58] UNEP. (2010). Share the road: investment in walking and cycling road infrastructure

[59] UNEP. (2010). Share the road: investment in walking and cycling road infrastructure

[60] UNEP. (2010). Share the road: investment in walking and cycling road infrastructure

[61] UNEP. (2010). Share the road: investment in walking and cycling road infrastructure

[62] Bristol City Council, NHS Bristol. (2010). Value for money: an economic assessment of investment in walking and cycling. Research Report 5

[63] UNEP. (2010). Share the road: investment in walking and cycling road infrastructure

7.2.5.11 Cost benefit analyses of walking and cycling networks in Norwegian cities, taking into account health benefits, reduced air pollution and noise, reduced car parking costs estimates that the benefits of providing walking and cycling infrastructure are at least 4-5 times greater than the costs. [64]

7.2.6 Traffic incidents (accidents)

7.2.6.1 Injuries from road traffic incidents are an important cause of death and disability in the UK. New roads and the modification of existing roads can increase or decrease the rates of road traffic incidents depending on how they are designed and used.[65]

7.2.6.2 There are significant differences in the rate of accidents and injuries depending on the type of road i.e. motorways, dual or single carriageways. A European report on road design factors affecting road accidents suggests that fatal and serious accident rates on British dual and mixed dual-single carriageways are less than single carriageways. Rates of fatal and serious accidents on dual carriageways are less than 50% that on single carriageways whilst mixed dual-single carriageways have approximately 70% of the single carriageway rate.[66]

7.2.6.3 In Britain, dual carriageways with split-level (grade-separated) junctions have significantly lower fatal and serious accident rates, 27 per billion vehicle km compared to 52 per billion vehicle km on dual carriageways with same level (non-grade-separated) junctions.[67]

7.2.6.4 Roads with higher traffic flows, as measured by Annual Average Daily Traffic (AADT), generally have lower rates of fatal and serious accidents. Observations in Europe have found that, compared to roads with an AADT of over 20,000 vehicles, roads with an AADT of between 10-20,000 and roads with an AADT of less than 10,000 have a 1.8 and 2.3 times greater rate of fatal and serious accidents respectively.[68]

7.2.6.5 The road users with the highest risk of being killed or seriously injured are cyclists and pedestrians.[69] The areas of highest risk for cyclists and pedestrians are generally where minor roads meet arterial roads. For children, roads near houses and schools are also areas of high risk.

[64] UNEP. (2010). Share the road: investment in walking and cycling road infrastructure

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

[66] EURORAP. (2003). European Road Assessment Programme: pilot phase technical report.

[67] EURORAP. (2003). European Road Assessment Programme: pilot phase technical report.

[68] EURORAP. (2003). European Road Assessment Programme: pilot phase technical report.

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

7.2.6.6 Perceived poor road safety can act as a potential barrier to healthy forms of transport (walking and cycling). It can also inhibit the use of outdoor space for play by children as well as adult on-street social interactions.[70]

7.2.7 Air Pollution

7.2.7.1 Air pollution can cause short and long term health effects particularly in susceptible groups such as older people, children and those with underlying health problems such as heart or lung disease. The evidence is stronger for the short term health effects.[71] [72] [73] Exposure to air pollution can lead to:

- premature deaths from cardio-respiratory disease (reduced life expectancy);
- exacerbations of existing respiratory illness (e.g. asthma) and an increase in hospital admissions because of it;
- an increase in respiratory symptoms; and
- reduced lung function.

7.2.7.2 Traffic is a leading source of air pollution, motor vehicles emit carbon dioxide (CO_2), carbon monoxide (CO), hydrocarbons, nitrogen oxides, (NO_X), particulate matter (PM), benzene, formaldehyde, acetaldehyde and 1,3-butadiene (VOCs).[74] Secondary by-products include ozone and secondary aerosols (e.g., nitrates and inorganic and organic acids). Road dust made up of road surface and tyre matter also contributes to particulate air pollution. Vehicle speed is also a factor as lower average speed journeys, such as those taken on congested routes, can make engines use fuel less efficiently which can result in greater levels of air pollution.

7.2.7.3 Initiatives which improve traffic flow can have potential benefits to population health by reducing levels of air pollution. A micro simulation study conducted by Norwegian research organisation, SINTEF, suggests that better alignment, sufficient width and capacity of roads which give traffic the possibility to flow steadily lead to less emissions of CO, NOx, Non-methane Volatile Organic Compounds (NMVOCs) and CO_2 from car traffic and is regarded as a positive

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

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

[72] World Health Organisation. (2005). Health effects of transport related air pollution

[73] Health Effects Institute. (2010). Special Report 17: Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects.

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

contribution to a sustainable environment. The three scenarios simulated and their reductions in emissions were:[75]

- Mixed narrow windy two lane/one lane road replaced with good two lane road had reduced emission levels of 67% for CO; 75% for NOx; 68% for NMVOCs and 11% for CO_2.
- Two lane road being replaced by four lane road had reduced emission levels of 48% for CO; 61% for NOx; 49% for NMVOCs and 26% for CO_2.
- Heavily congested city motorway expanded by one extra lane with reduced emission levels of 56% for CO; 61% for NOx; 58% for NMVOCs and 38% for CO_2.

7.2.7.4 Initiatives which reduce traffic volumes e.g. park and ride schemes, greater use of public transport and reduced travel can also reduce levels of air pollution.[76]

7.2.7.5 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 important factors influencing exposure. Some studies have identified in-vehicle concentrations of air pollution to be 1.5 to 5 times higher than general background levels.[77] [78] Other studies have observed and modelled that pedestrians are exposed to higher concentrations than people in cars.[79] [80] [81]

7.2.7.6 Those living, working and undertaking leisure activities near roads - particularly busy roads, highways and motorways - are more likely to be exposed to higher levels of air pollution.[82] [83] A meta-analysis of factors influencing the spatial extent of mobile source air pollution impacts found that the spatial extent of the impact is

[75] The Foundation for Scientific and Industrial Research at the Norwegian Institute of Technology. (2007). Environmental consequences of better roads - micro simulation used to predict different effects on the environment of improved infrastructure.

[76] Parkhurst., G.P. (1998). The economic and environmental roles of park and ride

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

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

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

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

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

[82] World Health Organisation. 2005. Health effects of transport related air pollution.

[83] Brugge D et al. (2007). Near-Highway pollutants in motor vehicle exhaust: A review of epidemiologic evidence of cardiac and pulmonary health risks. Environmental Health, 6:23.

between 100-400m for elemental carbon or particulate matter, 200-500m for nitrogen dioxide and 100–300m for ultrafine particle counts.[84]

7.2.8 Noise Pollution

7.2.8.1 Road traffic noise generally ranges between 50-80 decibels(dB). Normal conversation is usually around 50-60dB, a quiet room is around 30dB, a busy street heard through closed windows is around 50dB and a busy crossroads is around 80dB. These levels of road traffic noise can cause annoyance, interference with speech and sleep disturbance in some people.[85] Other health effects, such as heart disease, have not been clearly linked with noise pollution.[86] These effects are thought to occur as physiological and cognitive responses to the stress caused by hearing road traffic noise. Noise on busy roads can also deter some people from walking, cycling or engaging in on-street social interactions which in turn can reduce social capital and community cohesion.[87]

7.2.8.2 Annoyance from road traffic noise and the resulting reduced wellbeing is likely to be the most common health effect. One study has found that 40% more residents living along arterial streets were highly annoyed compared to residents living near non arterial streets (21% compared to 15%).[88]

7.2.8.3 Planning the location of sources of noise away from communities; limiting noise production (through removing or reducing traffic on certain routes or reducing speeds); and limiting the transmission and reception of noise (by using noise reducing road surfaces, roadside noise barriers and sound proofing homes) are important ways of protecting people from road noise.

7.2.9 Perception of the project

7.2.9.1 How people perceive development projects and their risks and benefits has an important influence on their health and wellbeing. Individuals and communities living near developments tend to perceive the negatives more strongly than those living further away.[89] [90]

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[84] Zhou Y., and Levy J.I. (2007). Factors influencing the spatial extent of mobile source air pollution impacts: a meta-analysis. BMC Public Health. 7:89.

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

[86] Schewela, D., Kephalopoulos, S., Prasher, D. (2005). Confounding or aggravating factors in noise induced health effects: air pollutants and other stressors. Noise & Health. 7:28.

[87] National Institute for Health and Clinical Excellence. (2005). Transport interventions promoting safe cycling and walking.

[88] Seto E.Y.W., Holt A., Rivard T., Bhatia R. (2007). 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. 6:24.

[89] The Royal Society. (1992). Risk: analysis, perception and management.

[90] Lofstedt R, Frewer L (Ed). (1998). Risk and Modern Society.

7.2.10 Inequity/Inequalities

7.2.10.1 Variations in the accessibility, availability and affordability of travel options that result from development projects can widen and exacerbate existing health inequities/inequalities. They can generate an additional burden on already disadvantaged communities and vulnerable groups during both the construction and operation phases by reducing their access to services and amenities including jobs, education and shops, reducing their ability to meet up with family and friends living further away as well as their ability to access/enjoy the outdoors.

7.2.10.2 Rates of road traffic deaths and injuries show a clear social class gradient with the poorest suffering most, as they have increased exposure to road traffic, because they are less likely to have access to a car and hence walk more and poorer children are more likely play on the street because there are no other play areas in their neighbourhoods or their parents/caregivers are not able to take them to these play areas.

7.2.10.3 Poorer communities are also exposed to higher levels of traffic and industry related air and noise pollution and their health and wellbeing consequences.

7.3 Evidence on health effects of bypasses, altering road layouts and new roads:

7.3.1.1 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 the effects on secondary roads. There is some suggestion that, following the opening of a bypass, injury crashes in smaller surrounding roads and intersections may increase. This could be due to drivers using short cuts or 'rat-running'. Major connecting roads (joining two 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.[91]

7.3.1.2 Levels of noise 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.[92] They also found that out-of-town bypasses reduce disturbance and severance in towns but can increase them elsewhere. Congestion and low average vehicle speeds generally increases the emission of air pollutants. Hence, initiatives that reduce

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

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

congestion and increase average vehicle speeds can reduce local air pollution levels. [93]

7.3.1.3 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 also 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 an individual lives. 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.

7.4 Evidence on health effects of expanding road capacity

7.4.1.1 Downs (1992) formulated a theory to explain the difficulty of trying to remove peak-hour congestion from highways. In response to an increase in capacity three immediate effects can occur: [94]

a. drivers using alternative routes begin to use the expanded highway;

b. those previously travelling at off-peak times (either immediately before or after the peak) shift to peak times; and

c. public transport users shift to driving their vehicles.

7.4.1.2 Mogridge *et al* (1987) extend this idea and argue that road capacity increases can actually make overall congestion on the road worse (the Downs-Thomson paradox). This can occur when the shift from public transport causes a disinvestment in public transport such that the operator either reduces the frequency of the public transport service or raises fares to cover costs. This moves more public transport passengers into cars, ultimately leading to the closure of the public transport service which in turn can lead to greater car congestion on the expanded road.[95]

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

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

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

7.5 Findings from previous road-related HIAs

7.5.1 This review identified five existing HIAs on road schemes which contain elements similar to some of those found in the A6MARR and therefore likely to provide some insight into the likely potential health and wellbeing impacts which may be applicable to this A6MARR. These were:

- The Regional Strategic Transport Network Transport Plan HIA;
- Forth Replacement Crossing HIA;
- Eastern Corridor proposals in Plymouth's East End HIA;
- St Mellons Link Road Development HIA; and
- The A483/A489 Newtown Road HIA.

7.5.2 The HIA of the Northern Ireland Regional Strategic Transport Network Transport Plan 2015 judged that:

- The overall effect of the Proposed RSTN TP would be to reduce air pollution with urban areas experiencing better air quality as a result of the provision of bypasses. Though a slight increase in carbon dioxide is predicted due to higher inter-urban speeds and the increased road capacity leading to an increase in the use of private cars;
- Collision remedial measures, traffic calming schemes (gateway features on the approach to towns and villages), car users switching to public transport, traffic management schemes, the increased level of road maintenance, Strategic Road Improvements and education and marketing would lead to a reduction in highway fatalities;
- Improvements in cycling and walking infrastructure and some people switching from car to public transport would result in more people undertaking sufficient exercise for them to obtain significant health benefits;
- New bypasses, traffic calming measures and improved pedestrian infra-structure would all serve to reduce severance for many people in urban areas and improve local road safety, especially for children and older people. However, severance would be introduced for those living adjacent to new bypasses and widened sections of the RSTN. On balance, the overall effect would be beneficial;
- The overall effect of the Emerging RSTN TP would be to reduce noise levels by a significant extent in the urban areas that would be bypassed;
- The Proposed RSTN TP would realise moderate beneficial impacts in terms of travel opportunities especially over longer distances. These impacts would be as a result of public transport services that offer greater flexibility, greater comfort and an increased feeling of safety, and services that are more accessible to people with disabilities; and

- The Proposed RSTN TP would also support the improvement of employment prospects for communities in regeneration areas due to improved and additional transport provision and links. Traveller stress would be reduced through improved services, greater provision of travel information and more reliable journey times.

7.5.3 The Forth Replacement Crossing HIA analysed a proposal to create a new bridge and associated new road connections and enhancements. It found that:

- The health effects of severance, reduced opportunities for social interaction for vulnerable individuals, are likely to be increased during construction as a result of diversions to existing footpaths[/ways] and road traffic. The increased presence of unknown people in the area during construction, change in routing of footpaths[/ways] and presence of construction sites may also give rise to concerns regarding safety and security;
- There would be both positive and negative effects on pedestrian and cycle routes resulting from the scheme which may indirectly influence the choices made by the community with regard to active travel. Likewise, the A6MARR may influence access to greenspace through the land take; noise and visual effects on nearby greenspace; and by influencing the accessibility of greenspace by car in the long term;
- A substantial reduction in road traffic along existing roads will reduce operational noise for adjacent properties and nearby open spaces. This will provide health benefits through a potential increase in the use of outdoor space for physical activity and social interaction. Conversely, the occupiers of houses close to the scheme who are affected by noise increases will experience reduced enjoyment of outdoor areas such as gardens. Adverse health effects resulting from this could include increases in levels of stress;
- Changes in air quality in the study area as a result of the operation of this scheme are generally predicted to be very small, and would not give rise to any health effects. During construction, the perceived changes in air quality as a result of construction activities may contribute towards anxiety and stress related health issues. Though there is a risk of dust nuisance for residents and sensitive users, in close proximity to the construction works, changes in predicted nitrogen dioxide concentrations and fine particulate matter concentrations are low;
- This scheme would have positive effects on unemployment and social exclusion, resulting in moderate health benefits. The this scheme would improve public transport journey times thus potentially reducing transport-related social exclusion, reducing health inequalities and providing better access to family and friends, employment opportunities and shops, services and amenities;

- The construction period would involve local disruption and increased journey times, which would have an adverse effect on local businesses;
- Positive effects for local businesses and suppliers during construction include the potential for increased earnings and employment/training opportunities which may result in minor positive effects on general wellbeing; and
- The construction period would give rise to direct employment and training opportunities which would have the potential to benefit people from within local communities. This would have a minor positive effect on health and wellbeing.

7.5.4 The Eastern Corridor proposals in Plymouth included road widening, creating link roads, public transport priority routes and improving pedestrian and bicycle access. The HIA judged that these proposals would have the following effects:

- An improved pedestrian and bicycle environment is likely to encourage people to be more physically active, and is likely to support improved mental wellbeing;
- There will be some inevitable disruption for the local community and broader populations at different points during construction;
- There is likely to be a reduction of severance;
- There may be opportunities for local businesses and employment arising from a more active neighbourhood 'centre';
- Air and noise pollution may slightly worsen in the immediate vicinity of a junction;
- More local people will benefit from reduced pollution (there will definitely be a net 'gain');
- Some overnight construction work is possible, and it may cause stress/anxiety for some (e.g. sleep disruption); and
- Increasing support for public transport may help to change travel habits and reduce traffic levels over the longer term.

7.5.5 The HIA of the St Mellons Link Road Development, on a direct freight route development proposal in Wales, judged that:

- The overall effects on the local population of pollutants caused by emissions from vehicles using this road are likely to be small;
- Noise is likely to cause direct disturbance to those near the road and the background noise level will increase over a wider area; and
- Enjoyment of the country park is likely to be diminished by a view of the proposed elevated section of road and by resultant traffic noise.

7.5.6 The A483/A489 Newtown road HIA looked at several possible locations for adding a bypass to improve these roads.

- Each of the options was considered to benefit Newtown in terms of improving access and journey reliability within and to Newtown especially for employment and access to services;
- All of the options were considered to be beneficial in terms of macro-economic issues through improving air quality, sustainability and creating opportunities for economic development;
- All of the options allow for the movement of wind turbines which is important for economic development in the wider area around Newtown;
- The options that performed well did so because they provided access and environmental benefits to the people living in Newtown and they do not have the severance and more localised environmental disbenefits of a route through a built up area;
- The key adverse impacts identified were loss of amenity land and the proximity of the road to residential dwellings reducing air quality and increasing noise disturbance in the local area;

7.6 Conclusion

7.6.1 The evidence on road related health impacts shows that there are both positive and negative potential health and wellbeing effects that can result from new road and road improvement schemes. Key health and wellbeing impacts include:

- New and/or improved roads generally enable and enhance access to services and amenities though road schemes also have the potential to create physical and social barriers that can reduce access to services and amenities and reduce community cohesion;
- Road schemes create construction and maintenance jobs; improve the opportunities available for unemployed and others to access jobs and education located further away; and contribute to regional and local economic growth. However, in some cases, other areas can experience greater benefits if local job seekers do not have the appropriate skills, or it is cheaper to source labour from other areas, and if residents and businesses begin to use services and amenities located outside a locality or region because of the improved access;
- Road schemes can both promote or hinder active travel e.g. walking, cycling and public transport. This depends on the quality and range of safe crossing places, pedestrian and cycle paths incorporated into the scheme;

- Road schemes can both enhance or reduce on-street social interactions depending on the traffic flows and volumes for residents living near the schemes or on roads that join the scheme;
- Road schemes can both reduce or increase the risks of road traffic incidents resulting in injuries and deaths for residents living near the schemes or on roads that join the scheme; and
- Road schemes can both reduce and increase levels of noise, visual intrusion and air pollution for residents living near the schemes or on roads that join the scheme.

