St Helens Council

TRANSPORT IMPACT ASSESSMENT

St Helens Local Plan

NG / AJF
JANUARY 2019

CONFIDENTIAL

St Helens Council

TRANSPORT IMPACT ASSESSMENT

St Helens Local Plan

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70038483

OUR REF. NO. NG / AJF

DATE: JANUARY 2019

WSP

St. Johns House
Queen Street
Manchester
M2 5JB

Phone: +44 161 602 8400

WSP.com

QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks				
Date	11/05/2018	25/05/2018	08/01/2019	
Prepared by	NG/AJF/HK	NG/AJF/HK	NG/AJF/HK	
Signature				
Checked by	AJF	AJF	AJF	
Signature				
Authorised by	AJF	AJF	AJF	
Signature				
Project number	70038483	70038483	70038483	
Report number				
File reference	Draft	01	02	

CONTENTS

APPENDICES

APPENDIX A: NEW MOBILITY NOW

APPENDIX B: HIGHWAY SCHEME TECHNICAL NOTES

1

INTRODUCTION

1 INTRODUCTION

1.1 BACKGROUND

1.1.1. St Helens Council is currently preparing a new Local Plan, which, once adopted, will replace the St. Helens Local Plan Core Strategy (2012) and the saved policies of the 1998 Unitary Development Plan. The new Local Plan will set out where different types of development will or will not be acceptable in principle, and general policies for assessing most planning applications. The proposed Submission version is due to be published in winter 2018/2019 for representations to be made on it prior to submission for examination.

1.1.2. The emerging Local Plan sets out the growth aspirations for the borough during the Plan Period, with an identified need for housing in the St. Helens Strategic Housing Market Assessment (2016) and its Update (2017/18) of 451 dwellings per year, and for employment land of 190ha up to 2033. The St. Helens Local Plan Preferred Options was published in December 2016 for consultation, and this proposed targets that would provide:

1.1.3. An additional 10,830 dwellings (570 dwellings per year from 2014 to 2033); and a minimum of 306 hectares of employment land.

1.1.4. The emerging Local Plan will set out a preferred spatial strategy for these housing and employment targets, taking account of suitable brownfield and greenfield development sites in the urban area. However, since 2008, every Strategic Housing Land Availability Assessment (SHLAA) has found that there is a shortage of available sites in the urban areas to meet housing needs. The Local Plan therefore identifies a number of greenbelt sites that the Council considers suitable for removal from the greenbelt and to be allocated for development in order to meet the needs of the Borough.

1.1.5. The National Planning Policy Framework (NPPF) sets out the role and contents of Local Plans, clearly setting out the need to prepare Local Plans with the objective of contributing to the achievement of sustainable development. Local Plans should be based on a proportionate evidence base, providing up to date and relevant evidence about the economic, social, and environmental characteristics and prospects of the area. In regards to transport, the NPPF states that Local Planning authorities should work with other authorities and providers to assess the quality and capacity of infrastructure for transport, including its ability to meet forecast demands.

1.1.6. WSP have been commissioned by St Helens Borough Council to undertake a Transport Impact Assessment (TIA) on the proposals set out in the emerging St Helens Local Plan, providing an appropriate and proportionate evidence base that considers the likely impacts of the Local Plan growth on the borough's local and strategic transport networks, and assesses what transport interventions, if any, may be required to accommodate the growth aspirations.

1.2 PURPOSE OF THE REPORT

1.2.1. The purpose of this report is to assess the likely transport implications and issues which may arise from the significant growth aspirations currently being determined within the emerging Local Plan, providing the transport evidence base to support the growth targets and specific proposed site allocations. The TIA specifically considers the sites suggested in the Local Plan Preferred Options (LPPO) as allocations for the period 2018 to 2033—it is not a TIA of the Proposed Submission version of the Local Plan (PSLP), and as such, the reference numbers refer to the LPPO sites, not

the PSLP sites. The analysis of the LPPO allocation sites has been used to help inform the selection of sites for the PSLP, and the recommendations for improving sites has been used to inform policy. The report will also make recommendations for any requirements that may be included within the Local Plan to mitigate the transport impacts of St Helens' growth aspirations.

1.2.2. The expected outcome of this work is to provide a high-level assessment of the potential implications of the proposals. It is expected that more detailed highways assessments will be completed as detailed proposals for development come forward at the masterplanning and planning application stage, while the work will identify further studies, interventions, and initiatives that could be undertaken over the Plan period.

1.3 STUDY AREA

1.3.1. The study area encompasses the entirety of the borough of St Helens, a metropolitan borough located in the north west of England. The borough sits midway between Liverpool and Manchester, one of 6 Local Authorities forming the Liverpool City Region. The borough of St Helens is shown in Figure 1.

Figure 1: St Helens Borough in context with the Neighbouring Authorities

1.4 OVERVIEW OF METHODOLOGY

1.4.1. The analysis looks to explore any issues and weaknesses within the existing transport network, as well as identify any current strengths, and then evaluate the potential for any future issues or opportunities. At this stage in the evidence base process, this analysis has been undertaken through the following methods:

- Production of a SATURN traffic assignment model, assessing the current performance of the highway network, and comparing the results with a number of future scenarios;
- Detailed site visits to those site allocations consider 'strategic', or of an equivalent size;
- Traccs Basemap accessibility mapping;
- GIS distance-based accessibility mapping;
- Engagement with various stakeholders and neighbours, including Highways England and Merseytravel.

1.5 REPORT CONTENTS

1.5.1. The remainder of the report encompasses the following chapters:

- Chapter 2 Policy Context;
- Chapter 3 Strategic Location and Borough Characteristics
- Chapter 4: Sustainable Transport Assessment
- Chapter 5: Sustainable Transport measures
- Chapter 6: Highway Impact Assessment Methodology
- Chapter 7 Detailed Highway Impact Assessment
- Chapter 8: Glossary

1.5.2. This document was updated in January 2019 for clarity and layout amendments, all content within reflects the available evidence at its production in June 2018.

2

POLICY CONTEXT

2 POLICY CONTEXT

2.1 INTRODUCTION

2.1.1. Legislation and policy have an important role to play in shaping and guiding the location, form, and function of new growth and development. This section of the report considers the transport implications of national, regional, and local policy for the St Helens Local Plan, with particular attention given to where this is directly relevant to the siting of potential site allocations.

2.1.2. While the St Helens Local Plan must consider the needs of its own borough first and foremost, St Helens is one of six local authorities comprising the Liverpool City Region (LCR), alongside the City of Liverpool, Halton, Knowsley, Sefton, and the Wirral. Since the 1st April 2014, the Liverpool City Region Combined Authority (LCRCA) has been the top-tier administrative body for the local governance of the city region, and the wider vision for the LCR has important strategic transport implications for St Helens that require further consideration.

2.1.3. St Helens is also located in a strategic position between the LCR and Greater Manchester Combined Authorities, the latter of, which is in the process of outlining extensive growth aspirations through the Greater Manchester Spatial Framework (GMSF). Furthermore, neighbouring authorities such as Warrington and West Lancashire are also progressing on updated Local Plans, with the potential for cross-boundary implications.

2.1.4. This review will therefore also consider the growth aspirations of these neighbouring authorities, and evaluate the potential for this growth to impact on the transport networks within St Helens.

2.2 NATIONAL PLANNING POLICY

2.2.1. The National Planning Policy Framework (NPPF), published in March 2012, replaces several planning guidance documents, including 'Planning Policy Guidance 13: Transport' (PPG13). In March 2018, the Government started consultation on a new draft of the NPPF, with some changes proposed for the Transport policy section, although the overall support for sustainable travel is the same.

2.2.2. The overarching aim of the NPPF is to simplify and combine a number of previous planning guidance documents and to put planning decision-making back into the hands of local Councils and people.

2.2.3. The NPPF gives responsibility back to local people by providing a framework within which local authorities and local people can produce their own plans to reflect the needs and priorities of their communities.

2.2.4. The NPPF states the importance of encouraging sustainable modes of transport that support reductions in greenhouse gas emissions and reduce congestion. The NPPF (paragraph 32) states that plans and decisions should take account of whether:

"The opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure; safe and suitable access to the site can be achieved for all people; and improvements can be undertaken within the transport network that effectively limit the significant impacts of the development."

2.2.5. The document also states the importance of locating developments that generate significant movement where the need to travel will be minimised, and the use of sustainable transport modes can be maximised:

2.2.6. *Developments should be located and designed where practical to*:

- *Accommodate the efficient delivery of goods and supplies;*
- *Give priority to pedestrian and cycle movements, and have access to high quality public transport facilities;*
- *Create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians;*
- *Incorporate facilities for charging plug-in and other ultra-low emission vehicles; and*
- *Consider the needs of disabled people by all modes of transport."*

Implications for St Helens

- Many of the proposed site allocations are to be removed from the Green Belt, in particular those larger strategic sites, are located on the periphery of St Helens and the urban areas and so many have fewer existing sustainable transport options;
- In order to conform with the NPPF, it is essential that the Local Plan has a robust evidence base supporting polices and requirements that ensure each site can maximise existing, and where required provide new sustainable transport options;
- Further supporting SPD documents may be required in order to ensure St Helens' vision for sustainable growth is achieved.

2.3 REGIONAL POLICIES

Transport for the North—Strategic Transport Plan Position Statement (2017)

2.3.1. Transport for the North (TfN) is a strategic organisation with a remit to transform the transport system across the North of England, providing the infrastructure needed to drive economic growth. TfN became a statutory body on April 5th, 2018, with a range of legal powers and duties.

2.3.2. Transport for the North is driven by a number of distinct objectives, with a clear vision to:

"maximise the economic, social and environmental performance of the north of England by ensuring that it has the most effective forms of connectivity within and between its constituent parts, and extending out into national and international networks and markets."

2.3.3. TfN's key overarching objectives include the creation of:

- A more productive and competitive northern economy;
- A more accessible and accountable transport network in the North; and
- A more environmentally sustainable northern transport network.

2.3.4. Transport for the North seeks to create an ethos for a combined northern powerhouse through the means of developing infrastructure and guided investment in strategic projects. Transport for the North sets out a framework which is intended to transform the northern city regions into a combined,

interconnected ‘powerhouse’ for both personal travel and freight, further rebalancing the economy across the whole of the north and not just the larger city regions by improving the connectivity throughout the North.

2.3.5. Transport for the North plans to drive growth through the means of improving business connectivity, competitiveness between city regions, innovation and boosting employment and productivity. TfN consulted on a draft of their Strategic Transport Plan (2018) in early 2018; this consultation closed in April 2018. The draft Plan presents four objectives which inform the role of the Strategic Transport Plan; these are:

- improve the performance and integration of the North’s strategic transport network by making the case for interventions that improve its efficiency, reliability and resilience;
- secure investment in transport between the important urban and rural economic centres and assets to support sustainable transformation of the North’s economic performance;
- improved access to opportunities; and
- transport interventions across the strategic transport system protect and enhance the natural and built environment.

2.3.6. The draft Strategic Transport Plan identifies two key deficiencies in transportation in the north, which shapes the direction of the strategy:

- A lack of coordination, as governance and funding approaches have led to competition rather than collaboration, and the move away from regional spatial planning has limited the amount of pan-northern level planning undertaken;
- A historical lack of investment has led to a serious deficit in spending in comparison to the south, resulting in adequate infrastructure.

2.3.7. TfN has carried out enhanced freight and logistics analysis to support their aims for enhanced freight and logistics movements across the north. The draft Strategy states that:

“Investment in Liverpool2 and continuing growth of the Humber Ports has given strength to the concept of a Freight Superhighway connecting Liverpool and the Humber, as well as wider benefits for freight movement across the North to other ports.”

2.3.8. As part of the LCR, St Helens’ emerging Local Plan shares the City Region’s ambitions for enhanced logistic and freight, and the proposed employment allocations are all for B2 & B8 usage with an intent to provide an enhanced logistics and freight offering.

2.3.9. The Strategy also states that, as of this moment, rail is seen as less economically viable for freight; however, TfN feel they are well placed to create the conditions for modal shift, changing the way that freight is viewed in the north. The proposed development at Parkside could be integral to these ambitions, creating a strategic rail freight interchange of national importance.

2.3.10. The draft Liverpool City Region Strategic Housing and Employment Land Market Assessment (LCR SHELMA), due for adoption in 2018, sets out the functional Housing Market Areas (HMA) and Functional Economic market area (FEMA) within the LCR and estimates the requirement for employment and housing needs in the Liverpool City Region. The SHELMA takes account of economic forecasts prepared for the LCR Local Economic Partnership (LEP) and the work undertaken by MDS Transmodal for the TfN Logistics Strategy, including forecasts of how freight will increase, taking account of Liverpool 2 and Superport ambitions, and the impact on demand for employment premises. In turn, the St Helens Employment Land Needs Assessment (ELNA) and its 2018 Update takes account of the increase in warehousing demand in the LCR identified in the SHELMA.

Implications for St Helens

- St Helens ambitions will need to consider the wider visions of TfN (as well as the LCR), especially when considering the potential for significant cross-boundary movements;
- TfN also sets out a clear vision for an environmentally sustainable transport throughout the north. St Helens will need to ensure they have sufficient policy controls to create genuinely sustainable development that aligns with TfN's wider vision.

Building our future – Liverpool City Region Growth Plan

2.3.11. The LCRCA is supported by the LCR Local Enterprise Partnership (LEP), working in partnership to deliver the Growth Strategy for the City Region. The LEP was created in 2012, and provides strategic advice and guidance on economic development, whilst the Combined Authority brings democratic accountability and oversight for the City Region.

2.3.12. Together, the LCRCA and LCR LEP have produced the Liverpool City Region Growth Strategy, 'Building our Future', which presents a single strategy for economic growth over a 25-year period. This document functions as the LEP's Strategic Economic Plan (SEP).

2.3.13. This document recognises the potential and strengths of the region, including:

- Advanced Manufacturing;
- Digital and Creative;
- Financial and Professional Services;
- Health and Life Sciences,
- Low Carbon Energy;
- Maritime and Logistics, and
- The Visitor Economy.

2.3.14. The Strategy sets out an overarching vision, stating:

"We will build on our core strengths and capacity for innovation to create a truly global and competitive City Region at the heart of the Northern Powerhouse."

2.3.15. The Growth Plan is designed to provide a strategic framework for interventions to generate growth and create additional employment within the City Region, and has a clear emphasis on doing so through the enablement of private sector investment and growth.

2.3.16. The Growth Plan reiterates that this growth does not come at the expense of sustainability, adopting what is referred to as a "twin-track approach", prioritising investment against the LCR's comparative strengths and competitive advantages in order to generate economic growth, whilst creating an environment that supports sustainable growth.

2.3.17. The Growth Strategy identifies five strategic projects:

- Liverpool City Centre as a global brand, visitor and business destination, a centre for commercial and business growth and a location for a growing cluster of knowledge assets;
- The Liverpool City Region Freight and Logistics Hub that builds on our natural assets and the changing nature of the international and national logistics industry;
- LCR2Energy which will facilitate the transition of the City Region's energy requirements to a lower carbon supply;
- Access to the Port of Liverpool; and
- A City Region Capital Investment Fund, to act as an intermediary mechanism between the Local Growth Fund nationally and investments at the local level.

2.3.18. The Growth Plan identifies these as the primary projects for the LCR, and those for which the LCR sought funding through the Local Growth Fund.

Implications for St Helens

- The emerging St Helens Local Plan is clearly aligned with the LCR's strategy for growth associated with freight and logistics, with a significant amount of B8 provision being allowed for in the LPPO, including 6 proposed strategic allocations for B2 & B8 usage in close proximity to the SRN, and a number of KRN routes, including Parkside SRFI;
- The LCR prioritises sustainable growth, and the Local Plan evidence base will need to demonstrate that St Helens can achieve their growth ambitions in a sustainable manner;
- St Helens will also need to ensure their proposals align with the LCRCA and LEP's strategic plans in order to obtain funding through the devolved streams, such as the Local Growth Fund, Access Fund, and more recently, the Single Investment Fund.

A Transport Plan for Growth – Liverpool City Region Combined Authority (2015/16)

2.3.19. The creation of the LCR Combined Authority in 2014 resulted in a need to draw the various strands of policy together across the new City Region. Previously, the City Region consisted of two local transport authorities: the Merseyside Integrated Transport Authority, governing Liverpool, Knowsley, St Helens, Sefton and the Wirral, and Unitary Authority of Halton, both of which had their own adopted Local Transport Plans.

2.3.20. 'A Transport Plan for Growth' is written to highlight the synergies between the two transport authorities' Local Transport Plans, and to show how the key priorities for transport interrelate to

other strategically important areas of policy. The document is thereby considered to provide a single strategic framework and delivery plan for transport in the Liverpool City Region, while not replacing the existing Local Transport Plans.

2.3.21. As appropriate for the wider strategic scale of the LCR, 'A Transport Plan for Growth' is aligned with the LCR's Growth Plan and written in the context of other adopted and emerging strategic policy. The Transport Plan presents three overarching transport priorities:

- 'Growth' – supporting economic growth in the City Region, through increasing employment, levels of productivity and investment;
- 'Low Carbon' – we want to live and work in a City Region that draws its energy from a range of sustainable energy sources, where travel is in vehicles powered by alternatives to fossil fuels, and with increased active travel opportunities; and
- 'Access to Opportunity' – supporting those who wish to access employment, training, education and further learning opportunities, and the wider work in supporting the whole City Region in access to fresh food, leisure and healthcare.

2.3.22. The Transport Plan details that these priorities will be achieved through partnership working with the LCR LEP in order to link the transport priorities with the wider strategic priorities of the other relevant key sectors:

- Freight and Logistics;
- Housing and Land-use Planning;
- Economic Development and Regeneration;
- Employment and Skills;
- Health and Wellbeing;
- Carbon Reduction and Air Quality;
- Connecting Communities; and
- Visitor Economy.

2.3.23. The Transport Plan considers that a strong and growing freight sector is crucial to the City Region's continued economic growth, and identifies Liverpool as one of the country's major ports.

2.3.24. The Transport Plan makes specific reference to the transport implications and opportunities presented by the significant growth in the port of Liverpool, specifically the £1bn investment in Superport. This large-scale development is considered to:

"Present a generational opportunity to place the port and surrounding logistics infrastructure at the heart of business in the UK and Europe, creating a Global Freight & Logistics Hub for Northern UK and Ireland."

2.3.25. The port is considered to further benefit through the completion of other significant developments, including major investment at the Seaforth site and the construction of the Liverpool 2 deep-water berth. In order to maximise the potential of this growth, the Transport Plan identifies a need to improve connectivity and capacity for freight on the LCR's road and rail networks.

Implications for St Helens

- As the overarching Transport Plan for St Helens and the LCR, the emerging Local Plan will need to be closely aligned with the strategic vision of 'A Transport Plan for Growth';
- In particular, the Transport Plan presents a priority for 'low carbon' transport. St Helens will need to show how its growth aspirations also promote electric vehicle usage, reduce single vehicle occupancy, and increases active travel;
- St Helens' priorities for employment growth in freight and logistics is clearly aligned with the LCR's vision to maximise the opportunities presented by the growth in the port of Liverpool.

Merseyside Local Transport Plan (LTP3)

2.3.26. The Merseyside LTP3 was adopted in April 2011, predating the formation of the LCRCA. The Plan covers the five Merseyside local authorities, who together with Merseytravel form the Merseyside Transport Partnership, and provide the transport strategy and plans for these areas.

2.3.27. The LTP 3 sets out a vision for:

"A city region committed to a low carbon future, which has a transport network and mobility culture that positively contributes to a thriving economy and the health and wellbeing of its citizens and where sustainable travel is the option of choice."

2.3.28. To achieve this vision, the LTP presents six goals:

- Help create the right conditions for sustainable economic growth by supporting the priorities of the Liverpool City Region, the Local Enterprise Partnership and the Local Strategic Partnerships;
- Provide and promote a clean, low emission transport system which is resilient to changes to climate and oil availability;
- Ensure the transport system promotes and enables improved health and wellbeing and road safety;
- Ensure equality of travel opportunity for all, through a transport system that allows people to connect easily with employment, education, healthcare, other essential services and leisure and recreational opportunities.
- Ensure the transport network supports the economic success of the city region by the efficient movement of people and goods;
- Maintain our assets to a high standard.

2.3.29. The LTP sets out several ways by which it will deliver these goals. The LTP identifies the need for partnership work with the Freight Quality Partnership (FQP) and other parties to develop and enhance the freight and logistics network; this is envisaged to have a number of outputs, including strengthening Merseyside's competitiveness, supporting SuperPort and access to the Port, reducing the impact of freight movement on local communities, promoting the use of rail, and making a major contribution to reducing carbon outputs.

2.3.30. There is also a strong focus on the need to engender growth in sustainable travel. The LTP states that:

"*Successful world cities have grasped the notion that having high levels of cycling, walking and public transport use is a sign of prosperity and wellbeing.*"

2.3.31. The LTP discusses a 'new mobility culture', expressing a desire to create a transport system that provides genuinely sustainable options and which supports the continuing regeneration and economic development of the city region. Furthermore, the LTP states that this 'Mobility Culture' is about ensuring people have equal access to employment opportunities, education and health facilities and to leisure, cultural and sporting resources, as opposed to simply focussing on sustainable travel as 'green' options.

2.3.32. The LTP considers that through the implementation of the Active Travel Strategy the LCR will improve and expand facilities to encourage cycling and walking, with associated health benefits, a reduction in carbon, and an increase in accessibility to employment and services.

2.3.33. The LTP also identifies Parkside SRFI as a significant strategic site within the LCR, it states that the site is potentially a good location for a road-rail transfer and warehousing point, potentially covering two phases totalling up to around 155 Hectares, providing an estimated 620,000m2 of floor space (based on a 40% density) by 2024.

Implications for St Helens

- The six goals set out in the Merseyside LTP3 set out a strong focus on not only 'sustainable transport', but also on a transport system that improves health and wellbeing, as well as being clean and low carbon.
- These goals could be met in a number of ways, but it is likely that this could be achieved through a strong focus on active travel modes, provision of clean, high quality buses and complementary infrastructure, and ensuring the borough is 'future-ready', with support for electric and autonomous vehicles.
- Attaining this 'new mobility culture' will require more than just mitigation of the transport impacts of new development and growth, and will also need strategic planning of infrastructure that will benefit and connect wider areas, complemented by a targeted program of behaviour change initiatives.

Neighbouring Local Plans – Liverpool City Region

2.3.34. As part of the LCR, the needs of St Helens must also be considered alongside those of the other metropolitan boroughs within the combined authority. However, at this stage only Sefton and Halton have a recently adopted Local Plan; Liverpool Council has an emerging Plan (as does St Helens itself), while Wirral and Knowsley Council only have or are in the process of producing a Core Strategy, with no Site Allocation document currently available.

2.3.35. This review therefore summarises the current position of the development of an up-to-date Local Plan within each of the neighbouring authorities making up the LCRCA.

Halton Local Plan Core Strategy (April 2013)

2.3.36. Halton Borough Council's Core Strategy Local Plan was adopted in April 2013, and contains the spatial vision for the Borough through to 2028, as well as a range of strategic objectives and policies. Halton Borough Council is currently progressing a Delivery and Allocations Local Plan document that will replace the remaining policies and the Proposal Map from the saved Unitary Development Plan (2005). A scoping consultation was undertaken in February 2014, with the preparation of a draft Local Plan commencing following that exercise. There is no expected timeframe published on Halton Borough Council's website.

Knowsley Local Plan Core Strategy (January 2016)

2.3.37. Knowsley Core Strategy (CS) was adopted in January 2016. The CS includes site allocations for areas to be released from the greenbelt, referred to as 'Sustainable Urban Extensions', while the Local Plan: Site Allocations and Development Policies document is anticipated to identify further proposed site allocations for housing and employment land. The Knowsley Local Plan Schedule lists this document as 'TBC', with no updates on a timeframe for consultation on a draft document. The Core Strategy released a significant amount of land from the Green Belt at the Halsnead Sustainable Urban Extension, close to junction 6 of the M62 – this is taken account of in the St Helens transport modelling

The City of Liverpool Local Plan

2.3.38. The 2018 Pre-Submission Draft of the Liverpool Local Plan was consulted on between January 26th and 9th March 2018.

2.3.39. The draft Local Plan draws heavily on content prepared for the Liverpool Council Core Strategy, which progressed to the pre-submission stage in 2012. Planning applications in Liverpool are currently assessed against the saved policies of the UDP, adopted in November 2002.

Sefton Local Plan (April 2017)

2.3.40. The Sefton Local Plan was adopted on the 20th April 2017, and sets out how development will be provided for to meet the needs of Sefton's communities; the policy framework for making decisions on planning applications; the strategic policy framework for Neighbourhood Plans; and priorities for investment in employment, housing and infrastructure, including site allocations.

Wirral Core Strategy

2.3.40.1 Planning applications in Wirral are currently assessed against the saved policies of the UDP, adopted in February 2000, although it is anticipated that a number of these saved polices will be replaced by the Council's emerging Core Strategy Local Plan, with a revised proposed submission draft expected to be reported in September 2017. Wirral Council is expected to produce a Land Allocations and Heritage Local Plan post-adoption of the emerging Core Strategy, although there is no timetable available for the publication of this document.

Warrington Core Strategy (July 2014)

2.3.41. The Warrington Local Plan Core Strategy is the overarching strategic policy document in the Warrington Local Plan. It sets out the planning framework for guiding the location and level of development in the borough up to 2027, replacing the Unitary Development Plan as a reference document against which all planning applications will be assessed.

2.3.42. The Warrington Core Strategy sets out an aspirational vision for maintaining Warrington's position as a pivotal location within the 'Atlantic Gateway' providing access to both Manchester and Liverpool conurbations and national transport infrastructure. To meet this overarching vision, 6 strategic objectives are set out:

- To secure the regeneration and renewal of the older areas of the town, strengthen existing neighbourhoods and make the most efficient use of infrastructure, ensuring development brings benefits to their host communities;
- To maintain the permanence of the Green Belt and the character of the countryside in the borough and protect them from inappropriate development;
- To strengthen the role of Warrington Town Centre as an employment, retail, leisure and cultural destination as well as a transport hub for the borough and the wider region;
- To be accessible as possible whilst reducing the need to travel and providing opportunities to move people and goods by non-car modes;
- To secure high quality design which reinforces local distinctiveness and protects, enhances and embraces the borough's built and natural assets;
- To minimise the impact of development on the environment through the prudent use of resources and ensuring development is energy efficient, safe and resilient to climate change.

2.3.43. Warrington undertook a public consultation exercise from 18th July 2017 to 29th September 2017 on the Preferred Development Option for a new Local Plan, which sets out the proposed approach to meeting Warrington's need for new homes and jobs between now and 2037.

2.3.44. The Preferred Options draft document provides an ambitious strategic framework to support the future growth of Warrington, specifically targeting the town centre for significant development and also across the inner areas of Warrington; this growth is complimented by development on the periphery of Warrington through green belt release.

2.3.45. The Preferred Options draft document asserts the intention to work in partnership with St. Helens Borough Council and its emerging Local Plan in order to support the proposed extension to the Omega employment site onto land St Helens identified in the St Helens LPPO as site EA1. This extension is included in the employment land need of Warrington making up part of the 381-ha required.

Draft Greater Manchester Spatial Framework (October 2016)

2.3.46. The 10 Local Planning Authorities in Greater Manchester (Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Stockport, Tameside, Trafford, and Wigan) agreed to prepare a joint Development Plan Document to set out the approach to housing and employment land across Greater Manchester for the next 20 years. This document is known as the Greater Manchester Spatial Development Framework (GMSF).

2.3.47. The GMSF sets out an aspirational vision for sustainable growth in the combined authority. The GSMF aims to deliver its vision through the following goals:

- Set out how Greater Manchester should develop over the next two decades up to the year 2035;
- Identify the amount of new development that will come forward across the 10 districts, in terms of housing, offices, and industry and warehousing, and the main areas in which this will be focused;
- Support the delivery of key infrastructure, such as transport and utilities;
- protect the important environmental assets across the conurbation;
- allocate sites for employment and housing outside of the urban area; and
- Define a new Green Belt for Greater Manchester

2.3.48. The GMSF sets out a framework to ensure development is well-located and makes use of the sustainable travel options already available across Greater Manchester. It identifies the need for developer contributions and also addresses the need for planning when it comes to strategic sites.

2.3.49. Within the GMSF the boroughs of Greater Manchester are split up into different gateways. The Gateways that may pose a significant impact on St. Helens are the Northern and Western; these Gateways include the borough of Wigan, which has many strategic links with St Helens through the M6 and East Lancashire Corridor, as well as sharing a borough boundary. Both of these corridors have been identified for significant industrial and logistic investment throughout the plan period; some major sites which could have implications on the transport networks within St. Helens, principally the A580 and the motorways, include:

- ELR3 (East Lancashire Road Corridor) - Pocket Nook, Lowton (Wigan) – 133,000m2 of floorspace for B1, B2 and B8.
- M6C1 Junction 25 (M6 Corridor) - 332,500m2 of B1, B2 and B8 employment uses and 80 new homes; and
- M6C2 Junction 26 (M6 Corridor) - 150,500m2 of floorspace for B1, B2 and B8 uses and 170 new homes.

2.3.50. Due to the extensive nature of the growth projected in the GMSF, the potential transport implications are likely to extend beyond the regional boundaries and have further impacts that have not currently been quantified.

2.4 LOCAL POLICY

St Helens Local Plan 2018 – 2033 Preferred Options (December 2016)

2.4.1. St Helens Council is currently preparing a new Local Plan, and consulted on a ‘preferred options’ draft from December 2016 to January 2017. The new St. Helens Local Plan will replace the St. Helens Local Plan Core Strategy (2012) and the 1998 Unitary Development Plan Saved Policies, once adopted. It sets out where different types of development will or will not be acceptable in principle, and general policies for assessing most planning applications.

2.4.2. The emerging Local Plan sets out an extensive vision for the borough. This vision states a desire to grow through urban regeneration and sustainable expansion. It is envisaged that employment land will be provided to make "best use of St Helens excellent transport links and location between two of the biggest economies in the North West" (Liverpool and Manchester), and further that:

2.4.3. The Borough's housing is well connected to employment sites, local facilities, attractions and green spaces, in a manner which encourages active travel and travel by public transport. Health is further improved by encouraging active live [SIC] styles with appropriate and sustainable sports and leisure facilities and attractive and safe open spaces and greenways."

2.4.4. The St Helens Spatial Strategy sets out in Policy LPA02 how St. Helens will deliver regeneration across the borough, focussing development on existing key settlements, which are considered to be areas with good existing transport links. The policy places an emphasis on reusing previously developed land, and states that the majority of housing will be delivered on previously developed land within these key settlements.

2.4.5. The policy states that this development will be encouraged through:

- setting lower and more appropriate thresholds for developer contributions within existing urban areas to reflect viability constraints associated with regenerating sites; and
- Keeping an up to date Brownfield Register of suitable development sites.

2.4.6. The Local Plan removes land from the green belt and allocates it for housing and employment sites to meet the housing and employment targets over the plan period, as well as safeguarding green belt land to meet housing and employment development needs for the following 15 years. The LPPO draft of the policy states that:

"Development will be required to make best use of land, provide the necessary infrastructure and services and integrate with the surrounding area whilst respecting the character of the area. Criteria for the development of Strategic Development Sites are set out in Policies LPA04.1 and LPA05.1."

2.4.7. The policy also states that:

"Employment development (excluding town centre uses) will be largely focussed on large sites capable of accommodating large employment opportunities in close proximity to the strategic road network of the M6 and M62 and better road, public transport and active travel links will be provided between residential areas in the Key Settlements, in particular areas of deprivation, and these areas of employment growth."

2.4.8. This is reflected in the use type and location of the Strategic Employment Site Allocations.

2.4.9. Policy LPA07 – Transport and Travel addresses transport and travel in the borough, with the LPPO draft setting out relevant requirements for all new development, including:

- Be located where there is potential for good access to existing and proposed public transport services, or be developed to allow access by public transport;
- Actively promote sustainable modes of transport, including where practicable electric vehicles and vehicle charging;
- Provide safe and adequate pedestrian, cycle and vehicular access to, from and within the development, including adequate visibility splays;

- Maintain the safe and efficient flow of traffic on the surrounding highway network. Development proposals will not be permitted where vehicle movements would cause harm to the highway network and surrounding environment.

St Helens Proposed Site Allocations

2.4.10. The emerging Local Plan sets out a number of site allocations in order to meet the extensive requirements for additional housing and employment in St Helens. These allocations are set out over the following policies:

- Policy LPA04 – A Strong and Sustainable Economy
- Policy LPA10 – Development of Strategic Rail Freight Interchange
- Policy LPA05 – Meeting St. Helens' Housing Needs

Policy LPA04 – A Strong and Sustainable Economy

2.4.11. The LPPO draft of this Policy sets out 12 employment sites, totalling 306 ha of employment land allocated for the Plan Period. The policy has a strong emphasis on protecting existing employment sites and those previously used for B1, B2 or B8 uses, stating the Council's support for reuse, reconfiguration or redevelopment of such sites and premises, and only allowing alternative uses where it can be demonstrated that land or premises are no longer suitable or economically viable, or where the community benefits of the development outweigh the potential of the site in its current form.

2.4.12. The policy also includes a statement declaring support for proposals for suitable rural economic development, diversifying the rural economy and providing local jobs for those located in these areas.

Policy LPA04.1 – Strategic Employment Sites

2.4.13. Of the 12 employment sites that were proposed for allocation in the LPPO draft, 6 are of considerable size and are identified as Strategic Employment Sites; these are:

- EA1: Omega South Western Extension, Phase 1, Land north of Finches Plantation, Bold – 31.2 ha, B2 & B8 uses;
- EA2: Land at Florida Farm North, Slag Lane, Haydock – 35.17 ha, B2 & B8 uses;
- EA4: Land north east of Junction M6 J23, south of Haydock Racecourse, Haydock – 42.31 ha, B2 & B8 uses;
- EA7: Land west of Millfield Lane, south of Liverpool Road and north of Clipsley Brook, Haydock – 20.58 ha, B2 & B8 uses;
- EA8: Parkside East, Newton-le-Willows – 64.55 ha; and
- EA9: Parkside West, Newton-le-Willows – 79.57 ha, B2 & B8 uses.

2.4.14. Site Allocation EA8 - Parkside East is allocated for the Strategic Rail Freight Interchange, while it is estimated that a further 60ha of land will be required to deliver the necessary infrastructure and landscaping required to deliver this. Parkside East is considered in further detail in Policy LPA10 (Development of Strategic Rail Freight Interchange).

2.4.15. Although there are six Strategic Employment Sites, these sites are clustered in similar locations and/or adjacent to smaller site allocations, and consequently present opportunities for cohesive infrastructure between neighbouring sites.

Policy LPA10 – Development of Strategic Rail Freight Interchange

2.4.16. This policy specifically relates to Strategic Site Allocation EA8: Parkside East, which is allocated for a Strategic Rail Freight Interchange (SRFI). The policy affirms the Council's support for this development, identified as a site of national significance and regional importance in the Transport for the North Northern Freight and Logistics Report (2016).

2.4.17. The LPPO draft policy includes a number of specific requirements for the sites, including:

- Mitigate any adverse impacts on the surrounding road network;
- Establish and implement a Travel Plan that incorporates measures which encourage travel to/from the site using sustainable transport modes, including access by public transport, cycle and foot, in accordance with Policy LPA07; and
- Put training schemes in place to increase the opportunity for the local population to obtain employment at the site.

Policy LPA05 – Meeting St. Helens' Housing Needs

2.4.18. This policy sets out the overarching policies covering the housing allocations in the Local Plan. The LPPO draft identified that an additional 10,830 dwellings will be required over the plan period of 2018-2033, equating to an indicative annual average of 570 dwellings.

2.4.19. The draft LPPO policy states that the housing requirements will be met from the following sources:

- Housing allocations shown on the Policies map and listed in table 4.4 of the policy;
- Sites with planning permission for housing development;
- Sites without planning permission identified in the SHLAA; and
- Windfall housing gains.

2.4.20. It is important to note that this list is not set out as a hierarchy. The policy includes 16 allocated sites, delivering approximately 4,000 dwellings.

Policy LPA05.1 – Strategic Housing Sites

2.4.21. Of the 16 allocated housing sites, 6 are identified in the LPPO as being 'Strategic Sites' as given their scale they will play a significant role in the delivery of the overall strategy of the Plan. In practice, they were housing sites for over 300 dwellings or employment sites over 20ha. These are:

- HA3: Land at Florida Farm South, Slag Lane, Blackbrook – 502 dwellings;
- HA5: Land South of Gartons Lane and former St. Theresa's Social Club, Gartons Lane, Bold – 446 dwellings;
- HA7: Land between Vista Road and Ashton Road, Earlestown – 350 dwellings;
- HA8: Land at Eccleston Park Golf Club, Rainhill Road, Eccleston – 585 dwellings;
- HA10: Land south west of M6 J23 between Vista Road and Lodge Lane, Haydock – 520 dwellings; and
- HA16: Land south of A580 between Houghton's Lane and Crantock Grove, Windle – 585 dwellings

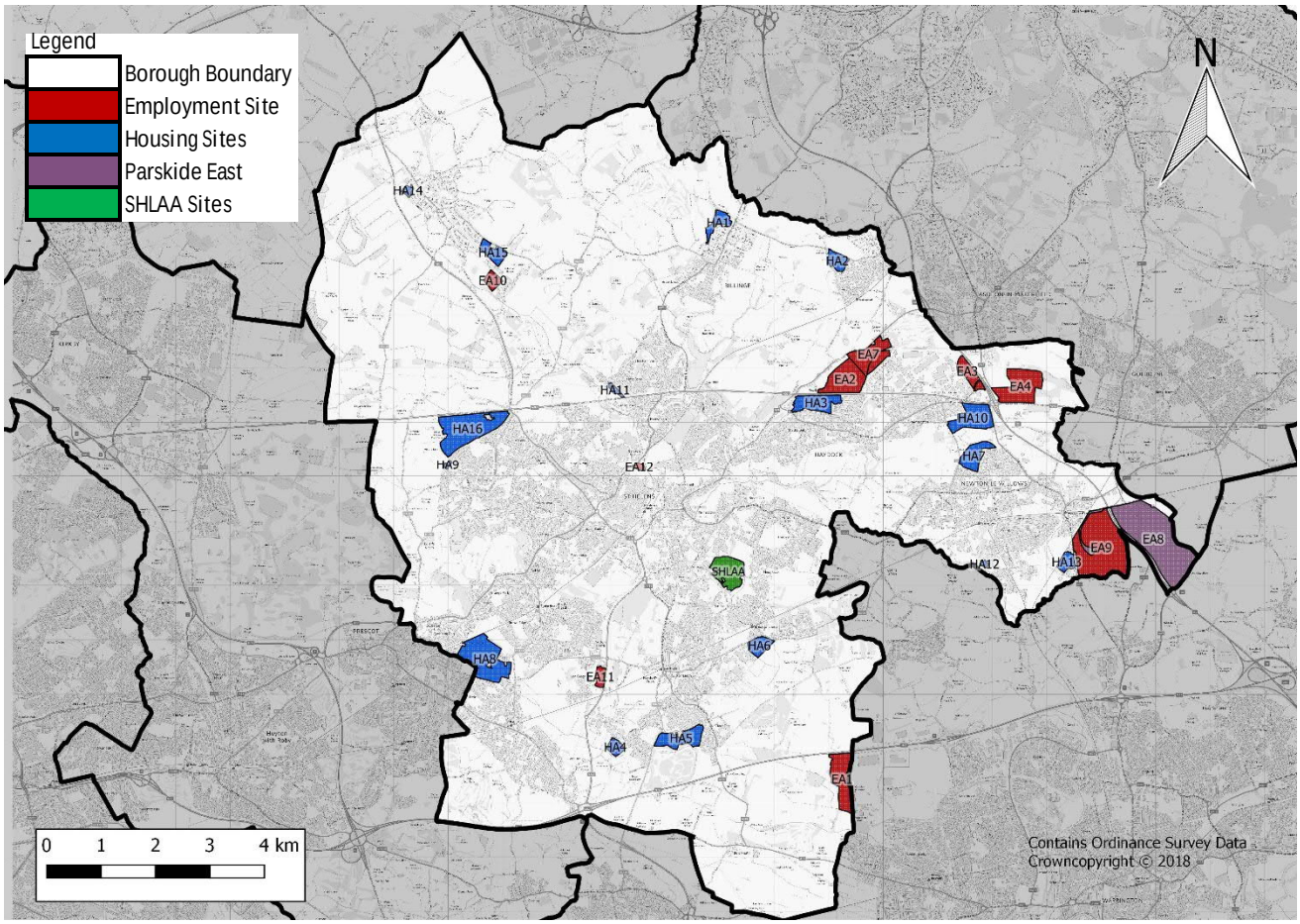
2.4.22. As sites included within the SHLAA are considered to contribute to meeting the housing requirement in St Helens, these sites have been reviewed to determine whether any are of a similar scale to the

Strategic Site Allocations. Only a single site considered appropriate for housing (that does not have an extant permission) exceeds a yield of 500 dwellings in the 2016 SHLAA1:

- SHLAA Site 09 – Moss Nook Urban Village.

2.4.23. Figure 2 shows the proposed site allocations across the borough, illustrating the widespread distribution and the proximity of many of the Strategic Sites to the Strategic Road Network (SRN) and A580 East Lancashire Road.

Figure 2: St Helens LPPO proposed Site Allocations



[1] The modelling takes account of the 2017 SHLAA sites

2.5 STRATEGIC FIT WITH THE LCR

2.5.1. The review of the overarching Liverpool City Region policy documents identifies the LCR's growth ambitions in regards to freight and logistics, hinging on the significant investment in the port of Liverpool. The LCR Growth Strategy sets out an ambitious vision for the LCR to be:

"the global logistics hub for the Northern UK and Ireland, and a globally significant Maritime Knowledge Hub, with a thriving cluster of industries and services, predicting sector GVA to increase by 50% by 2040".

2.5.2. The Growth Strategy recognises the significant assets in the region in this sector, which include the largest Atlantic facing port on the UK west coast, and the new Liverpool2 deep water terminal. As part of this aspiration, the Growth Strategy identifies an opportunity to develop:

"a large portfolio (estimated at 400-500ha over 25 years) of logistics sites, multimodal facilities and buildings to fulfil demand generated from increased port based freight, retail and manufacturing logistics close to ports, airports and near major road and rail infrastructure."

2.5.3. To support this, the Growth Strategy also recognises the need for the relevant transport infrastructure required to make the LCR the Global Port and logistics hub for the northern UK and Ireland, expecting a:

"surge in demand for logistics facilities and 'spin-off' industries".

2.5.4. While not exclusively the focus of the emerging St Helens Local Plan, the thrust of the plan in regards to the Strategic Employment Site Allocations is focussed on catering towards logistics and freight usages. Part 11 of Policy LPA04 (A Strong and Sustainable Economy) states that the provision of new jobs will be facilitated through:

"Maximising the economic opportunities presented by the borough's location on the North West's strategic transport corridors."

2.5.5. Furthermore, Policy LPA02 (Spatial Strategy) states that:

"Employment development (excluding town centre uses) will be largely focussed on large sites capable of accommodating large employment opportunities in close proximity to the strategic road network of the M6 and M62 and better road, public transport and active travel links will be provided between residential areas in the Key Settlements, in particular areas of deprivation, and these areas of employment growth."

2.5.6. These policies set out an emphasis that is reiterated throughout the Local Plan: that employment land allocated to meet the identified need for B1, B2 and B8 Use Class development will be primarily focussed on large previously undeveloped sites, capable of accommodating large employment opportunities in close proximity to the strategic road network of the M6 and M62.

2.5.7. It is recognised throughout the Local Plan that St. Helens is well-placed in relation to the SRN to take advantage of this connectivity, and that this represents an opportunity to focus employment on uses that can maximise this position, such as freight and distribution. The Strategic Employment Allocations are designed to support this aspect of the policy, and are all for B2 & B8 use classes—General Industrial and Storage & Distribution.

2.5.8. The reasoned justification explains that the supporting evidence shows that meeting market demand for large scale distribution centres requires sites of 5ha or greater; the sites previously allocated in

the Core Strategy were not considered appropriate for this scale of development, and therefore the majority of those sites are not allocated in the Local Plan Preferred Options.

2.6 THE IMPACT OF FUTURE MOBILITY

Introduction

2.6.1. A key challenge for St Helens will be meeting its future needs and continuing to grow in a rapidly changing, globalised world. There is a clear need to embrace change, ensure that people have the right qualifications and skills for the future, and provide access for all, including both people to places and businesses to markets, in order to fully realise the opportunities presented for everyone.

2.6.2. For St Helens to meet and exceed its growth aspirations, the borough will need an integrated transport network that not only meets the existing accessibility needs of its businesses and those that live, work, learn, and visit the area, but more importantly meets and accommodates the future needs of those that will live, work, learn, and visit the area.

2.6.3. This section presents an overview of how the changes in transport provision and technology over the coming decades may influence travel in St Helens, and indeed globally. WSP recently released a White Paper, New Mobility Now (WSP, 2017), covering this topic in more detail; a copy of this document is included as Appendix A. The influence of New Mobility is yet to be truly understood, let alone quantified, and it is therefore impossible to discuss a way to measure the potential impacts. Nevertheless, this section presents a number of recommendations for next steps that could influence a number of emerging policies in St Helens, guide the creation of new SPDs, and provide considerations for the next Local Plan.

Future Mobility: Ensuring the Borough leads the Way

2.6.4. There are currently several significant global trends which have the potential to impact on how, when and why movement will need to occur. Trends such as globalisation, climate change, and a growing and ageing population will have significant transport impacts right across the region.

2.6.5. Globally, the developed world is close to a significant change in transportation, facilitated by an on-going digital revolution, enabling unprecedented levels of connectivity, autonomous vehicles across all modes, clean propulsion, and new models of sharing (amongst many other things), altering the traditional models of transport access, ownership, and use. While St Helens can expect that private car usage will still remain an essential part of the transportation landscape in the near future, this is likely to change significantly over the coming decades, with automation of driving tasks becoming a reality and fossil fuels being phased out, both nationally and globally.

2.6.6. Transport is a derived demand, serving people and commerce through the provision of access to activities such as social interactions, employment opportunities, educational attainment, healthcare needs, leisure activities, tourism, markets, and distribution. Digital connectivity is increasingly helping individuals and organisations to reduce the need to travel, and while this trend is likely to continue, it is not considered to be a model applicable to all, and certainly not all the time.

2.6.7. Better transport connectivity will unlock resources for growth and act as a catalyst for productivity improvements through economies of scale and enhanced specialisation. This will promote enterprise, attract inward investment and ultimately increase value and choice for consumers. It should also be noted that increasingly digital access can meet the needs of some activities that

traditionally required conventional transport (air, road, and rail) meaning that 'virtual' access is an important part of our future considerations.

2.6.8. New Mobility

2.6.9. These changes in transportation can be structured around four distinct strands of change, and one key enabler. Each strand is currently evolving across the globe, and each brings distinct benefits and opportunities; these strands are:

- Progress towards vehicle automation (including driverless vehicles);
- Distinct from this, the evolution towards connected vehicles, transport systems and networks;
- Increasing appetite for shared use (for example, via 'mobility as a service' models); and
- Increasing public interest in, and a shift towards, electric vehicles

2.6.10. These four strands of change are considered likely to significantly alter St Helens transportation networks and places. Furthermore, it is considered that leaving the evolution of such systems wholly to the market is a high-risk strategy that may produce undesirable outcomes.

2.6.11. The fifth strand is considered necessary to create a transportation future that is popular, fair, and sustainable: business models and revenue generation. This strand is likely to play a core enabling role, encouraging collaboration between the public and private sectors, and influencing the direction and speed of change across the other four strands.

2.6.12. Together, these five strands are termed 'New Mobility'—the overall package of transport, technology, and mobility changes that will create new transport systems and significantly change the way people move, live, and interact with each other. Each strand of New Mobility is considered essential, adding value to the overall concept, and without any one strand, the benefits of all are unlikely to be maximised.

2.6.13. The automated and connected strands are considered to be the two elements that will transform future network efficiency, safety and access to mobility, creating a single data-led multi-modal transport system. However, in isolation they are unlikely to reduce demand or associated congestion, or have any great impact on air quality or the quality of our places.

2.6.14. The electric strand (or potentially other alternative fuels) is the primary New Mobility element that holds the key to substantially cleaner air for communities in the long-run.

2.6.15. The sharing strand holds the transformational power around future place-making across our cities, towns and rural centres. A high quality, flexible and affordable mobility service that works as well as (or better than) today's car ownership and lease models could create a substantial move away from private vehicle ownership, significantly reducing the numbers of vehicles using the network and parked across the Borough.

2.6.16. Finally, the business model strand, linked closely with road pricing, is anticipated to bring together the lessons from the various examples across the world to create a New Mobility 'bundle' that brings together the automated, connected and electric strands under one business model. The shared mobility strand already has various business models in operation, but it is anticipated that these will evolve and become better integrated with the wider New Mobility concept. In the interests of simplicity, but also to maximize returns and efficiency, it is anticipated that there will be a move towards integrated system operation where the cost of trip-making are clear and understandable,

and where levels of use are maximized—but in a way that manages congestion and encourages efficiency.

2.6.17. New Mobility business models also hold the key to capturing commercial returns for both private sector participants (whose returns should increase through collaboration) and public-sector bodies who are responsible for maintaining and investing in multi-modal transport networks over time. It is also the corner stone that will steer public engagement and opinion, with acceptability being dependant on quality of service and a perception that user costs are fair and affordable.

Putting New Mobility into a Local Context

2.6.18. There is no easily defined single 'package' that will work everywhere. It will be the local application, and onward growth, of specific yet tailored solutions that will bring genuine benefit to St Helens' places and routes of the future. Some players have the power to generate widespread multi-national change, while others hold much more local influence as enablers and agents of change on the ground. Each needs the other if they want to maximize popularity, commercial returns and wider benefits.

2.6.19. At this point in time, the majority of these technologies are very much in their infancy and only just emerging. The uptake of electric vehicles, use of Mobility as a Service (MaaS), and use of autonomous vehicles is essential market-driven at the present time, although as the adoption of national targets for the end of traditionally fuelled vehicles continues across the globe, local and national governments are likely to have to consider their role in facilitating such change. New legislation is likely to be required in order to facilitate truly autonomous vehicles across the highway network, while the potential for shared use models to replace traditional bus and taxi business models could have significant impacts on travel patterns.

2.6.20. With such technology very much in the early stages of adoption, there is no current framework or methodology for measuring the potential impact of such changes on transportation networks.

2.6.21. For St Helens, the move toward future mobility creates a number of possibilities. Each strand of New Mobility has a number of potential outcomes that could influence the development of strategy and investment in the transport network. These include:

Automated Driving

- Create local guidance, as appropriate, to bring through new policies and potential new business models to include capital and revenue funding;
- Collaborate with others to identify changes to planning policy requirements that will consider the effects of automated vehicles and their impacts on mobility, in the context of all five pillars of change. Identify what the borough requires and engage with the relevant providers; and
- Consider a 'mobility index' in place of a public transit accessibility rating, recognizing that the gap between public and private transport is likely to narrow.

Connected Vehicles, Transport Systems, and Networks

- Understand the potential and appetite to support long-run investment in transport and mobility connectivity, perhaps through new business models;
- Recognize and investigate the opportunity to tap into new sources of data that might support local planning, place-making and operation. These could be beneficial at the day to- day level or more strategically;

- Encourage links between strategic land-owners and connected technology providers, and look for ways to collaborate for long-run community benefit; and
- Support and/or seek national government decisions around connectivity and data standards

Electric Vehicles;

- Consider new targets for ultra-low emission zones in specific locations, especially in congested urban locations;
- Support developers and fleet operators in bringing through creative electric vehicle solutions, perhaps in combination with other aspects of New Mobility;
- Encourage electrification for authority -owned/leased fleet vehicles unless limited by operational requirements;
- Establish comprehensive policy standards for electric charging provision by location and land use, without incentivizing inner city private car ownership;
- Expand the availability of rapid charging stations across the on-street network and review parking policies to support the use of shared electric vehicles; and
- Explore policy/pricing measures to encourage smart charging and new business models for the installation of new charging infrastructure.

Shared Use

- Incentivize collaboration between public and private sector operators in the shared mobility space, and seek consensus around common objectives that benefit each;
- Consider how 'Mobility Orientated Development' might be measured against planning and mobility objectives, explicitly enabling shared mobility to drive development planning processes and support uplifts in development densities;
- Linked to this, investigate the creation of a New Mobility index to measure accessibility levels (considering access to public transport, electric charging, multiple shared mobility options, time mapping and walk/cycle options);
- Develop policy and quality targets for the range of sharing mobility models. These could relate to reliability, cleanliness, affordability service indicators applied to carsharing (car clubs, fractional ownership), ridesharing, public transport and bikesharing in order to achieve specific modal shares and reduction in private car usage; and
- Consider policy incentives for shared mobility options such as preferential parking/drop-off locations, high occupancy lanes or signal prioritization.

New Business Models

2.6.22. It is more complex to consider the next steps in business models and revenue in regards to New Mobility; certain models will be the result of uptake in the New Mobility strands, while some business models could influence the development of New Mobility in other areas.

2.6.23. Nevertheless, there is a still a need to consider how St Helens could create a fair, sustainable and politically acceptable operating model that is self-maintaining and makes the most of all four aspects of New Mobility, recognizing their unique individual contributions to desirable wider outcomes. At this stage, this is likely to be little more than consideration of various elements, influences, and possible outcomes, although an initial step could be to start to set New Mobility targets and carry out scenario tests for a range of outcomes, reflecting different future values of mobility and time, and then to keep a close watch on the actual influencers of this value in the context of New Mobility change.

Implications for St Helens

- A key challenge for St Helens will be meeting its future needs and continuing to grow in a rapidly changing, globalised world. The impacts of New Mobility, while currently very uncertain, are likely to be realised over the proposed Plan period.
- St Helens will need to be proactive rather than reactive to these changes in travel and transport demands to ensure the borough is at the forefront of modern transportation.
- St Helens should consider the applicability of the recommendations made in this chapter to the Borough, and begin to collaborate with stakeholders such as travel providers, land owners & developers, technology providers, and other authorities in the city-region to determine the appetite for change.
- An immediate opportunity is to require electric car charging infrastructure in new development and public car parks, plus promotion for shared transport infrastructure (bays for car clubs, etc).

2.7 SUMMARY

2.7.1. This review has considered relevant national, regional, and local policy relevant to St Helens, and the potential implications of these on the emerging St Helens Local Plan, paying particular regard to the transport implications.

2.7.2. The review has found a rapidly evolving landscape across the northwest, with significant growth aspirations across all neighbouring authorities as the national economy recovers from a period of recession. The regional structure has changed significantly, with the abolition of the Regional Development Agencies and the development of the Local Enterprise Partnerships, and many nearby authorities are undergoing a transition period towards devolution and greater local powers, with the creation of the Liverpool City Region devolution in deal in 2015, the Greater Manchester devolution deal in 2014, and Cheshire East, Cheshire West & Chester, and Warrington currently seeking a devolution deal.

2.7.3. The growth across this area of the northwest leaves St Helens well-placed to take advantage of the extensive investment across the regions; indeed, the emerging St Helens Local Plan identifies the need to maximise the potential opportunities presented by the borough's strategic connectivity, allocating employment land for freight and logistics uses, as well as general industry.

2.7.4. The significant growth across the northwest will undoubtedly cause an increase in travel demand across all modes of transport. This demand is likely to spread outside of the traditional peak periods, reflecting the changing needs of people and businesses. However, current policy makes it clear that additional capacity requirements cannot simply be accommodated through additional roads, and present an agenda for increasing the use of sustainable transport modes.

2.7.5. For St Helens, this means that the emerging Local Plan must consider not only how to accommodate an increase in travel demand through the borough's own planned growth, but also the potential impacts of growth across the region, as people move fluidly across boundaries for employment opportunities, business purposes, and leisure pursuits. In accommodating this

increase, St Helens will need to encourage an uptake in more sustainable modes of transport, shifting private car usage toward bus, rail, walking, and cycling, as well as paying cognisance to new and emerging trends in travel.

2.7.6. This document assesses the impacts of St Helens' ambitious proposals for growth, considers existing travel conditions, and predicts how growth in St Helens and the wider region could affect conditions in the future. The document not only sets out a framework for further studies to accommodate increases in traffic, but also provides a number of recommendations for policies, guidance documents, interventions, and initiatives to encourage sustainable travel across the borough and beyond. In this way, the Transport Evidence Base for St Helens pays due cognisance to local, regional, and national policy, aligning with the wider transport needs of the Liverpool City Region, the North, and the country.

3

STRATEGIC LOCATION AND BOROUGH CHARACTERISTICS

3 STRATEGIC LOCATION AND BOROUGH CHARACTERISTICS

3.1 INTRODUCTION

3.1.1. This section of the report provides an overview of the Borough from a transportation perspective, considering the existing infrastructure and committed schemes expected to come forward in the immediate future. This information helps inform the baseline conditions to shape a vision for transportation in St Helens by the end of the Plan period, and guide the requirements for intervention.

3.1.2. This section also presents key statistics relating to transportation and travel characteristics, behaviours and trends. Such statistics help identify patterns of sustainable travel as well as areas with high car ownership levels and typically longer journeys. This data can influence areas of the Borough already making best use of available sustainable transportation modes, but also help direct investment and interventions, ensuring those areas currently reliant on private car usage have significantly more options by the end of the Plan period.

3.2 STRATEGIC LOCATION AND BOROUGH CHARACTERISTICS

Highways - Overview

3.2.1. Located midway between Liverpool and Manchester, St. Helens is in a strong strategic position at the heart of the North West. The borough is characterised by an extensive road, bus and rail network, providing a variety of options for people travelling to and from St. Helens.

3.2.2. St Helens borough contains over 700km of roads, including 75km of the Key Route Network (‘A’ Roads); This includes a number of significant radial routes, providing links not only across the borough but also to neighbouring authorities, including:

- the A570 to the north (towards the M58 and Ormskirk/West Lancashire);
- the A58 (connecting to the M6 junction 24 and Wigan to the east and Knowsley to the west); and
- the A570 St Helens Linkway to the south (providing high speed connections to the M62 and both Warrington to the south east and Widnes to the south).

3.2.3. The borough also includes part of the A580 East Lancashire Road, a high speed (primarily dual carriageway with a mix of 40/50/60 mph limits) direct route between Liverpool and Manchester. The East Lancs Road was the biggest road project undertaken before the advent of the motorway network, and runs across the centre of the Borough—to the north of the town of St Helens—in an east-west alignment.

3.2.4. The Liverpool City Region’s trunk road network comprises parts of the M53, M56, M57, M58, M6, and M62 to the east of junction 6 and the A5036 from the Port of Liverpool to Switch Island. These roads remain owned and managed by Highways England. There are several SRN routes in and around the Borough of St. Helens, including the M6, M62 and M57, in addition to a short section of the A580 East Lancashire Road at Junction 23 of the M6.

The Key Route Network (KRN)

3.2.5. The Key Route Network is considered to be those roads that form part of the Primary Route Network (PRN), which includes all roads that form a continuous network between ‘primary destinations’. In essence, these are the most important local roads. The KRN in the Liverpool City Region also

includes two Mersey Tunnels and those roads that serve primary destinations immediately outside the boundaries of the LCR. In addition, the KRN includes roads that link significant new or proposed housing and employment areas that are not already part of the PRN.

3.2.6. Changes in responsibility for the management and maintenance of the Key Route Network (KRN), are likely from the devolution of highway, traffic and street authority powers to the Mayoral Combined Authority (MCA). The responsibility for asset management and Whole of Government Accounts (WGA) for these changes are still in the process of being finalised.

Investment in the KRN

3.2.7. The LCRCA has secured approximately £28 Million from the LCRCA Single Investment fund (SIF) for the LCR KRN Invest for Growth programme, an integrated programme of interventions in the strategic highway routes that are considered to contribute to growth in the LCR. This investment covers a range of highways interventions between 2017/18 - 2019/20, and builds on the investment made across the LCR from previous Local Growth Fund Programmes.

3.2.8. The Invest for Growth programme of works includes measures that improve conditions for all road users (freight, private cars public transport users and pedestrians and cyclists), and measures that improve the safety, capacity and effectiveness of key junctions and links, as well as works to improve the quality and resilience of the City Region's highway assets.

3.2.9. The package is also considered to support the growth of the SuperPort and multimodal freight access, accelerate growth in the enterprise zones, support the growth and expansion of the city centre, connect new housing and employment sites, support the visitor economy, and help to rejuvenate town centres.

Cycle Connections

3.2.10. Cycling around St Helens is actively promoted through both the Council and Merseytravel, with a variety of sources of information to facilitate cycling around the borough, as well as complementary programmes or infrastructure investment and behaviour change initiatives.

3.2.11. St Helens Council are currently part way through a six-year Sustainable Transport Enhancements Package (STEP), an integrated programme of investment in sustainable transport in the LCR. The Growth fund will contribute £41.1 million over the period, with further funding provided by the local Councils and partners. STEP schemes over the period 2015 – 2017 (first two years of funding) include:

- Haydock Connectivity, Stanley Bank Way - Off-road cycle link along A580 completing cycle facilities along its length from M62 to Knowlsey boundary;
- Haydock Connectivity, King George V links - Improved cycle facilities within park;
- Connecting Haydock - Provide improved sustainable transport facilities to Haydock Industrial Estate linking into Schemes 1, 2 and 3;
- Newton-le-Willows Eastern Enhancements Programme Earlestown to Newton-Le-Willows Cycle Path;
- Connect St Helens - upgrade of Sankey Valley to cycle path and improved cycle parking in St Helens Town Centre;
- Haydock Connectivity, Liverpool Road - Junction Improvement for access to Haydock Industrial Estate; and

- Parkside Eastern Enhancements Programme - Sustainable transport route linking Vulcan Village, Newton Le Willows Station and Parkside to improve access to employment.

3.2.12. Further schemes anticipated for 2017 to 2021 include:

- Haydock Industrial Estate Access - a new junction that will upgrade the existing signalised Haydock Lane/A580 East Lancs Road junction with pedestrian and cycle facilities, right and left turning lanes and an improved layout;
- Active Travel East - improvements to walking and cycling routes from the Haydock and Newton Le Willows area to key destinations such as railways stations, employment, retail and education; and
- A58 Active Travel Improvements - improvements to the walking and cycling infrastructure along parts of the A58.

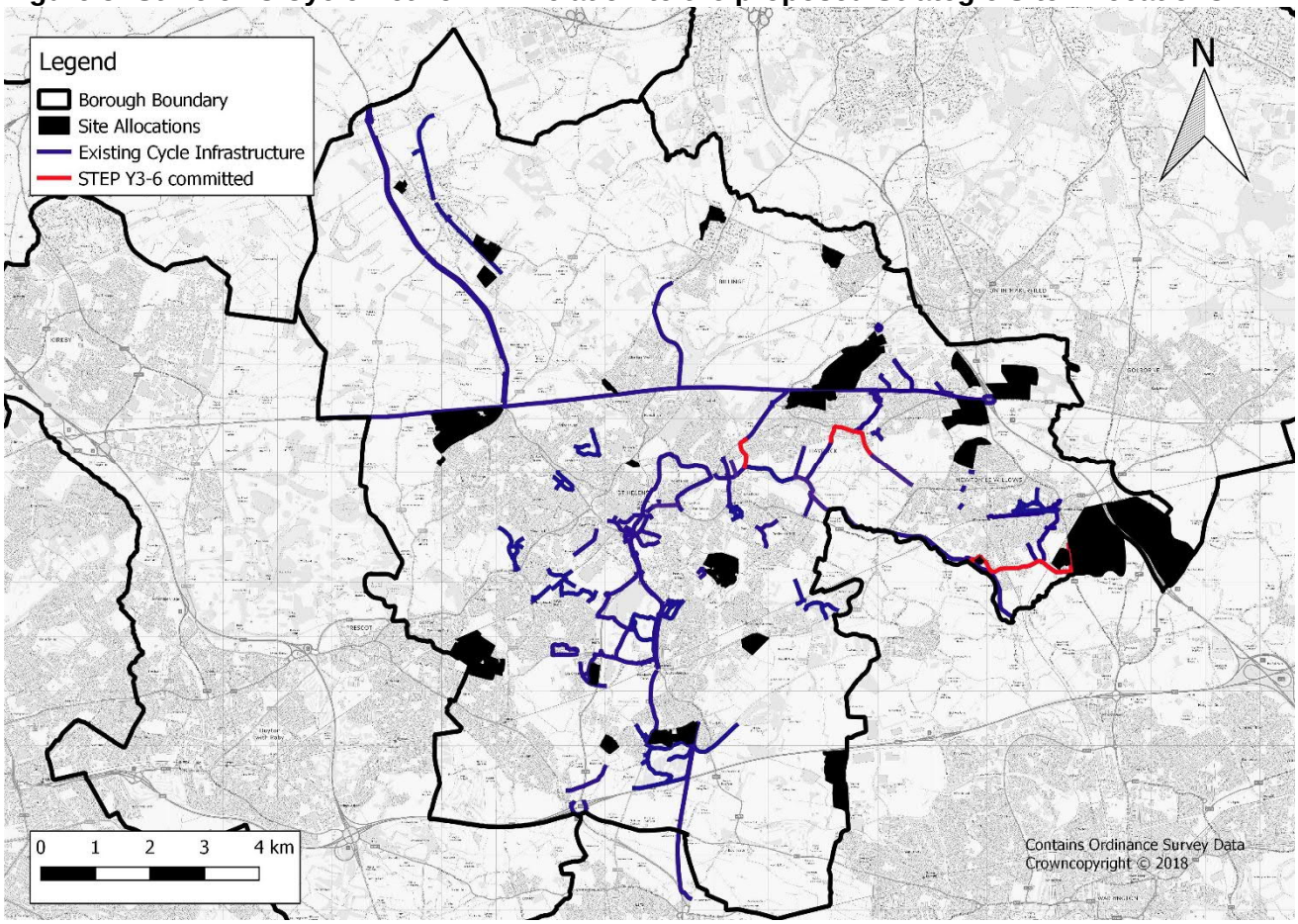
3.2.13. St Helens also operates the 'Healthy Living' team2, who deliver a number of behaviour change initiatives designed to encourage model shift from private car use to walking and cycling, amongst a number of other associated roles.

3.2.14. St Helens produce a comprehensive, up-to-date map of the existing cycling infrastructure in the borough. This is produced in conjunction with the various neighbouring authorities in the LCR, facilitating ease of travel across the region. While there is a comprehensive network of 'suggested cycle routes' in St Helens, these are predominantly quieter streets that are considered more conducive to cycling, and do not feature any dedicated cycling infrastructure.

3.2.15. Figure 3 maps the existing network of cycleways across St Helens in relation to the strategic site allocations in the Borough.

[2] http://www.healthysthelens.co.uk/

Figure 3: St Helen's Cycle Network in Relation to the proposed Strategic Site Allocations



3.2.16. The existing network of cycling facilities within St Helens is disjointed in places. Various cycle and footpaths are located throughout the borough, but do not make up part of a larger connected network of routes. Most of the available dedicated cycling infrastructure is located along radial routes leading to St Helens town centre, although there are other routes around Clock Face, parts of the A580 East Lancs Road, and in Newton-le-Willows.

3.2.17. While the importance of active travel is addressed in both the St Helens emerging Local Plan and the LCR's A Transport Plan for Growth, St Helens does not currently have any Local Plan documents solely dedicated to the promotion of walking and cycling.

3.2.18. The DfT published its National Cycling and Walking Investment Strategy in April 2017, outlining the government's ambition to make cycling and walking a natural choice for shorter journeys or as part of longer journeys by 2040. The Strategy includes specific objectives to double cycling, reduce cycling accidents, and increase the proportion of 5 to 10-year-olds walking to school to 55% by 2025. In order to achieve this, £1.2 billion in funding is allocated for various purposes, including:

- £101 million to improve cycling infrastructure and expand cycle routes between the city centres, local communities, and key employment and retail sites;
- £389.5 million for councils to invest in walking and cycling schemes; and
- £476.4 million from Local Growth Funding to support walking and cycling

3.2.19. The Strategy was accompanied by the Local Cycling and Walking Investment Plan (LCWIP), a 40-page document explaining the process of developing a comprehensive and cohesive walking and cycling infrastructure plan. Such a plan allows Local Authorities to proactively plan their active travel infrastructure needs over a set period, setting out guidelines for defining scope, gathering supporting evidence, devising a cohesive network, prioritising the various elements of the network, and aligning the proposals with other policies, strategies, and delivery plans.

3.2.20. Having an adopted LCWIP is anticipated to help Local authorities make a case for local investment that delivers the plan as funding becomes available, while also ensuring that new development contributes to active travel in a cohesive manner.

3.2.21. As a Combined Authority, the LCR will be developing an LCWIP for the sub-region, which includes St Helens. It is anticipated that this will be delivered through the DfT's support framework, providing technical support to 35 local authorities.

Bus Connections

3.2.22. As with cycling, bus usage is also actively promoted through both SHBC and Merseytravel as part of St Helens' sustainable travel agenda. Sources of bus information can be found throughout the borough in various forms, including the Merseytravel public transport map and guide, produced in conjunction with the neighbouring authorities in the LCR to help facilitate ease of travel by bus across the region.

3.2.23. St Helens has benefitted from a £1.5m investment which focussed on improving bus travel as part of the Liverpool City Region Better Bus Area project (BBA). The BBA is being delivered in collaboration between Merseytravel, LCR Borough Councils, and bus operators Arriva, Stagecoach, Halton Transport and Huyton Travel. The BBA region covers several principal residential areas and key centres of employment, including Runcorn, Widnes, Kirkby, Huyton, St Helens town centre and Speke. It is considered to cover some of the most significant areas of deprivation in the City Region, as well as principal industrial and development areas including the Mersey Gateway and 3MG. and is considered to be an opportunity for the City Region to utilise its existing assets and deliver targeted investment in new infrastructure and industry to help to reverse deprivation.