8 Community Views and Perspectives

8.1 Introduction

8.1.1 The A6MARR conducted two major community consultation programmes: Phase 1 and Phase 2.[96] [97] These consultations identified a range of community concerns including those around health and wellbeing. The key conclusions from these consultations are summarised below.

8.1.2 Three HIA specific workshops were also undertaken in Hazel Grove (Stockport), Handforth (Cheshire East) and Wythenshawe (Manchester) in February 2013 at various community venues. The perceived positive and negative health and wellbeing impacts are summarised in Table 8.2 and Table 8.3.

8.1.3 These were structured to involve a short presentation of the scheme, what HIA is and key health and wellbeing issues that were being considered followed by a discussion with members of the community who had come to the workshop.

8.1.4 This feedback included a community HIA undertaken by Disley Parish Council.

8.1.5 The A6MARR has considered all the comments received across all the consultation activities that have been undertaken. Where possible and feasible suitable mitigations measures have been designed in or committed to as part of the constructing and operating the A6MARR (see Chapter 10 Mitigation and Enhancement Measures).

8.2 Phase 1 consultation

8.2.1 The Phase 1 consultation was held between 22nd October 2012 and 25th January 2013. The purpose was to capture people's opinion on the A6MARR along with people's views on junction options.

8.2.2 Two leaflets were distributed to approximately 85,000 properties within the area surrounding the A6MARR. The purpose of leaflet one was to raise awareness of the A6 to Manchester Airport Relief Road, while leaflet two provided more detailed information about the Scheme and junction options. Leaflet two also provided a self-completion response form including questions relating to overall support of the Scheme and preferences on the layout of the six junctions.

8.2.3 In addition to the leaflets, a range of other methods were also utilised to provide the public and other stakeholders with an opportunity to engage in the consultation period, including by: email, phone, post, Twitter, Facebook, Website, Exhibitions and Meetings/ Workshops.

[96] WSP. (2013). SEMMMS A6MARR Phase 1 Public Consultation Report. 1007/9.6/132. March 2013.

[97] WSP. (2013). SEMMMS A6MARR Phase 2 Public Consultation Report. 1007/9.6/150.. March 2013.

8.2.4 9,031responses were received.

8.2.5 Approximately, 69% (6,208) of residents who responded supported the proposals with approximately 50% (4,505) specifying that they were strongly in favour of the A6MARR. 13% (1,132) were not in favour or definitely not in favour of the A6MARR.

8.2.6 There was a broad distribution of respondents by geography, age group and gender in favour of the Scheme across the urban areas and within the vicinity of the A6MARR with clustering of residents in favour in Hazel Grove, Bramhall, Poynton and Heald Green. There were clusters of residents not in favour in south Bramhall, south Hazel Grove and north-west Poynton. Resident living within 500m to the A6MARR were less likely to be in favour than those residents who lived further away.

8.2.7 Table were the most frequent open comments on the A6MARR in rank order in terms of the proportion of respondents who made a comment on a particular theme and the proportion of those in favour (In favour and strongly in favour) or those not in favour (Not in favour and Definitely not in favour) who made a comment on that particular theme.

Table 8.1: Summary of open comments by theme, proportion who made a comment on a particular theme and the proportion of those in favour and those not in favour who made a comment on a particular theme

Overall Opinion	Total	In favour	Not in favour
Total number of respondents (n)	**9031**	**6208**	**1132**
Go ahead as long overdue	13%	16%	1%
Design specific issues commented on	13%	12%	18%
Will reduce traffic / improve traffic flow	8%	9%	5%
Negative economic impact	7%	3%	24%
Environment related	6%	2%	25%
Cycle/walking related	55	4%	6%
Link A6 to M60	5%	2%	19%
Will increase traffic	3%	1%	13%
Road safety related	2%	2%	3%
Noise related	2%	1%	7%
Further information needed	2%	1%	2%
Quality of life related	2%	1%	8%

Unnecessary	2%	1%	0%
Public transport related	1%	1%	6%
Disruption during construction	1%	1%	3%
Post implementation development	1%	0%	4%
Positive economic impact	1%	1%	0%

8.3 Phase 2 consultation

8.3.1 The Phase 2 consultation was held between 3rd June and 19th July 2013. The purpose of the Phase 2consultation was to provide feedback to people on the findings of the Phase 1 consultation and seek comments on the emerging Preferred Design in order to inform the development of the A6MARR for the planning application.

8.3.2 A leaflet and response form was distributed to properties within the area surrounding the A6MARR. The postal distribution of the leaflets was to an area of approximately 85,000 properties, including residential and business properties.

8.3.3 In addition to the leaflets, a range of other methods were also utilised to provide the public and other stakeholders with an opportunity to engage in the consultation period, including by: email, phone, post, Twitter, Facebook, Website, Exhibitions and Meetings/ Workshops.

8.3.4 5,481 responses were received.

8.3.5 The majority of respondents agreed that the four main environmental impacts of theA6MARR (ecological, landscaping, visual and noise) were being addressed.

- For ecological impacts, 55% agreed (agreed or strongly agreed) that this was being addressed compared to 15% who disagreed (disagreed or strongly disagreed). For residents living within 500m , 43% agreed and 28% disagreed;
- For landscaping impacts, 66% agreed that this was being addressed compared to 13% who disagreed.). For residents living within 500m , 51% agreed and 28% disagreed.
- For visual impacts, 65% agreed that this was being addressed compared to 14% who disagreed. For residents living within 500m , 51% agreed and 29% disagreed;
- For noise impacts, 63% agreed that this was being addressed compared to 15% who disagreed. For residents living within 500m , 49% agreed and 33% disagreed;
- Residents living within 500m were more likely to disagree;
- Hazel Grove residents were most likely to disagree that all four impacts were being addressed;

- Heald Green, Handforth, Poynton and Hazel Grove all had clusters of residents who agreed that all four impacts were being addressed;
- Woodford Road, Bramhall junction to the A6 junction and the A523 Macclesfield Road junction had clusters of residents who disagreed that all four impacts were being addressed; and
- Air quality particularly those that live in close proximity to the A6MARR and the loss of green belt land and woodland were key concerns.

8.3.6 Approximately, 58% and 59% of residents who responded agreed that the A6MARR addressed the needs of pedestrians and cyclists compared to 12% who disagreed (for both). Across all areas more residents agreed than disagreed. Woodhouse Park/Wythenshawe residents who responded had the highest proportion of residents who agreed that pedestrian needs were being addressed while residents of Hazel Grove had a high proportion of residents who disagreed.

8.3.7 Approximately, 58% of residents who responded agreed that the A6MARR adequately addressed Public Rights of Way. Across all areas more residents agreed than disagreed. Woodhouse Park/Wythenshawe residents who responded had the highest proportion of residents who agreed that pedestrian needs were being addressed while residents of Hazel Grove had a high proportion of residents who disagreed.

8.3.8 Approximately, 63% of residents who responded agreed that the A6MARR addressed the likely changes in traffic flows (complementary and mitigation measures) while 16% disagreed. Across all areas more residents agreed than disagreed. Heald Green and Cheadle Hulme residents who responded had the highest proportion of residents who agreed that traffic flows were being addressed while residents of Hazel Grove and High lane have a high proportion of residents who disagreed.

8.3.9 In the open comments that were received the following key concerns were expressed:

- Noise, air quality and visual (including light pollution) impacts of the scheme;
- Impact on Queensgate Primary School;
- Traffic increase on local roads;
- Access to properties;
- Impact on the local environment;
- Safe crossing facilities at junctions and accommodation of Public Rights of Way;
- Increase in crime and antisocial behaviour as a result of the scheme due to improved accessibility;
- Construction impacts; and

- Traffic management at junction

8.4 Hazel Grove

8.4.1 Concern about air pollution (nitrogen dioxide and particulate matter) to residents living near the A6MARR; particularly near the proposed Macclesfield Road junction e.g. Longnor Road.

8.4.2 Mental health and wellbeing impacts of the A6MARR because of daily concerns about potential impact on family health, property values, the cost of moving, construction impacts, etc. over such a long period of time (four to five years before the road opens and one year after that before compensation claims can be submitted).

8.4.3 Concern about high levels of traffic going along Windlehurst Road, Torkington Lane, Threaphurst Lane leading to an increase in road traffic accidents because they are currently used by horse riders, cyclists and walkers.

8.4.4 Concern about increase in noise on side (feeder) roads that connect to the A6MARR.

8.4.5 Concern about increased congestion on both residents and motorists leading to longer journey times and idling of cold engines while waiting for gaps in peak hour traffic.

8.4.6 Concern about increase in journey times and unreliability of buses because of increased congestion.

8.4.7 Concern about encroachment on green belt designated land.

8.5 Handforth

8.5.1 Concern about an increase in air pollution, noise and road traffic incidents; particularly concern about health impact on children attending the Queensgate Primary School in Bramhall.

8.5.2 Concern about the potential for air, soil or water pollution on fruit trees and vegetable plots because of the close proximity of the road and on the playing field of Queensgate School playing fields which will be near two attenuation ponds for the A6MARR.

8.5.3 Concern that the A6MARR will redistribute rather than reduce traffic.

8.5.4 Concerns about safety of children in back gardens as the new cycle/footpath will be close to some homes.

8.5.5 Concerns about the consultation process for the A6MARR and the release of assessment reports.

8.5.6 Concern about the A6MARR affecting nine footpaths and the safety of walkers and accessibility of these footpaths.

8.6 Wythenshawe

8.6.1 No residents attended the Wythenshawe workshop and it is unclear why as the location. Two likely reasons are the short length of the A6MARR that impinges on this area and the potentially much larger impact of the Manchester Airport road development and the Airport City and associated car park development.

8.7 High Lane

8.7.1 Concern about increased air pollution (Nitrogen dioxide, particulate matter, ozone, carcinogens such as benzene, polyaromatic hydrocarbons (PAH), volatile organic compounds (VOC), etc., noise and road traffic incidents during operation phase along the A6 running through High Lane village.

8.7.2 Concern about noise during operation phase.

8.7.3 Concern about increase in Heavy Goods Vehicle (HGV) traffic during the construction phase.

8.8 Disley

8.8.1 The section summarise the key points from the Disley Parish Council SEMMMS HIA. The phrasing of the paragraphs has been kept as close to the original as possible but the structure has been modified so that mitigation measures are described separately from the impacts and issues that read better within this new structure are grouped together. The findings of this HIA cover the comments made at the HIA workshop in Handforth about Disley.

Construction phase health impacts identified

8.8.2 Environmental

8.8.2.1 Noise pollution from construction vehicle traffic.

8.8.2.2 Air pollution from construction vehicle traffic.

Operation phase (long term) health impacts identified

8.8.3 Environmental

8.8.3.1 Negative - Air pollution from increased traffic along the A6MARR.

8.8.4 Safety

8.8.4.1 Negative - Increased risk/perceived risk of road traffic incidents in crossing A6 and accessing the village and in accessing key services and amenities e.g. the local pharmacy from the local GP practice on foot, shops, primary school; particularly for children and older people.

8.8.4.2 Negative - Increased risk/perceived risk of road traffic incidents on side roads as 'rat run' emerge to access the A6MARR.

8.8.5 Economy

8.8.5.1 Positive - Increase in visitors as Disley could become the 'gateway' to the Peak District.

8.8.5.2 Positive – Access to employment opportunities further away will be improved. Disley's dormitory village identity will increase – future increase in commuters / housing demand and more potential support for the local economy.

8.8.5.3 Positive – Local employment opportunities in the construction phase.

8.8.5.4 Negative - Decrease in local shopping and local economic activity/businesses as the increase in traffic and heavy vehicles in the village and the easier access via SEMMMS to shopping centres elsewhere mean local people shop less locally.

8.8.5.5 Negative - Increase in commuter cars along the A6.

8.8.6 Social networks

8.8.6.1 Negative - Reduced social connectivity as the A6 already bisects the community and the A6MARR will generate additional traffic making it even more difficult for residents in the northern part of the village to access the south of the village community where key services and amenities are located.

8.8.7 Lifestyle

8.8.7.1 Negative - Increased traffic is likely to reduce take up of cycling and walking. The potential to improving cycle safety along the full length of the A6 is very limited.

8.8.8 Accessibility

8.8.8.1 Positive – For car owners access to services elsewhere is likely to improve.

8.8.8.2 Negative – Increased traffic on A6 is likely to make it even harder for those with no car to access services.

8.9 Mitigation and enhancement measures identified by residents

Handforth-focused mitigation measures identified

8.9.1 Close Torkington Lane at the Hazel Grove end.

8.9.2 Control the speed of traffic on side (feeder) roads that connect to the A6MARR.

8.9.3 Monitor air pollution on roadside of key roads linking to the A6MARR both before and after the A6MARR is constructed and in operation to ensure credible estimates of current levels of air pollution rather than relying on modelling or background monitoring sites that are far away from a key road.

Disley-focused mitigation measures identified in Disley HIA

8.9.4 Environmental

8.9.4.1 Mitigation measures to improve air quality during both the construction and operation phases of the A6MARR including having an Air Quality Action Plan for Disley.

8.9.4.2 Improvements in existing public transport provision and facilities for both bus and rail services with park and ride along the whole A6 corridor to attract increased use of public transport and reduce the use of cars along the A6MARR.

8.9.4.3 Further air pollution and noise studies on the A6 and on key village side roads. A new air quality monitoring unit is to be installed in the village centre by Cheshire East Council to continue assessing present and future air pollution levels.

8.9.5 Safety, Lifestyle and Accessibility

8.9.5.1 Mitigation measures to improve the pedestrian experience and access to the village by improving pedestrian safety and access, across A6 and other key side roads within Disley, including actively managing traffic flows on key side roads.

8.9.5.2 Mitigation measures to improve the cycling experience and access to the village. Well informed mitigation measures for the A6 will attract investment for improving cycling both through and within the village. Alternative cycle routes (Lyme Park) proposed and being explored to avoid the A6.

8.9.5.3 Improve community transport to assist non-car owners in accessing key services, particularly medical and social. A small community grant has been awarded for kick starting a community transport scheme to improve accessibility.

8.9.5.4 Consultants views/report to commission on Disley's having vehicle and pedestrian shared space either now or in the future.

8.9.6 Economy

8.9.6.1 Include a criteria that local employment is built into the SEMMMS contract specification.

8.9.6.2 See 8.3.14.1.

8.9.6.3 Improved parking for residents and visitors.

8.9.6.4 Need to invest more in visitor attractions so visitors have more reason to stop and spend time in the village. The Parish Council presently invests in funding a Love Local Life scheme to improve retail footfall in the village. This scheme is under review

8.10 Conclusion

8.10.1 The Phase 1, Phase 2 and HIA consultation feedback identified a range of community issues and concerns.

8.10.2 Overall the key comments concerned the increase in traffic generated by the A6MARR and the resulting potential increases in vehicle distribution onto residential or local roads not able to take the additional traffic safely; vehicle speeds on connecting roads; safety of new or modified junctions; and increases in noise, air pollution and visual intrusion particularly at perceived sensitive locations such as Queensgate Primary School.

8.10.3 The A6MARR has considered all the comments received across all the consultation activities that have been undertaken. Where possible and feasible suitable mitigations measures have been designed in or committed to as part of the constructing and operating the A6MARR (see Chapter 10 Mitigation and Enhancement Measures).

Table 8.2 Community views on the potential positive impacts of the A6MARR identified at the HIA community workshops

POSITIVES					
Topics	**Wythenshawe**	**Handforth**	**Hazel Grove**	**High Lane**	**Disley**
Increase in visitors					✓
Access to employment opportunities further away					✓
Local employment opportunities on the A6MARR – construction phase					✓
Easier access to services further away for car owners					✓

Table 8.3 Community views on the potential negative impacts of the A6MARR identified at the HIA community workshops

NEGATIVES					
Topics	**Wythenshawe**	**Handforth**	**Hazel Grove**	**High Lane**	**Disley**
Air pollution - operation phase		✓	✓	✓	✓
Air pollution - construction phase				✓	✓
Noise - operation phase			✓	✓	✓
Noise - construction phase				✓	✓
Road traffic incidents - side/feeder roads - operation phase			✓		✓
Increase in HGVs during construction phase					
Effects on children and/or older people		✓			✓
Safety concerns about proximity of footpath/ cycle path to back gardens		✓			
Existing footpath access and safety		✓			
Longer journey times and unreliable services for bus users/greater difficulty in access because of increase in traffic			✓		✓
Decrease in local shopping and shops					✓
Decrease in social connectivity					✓
Decrease in cycling and walking			✓		✓
Soil and/or water pollution					
Mental health and wellbeing impacts			✓		
Concerns about consultation process		✓			
Longer journey times for car drivers			✓		
Encroachment on green belt			✓		

9 Health Impacts of the A6MARR

9.1 Introduction

9.1.1 The analysis of health impacts examined the likely health and wellbeing effects during the construction and operation phases of the A6MARR.

9.1.2 Appendix B: Health Impact Tables provides detailed health impact analysis tables.

9.1.3 Two summary health impact tables are provided at the end of this chapter (See Table 9.1 and Table 9.2).

9.1.4 The three geographic zones of impact/influence considered were: within 200m; 200m-1km and over 1km.

9.1.5 The population groups within the geographic zones of impact/influence considered were: Residents (houses and care homes); Users of Amenities (including schools and health care facilities) and Workers (business owners and employees).

9.1.6 As there are different sets of impacts along the A6MARR, the route was divided into four sections and the impacts assessed for each section in the detailed health impact table. The four sections of the A6MARR were:

- Existing section of the A6 and the new realigned section of the A6 Buxton Road near Hazel Grove, joining Buxton Road at two points - north, opposite Yew Tree Avenue and south, opposite Norbury Hollow Road;
- New section of A6MARR from the new realigned section of the A6 Buxton Road near Hazel Grove to Woodford Road A5102 near Bramhall;
- Existing section of the A555 from Woodford Road A5102 near Bramhall to Wilmslow Road B5358 near Handforth; and
- New section of A6MARR from Wilmslow Road B5358 near Handforth to the junction of Ringway Road and Ringway Road West near Manchester Airport.

9.1.7 Where there were common impacts across the whole route, these are described under a section on the 'A6MARR as a whole'.

9.1.8 Road users are not considered separately because they are captured in the categories described above.

9.1.9 The HIA has relied on the ES and transport assessment to understand the likely changes in air quality, noise, road traffic injury and land use (and develop Sections 9.2 and 9.3 below). The methodologies and assumptions used in these assessments were reviewed.

9.1.10 The air quality and noise modelling has incorporated the likely future increases in traffic from future developments happening in the area around the A6MARR.

9.1.11 The mitigation measures identified in the ES, Transport Assessment and developed into the Schedule of Environmental Commitments and Outline Construction Environmental Management Plan have not been considered when analysing the health impacts. These are discussed in the next section, Section 10 Mitigation and Enhancement Measures.

9.2 Key facts about the construction phase

9.2.1 The construction phase will include vegetation clearance, excavation, earthworks and road construction activities including movement of construction vehicles, use of machinery and piling. Only a small amount of demolition work is likely to be undertaken.

9.2.2 There will be temporary road diversions, access restrictions and additional construction-related road traffic.

9.2.3 The construction phase will be 18 months long.

9.2.4 The construction phase will be phased so that at any given point the likely disruption will be temporary lasting a few weeks or months.

9.2.5 No houses are lost, though some residents will lose part of their gardens.

9.2.6 Part of the land of Woodford Recreation Ground, a sports field, to the north of the existing A555 near the Woodford Road roundabout will be needed for the A6MARR.

9.2.7 There are twenty three (23) farms or agricultural holdings will be affected with between 5-50% of their land being needed. This may affect the viability of some of these farms and agricultural holdings.

9.2.8 From east to west:

9.2.8.1 A small amount of land from Hazel Grove Golf Club will be needed but this will not affect any golf holes;

9.2.8.2 A small amount of land will be needed from an industrial facility in Hazel Grove that is currently not operational;

9.2.8.3 A small amount of land from Brookside Garden Centre near Hazel Grove/Poynton will be needed but will not affect its viability;

9.2.8.4 Moorend Golf Course and a kitchen showroom north of Hawthorne Farm both near Bramhall will need to close; and

9.2.8.5 Styal Golf Course near Heald Green will need to relocate south of the A6MARR as golf holes 1, 2 and 3 would be lost.

9.2.9 Some existing bridle, cycle and foot paths will need to close temporarily or be diverted while construction work takes place.

9.2.10 There are 605 receptors (including 2 schools and I nursery; Queensgate primary School, St James RC High School and Little Acorns Nursery) within 50m of the boundary and a further 3,519 between 50 and 250m (including 1 school, Royal School for the Deaf, and 1 nursery) from the boundary.

9.2.11 For the above houses and community facilities/amenities there is potential for construction activity related dust and construction equipment and construction traffic related noise and air pollution.

9.2.12 There is likely to be some light pollution and visual intrusion from the construction site.

9.3 Key facts about the operation phase

9.3.1 There will be some revised junctions which are likely to maintain or improve accessibility to residential areas, business areas, shops, recreational and other amenities.

9.3.2 Bridle, cycle and footpaths are preserved though some will be realigned and connected to the new bridle, cycle and foot path running the length of the A6MARR.

9.3.3 Two roads, the existing A6 Buxton Road section near Hazel Grove will have no through car traffic but will be kept open for cyclists, pedestrians and buses and the Ringway Road near Wythenshawe will be closed off at one end.

9.3.4 The A6MARR is likely to lead to increased traffic along the existing A555 between Woodford Road A5102 and Wilmslow Road B5358 and the new sections of road at either side of the existing A555 due to a redistribution of traffic from existing local road networks.

9.3.5 It is estimated that there will be no additional fatalities due to the A6MARR, one potential additional serious road traffic incident injury and a reduction in 28 slight road traffic incident injuries.[98]

9.3.6 For some residents, users of amenities and workers within 2km of the A6MARR, there is likely to be some decreased road traffic and associated noise and air pollution on some existing local road networks whilst for others, there is likely to be some increased road traffic and associated noise and air pollution and visual intrusion from some sections of the A6MARR. The pattern of changes is complex and the details can be found in the Environmental Statement (ES).

9.3.7 There are areas in Greater Manchester and on the main roads in Cheshire East that experience levels of Nitrogen Dioxide (NO_2) that exceed the health guideline limit value of 40 $\mu g/m^3$. There are no areas that experience levels of PM_{10} (Particulate Matter less than or

[98] Atkins. 2013. A6MARR Transport Assessment

equal to 10 micrometres in size) that exceed the health guideline limit value of 40 µg/m^3 (micrograms per cubic metre) .

9.3.8 For air pollution, the air quality modelling in the ES estimates that there are 11,036 potentially sensitive receptors (houses, schools, hospitals, care homes, community facilities, etc.) within 200m of the A6MARR and affected links:

9.3.8.1 Where NO_2 increases, the number of receptors that exceed the health guideline limit value of 40 micrograms per cubic metre; 209 receptors are likely to experience an increase in NO_2 of more than 4 µg/m^3, Queensgate School which is the closest school to the A6MARR is likely to experience an increase in NO_2 from 21.7µg/m^3 to 31.3 µg/m^3 (an increase of 9.6 µg/m^3) at the boundary, 407 receptors are likely to experience an increase of between 2-4 µg/m^3; and 1,540 receptors are likely to experience an increase of between 0-2 µg/m^3. In the Greater Manchester Air Quality Management Area (AQMA), 39 receptors are likely to experience an increase of more than 4 µg/m^3 increase in NO_2; 42 an increase of between 2-4 µg/m^3; and 292 an increase of between 0-2 µg/m^3. In the Disley AQMA, 3 receptors are likely to experience levels of NO_2 above 40 µg/m^3. All the sensitive receptors in the Disley AQMA will experience some increase in NO_2 (63 of more than 4 µg/m^3 and 41 between 2-4 µg/m^3).

9.3.8.2 Where NO_2 decreases, the number of receptors that exceed that health guideline limit value of 40 micrograms per cubic metre (µg/m3) falls from 4,566 to 3,722 (844 receptors); 758 receptors are likely to experience a decrease of NO_2 of more than 4 µg/m^3; 801 receptors are likely to experience a decrease of between 2-4 µg/m^3; and 7,128 receptors are likely to experience a decrease of between 0-2 µg/m^3. In the Greater Manchester AQMA 780 receptors are likely to experience a decrease below the 40 µg/m^3 health guideline limit value; overall 7,743 receptors in the Greater Manchester AQMA are likely to experience a decrease in NO_2 (603 receptors are likely to experience a decrease of more than 4 µg/m^3; 605 are likely to experience a decrease of between 2-4 µg/m^3; and 6535 are likely to experience a decrease of between 0-2µg/m^3).

9.3.8.3 Overall, 2,156 receptors will experience an increase in NO_2 , 193 will experience no change and 8,687 will experience a decrease.

9.3.8.4 Where PM_{10} increases, 1 receptor is likely to experience an increase of more than 4 µg/m^3; 3 receptors are likely to experience an increase of between 2-4 µg/m^3; and 1,914 receptors are likely to experience an increase of between 0-2 µg/m^3, Queensgate Primary School which is the closest school to the A6MARR is likely to experience an increase in PM_{10} from 14.10 µg/m^3 to 15.90 µg/m^3 (an increase of 1.80 µg/m^3). In the Greater Manchester AQMA, there are no exceedences above the 40µg/m^3 limit; 1 receptor is likely to experience an increase of more

than 4 µg/m^3; and 188 receptors are likely to experience an increase of between 0-2 µg/m^3. In the Disley AQMA; there are no exceedences above the 40µg/m^3 limit; 104 receptors are likely to experience an increase of between 0-2 µg/m^3.

9.3.8.5 Where PM_{10} decreases, 15 receptors are likely to experience a decrease of more than 4 µg/m^3; 78 are likely to experience a decrease of between 2-4 µg/m^3; and 6606 receptors are likely to experience a decrease of between 0-2 µg/m^3. In the Greater Manchester AQMA, 14 receptors are likely to experience a decrease of more than 4 µg/m^3; 22 receptors are likely to experience a decrease between 2-4 µg/m^3; and 5,910 receptors are likely to experience a decrease between 0-2 µg/m^3. In the Disley AQMA there are no decreases in receptor exposure to PM_{10}.

9.3.9 For noise, the noise modelling in the ES estimates that for 26,034 potentially sensitive receptors (houses, schools, hospitals, care homes, community facilities, etc.) within 600m of the A6MARR and affected links ($LA_{10\ 18\ hr}$):

9.3.9.1 The majority or receptors are likely to experience daytime noise levels that are less than 55dB, a small number of houses are likely to experience daytime noise levels of 55-70db and a smaller number of houses are likely to experience daytime noise levels of 70-75dB.

9.3.9.2 Where there is an increase in traffic noise in the opening year of the A6MARR, 492 receptors (488 houses, 2 schools and 2 other non-residential) are likely to experience an increase of more than 5dB, Queensgate Primary School is likely to experience 6.5dB increase in noise at the boundary; 2,341 receptors (2,332 houses and 9 non-residential) are likely to experience an increase of between 3-4.9dB; 6,781 receptors (6,755 houses and 26 non-residential) are likely to experience an increase of between 1-2.9dB; and 9,027 receptors (8,983 houses and 44 non-residential) are likely to experience an increase of between 0.1-0.9 dB; overall 9,614 receptors (9,575 residential and 39 non-residential) are likely to experience an increase of 1dB or more.

9.3.9.3 Where there is a decrease in traffic in the opening year of the A6MARR, 37 receptors (all residential) will experience a decrease of more than 5 dB; 137 receptors (all residential) will experience a decrease between 3-4.9 dB; 1,705 receptors (1,691 residential and 14 non-residential) will experience a decrease of between 1-2.9 dB; and 4,648 receptors (4,624 residential and 24 non-residential) are likely to experience decreases of between 0.1-0.9 dB; 1,879 receptors (overall 1,865 residential and 14 non-residential) experience a decrease of 1dB or more.

9.3.10 Over the long term, the A6MARR will need to be maintained on a regular basis, e.g. low noise road surfacing, and the traffic flows reviewed to ensure that it meets the needs of the residents, users or amenities and workers living, using amenities and working 200m, 200m-1km and over 1km away from the A6MARR.

9.4 Health impacts – construction phase

9.4.1 Considering the A6MARR as a whole, there is likely to be a significant number of construction jobs (full-time and part-time) that will last for the 18 month period estimated for construction. There are also likely to be other jobs created in businesses allied to road construction who supply the A6MARR, e.g. construction materials and equipment manufacturers, and potentially in other non-construction related businesses e.g. retail.

9.4.2 There are likely to be some negative health and wellbeing impacts to residents living near the A6MARR who lose parts of their land, e.g. gardens, or whose access from their properties is changed in a way that increases journey times or who experience increases in noise, visual intrusion and air pollution where they live, use amenities and work either temporarily during the construction phase or more permanently during the operation phase.

9.4.3 There is the potential for temporary negative health and wellbeing impacts to some pedestrians, cyclists, and bus and car users where there is realignment of existing road; junction closures and improvements; traffic diversion; temporary speed limits and other restrictions; re-routing of bridle, cycle and foot paths and access roads; and construction work related congestion; particularly those living in isolated areas.

9.4.4 For some businesses, e.g. Moorend Golf Course, the kitchen showroom business and some farms where the A6MARR needs a substantial part of their land, there is the potential for negative health and wellbeing impacts on owners and their employees.

9.4.5 The overall health and wellbeing impacts, before mitigation, of the construction phase of the A6MARR are likely to be:

- **moderate to major positive** health and wellbeing impact for those looking for work and those with existing construction skills who find jobs building the A6MARR and workers in road construction related businesses who supply goods and services during the construction phase.
- **minor to major negative** health and wellbeing impact for residents, users of amenities and workers within 200m of the A6MARR. Most residents, users of amenities and workers are likely to face minor negative health and wellbeing impacts. While those residents who live along the existing A6 Buxton Road behind whom the new section of A6 will be built; residents who lose parts of their gardens; the farmers and business owners, that lose a substantial amount of their land are likely to experience a moderate negative health and wellbeing impact. Regular weekly users of Moorend Golf Course and Woodford Recreational Ground could also experience a moderate negative health and wellbeing impact. Workers of farmers and business owners e.g. Moorend Golf Course who lose a substantial part of their land could experience moderate to major negative health and wellbeing impact.

- **no effect or a minor negative** health and wellbeing impact for residents, users of amenities and workers between 200m and 1km of the A6MARR.
- **no effect or a minor negative** health and wellbeing impact for residents, users of amenities and workers beyond 1km of the A6MARR.

9.4.6 In terms of the four key sections of the route during the construction phase:

9.4.7 For the existing section of the A6 and the new realigned section of the A6 Buxton Road near Hazel Grove, joining Buxton Road at two points: north, opposite Yew Tree Avenue and south, opposite Norbury Hollow Road: Residents, users of amenities and workers are likely to face some disruption, restricted road access, increased traffic, noise and dust nuisance and annoyance from the construction work as the A6, Buxton Road is realigned and a new signalised junction is created on the realigned road. The new section of road will also need land from some residential gardens, some farms and the Hazel Grove Golf Course. ***Most residents are likely to experience a minor to moderate negative health and wellbeing impact. Residents who lose part of their garden, and experience noise, dust and light/visual nuisance and annoyance, and farmers who lose a substantial portion of their land are likely to experience a moderate negative health and wellbeing impact. Workers of farmers and business owners who lose a substantial part of their land could experience moderate to major negative health and wellbeing impact.***

9.4.8 For the new section of A6MARR from the new realigned section of the A6 Buxton Road near Hazel Grove to Woodford Road A5102 near Bramhall: Residents, users of amenities and workers are likely to face some noise, dust and light nuisance and annoyance from the construction work and construction lorry traffic. The new section of road also cuts across some existing bridle, cycle and foot paths and roads which is likely to create temporary diversion and severance as alternative permanent routes are constructed. The new section of road will also need land from some residential gardens, some farms and Brookside Garden Centre as well as land and closure of Moorend Golf Course. ***For most residents, users of amenities and workers along and around the new section of road from the realigned A6, Buxton Road to Woodford Road, this is likely to have a minor negative health and wellbeing impact. For those residents who lose part of their garden, and experience other nuisance and annoyance; and farmers who lose a substantial portion of their land (and their employees); regular weekly users of Moorend Golf Course could experience a moderate negative health and wellbeing impact. Workers of farmers and business owners e.g. Moorend Golf Course who lose a substantial part of their land could experience moderate to major negative health and wellbeing impact.***

9.4.9 For the existing section of the A555 from Woodford Road A5102 near Bramhall to Wilmslow Road B5358 near Handforth: Residents, users of amenities and workers are likely to face some disruption, restricted road access, journey delays, noise, dust and light nuisance and annoyance from the construction work and construction traffic due to the new junctions and

junction improvements, cut across some existing bridle, cycle and foot paths and roads which is likely to create temporary diversion and severance. The new junctions and junction improvements will also need land from residential gardens and Woodford Recreation Ground as well as the land and closure of a small kitchen-related business. ***Most residents, users of amenities and workers along and around the existing section of the A555 from Woodford Road to Wilmslow Road, are likely to experience a minor negative health and wellbeing impact. Residents who lose part of their garden, and experience noise, dust and light/visual nuisance and annoyance; farmers who lose a substantial portion of their land (and their employees); are likely to experience a moderate negative health and wellbeing impact. Regular weekly users of Woodford Recreation Ground could experience a moderate negative health and wellbeing impact. Workers of farmers and business owners who lose a substantial part of their land could experience moderate to major negative health and wellbeing impact.***

9.4.10 For the new section of A6MARR from Wilmslow Road B5358 near Handforth to the junction of Ringway Road and Ringway Road West near Manchester Airport: Residents, users of amenities and workers are likely to face some noise, dust and light nuisance and annoyance from the construction work and construction lorry traffic. The new section of road also cuts across some existing bridle, cycle and foot paths and roads which is likely to create temporary diversion and severance as alternative permanent routes are constructed. The new section of road will also need land from some residential gardens, some farms and Styal Golf Course. ***Most residents, users of amenities and workers along and around the new section of road from Wilmslow Road to the junction of Ringway Road and Ringway Road West near Manchester Airport, are likely to experience no effect or a minor negative health and wellbeing impact. Residents who lose part of their garden, experience noise, dust and light/visual nuisance and annoyance, and farmers and business owners who lose a substantial portion of their land are likely to experience a moderate negative health and wellbeing impact. Workers of farmers and business owners who lose a substantial part of their land could experience moderate to major negative health and wellbeing impact.***

9.5 Health impacts – operation phase

9.5.1 The A6MARR is likely to improve road network connectivity between Hazel Grove and Manchester Airport and the surrounding area and the connectivity of the bridle, cycle and foot path network along the A6MARR.

9.5.2 The A6MARR is likely to remove some traffic from some parts of local residential road network particularly in Heald Green and Hazel Grove in Stockport and some roads at the southern end of Handforth. This is likely to improve accessibility, public bus reliability, cycle and pedestrian safety, and social capital/community cohesion by reducing congestion and severance, in these areas. The likely reduction of traffic is also likely to reduce air and noise pollution.