3.2.24. The BBA commenced in the financial year 2013/14, and ended in the financial year 2017/18.

3.2.25. Improvement works which have now been completed in St Helens as part of this scheme include:

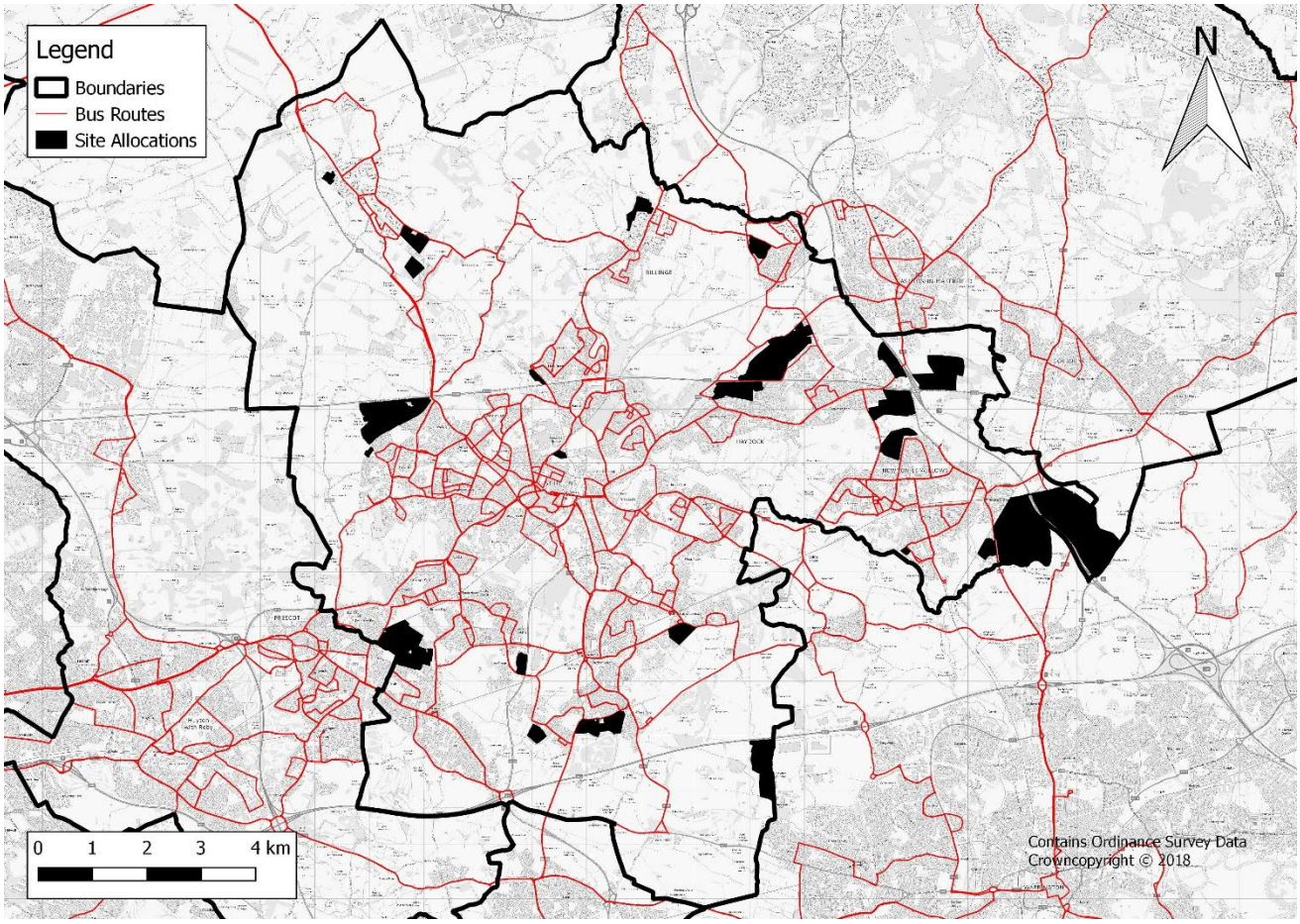
- Widening of junction and upgrade of traffic signals at A57 Warrington Road and Holt Lane Junction;
- Widening of junction and upgrade of traffic signals at A57 Warrington Road/B5419 Wilmere Lane/ Jubits Lane Junction;
- Upgrade of adjacent traffic signals at Lea Green Railway Station at the adjacent junction with the A569 Marshall's Cross Road;
- Additional pedestrian crossing at the north entrance on Corporation Street into St Helens Bus Station; and
- Bus priority measures to help reduce delays to buses and upgrading of traffic signals at the A58 Prescot Road/Freckleton Road junction and the adjacent junction with Lugsmore Lane

3.2.26. Improvement works which are still to be completed in St Helens include:

- Widening of junction and upgrade of traffic signals at A57 Warrington Road/Longton Lane/Old Lane junction;
- Upgrade of traffic signals and bus priority measure at A58 Prescot Road/Dunriding Lane junction;
- Upgrading of traffic signals at the south exit of the St Helens Bus Station onto Bickerstaffe Street and at the adjacent junction at Library Street;
- Upgrade of existing traffic signals at the A570 Chalon Way/Bridge Street/Canal Street junction and also in Westfield Street; and
- Upgrade of existing traffic signals at the Westfield Street/Cotham Street/Baldwin Street junction.

3.2.27. Figure 4 maps the existing network of bus service routes across St Helens in relation to the strategic site allocations in the Borough.

Figure 4: St Helen's Bus Service Network in Relation to the proposed Strategic Site Allocations



3.2.28. There is an extensive bus network across St Helens borough; Figure 4 highlights 116 services which connect areas both in the borough itself and to further afield, including Warrington and the wider LCR. These services cluster within the town centre district and other urban locations, with less provision in more rural locations.

3.2.29. When considering the allocated sites, Figure 4 shows that most sites are located close to at least one bus route. Each site will be analysed in more detail in subsequent sections of the report.

3.2.30. It is noted that Strategic Site EA1 (Omega extension) has no bus services from St Helens serving the development, which means that a door to door bus journey using St Helens' services would be impossible to this location, and using the bus as part of a multi-modal journey could also be difficult.

Rail Connections

3.2.31. There are ten rail stations serving the borough in St Helens. The railway stations of St Helens Central, Thatto Heath, Eccleston Park and Garswood are situated on the Liverpool Lime Street to Wigan North Western line, Rainford lies on the Kirkby to Wigan line and Rainhill, Lea Green, St Helens Junction, Earlestown, and Newton-le-Willows railway stations connect Liverpool and central Manchester.

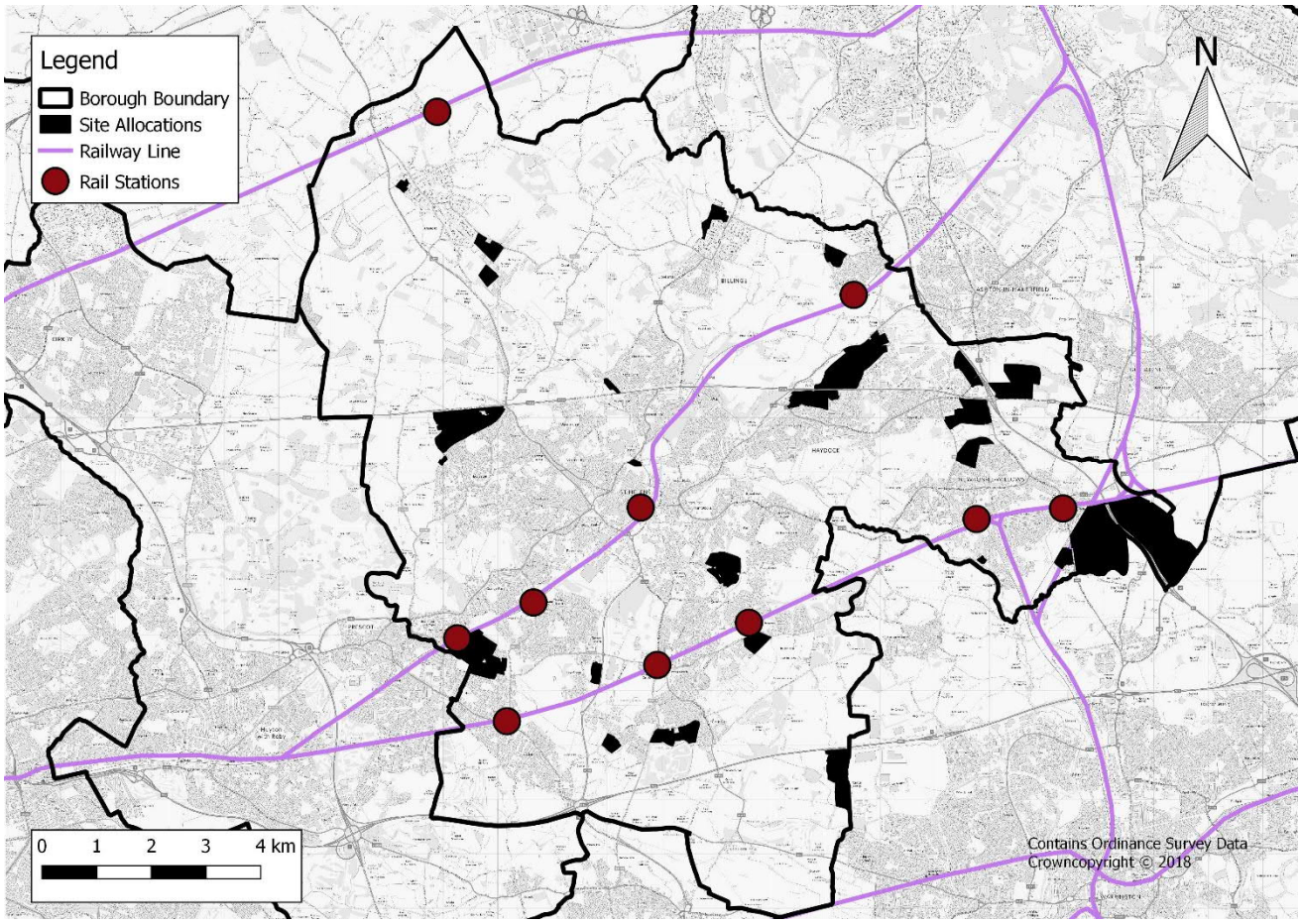
3.2.32. As part of the Liverpool City Region railway upgrade plan, Newton-le-Willows station is being upgraded into a multi-modal transport hub. Plans for the station include a new bus interchange, extended car park facilities and a new booking hall on the south side of the station. Access to the station will be improved with the implementation of lifts, subway, and stairs. The station upgrades are due to be complete in spring 2018. The project is funded by the Liverpool City Region through the Local Growth Fund and Merseytravel. This is one of 10 major railway upgrades as part of a £340m railway investment in the Liverpool City Region and sits within the wider Great North Rail Project to enhance rail provision across the north of England.

3.2.33. Figure 5 maps the existing railway network across St Helens, including the stations and routes. The figure highlights the location of the railway services in relation to the proposed Strategic Site Allocations in the borough.

3.2.34. The rail network provides St Helens with strategic and local connections to major employment, leisure and residential locations both within the borough and the wider region, such as Warrington, Liverpool and Greater Manchester.

3.2.35. In relation to the proposed Strategic Sites Allocations, most of the sites are located near to a rail station, while sites EA1 and HA16 are located furthest away from any railway station, making it less practicable to access these areas by rail.

Figure 5: St Helen's Railway Network in Relation to the proposed Strategic Site Allocations



3.3 RAIL FREIGHT – PARKSIDE SRFI

3.3.1. St Helens Borough Council have identified Parkside as key strategic site, not only important locally but also regionally significant to both the Liverpool City Region (LCR) and the wider North. The site is split into two halves—bisected by the M6 Motorway—referred to as Parkside East and West. The two sites are included in the emerging St Helens Local Plan as sites EA8 & EA9 respectively.

3.3.2. The overall Parkside site is located on the former Parkside colliery, covering approximately 600 acres. The site was the location of a colliery which employed around 2,000 people until its closure in 1993. The site is located to the east of Newton – Le – Willows which is a market town in the Borough of St Helens.

3.3.3. The aspiration is to bring forward Parkside as a Strategic Rail and Freight Interchange (SRFI), one of only 3 in the north of England (alongside Port Salford and IPort Rossington). Parkside benefits from access to strategic rail links in all directions, with a north – south connection via the West Coast Mainline and also an east – west link via the Chat Moss line. There is a clear strategic link to deliver a project of this nature in this region and the proposals would strategically align with the delivery of other large logistical schemes in the area such as Liverpool2.

3.3.4. One of the main reasons that the Parkside site has not come forward previously is the difficulties in delivering a viable access option to the site; however, it is now believed that access can be successfully implemented on the A579 on the east and west of the site, along with a link from the A49 to the eastern access.

3.3.5. It is believed that developing Parkside as an SRFI is a major opportunity to provide an alternative to the current supply chains which relies on the M6, M56 and M62; these routes currently suffer from journey time variability due to the significant amount of congestion. However, rail freight is much more efficient in this regard, with over 94% of freight arriving on time.

3.3.6. There are currently two planning applications submitted which are associated with the Parkside development:

Outline Planning application - P/2018/0048/OUP (submitted 16/01/2018)

3.3.7. This outline application (all matters reserved except for access) is for:

The construction of up to 92,900 m2 of employment floorspace (Use Class B8 with ancillary B1 (a)) and associated servicing and infrastructure including car parking; vehicle and pedestrian circulation space; alteration of existing access road including works to existing A49 junction; noise mitigation; earthworks to create development platforms and bunds; landscaping including buffers; works to existing spoil heap; creation of drainage features; substations and ecological works

3.3.8. This application relates to phase 1 of the Parkside development on the western side (note that land proposed for allocation for the SRFI (Site EA8) is predominantly on the eastern side, with a small spur into the western allocation). The application for phase 1 covers part of the southern section of the site.

3.3.9. This application is currently awaiting decision.

Full application for Link Road - P/2018/0249/FUL (submitted 23/03/2018)

3.3.10. The application is for the formation of a new link road between A49 (Winwick Road) and M6 Junction 22 including the re-alignment of Parkside Road and other associated works. The Parkside link road is a 3.3km section of road which will connect from the A49 in Newton-le-Willows on the west of the M6 to the A579 and then on to M6 J22 in the east, crossing the M6 via an existing road bridge. This link road will be open to all traffic, and will act as the main spine road through Parkside West and service the southern section of the planned SRFI on the East.

3.3.11. This planning application is currently awaiting decision.

3.4 CURRENT ISSUES

3.4.1. This section outlines the current issues facing St Helens Metropolitan Borough in terms of transport and accessibility. Census data has been analysed to help better understand the current situation in St Helens with regards to transport.

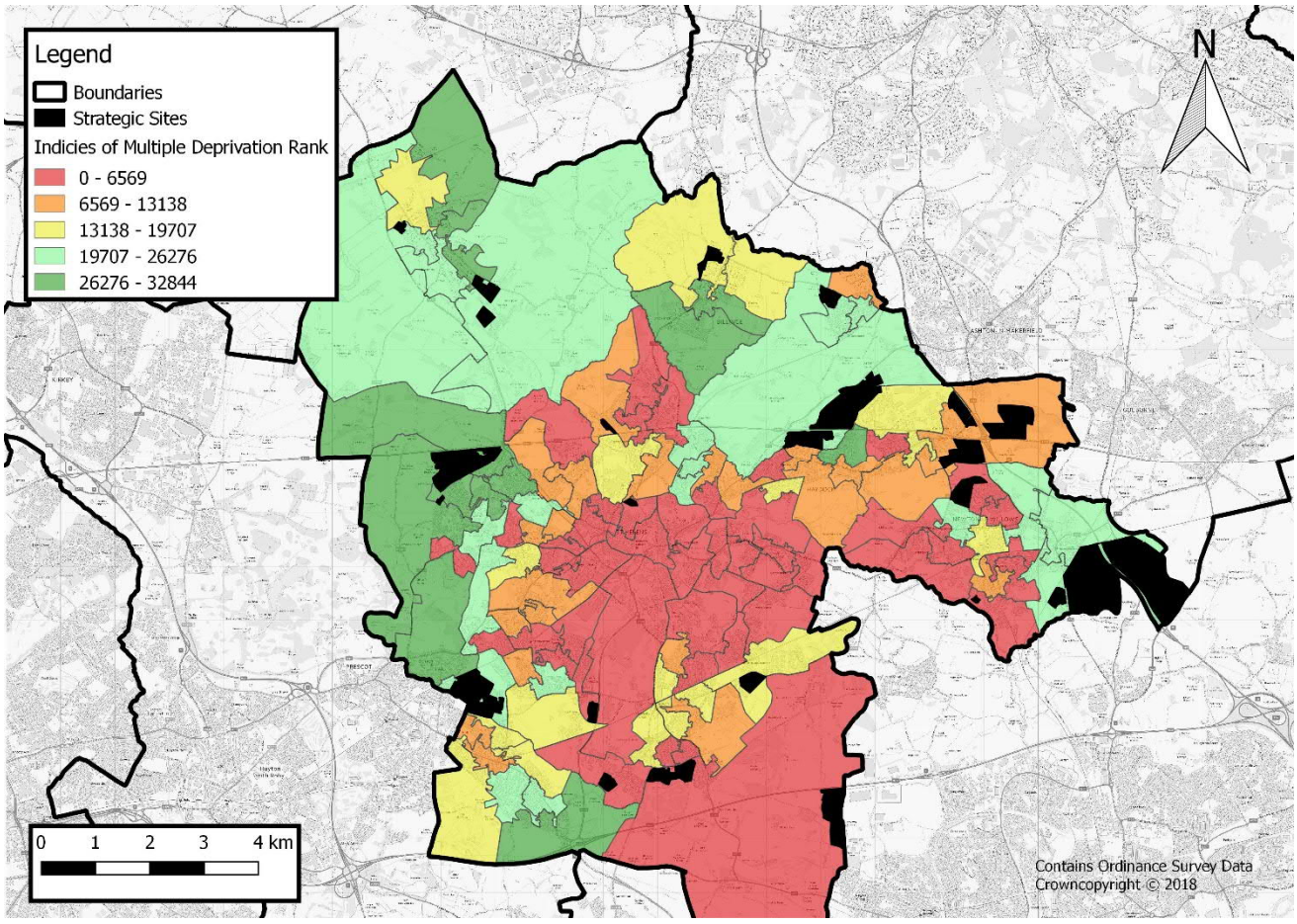
Deprivation

3.4.2. The Index of Multiple Deprivation (IMD) 2015 is the official measure of relative deprivation for neighbourhoods (classified as LSOAs) in England. The IMD ranks every LSOA in England from 1 (as the most deprived area) to 32,844 (the least deprived area).

3.4.3. The IMD can be a useful indicator of the propensity to travel by particular modes of transport within a given neighbourhood. More deprived areas of the country may not have access to privately owned vehicles and therefore have a greater propensity to use public transport or active travel modes for a higher proportion of their journeys.

3.4.4. Figure 6 maps the IMD against borough, highlighting those areas with the highest levels of deprivation.

Figure 6: IMD Ranks within the Borough of St Helens, in relation to the proposed Strategic Site Allocations



3.4.5. The map shows that there are several areas within the borough of St Helens that are amongst the most deprived areas in the country. Areas of higher deprivation tend to be consistent with lower

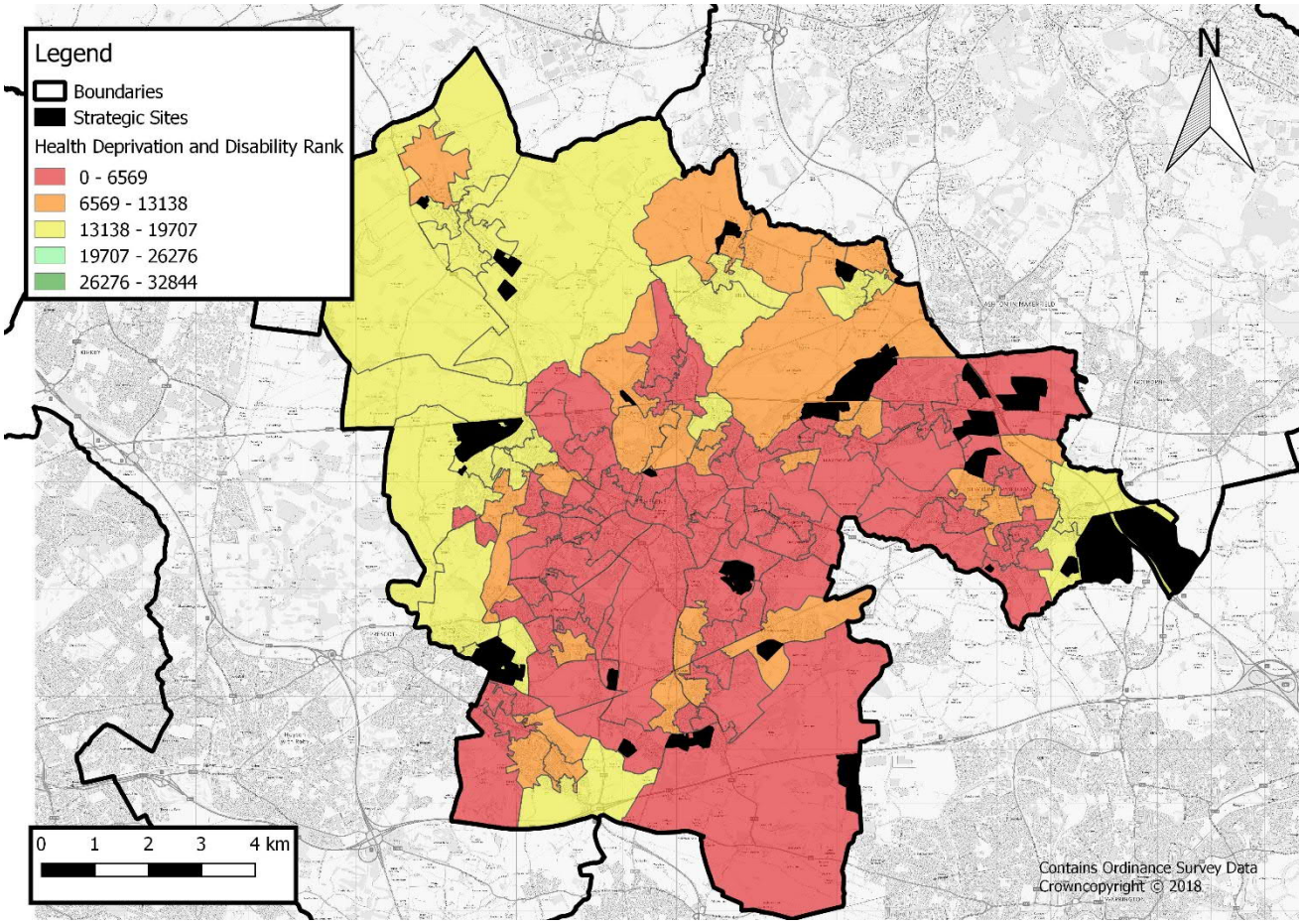
levels of private vehicle ownership and an increased reliance and usage of public transport, and therefore certain considerations must be taken into account when looking at the travel patterns in relation to these areas that may not be relevant in more affluent areas; for example, due to the high levels of deprivation within St Helens town centre, it could be assumed that private vehicle ownership would be low and public transport usage proportionally higher.

3.4.6. In relation to the potential strategic site allocations, Strategic Site HA5 and Moss Nook Urban Village are located in, or adjacent to, areas that are relatively the most deprived. The majority of the sites are not located within the 20% most deprived areas in the country. However, only HA16, HA8, and Parkside are located entirely within areas in the 25% to 100% least deprived percentage bands.

Health Deprivation and Disability

3.4.7. Health deprivation and disability in regards to the IMD analyses those living in poor physical and mental health. Figure 7 shows that when analysing this IMD factor in isolation illustrates that the entirety of St. Helens rank within the bottom 60% most deprived areas in the country. Of the 119 LSOAS, there are 99 which rank within the bottom 20% of the entirety of the UK.

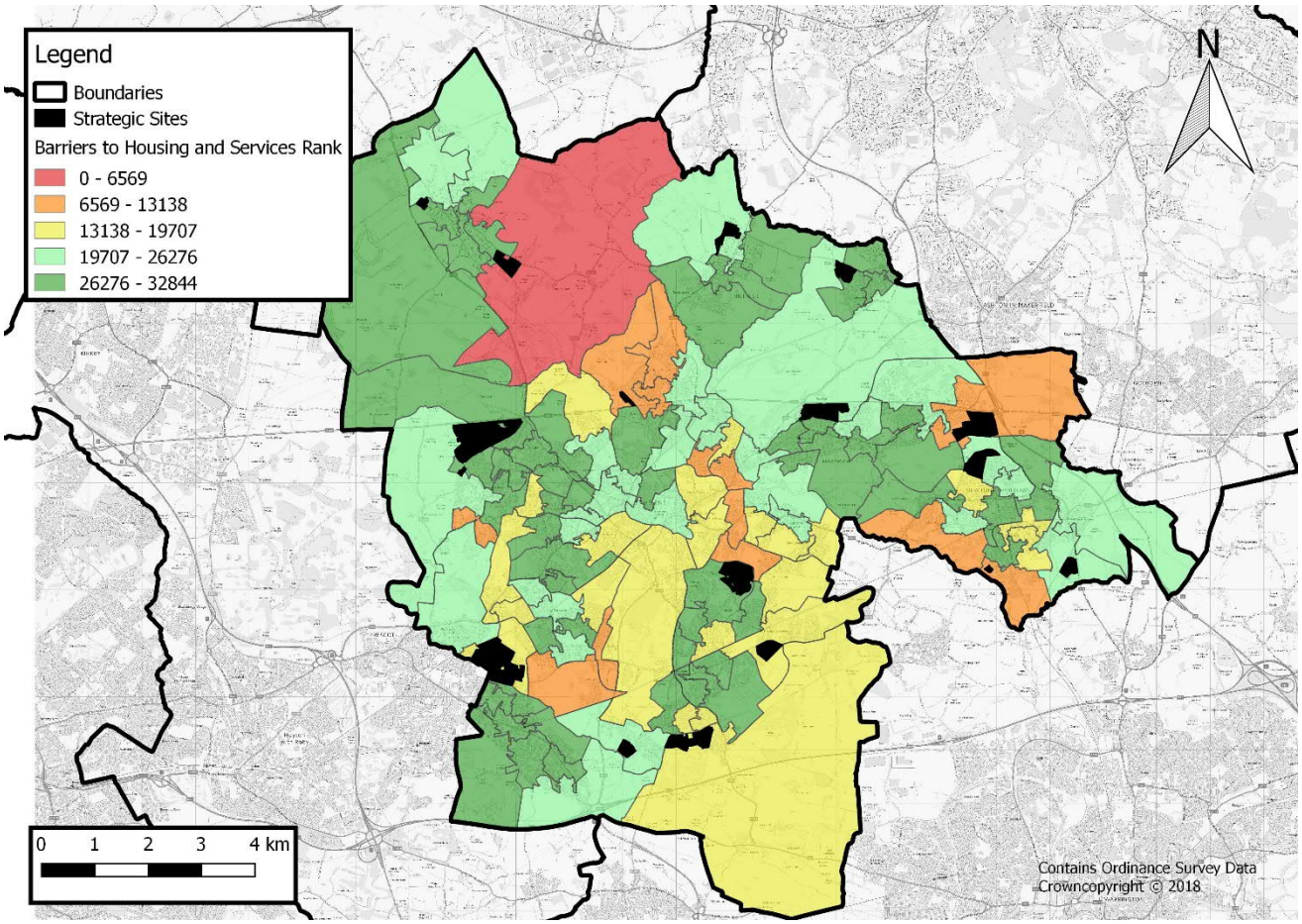
Figure 7: Health Deprivation and Disability Ranks within the Borough of St Helens, in relation to the proposed Strategic Site Allocations



Barriers to Housing and Services

3.4.8. Barriers to Housing and Services looks at the affordability and availability of housing. This aspect of the IMD also considers the geographical location of such housing in regards to key services. The indicators fall into two sub categories: 'geographical barriers' and 'wider barriers'. Geographical barriers relate to the physical distance measured by road distance to a post office, primary school, supermarket and GP surgery. Wider barriers include issues relating to the access to housing including household overcrowding, homelessness and housing affordability.

Figure 8: Barriers to Housing and Services Ranks within the Borough of St Helens in relation to the proposed Strategic Site Allocations



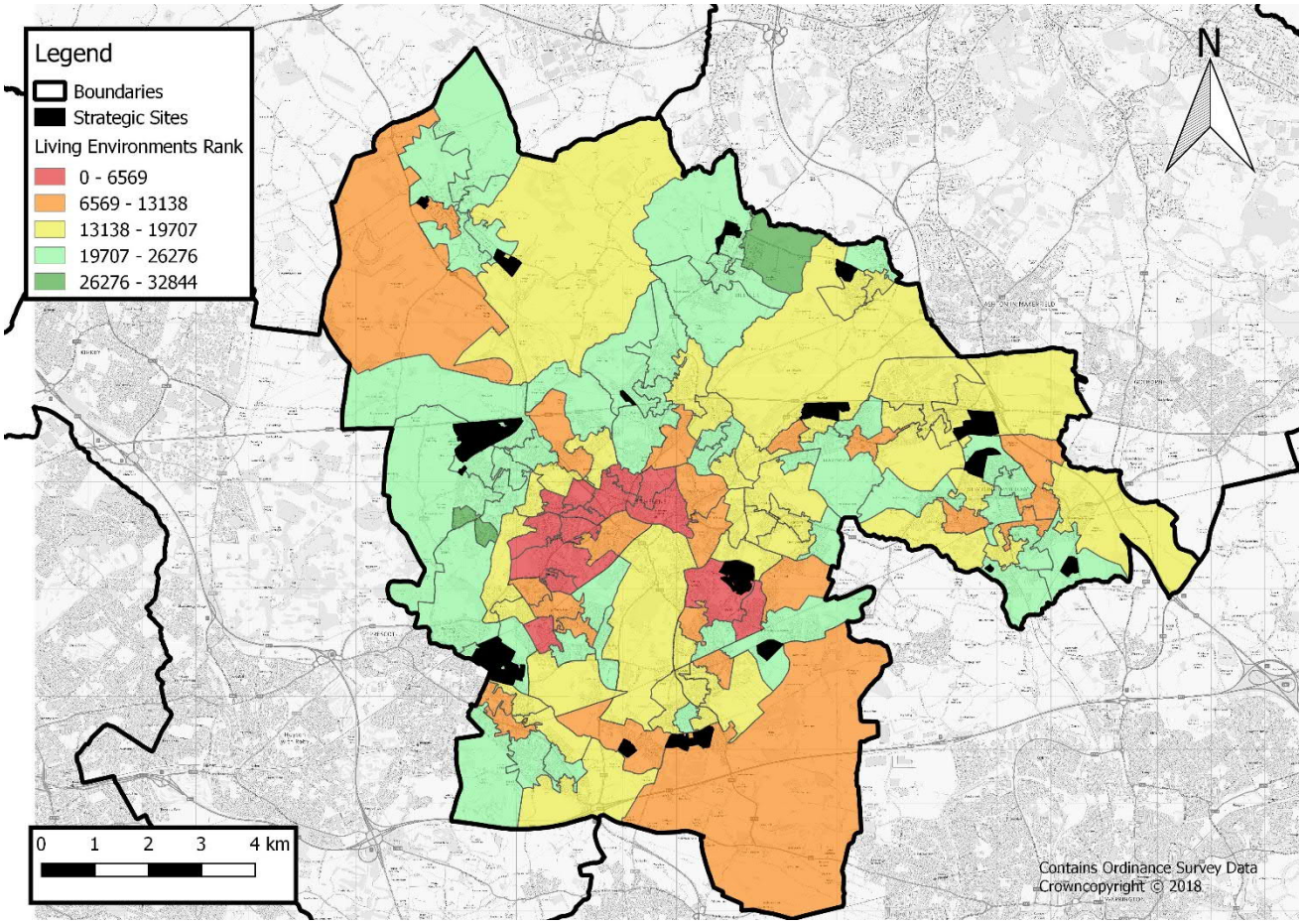
3.4.9. Figure 8 illustrates that 82 of the 119 LSOAS in St Helens rank within the top 40%, while 51 of these 82 are within the top 20% in the UK. There is only one LSOA in St. Helens which is ranked within the bottom 20% within the UK, which mainly consists of rural agricultural land. There are an additional 13 LSOAS within St. Helens which rank within the bottom 40%.

Living Environment

3.4.10. Living Environment Deprivation analyses the standards of people's indoor and outdoor living environment. The specific measures which contribute to this index are the quality of housing, the local air quality and numbers of road traffic incidents in the area, taking into account the severity of said incidents. The indicators fall into two sub-domains: The 'indoors' and 'outdoors' living environment. The indoors sub domain measures the quality of housing based on whether a house

has central heating and whether it fails to meet the decent homes standard. The outdoors measures air quality and road traffic accidents involving injury to pedestrian and cyclists.

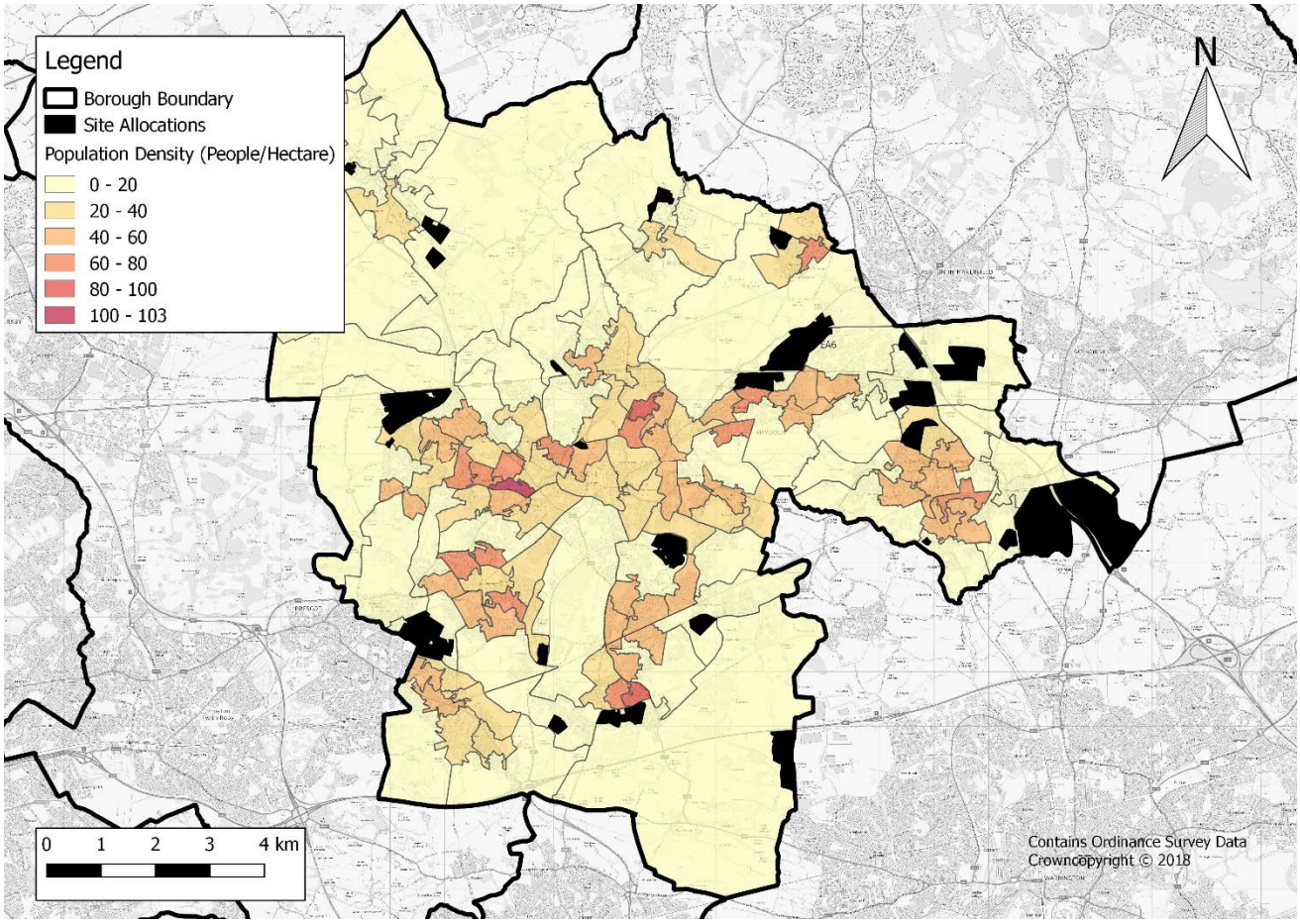
Figure 9: Living Environment Ranks with the Borough of St Helens in relation to the proposed Strategic Site Allocations



3.4.11. Figure 9 shows that central St. Helens ranks the worst out of the entire borough with 3 of the central LSOAS ranking within the bottom 20% of the UK. In total there are 35 LSOAS which rank within the bottom 40% of the UK, while there are only 4 which rank in to top 20%; the majority of these occur in the rural areas of St Helens, toward the borough boundary.