9.5.3 The traffic levels on both the existing and new sections of the A6MARR is likely to increase levels of noise and air pollution for those residents, workers and users of amenities living, working and using amenities near it.

9.5.4 There will be some permanent loss of greenspace and associated amenity where the A6MARR needs land from public/publicly accessible greenspace and private residential gardens. There will also be some permanent loss of agricultural land.

9.5.5 Overall health and wellbeing impacts of the operation phase of the A6MARR are likely to be:

- **Minor to moderate positive and minor to moderate negative** health and wellbeing impacts for residents, users of amenities and workers within 200m of the proposed route depending on how the A6MARR affects their access to services and amenities, what increases and decreases there are in road traffic on local residential roads and what increase or decrease in noise, air pollution and visual intrusion there are. Residents who experience an increase in local traffic and an increase in noise, air pollution and visual intrusion are more likely to experience moderate negative health and wellbeing impacts than other residents, users of amenities and workers. Residents who experience an improvement in access to services and amenities as well as reductions in local residential traffic and reductions in noise and air pollution are more likely to experience moderate positive health and wellbeing impacts. There is a potential that local residents use the A6MARR to travel to shops and services further away and reduce their use of local shops and services. This could reduce the vitality of local shopping centres. The health and wellbeing implications of this are unclear given the wider social changes in shopping with an increase in the use of online shops and services.
- **Minor to moderate positive, no or minor to moderate negative** health and wellbeing impacts for residents, users of amenities and workers between 200m and 1km of the A6MARR depending on how the A6MARR affects their access to services and amenities, what increases and decreases there are in road traffic on local residential roads and what increase or decrease in noise and air pollution there are. Residents who experience an increase in local traffic and an increase in noise and air pollution are more likely to experience moderate negative health and wellbeing impacts than other residents, users of amenities and workers. Residents who experience an improvement in access to services and amenities as well as reductions in local residential traffic and reductions in noise and air pollution are more likely to experience moderate positive health and wellbeing impacts.
- **Minor to moderate positive** health and wellbeing impacts for residents, users of amenities and workers beyond 1km of the A6MARR as the route improves access and connectivity, reduces congestion in some residential areas and creates the potential for attracting new businesses into business areas around the A6MARR e.g. Airport City development because of the improved road connectivity.

9.5.6 In terms of the four key sections of the route during the operation phase:

9.5.7 For the existing section of the A6 and the new realigned section of the A6 Buxton Road near Hazel Grove, joining Buxton Road at two points - north, opposite Yew Tree Avenue and south, opposite Norbury Hollow Road: Car and lorry traffic flows are likely to reduce and congestion ease up on the existing A6, Buxton Road as it will only be used by public buses, cyclists and pedestrians as road traffic is diverted onto the new section of the A6 Buxton Road. This is likely to improve pedestrian and cycling safety, social/capital community cohesion, bus journey times as well as noise and air pollution. There will be some visual intrusion for some residents as the A6MARR will pass behind their homes and gardens. There are likely to be increases noise and air pollution in Disley. The A6MARR is likely to improve accessibility by car to Manchester Airport and settlements to the west including potentially improved employment and educational opportunities. There is also an increase in accessibility and potentially work and leisure time physical activity through the improved bridle, cycle and foot path network along the A6MARR. ***Residents living along the existing section of A6, are likely to experience a minor to moderate positive and minor to moderate negative health and wellbeing impact (likely to be moderate negative for those residents experiencing multiple changes e.g. increases in traffic, noise, air pollution and visual intrusion, reduced accessibility, etc.). Workers and users of amenities, are likely to experience a minor positive health and wellbeing impact.***

9.5.8 For the new section of A6MARR from the new realigned section of the A6 Buxton Road near Hazel Grove to Woodford Road A5102 near Bramhall: There is likely to be an increase in noise and air pollution, and potentially visual intrusion, particularly near the residential areas close to the A6MARR in Hazel Grove and Bramhall because of the new traffic flows generated by the A6MARR and the presence of the A6MARR itself. There is likely to be a decrease in noise and air pollution in Hazel Grove in residential areas further away from the A6MARR. The A6MARR is likely to improve accessibility by car to Manchester Airport and settlements to the west including potentially improved employment and educational opportunities. There is also an increase in accessibility and potentially work and leisure time physical activity through the improved bridle, cycle and foot path network along the A6MARR. ***Residents living close to the A6MARR or its main link roads, are likely to experience a minor positive and a minor to moderate negative health and wellbeing impact (potentially moderate negative for those residents experiencing multiple changes e.g. increases in traffic, noise, air pollution and visual intrusion, reduced accessibility, etc.). Residents living further away from the A6MARR, are likely to experience a minor to moderate positive health and wellbeing impact (depending on the level of decrease in traffic, noise and air pollution and improvement in accessibility). Workers and users of amenities, are likely to experience a minor positive health and wellbeing impact.***

9.5.9 For the existing section of the A555 from Woodford Road A5102 near Bramhall to Wilmslow Road B5358 near Handforth: There is likely to be an increase in noise and air pollution, and potentially visual intrusion, particularly near the residential areas close to the A6MARR in

Bramhall and Handforth because of the additional traffic flows generated by the A6MARR. There is likely to be a decrease in noise and air pollution in Heald Green, and to a lesser extent Bramhall, further away from the A6MARR. The A6MARR is likely to improve accessibility by car to Manchester Airport and settlements to the west and east including potentially improved employment and educational opportunities. There is also an increase in accessibility and potentially work and leisure time physical activity through the improved bridle, cycle and foot path network along the A6MARR. ***Residents living close to the A6MARR or its main link roads, are likely to experience a minor positive and a minor to moderate negative health and wellbeing impact (likely to be moderate negative for those residents experiencing multiple changes e.g. increases in traffic, noise, air pollution and visual intrusion, reduced accessibility, etc.). Residents living further away from the A6MARR, are likely to experience a minor to moderate positive health and wellbeing impact (depending on the level of decrease in traffic, noise and air pollution and improvement in accessibility). Workers and users of amenities, are likely to experience a minor positive health and wellbeing impact.***

9.5.10 For the new section of A6MARR from Wilmslow Road B5358 near Handforth to the junction of Ringway Road and Ringway Road West near Manchester Airport: There is likely to be an increase in noise and air pollution, and potentially visual intrusion, particularly near the residential areas close to the A6MARR in Wythenshawe because of the new traffic flows generated by the A6MARR and the presence of the A6MARR itself. There is likely to be a decrease in noise and air pollution in Wythenshawe in residential areas further away from the A6MARR and on part of Ringway Road and Styal Road near the A6MARR. The A6MARR is likely to improve accessibility by car to Manchester Airport and settlements to the west and east including potentially improved employment and educational opportunities. There is also an increase in accessibility and potentially work and leisure time physical activity through the improved bridle, cycle and foot path network along the A6MARR. ***Residents living close to the A6MARR or its main link roads, are likely to experience a minor to moderate positive and a minor to moderate negative health and wellbeing impact (potentially moderate negative for those residents experiencing multiple changes e.g. increases in traffic, noise, air pollution and visual intrusion, reduced accessibility, etc.). Residents living further away from the A6MARR, are likely to experience a minor to moderate positive or a minor negative health and wellbeing impact (depending on the level of decrease in traffic, noise and air pollution and improvement in accessibility). Workers and users of amenities, are likely to experience a minor positive health and wellbeing impact.***

9.6 Health impacts on children and young people

9.6.1 During the construction phase, the potential health and wellbeing impacts are likely to be from:

9.6.1.1 *Physical injury*: there are potentially higher risks of physical injury because of increased lorry traffic and exposure to all types of traffic for longer due to temporarily reduced access on some roads and the temporary severance of bridle, cycle and foot paths. This is likely to affect, in particular, children and young people who walk, cycle and/or use buses.

9.6.1.2 *Mental health and wellbeing*: the noise and other disruptions from construction work could adversely affect play, relaxation and sleep.

9.6.1.3 *Transport and Connectivity*: construction work and construction related traffic is likely to generate congestion in some areas and make journey times longer. This could make it difficult for some children to get to and use educational, leisure and shopping amenities.

9.6.1.4 *Learning and education*: children and young people living near the A6MARR or attending schools and nurseries near the A6MARR may be affected by noise, dust and visual intrusion. This could have an impact on their learning.

9.6.1.5 *Leisure and recreation*: restricted access to greenspace as well as the potential for higher levels of noise, dust and visual intrusion when using residential gardens and outdoor play areas and sports fields of schools and nurseries near the A6MARR.

9.6.2 During the operation phase the potential health and wellbeing impacts are likely to be from:

9.6.2.1 *Transport and connectivity*: Journey times and journey ambience are likely to improve for children being taken to school by car, those who use the improved bridle, cycle and foot paths to get to school and those for whom the reduced local traffic flows mean that it is safer to go to cycle and walk to school. the improved bridle, cycle and foot path network is likely to increase leisure time physical activity and potentially walking and cycling to schools. There is likely to be an overall decrease in road traffic incidents (children are more often involved in road traffic incidents fatalities and injuries).

9.6.2.2 *Learning and education*: Children and young people attending schools and near the A6MARR are likely to be affected by some increase in noise particularly in outdoor play areas. This could have an impact on their learning. There is also some additional increase in air pollution though this is small.

9.6.2.3 *Crime and safety*: in areas where new bridle, cycle and foot paths are near homes and particularly back gardens there are likely to be safety concerns for allowing children to play unsupervised in back gardens and potentially increasing the risk of burglary.

9.6.2.4 *Social capital and community cohesion*: in areas where new bridle, cycle and foot paths are incorporated into the scheme and where traffic is reduced as some car

drivers reduce their use of residential roads in favour of the A6MARR, this is likely to encourage play and socialising outdoors in local streets.

9.7 Health impacts on women

9.7.1 Women are more likely to face disruptions to their daily routine as they generally undertake most of the household chores and childcare and child-school/nursery pick up and drops offs.

9.7.2 Women are also generally more reliant on public transport and walking to amenities.

9.7.3 Women are also more likely to take part in on-street social interactions.

9.8 Health impacts on older people

9.8.1 Older people are more likely to be sensitive to noise, air pollution and visual intrusion and have existing cardiovascular and respiratory conditions which can be exacerbated by small changes.

9.8.2 They can also be more dependent on public transport and/or have mobility problems.

9.8.3 They are also more likely to reduce going outdoors, find it more difficult to go about their daily activities and more easily lose contact with friends and family during the construction phase because of the general disruption and difficulties caused by construction activities.

9.9 Health impacts on people with disabilities and long term health conditions

9.9.1 People with disabilities and long term health conditions are likely to face similar issues to older people.

9.10 Health impacts on people on low income/unemployed people

9.10.1 The construction work on the A6MARR is likely to create new jobs and operationally potentially attract new businesses and economic investment into Stockport, Cheshire East and Manchester. It is also likely that the A6MARR will make it easier for unemployed people with access to a car or van to get to employment and education opportunities further away.

9.10.2 Provided there is a policy in place that local residents near the route and Stockport, Cheshire East and Manchester residents are targeted first and supported to take on locally generated jobs, e.g. construction work and the new jobs created during both the construction phase (and any created during the operation phase), the A6MARR is likely to have a positive impact on the health and wellbeing of local people who are on low incomes/unemployed. The improved access could also potentially attract new businesses into the area, particularly in relation to the Airport City development.

9.11 Cumulative impacts and long term implications

9.11.1 There are a number of potential housing development that are likely to be built during the construction or operation of the A6MARR. These include the Airport City business development, the Woodford development (750-850 homes) and the East Handforth development (1,800 homes). This is likely to increase the levels of traffic along the A6MARR. The traffic modelling undertaken as part of the Transport assessment has included both the proposed Airport City and Woodford developments but not the East Handforth development. Relatively speaking the numbers of additional vehicles due to the East Handforth developments and their potential impacts are likely to be small compared to the total traffic along and A6MARR and link roads.

9.11.2 The A6MARR will permanently reduce some agricultural land, open spaces and recreational land. The level of land take from existing green and open spaces is relatively small. Only Moorend Golf Course is lost permanently and a small part of Woodford Recreation Ground.

9.12 Equality/Inequality impacts

9.12.1 The key equality/inequality issue is whether the negative health and wellbeing impacts from the economic, access/connectivity, community cohesion, and increased noise, visual intrusion and air pollution impacts fall disproportionately on already disadvantaged residents, users of amenities and workers in and around the A6MARR. Or conversely, whether the positive health and wellbeing impacts accrue largely to those who are already better off from a health and wellbeing perspective.

9.12.2 There is also a potential that some businesses e.g. local shops will lose some passing trade from traffic that is removed from the existing local road network and this could affect their viability. The A6MARR could also make it easier to get to shops and other services further away and reduce their use of local shops and services. This could reduce the vitality of local shopping centres. However, it is unclear how likely this is, to what extent this would occur and the health and wellbeing implications of this on workers in local shops and services and to local residents through the reduced vitality of local shopping centres. This is particularly so given the wider social changes in shopping where there is significant increase in the use of online shops and services.

9.12.3 The most negative health and wellbeing impact is likely to be on the small number of residents; farms and businesses whose land is needed for the A6MARR; and those workers/employees working in those businesses where a substantial amount of land is required e.g. Moorend Golf Course and small kitchen-related business nearby will need to close as all their land is required by the A6MARR. These residents, farms and businesses are located in both more deprived and less deprived areas along the A6MARR route.

9.12.4 The positive health and wellbeing impacts, both during the construction and operation phases, are experienced by residents living in more deprived and less deprived areas as well as those living close to and further away from the A6MARR.

9.12.5 Overall, there is potential for the A6MARR to provide some important positives for residents, users of amenities and workers in the deprived areas in Stockport, Cheshire East and south Manchester and the wards considered in this HIA.

9.13 Conclusion

9.13.1 During the construction phase the majority of negative health and wellbeing impacts are localised on residents, users of amenities and workers living within 200m of the A6MARR.

9.13.2 The most impact is on those residents who lose some part of their gardens and farmers and business owners who lose a substantial part of their land.

9.13.3 During the operation phase, the A6MARR has a complex set of positive and negative health and wellbeing impacts for residents, users of amenities and workers as well as those living, using amenities and working close to and further away from the A6MARR.

9.13.4 The positive and negative health and wellbeing impacts are widespread encompassing both more deprived and less deprived areas i.e. deprived areas are not facing a disproportionate share of the negative health and wellbeing impacts and less deprived areas are not experience a disproportionate share of the positive health and wellbeing impacts.

9.13.5 Key positive health and wellbeing impacts are:

9.13.5.1 Economic and employment potential: Both during the construction and operation phases through construction jobs building the A6MARR and jobs in construction-related businesses that supply the A6MARR and creates the potential for attracting new businesses into business areas around the A6MARR e.g. Airport City development because of the improved road connectivity.

9.13.5.2 Improved accessibility and connectivity: Through the construction of the A6MARR and the new bridle, cycle and foot path alongside it that enhances both the existing road and bridle, cycle and foot path networks.

9.13.5.3 Traffic and associated pollution: The reductions in traffic flows, congestion, noise, air pollution and visual intrusion and likely increased social capital/community cohesion in some residential areas.

9.13.6 Key negative impacts are:

9.13.6.1 Loss of land: The loss of parts of private gardens and loss of substantial land from some farms and business owners could have personal and economic implications of these people and any employees that they may have. It may be difficult for these farmers and business owners to relocate or for their employees to find new jobs.

9.13.6.2 Traffic and associated pollution: The increase in traffic flows, congestion, noise, air pollution and visual intrusion and likely decreased social capital/community

cohesion in some residential areas, particularly those residents living close to the A6MARR.

9.13.7 The extent of the positive and negative health and wellbeing impacts is likely to depend on:

- The opportunities for local people and businesses to benefit from the construction work;
- How the construction work and construction related traffic is managed;
- Diversion plans in place for pedestrians, cyclists and road and public transport users who would normally use the cycle, pedestrian and bridle paths and bus stops that are re-routed and any temporary and permanent closure of junctions;
- How well public transport services are maintained;
- How accessibility to local services and amenities is managed;
- What other major developments occur at the same time in the surrounding area e.g. housing developments; and
- The process of vesting (taking land from existing residents and businesses).

Table 9.1 Construction phase (18 months, before mitigation; the majority of these health and wellbeing impacts are likely to be temporary and reversible)

This table summarises the detailed health impact tables and identifies only the key impacts and those groups that could be worst affected or could benefit the most i.e. impacts rated as only ~ or ~/- or ~/+ or -/~/+ have not been included in the table below.

- = negative impact (red) , ? = uncertain impact (could be +ve or –ve, yellow), **+ = positive impact (green)**, ~ or blank = no impact or no impact identifiable

People affected in and around the following areas	Overall	Chronic diseases (inc physical effects of pollution	Physical injury	Mental health & wellbeing (inc wellbeing effects of pollution)	Economy & employment	Housing & shelter	Transport & connectivity	Learning& education	Crime & safety	Health social care & public services	Shops &retail	Social capital & community cohesion	Arts & cultural activities	Leisure & recreation	Lifestyle & daily routines	Energy & waste	Land & spatial
Existing and new sections of A6 Buxton Road near Hazel Grove, joining Buxton Road at two points: north, opposite Yew Tree Avenue and south, opposite Norbury Hollow Road (including Disley)	-/--			~/-/--			-/--										
New section of the A6MARR road from the realigned A6, Buxton Road near Hazel Grove to Woodford Road A5102 near Bramhall	-/--			~/-/--			-/--										
Existing section of the A555 from Woodford Road A5102 near Bramhall to Wilmslow Road B5358 near Handforth	-/--			~/-/--			-/--										
New section of the A6MARR from Wilmslow Road B5358 to the junction of Ringway Road and Ringway Road West near Manchester Airport	~/-/--			~/-/--			~/-										
For residents, users of amenities and/or workers within 200m of the scheme	-/--/---		~/-/--	-/--/---			-/--					~/-/--		~/-/--			-/--
For residents, users of amenities and/or workers between 200m and 1km of the scheme																	

	People affected in and around the following areas	Overall	Chronic diseases (inc physical effects of pollution	Physical injury	Mental health & wellbeing (inc wellbeing effects of pollution)	Economy & employment	Housing & shelter	Transport & connectivity	Learning& education	Crime & safety	Health social care & public services	Shops &retail	Social capital & community cohesion	Arts & cultural activities	Leisure & recreation	Lifestyle & daily routines	Energy & waste	Land & spatial
	For residents, users of amenities and/or workers beyond 1km of the scheme																	
Gender	Women (all)							(see below resident dependent on public transport/ walking/ cycling)										
Age	Older people (all)							(see below resident dependent on public transport/ walking/ cycling)										
Age	Children and young people (all)		(see below those with cardio and/or respiratory conditions)						(see below children in schools/ nurseries within 200m)									
Other	Those looking for work/those with existing construction skills who find jobs building the A6MARR and workers in road construction related businesses who	+/++/+++	+/++		++/+++	++/+++												

People affected in and around the following areas	Overall	Chronic diseases (inc physical effects of pollution	Physical injury	Mental health & wellbeing (inc wellbeing effects of pollution)	Economy & employment	Housing & shelter	Transport & connectivity	Learning& education	Crime & safety	Health social care & public services	Shops &retail	Social capital & community cohesion	Arts & cultural activities	Leisure & recreation	Lifestyle & daily routines	Energy & waste	Land & spatial
supply A6MARR																	
For those residents who lose part of their gardens	--			--		-/--											
For those with cardiovascular and/or respiratory conditions	~/-	~/-/--															
For workers and those business owners/farmers who lose substantial or all their land	--/---				--/---												
For those who get training and experience through work on the A6MARR	+/++			+/++				+/++									
School and nursery children in schools/ nurseries within 200m (inc school outdoor areas)	~/-/--			~/-/--				~/-/--									
Users of Moorend Golf Course, Woodford Recreation Ground	-/--			-/--										-/--			
Residents dependent on public transport/cycle/ walking	~/-/--			~/-/--			~/-/--										
Climate change																--/-/+/++	

Table 9.2 Operation phase (0-20 year after construction, before mitigation)

This table summarises the detailed health impact tables and identifies only the key impacts and those groups that could be worst affected or could benefit the most i.e. impacts rated as only ~ or ~/- or ~/+ or -/~/+ have not been included in the table below.

- = negative impact (red) , ? = uncertain impact (could be +ve or –ve, yellow), **+ = positive impact (green)**, ~ or blank = no impact or no impact identifiable

People affected in and around the following areas	Overall	Chronic diseases (inc physical effects of pollution	Physical injury	Mental health & wellbeing (inc wellbeing effects of pollution)	Economy & employment	Housing & shelter	Transport & connectivity	Learning & education	Crime & safety	Health social care & public services	Shops &retail	Social capital &community cohesion	Spirituality, faith & traditions	Arts & cultural activities	Leisure & recreation	Lifestyle & daily routines	Energy & waste	Land & spatial
New section of A6, joining Buxton Road at two points: north, opposite Yew Tree Avenue and south, opposite Norbury Hollow Road	-/-- / +/++	~/+/++		-/-- / ~/+/++			-/~/+/++					+/++						
New section of road from the realigned A6, Buxton Road to Woodford Road	-/-- / +/++	~/+		-/-- / ~/+/++			-/~/+/++											
Existing section of the A555 from Woodford Road to Wilmslow Road	-/-- / +/++	~/+		-/-- / ~/+/++			-/~/+/++					+/++						
New section of road from Wilmslow Road to The junction of Ringway Road and Ringway Road West near Manchester Airport	-/-- / +/++	+/++					-/~/+/++											
For residents, users of amenities and/or workers within 200m of the scheme	-/-- / +/++	+/++	+	-/-- / ~/+/++	~/+/++		-/~/+/++					-/-- / ~/+/++			-/~/+/++			
For residents, users of amenities and/or workers between 200m and 1km of the scheme	-/-- / ~/+/++	~/+/++	+	-/-- / ~/+/++	~/+/++		-/~/+/++					-/~/+/++			~/+/++			

People affected in and around the following areas		Overall	Chronic diseases (inc physical effects of pollution	Physical injury	Mental health & wellbeing (inc wellbeing effects of pollution)	Economy & employment	Housing & shelter	Transport & connectivity	Learning & education	Crime & safety	Health social care & public services	Shops &retail	Social capital &community cohesion	Spirituality, faith & traditions	Arts & cultural activities	Leisure & recreation	Lifestyle & daily routines	Energy & waste	Land & spatial
For residents, users of amenities and/or workers beyond 1km of the scheme		+/++			~/+/++	~/+/++		~/+/++					~/+						
Gender	Women																		
Age	Older people																		
	Children and young people																		
Other	Disley residents	~/-/--			~/-/--			--/-/~/+					~/-/--						
	Unemployed people	~/+/++				~/+/++													
	School and nursery children in schools/ nurseries within 200m	~/-/--			~/-/--				~/-/--										
	Existing and new businesses and their employees	+/++				+/++													
	Climate change																	--/-/+	

10 Mitigation and Enhancement Measures

10.1 Introduction

10.1.1 This section discusses the embedded mitigation measures designed into the A6MARR, the environmental commitments and plans developed to minimise potential negative impacts on local residents and some additional issues that should be considered during the operation phase, alongside the monitoring indicators suggested in Section 11,

10.1.2 The measures discussed are likely to ensure that health inequity/inequalities are not widened and could potentially also help to reduce some of these inequities/ inequalities over the longer term.

10.1.3 The measures also try to take into account cumulative effects that could arise due to other proposals being implemented around the same time as the A6MARR.

10.1.4 The measures described in this section, if properly applied and monitored, are likely to ensure that the majority of the negative health and wellbeing impacts, both during the construction and operation phases, are minimised and the positive health and wellbeing benefits maximised.

10.1.5 Some of the measures may not be feasible under current planning framework however they are included as they raise important points for policy and decision makers in terms of how the negative health and wellbeing impacts can be reduced for current and future road schemes.

10.2 Embedded and committed mitigation and enhancement measures

CEEQUAL validation

10.2.1 The A6MARR, during its management, design and construction, is being independently assessed through the CEEQUAL A6MARR. The CEEQUAL A6MARR is evidence-based, externally verified, and rigorously assessment of a civil engineering project across a wide range of topics (see below). It provides a sustainability rating system for project and contract teams. A CEEQUAL score indicates how far a project is between minimum legal compliance and pinnacle best practice. The A6MARR has provisionally received an Excellent Rating. The A6MARR looks at the following areas:

- Project Strategy;
- Project Management;
- People and Communities (effects on neighbours, users and the workforce; relations with the local community & other stakeholders);
- Land use and Landscape;

- Historic Environment;
- Ecology and Biodiversity;
- Water Environment (fresh & marine);
- Physical Resources; and
- Transport

Schedule of Environmental Commitments (part of the Environmental Statement)

10.2.2 This schedule identifies the following summary measures to minimise the following health and wellbeing related issues:

10.2.2.1 Construction phase related dust by minimising its production and transmission through the air;

10.2.2.2 Landscape and visual effects by implementing a planting strategy that integrates the A6MARR into the existing landscape and screens it from existing residents living along it;

10.2.2.3 Geology and soil contamination by undertaking on-site investigations to identify what, if any, soil contaminants are present;

10.2.2.4 Storage and disposal of hazardous waste by ensuring hazardous waste is stored on-site appropriately and then and disposed of by qualified and licensed contractors using in appropriate vehicles at suitable and licensed waste treatment and disposal facilities;

10.2.2.5 Construction related noise and vibration by making local communities aware of when noisy/vibration activities will take place through leaflet drops and providing a contact/complaints phone number; best practice noise abatement measures for on-site construction equipment and exhaust silencers on construction vehicles and other construction plant;

10.2.2.6 Operation related noise will be mitigated using bunds/landscaping and noise barriers and the use of low noise road surfacing across the A6MARR;

10.2.2.7 Cycle and foot paths access by ensuring that there is safe access during the construction phase and developing new connections and routes where appropriate to maintain these paths during the operation phase;

10.2.2.8 Road drainage and water environment by considering and implementing SUDs and other treatment systems as appropriate to ensure that hydrocarbons, heavy metals and other contaminants from the road during the operation phase (from the car and lorry traffic) to minimise the transmission and increase the treatment of these contaminants so that they are not transferred into nearby waterways and groundwater; and

10.2.2.9 Construction waste will be reused and recycled on-site where appropriate and safe to do so.

Outline Construction Environmental Management Plan (CEMP) and Code of Construction Practice (CoCP)

10.2.3 An outline CEMP and Site Waste Management Plan have been produced that provides initial guidance for the future lead construction contractor on how they will develop a detailed CEMP, manage key impacts during the construction phase and help to deliver the environmental commitments outlined above.

10.2.4 A CoCP will be developed and detailed based on the draft Construction procedures outlined in the CEMP Annex 1. The CoCP will be used alongside the Local Government Authorities Considerate Constructor A6MARR (with the CoCP superseding any part of the Considerate Constructor A6MARR, where it is more onerous).

Environmental performance of lead construction contractor

10.2.5 The environmental performance of the potential lead construction contractor/s will be assessed and be a pre-qualification criteria for selection.

Construction phase traffic management measures

10.2.6 A set of traffic management measures during the constructions where the A6MARR ties into the existing road network have been developed so that disruption is minimised.

Other embedded management and design aspects

10.2.7 There has already been extensive work in redesigning the A6MARR in light of comments from local communities living, using amenities and working along the A6MARR (See Phase 2 Consultation Report, 1007/9.6/150, September 2013).

10.2.8 Through the Local Liaison Forums (LLFs) the project team has already been discussing and consulting with the public. These will continue and will be contractor led once the lead contractor is appointed.

10.2.9 The construction phase will be phased over the 18 month construction period so that the disruption at any one point along the A6MARR will be for some weeks and months rather than a year or more.

10.2.10 Bridle, cycle and footpaths have been protected and alternative routes have been developed so that access is not lost.

10.2.11 20mph zones and shared spaces have been incorporated into the design of the A6MARR at Wythenshawe (20mph zone), Handforth (shared space scheme), Disley (shared space scheme) and Bramhall (shared space scheme) to deter traffic along key residential and main local roads.

10.2.12 Lighting columns have been limited to junctions and the proposed lighting scheme will reduce light intrusion for local residents and enable remote control and monitoring.

10.2.13 Bus routes that would have been affected by the severing of Ringway Road have already been diverted to alternative routes or alternative routes have already been identified that reduce the disruption to local residents and users of these bus routes.

10.2.14 Discussion on developing bus routes along the A6MARR have taken place and the option is open for bus routes to travel along the A6MARR in the future.

10.3 Design aspects – additional proposed mitigation

10.3.1 Bus stops and routes

10.3.1.1 Ensure that Ringway Road residents have replacement bus stops to their existing ones that are within 400m of where they live.

10.3.1.2 Ensure all new bus stops have bus shelters that offer all round visibility, all weather protection from the wind and rain and seating where practicable to enhance comfort and to increase the use of bus public transport. Ensure suitable crossing points for bus users e.g. controlled crossings or refuges.

10.3.1.3 Ensure junctions are designed to encourage people to cross safely.

10.3.2 The guidance on managing vesting and compensation for land and construction impacts such as blight, compulsory purchase and noise can be complex and leave a lot of discretion for local authorities. Residents, in particular, are likely to need support to properly understand the guidance and make an appropriate claim for compensation. Key measures that are likely to minimise the potential negative health and wellbeing effects by reducing the uncertainty and misunderstanding that residents may have and help to better identify those residents that are likely to meet compensation criteria:

10.3.2.1 Having a unified approach to dealing with all compensation issues whether for land lost, noise, blight and construction disruption, etc. such as a single point of contact for compensation issues, one main webpage and a single leaflet/brochure.

10.3.2.2 Developing this unified approach early pre-construction phase.

10.3.2.3 Having a dialogue with community representatives and residents about the exact form of the compensation process.

10.3.2.4 Having a dialogue with farmers and business owners who lose a substantial portion of their land particularly in relation those farms/businesses that may/are likely to need to close so that workers/employees can plan for new employment.

10.4 Construction phase – additional proposed mitigation

10.4.1.1 Appoint a Main Contractor and Sub-Contractors with excellent past safety records, low complaints record and a good history of working with residents living nearby. This should be a key criterion during tendering.

10.4.1.2 Ensure adherence to the Construction (Design & Management) Regulations 2007 (CDM 2007) and aim to integrate health and safety into project management process. The Health and Safety Executive has produced an accompanying Approved Code of Practice document *'Managing Health and Safety in Construction'* which sets out the implications of the legislation for developers, contractors, designers and workers.

10.4.2 Local recruitment of road construction and other workers,

10.4.2.1 Consider starting recruitment for the road construction and other related jobs, locally through local job centres before being advertised more widely depending on what is practicable within existing employment law. In the affected wards in Stockport, Cheshire East and Manchester 7%, 6% and 6% of residents work in the construction industry.

10.4.3 Linking into local road construction and other skills training and apprenticeship programmes and road construction suppliers

10.4.3.1 Establish links now with colleges and other institutions involved with training local people in road construction and other relevant skills/apprenticeship programmes and keep them informed about how the planning process for the A6MARR is progressing.

10.4.3.2 Where practicable, source raw materials needed for the road construction activities from firms and suppliers in the North West region; particular Stockport, Cheshire East and South Manchester.

10.4.4 Construction vehicles and routes

10.4.4.1 Work with contractors to ensure that low emission delivery lorries are used.

10.4.4.2 Protect residential streets from construction related HGV movements.

10.4.5 Monitoring noise, light and air pollution

10.4.5.1 Proactively use the number, type and location of residential complaints to identify residents facing air, noise and light pollution and any other issues that are not being adequately addressed in line with current guidance.

10.4.5.2 Have regular meetings with local schools along the A6MARR to identify air, noise and light pollution and any other issues that are not being adequately addressed in line with current guidance.

10.4.5.3 Develop and implement additional mitigation measures to further minimise the noise, light and air pollution.

10.5 Operation phase – additional proposed mitigation

10.5.1 Noise, light and air pollution (See Section 11)

10.5.1.1 Proactively use the number, type and location of residential complaints to identify residents facing air, noise and light pollution and any other issues that are not being adequately addressed in line with current guidance.

10.5.1.2 Have regular meetings with local schools along the A6MARR to identify air, noise and light pollution and any other issues that are not being adequately addressed in line with current guidance.

10.5.2 Traffic levels along streets/roads where a decrease or increase in traffic flows has been predicted in ES and Transport Assessment and the changes are directly related to scheme impacts.

10.5.2.1 Monitor whether the traffic flows along those streets/roads that are expected/predicted to have reduced traffic flows and where traffic flows have not reduced consider and implement additional mitigation measures to reduce the traffic flow.

10.5.2.2 Monitor whether the traffic flows along those streets/roads that are expected/predicted to have increased traffic flows and consider and implement additional mitigation measures to reduce the traffic flow now that actual traffic flow can be observed.

10.5.3 A6MARR maintenance

10.5.3.1 Consider the feasibility of the existing A555 being resurfaced with low noise road surfacing when it is next resurfaced.

10.5.4 Active and green travel

10.5.4.1 Proactively support the development of one or more strategic bus routes along the A6MARR that encompass existing communities, existing and future business areas e.g. Airport City and future housing developments in Woodford and Handforth.

10.5.4.2 Encourage cycling and walking on the new cycleway and footpath along the A6MARR through engagement with local walking, running and cycling clubs and green gyms.

10.5.4.3 Support the use of green and active travel plans for businesses and schools, particularly those based in Airport City and Manchester Airport.

10.5.4.4 Encourage schools to update or develop green travel plans/safe active travel routes to the schools near the A6MARR (walking, cycling and public transport) and for those residential areas that are likely to have reduced traffic because of the A6MARR and engage with other stakeholders involved in supporting children and young people to identify ways that these streets can be made more inviting for child and adolescent pedestrians and cyclists.

10.5.5 Wider health and wellbeing impacts of the A6MARR

10.5.5.1 Use the indicators identified in Section 11, and other possible indicators, to monitor and evaluate the actual and perceived positive and negative health and wellbeing impacts on local residents living near the A6MARR that are identified during the operation phase.

11 Monitoring & Evaluation of Health Impacts

11.1 Introduction

11.1.1 This chapter identifies some useful indicators that could be used to monitor and evaluate the health impacts.

11.1.2 In general, it is difficult to identify routine monitoring indicators that are:

a) sensitive enough to detect the localised changes and

b) easy to collect.

11.1.3 This chapter therefore identifies some possible indirect as well as direct health indicators however some may not be sensitive enough to detect small changes, e.g. road traffic injuries cannot provide information on near misses and changing behaviour as parents keep children indoors because of concerns about traffic, while others will require financial, time and staff resources to collect.