Population Density

Figure 10: Population Density in Relation to the proposed Strategic Site Allocations



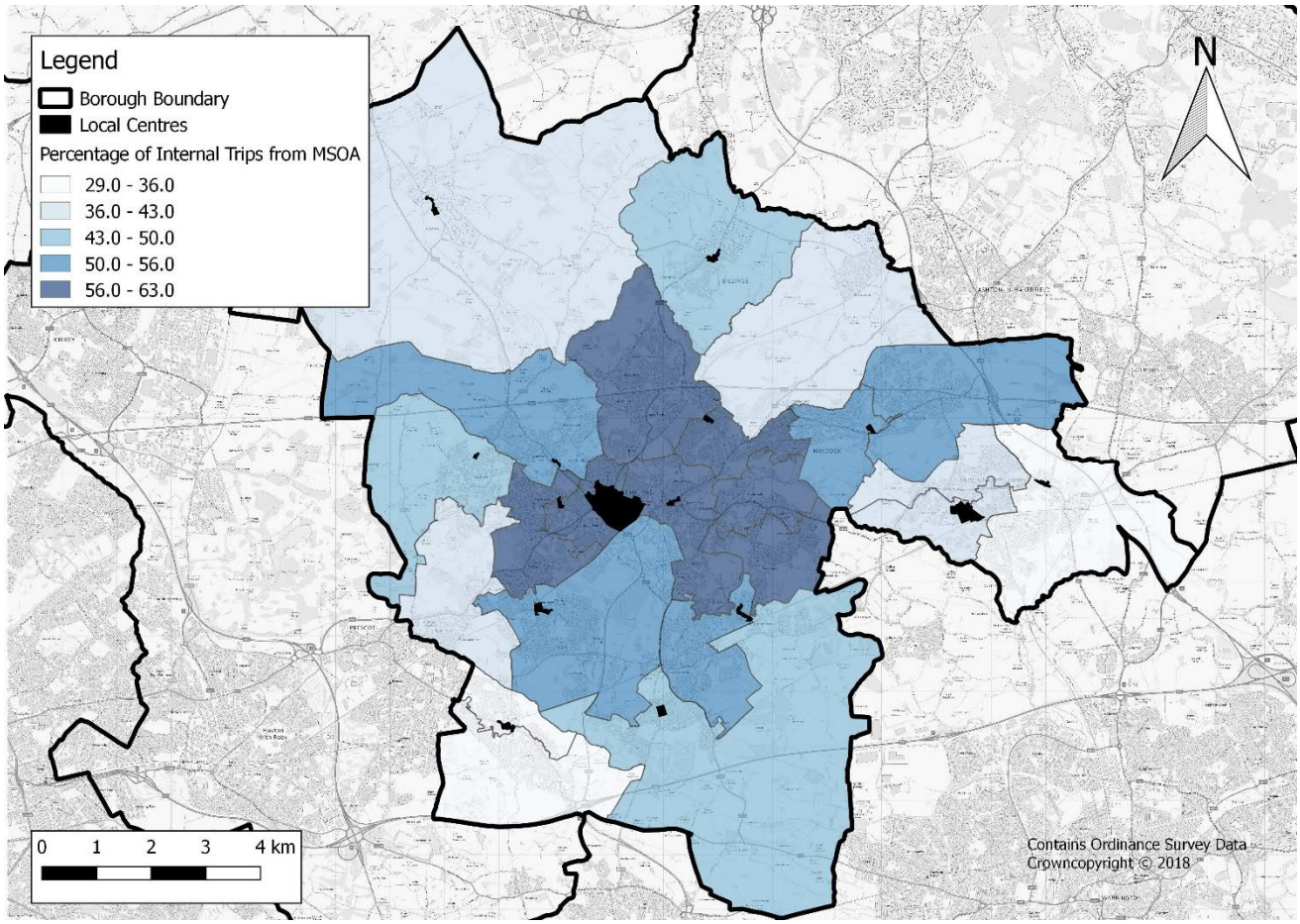
3.4.12. Figure 10 above illustrates the population density of each LSOA in the borough. The highest population density tends to occur around the Principal Towns, Key Service Centres and Local Centres, such as St. Helens town centre and Newton le Willows. The periphery of the borough tends to be less densely populated than that of the urban centre, with almost all the LSOAS adjacent to the borough boundary having a population density of between 0 – 20 people per hectare of land. The average population density of the borough is 34% which is approximately 7% lower than that of the national average (40.7%).

Trip Origin and Destination

3.4.13. Analysis was undertaken to identify the proportion of trips to work which remain within the borough, as opposed to those crossing the borough boundary. Origin – Destination data from the Census

20113 was analysed to show the proportion of trips from each MSOA which both live and work in St. Helens.

Figure 11: Proportion of Internal Borough trips from each MSOA

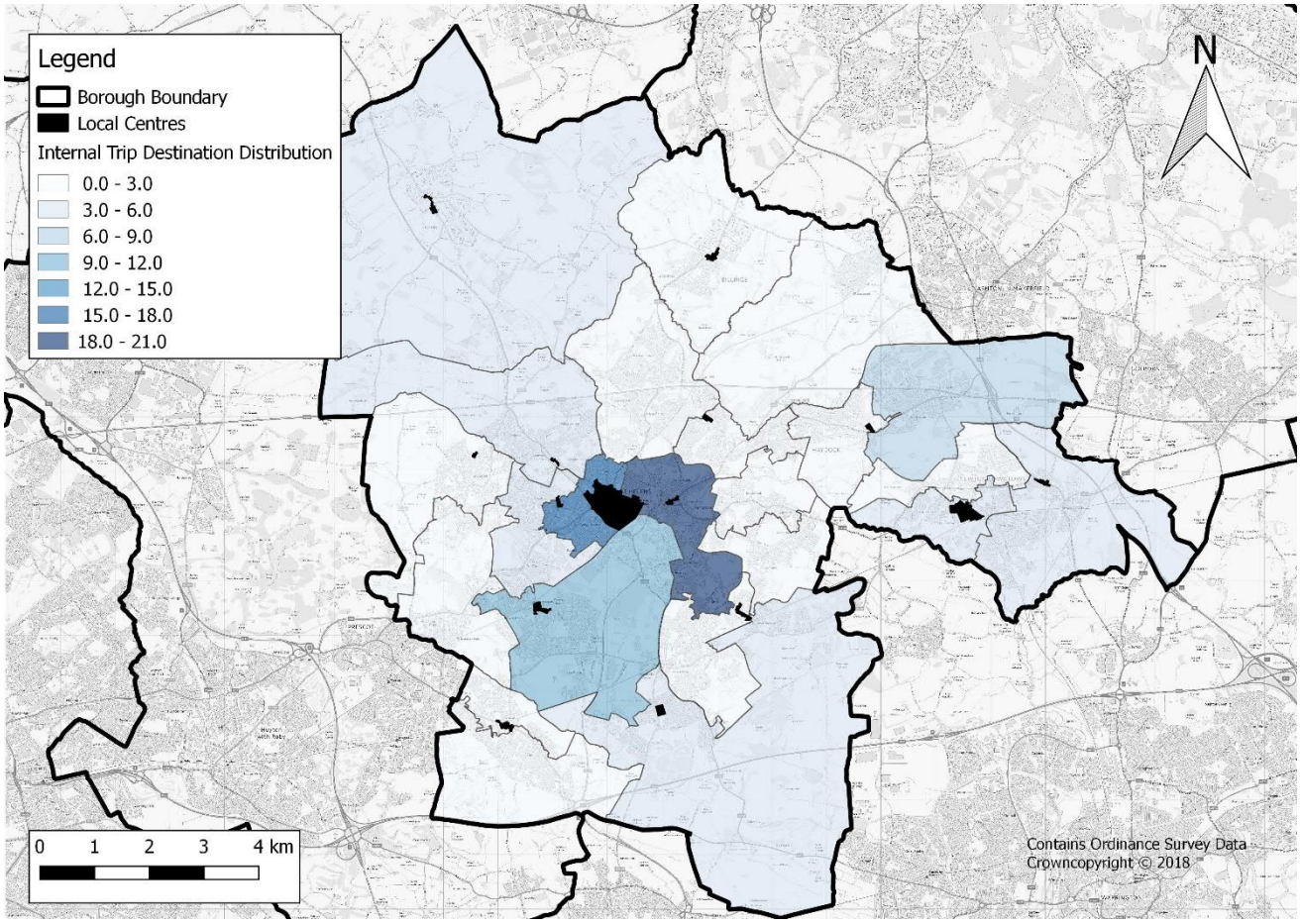


3.4.14. Figure 11 shows that the MSOAs with the highest percentage of trips which remain within the borough are in the central area of St. Helens around the town centre. The areas around the periphery of the borough tend to have a much larger percentage of outward commuting to other output areas; an example of this is Newton le Willows, where only 34% of trips to work remain within the borough.

3.4.15. Further Analysis was undertaken to understand the destinations within St. Helens which the internal trips travel to. The Census 2011 data shows that there were approximately 32,000 internal trips occurring within St. Helens; this is roughly half of the total trips to work originating in St. Helens. Figure 12 shows the percentage trip destination distribution from these internal trips, illustrating the main areas which residents of St. Helens travel to for work within the borough.

[3] Census 2011: WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)

Figure 12: Trip Destination Distribution in the Borough of St Helens in relation to identified Local Centres



3.4.16. There are a significantly larger proportion of trips arriving in the central areas of the St. Helens borough than anywhere else; this distribution could be expected, as these are the main areas of employment within the borough. Approximately 50 % of all internal trips travel to the 3 central MSOAs of the borough, while the remainder of the trips are distributed relatively evenly throughout the rest of the MSOAs.

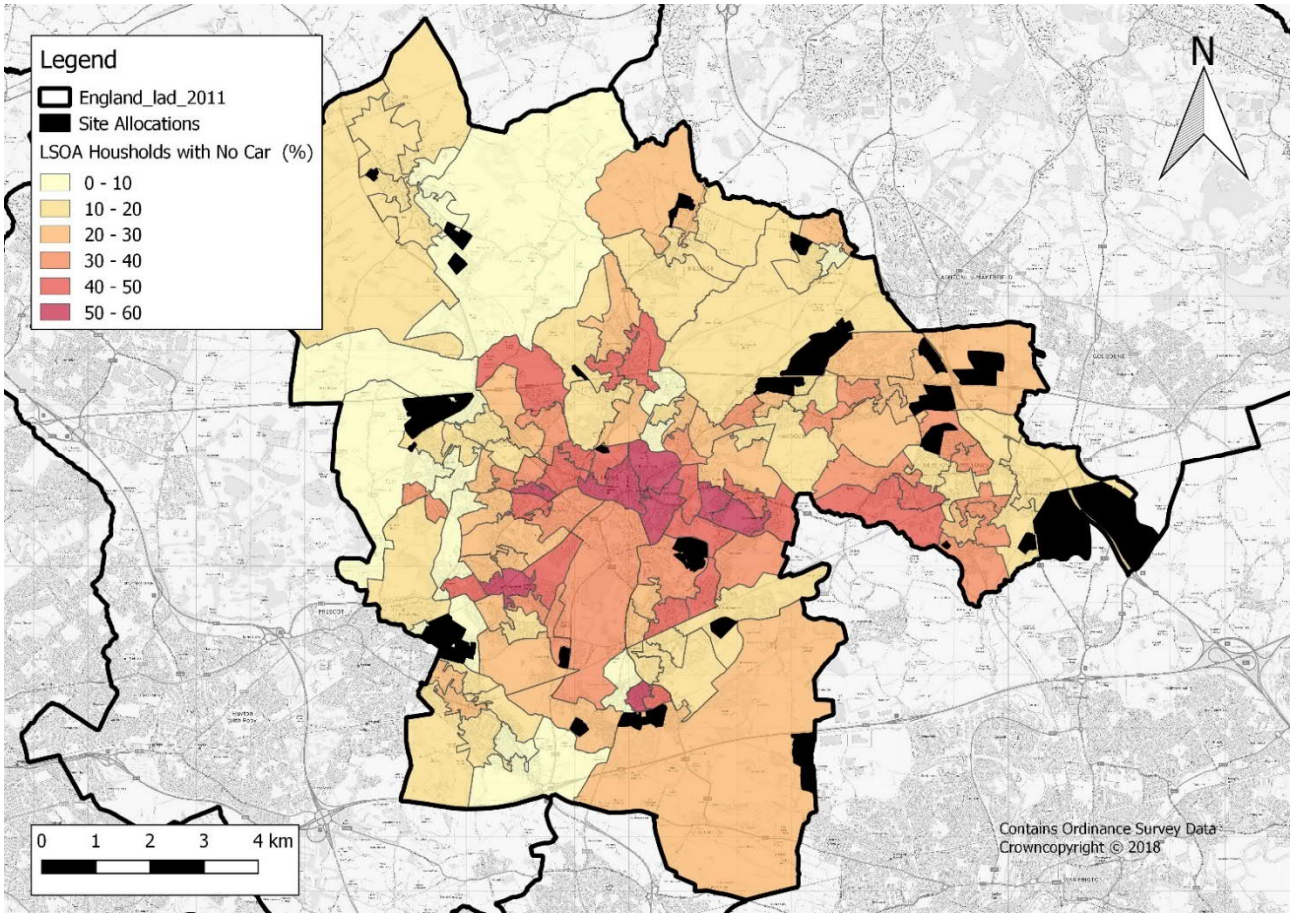
3.5 JOURNEY TO WORK ANALYSIS

Vehicle Ownership

3.5.1. Vehicle ownership levels within an area have a significant influence on travel patterns. High levels of vehicle ownership are considered to positively correlate with motorised vehicle usage, potentially reducing the propensity to travel by active or sustainable methods. Figure 13 maps the level of car

ownership within St Helens borough4, showing average number of cars per household by 2011 Census Output Area (OA).

Figure 13: Percentage Car Ownership within the Borough of St Helens in relation to the proposed Strategic Site Allocations



3.5.2. The map shows that those areas considered more deprived (based on the IMD) in the centre of the urban area of St Helens town also have a lower level of vehicle ownership. In contrast, large portions of the borough outside of St Helen's urban core have a larger percentage of car ownership.

3.5.3. Strategic Sites EA8 (Parkside East) and HA16 are located adjacent to areas which have a higher percentage of car ownership with around 80-90% of households owning at least one vehicle (note that the areas adjacent to EA8 is in the borough of Warrington). Moss Nook Urban Village is the only potential large site that is in a location surrounded by areas of low car ownership.

[4] Census 2011, Dataset QS416EW – Car or van availability

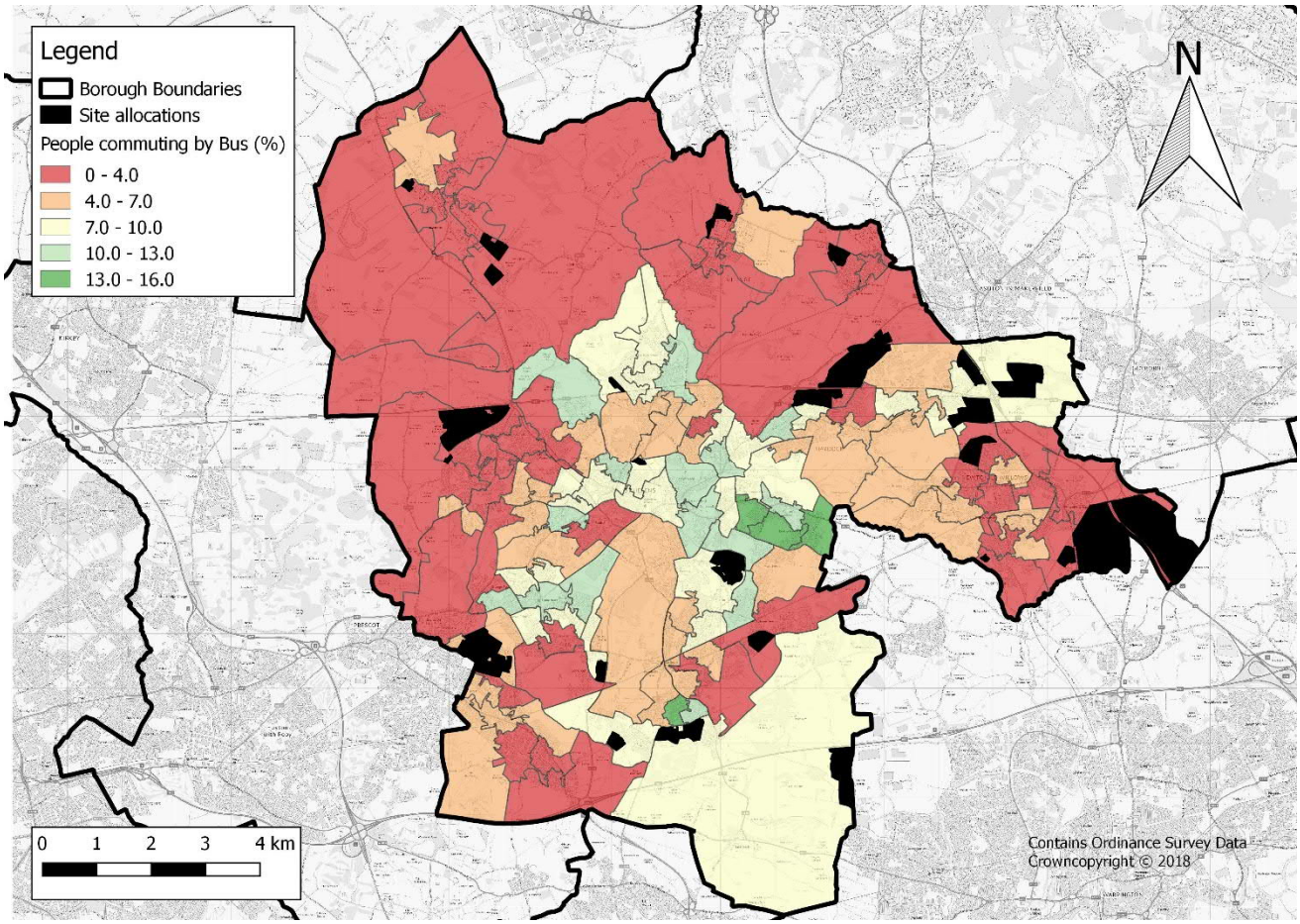
Mode Share

3.5.4. The current mode share within the borough, particularly in areas surrounding the potential sites, can help to predict the future mode share at each site and influence which sites to target when developing future objectives, measures, and interventions to promote more sustainable patterns of travel.

3.5.5. Figure 14 to

3.5.6. Figure 18 below and overleaf map out the percentage of people using different modes of transport to commute to work. Using the OAs from the 2011 census, the percentage of people using each mode of transport has been displayed relative to the potential sites5. Note that as this dataset is in regards to method of travel to work, the analysis does not capture mode of travel for other purposes, such as leisure or errands.

Figure 14: Levels of Bus Usage in St Helens relative to the proposed Strategic Site Allocations



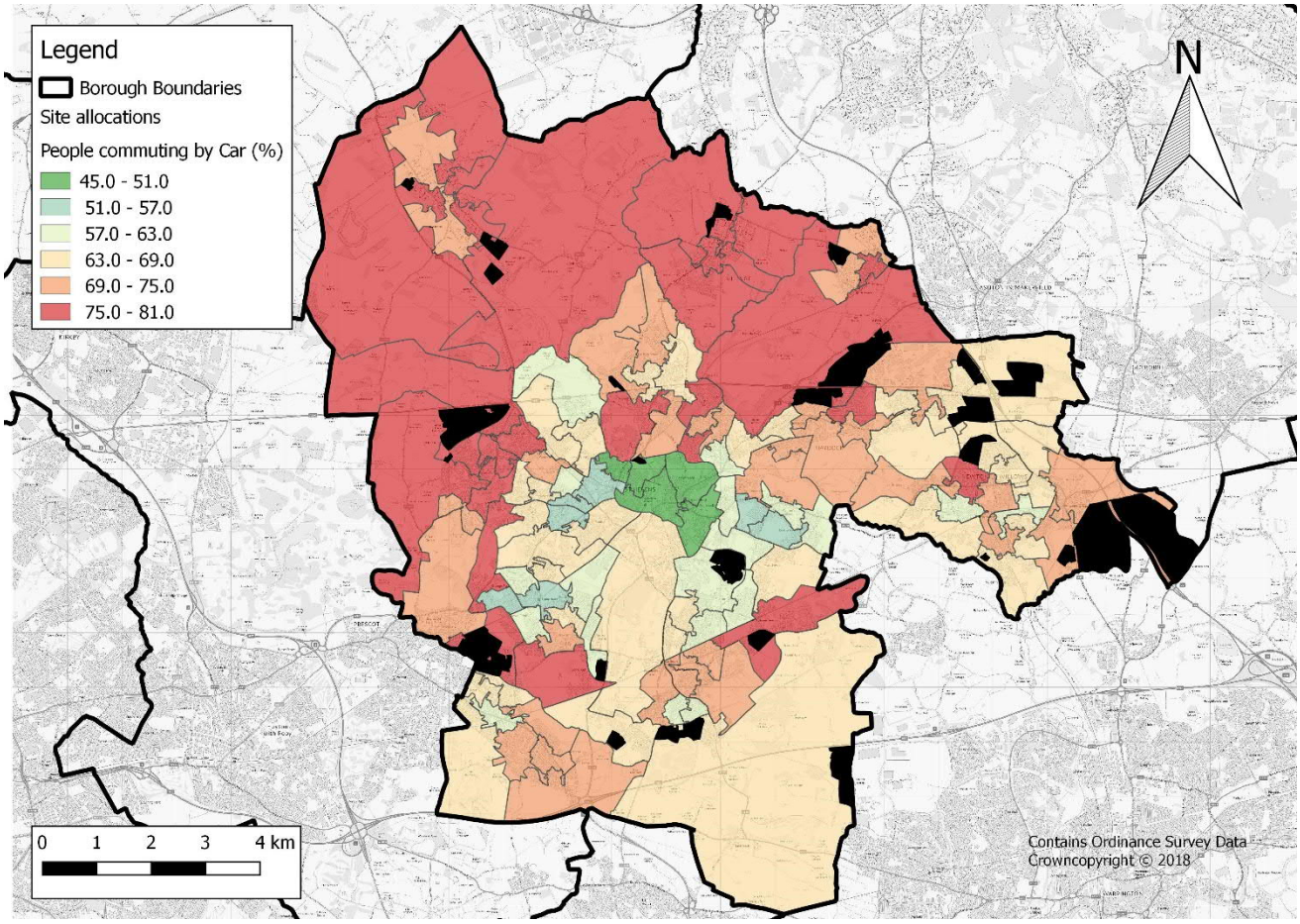
3.5.7. Bus patronage in St Helens borough is relatively similar to the national average, at 6.5% compared to 7.3% respectively (when removing those who work from home and are unemployed). However, the statistics show that there are several areas, primarily within the urban cores, that have considerably higher proportions of bus usage, with some output areas to the east of the urban centre of St. Helens recording up to 16% of people commuting by bus, highlighted in green.

[5] 2011 Census, dataset QS701EW – Method of Travel to Work.

3.5.8. It is also noted that those areas in the centre of St Helens with higher percentages of bus commuters are also those areas with a lower average number of cars per household, and are more deprived than areas with a lower percentage of bus usage (according to the IMD).

3.5.9. Regarding the proposed Strategic Site Allocations, it is notable that the employment sites are located in areas surrounded by relatively low bus usage, at between 0%-4% of modal share. Most of the housing sites are adjacent to areas featuring a modal share similar to the borough average; although Moss Nook is adjacent to areas with particularly higher than average bus patronage.

Figure 15: Levels of car usage in St Helens relative to the proposed Strategic Site Allocations



3.5.10. There is a higher percentage of people traveling by car in St Helens than any other mode of transport. The regional average of 68.3% driving a car or van for commuting purposes is higher than the national average of 54%, although it is noted that this average includes areas such as London, which has markedly different transport characteristics.

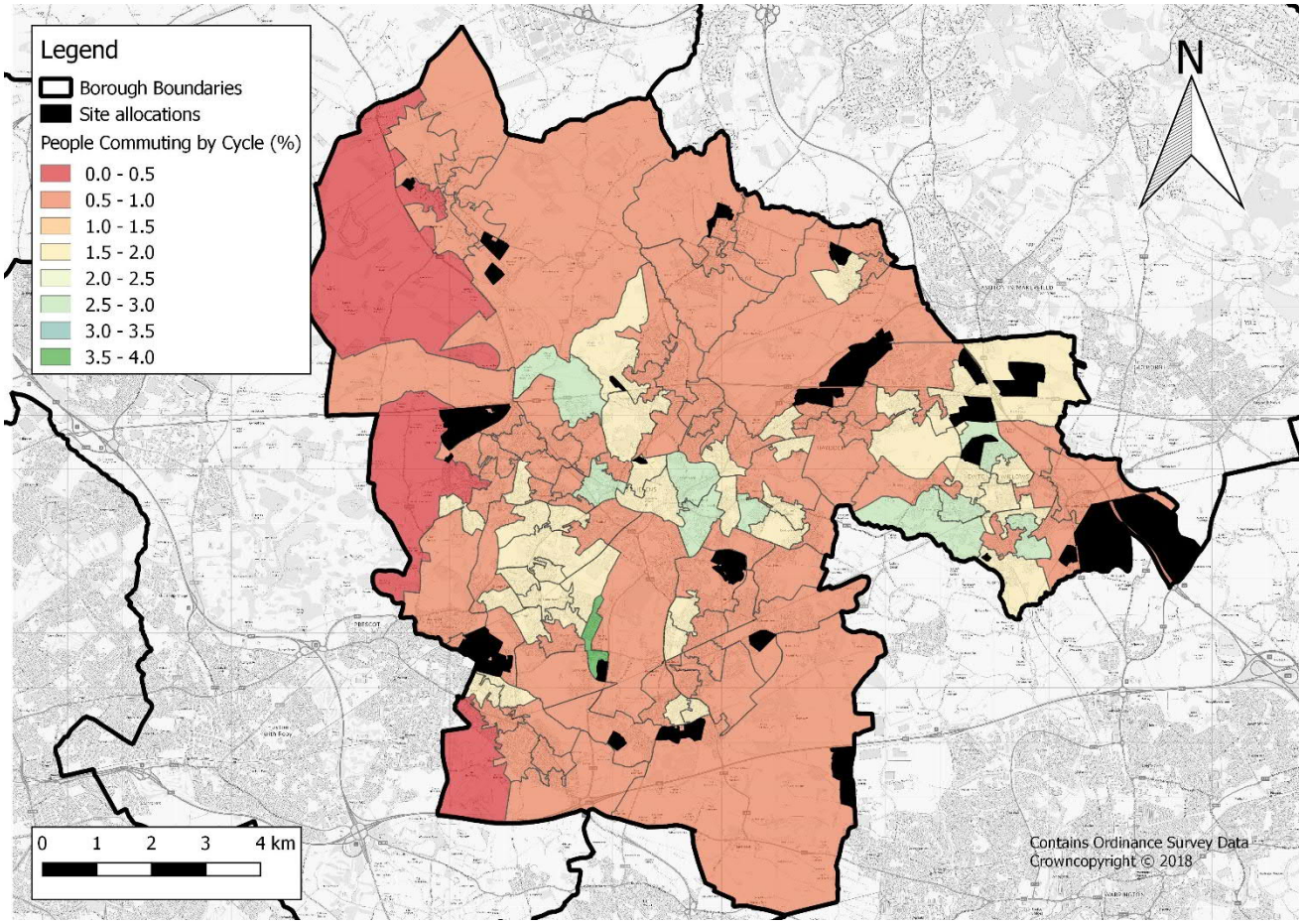
3.5.11. This correlates with the data shown in Figure 13 above, which highlights that the output areas with a higher percentage of car ownership has an increased mode share of people commuting by single occupancy car. The ease of availability of privately owned vehicles for a high proportion of the population are significant contributory factors towards a high percentage of car use for journey to work purposes.

3.5.12. The town centre has the lowest percentage of commuting by car, which could be influenced by better access to other modes of transport, such as bus and rail, and the relatively higher levels of deprivation in these areas.

3.5.13. Many of the proposed Strategic Site Allocations are located adjacent to areas that record high levels car usage for commuting purposes as above the regional average. Moss Nook urban village and HA5 in Clock Face are notable exceptions; these sites are located in areas considered more deprived, with a lower level of car ownership.

3.5.14. It is also noted that much of Newton-le-Willows records below average levels of commuting by car.

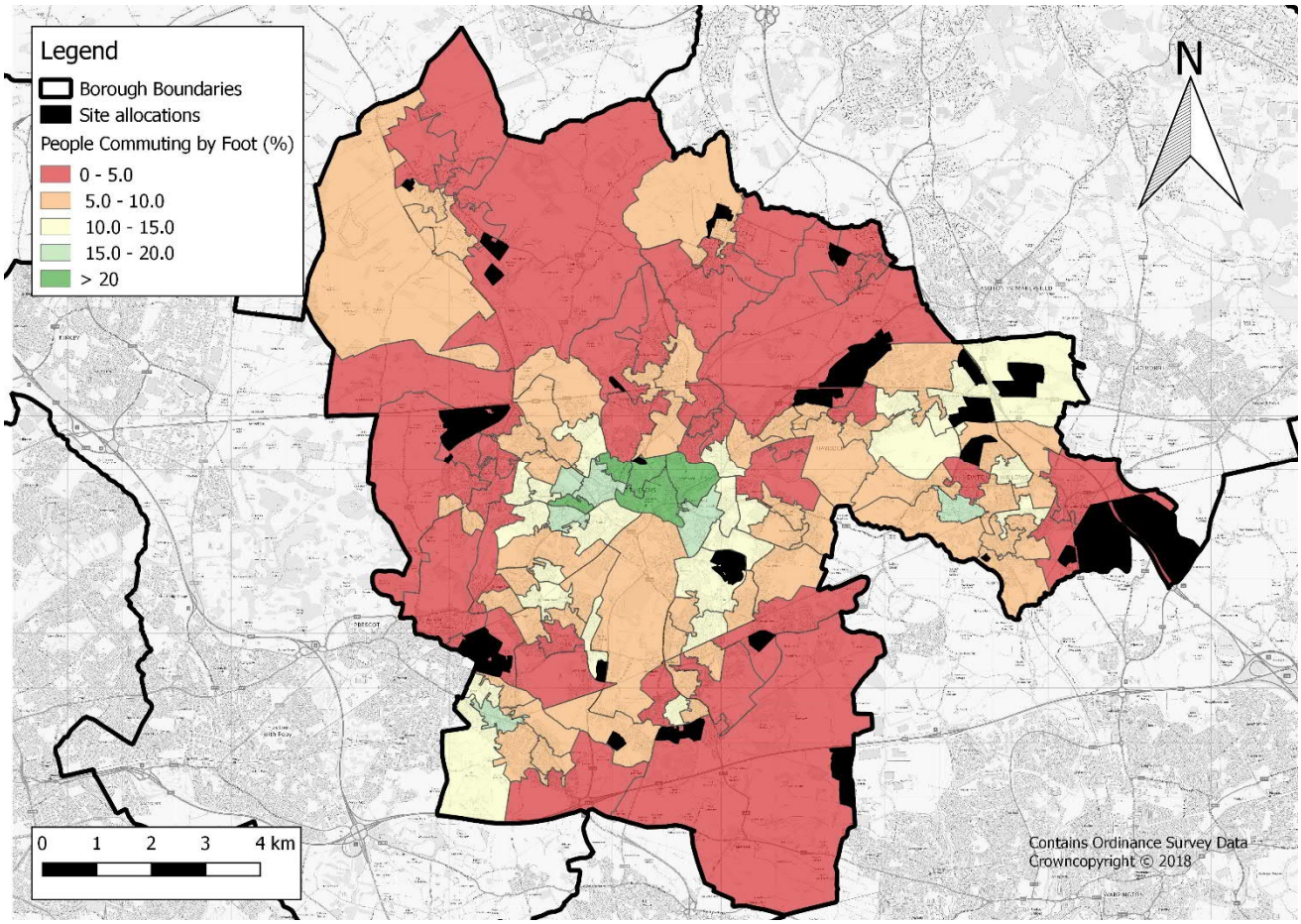
Figure 16: Levels of cycle usage in St Helens relative to the proposed Strategic Site Allocations



3.5.15. The percentage of people cycling to work in St Helens as shown in Figure 16 is low throughout the borough, with an average of 1.5%, compared to the national average of 2.9%. Nevertheless, there are a few output areas with higher levels of cycling for commuting purposes mainly concentrated towards the central areas of St Helens and around Newton le Willows.

3.5.16. There are slightly higher levels of cycling within the more deprived areas that have less access to a car, such as within the town centre of St Helens.

Figure 17: Levels of Walking in St Helens relative to the proposed Strategic Site Allocations

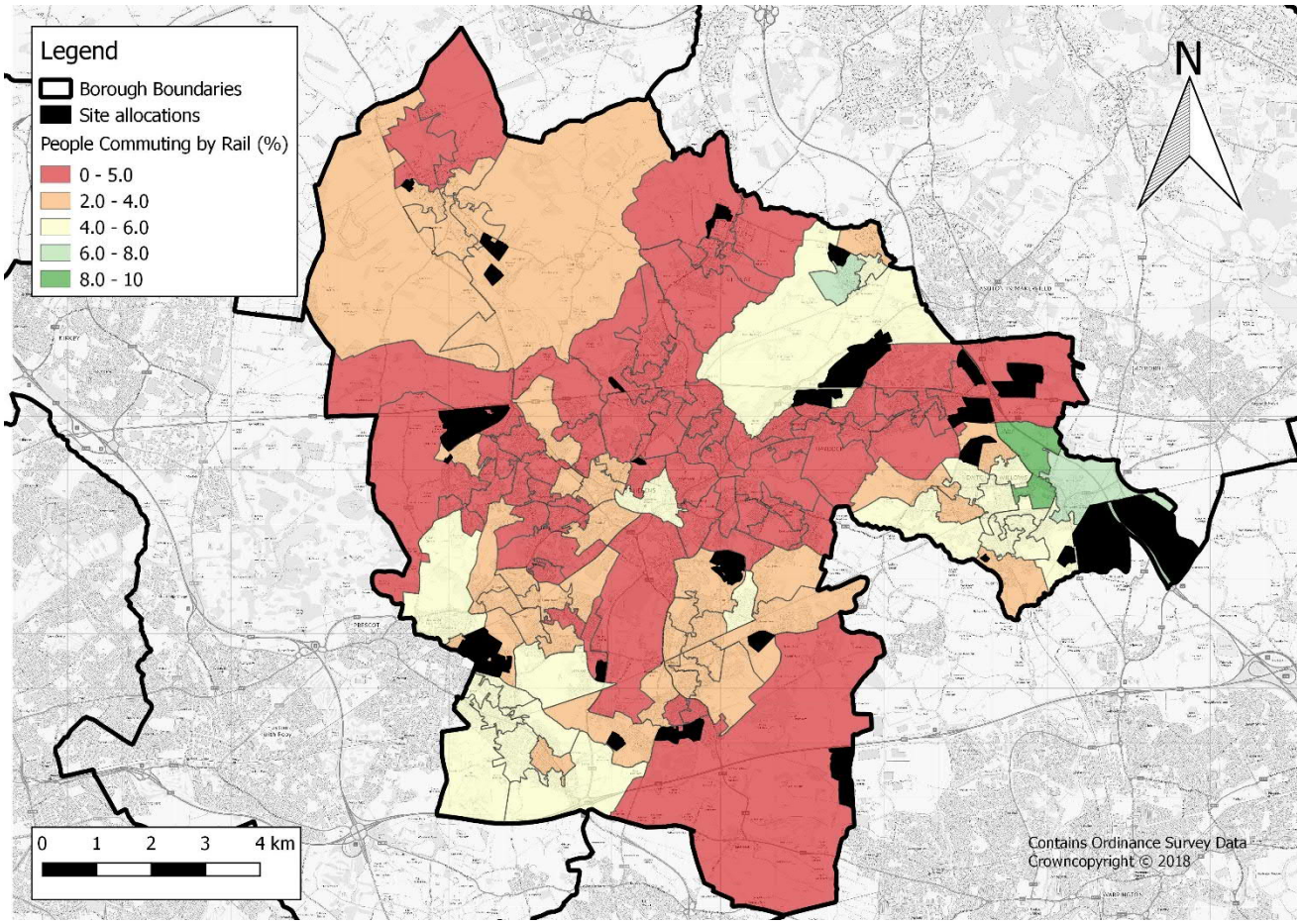


3.5.17. The percentage of people walking to work in St Helens, as shown in Figure 17, is below the national average at 8.7% compared to 11.3% nationally.

3.5.18. There is a significantly higher percentage of people commuting on foot within the town centre and urban areas compared to the more peripheral and rural locations, with levels of commuting on foot exceeding 20% in the town centre of St Helens.

3.5.19. Nevertheless, the majority of the proposed Strategic Site Allocations are located in areas with levels of commuting by foot at or below the regional average.

Figure 18: Levels of rail usage in St Helens relative to the proposed Strategic Site Allocations



3.5.20. The percentage of people commuting by train in St Helens is significantly lower than the national average, at 3% compared to 5.6%. Nevertheless, those areas in close proximity to a rail station generally have higher proportions of commuting by train; this is particularly noticeable in Newton-le-Willows, with many output areas recording levels of commuting by train above 6%.

3.5.21. A number of the proposed Strategic Site Allocations are located a significant distance from the nearest rail station, potentially limiting the propensity to travel by rail for commuting purposes. Strategic employment sites EA8 and EA9 however are located within 1km of the Newton le Willows train station.

3.6 TOWN CENTRE MODE SHARE & TRAVEL PATTERNS

3.6.1. Mott MacDonald have been commissioned to undertake the Modal Choice into Merseyside Centres report, an annual study into movement and transport trends within the various town centres in the Liverpool City Region—which includes St Helens town centre. Mott MacDonald recently published the results from the 2016/17 study, which represents the 14th consecutive annual study undertaken, providing a significant amount of historical data from which to draw conclusions over changes in trends and travel patterns over time; this report is available on request.

3.6.2. The surveys are undertaken via a ‘cordon’ around the town centre, with survey sites set up on all significant routes. Survey methods include Manual Classified Counts, Automatic Traffic Counters, Pedestrian and Cycle counts, vehicle occupancy counts, and bus and train passenger counts.

3.6.3. This data can be used to present a more detail baseline situation regarding travel to and from the main urban centre in the borough, and helps to inform the forthcoming St Helens Town Centre Strategy.

3.6.4. The following subsections summarise the key points from the document in relation to bus and rail travel within the town centre.

Bus Travel

Table 1 - Percentage of Bus Travel into the Town Centre

Peak Period	Trips Made by Bus	Total Trips	Percentage of Trips Made by bus
AM	2,312	8,835	26.2%
IP	3,129	10,032	31.3%

- There is an increase of approximately 1,200 trips into the town centre from the AM to IP.
- St Helens has the largest percentage of bus travel into the town centre in the entire Liverpool City Region during the IP.
- When comparing the above statistics to data collected by the National Travel Survey 2016 it shows that the proportion of trips occurring during both the AM and Inter peak by bus are significantly higher than that of the nationally collected mode share data for trips which is 5%.

Rail travel

Table 2: Percentage of Rail Travel into the Town Centre

Peak Period	Trips Made by Rail	Total Trips	Percentage of Trips Made by Rail
AM	172	8,835	1.9%
IP	210	10,032	2.1%

- When comparing the level of rail usage to the mode share set out within the National Transport Survey 2016 it shows that the level of rail usage is slightly lower than the national statistic of 3%.

General travel statistics for the borough

3.6.5. The level of travel to the town centre has slightly decreased during the AM peak; this aligns with the general trend which can be seen since surveys began. However, there has been an increase in the levels of travel to the town centre during the inter peak.

3.6.6. For almost all the different methods of travel the percentage of mode share has remained fairly constant throughout all the years surveyed. There has however been a slight increase in walking and cycling in both peak periods. The levels of private vehicles have generally decreased since these surveys began.

3.7 COMMITTED NETWORK CHANGES

3.7.1. There are a number of highways schemes and interventions already planned within the borough that are anticipated to have an impact on highway capacity, while other committed schemes introduce additional facilities for pedestrians and sustainable modes of travel. Those schemes identified as committed have been taken into account in the highway modelling undertaken to support this Transport Impact Assessment, and details of these schemes are provided in the Highway Schemes Technical Note (WSP, 2018) included in Appendix B.

3.7.2. The committed schemes identified on the Local Highway Network are summarised below:

- A580/Haydock Lane: new roundabout junction arrangement to the west of Haydock Lane and North of the A580 East Lancashire Road;
- A580/A58: junction improvements and pedestrian facilities associated with development at Haydock Industrial Estate;
- Elton Head Road/A570 St Helens Linkway: junction capacity and safety improvements, including pedestrian crossing facilities;
- Sutton Road/Jackson Street: capacity and safety improvements;
- Sutton Road/Watery Lane: new highway link between Sutton road and Watery Lane;
- A580 East Lancashire Road – Windle Island upgrade: capacity improvements and pedestrian facilities; and
- Penny Lane/Lodge Lane: junction capacity and safety improvements.

3.7.3. There are three committed schemes identified on the Strategic Road Network:

- M62 Smart Motorway Improvements: Hard shoulder running between J10 and J12 of the M62;
- M6 Smart Motorway Improvements: Hard shoulder running between J21a and J26 of the M6; and
- Junction 22 capacity improvements: likely to consist of an additional circulatory lane.

3.7.4. There are also currently two committed schemes to increase car parking capacity at St Helens' rail stations:

- St Helens Junction Car Park: Increase from 66 to 242 spaces
- Newton Le Willows Station: Station upgrades and 400+ park and ride facility

4

SUSTAINABLE TRANSPORT ASSESSMENT

4 SUSTAINABLE TRANSPORT ASSESSMENT

4.1 INTRODUCTION

4.1.1. The NPPF clearly sets out that the planning system should aim to create sustainable and healthy communities; this can partly be achieved through the management of growth patterns in order to make the best possible use of public transport, walking and cycling opportunities, and focussing significant development in locations which wither are or can be made sustainable.

4.1.2. This section of the report presents the methodology and results of a baseline analysis of the proposed site allocations in the emerging St Helens Local Plan, focussing on the accessibility of the sites via sustainable and active modes of travel; full details of the assessment undertaken, including outputs, are available in the Sustainable Transport Impact Assessment Report (STIAR).

Sites for Assessment

4.1.3. The emerging Local Plan looks to fulfil St Helens' requirements for housing and employment land from a number of sources, including site allocations, existing permissions, sites included in the SHLAA, and windfall sites. It is impracticable to consider and undertake detailed analysis on every potential site, and therefore an appropriate and proportional approach to assessment has been undertaken, with a greater focus on sites of a considerable size, primarily those identified in the emerging St Helens Local Plan as Strategic Housing or Employment sites.

4.1.4. Policy LPA04 of the emerging St Helens Local Plan allocates 12 employment sites, totalling 306 ha of employment land allocated for the Plan Period. Of the allocated 12 sites, 6 are of considerable size and are identified as Strategic Employment Sites; these sites are listed in Table 3.

Table 3: Proposed Strategic Employment Sites

Site Ref	Name	Size	Use
EA1	Omega South Western Extension, Phase 1, Land north of Finches Plantation, Bold	31.2ha	B2 & B8
EA2	Land at Florida Farm North, Slag Lane, Haydock	42.31 ha	B2 & B8
EA4	Land north east of Junction M6 J23, south of Haydock Racecourse,	42.31 ha	B2 & B8
EA7	Land west of Millfield Lane, south of Liverpool Road and north of Clipsley Brook, Haydock	20.5 ha	B2 & B8
EA8	Parkside East, Newton-le-Willows	64.55 ha	B2 & B8
EA9	Parkside West, Newton-le-Willows	79.57 ha	B2 & B8

4.1.5. Site Allocation EA8 - Parkside East is allocated primarily for the Strategic Rail Freight Interchange, while it is estimate that a further 60ha of land will be required to deliver the necessary infrastructure and landscaping required to deliver this.

4.1.6. Policy LPA05 sets out the overarching policies covering the housing allocations in the Local Plan. An additional 10,830 dwellings will be required over the plan period, equating to an indicative annual average of 570 dwellings. The policy includes 16 allocated sites, delivering approximately 4,000 dwellings.

4.1.7. Of the 16 allocated housing sites, 6 are of a sufficient size to be allocated as 'Strategic Sites'. These are listed in Table 4.

4.1.8. The St Helens 2016 SHLAA includes a single site with an anticipated yield over 500 dwellings (and therefore of a similar scale to the St Helens Local Plan proposed Strategic Sites; this site has therefore also been considered alongside the proposed Site Allocations, at a level of detail comparable to the proposed Strategic Site Allocations.

Table 4: Proposed Strategic Housing Allocations

Site Ref	Name	Yield (dwellings)
HA3	Land at Florida Farm South, Slag Lane, Blackbrook	502
HA5	Land South of Gartons Lane and former St. Theresa's Social Club, Gartons Lane,	446
HA7	Land between Vista Road and Ashton Road, Earlestown	350
HA8	Land at Eccleston Park Golf Club, Rainhill Road, Eccleston	585
HA10	Land south west of M6 J23 between Vista Road and Lodge Lane, Haydock	520
HA16	Land south of A580 between Houghton's Lane and Crantock Grove, Windle	585
09	Moss Nook Urban Village, Watery Lane	802

4.1.9. Although the emerging Local Plan does not set out phasing for development, a number of assumptions are made over the deliverability of the sites and a likely buildout rate for proposed housing allocations. These assumptions have led to the following trajectory for housing shown in Table 5.

Table 5: St Helens Housing Trajectory

Period	Buildout Rate (units)
0 – 5 years	1,153
5 – 10 years	1,828
10 – 15 years	1,008

Overview of Assessment Methodology

4.1.10. The Sustainable Transport Assessment considers all the proposed Site Allocations in the emerging St Helens Local Plan through a broad GIS distance-based assessment, while considering the Strategic Site Allocations in significantly more detail. Each proposed Site Allocation has been assessed in terms of accessibility to key services and amenities by sustainable and active modes of travel, such as bus travel, walking, or cycling. This assessment has primarily been undertaken using data gathered through desktop methods (including GIS and Census data analysis), while the assessment of the proposed Strategic Site Allocations has been supplemented through site visits, detailed isochrone mapping, and Traccs Basemap analysis.

4.1.11. Traccs Basemap accessibility analysis was undertaken for each of the proposed Strategic Site allocations. The accessibility mapping undertaken illustrates what areas of St Helens and the surrounding boroughs (where appropriate) can reasonably be considered accessible to and from the potential sites.

4.1.12. Isochrone mapping has been undertaken to estimate the existing level of accessibility from each of the proposed Strategic Site allocations by active travel modes. This mapping has included the Core Accessibility Indicators where data has been available, allowing analysis to be undertaken on the propensity for local journeys to be undertaken on foot or by bicycle.

4.1.13. A site overview proforma has been completed for each proposed Strategic Site allocation as part of an initial site visit. The proformas consider the current levels of accessibility in and around the proposed sites, any existing constraints, and the likely future impacts. Each of the site proformas includes commentary on walking, cycling, and footway conditions, together with the provision of on-street or shared off-street cycle routes, as well as bus and rail infrastructure. Consideration is also given toward the accessibility of key desire lines to local facilities.

4.1.14. Each site's accessibility is considered against a set of accessibility criteria derived from best practice guidance, assessing each site on its level of accessibility to key services and public amenities. Each site is then ranked based on a set of criteria against each amenity, with a 'high' scoring indicating a positive level of accessibility.

4.2 SUSTAINABLE ACCESSIBILITY APPRAISAL METHODOLOGY

4.2.1. This section sets out the methodology used to review each of the sites. This methodology used to assess each of the sites is based on based on a combination of guidance documents, including the following core publications:

- Guidance on Accessibility Planning in Local Transport Plans – DfT, 2004;
- Manual for Streets 1 & 2 – DfT, 2007, 2010
- Providing for Journeys on Foot, CIHT, 2000;
- Designing for Walking / Planning for Walking – CIHT, 2015;
- Designing for Cycling / Planning for Cycling – CIHT, 2015;
- Bus Services and New Residential Developments – Stagecoach, 2017;
- Buses in Urban Developments – CIHT, 2018;
- Streetscape Guidance (3rd Edition) – TfL, 2016;
- Ensuring a Choice of Travel – St Helens SPD

Core Accessibility Indicators

4.2.2. A key element of the Sustainable Accessibility Appraisal is the consideration of ease of access to services, facilities and amenities considered necessary for day-to day needs from each of the proposed Site Allocations. This method of assessment provides a more holistic approach, complementing the assessment of local sustainable transport infrastructure provision and resulting in a greater understanding of the accessibility of a location

4.2.3. Table 6 sets out a list of services considered to meet the needs of potential residents (and, to some extent, employees) of the potential sites. This list is based on best practice guidance, and includes services such as healthcare, education, food, social, community, and cultural uses, as well as the availability of basic day to day needs small food items and local employment opportunities.

Table 6: Core Accessibility Indicators and Corresponding Datasets

Key Services and Facilities	Key Services and Facilities Datasets used in the Analysis
Food and retail facilities	Foodstores: Location of supermarket stores for 11 major chains. Including: Aldi, Asda, Co-op, Iceland, Lidl, Morrisons, Netto, Sainsburys, Somerfield, Tesco and Waitrose. Data is from 2010 for England and 2009 for Scotland and Wales. In each case, this is the most recent government Open Data published.
Health Facilities	NHS Choices: This dataset contains the location of GPs, Dentists, Pharmacists, Opticians, Hospitals (including A & E), Walk-in Centres, and Sport and Fitness facilities.
Community Facilities / Local Centres	These are Local Centres, as defined in the emerging St Helens Local Plan
Education Facilities	Educational Establishments (England & Wales): Location of Nurseries, Primary Schools, Secondary Schools, and Further Education institutions in England and Wales.
Employment Opportunity	Location of Proposed Strategic Employment Allocations

Key Facilities and Services

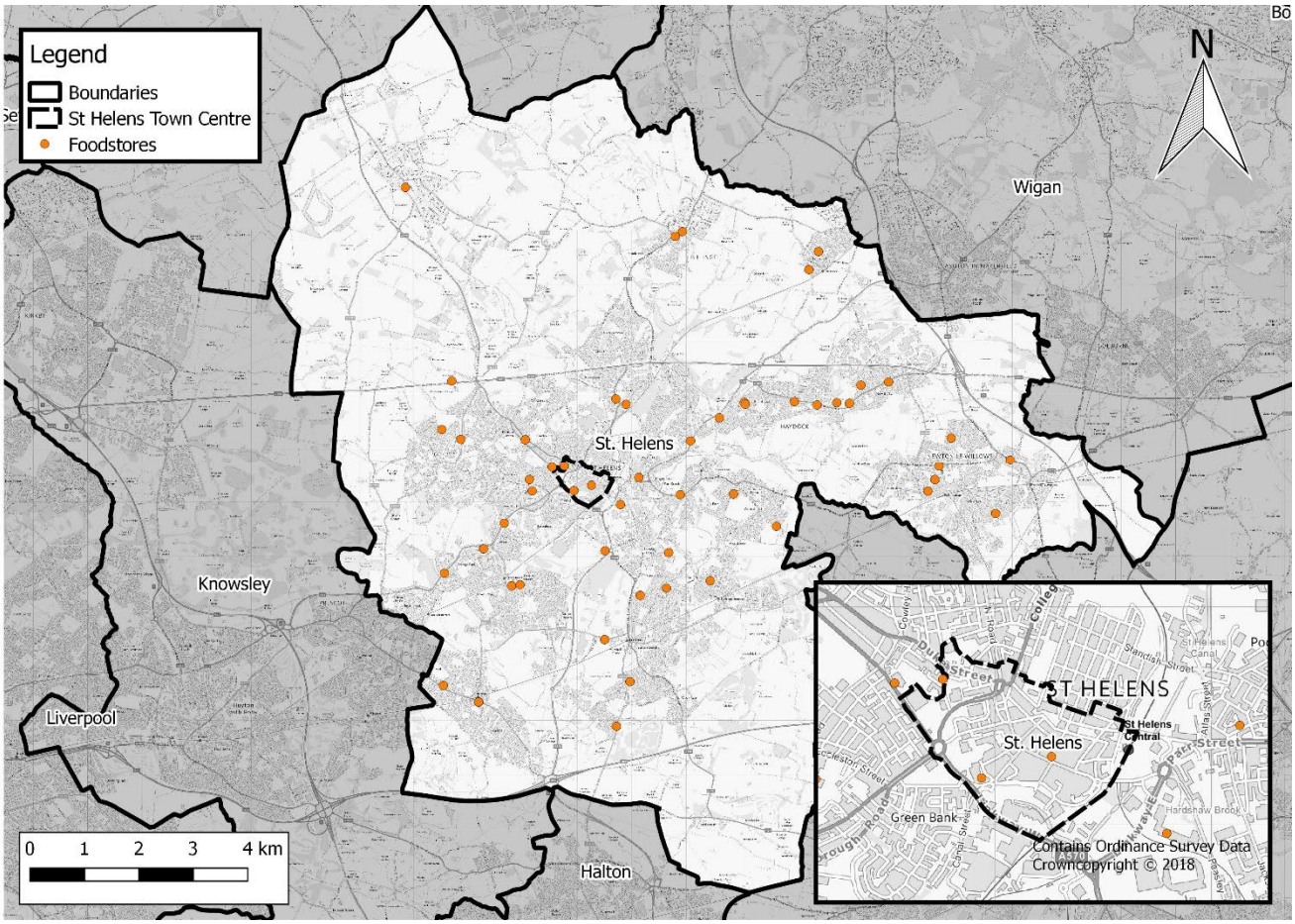
4.2.4. The location of key services can also be analysed against other relevant data, including existing or proposed cycle and public transport infrastructure. This analysis can be used to quantify the existing level of accessibility to these services from the potential sites, as well as to determine the potential success of any intervention.

4.2.5. While the location of key services in relation to the site and accessibility between the two is essential in regards to the proposed Housing Site Allocations, these indicators have less relevance when considering the proposed Employment Site Allocations. Nevertheless, the locations of such destinations can have an influence of travel patterns, such as where trips between home, work, and school or leisure activities can be linked, or where the proximity of foodstores can limit the need to travel by car at lunchtimes. GP appointments and errands can be run during break times, or leisure activities pursued, lessening the need to travel at peak times and by private vehicle.

4.2.6. Figure 19 to

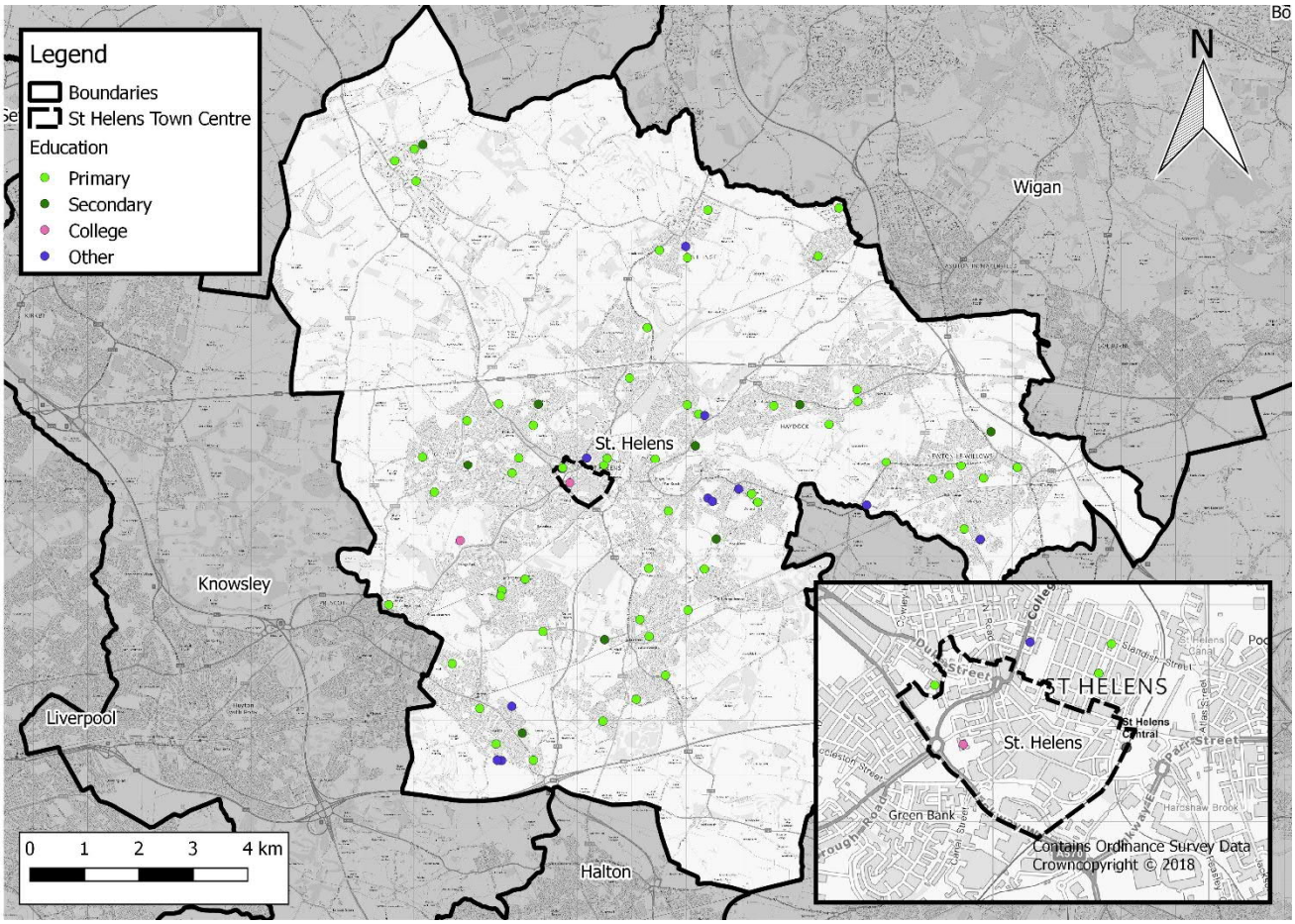
4.2.7. Figure 21 map out the location of the various Core Accessibility Indicators, including GP practices, food stores and schools in the borough of St Helens.

Figure 19: Locations of Foodstores in St Helens



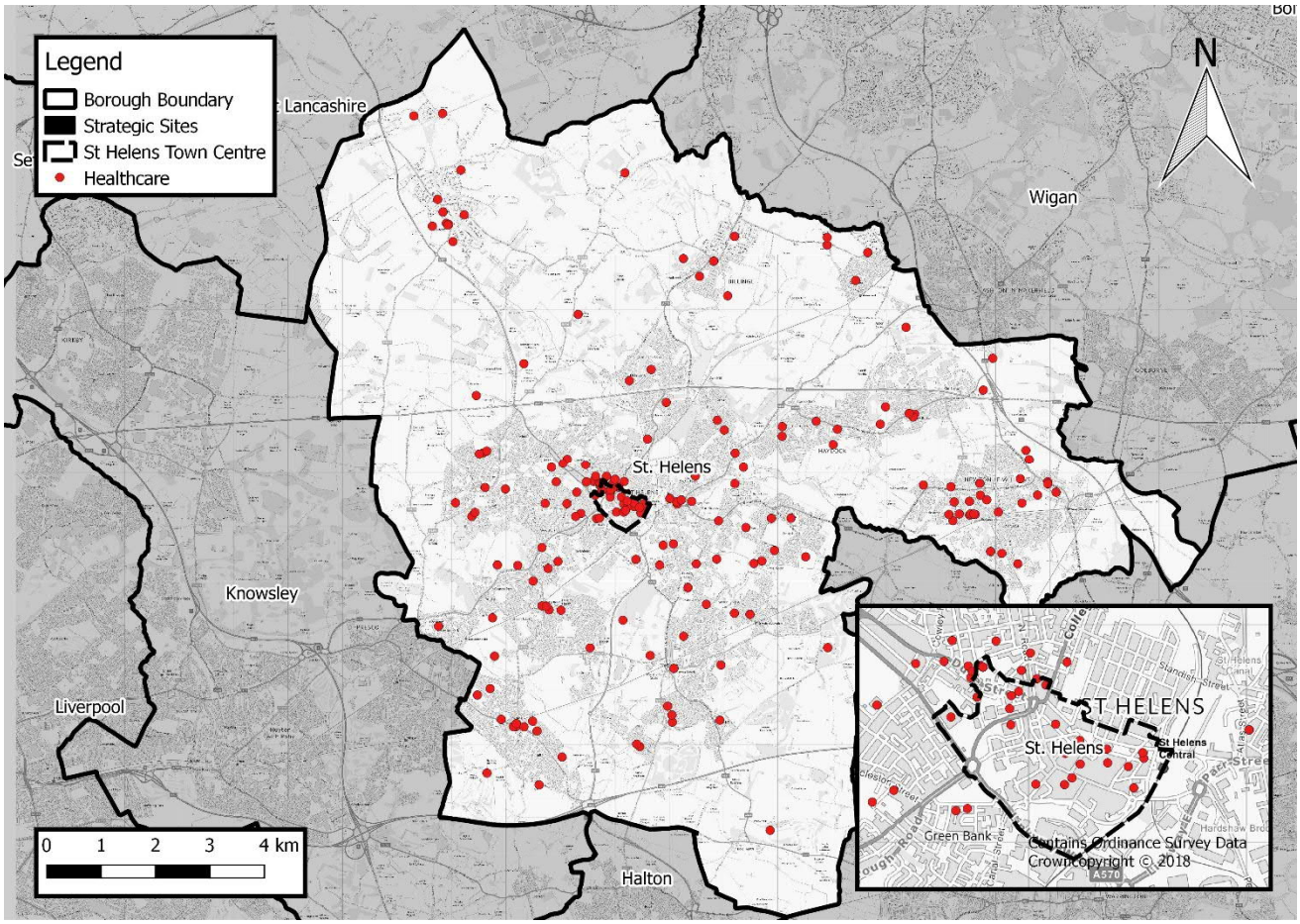
4.2.8. There are many food stores located within the St Helens borough boundary. Foodstores are more concentrated within the urban centres, particularly in the town of St Helens, and along key corridors, such as the A58 heading north east out of St Helens town centre.

Figure 20: Locations of Schools in St Helens



4.2.9. There is a large number of primary schools in St Helens, which are spread throughout the multiple residential areas. Secondary schools are located more sporadically in the borough, while there are only three further education establishments. Note that the dataset includes information on schools in England (including local authority maintained schools, academies, free schools, studio schools, university technical colleges and independent schools) and while comprehensive, there are a few limitations, notably regarding nurseries.

Figure 21: Locations of GPs in St Helens



4.2.9.1

4.2.9.2 Figure **21** maps the location of GP practices within St Helens. The majority of GP practices are located throughout the residential zones of St Helens borough; a particularly large cluster is located within the town centre of St Helens.

Local Centres

4.2.9.3 St Helens' emerging Local Plan states that proposals for retail, leisure, and other Main Town Centre uses will be directed towards the Borough's defined centres, listed as:

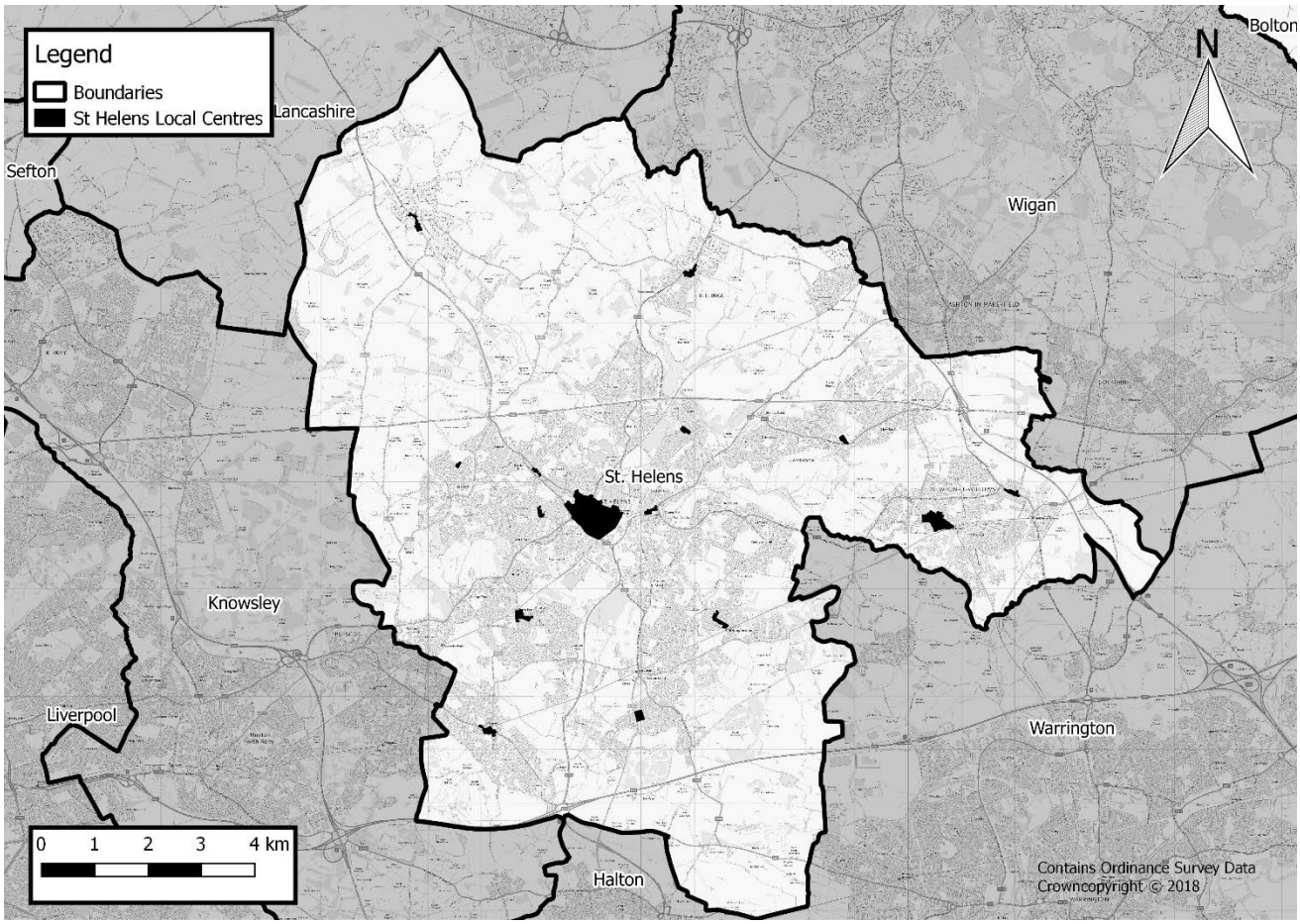
- Principal Town Centre: St. Helens.
- Town Centre: Earlestown.
- District Centres: Rainhill and Thatto Heath.
- Local Centres: Billinge; Chain Lane; Clipsley Lane; Denton's Green; Eccleston; Fingerpost; Marshall's Cross; Newton-le-Willows; Newtown; Rainford; and Sutton.

4.2.10. The National Planning Policy Framework (NPPF) defines main town centre uses as:

"Retail development (including warehouse clubs and factory outlet centres); leisure, entertainment facilities the more intensive sport and recreation uses (including cinemas, restaurants, drive-through restaurants, bars and pubs, night-clubs, casinos, health and fitness centres, indoor bowling centres, and bingo halls); offices; and arts, culture and tourism development (including theatres, museums, galleries and concert halls, hotels and conference facilities)".

4.2.11. As the primary areas for such uses, the proximity of the proposed Site Allocations to the various Local Centres in the borough is considered a key aspect of the concept of 'accessibility'. Figure 22 shows the location of the Local Centres in the Borough used as part of this assessment.

Figure 22: St Helens Local Centres



Site Audit

4.2.12. A site visit was undertaken at each of the proposed Strategic Site Allocations on 22/11/2017. The primary purpose of the site visit was to assess the following characteristics:

- Potential access points to the sites;
- Current traffic regulations (e.g. parking restrictions , clearways etc) and road speeds (where these are relevant);
- Any current movement, parking, or access problems;
- Provision of facilities to encourage sustainable transport use (e.g. lighting, footways, cycle lanes etc);
- Connectivity to public transport services;
- Connectivity to local amenities such as schools, health centres and shops;
- Connectivity to local and regional employment bases (for residential sites); and
- General observations about how the site would integrate with the surrounding area and any measures which would need to be taken to mitigate against potential negative impacts.

4.2.13. Each Potential site has also been considered on the following basis:

- Gross Site Area (ha);
- Proposed use;
- Estimated capacity – details of number of planned dwellings or estimated employment space;
- Description of site location;

- Strategic fit of the site;
- Immediate issues and access; and
- Nature and likely impact of development.

Walking and Cycling Isochrones

4.2.14. Active travel isochrones have been produced for each of the proposed Strategic Sites Allocations, identifying what extent of St Helens could reasonably be accessed by walking or cycling. The criteria used for the isochrones are listed in Table 7.

Table 7: Walking and Cycling Isochrones

Mode	Speed	Increments
Walk	4.8kph / 3mph	5 min, up to 30 min.
Cycle	16kph / 10mph	5 min, up to 30 min.

4.2.15. These isochrones include the Core Accessibility Indicator datasets, allowing analysis of travel times to key facilities, amenities and services. A range of criteria are used to assess the level of accessibility to these destinations. The NPPF and other established guidance documents on access to services and facilities (for example, Guidelines for Providing for Journeys on Foot, CIHT 2000) recognise that, beyond a certain distance, it becomes increasingly unlikely that people will walk or cycle to access services and facilities, instead using public transport or private motor vehicles. Table 8 summarises the lower and upper limits for distance and time in relation to accessibility on foot. Note that the distance threshold for walking to school is the statutory walking distance as set by the Education Act 1996. This results in a long journey time beyond that reasonably expected for adults commuting to work etc, and therefore a lower threshold has been considered for the purposes of this assessment, whereby any location beyond a 30-minute walk is no longer considered accessible.

Table 8: Core Accessibility Indicator – Walking Distance / Time Thresholds

Core Accessibility Indicator	Lower / Upper Distance Threshold	Walking Time
Education	Primary: 2 miles Secondary 3 miles	30 mins (max)
Employment Opportunity	Up to 2km	25 mins
Health Facilities	800m / 2km	10 / 25 mins
Retail inc Foodstore	1200m (up to 2km – less acceptable when carrying food)	15 / 25 mins

Public Transport Provision

4.2.16. A detailed accessibility mapping exercise was undertaken using Traccs Basemap software in order to analyse the ability of people to access jobs and essential services via the existing public transport

services in St Helens. This analysis is used to better understand the current accessibility issues that may exist around the potential sites, and inform potential solutions to meet any potential deficits, both in terms of infrastructure and future levels of service provision. The analysis focussed solely on the proposed Strategic Site Allocations and Moss Nook Urban Village.

4.2.17. It is important to consider the frequency of service and availability outside of peak times when evaluating measures of accessibility by public transport modes. Isolated areas are more likely to be served by infrequent services, potentially with limited services across evenings or weekends. The following criteria has been applied to the Traccs Basemap analysis in order to provide a more robust assessment of accessibility:

- Any service considered must provide a minimum frequency of 2 services per hour;
- Journeys each way to take no more than one hour (as defined by Tracc analysis);
- A maximum 10-minute walk time (800m) to a bus stop is included as part of the hour journey (representing a 4.8 mph average walking speed), and
- For a weekday service to be considered it must have one service which arrives at the destination before 9am and leaves after 5pm.
- A weekend service is required to have one service arriving before 12 and one leaving after 3pm.