11.2 Monitoring and evaluation

Indicator	Sub indicator	Phase	Data collected along the A6MARR	Recommended Lead Agencies
Routine				
Physical injury	Urban/Rural	Construction Operation	Levels of traffic related injuries and incidents along the A6MARR and linked routes to identify trends from the current baseline.	Lead construction contractor SMBC, CEC, MCC
Wellbeing	Households Urban/Rural	Operation	General purpose wellbeing surveys that might be undertaken that includes residents living within 200m of the A6MARR (less sensitive than a specific survey, see Quality of Life/Wellbeing)	SMBC, CEC, MCC
A6MARR Specific				
Employment	Urban/Rural	Construction	Monitoring of recruitment during construction phase to evaluate how many local people within Stockport, Cheshire East and South Manchester (Wythenshawe) have benefited from construction jobs	Lead construction contractor SMBC, CEC, MCC
Air pollution	Urban/Rural	Construction Operation	Undertake suitable monitoring to measure levels of air pollution at key sensitive receptors along the A6MARR e.g. schools close to the A6MARR, streets identified in ES	SMBC, CEC, MCC
Air pollution	Urban/Rural	Construction Operation	Monitor and regularly review the location, type and time pattern of air pollution related complaints within 200m of the A6MARR during the construction and operation phases	Lead construction contractor SMBC, CEC, MCC
General	Urban/Rural	Construction	Regular meetings with local schools near the A6MARR to discuss wider scheme impacts and issues both indoors and outdoors during	Lead construction contractor

Indicator	Sub indicator	Phase	Data collected along the A6MARR	Recommended Lead Agencies
		Operation	construction and operation phases	SMBC, CEC, MCC
Noise	Urban/Rural	Construction Operation	Undertake suitable monitoring to measure levels of noise pollution at key sensitive receptors along the A6MARR e.g. schools close to the A6MARR, streets identified in ES	SMBC, CEC, MCC
Noise	Urban/Rural	Construction Operation	Monitor and regularly review the location, type and time pattern of A6MARR noise related complaints along the A6MARR during the construction and operation phases	Lead construction contractor SMBC, CEC, MCC
General	Urban/Rural	Construction Operation	Regular meetings with local schools near the A6MARR to discuss wider scheme impacts and issues both indoors and outdoors during construction and operation phases	Lead construction contractor SMBC, CEC, MCC
Walking/Cycling	Adults/Children Urban/Rural	Operation	Levels of walking and cycling for transport along the new bridle, cycle and footpath along A6MARR during the operation phase	SMBC, CEC, MCC
Severance/Social Cohesion	Roads	Operation	Monitor streets/roads where increased traffic is expected to see what additional measures may be needed to manage traffic	SMBC, CEC, MCC
Severance/Social Cohesion	Roads	Operation	Monitor streets/roads where reduced traffic is expected to see whether predicted decreases have occurred and if not what additional measures are needed to manage traffic	SMBC, CEC, MCC
Quality of Life/Wellbeing	Households Urban/Rural	Operation	Post-construction survey of residents within 200m and of the A6MARR during the operation phase using various measures e.g. wellbeing scale, questions on the use of, benefits/positives and negatives experienced during A6MARR operation e.g. increased access to education/jobs/amenities	SMBC, CEC, MCC
Mental/Physical health	Clinical	Construction	Regular meetings with Directors of Public Health and local Clinical	

Indicator	Sub indicator	Phase	Data collected along the A6MARR	Recommended Lead Agencies
	Commissioning Group	Operation	Commissioning Groups serving the communities along the A6MARR to ascertain if there are, for example, any increase in GP visits for mental/physical health issues that are explicitly linked to the construction/operation of the A6MARR.	
Wider				
Green travel plans	Businesses Schools Households	Operation	Encourage green travel plan development in existing and businesses who use A6MARR for goods, services and employee commuting; in particular Airport City Development. Update/develop green travel plans for schools near the A6MARR Promote household level green travel planning	SMBC, CEC, MCC

12 Conclusion

12.1.1 Almost all kinds of additions to, and modifications of, transport infrastructure have positive and negative health and wellbeing impacts. The key thing therefore through the design, construction and operation phases is to minimise and remove the potential negatives and maximise the positive health and wellbeing impacts. Extensive changes have been made to the design of the A6MARR to minimise the potential negative health and wellbeing impacts.

12.1.2 Overall, the health and wellbeing impacts across the life of the A6MARR are more positive than negative for the majority of residents, users of amenities and workers in Stockport, Cheshire East and South Manchester and the wards areas considered in this HIA.

12.1.3 During the operation phase, the A6MARR has a complex set of positive and negative health and wellbeing impacts for residents, users of amenities and workers as well as those living, using amenities and working close to and further away from the A6MARR.

12.1.4 The positive and negative health and wellbeing impacts are widespread encompassing both more deprived and less deprived areas i.e. deprived areas are not facing a disproportionate share of the negative health and wellbeing impacts and less deprived areas are not experience a disproportionate share of the positive health and wellbeing impacts.

12.1.5 Key positive health and wellbeing impacts are:

12.1.5.1 Economic and employment potential: Both during the construction and operation phases through construction jobs building the A6MARR and jobs in construction-related businesses that supply the A6MARR and creates the potential for attracting new businesses into business areas around the A6MARR e.g. Airport City development because of the improved road connectivity;

12.1.5.2 Improved accessibility and connectivity: Through the construction of the A6MARR and the new bridle, cycle and foot path alongside it that enhances both the existing road and bridle, cycle and foot path networks; and

12.1.5.3 Traffic and associated pollution: The reductions in traffic flows, congestion, noise, air pollution and visual intrusion and likely increased social capital/community cohesion in some residential areas.

12.1.6 Key negatives are:

12.1.6.1 Loss of land: The loss of parts of private gardens and loss of substantial land from some farms and business owners could have personal and economic implications of these people and any employees that they may have. It may be difficult for these farmers and business owners to relocate or for their employees to find new jobs; and

12.1.6.2 Traffic and associated pollution: The increase in traffic flows, congestion, noise, air pollution and visual intrusion and likely decreased social capital/community cohesion in some residential areas, particularly those residents living close to the A6MARR.

12.1.7 A key aspect of further minimising the potential negative health and wellbeing impacts of the A6MARR beyond that already embedded into the design and committed to for the construction and operation phases is to monitor noise and air pollution in key communities along the A6MARR and to develop additional ways of creating modal shift, in Stockport, Cheshire East and South Manchester from car and lorry traffic to travel by bus, tram, cycle and foot; in particular developing a green travel plan for the Airport City development (and green travel plans for businesses located within it) and encouraging the development of bus routes along the A6MARR

12.1.8 It is important that the mitigation and enhancement measures discussed in Chapter 10 Mitigation and Enhancement Measures and in the Environmental Statement (ES) are considered and implemented so that the potential negative health and wellbeing impacts are minimised and the potential positives maximised during the construction and operation phases.

Appendix A: Search Strategy for the Evidence Review

Aims of review

The review was conducted to identify the positive and negative health impacts of the A6MARR.

Background

Due to the mix of elements proposed for the scheme e.g. road dualling, creation of bypasses and new sections of road, altering current road layouts, restricting traffic on some existing roads and constructing new bridges, the evidence review examined the potential health and wellbeing impacts of new roads, road dualling, bypasses and increasing road capacity.

Review methods

The evidence review summarised existing key syntheses/reviews from research reports and past HIAs in the following order:

1. Past HIAs focusing on road dualling or similar road change/improvement projects.
2. Transport related literature reviews focusing on the evidence on road dualling and similar road changes and health.
3. Any evaluations of the actual health impacts of road dualling and similar road schemes.

Search Years

Review reports since 1990.

Language

Only English language documents were considered.

Inclusion or exclusion criteria

The literature collected was reviewed to identify relevance to the A6MARR.

Evaluation of quality

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

Appendix B: Health Impact Tables

Health impact tables for the various phases of the A6MARR compared to no development taking place

Definition of the levels of potential impact

Significance Level	Criteria
Major +++/--- (positive or negative)	Health effects are categorised as major if the effects could lead directly to mortality/death or acute or chronic disease/illness. 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 e.g. over 500 or so 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 moderate if the effects are long term nuisance impacts from odour and noise, etc. or could lead to exacerbations of existing illness. 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 e.g. between 100-500 or so and/or sensitive groups. The negative impacts could be nuisance/quality of life impacts which could affect physical and mental health either directly or through the wider determinants of health. 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 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 if they are generally nuisance level/quality of life impacts e.g. noise, odour, visual amenity, etc. 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 e.g. less than 100 or so. 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.
Neutral/No Effect ~	No effect or effects within the bounds of normal/accepted variation.

Construction Phase (0-18 months)

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
Overall	▪ Traffic volumes are likely to continue increasing on the existing local roads. This is likely to increase congestion. There could be increase in emissions and higher levels of localised air pollution. ▪ There are likely to be improvements in motor vehicle pollution technologies leading to lower emissions. ▪ Road traffic casualties are low in Stockport, Cheshire East and Manchester and are likely to remain so. ▪ Circulatory/cardiovascular and respiratory deaths are amongst the most common causes of death.	-/~/+	▪ <u>A6MARR as a whole</u> ▪ There are likely to be a number of full time and part time construction jobs that will last for approximately 18 months. ▪ There are also likely to be other jobs created in road construction-related businesses that supply the A6MARR e.g. construction materials and equipment manufacturers. ▪ Both of these are likely to provide local and a wider regional economic stimulus across Stockport, Cheshire East and Manchester. ▪ Some residents will lose land, e.g. parts of their garden, and existing farms and other businesses along the A6MARR whose land will be needed for the road (land take). Some workers/employees of these farms/businesses may also lose their jobs e.g. A6MARR needs all the land from Moorend Golf Course and the kitchen-related business. ▪ Pedestrians, cyclists, bus and car users are likely to experience some temporary disruption, severance, congestion, increased journey times and safety concerns where the A6MARR cuts across existing pedestrian, cycle and bridle paths and other roads on the existing local networks leading to a loss of/less direct access; and where there are temporary speed limits, construction lorry traffic, traffic diversions, junction closures; and construction activities.. ▪ For residents living near the A6MARR, some workers working in the area, children attending local schools and nurseries there is also likely to be negative health and wellbeing impacts from noise, vibration, dust, air pollution and visual intrusion.	Those looking for work, those with existing construction skills who find jobs building the A6MARR and workers in road construction related businesses who supply A6MARR ++/+++ For residents, users of amenities and workers within 200m of the A6MARR -/-- For residents, users of amenities and workers between 200m and 1km of the A6MARR ~/-

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
			▪ Construction phase impacts are likely to be felt from the beginning to the end of the construction phase by all residents, users of amenities and workers along and around the A6MARR. ▪ The extent of the positive and negative health and wellbeing impacts is likely to depend on: ▪ the opportunities for local people and businesses to benefit from the construction work; ▪ how the construction work and construction related traffic is managed; ▪ diversion plans in place for pedestrians, cyclists and road users who would normally use the pedestrian, cycle and bridle paths that are re-routed or closed off and any temporary and/or permanent junction closures ▪ how well public transport services are maintained; ▪ how accessibility to local services and amenities is managed; and ▪ what other major developments occur at the same time in the surrounding area e.g. housing developments.	For residents, users of amenities and workers beyond 1km of the A6MARR ~/- For those residents who lose part of their gardens -- For workers at farms/businesses that lose a substantial portion of land --/---

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
			▪ New section of the A6, joining Buxton Road at two points: north, opposite Yew Tree Avenue and south, opposite Norbury Hollow Road ▪ The realignment of the A6, Buxton Road is likely create road access disruptions, increased traffic, journey time delays to residents, users of amenities and workers in this area particularly given what a busy main road this currently is. ▪ This new section of road also cuts across one or more existing pedestrian, cycle and bridle paths and other roads which is likely to create some temporary severance as temporary alternative paths are developed where appropriate and feasible and new paths built. ▪ New section of road from the realigned A6, Buxton Road to Woodford Road ▪ There is likely to be disruption, increased traffic, nuisance and annoyance from the construction work. Also the new section of the road will cut across existing pedestrian, cycle and bridle paths and existing roads and create severance. Uptake of land from homes, farms and other businesses is also likely to have a negative impact. ▪ This new section of road also cuts across one or more existing pedestrian, cycle and bridle paths and other roads which is likely to create some temporary severance as temporary alternative paths are developed where appropriate and feasible and new paths built..	For most residents, users of amenities and workers along and around this section -/-- For most residents, users of amenities and workers along and around this section -

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
			▪ Existing section of the A555 from Woodford Road to Wilmslow Road ▪ Residents, users of amenities and workers are likely to face some disruption, severance, nuisance, annoyance and access issues from the road construction work. ▪ This new junctions also cut across one or more existing pedestrian, cycle and bridle paths and other roads which is likely to create some temporary severance as temporary alternative paths are developed where appropriate and feasible and new paths built.	For most residents, users of amenities and workers along and around this section -
			▪ New section of road from Wilmslow Road to The junction of Ringway Road and Ringway Road West near Manchester Airport ▪ Residents, users of amenities and workers are likely to face some disruption, severance, nuisance, annoyance and access issues from the road construction work. ▪ This new section of road also cuts across one or more existing pedestrian, cycle and bridle paths and other roads which is likely to create some temporary severance as temporary alternative paths are developed where appropriate and feasible and new paths built..	For road users, residents, users of amenities and workers along and around this section ~/-

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
Infectious diseases	▪ Infectious diseases are more of a problem in Manchester compared to Stockport and Cheshire East with these featuring highly in Manchester's key healthcare priorities.	~	▪ <u>A6MARR as a whole</u> ▪ The construction phase is unlikely to cause or spread infectious diseases in residents. ▪ Workers coming into contact with sewage and contaminated water could be affected by micro-organisms e.g. leptospirosis. ▪ The extent of hazard to workers will depend on the management of the construction; strict adherence to health and safety protocols; and availability and use of safety equipment and protective clothing.	For residents, users of amenities and workers within 200m, between 200m and 1km and beyond 1km ~/-
Non-infectious/chronic diseases (including the effects from air, water, soil and noise pollution effects)	▪ Circulatory/cardiovascular and respiratory deaths are amongst the most common causes of death.	~/-	▪ <u>A6MARR as a whole</u> ▪ The construction work is unlikely to cause non-infectious/chronic diseases in residents. However, increase in construction related traffic and possible traffic congestions due to temporary road closures and diversions is likely to temporarily increase local levels of air pollution. This applies especially to built-up areas where there are already elevated levels of air pollution from vehicle emissions. There is also likely to be increased levels of dust generated. ▪ The increased levels of air pollution and dust are unlikely to lead to respiratory or other health problems but could lead to an exacerbation of some symptoms in some residents/workers with existing respiratory illness.	For residents, users of amenities and workers within 200m, between 200m and 1km and beyond 1km ~/- For those with existing cardiovascular and/or respiratory conditions ~/-/--

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
Nutritional disorders	▪ Obesity levels are likely to be similar to or higher than current trends. ▪ Obesity is highlighted as an increasing health problem in Stockport in particular. ▪ Given the high car usage in the three local authorities, particularly Stockport and Cheshire East and because there is an association between car use and being overweight, obesity levels are likely to be on an upward trend.	~/-	▪ A6MARR as a whole ▪ There will be no effects on nutrition due to the construction phase.	For residents, users of amenities and workers within 200m, between 200m and 1km and beyond 1km ~

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
Physical injury (including poisoning)	▪ Road traffic injuries and deaths Stockport and Manchester are low and likely to remain at similar levels. ▪ Cheshire East has relatively high levels of road traffic injuries compared to the England average this is likely to remain at similar levels.	~/-	▪ <u>New section of the A6, joining Buxton Road at two points: north, opposite Yew Tree Avenue and south, opposite Norbury Hollow Road</u> ▪ The construction works in this area could increase the potential for traffic incidents. This is likely to be due to temporary increase in construction lorry traffic on the existing local road networks. ▪ There is also a potential for traffic incidents where the new road cuts across existing local roads, pedestrian, cycle and bridle paths leading to some reduction in access and reduced safety of pedestrians, cyclist and road users. ▪ <u>New section of road from the realigned A6, Buxton Road to Woodford Road</u> ▪ The construction works in this area could increase the potential for traffic incidents. This is likely to be due to temporary increase in construction lorry traffic on the existing local road networks. ▪ There is also a potential for traffic incidents where the new road cuts across existing local roads (London Road North, Chester Road/A5149 and Woodford Road/A5102 and Woodford Road near Hill Green Farm), pedestrian, cycle and bridle paths leading to some reduction in access and reduced safety of pedestrians, cyclist and road users. ▪ <u>Existing section of the A555 from Woodford Road to Wilmslow Road</u> ▪ This section is likely to be open whilst construction work takes place and there is likely to be restriction to traffic flows on this section.	For road users, residents, users of amenities and workers along and around this section ~/- For road users, residents, users of amenities and workers along and around this section ~/- For road users, residents, users of amenities and workers along and around this section ~/-

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
			▪ <u>New section of road from Wilmslow Road Ringway Road West</u> ▪ The construction works in this area could increase the potential for traffic incidents. This is likely to be due to temporary increase in construction lorry traffic on the existing local road networks. ▪ There is also a potential for traffic incidents where the new road cuts across existing local roads, pedestrian, cycle and bridle paths leading to some reduction in access and reduced safety of pedestrians, cyclist and road users.	For road users, residents, users of amenities and workers along and around this section ~/-

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
Mental health and wellbeing (including nuisance and annoyance effects)	▪ The proportion of residents with dementia in Stockport and Cheshire East are significantly worse than the national average, whilst that of Manchester is significantly better than the England average. ▪ Depression in Stockport, Cheshire East and Manchester significantly worse than the England average. ▪ The proportion of people with learning disabilities is significantly lower than the national average while there is no significant difference between levels in Stockport and Manchester and the England average.	~	▪ <u>A6MARR as a whole</u> ▪ Residents, users of amenities and workers within 200m and between 200m and 1km of construction work are likely to be exposed to noise, dust, traffic and visual impacts which can lead to nuisance and annoyance. Within 200m noise, dust, traffic and visual impacts will all be important. Between 200m and 1km the major effect is likely to be through traffic and access impacts. ▪ Some residents will lose land, e.g. parts of their garden, and existing farms and other businesses along the A6MARR whose land will be needed for the road (land take). Some workers/employees of these farms/businesses may also lose their jobs e.g. A6MARR needs all the land from Moorend Golf Course and the kitchen-related business. ▪ Pedestrians, cyclists, bus and car users are likely to experience some temporary disruption, severance, congestion, increased journey times and safety concerns where the A6MARR cuts across existing pedestrian, cycle and bridle paths and other roads on the existing local networks leading to a loss of/less direct access; and where there are temporary speed limits, construction lorry traffic, traffic diversions, junction closures; and construction activities. ▪ The above can lead to adverse mental health and wellbeing impacts which could also exacerbate existing physical health problems. ▪ Users of Moorend Golf Course will lose this amenity and users of Woodford Recreation ground will be disrupted as they will lose part of the Recreation ground. Hazel Grove and Styal Golf Courses will also lose some land but this will not affect the use of these Golf Courses.	For most residents, users of amenities and workers within 200m of the A6MARR -/--/--- For most residents, users of amenities and workers between 200m and 1km of the A6MARR ~/- For most residents, users of amenities and workers beyond 1km of the A6MARR ~/- For those residents who lose part of their gardens -- See Below continued