4.2.18. Traccs Basemap Accessibility mapping was carried out for the following four scenarios:

- Scenario 1: Tuesday 07:00 - 09:00 - Destination: Employment Zones;
- Scenario 2: Tuesday 17:00 - 19:00 - Destination: Housing Zones;
- Scenario 3: Saturday 10:00 - 12:00 - Destination: Employment Zones; and
- Scenario 4: Saturday 15:00 - 17:00 - Destination: Housing Zones.

4.2.19. These scenarios are considered to best represent the movements of individuals in peak times, with journeys to the proposed Strategic Employment Sites mapped in the AM peak periods, and journeys to the proposed Strategic Employment Sites mapped in the PM peak periods. The selected time periods cover both the traditional peaks, but also some off-peak periods, which often feature reduced services, thereby lessening the accessibility.

4.2.20. Mapping was also carried out for both bus travel in isolation, and combined bus / rail. Rail by itself, while a viable mode of transport, is inherently limited by a set route and the location of stations, which can be very costly to alter. When combined as part of a multi-modal trip, many more destinations can become accessible. Note that a 5-minute interchange penalty has been applied to represent the potential delay when switching mode, as per WebTAG Unit M3.2 Public Transport and Assignment.

Site Accessibility Matrix

4.2.21. The accessibility analysis is summarised in a Site Accessibility Matrix, allowing a comparison of the relative accessibility between sites and quantifying the accessibility of each site on a five-point scale. Each site's accessibility is considered against a set of accessibility criteria derived from best practice guidance, assessing each site on its level of accessibility to key services and public amenities. Each site is then ranked based on a set of criteria against each amenity, with an 'excellent' scoring indicating the most positive level of accessibility.

4.2.22. Table 9 below presents these accessibility indicators, and the associated criteria.

Table 9: Site Accessibility Criteria

Accessibility Indicator	Excellent Accessibility	Good accessibility	Average Accessibility	Lack of accessibility	Limited Accessibility
Railway Station (on foot)	<400m	800m	1200m	1500m	>2km
Railway Station (by cycle- average speed of 15 kph)	<1km – 4mins	2km – 8mins	4km – 16mins	6km -24mins	8km – 32mins
Bus route	Multiple bus routes & stops within 250m	Multiple bus routes and stops within 400m	Singular bus route within 300m / multiple routes within 500mm	Singular bus route within 800m	No immediate bus route (i.e. within 800m)
Distance to nearest cycle route	<400m	800m	1000m	1.5-2km	>2km
Major Foodstore (on foot)	<400m 0-5 mins	400 -800m 5-10 mins	800m – 1.2km 10-15 mins	1.2km – 1.6km 15- 20 mins	>1.6km >20 mins
Education (Primary / Secondary) (on foot)	400	800	1200m	1800	<2400m
Employment (bus / rail)	<10 min	10-20 min	20-30 min	30-40 min	50 - 60 min
Healthcare (Local GP / Dentist / Pharmacy – ex. Hospitals) (on foot)	<400m 0-5 mins	400 -800m 5-10 mins	800m – 1.2km 10-15 mins	1.2km – 2km 15- 25 mins	>2km >25 mins
Local centre (on foot)	<400m 0-5 mins	400 -800m 5-10 mins	800m – 1.2km 10-15 mins	1.2km – 2km 15- 25 mins	>2km >25 mins

Broad Assessment of Sites:

4.2.23. As befits their size, strategic importance, and associated constraints, each of those housing and employment sites identified as strategic have been classified based on the detailed site assessments contained in the St Helens Sustainable Transport Impact Assessment Report (STIAR),

including walking and cycling isochrones, Traccs Basemap analysis, and site visit profomas. This analysis has informed the classification of non-strategic sites where these are in close proximity to strategic sites, while those few sites in isolation have been classified based on the outputs of a GIS distance-based assessment, considering the proximity of each site to the various indicators of accessibility.

4.2.24. This distance-based assessment can only consider the proximity of the site to each indicator. This is done on a straight line 'crow flies' basis (the Euclidean distance). It does not consider whether this desire line is available, nor can it consider barriers to movement, such as severance or safety issues, or the overall desirability of the area in regards to ease of travel. The assessment also does not consider the frequency of rail services or bus services in detail, or the destinations of these services (although 'multiple routes' is considered a proxy for this).

4.2.25. The assessment of bus services has been further refined through an analysis of existing bus timetables. Similar criteria to that used in the Traccs Basemap analysis have been applied in order to ensure that any bus service included in the analysis offers a genuine alternative to private vehicle use; these criteria are:

- Any service considered must provide a minimum frequency of 2 services per hour;
- Journeys each way to take no more than one hour (as defined by Tracc analysis);
- A maximum 10-minute walk time (800m) to a bus stop is included as part of the hour journey, and
- For a weekday service to be considered it must have one service which arrives at the destination before 9am and leaves after 5pm; and
- A weekend service is required to have one service arriving before 12 and one leaving after 3pm

4.2.26. Furthermore, a number of the proposed Strategic Site Allocations are of a significant size, with limited or no details available regarding access points, layout, or transport routes within the site. Travel across the site could encompass a significant part of any journey, and so the site centroid is taken as the origin / destination for any journey to these sites, as opposed to the site boundary.

4.2.27. Table 10 presents the results of this analysis, allowing the relative accessibility of each site to be easily identified and compared. By identifying those sites with relatively low levels of accessibility, measures can be tailored to each site (or area, where multiple sites are likely to benefit).

Table 10: Site Accessibility Matrix

				Railway Stations			Cycle Routes			School			
	Site no	Name	Strategic?	On Foot	By Cycle	Bus Routes	Existing	Committed (STEP)	Major Food Stores	Primary	Secondary	Healthcare	Town or Local Centre
Employment Allocations	EA1	Omega South Western Extension, Phase 1, Land north of Finches Plantation, Bold	Strategic	Lack	Good	Limited	Limited	Limited	Average	Average	Good	Average	Limited
	EA2	Florida Farm North, Slag Lane, Haydock	Strategic	Average	Good	Average	Excellent	Lack	Good	Good	Good	Good	Average
	EA3	Land North of Penny Lane, Haydock		Limited	Average	Average	Good	Limited	Average	Average	Excellent	Average	Lack
	EA4	Land North East of Junction 23 M6, south of Haydock Racecourse, Haydock	Strategic	Limited	Average	Lack	Excellent	Limited	Average	Average	Average	Average	Lack
	EA5	Land South of Penny Lane, Haydock		Limited	Average	Good	Excellent	Limited	Average	Lack	Good	Lack	Lack
	EA6	Land to the West of Haydock Industrial Estate, Haydock		Average	Good	Good	Excellent	Lack	Good	Average	Lack	Average	Average
	EA7	Land west of Millfield Lane, south of Liverpool Road and north of Clipsley Brook, Haydock	Strategic	Good	Excellent	Average	Good	Lack	Average	Good	Average	Average	Average
	EA8	Parkside East, Newton-le-Willows	Strategic	Excellent	Excellent	Limited	Lack	Excellent	Average	Good	Lack	Average	Average
	EA9	Parkside West, Newton-le-Willows	Strategic	Excellent	Excellent	Lack	Good	Excellent	Average	Good	Lack	Average	Average

	EA10	Land to the West of Sandwash Close, Rainford		Limited	Average	Average	Excellent	Limited	Lack	Lack	Limited	Average	Lack
	EA11	Land at Lea Green Farm West, Thatto Heath		Average	Excellent	Average	Excellent	Limited	Good	Excellent	Good	Average	Average
	EA12	Gerards Park, Phases 2 and 3, College Street, St. Helens Town Centre		Good	Excellent	Excellent	Good	Average	Good	Excellent	Lack	Excellent	Good
Housing Allocations	HA1	Land adjoining Ash Grove Farm, Beacon Road, Billinge		Limited	Average	Average	Lack	Limited	Excellent	Excellent	Limited	Excellent	Excellent
	HA2	Land South of Billinge Road, east of Garswood Road and west of Smock Lane, Garswood		Good	Excellent	Lack	Limited	Limited	Excellent	Excellent	Limited	Excellent	Lack
	HA3	Land at Florida Farm (south of A580), Slag Lane, Blackbrook	Strategic	Lack	Good	Good	Excellent	Lack	Excellent	Good	Excellent	Excellent	Good
	HA4	Land East of Chapel Lane and south of Walkers Lane, Sutton Manor		Lack	Good	Excellent	Excellent	Limited	Good	Excellent	Average	Average	Average
	HA5	Land South of Gartons Lane and former St.Theresa's Social Club, Gartons Lane, Bold	Strategic	Average	Good	Excellent	Excellent	Limited	Excellent	Excellent	Lack	Excellent	Excellent
	HA6	Land south of Reginald Road / Bold Road - Northern Section (Phase 1), Bold		Excellent	Excellent	Excellent	Lack	Limited	Good	Good	Lack	Excellent	Excellent
	HA7	Land between Vista Road and Ashton Road, Newton -le-Willows	Strategic	Average	Excellent	Good	Excellent	Average	Excellent	Good	Good	Excellent	Good

	HA8	Eccleston Park Golf Club, Rainhill Road, Eccleston	Strategic	Excellent	Excellent	Lack	Lack	Limited	Good	Excellent	Average	Good	Average
	HA9	Higher Barrowfield Farm, Houghton's Lane, Eccleston		Limited	Average	Excellent	Average	Limited	Good	Excellent	Average	Good	Good
	HA10	Land south west of M6 J23 between Vista Road and Lodge Lane, Haydock	Strategic	Limited	Good	Average	Excellent	Lack	Good	Average	Good	Good	Lack
	HA11	Land at Moss Bank Farm, Moss Bank Road, Moss Bank		Limited	Average	Excellent	Excellent	Limited	Good	Good	Average	Excellent	Lack
	HA12	Former Newton Community Hospital (Simms Ward), Bradlegh Road, Newton-le-Willows		Good	Excellent	Excellent	Excellent	Excellent	Average	Excellent	Limited	Excellent	Good
	HA13	Former Red Bank Community Home, Winwick Road, Newton-le-Willows		Good	Excellent	Excellent	Excellent	Excellent	Good	Average	Limited	Lack	Average
	HA14	Land south east of Lords Fold, Rainford		Lack	Good	Excellent	Excellent	Limited	Good	Excellent	Average	Good	Good
	HA15	Land South of Higher Lane and east of Rookery Lane, Rainford		Limited	Average	Good	Good	Limited	Average	Average	Lack	Good	Average
	HA16	Land south of A580 between Houghtons Lane and Crantock Grove, Windle	Strategic	Limited	Average	Lack	Excellent	Limited	Excellent	Excellent	Average	Excellent	Excellent

4.3 SUMMARY

4.3.1. The overall outputs from the sustainable transport assessment process in St Helens has identified several sites with average or below accessibility ratings. The following key points are noted:

- Many sites have limited sustainable transport opportunities to access St Helens railway stations, being further than the maximum recommended walking distance. However, the opportunities for access by bicycle are much higher based on distance; complementary measures such as infrastructure improvements and behaviour change measures could promote bicycle and rail use as part of a multi-modal journey.
- Three-quarters of the proposed employment allocations (9 of 12) and approximately a third (5 of 16) of the proposed housing allocations are identified as having Average or worse accessibility by bus. Bus assessment is not only based on distance to nearby infrastructure, but also considers the availability and frequency of services. Enhancing bus travel to and from the proposed site allocations, particularly in relation to the proposed Strategic Employment sites, is likely to require a collaborative approach between developers, the Council, and Merseytravel.
- While a number of sites are within a Good or Excellent rated distance from the existing St Helens cycle network, this assessment does not consider the ease of the route to access this network, or the quality of the existing network and connectivity to key origins and destinations. The development of the LCR LCWIP will contribute to the identification of a cohesive cycle network across the borough, including enhancements to existing infrastructure and the provision of new routes. St Helens will need to ensure that the proposed site allocations, particularly those identified as Strategic, are included as O/Ds within the LCWIP process, that the document is given weight in the planning process through policy controls and adoption as an SPD, and that mechanisms are in place for the collection of contributions towards infrastructure provision.
- The accessibility rating for the Core Accessibility Indicators carries less weight in relation to the proposed employment sites, and therefore the Core Accessibility Indicators have been assessed in greater detail in relation to the proposed housing sites. The majority of the proposed housing sites are well located in relation to proximity to major food stores, healthcare facilities, local centres, and primary schools. Secondary schools in the borough are more dispersed, limiting accessibility by foot. Where sites are well located in regards to their proximity to Core Accessibility Indicators, it is essential that routes are provided along desire lines, with potential enhancements to the pedestrian environment to further encourage travel by foot for short journeys to local facilities.

4.3.2. It is anticipated that the Site Accessibility Criteria will form a key part of any further assessment of the sites; while this is not the only way of assessing the sustainable credentials of a site, and achieving ‘Excellent’ ratings should not be a substitute for more detailed assessment where appropriate, it is envisaged that, where possible, development sites will take the necessary practicable steps to achieve the highest possible Accessibility Matrix rating in each category.

5

SUSTAINABLE TRANSPORT MEASURES

5 SUSTAINABLE TRANSPORT MEASURES

5.1 INTRODUCTION

5.1.1. Bringing forward development in St Helens in a truly sustainable way will take concerted effort across various stakeholders and organisations; St Helens Council have consulted extensively through the Transport Impact Assessment process with its many partners, including the Liverpool City Region Combined Authorities, the neighbouring Local Authorities, and infrastructure providers such as Highways England, Transport for the North, and Merseytravel. The measures required to do so will vary from site to site—there is no single package of measures that can be uniformly applied across all sites in order to maximise sustainable transport opportunities. Furthermore, the anticipated changes in technology encompassed under New Mobility is likely to significantly change how sustainable transport is realised over the Plan period; measures suggested now may be inappropriate for development that comes forward a decade hence.

5.1.2. Nevertheless, there are a number of recommendations that can be made at this moment to encourage an uptake in sustainable travel. Many of these require policy controls adopted through the emerging St Helens Local Plan, through new SPDs, or through close collaboration with various stakeholders, such as Merseytravel and Highways England.

5.2 SUSTAINABLE MEASURES

Public Transport: Bus

5.2.1. At present, the 2011 Census travel to Work data indicates that fewer people travel to work via bus in St Helens when compared to the national average. However, there are positive trends in bus travel in regards to St Helens town centre; bus trips into the town centre account for approximately 30% modal share. St Helens benefits from its inclusion within the Liverpool City Region, with Merseytravel being responsible for the strategic coordination of bus services across the combined authority.

5.2.2. The following recommendations look to promote bus services in the borough and increase modal share, with a particular focus on those interventions that increase the sustainability of the proposed site allocations:

- Enabling easy access for sites to bus infrastructure is key in encouraging bus usage. More detail on design and layout considerations is given in subsection 5.2.6 below.
- A number of sites were identified through consultation with Merseytravel as having potential for additional services, whether extensions of existing services, an entirely new route, or increased service frequency. Where appropriate, these recommendations will be adopted as site specific requirements in the new St Helens Local Plan.
- However, the need for such additional services may change depending on when each new site comes forward, and therefore an assessment of bus services should be determined through the Transport Assessment process, including further liaison with Merseytravel and other key stakeholders. The requirements for a Transport Assessment / Statement are set out in emerging Policy LPA07: Transport and Travel, which makes reference to the additional detail contained in the Ensuring a Choice of Travel SPD.
- New developments should give consideration to the availability of infrastructure in the vicinity of each site; bus services can be much more reactive where infrastructure such as bus stops

already exist, and upgrading poles to shelters where practicable can encourage bus travel in inclement weather.

- While electronic timetabling is currently available at a number of stops in St Helens, new developments should consider the provision of real-time bus timetabling.
- Behaviour change initiatives should be incorporated within Travel Plans for each site. More detail on Travel Planning is given in sub section 5.2.5 below.
- St Helens is also considering a number of additional measures that will influence bus travel across the borough. The emerging Town Centre Strategy is likely to have a significant impact on bus travel into St Helens town, envisaging new bus infrastructure, public realm, and a reorganisation of parking across the town centre.

Public Transport: Rail

5.2.3. Rail travel is heavily constrained by the location of infrastructure, including stations, parking, and the rail lines themselves. It is much more difficult for rail to react quickly to new development compared to bus operators, and interventions can be extremely costly.

5.2.4. Nevertheless, the propensity to travel by rail can be improved through various external measures, including improving access to rail stations, enhancing desire lines to and from major locations, providing additional car and cycle parking, and through behaviour change initiatives.

5.2.5. The following recommendations look to promote rail travel in the borough and increase modal share, with a particular focus on those interventions that increase the sustainability of the proposed site allocations:

- Sites in close proximity should consider the potential for direct routes along desire lines to rail facilities; more detail on design and layout considerations is given in subsection 5.2.6 below.
- Provision of additional parking at rail stations could increase rail mode share, but it is recognised that providing additional parking is limited by the availability of land, and that park-and-ride facilities can induce additional traffic, creating localised capacity issues around facilities.
- The requirements for any improvements related to rail travel should be included as part of any Transport Assessment / Statement. The requirements for a Transport Assessment / Statement are set out in emerging Policy LPA07: Transport and Travel, which makes reference to the additional detail contained in the Ensuring a Choice of Travel SPD.
- Further improvements to rail likely to increase modal share, such as enhanced ticketing services or upgrade to facilities should be considered in conjunction with MerseyTravel, relevant Train Operating Companies (TOCs), and Transport for the North (TfN).

Cycling

5.2.6. St Helens is currently partway through the STEP programme, implementing a number of active travel improvements across the borough, with additional schemes still planned. However, the STEP scheme is for a fixed amount of time, coming to an end in 2021. Whilst additional funding could be sought for a continuation of the scheme or similar, the following additional recommendations look to promote cycle use in the borough and increase modal share, with particular focus on those interventions that increase the sustainability of the proposed site allocations:

- The Liverpool City Region is currently progressing a City Region Local Cycling and Walking Infrastructure Plan (LCWIP), which includes St Helens. This document will identify both existing and future key origins and destinations, assess existing infrastructure, and make

recommendations for future infrastructure to create a cohesive cycling (and walking) network across the borough and the wider LCR.

- Any new development should pay due cognisance to this document, and consideration should be given to how new development can contribute to identified off-site infrastructure, and well as provide exemplary facilities on-site to further encourage cycle usage. The DfT's LCWIP guidance suggests that an LCWIP is adopted as an SPD, providing a policy framework for infrastructure investment across the borough.
- More detail on design and layout considerations is also given in subsection 5.2.6 below.
- Behaviour change initiatives should be incorporated within Travel Plans for each site. More detail on Travel Planning is given in sub section 5.2.5 below.
- St Helens should also continue to promote cycling across the borough through initiatives such as the Healthy Living Team, coordination with cycling community and action groups, and road safety schemes like cycle proficiency training.
- While poor air quality affects all transport users, poor air quality can have a significant impact on active travel modes including walking and cycling. Emerging Policy LPA07: Transport and Travel sets out that the Council will seek to minimise the negative impacts of transport including air and noise pollution through requiring developers to implement Travel Plans in accordance with the requirements of the Ensuring a Choice of Travel SPD. St Helens also currently has AQMA Action Plans relating to the 4 AQMA's around the borough.

Walking

5.2.7. Walking is the most natural choice of travel, requiring little more than the individual's own body, and is considered the best option for replacing short trips, generally below 2km in length. Nevertheless, the propensity to travel on foot can be easily restricted through elements such as poor design, resulting in severance, a perception of unsafe and intimidating environments, and low air quality. The availability of the private motor car and ease of travel for short journeys can also have an impact on modal choice. Improving the existing environment to increase the propensity to travel on foot and limiting car usage for short journeys is a highly complex task, and requires a multi-faceted approach tailored to each area.

5.2.8. Nevertheless, the following additional recommendations will look to promote walking in the borough and increase modal share, with a particular focus on those interventions that increase the sustainability of the proposed site allocations:

- With the recent publication of the Government's Cycling and Walking Investment Strategy and subsequent LCWIP guidance, there has been much more focus on producing comprehensive walking strategies as part of the Local Plan suite of documents. As discussed above, the Liverpool City Region is currently progressing a City Region Local Cycling and Walking Infrastructure Plan (LCWIP), which includes St Helens. This document will provide a cohesive strategy for investment across the borough (and into the wider region), focussing walking improvements on those places currently poorly connected or supressing pedestrian movement, while also analysing future demands.
- As stated above in regards to cycling infrastructure, any new development should pay due cognisance to this document, and consideration should be given to how new development can contribute to identified off-site infrastructure, and well as provide exemplary facilities on-site to further encourage walking. The LCWIP could also be adopted as an SPD, providing a policy framework for infrastructure investment across the borough.

- While the LCWIP will provide a framework for investment in a cohesive walking network, there may be other improvements required outside of its scope, such as where the existing footways and pedestrian facilities are considered inadequate for any increase in pedestrian usage. Such limitations should be identified through the Transport Assessment / Statement process. The requirements for a Transport Assessment / Statement are set out in emerging Policy LPA07: Transport and Travel, which makes reference to the additional detail contained in the Ensuring a Choice of Travel SPD.
- New developments will need to carefully consider pedestrian desire lines within the site and connectivity to offsite facilities, in particular to public transport infrastructure. More detail on design and layout considerations is also given in subsection 5.2.6 below.
- Behaviour change initiatives should be incorporated within Travel Plans for each site. More detail on Travel Planning is given in sub section 5.2.5 below.
- While poor air quality affects all transport users, poor air quality can have a significant impact on active travel modes including walking and cycling. Emerging Policy LPA07: Transport and Travel sets out that the Council will seek to minimise the negative impacts of transport including air and noise pollution through requiring developers to implement Travel Plans in accordance with the requirements of the Ensuring a Choice of Travel SPD. St Helens also currently has AQMA Action Plans relating to the 4 AQMA's around the Borough.

The Influence of Effective Travel Planning

5.2.9. A Travel Plan (TP) is a long-term management strategy for an organisation or site that seeks to deliver sustainable transport objectives through active management and is articulated in a document that is regularly reviewed. A Travel Plan involves identifying a suitable package of measures as to ensure sustainable travel with an emphasis on reducing reliance on single occupancy car journeys, and can further assist in meeting a range of other objectives.

5.2.10. A thoroughly developed Travel Plan can assist in the mitigation of any adverse traffic impacts of a development, and national government recognises their importance in achieving improvements in transport conditions at the local level. Further evidence suggests that people who are physically active in their daily lives are more productive and have good attendance records. The Department for Health publication "Choosing Health: Making healthy choices easier" (2004) recognised the health benefits of walking or cycling, and active travel as part of a Travel Plan enables people to enjoy these health benefits as part of their daily routine.

5.2.11. Travel Plans at each site should include a range of bespoke behaviour change initiatives, tailored to each site through engagement with residents / staff as appropriate, and led by a genuinely invested Travel Plan Coordinator.

5.2.12. Where possible, monies should be sought in order to provide long-term monitoring and evaluation of the Travel Plan, while contributions could be secured against the success of the Travel Plan measures and achievement of the stated targets.

5.2.13. The need to produce a Travel Plan is referred to in Policy LPA07: Transport and Travel in the emerging St Helens Local Plan, as well as in Policies LPA04.1: Strategic Employment Sites, LPA05.1: Strategic Housing Sites, and LPA10: Development of Strategic Rail Freight interchange. These policies direct the reader to the St Helens SPD, Ensuring a Choice of Travel, for more detail on Travel Plan requirements. This SPD was adopted in 2010, and while the information it contains is

still highly relevant in places, there have been a number of significant changes in national and regional policy, in the structure of the regions, and new guidance and research published.

5.2.14. It is St Helens intention to refresh the Ensuring a Choice of Travel SPD in order to make sure the guidance aligns with current best practice and policy; this refresh should be undertaken as soon as practicable in order to help direct future development.

Design and Layout

5.2.15. Providing seamless access to sustainable transport options is not simply achieved by locating access points in close proximity to infrastructure, but also by ensuring the internal layout of sites is conducive to sustainable travel. St Helens already has an SPD that provides detailed guidance on design and layout: St Helens Design Guidance SPD (2007).

5.2.16. It is noted that this document was adopted in 2007, and predates the publication of new guidance such as Manual for Streets (DfT, 2007), the adoption of the National Planning Policy Framework (NPPF), and the withdrawal and abolition of the various Planning Policy Guidance documents.

5.2.17. It is St Helens intention to refresh the Design Guidance SPD in order to make sure the guidance aligns with current best practice and policy; this refresh should be undertaken as soon as practicable in order to help direct future development.

Accessibility Rankings

5.2.18. The work undertaken in baselining the existing sustainable travel culminated in the creation of an Accessibility Matrix (as presented in section 4.2.6), a primarily distance based assessment which considered the relative proximity of each proposed site to a number of Key Accessibility Indicators, ranking them based on a range of best practice guidance documents. While this is not the only way of assessing the sustainable credentials of a site, and achieving 'Excellent' ratings should not be a substitute for more detailed assessment where appropriate, it is envisaged that, where possible, development sites will take the necessary practicable steps to achieve the highest possible Accessibility Matrix rating in each category.

5.2.19. This Accessibility Matrix could also be adopted within the refreshed Ensuring a Choice of Travel SPD, or form the basis of such.

5.3 THE IMPACT OF SUSTAINABLE INTERVENTIONS ON HIGHWAY CAPACITY AND OPERATION

5.3.1. Transport models are commonly used to inform planner and policy makers about the current capacity and performance of a transport system, and how this situation is likely to change in response to a particularly scenario, such as the impact of Local Plan growth in a given area. Transport models were historically produced to predict likely future demand, and then provide capacity to meet this demand (predict and provide methods). However, modern transportation policy reflects a general recognition that additional capacity induces additional demand, and that catering for private vehicle usage through road building does not create an efficient network—this approach also comes at a significant economic, environmental, and social cost.

5.3.2. With a policy shift towards more sustainable forms of travel and transportation, there is a focus on methods of predicting the impact of sustainable transport measure, in particular considering the potential for such measures to reduce demand for private car usage and induce modal shift. However, estimating the impacts of sustainable transport measures is a relatively new concept, and

lacks the evidence that accompanies traditional capacity modelling and vehicle behaviour simulation.

5.3.3. The need to incorporate sustainable interventions into transport models is driven by the significant impacts such interventions can bring. A number of significant projects delivering packages of sustainable transport measures reported a modal shift toward sustainable modes:

- Evaluation of the DfT funded Smarter Choices Programme in Darlington, Worcester, and Peterborough showed that the four-year package of targeted sustainable transport interventions achieved a reduction of 5% – 7% in car driver distance travelled by residents for those journeys under 50km that were in-scope.
- Similarly, the evaluation of the Cycling City and Towns Programme (CCTs), and the Cycling Demonstration Towns (CDTs) found that there was an overall increase in cycling trips of 29% in the six CDTs and 24% in the 12 CCTs over the programme periods.
  The DfT's evaluation of the Local Sustainable Transport Fund (LSTF) found that car use fell in LSTF Large Projects areas, with relative per capita car traffic falling by 2.3 percentage points. across 93 workplaces in the Large Project areas, car driving fell by 2.7 percentage points, equivalent to a 4.1% reduction in commuting by car, while the proportion of adults who cycled in these areas increased by 6.6 percentage points.

5.3.4. WSP released a report in 2008 (Modelling and Appraisal of Smarter Choices: Review of empirical data for practical modelling) that considered possible methods for incorporating various sustainable travel measures into standard modelling packages. The report found that some measures could be included if enough detail were provided in the model, but that this introduced more possibility for error and significantly added to model development and processing time. The report also found that some measures cannot be directly incorporated within the current logit based mode choice models, such as personalised travel plans, provision of secure cycle facilities, etc, while some 'smarter choices' measures, such as preferential car parking for car sharers, demand responsive bus services, working at home, etc, cannot be reflected in traditional four-stage modelling at all.

5.3.5. The DfT have released TAG Unit M5.2, Modelling Smarter Choices, providing guidance on modelling 'Smarter Choices' as part of the WebTAG series of online guidance documents on transport appraisal. However, this document identifies that, while there is some evidence about the combined effects of several Smarter Choices measures delivered as a package of interventions, there is much less evidence about the isolated effects of individual 'soft' measures, in a form that informs the specification of how these measures may be modelled.

5.3.6. The guidance further states that there is currently no complete TAG guidance on the appraisal of 'soft' measures in particular (those which are intended to affect demand without affecting actual as opposed to perceived cost).

5.3.7. The transport evidence base to support the new St Helens Local Plan has identified a number of sustainable interventions to enhance the uptake of sustainable transport in the borough, with a particular focus on policy controls for new development, taking reasonable necessary steps to ensure that the growth aspirations of the borough come forward while minimising private car usage and maximising every opportunity for sustainable travel. While the impact of some of these interventions could be modelled individually, many of the 'soft' interventions cannot be explicitly modelled, and there is no current methodology for incorporating all the proposed measures within one multi-modal model. Attempting to produce such a model would be disproportionate to the scale

of assessment required to support the Local Plan proposals. Furthermore, the change in travel predicted as part of 'New Mobility' is likely to further limit the accuracy of any such assessment.

5.3.8. As a proxy for such interventions, the modelling work undertaken has included a 5% reduction in vehicle trips across the network. This reduction is applied to scenario DS2a, which considers the impact of sustainable interventions in isolation, while scenario DS2 incorporates both the impacts of sustainable transport interventions and highway interventions. Further details on the modelling scenarios and the results can be found in the subsequent sections of this report.

6

HIGHWAY IMPACT ASSESSMENT METHODOLOGY

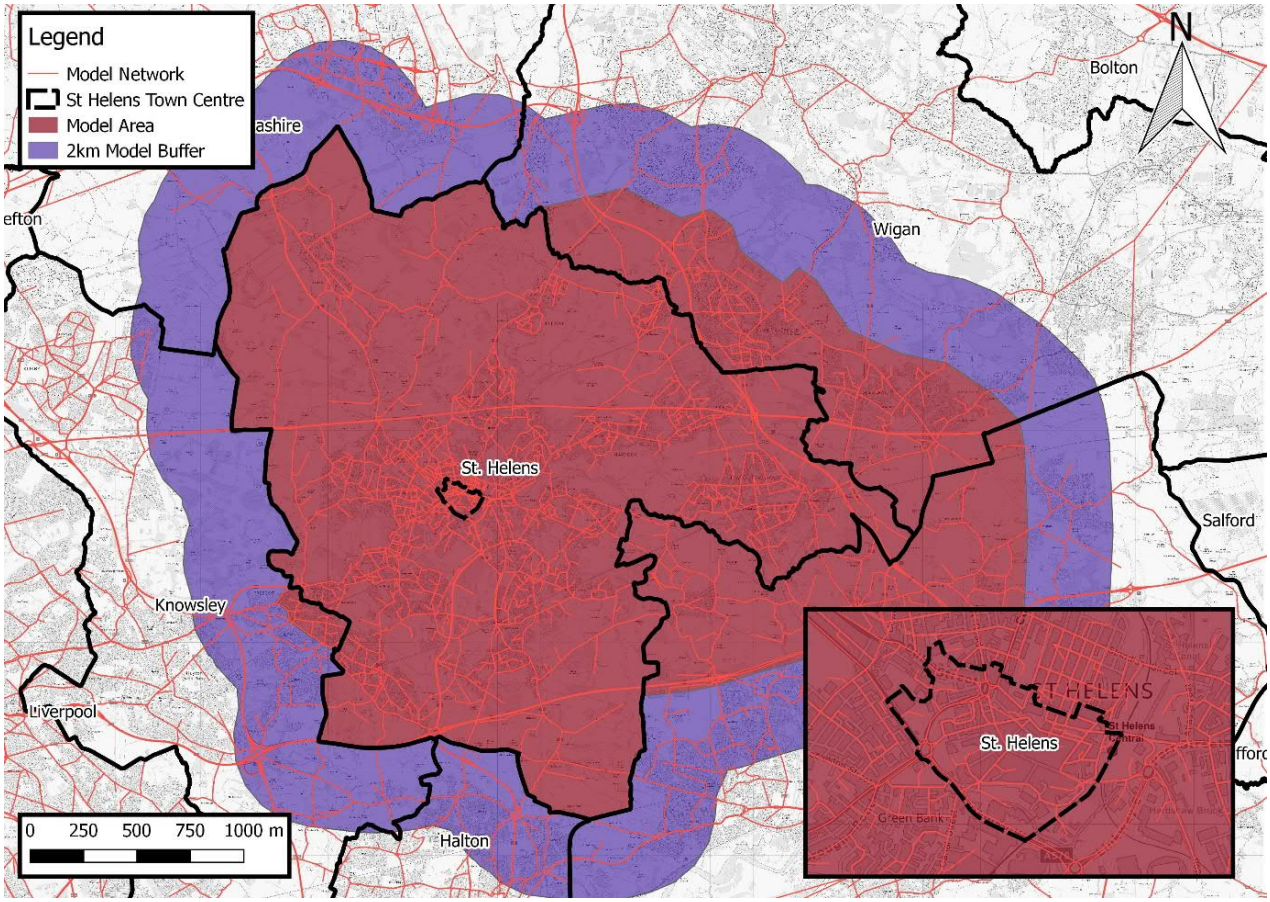
6 HIGHWAY IMPACT ASSESSMENT METHODOLOGY

6.1 BACKGROUND

6.1.1. In order to provide a robust evidence base to support the proposed site allocations in the Local Plan, a methodology for assessing the highway impact has been developed and agreed in close liaison with St Helens Council (SHC) and Highways England.

6.1.2. Fundamental to the assessment has been the development of a SATURN highway assignment model for the area of influence, as shown in Figure 23.

Figure 23: Extent of St Helens Saturn Model (SHSM)



6.1.3. SM is a traffic only assignment model, which can be used to assess the traffic impact highway schemes and land use development proposals within St Helens district. The model bridges the gap between the strategic Liverpool City Region Transport Model (LCRTM) – which has a coarser representation of the transport network but detailed estimations of travel demand – and microsimulation models such as the A570 corridor model, which benefit from a high level of information on network operation at the expense of more aggregate representations of travel demand.

6.1.4. SHSM has been developed in accordance with the Department for Transport's (DfT) Transport Appraisal Guidance (TAG), with the focus of the model calibration and validation on St Helens' Key

Route Network (KRN) and junctions at key locations within the district. During model development, the Liverpool City Region Transport Model (LCRTM) was utilised as a starting point from which network detail was added within St Helens and also as the basis of the initial travel demand, from which matrix improvements were made based on recently collected count data.

6.1.5. The SHSM Local Model Validation Report, dated March 2018, provides the requisite detail on the model development and its compliance against WebTAG guidance.

6.1.6. In line with good practice, a model Forecasting Report has also been prepared. Within the Forecasting Report full details are presented on the approach to using SHSM to provide predictions of the impact as a result of the estimated levels of traffic generated by the Local Plan sites, along with the effectiveness of a series of mitigation scenarios, with reference to a Do Minimum scenario comprising of committed developments and plan infrastructure improvements. The Forecasting Report is provided as a separate document to be read in conjunction to this TIA.

6.1.7. SHSM has been used to provide a range of useful metrics to help understand the traffic impacts of the Local Plan, notably those relating to changes in:

- Traffic flows;
- Queues experienced at key junctions;
- Volume over capacity (V/C) ratios; and
- Journey times on key corridors.

6.1.8. In consultation with SHC, the key junctions were agreed and are shown in Table 11 and Figure 24. Also agreed with SHC were 10 journey time corridors, illustrated in Figure 25 and documented in Table 12, used in the calibration and validation of the base model.