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
				For workers at farms/businesses that lose a substantial portion of land --/--- Regular users of Moorend Golf Course and Woodford Recreation ground -/--
			▪ New section of the A6, joining Buxton Road at two points: north, opposite Yew Tree Avenue and south, opposite Norbury Hollow Road ▪ As above.. ▪ New section of road from the realigned A6, Buxton Road to Woodford Road ▪ As above. ▪ Existing section of the A555 from Woodford Road to Wilmslow Road ▪ As above. ▪ New section of road from Wilmslow Road to Ringway Road West As above.	For most residents, users of amenities and workers along and around this section ~/-/--

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
Population demography	▪ Population trends in Stockport and Cheshire East suggest an ageing population whilst the Manchester population is a young population.	~	▪ <u>A6MARR as a whole</u> ▪ The construction phase will not influence the population profile of the area though it is likely that the day-time population will increase temporarily because of the construction workers working in the local area.	For most residents, users of amenities and workers within 200m, between 200m and 1km and beyond 1km ~

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
Employment and economy	▪ Unemployment in the 7 Stockport and 4 Cheshire East wards around the A6MARR are the same as their respective Stockport and Cheshire East averages. ▪ However in Woodhouse Park ward in Manchester, unemployment is higher than the Manchester average. ▪ The top occupation in the 7 Stockport and 4 Cheshire East wards is 'managers and senior officials'. ▪ The top occupation in the Woodhouse Park ward in Manchester wards is 'elementary'.	~	▪ <u>A6MARR as a whole</u> ▪ It is unclear how many of the construction related employment will go to residents living in Stockport, Cheshire East and Manchester particularly those who are currently unemployed. ▪ The main positive impact is likely to be on those in these local authority areas with construction skills and experience and those who are currently unemployed or under-employed. ▪ There are likely to be a number of full time and part time construction jobs. ▪ There are also likely to be other jobs created in road construction related businesses e.g. construction materials and equipment manufacturers. ▪ Both of these could provide a local and a wider regional economic stimulus across Stockport, Cheshire East and Manchester ▪ However, the road scheme is likely to negatively affect a number of existing farms and other businesses along the A6MARR either because of land take, loss of/less direct access to customers and disruption caused by the construction works. This could affect the viability of some of these businesses; particularly where a substantial proportion of land from a farm or business is required. This could also affect workers in those farms and businesses who may lose their jobs if the farm or business becomes commercially unviable. ▪ Though some shops could benefit from the passing trade of construction workers.	For workers/ business owners within 200m and between 200m and 1 km of the A6MARR ---/--/-/~/+ For workers/ business owners beyond 1 km of the A6MARR -/~/+/++ For residents within 200m, between 200m and 1km and over 1 km of the A6MARR ~/+ Those looking for work, who find jobs building the A6MARR and workers in road construction related businesses who supply A6MARR ++/+++

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
Housing and shelter	▪ Patterns of housing and growth of settlements is likely to follow existing trends. ▪ Majority of residents in the 7 Stockport and 4 Cheshire East wards around the A6MARR own their homes, with social renting in these wards being lower than the respective Stockport and Cheshire East averages. ▪ Less than half of residents in Woodhouse Park ward in Manchester own their own homes whiles over half are in social renting.	~	▪ <u>A6MARR as a whole</u> ▪ There is potential for some vibration effects from the construction work and lorry traffic which could affect local housing especially in sections where the A6MARR passes very close to existing housing. ▪ The construction work can also disrupt utility services – water, gas, electricity, waste and sewage disposal for residents living nearby. ▪ The A6MARR is likely to take up land from existing housing.	For residents within 200m of the A6MARR ~/- For residents between 200m and 1km and beyond 1km of the A6MARR ~

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
Transport and connectivity	▪ Traffic volumes are likely to continue increasing on the existing local roads. This is likely to increase congestion. There could be increase in emissions and higher levels of localised air pollution. ▪ Road traffic casualties in all three local authorities is low and likely to remain at similar levels. ▪ There are several bus routes that serve Stockport, Cheshire East and Manchester. ▪ Majority of residents in the 7 Stockport, 4 Cheshire East and 1 Manchester wards travel to work by car or van. However this is lowest for Manchester.	~/-	▪ <u>A6MARR as a whole</u> ▪ Pedestrians, cyclists, bus and car users are likely to experience some temporary disruption, severance, congestion, increased journey times and safety concerns where the A6MARR cuts across existing pedestrian, cycle and bridle paths and other roads on the existing local networks leading to a loss of/less direct access; and where there are temporary speed limits, construction lorry traffic, traffic diversions, junction closures; and construction activities. ▪ Residents living close to the new section are likely to face some temporary access issues to their homes. ▪ The traffic flow restrictions could lead to general congestion on the existing local road networks ▪ Roads, junctions and paths could become or be seen as being dangerous and difficult to cross thus creating a modal shift from sustainable forms of transport to private vehicle use further increasing congestion. ▪ Traffic diverting onto local roads frequently used by pedestrians and cyclists could increase the risk of traffic related incidents.	For most residents, users of amenities and workers within 200m of the A6MARR -/-- For most residents, users of amenities and workers between 200m and 1km of the A6MARR - For most residents, users of amenities and workers beyond 1km of the A6MARR ~/- For those dependent on public transport, walk and cycle ~/-/--

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
			▪ For the new section of the A6, joining Buxton Road at two points: north, opposite Yew Tree Avenue and south, opposite Norbury Hollow Road ▪ As above. ▪ There is likely to be traffic congestion/disruption for residents and workers near the A6MARR due to construction lorry traffic and the traffic flow restrictions on the surrounding existing local road networks, particularly the existing section of A6, Buxton Road that will be realigned. ▪ New section of road from the realigned A6, Buxton Road to Woodford Road ▪ As above. ▪ There is likely to be traffic congestion/disruption for residents and workers near the A6MARR where it cuts across existing roads (London Road North, Chester Road/A5149 and Woodford Road/A5102 and Woodford Road near Hill Green Farm) due to construction lorry traffic and the traffic flow restrictions on the surrounding existing local road networks. ▪ Existing section of the A555 from Woodford Road to Wilmslow Road ▪ As above. ▪ There is likely to be traffic congestion/disruption for residents and workers near the A6MARR, around the three existing junctions, due to construction lorry traffic and the traffic flow restrictions on the existing local road networks. ▪ New section of road from Wilmslow Road to Ringway Road West ▪ As above. ▪ There is likely to be little or no congestion, disruption, severance, etc.	For most residents, users of amenities and workers along and around this section -/-- For most residents, users of amenities and workers along and around this section ~/-

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
Learning and education	▪ There proportion of residents in both the Stockport and Cheshire East wards around the A6MARR who have no educational qualifications is lower than their respective Stockport and Cheshire East averages whilst that of the Manchester ward is higher than the Manchester average.	~	▪ <u>A6MARR as a whole</u> ▪ Schools and nurseries along the A6MARR are likely to be affected by temporary increases in noise and air pollution and visual intrusion which may adversely affect learning. ▪ Pedestrians, cyclists, bus and car users are likely to experience some temporary disruption, severance, congestion, increased journey and safety concerns where the A6MARR cuts across existing pedestrian, cycle and bridle paths and other roads on the existing local networks leading to a loss of/less direct access; and where there are temporary speed limits, construction lorry traffic, traffic diversions, junction closures; and construction activities. ▪ Increase journey times and could make some school children and students late for school/nursery. ▪ Construction workers are likely to gain experience and on-the-job training.	For most residents, users of amenities and workers within 200m, between 200m and 1km and beyond 1km ~ For school children/ students studying in schools near the road and who travel along the A6MARR to get to school/college ~/-/-- For those who get training and experience through work on the A6MARR +/++

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
Crime and safety (including perception of crime and safety)	▪ Crime rates are highest in Manchester, followed by Stockport, and is mostly lowest in Cheshire East.	~	▪ A6MARR as a whole ▪ The potential increase in construction workers coming from outside the area could make the residential areas near the A6MARR feel less safe for some residents e.g. women, older people and those with young children.	For residents, users of amenities and workers within 200m ~/- For residents, users of amenities and workers between 200m and 1km and beyond 1km ~
Health, social care and other public services	▪ Circulatory/cardiovascular and respiratory deaths are amongst the most common causes of death. ▪ Obesity is highlighted as an increasing health problem in Stockport in particular. ▪	~	▪ A6MARR as a whole ▪ There could be some disruption to emergency services, staff (and hence delivery of services) and patients accessing health and social care services and facilities particularly those very near to and along the A6MARR. ▪ Health, social care and other public services along the A6MARR are also likely to be affected by increased levels of noise and air pollution and visual intrusion.	For residents, users of amenities and workers within 200m ~/- For residents, users of amenities and workers between 200m and 1km and beyond 1km ~

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
Shops and retail amenities (commercial goods and services)	▪ Shops and services are likely to continue to be available as they are currently.	~	▪ A6MARR as a whole ▪ Some local shops near the A6MARR are likely to have disrupted access and this can affect deliveries, opening hours and customers being able to visit. ▪ This can particularly affect older people, people with disabilities or existing health conditions and those with children who rely on local shops.	For residents, users of amenities and workers within 200m and between 200m and 1km ~/- For residents and workers beyond 1km ~
Social capital and community cohesion	▪ Levels of social capital and community cohesion are difficult to predict in the future but are likely to remain at similar levels to current.	~	▪ A6MARR as a whole ▪ Pedestrians, cyclists, bus and car users are likely to experience some temporary disruption, severance, congestion, increased journey and safety concerns where the A6MARR cuts across existing pedestrian, cycle and bridle paths and other roads on the existing local networks leading to a loss of/less direct access; and where there are temporary speed limits, construction lorry traffic, traffic diversions, junction closures; and construction activities. ▪ The above can reduce social interactions which is likely to reduce social capital and community cohesion, at least temporarily.	For residents, users of amenities and workers within 200m ~/-/-- For residents, users of amenities and workers and between 200m and 1km and beyond 1km ~

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
Arts and cultural activities	▪ There are a no major arts and cultural facilities within 200m of the A6MARR.	~	▪ A6MARR as a whole ▪ No arts and cultural facilities are likely to be disrupted by the construction phase of the A6MARR	For residents and workers within 200m, between 200m and 1km and beyond 1km ~
Leisure and recreation	▪ There are several outdoor and scenic leisure and recreation facilities along the A6MARR e.g. golf course, recreation ground, garden centre. These would continue to operate as they do currently.	~	▪ A6MARR as a whole ▪ There is loss of Moorend Golf Course and loss of part of the land of Woodford Recreation Ground. ▪ There will be some greater noise, air quality and visual impacts e.g. Woodford Recreation ground, Queensgate primary School sports field. ▪ There is some temporary disruption to pedestrian, cycle and bridle paths along the A6MARR. ▪ There is a loss of some holes at Hazel Grove and Styal Golf Courses	For most residents, users of amenities, workers and visitors within 200m ~/- Users of the amenities described ~/-/--

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
Lifestyle and daily routines	▪ It is likely that there will be no change from existing trends.	~	▪ <u>A6MARR as a whole</u> ▪ There are no additional lifestyle and daily routine impacts beyond those already discussed in transport and connectivity.	For residents, users of amenities and workers within 200m, between 200m and 1km and beyond 1km ~
Governance and public policy	▪ Current governance and public policy frameworks will continue to be in place.	~	▪ The scheme will not have an effect on governance and public policy.	~
Energy and waste	▪ Energy use and waste production is likely to follow current trends	~	▪ <u>A6MARR as a whole</u> ▪ This will depend on: ▪ Whether construction activities will reuse and recycle soils, dug up road surfaces and other materials. ▪ The amount of construction waste treated and sent to landfill e.g. contaminated soils. ▪ The types of construction vehicles used i.e. low emission lorries and the vehicle kilometres travelled. ▪ The type of mobile construction equipment used and their energy sources. ▪ The energy and waste strategy developed for the construction phase. ▪ Use of sustainable sourced construction materials.	For residents, users of amenities and workers within 200m, between 200m and 1km and beyond 1km ~ Climate change --/-/+/++

Construction Phase	No development (If the A6MARR is not built))	Impact	A6MARR (If the A6MARR is built)	Direction, Magnitude and Likelihood of Impact without mitigation
Land and spatial	▪ Patterns of land use and the spatial location of residential and industrial buildings are likely to follow current trends. ▪ There is a rich resource of productive agricultural land and land for recreation activities in Stockport, Cheshire East and Manchester.	~	▪ <u>A6MARR as a whole</u> ▪ The A6MARR will take up some agriculture, business, residential, community and recreational purposes. ▪ There will be some visual intrusion for those residents, users of amenities and workers living, working and using amenities within 200m of the A6MARR	For residents, users of amenities and workers within 200m -/--

Operation Phase (0-20 years after the construction phase):

Operation Phase	No development (If the A6MARR is not built)	Impact	A6MARR (If the A6MARR is built) (Impacts of land take e.g. loss of homes and businesses are accounted for in the construction phase table and are not duplicated here)	Direction, Magnitude and Likelihood of Impact without mitigation

Operation Phase	No development (If the A6MARR is not built)	Impact	A6MARR (If the A6MARR is built) (Impacts of land take e.g. loss of homes and businesses are accounted for in the construction phase table and are not duplicated here)	Direction, Magnitude and Likelihood of Impact without mitigation
Overall	▪ Traffic volumes are likely to continue increasing on the existing local roads. This is likely to increase congestion. There could be increase in emissions and higher levels of localised air pollution. ▪ There are likely to be improvements in motor vehicle pollution technologies leading to lower emissions. ▪ Road traffic casualties are low in Stockport, Cheshire East and Manchester and are likely to remain so. ▪ Circulatory/cardiovascular and respiratory deaths are amongst the most common causes of death.	-/~/+	▪ <u>A6MARR as a whole</u> ▪ The A6MARR is likely to increase the traffic capacity of the A6MARR. This is likely to increase levels of motor vehicle traffic as well as improve traffic flows between Manchester Airport and Hazel Grove as well as beyond these two areas ▪ It is also likely to improve commute times and make it easier for many people to travel further to work particularly between Hazel Grove and Manchester Airport. ▪ It is likely to enhance business growth and development, and inward economic investment, into Stockport, Cheshire East and Manchester particularly given the development of Airport City. ▪ It is likely that some congested local roads in the surrounding areas around the A6MARR would be freed up as more vehicles make use of the new road. This is likely to improve traffic flows, pedestrian and cycling safety and levels of air and noise pollution in these areas. This is likely to also reduce severance and improve social capital and community cohesion. ▪ There is a potential for some parts of some local roads north of the A6MARR that could have an increase in traffic. This is likely to worsen traffic flows, pedestrian and cycling safety and levels of air and noise pollution in these areas. This is likely to increase severance and reduce social capital and community cohesion. ▪ An improved pedestrian, cycle and bridle path network is provided as part of the A6MARR and this is likely enhance physical activity and active travel. Almost all existing pedestrian, cycle and bridle paths are preserved, though some may have a much longer route across the A6MARR. ▪ There will be safe controlled crossing points which is likely to enhance pedestrian and cyclists safety.	For residents, users of amenities and workers within 200m of the A6MARR --/-/+ For residents, users of amenities and workers between 200m and 1km of the A6MARR -/+/++ For residents, users of amenities and workers beyond 1km of the A6MARR +/++

Operation Phase	No development (If the A6MARR is not built)	Impact	A6MARR (If the A6MARR is built) (Impacts of land take e.g. loss of homes and businesses are accounted for in the construction phase table and are not duplicated here)	Direction, Magnitude and Likelihood of Impact without mitigation
			▪ <u>For the new section of the A6, joining Buxton Road at two points: north, opposite Yew Tree Avenue and south, opposite Norbury Hollow Road</u> ▪ It is likely that some congested local roads in the surrounding areas will be freed up as more vehicles make use of the A6MARR. This is likely to improve pedestrian and cycling safety, bus journeytimes and community cohesion as well as reduce levels of noise and air pollution in the areas surrounding the local roads. ▪ However some roads leading to this section could have an increase in traffic which could increase journeytimes, reduce road safety and increase noise and air pollution. ▪ <u>New section of road from the realigned A6, Buxton Road to Woodford Road</u> ▪ It is likely that some congested local roads (e.g. Woodford Road A502) in the surrounding areas will be freed up as more vehicles make use of the A6MARR. This is likely to improve pedestrian and cycling safety, bus journeytimes and community cohesion as well as reduce levels of noise and air pollution in these areas.. ▪ However some roads leading to this section could have an increase in traffic which could increase journeytimes, reduce road safety and increase noise and air pollution.	For residents, users of amenities and workers along and around this section --/-/+/++ For residents, users of amenities and workers along and around this section --/-/+/++