6.1.9. Furthermore, district wide statistics concerning overall distance travelled, total travel times and average speeds have been extracted from the model outputs

Table 11: Key junctions in SHSM (junction code refers to node number)

Jnc code	Junction	Jnc code	Junction
111	Main Street/Newton Road	R11	Marshall Cross Bridge Mill Lane
50	Liverpool Rd/Millfield Lane/Tithebarn Rd/Ashton X	33	Boundary Road/Duke Street/Dentons Green Lane
R1	A580/Blindfoot Road	34	Boundary Road/Kirkland Street
54	East Lancashire Road/Rainford Rd/Windle	11	College Street/Standish Street
53	East Lancashire Road/Green Leach Lane	69	Linkway West/Canal Street
52	East Lancashire Road/Carr Mill Road	R3	A58 ASDA
48	East Lancashire Road/Liverpool Road/Pewfall	R2	A571 The Landings
92	A580/Haydock Lane	40	Crow Lane West/Market Street
66	St Helens Road/Burrows Lane	41	Crow Lane West/Vista Road
115	St Helens Road/Portico Lane	42	Crow Lane West/Belvedere Road

Jnc code	Junction	Jnc code	Junction
32	Prescot Road/Lugsmore Lane	43	Crow Lane West/Victoria Road
31	Prescot Road/Dunriding Lane	44	Crow Lane West/Queens Drive
132	Prescot Road/Boundary Lane/Borough Road	N_7	Southworth Road/ Parkside Road/ Newton Road/ Golbourne Dale Road
29	Prescot Road/Eccleston Street/Borough Road	N_6	Crow Lane West/High Street
R5	A58 Peasley Cross	135	Church Road/Southworth Road
14	Parr Street/Atlas Street	126	Warrington Road/Holt Lane/Whiston Hospital
15	Parr Street/Jackson Street	63	Warrington Road/Longton Lane
18	Parr Street/Ashcroft Street	62	Warrington Road/Rainhill Road
21	Park Road/Merton Bank Road	61	Warrington Road/Wilmere Lane/Jubits Lane
23	Park Road/Boardmans Lane	J7	M62 J7
140	Blackbrook Road/Ashurst Drive	J8	M62 J8
90	Blackbrook Road/Chain Lane	J9	M62 J9
20	Parr Stocks Road/Chancery Lane	J22	M6 J22
82	Broad Oak road/Chancery Lane	J23	M6 J23
R4	A570 Carrington	J24	M6 J24
R6	A570 Saints Park	N_1	Piele Road/Church Road
R8	Robins Lane/Marshall Cross	N_2	Church Road/Vista Road/Penny Lane
R9	Marshalls Cross/Scorecross	N_3	Penny Lane/Lodge Lane
R10	A570 Sutton Hall	N_4	Clipsley Lane/Haydock Lane
N_5	Sherdley Roundabout		

Figure 24: Key Junctions

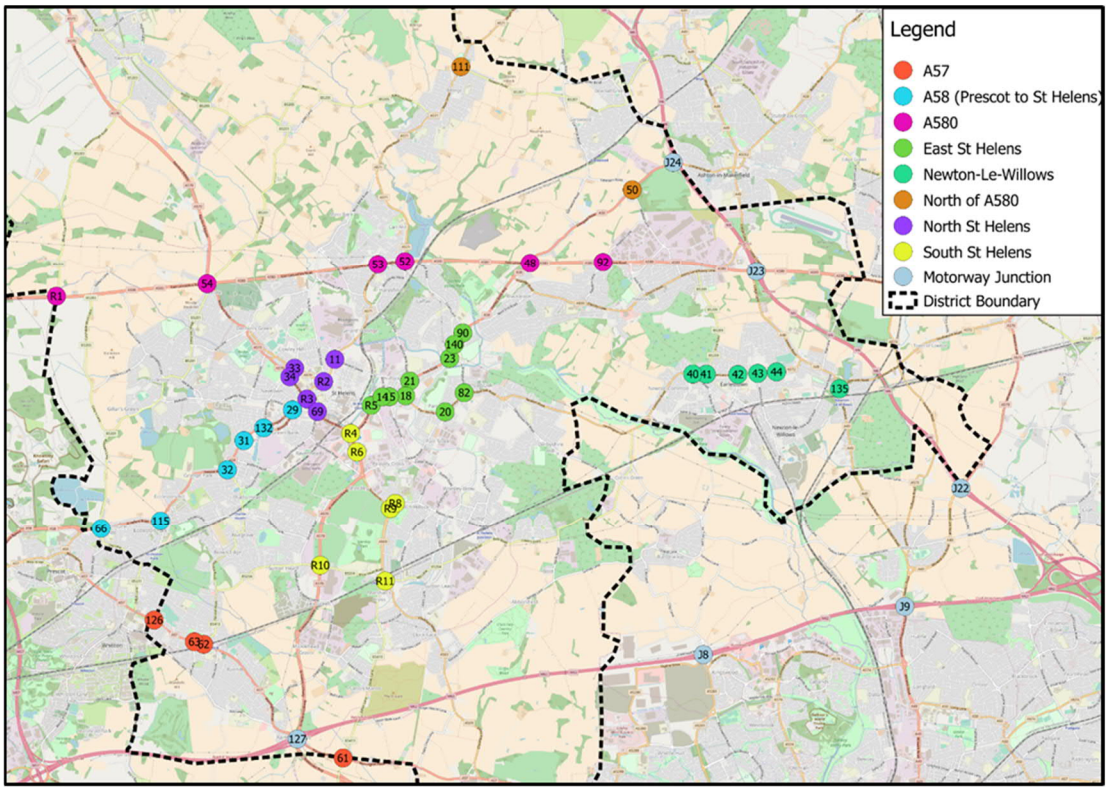


Figure 25: Journey Time Corridors

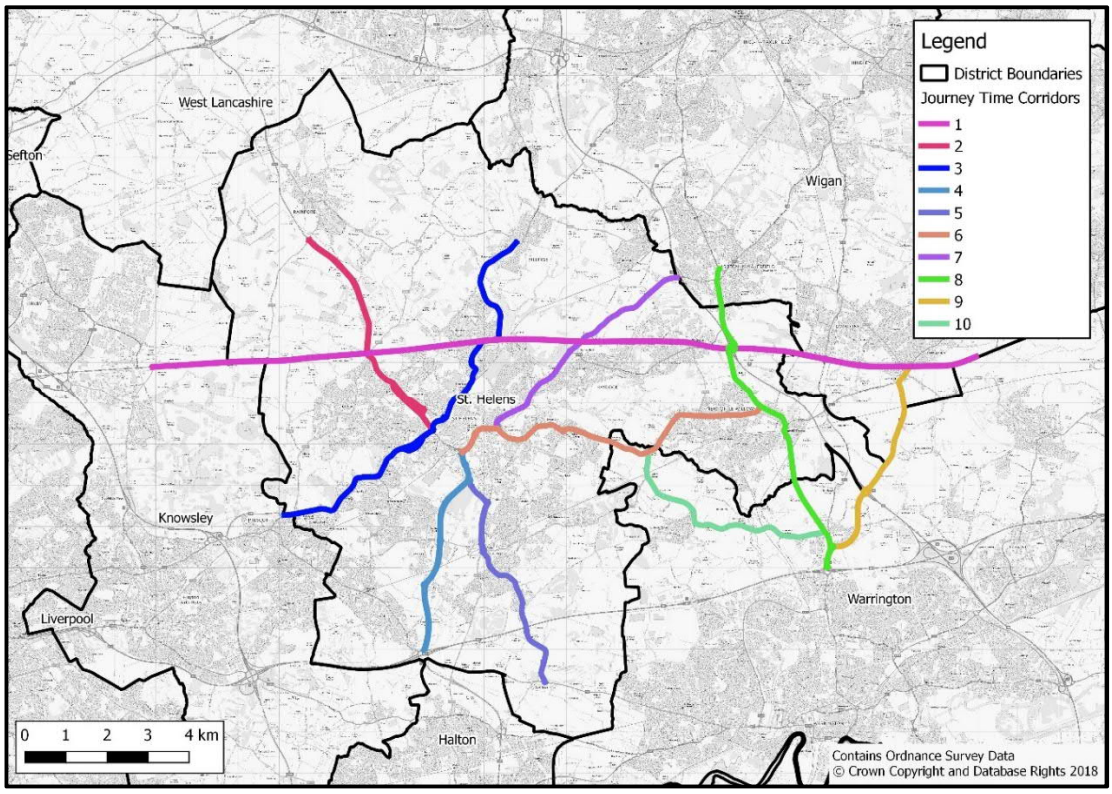


Table 12: Journey time route description

Route	description
1 EB	A580 from B5202 to A579
1 WB	A580 from A579 to B5202
2 NB	A570 from A58 to B5203
2 SB	A570 from B5203 to A58
3 EB	A58 from A58/St Helens Road roundabout to A58//A571 roundabout then A571 to B5205 via A580
3 WB	B5205 to A58//A571 roundabout via A580 then A58 to A58/St Helens Road roundabout
4 NB	A570 from M62 J7 roundabout to A58 St Helens Linkway West
4 SB	A570 from St Helens Linkway West to M62 J7 roundabout
5 NB	A569 from A57 to St A570 St Helens Linkway
5 SB	A569 from A570 St Helens Linkway to A57
6 EB	A58 from A570/A58 roundabout to A572 then A572 from A58 to A49
6 WB	A572 from A49 to A58 then A58 from A572 to A570/A58 roundabout
7 EB	A58 from A572 to M6
7 WB	A58 from M6 to A572
8 NB	A49 from M62 J9 roundabout to Wigan Road (Ashton-in-Makerfield)
8 SB	A49 from Wigan Road (Ashton-in-Makerfield) to M62 J9 roundabout
9 NB	A49 (Winwick Link Road) from M62 J9 roundabout to M6 J22 roundabout then A579 from M6 J22 roundabout to A580
9 SB	A579 from A580 to M6 J22 roundabout then A49 (Winwick Link Road) from M6 J22 roundabout to M62 J9 roundabout
10 EB	A572 from A58 to Penkford Lane then Penkford Lane /Collins Green Lane/ Lumber Lane/ Alder Lane/ Hollins Lane to A49
10 WB	Hollins Lane from A49 to Alder Lane/ Lumber Lane/ Collins Green Lane/ Penkford Lane to A572 then A572 to A58

6.1.10. A summary of the forecast methodology is provided in the following sections.

6.2 DEFINITION OF SCENARIOS

6.2.1. In order to provide a robust evidence base for assessing the impacts of the site allocations in the Local Plan, future year forecasts have been developed. 2033 has been identified as the most appropriate future year as this is consistent with the end date of the Local Plan period, and therefore enables a robust quantification of the impacts of all proposed site allocations to be made. Further details relating to the development sites and highway schemes included in each scenario can be found in the Model Forecasting Report developed in conjunction with this document.

2033 Do Minimum

6.2.2. The 2033 Do Minimum (DM) forecast seeks to demonstrate the likely future network operation under "business as usual" conditions – but without the Local Plan allocations – and incorporating the following elements:

- Sites with extant planning permissions (all land uses)
- Strategic Housing Land Availability Assessment sites (SHLAA)
- Planned infrastructure schemes on the local road network:
  - A580/Haydock Lane
  - A580/A58
  - Elton Head Road/A570 St Helens Linkway
  - Sutton Road/Jackson Street
  - Sutton Road/Watery Lane
  - Windle Island
  - Penny Lane/Lodge Lane
- Planned infrastructure schemes on the strategic road network:
  - M62 Smart Motorway Improvements – M62 J10-12
  - M6 Smart Motorway Improvements – M6 J21A-26
  - Junction 22 Capacity Improvements

6.2.3. The total additional jobs and households included in the DM scenario are given in Table 13.

Table 13: Summary of increase in jobs and households

Use	Area (ha)	Jobs (2033)	Households (2033)
Employment	61.40	1,232	--
Residential	334.31	--	9,198
Retail	1.37	254	--
Total	397.1	1,486	9,198

6.2.4. The location of developments included in the DM scenario are shown in Figure 26 and highway schemes included in the DM scenario are shown in Figure 27.

Figure 26: Locations of DM developments

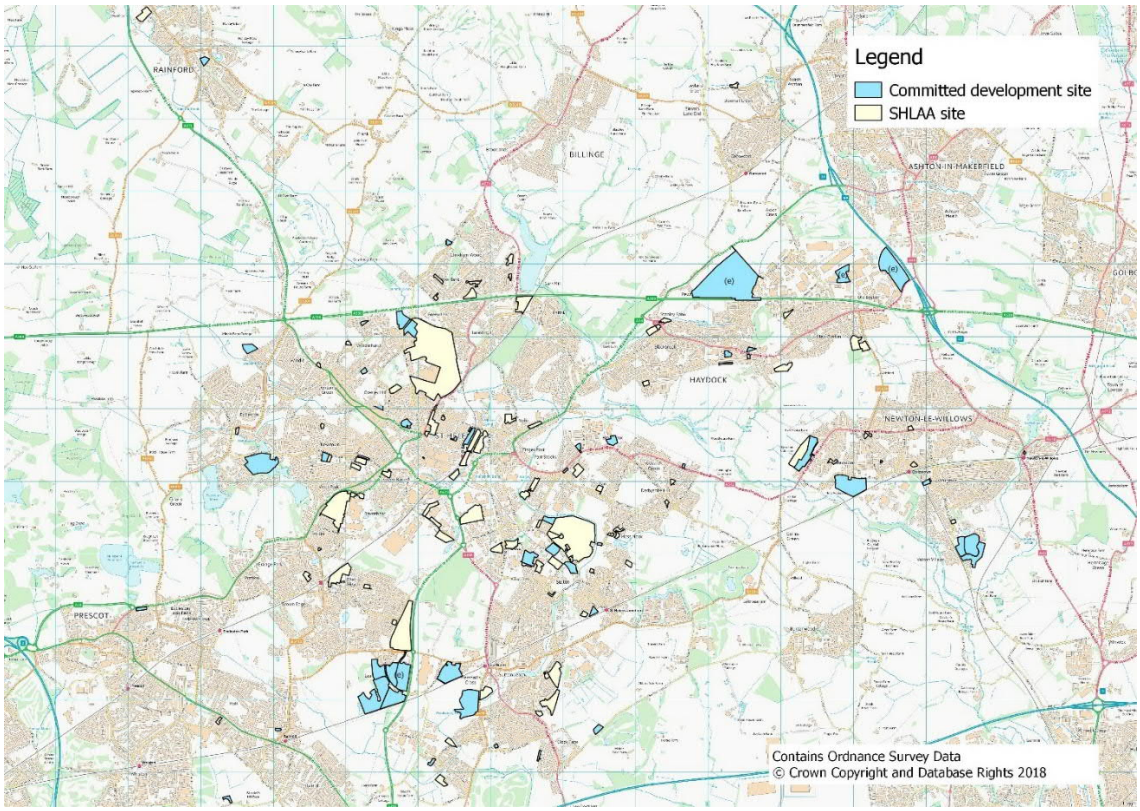
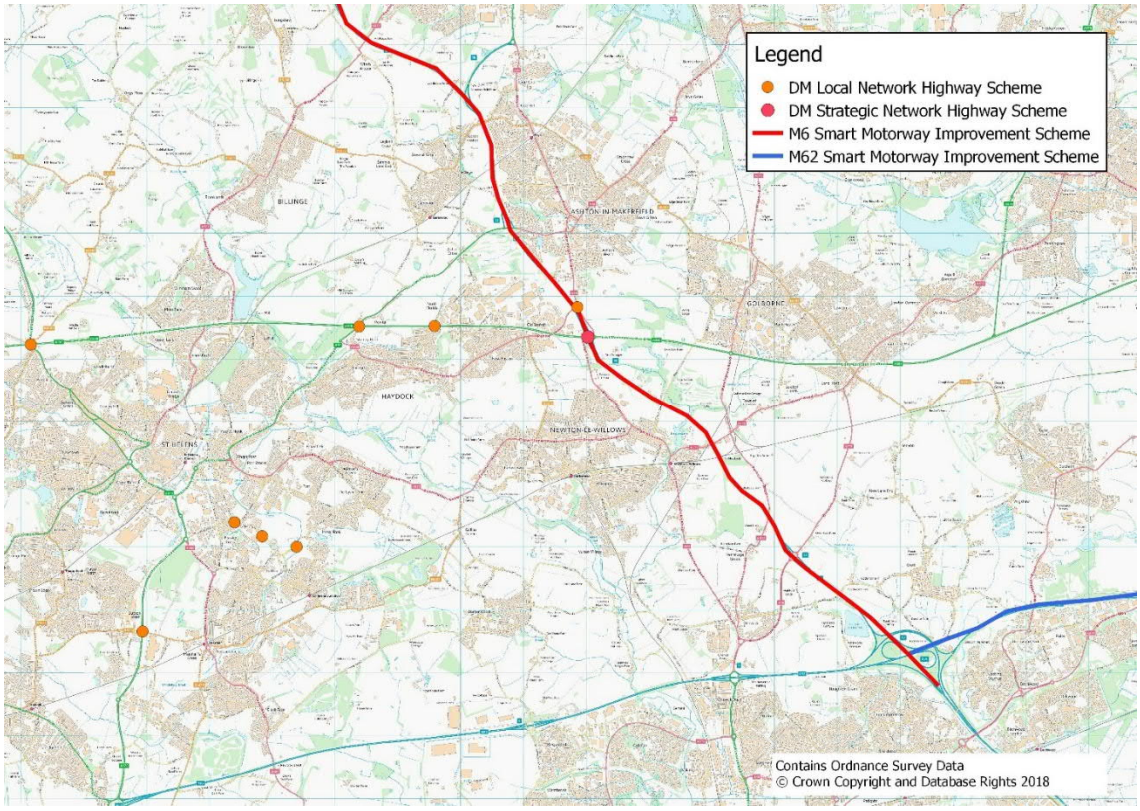


Figure 27: Locations of DM highways schemes



2033 Do Something 1

6.2.5. Do Something 1 (DS1) includes all do minimum developments and planned infrastructure schemes, and in addition also includes the Local Plan preferred site allocations. No further highway improvements have been assumed under DS1, which enables a clear and robust assessment of the impact of the Local Plan allocations to be made.

6.2.6. A series of alternative Do Something forecasts have been undertaken in order to address the residual impacts identified from the results of the 2033 DS1 tests, these are detailed in the remainder of this section.

2033 Do Something 2a (DS2a)

6.2.7. DS2a is a test of the potential effectiveness of a modest reduction in weekday peak-hour car commuter trips with an origin or destination within St Helens. In this test a 5% reduction to the forecast year travel demand has been applied to those commuter journeys that either start or end in St Helens – to reflect the response to the range of strategic policies, improved technology and changing working culture that are discussed in section 2.6.

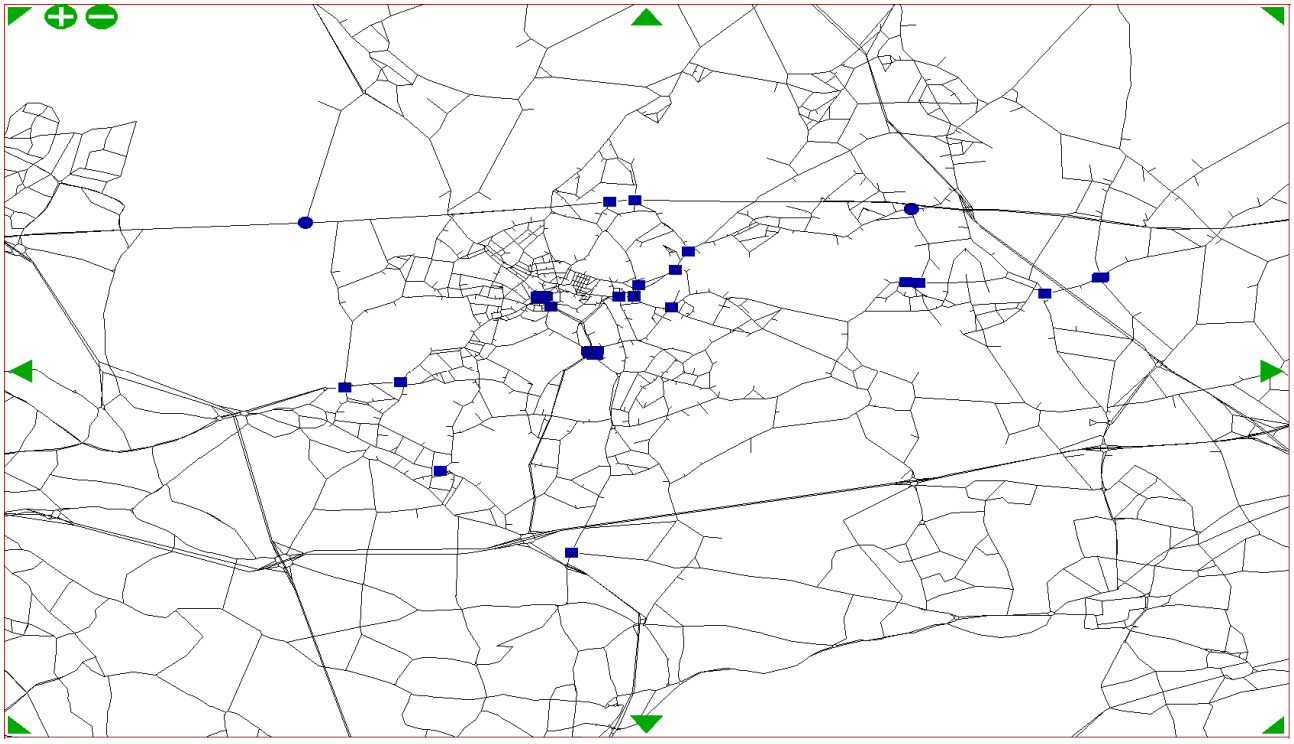
2033 Do Something 2b (DS2b)

6.2.8. Test DS2b has been designed to consider the effectiveness of small-scale capacity improvements at congested junctions on the KRN and implemented within SHSM by increasing the capacity on approach arms by 10%. The scale of the capacity increase has been based on levels of improvements that could reasonably be expected to be achieved through the implementation of measures such as: signal staging amendments and optimisation; conversion to MOVA control; minor amendments to junction layouts within the highway boundary to provide additional lanes on approach; improved signage; and re-allocation of road space to enable better lane utilisation. The locations where this assumption has been applied are illustrated in

6.2.9.

6.2.10. Figure 28.

Figure 28: Junctions where 10% capacity uplift has been applied in DS2b



6.2.11. DS2b also includes, larger-scale, strategic interventions at the following locations:

- Parkside Link Road
- M62 J7 (subject to ongoing study – based on indicative plans provided)
- M6 J23 Grade Separation of A580 (Feasibility study has commenced but no plans are available)

6.2.12. These schemes are described further in the Model Forecasting Report.

2033 Do Something 2 (DS2)

6.2.13. Combination of DS2a and DS2b.

2033 Do Something 2C (DS2C)

6.2.13.1 As DS2, but with the addition of a speed limit of 40 mph applied to the A580 corridor between Junction 23 in the east and the westernmost simulation link on the A580 at the junction with the B5202.

Matrix totals

6.2.14. To provide further context in terms of the trips into, out of, and total within St Helens under each of the scenarios

6.2.15. Table 14 to Table 16 provide summary volumes (note the analysis excludes trips that do not have one end of their journey within St Helens (external to external movements), although some of these trips will pass through the district, such as longer distance trips on the A580 corridor.

6.2.16. The tables show that in terms of car trips, the DS1 scenario represents an increase by 16% in the AM peak and 14% in the PM peak compared to the DM.

Table 14: Matrix Totals Do Minimum (DM)

	AM Peak		PM Peak	
From/To	St Helens	External	St Helens	External
St Helens	12,216	14,706	12,355	12,192
External	9,864	-	12,404	-

Table 15: Matrix Do Something (DS1 & DS2b) increase over Do Minimum (DM)

	AM Peak		PM Peak	
From/To	St. Helens	Elsewhere	St. Helens	Elsewhere
St. Helens	10%	20%	11%	14%
Elsewhere	19%	-	16%	-

Table 16: Matrix Do Something (DS2a, DS2 & DS2c) increase over Do Minimum (DM)

	AM Peak		PM Peak	
From/To	St. Helens	Elsewhere	St. Helens	Elsewhere
St. Helens	7%	17%	8%	11%
Elsewhere	16%	-	13%	-

7

DETAILED HIGHWAY IMPACT ASSESSMENT

7 DETAILED HIGHWAY IMPACT ASSESSMENT

7.1 INTRODUCTION

7.1.1. As described in the previous chapter, in order to quantify the impact of the proposed site allocations, a series of future year forecasts at 2033 have been developed and tested using SHSM.

7.1.2. In order to allow an appropriate basis for comparison, a "reference case" known as "2033 Do Minimum" has been developed in close liaison with St Helens Council and Highways England.

7.1.3. This chapter examines the highway impact of the LPPO sites by comparing "2033 Do Something 1" against "2033 Do Minimum" forecast assignments. It then describes the effect of a series of potential measures (described in the previous chapter) in mitigating for the impact of the proposed site allocations, and draws conclusions around residual impacts, along with a recommended strategy for the investigation of further interventions.

7.1.4. In order to provide a structured narrative to the analysis, firstly a comparison is made of the global impact of the LPPO sites across the detailed model area (also known as the simulation area) as shown earlier in Figure 23. This is followed by a consideration of the performance of key corridors and finally an examination of individual junction performance.

7.1.5. A separate Model Forecasting Report has been prepared that documents fully the methodology behind the generation of the traffic forecasts and the results of the forecasts themselves.

7.2 GLOBAL NETWORK PERFORMANCE

7.2.1. The following tables summarise key SATURN output parameters relating to the morning and evening peak hours for the entire model simulation area. The definition of these parameters is shown in Table 17.

Table 17: Global Network Performance Parameters

Parameter	Definition
Transient and Over-Capacity Queue	These are measures of the total time all vehicles spend queuing (in passenger car unit (PCU) hours). As an example, for a signalised junction, the transient queue element relates to the queues which build up and dissipate each cycle under uncongested conditions. The over-capacity element relates to queues which fail to clear. The two values should be summed to calculate the total queueing time.
Total Travel Time	This measures the total time all vehicles take to travel through the simulation network (in PCU hours). It includes both time incurred travelling along links and at junctions.
Travel Distance	This measures the total distance travelled by all vehicles in the simulation area, measured in PCU km.
Average Speed	This measures the average speed (km/hr) of all vehicles in the simulation area.

Table 18: Global Network Statistics AM Peak

	DM	DS1	DS2a	DS2b	DS2	DS2c
Transient queues	3,361	4,091	3,911	3,899	3,742	3,708
Over capacity queues	662	1,114	1,025	988	885	835
Total travel time	14,718	16,683	16,220	16,346	15,890	16,073
Travel distance	806,446	854,105	843,051	855,161	843,687	843,706
Average speed	54.8	51.2	52.0	52.3	53.1	52.5

Table 19: Global Network Statistics PM Peak

	DM	DS1	DS2a	DS2b	DS2	DS2c
Transient queues	3,702	4,224	4,054	4,069	3,945	3,969
Over capacity queues	821	1,191	1,099	1,082	1,027	1,042
Total travel time	15,862	17,359	16,926	17,117	16,751	16,972
Travel distance	853,588	887,920	878,439	889,914	880,706	874,419
Average speed	53.8	51.2	51.9	52.0	52.6	51.5

7.2.2. From the tables above, the impact across St Helens district of the LPPO sites (DS1) over the Do Minimum is:

- Queuing, travel time and travel distance all increase; and
- Average speed decreases.

7.2.3. This result is not unsurprising given the level of increase in trips into, within and out of St Helens as a result of the Local Plan sites.

7.2.4. However, under the scenario DS2a (Reduction in commuter trips), there is a predicted improvement in all of these statistics compared with DS1. This improvement is generally greater when combined with the junction improvements in the DS2 test.

7.2.5. The DS2c sensitivity test reduces total travel distance, but shows some increase in queues and travel time and a reduction in average speed compared with DS2. This test was undertaken to provide an initial assessment of a potential speed reduction scheme on the A580 East Lancashire Road, as discussed in further detail in subsequent sections.

Implications for St Helens

The scenario testing that has been undertaken demonstrates that the overall impact of the LPPO sites is likely to be substantially mitigated by a combination of committed infrastructure schemes, modest changes in travel behaviour and minor improvements at key junctions.

7.2.6. The following sections consider in more detail the impact along key corridors and at specific junctions.

7.3 CORRIDOR AND JUNCTION ANALYSIS METHODOLOGY

7.3.1. In order to provide additional depth to the analysis, the performance of the St Helens highway network has been reviewed at a corridor and individual junction level. The analysis has centred on identifying “hotspots”, where the predicted volumes of traffic are likely to exceed the capacity of the network, in particular at a number of key junctions agreed through discussion with SHC. This analysis has used typical thresholds of performance, using volume over capacity measurements as shown in Table 20.

Volume over capacity parameter (v/c)

The v/c ratio is defined as the forecast volume (v) at a junction divided by it capacity (c), usually quantified by each approach arm and turning movement and is a measure of how congested a junction is. Analogous terminology is used in standard junction modelling software, where programmes such as Junctions9 and Linsig refer to quantities such as the ratio of flow to capacity (RFC) or the degree of saturation (DoS).

Generally, where the v/c is forecast to be greater than 1.0 then that approach link is said to exceed its theoretical, or absolute, capacity, as the number of vehicles arriving at the junction is greater than the maximum throughput that is a function of the geometry, signal stages and conflicts with other vehicle streams. Any approach with a v/c above 1.0 would be expected to suffer from significant queuing and delay and also be characterised by small additional traffic volumes leading to a disproportional increase in congestion.

A v/c of 0.85-0.9 is usually taken as a point where a link has reached its practical capacity and where vehicles will start to experience delay and congestion.

Table 20: Threshold Levels of Performance

v/c Value	Level of performance
< 0.85 for non-signalised or <0.9 for signalised junctions	Operating satisfactorily (within practical capacity)
0.85/0.9 –1.00	Approaching absolute capacity
> 1.00	Over absolute capacity

7.3.2. The above thresholds have been adopted within the assessment to identify junctions with likely capacity issues (hotspots) that may need further consideration and potential mitigation solutions. For simplicity, the highest forecast v/c ratio, as identified in the traffic modelling, has been presented at each key junction.

7.4 A580 EAST LANCASHIRE ROAD

Current Conditions

7.4.1. As described previously, the A580 East Lancashire Road forms an important part of St Helens Key Route Network, and performs a regional function (connecting Liverpool and Manchester City Regions) in addition to a local function. The East Lancashire Road, which was the biggest road

project undertaken before the advent of the motorway network, and runs across the centre of the Borough—to the north of the town of St Helens – in an east-west alignment.

7.4.2. The A580 is currently a high speed (40-60mph), primarily dual carriageway direct route between Liverpool and Manchester. It ties into the M6 at Junction 23 at the eastern boundary of the borough at a large signalised "throughabout" junction. The junction is currently the focus of a joint study commissioned by Highways England and St Helens Council.

Junction 23 Study

St Helens Council, in conjunction with Wigan Council and Highways England, has recently commissioned a feasibility study into improvement options at M6 J23. The objective of this study is to identify, appraise and sift a range of options to improve the operation of the junction in light of current and forecast travel demands. The study will consider a variety of options: covering small-scale improvements within the current layout to more significant infrastructure enhancements that may remove key movements from the junction itself.

Alongside these J23 specific options, the study will also consider the wider network constraints that may be encouraging drivers to use the junction rather than other routes and look to identify whether improvements elsewhere on the network may remedy this.

A further strand to the study will also investigate the potential for sustainable travel initiatives to reduce car-based travel to the employment sites that are adjacent to the junction, both current sites and those identified as in the Local Plan.

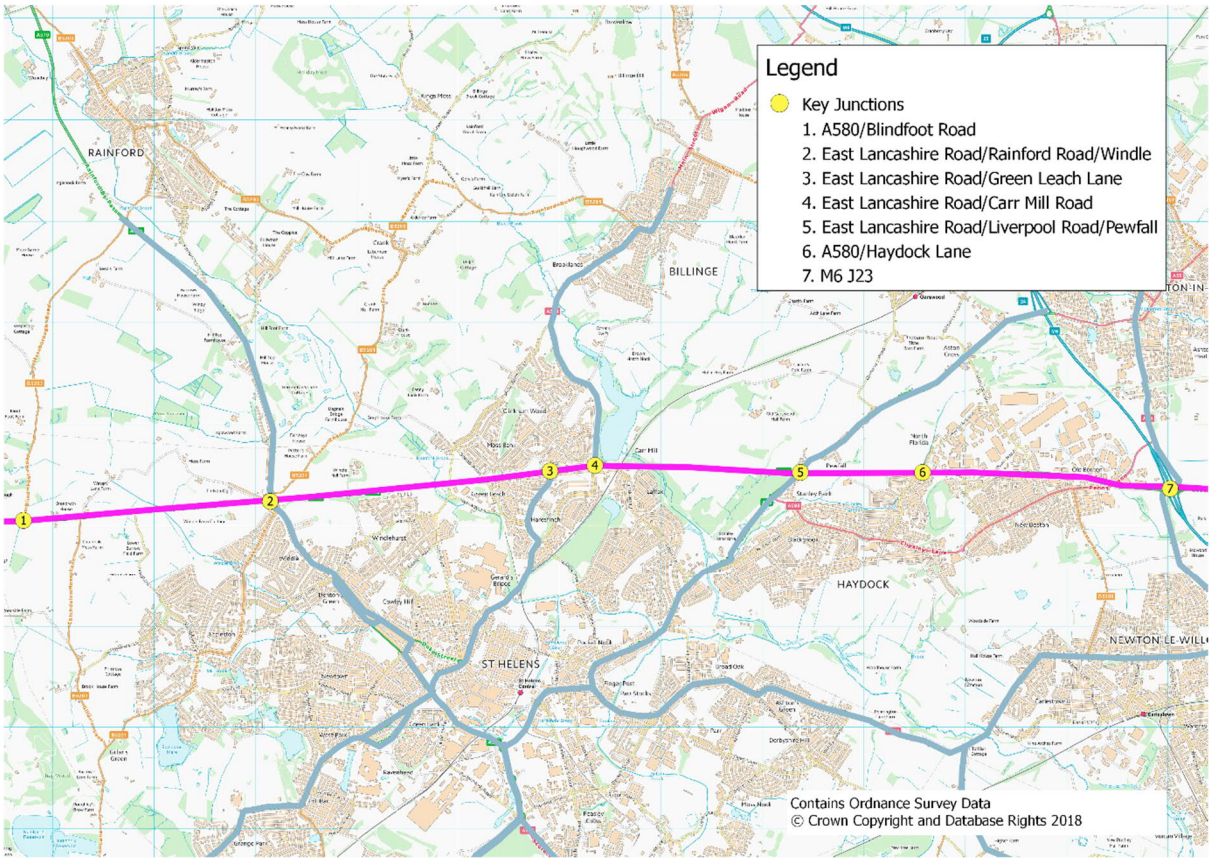
7.4.3. The A580 carriageway is elevated above a number of more minor highways, particularly in the eastern section, without direct junction connections and reflecting the current status of the A580 as a through route for regional trips. For example, the junctions at Piele Road and Millfield Lane are restricted to left in left out operation only.

7.4.4. The A580 links with more significant local roads at a series of large, signalised junctions, including key radial routes into St Helens:

- Haydock Lane (currently being upgraded to provide additional capacity and access to Florida Farm development and Haydock Industrial Estate)
- A58 (planned to be upgraded to enable additional capacity - it is noted that the transport assessment for the Florida Farm application concluded that the A58/A580 junction would exceed capacity within ten years, with or without additional development).
- Stanley Bank Way
- Carr Mill Road
- Moss Bank Road
- A570 Windle Island (Planned to be widened on its northern and eastern arms to improve capacity).

7.4.5. These junctions are highlighted in Figure 29.

Figure 29: A580 Corridor



7.4.6. It is noted from the base year traffic model that, under current conditions, whilst the mainline A580 is free flowing, the A580 junctions suffer significant queues and delays during weekday peak periods, particularly on the approaches to the junctions with the M6 (J23), A58 Liverpool Road, Carr Mill Road and Windle Island. These observations are supported by an inspection of the highest v/c ratios at key junctions on the link. As shown in Table 21, in most cases, the highest v/c exceeds 90%, indicating that on at least one approach the junction has exceeded its practical capacity during these time periods.

Future Do Minimum Conditions (2033 DM)

7.4.7. Table 21 below provides a summary of the highest forecast v/c ratio on each of the key junctions on the A580 route. The base year conditions are forecast to remain broadly similar under the 2033 Do Minimum scenario, as the additional traffic along the route associated with committed developments, SHLAA sites and background traffic growth is substantially mitigated by the implementation of committed highway schemes at Haydock Lane, A58 Liverpool Road and Windle Island.