Operation Phase	No development (If the A6MARR is not built)	Impact	A6MARR (If the A6MARR is built) (Impacts of land take e.g. loss of homes and businesses are accounted for in the construction phase table and are not duplicated here)	Direction, Magnitude and Likelihood of Impact without mitigation
			▪ Existing section of the A555 from Woodford Road to Wilmslow Road ▪ There will be some increase in noise and air pollution as more motor vehicles travel along this exiting section of road. ▪ It is likely that some congested local in the surrounding areas will be freed up as more vehicles make use of the A6MARR. This is likely to improve pedestrian and cycling safety, bus journeytimes and communitycohesion as well as reduce levels of noise and air pollution in these areas.	For residents, users of amenities and workers along and around this section --/-/+/++
			▪ New section of road from Wilmslow Road to Manchester Airport ▪ It is likely that some congested local roads in the surrounding areas will be freed up as more vehicles make use of the A6MARR. This is likely to improve pedestrian and cycling safety, bus journeytimes and communitycohesion as well as reduce levels of noise and air pollution in the areas surrounding the local roads. ▪ However some roads leading to this section could have an increase in traffic which could increase journeytimes, reduce road safety and increase noise and air pollution.	For residents, users of amenities and workers along and around this section --/-/+/++

Operation Phase	No development (If the A6MARR is not built)	Impact	A6MARR (If the A6MARR is built) (Impacts of land take e.g. loss of homes and businesses are accounted for in the construction phase table and are not duplicated here)	Direction, Magnitude and Likelihood of Impact without mitigation
Infectious diseases	▪ Infectious diseases are more of a problem in Manchester compared to Stockport and Cheshire East with these featuring highly in Manchester's key healthcare priorities.	~	▪ A6MARR as a whole ▪ The operation phase is unlikely to cause or spread infectious diseases.	For residents, users of amenities and workers within 200m, between 200m and 1km and beyond 1km ~

Operation Phase	No development (If the A6MARR is not built)	Impact	A6MARR (If the A6MARR is built) (Impacts of land take e.g. loss of homes and businesses are accounted for in the construction phase table and are not duplicated here)	Direction, Magnitude and Likelihood of Impact without mitigation
Non-infectious/chronic diseases (including the effects from air, water, soil and noise pollution effects)	▪ Circulatory/cardiovascular and respiratory deaths are amongst the most common causes of death.	~/-	▪ <u>A6MARR as a whole</u> ▪ The operation phase is unlikely to cause non-infectious/chronic diseases to local residents, users of amenities and workers along the road. ▪ Local air pollution and noise levels are likely to be increased along some parts of the A6MARR and reduced along others. The increases in air pollution and noise levels are unlikely to lead to chronic illness but could contribute to exacerbation of existing conditions. ▪ An improved pedestrian, cycle and bridle path network is provided as part of the A6MARR and this is likely enhance physical activity and active travel. ▪ However, there is also the potential that the A6MARR will encourage car use and hence increase the potential for over-weight/obesity and cardiovascular disease.	For residents, users of amenities and workers within 200m of the A6MARR -/+/++ For residents, users of amenities and workers between 200m and 1km of the A6MARR -/~/+/++ For residents, users of amenities and workers beyond 1km of the A6MARR ~

Operation Phase	No development (If the A6MARR is not built)	Impact	A6MARR (If the A6MARR is built) (Impacts of land take e.g. loss of homes and businesses are accounted for in the construction phase table and are not duplicated here)	Direction, Magnitude and Likelihood of Impact without mitigation
Nutritional disorders	▪ Obesity levels are likely to be similar to or higher than current trends. ▪ Obesity is highlighted as an increasing health problem in Stockport in particular. ▪ Given the high car usage in the three local authorities, particularly Stockport and Cheshire East and because there is an association between car use and being overweight, obesity levels are likely to be on an upward trend.	~/-	▪ A6MARR as a whole ▪ There are unlikely to be any nutritional effects from the scheme.	For residents, users of amenities and workers within 200m, between 200m and 1km and beyond 1km ~

Operation Phase	No development (If the A6MARR is not built)	Impact	A6MARR (If the A6MARR is built) (Impacts of land take e.g. loss of homes and businesses are accounted for in the construction phase table and are not duplicated here)	Direction, Magnitude and Likelihood of Impact without mitigation
Physical injury (including poisoning)	▪ Road traffic injuries and deaths Stockport and Manchester are low and likely to remain at similar levels. ▪ Cheshire East has relatively high levels of road traffic injuries compared to the England average this is likely to remain at similar levels..	~/-	▪ A6MARR as a whole ▪ Overall, there is one additional serious injury and a reduction in 27 slight injuries (from Environmental Statement Transport Assessment). ▪ Dual carriageways generally have fewer traffic incidents. The potential for traffic incidents is greater at junctions. ▪ Some local roads are likely to have reduced traffic flows and some could have increased traffic flows. Where traffic is reduced then there is likely to be a reduction in traffic incidents. Where there is an increase in traffic flows there is likely to be an increase in road traffic incidents. ▪ For the new section of the A6, joining Buxton Road at two points: north, opposite Yew Tree Avenue and south, opposite Norbury Hollow Road ▪ As above. ▪ New section of road from the realigned A6, Buxton Road to Woodford Road ▪ As above. ▪ Existing section of the A555 from Woodford Road to Wilmslow Road ▪ As above. ▪ New section of road from Wilmslow Road to The junction of Ringway Road and Ringway Road West near Manchester Airport ▪ As above.	For residents, users of amenities and workers within 200m, between 200m and 1km and beyond 1km ~/+ For residents, users of amenities and workers along and around this section -/~/+

Operation Phase	No development (If the A6MARR is not built)	Impact	A6MARR (If the A6MARR is built) (Impacts of land take e.g. loss of homes and businesses are accounted for in the construction phase table and are not duplicated here)	Direction, Magnitude and Likelihood of Impact without mitigation
Mental health and wellbeing (including nuisance and annoyance effects)	▪ The proportion of residents with dementia in Stockport and Cheshire East are significantly worse than the national average, whilst that of Manchester is significantly better than the England average. ▪ Depression in Stockport, Cheshire East and Manchester significantly worse than the England average. ▪ The proportion of people with learning disabilities is significantly lower than the national average while there is no significant difference between levels in Stockport and Manchester and the England average.	~	▪ <u>A6MARR as a whole</u> ▪ The improved access and reduced journey times are likely to enhance mental health and wellbeing for those using the A6MARR. ▪ The enhanced connectivity that the road brings could enhance wider social capital and community cohesion. ▪ In the areas where there are reduced levels of air pollution and noise, this can positively enhance mental health and wellbeing. ▪ However in other areas particularly along the A6MARR, air pollution and noise levels are likely to be increased. The increase in air pollution and noise is likely to generate nuisance and annoyance and could exacerbate existing cardiovascular and respiratory conditions which can negatively affect mental health and wellbeing. ▪ An improved pedestrian, cycle and bridle path network is provided as part of the A6MARR and this is likely enhance physical activity and active travel. ▪ There will be safe controlled crossing points which is likely to enhance pedestrian and cyclists safety.	For residents, users of amenities and workers within 200m of the A6MARR --/-/~/+/++ For residents, users of amenities and workers between 200m and 1km of the A6MARR --/-/~/+/++ For residents, users of amenities and workers beyond 1km of the A6MARR ~/+/++

Operation Phase	No development (If the A6MARR is not built)	Impact	A6MARR (If the A6MARR is built) (Impacts of land take e.g. loss of homes and businesses are accounted for in the construction phase table and are not duplicated here)	Direction, Magnitude and Likelihood of Impact without mitigation
Population demography	▪ Population trends in Stockport and Cheshire East suggest an ageing population whilst the Manchester population is a young population.	~	▪ A6MARR as a whole ▪ The operation phase is unlikely to result in changes to the population.	For residents, users of amenities and workers within 200m, between 200m and 1km and beyond 1km ~

Operation Phase	No development (If the A6MARR is not built)	Impact	A6MARR (If the A6MARR is built) (Impacts of land take e.g. loss of homes and businesses are accounted for in the construction phase table and are not duplicated here)	Direction, Magnitude and Likelihood of Impact without mitigation
Employment and economy	▪ Unemployment in the 7 Stockport and 4 Cheshire East wards around the A6MARR are the same as their respective Stockport and Cheshire East averages. ▪ However in Woodhouse Park ward in Manchester, unemployment is higher than the Manchester average. ▪ The top occupation in the 7 Stockport and 4 Cheshire East wards is 'managers and senior officials'. ▪ The top occupation in the Woodhouse Park ward in Manchester wards is 'elementary'.	~	▪ <u>A6MARR as a whole</u> ▪ The improved access and reduced journey times is likely to provide economic benefits to road freight using businesses and businesses using Manchester Airport. ▪ Improved journey experience/ambience and reduced commute times for journeys that people currently take has the potential to improve worker wellbeing and hence productivity. This would not necessarily be the case where commutes are longer. ▪ The improved access is likely to enhance the uptake of job opportunities further away and this is likely to particularly benefit unemployed people. ▪ It is likely to enhance business growth and development, and inward economic investment, into Stockport, Cheshire East and Manchester particularly given the development of Airport City. ▪ Some local shops could benefit from passing trade. ▪ There is a potential that the A6MARR could increase tourism. ▪ There is also a potential that some businesses e.g. local shops will lose some passing trade from traffic that is removed from the existing local road network and this could affect their viability. The A6MARR could also make it easier to get to shops and other services further away so that local shops lose custom. However, it is unclear how likely this is, to what extent this would occur and the health and wellbeing implications of this on workers in local shops and services and to local residents through the reduced vitality of local shopping centres. This is particularly so given the wider social changes in shopping where there is significant increase in the use of online shops and services.	For most residents, users of amenities and workers within 200m, between 200m and 1km and beyond 1km of the A6MARR ~/+/++ For those looking for work or better job prospects ~/+ Existing and new businesses and their employees -/~/+/++

Operation Phase	No development (If the A6MARR is not built)	Impact	A6MARR (If the A6MARR is built) (Impacts of land take e.g. loss of homes and businesses are accounted for in the construction phase table and are not duplicated here)	Direction, Magnitude and Likelihood of Impact without mitigation
Housing and shelter	▪ Patterns of housing and growth of settlements is likely to follow existing trends. ▪ Majority of residents in the 7 Stockport and 4 Cheshire East wards around the A6MARR own their homes, with social renting in these wards being lower than the respective Stockport and Cheshire East averages. ▪ Less than half of residents in Woodhouse Park ward in Manchester own their own homes whiles over half are in social renting.	~	▪ <u>A6MARR as a whole</u> ▪ There is some potential for vibration effects from passing vehicles on houses especially those very near the A6MARR. Although this effect is unlikely to be as high as during the construction phase.	For residents within 200m of the A6MARR ~/- For residents within 200m and 1km and beyond 1km the A6MARR ~

Operation Phase	No development (If the A6MARR is not built)	Impact	A6MARR (If the A6MARR is built) (Impacts of land take e.g. loss of homes and businesses are accounted for in the construction phase table and are not duplicated here)	Direction, Magnitude and Likelihood of Impact without mitigation
Transport and connectivity	▪ Traffic volumes are likely to continue increasing on the existing local roads. This is likely to increase congestion. There could be increase in emissions and higher levels of localised air pollution. ▪ Road traffic casualties in all three local authorities is low and likely to remain at similar levels. ▪ There are several bus routes that serve Stockport, Cheshire East and Manchester. ▪ Majority of residents in the 7 Stockport, 4 Cheshire East and 1 Manchester wards travel to work by car or van. However this is lowest for Manchester.	~/-	▪ <u>A6MARR as a whole</u> ▪ The scheme creates a strategic route and increases vehicular connectivity between Manchester, Hazel Grove and beyond. This includes creating new connections to local roads. ▪ The scheme is likely to improve journey times and journey experience on the existing local road networks as traffic is diverted onto the A6MARR. This is likely to improve connectivity by encouraging walking and cycling on the local roads. ▪ There is a potential for some parts of some local roads north of the A6MARR that could have an increase in traffic, journey times could increase and it could be more difficult to access amenities. ▪ Pedestrian, cycle and bridle paths provided as part of the A6MARR could increase levels of walking and cycling.	For residents, users of amenities and workers within 200m of the A6MARR -/~/+/++ For residents, users of amenities and workers between 200m and 1km of the A6MARR -/~/+/++ For residents, users of amenities and workers beyond 1km of the A6MARR ~/+/++

Operation Phase	No development (If the A6MARR is not built)	Impact	A6MARR (If the A6MARR is built) (Impacts of land take e.g. loss of homes and businesses are accounted for in the construction phase table and are not duplicated here)	Direction, Magnitude and Likelihood of Impact without mitigation
Learning and education	▪ There proportion of residents in both the Stockport and Cheshire East wards around the A6MARR who have no educational qualifications is lower than their respective Stockport and Cheshire East averages whilst that of the Manchester ward is higher than the Manchester average.	~	▪ <u>A6MARR as a whole</u> ▪ For schools and nurseries near the A6MARR, there is a small increase in noise and air pollution. ▪ This could affect learning and could also affect children with existing respiratory conditions.	For most residents, users of amenities and workers within 200m, between 200m and 1km and beyond 1km ~ For school children/ students studying in schools near the road and who travel along the A6MARR to get to school/college ~/-/--

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Crime and safety (including perception of crime and safety)	▪ Crime rates are highest in Manchester, followed by Stockport, and is mostly lowest in Cheshire East.	~	▪ There is unlikely to be any increase in crime because of the A6MARR. ▪ In areas where new pedestrian, cycle and bridle paths are homes and particularly back gardens there are likely to be safety concerns for allowing children to play unsupervised in back gardens and potentially increasing the risk of burglary. However the risks of this are likely to be small given the design of the new paths.	For residents, users of amenities and workers within 200m ~/- For residents, users of amenities and workers within 200m, between 200m and 1km and beyond 1km ~

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Health, social care and other public services	▪ Circulatory/cardiovascular and respiratory deaths are amongst the most common causes of death. ▪ Obesity is highlighted as an increasing health problem in Stockport in particular.	~	▪ <u>A6MARR as a whole</u> ▪ The A6MARR could make it quicker for some emergency vehicles to get to some areas along the A6MARR.	For residents and workers within 200m and between 200m and 1km ~/+ For residents and workers beyond 1km ~
Shops and retail amenities (commercial goods and services)	▪ Shops and services are likely to continue to be available as they are currently..	~	▪ <u>A6MARR as a whole</u> ▪ The A6MARR could also make it easier to get to shops and other services further away.	For residents within 200m and between 200m and 1km -/~/+ For residents beyond 1km ~

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Social capital and community cohesion	▪ Levels of social capital and community cohesion are difficult to predict in the future but are likely to remain at similar levels to current.	~	▪ <u>A6MARR as a whole</u> ▪ The enhanced connectivity that the road brings could enhance *wider* social capital and community cohesion. ▪ Social capital and community cohesion is likely to be enhanced in areas where traffic flow on local roads is reduced. ▪ An improved pedestrian, cycle and bridle path network is provided as part of the A6MARR and this is likely enhance physical activity and active travel. ▪ For some residents there is likely to be some increase in noise and this can reduce social interaction outdoors.	For residents, users of amenities and workers within 200m of the A6MARR --/-/~/+/++ For residents, users of amenities and workers between 200m and 1km of the A6MARR -/~/+/++ For residents, users of amenities and workers beyond 1km of the A6MARR ~/+

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Arts and cultural activities	▪ There are a no major arts and cultural facilities within 200m of the proposed road scheme.	~	▪ A6MARR as a whole ▪ No arts and cultural facilities that will be disrupted by the operation phase of the A6MARR.	For residents and workers within 200m, between 200m and 1km and beyond 1km ~

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Leisure and recreation	▪ There are several outdoor and scenic leisure and recreation facilities along the proposed road scheme e.g. golf course, garden centre. These would continue to operate as they do currently.	~	▪ <u>A6MARR as a whole</u> ▪ Where there is reduced traffic on the existing local road networks this could lead to increased outdoor street play by children. Where there is increased traffic this could lead to reduced outdoor street play by children. ▪ An improved pedestrian, cycle and bridle path network is provided as part of the A6MARR and this is likely enhance physical activity and active travel. ▪ There will be safe controlled crossing points which is likely to enhance pedestrian and cyclists safety. ▪ The close proximity of the new route to some community/recreational facilities could reduce outdoor activities undertaken in these facilities. ▪ There is a potential that the route could increase tourism.	For residents, users of amenities and workers within 200m -/~/+/++ For residents, users of amenities and workers between 200m and 1km ~/+/++ For residents, users of amenities and workers beyond 1km ~/+

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Lifestyle and daily routines	▪ It is likely that there will be no change from existing trends.	~	▪ A6MARR as a whole ▪ There are no additional lifestyle and daily routine impacts beyond those already discussed in transport and connectivity.	For residents, users of amenities and workers within 200m, between 200m and 1km and beyond 1km ~
Governance and public policy	▪ Current governance and public policy frameworks will continue to be in place.	~	▪ The scheme will have no effect on governance and public policy.	~
Energy and waste	▪ Energy use and waste production is likely to follow current trends.	~	▪ A6MARR as a whole ▪ This will depend on the materials used for maintenance of the A6MARR. Using high quality, sustainable and recyclable materials will ensure that road surfaces last longer and use less energy and produce less waste going to landfill. ▪ Increased vehicles travelling along the route are likely to generate increased carbon emissions. ▪ There is a potential that vehicles using this route instead of other existing routes will travel fewer vehicle miles in total and hence this would reduce carbon emissions compared to previously. ▪ Future improvements in engine technology including the use of electric energy could mean that carbon emissions are reduced.	For residents, users of amenities and workers within 200m, between 200m and 1km and beyond 1km ~ Climate change --/-/~/+

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Land and Spatial	▪ Patterns of land use and the spatial location of residential and industrial buildings are likely to follow current trends. ▪ There is a rich resource of productive agricultural land and land for recreation activities in Stockport, Cheshire East and Manchester.	~	▪ A6MARR as a whole ▪ There is unlikely to be any further effects on land and spatial issues during the operation phase.	For residents, users of amenities and workers within 200m, between 200m and 1km and beyond 1km ~

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