7.4.8. The only exception to this is M6 J23, but it is noted that a feasibility study into potential improvements at this location is underway at the time of writing.

Impact of LPPO Sites (2033 DS1)

7.4.8.1 It can be seen from Table 21 below that forecast junction operation along the A580 corridor is generally similar to that for the Do Minimum scenario, with the highest v/c values increasing by up to around 5%. The exceptions to this are the A580 Haydock Lane junction and the M6 Junction 23. Therefore, further consideration has been given to the likely performance of these junctions under a series of sensitivity tests representing additional mitigation.

Table 21: A580 Corridor Max Forecast v/c Percentages Base Year

	2017 Base Year		2033 DM		2033 DS1	
Junction	AM	PM	AM	PM	AM	PM
A580/Blindfoot Road	101	78	100	86	100	93
East Lancashire Road/Rainford Rd/Windle	106	102	104	105	107	106
East Lancashire Road/Green Leach Lane	95	88	99	95	98	93
East Lancashire Road/Carr Mill Road	101	114	102	118	105	118
East Lancashire Road/Liverpool Road/Pewfall	104	102	101	103	105	103
A580/Haydock Lane	91	84	92	71	107	97
M6 J23	100	100	107	106	115	109

Impact of Potential Mitigation (2033 DS2a, 2b, 2 and 2c)

7.4.9. As described in the previous chapter, further forecasts have been run to assess the impact of various potential mitigation measures on the junctions along the A580 corridor. In summary, in relation to this corridor:

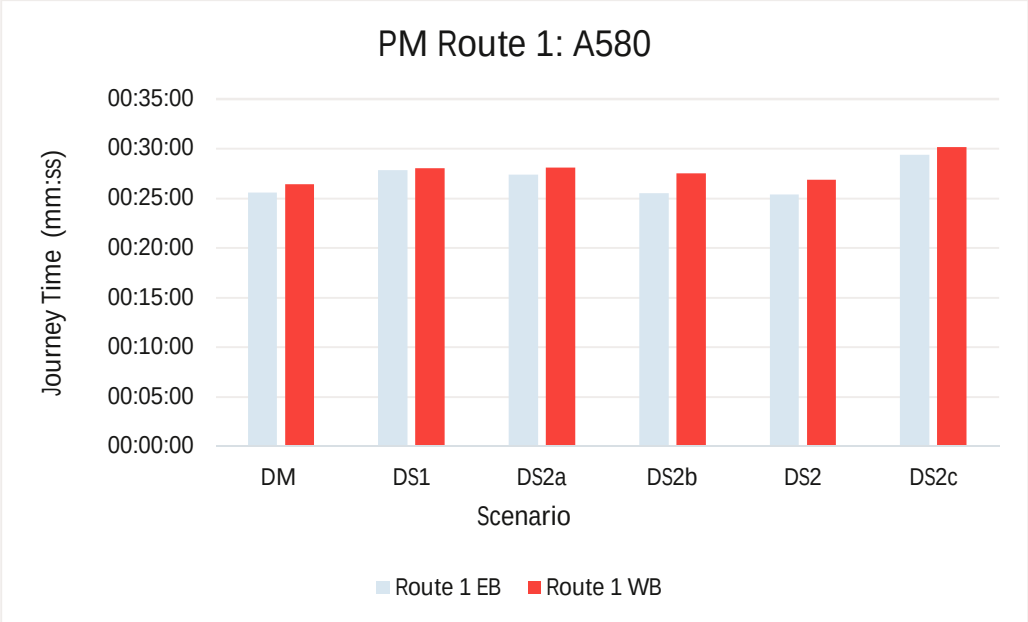
- DS2b includes improvements at Parkside Link Road, M6J23, M62 J7, plus modest capacity increases (10%) at other junctions along the route
- DS2c includes amending the speed limit along the corridor to 40mph in addition to DS2

7.4.10. The graphs below summarise the impact on peak hour journey time along the A580 corridor. It can be seen that the increased journey time associated with DS1 is forecast to be reduced by all tests, with the combined DS2 test forecasting journey times will return to a similar value to that forecast for the 2033 “Do Minimum” scenario in all scenarios.

7.4.11. Forecast journey times increase slightly under DS2c, which is expected as this test includes a reduced speed limit along the whole A580 corridor.

Figure 30: AM Peak Journey Times Route 1

Figure 31: PM Peak Journey Times Route 1



7.4.12. Considering the performance of individual junctions in more detail, the table below shows maximum v/c percentages for each of the key junctions on the route:

Table 22: Maximum Forecast v/c values A580

	2033 DM		2033 DS1		2033 DS2a		2033 DS2b		2033 DS2		2033 DS2c	
Junction	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
A580/Blindfoot Road	100	86	100	93	98	91	93	92	91	88	71	44
East Lancashire Road/Rainford Rd/Windle	104	105	107	106	106	105	107	107	105	106	107	107
East Lancashire Road/Green Leach Lane	99	95	98	93	98	93	98	92	99	95	89	83
East Lancashire Road/Carr Mill Road	102	118	105	118	104	114	104	116	101	118	102	113
East Lancashire Road/Liverpool Road/Pewfall	101	103	105	103	105	104	103	103	102	104	102	104
A580/Haydock Lane	92	71	107	97	107	96	107	96	107	96	107	95
M6 J23	107	106	115	109	114	108	104	91	103	90	103	93

7.4.13. The majority of junctions are forecast to operate at very similar levels, or slightly better, under DS2 compared against DM. In particular, the assumed upgrade at Junction 23 is shown to return its operation to those similar to the Base Year during the AM peak and significantly better during the PM peak.

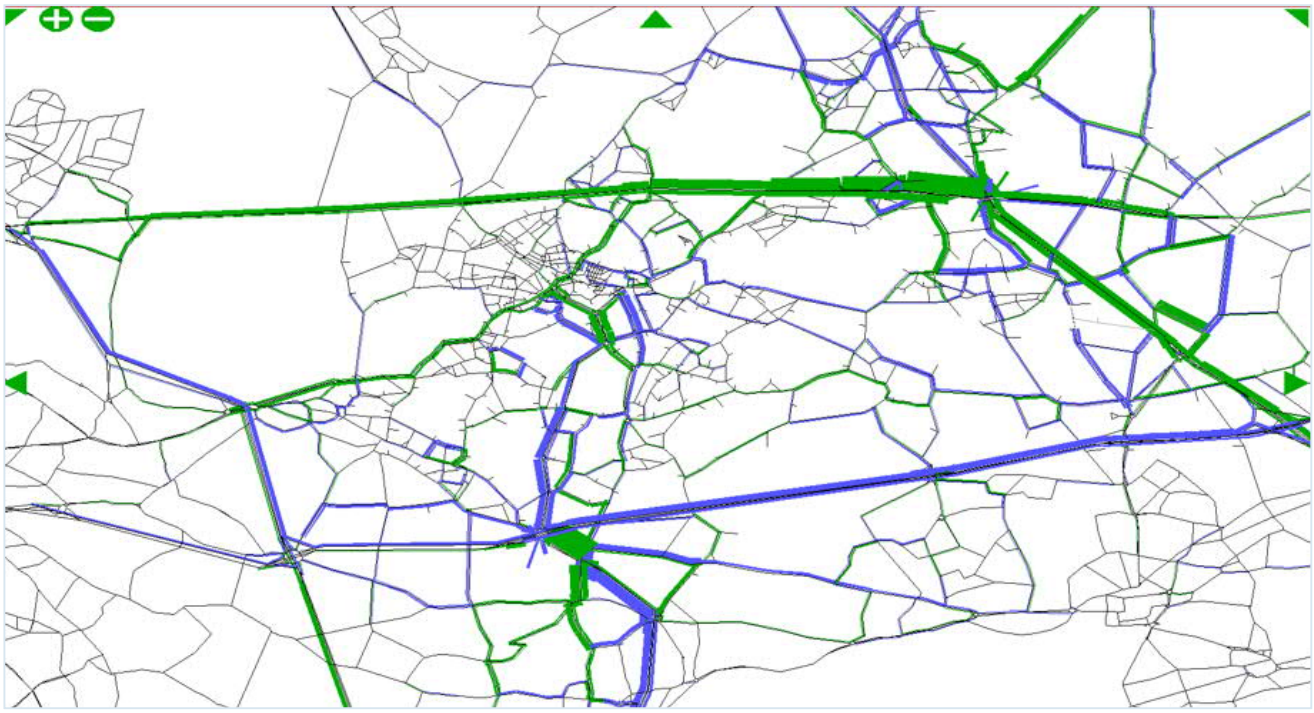
7.4.14. However, the junction at Haydock Lane is forecast to experience an increase in maximum v/c.

7.4.15. To provide further context to the interpretation of these results, an examination of the flow differences between relevant scenarios has also been made.

7.4.16. Figure 32 shows the flow difference between DS2b and DS1 for the AM peak. The green bands indicate an increase in flow whereas the blue bands indicate a decrease.

7.4.17. It can be seen that an unintended impact of improving capacity along the A580 corridor is to draw more trips along this route which were previously using the M62 corridor.

Figure 32: AM Peak Flow Difference Plot 2033DS2b – 2033DS1



7.4.18. Major interventions can bring positive and negatives to wider travel choices and have to be considered in a wider picture. The forecast pattern of re-assignment may not be in accordance with the respective hierarchy of the strategic route network (SRN) and key route network (KRN), and is to an extent masking the effectiveness of the modelled capacity improvements on the corridor.

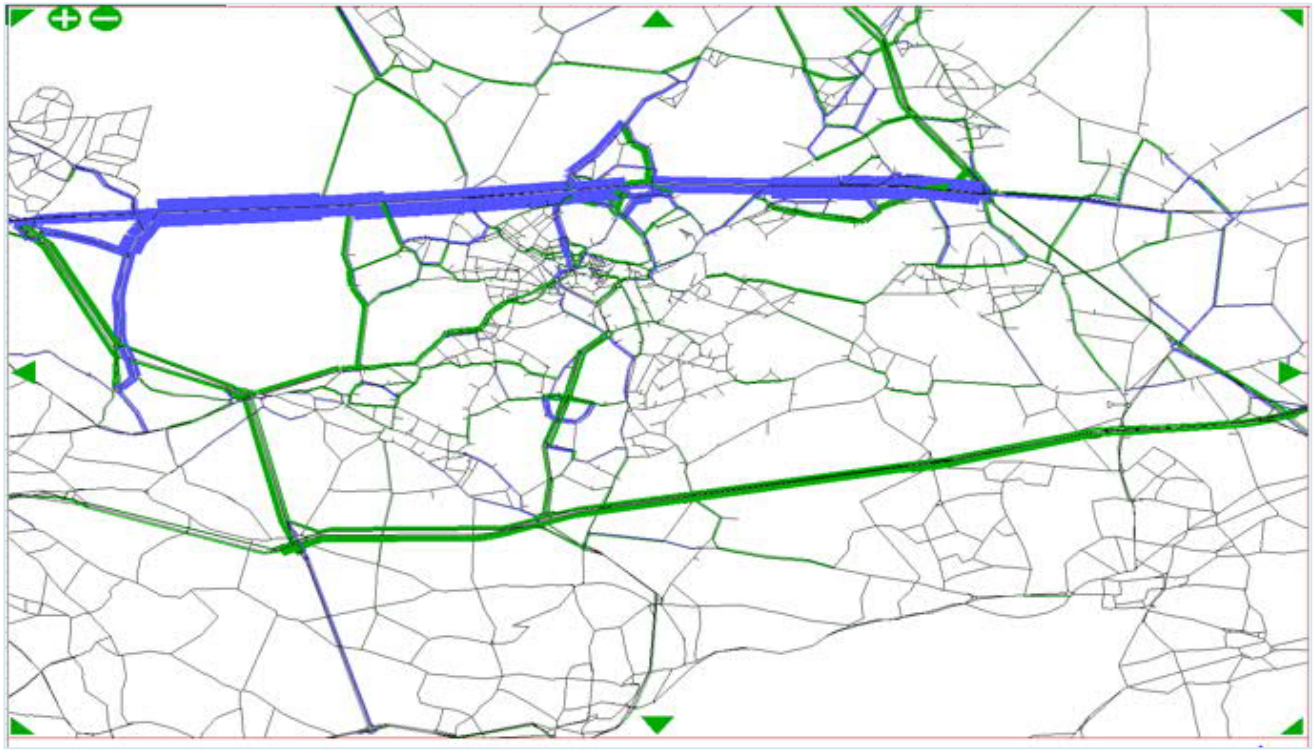
7.4.19. Recent schemes on the A580 have led to St Helens to discuss with its partner authorities to investigate options for the wider A580 Corridor and this work will be progressed during the plan period. A junction improvement at this location is proposed and thus final design and signal timings were not available at the time of writing.

7.4.20. However, in order to provide an early indication of potential impact of one of the measures which may be brought forward, a sensitivity test has been undertaken relating to a change in speed limit along the A580 route to 40mph. This is known as test DS2c.

7.4.21.

7.4.22. Figure 33 showing DS2c compared against DS2 demonstrates that the reduced speed limit on the A580 corridor is forecast to reassign longer distance trips back onto the strategic road network.

Figure 33: AM Peak Flow Difference Plot 2033DS2c – 2033DS2



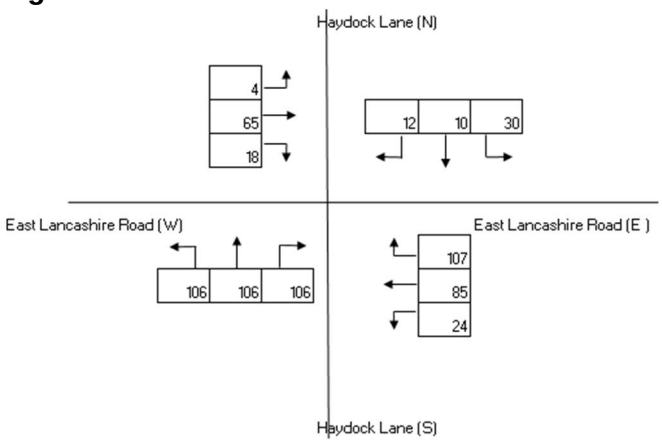
7.4.23. A summary comparison of the highest v/c percentages is shown in

7.4.24. Table 22 above, to demonstrate the additional impact of DS2c. It can be seen that the impact of test DS2c is to reduce or not change the maximum v/c percentages compared with DS2 in the majority of cases.

7.4.25. Comparing DS2c against the DM, the junctions at Blindfoot Road, Leach Lane, Carr Mill Road and M6 J23 are all forecast to operate with lower maximum v/c percentages. The junctions of Windle Island, and Liverpool Road are all forecast to operate with very similar maximum v/c percentages (within 3%).

7.4.26. Therefore, the only junction on this corridor which is forecast to experience a significant worsening of operation is the A580/Haydock Lane. A more detailed review of the forecast operation of this junction indicates that the assumed signal staging and timings are not optimal. Specifically, the v/c values for the western and northern arms of the junction are very low compared with those on the southern arm and the right turn from the A580 east to the northern arm (Florida Farm access).

Figure 34: Forecast maximum v/c values at A580/Haydock Lane 2033 DS2 AM peak



7.4.27. It is anticipated that an update to the signal staging and timings would result in an acceptable forecast level of performance. However, the timescales for production of this Transport Assessment have precluded a more detailed investigation of this issue at the time of writing.

7.4.28. Therefore, it is recommended to further review the operation of this junction as the junction is re-adopted by the council following section 278 works, and take into account emerging outputs from the proposed A580 corridor study and any future studies along the A580 corridor.

7.5 A58 LIVERPOOL ROAD TO LINKWAY

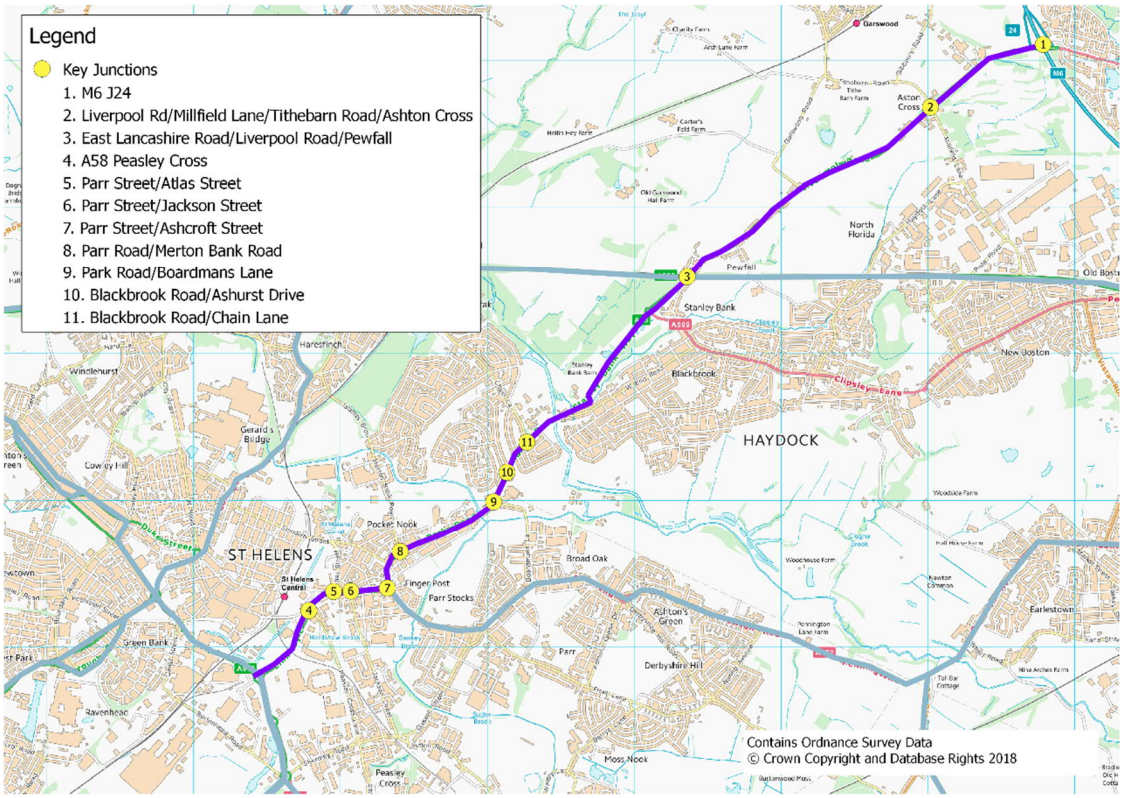
Current Conditions

7.5.1. The A58 forms a key radial approach to St Helens from Ashton in Makerfield and the north east, linking to the M6 at a junction with restricted movements (north facing slips only). It is a single carriageway route with speed limits of between 40 and 50mph and relatively few accesses points and limited frontage activity from the M6 to the junction with West End Road and the boundary of the urban area. From this point, the speed limit reduces to 30mph and continues as a single carriageway with significant accesses, frontage activity and some on-street parking. From the junction with Merton Bank Road, the A58 widens into a dual carriageway, eventually becoming the Linkway around the town centre from the large roundabout with Peasley Cross Lane.

7.5.2. The A58 links with more significant local roads at a series of junctions, including:

- M6 J24 north facing slips (signalised)
- Millfield Lane/Tithebarn Road (signalised crossroads)
- A580 East Lancashire Road (large signalised crossroads, planned to be upgraded to enable additional capacity in the east-west movements)
- Chain Lane (signals)
- Ashurst Drive (signals)
- Park Road (signals)
- Merton Bank Road (signals)
- Parr Street/Ashcroft Street
- Jackson Street
- Atlas Street
- Peasley Cross Lane (large at grade roundabout)

Figure 35: A58 Corridor



7.5.3. It is noted from the base year traffic model that, under current conditions, there are queues and delays at the approaches to several of the main junctions along the route during weekday peak periods, following a tidal pattern with inbound queues being greater during the morning peak and outbound queues being greater during the evening peak period.

7.5.4. These observations are supported by an inspection of the highest v/c ratios at key junctions on the link. The highest v/c exceeds 90% at J24, Millfield Lane, the A580 East Lancashire Road during the morning peak periods and at Ashurst drive, Chain Lane and the A580 East Lancashire Rd during the

evening peak, indicating that these junctions have exceeded their practical capacity during these time periods.

Future Conditions (2033 DM)

7.5.5. Table 23 provides a summary of the highest forecast v/c ratio on each of the key junctions on the route. These conditions are forecast to remain broadly similar under the 2033 Do Minimum scenario at J24, Millfield Lane and the A580 East Lancashire Road. Junctions closer to the town experience increases in forecast maximum v/c percentages due to the committed and SHLAA developments and increased background traffic growth.

Impact of LPPO Sites (2033 DS1)

7.5.6. It can be seen from the table below that forecast junction operation along the A58 corridor is generally similar to that for the Do Minimum scenario at the majority of junctions, with the highest v/c values increasing by up to around 5 percentage points.

7.5.7. The exceptions to this are M6 J24, Millfield Lane and Park Road/Boardmans Lane. Therefore, further consideration has been given to the likely performance of these junctions under a series of sensitivity tests representing additional mitigation.

Table 23: Maximum v/c values A58

	2017 Base Year		2033 DM		2033 DS1	
Junction	AM	PM	AM	PM	AM	PM
Liverpool Rd/Millfield Lane/Tithebarn Rd/Ashton X	91	89	92	90	104	93
East Lancashire Road/Liverpool Road/Pewfall	104	102	101	103	105	103
A58 Peasley Cross	43	58	65	73	71	77
Parr Street/Atlas Street	54	60	79	79	81	86
Parr Street/Jackson Street	59	85	71	97	74	100
Parr Street/Ashcroft Street	87	78	100	100	100	101
Park Road/Merton Bank Road	85	88	93	91	95	93
Park Road/Boardmans Lane	55	57	75	70	78	87
Blackbrook Road/Ashurst Drive	75	91	88	86	90	86
Blackbrook Road/Chain Lane	84	98	100	102	102	104
M6 J24	103	75	106	78	109	92

Impact of Potential Mitigation (2033 DS2A, 2B, 2 and 2C)

7.5.8. As described in the previous chapter, further forecasts have been run to assess the impact of various potential mitigation measures on the junctions along the A580 corridor.

7.5.9. Figure 36 and Figure 37 below summarise the impact on peak hour journey time along the A58 corridor. It can be seen that the increased journey time associated with DS1 is forecast to be reduced by all tests during the AM peak, with the combined DS2 test forecasting journey times will return to a similar value to that forecast for the 2033 “Do Minimum” scenario in all scenarios. For the PM peak, there is forecast to be very little variation in journey times between scenarios.

Figure 36: AM Peak Journey Times Route 7 A58

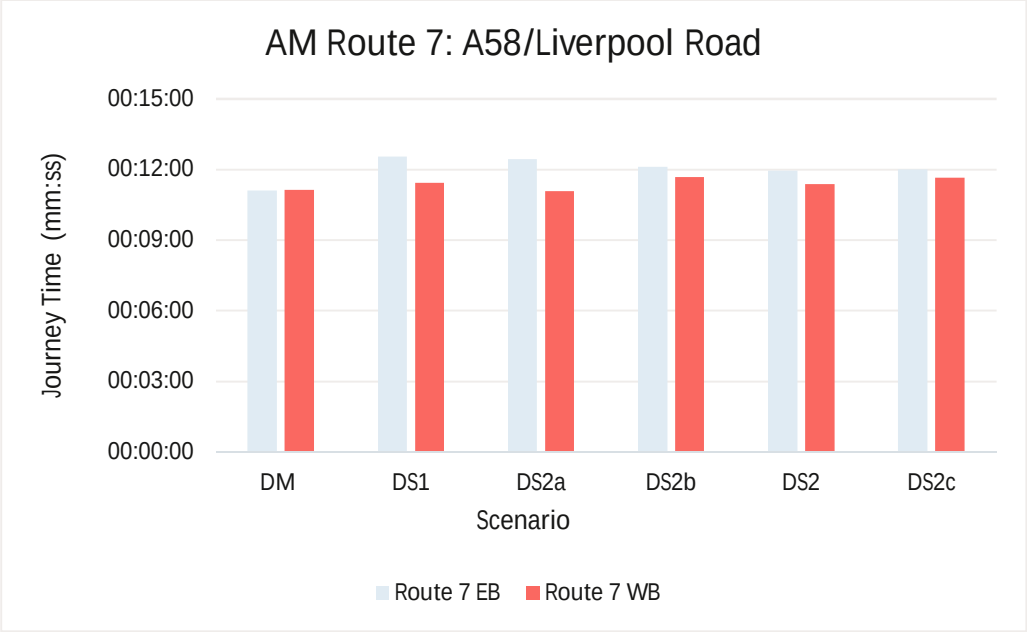
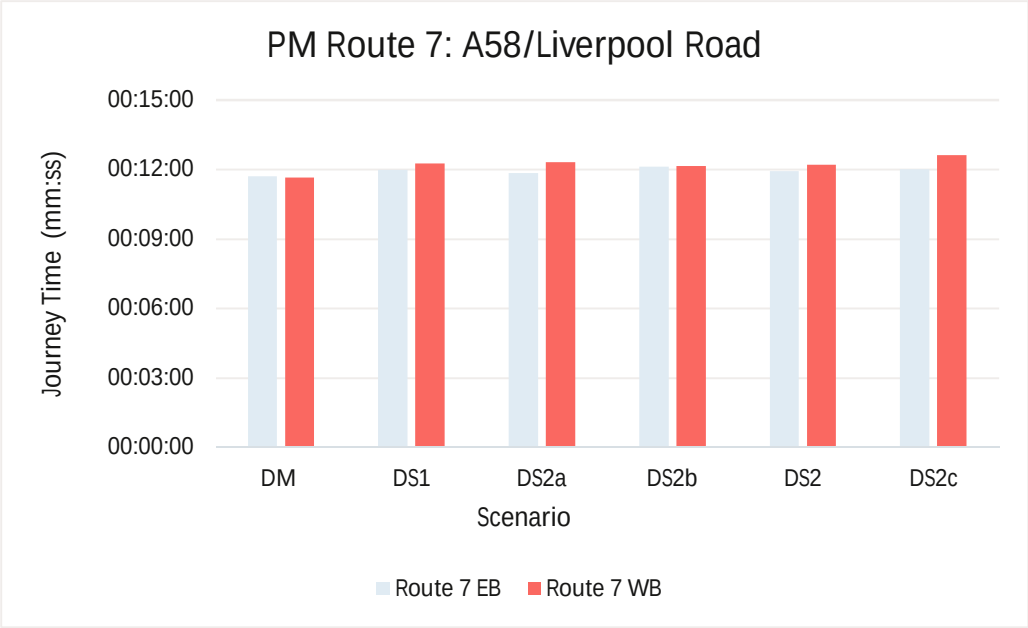


Figure 37: PM Peak Journey Times Route 7 A58



7.5.10. Considering the performance of individual junctions in more detail, Table 24 shows maximum v/c percentages for each of the key junctions on the route.

Table 24: Maximum v/c values A58

	2033 DM		2033 DS1		2033 DS2a		2033 DS2b		2033 DS2		2033 DS2c	
Junction	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Liverpool Rd/Millfield Lane/Tithebarn Rd/Ashton X	92	90	104	93	103	94	98	99	97	98	99	99
East Lancashire Road/Liverpool Road/Pewfall	101	103	105	103	105	104	103	103	102	104	102	104
A58 Peasley Cross	65	73	71	77	67	72	68	75	63	71	71	72
Parr Street/Atlas Street	79	79	81	86	79	80	81	81	78	78	80	81
Parr Street/Jackson Street	71	97	74	100	73	97	65	96	64	93	63	88
Parr Street/Ashcroft Street	100	100	100	101	100	100	100	100	100	96	100	100
Park Road/Merton Bank Road	93	91	95	93	92	92	92	84	91	83	86	85
Park Road/Boardmans Lane	75	70	78	87	77	75	72	74	70	73	69	64
Blackbrook Road/Ashurst Drive	88	86	90	86	89	85	94	92	93	91	92	93
Blackbrook Road/Chain Lane	100	102	102	104	101	103	98	100	97	101	95	98
M6 J24	106	78	109	92	109	90	106	85	106	84	106	84

Summary of Impact: A580 East Lancs Road

All junctions on the corridor are forecast to operate at very similar levels, or slightly better, under DS2 compared against DS1, and in the majority of cases the forecasts operation is similar to or better than that under DM**.**

The exception to this is Millfield Lane, although it is noted that the forecast level of performance remains within the same threshold (below 100%) and therefore this junction is forecast to remain within absolute capacity.

The forecast performance of J24 should be considered further in the context of the current J23 study.

7.6 A572 NEWTON LE WILLOWS TO ST HELENS

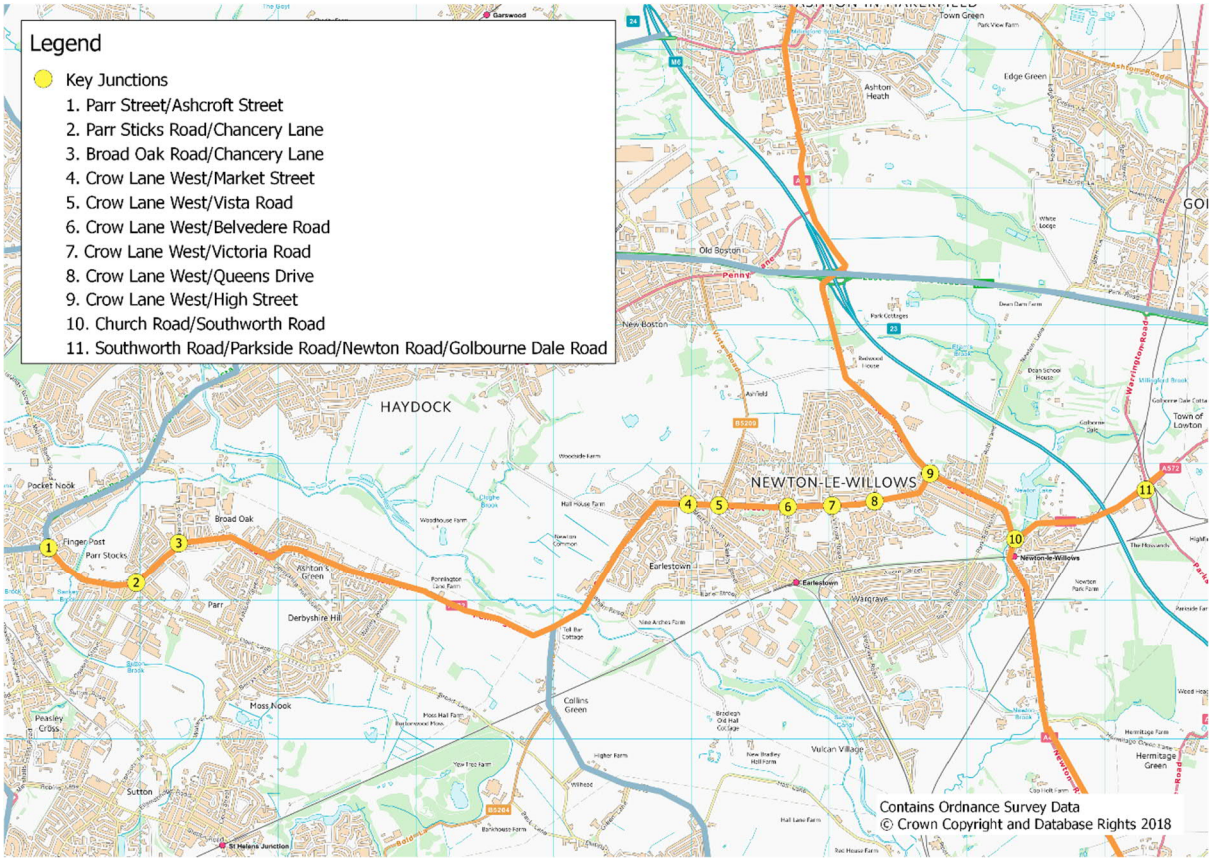
Current Conditions

7.6.1. The A572 forms the main approach route to St Helens from Newton le Willows and areas to the east. It crosses the A580 East Lancashire Road at a large signalised junction south of Lowton, passes beneath the M6 without a direct junction access, and through Newton le Willows and Earlestown before reaching the urban boundary of St Helens and joining the A58 at the Parr Street signalised junction.

7.6.2. The A572 is a single carriageway road with a speed limit of 30-40mph. It links with more significant local roads at a series of junctions, including:

- Parkside Road (staggered priority crossroads)
- Church St (signalised junction)
- Crow Lane East/High Street (roundabout
- Crow Lane/Queens Drive (priority junction)
- Crow Lane/Victoria Road (signals)
- Crow Lane/Belvedere Road (signals)
- Crow Lane/Vista Road (signals)
- Crow Lane/Market Street (signals)
- Broad oaks Road/Chancery Lane (signals)
- Parr Stocks Road/Chancery Lanes (signals)
- Parr Street/Ashcroft Street (signals)

Figure 38: A572 Corridor



7.6.3. It is noted from the base year model, that, under current conditions, there are queues forming at the approaches to several of the main junctions along the route during weekday peak periods, but these generally clear within each cycle, and conditions are generally freer flowing than those on other radial routes. This is reflected by a review of the maximum v/c percentages, which are all below 90% (Table 25).

Future Conditions (2033 DM)

7.6.4. Table 25 below provides a summary of the highest forecast v/c ratio on each of the key junctions on the route. These conditions are forecast to remain broadly similar under the 2033 Do Minimum scenario at the majority of junctions, which remain within practical capacity with forecast maximum v/c ratios of below 90%.

7.6.5. The junctions at Parr Street/Ashcroft Street and Crow Lane West/Vista Road closer to the town experience increases in forecast maximum v/c percentages due to the committed and SHLAA developments and increased background traffic growth.

Impact of LPPO Sites (2033 DS1)

7.6.6. It can be seen from Table 25 that forecast junction operation along the A572 corridor is generally similar to that for the Do Minimum scenario at the majority of junctions, with the highest v/c values increasing by up to around 5 percentage points.

7.6.7. The main junctions on Crow Lane in Newton le Willows experience greater increases in forecast maximum v/c percentages, but generally remain within practical capacity. The junction at Newton Road/Parkside Road is forecast to slightly exceed practical capacity during the PM peak period. The junction at Church Road/Southworth Road is forecast to exceed absolute capacity in the AM peak hour in the forecast scenarios.

7.6.8. A more detailed review of the forecast operation of this junction indicates that the assumed signal staging and timings are not optimal. However, the timescales for production of this Transport Assessment have precluded a more detailed investigation of this issue at the time of writing.

7.6.9. Therefore, additional consideration has been given to the likely performance of these junctions under a series of sensitivity tests representing additional mitigation.

Table 25: Maximum v/c values A572

	2017 Base Year		2033 DM		2033 DS1	
Junction	AM	PM	AM	PM	AM	PM
Parr Street/Ashcroft Street	87	78	100	100	100	101
Parr Stocks Road/Chancery Lane	75	69	89	86	90	89
Broad Oak Road/Chancery Lane	40	49	53	69	56	73
Crow Lane West/Market Street	63	60	89	81	95	87
Crow Lane West/Vista Road	53	73	92	95	97	100
Crow Lane West/Belvedere Road	51	40	49	68	62	70
Crow Lane West/Victoria Road	49	38	52	50	63	70
Crow Lane West/Queens Drive	31	33	46	46	61	55
Southworth Road/ Parkside Road/ Newton Road/ Golbourne Dale Road	69	66	61	77	73	92
Crow Lane West/High Street	28	35	51	49	81	70
Church Road/Southworth Road	49	46	98	88	105	91

Impact of Potential Mitigation (2033 DS2a, 2b, 2 and 2c)

7.6.10. As described in the previous chapter, further forecasts have been run to assess the impact of various potential mitigation measures on the junctions along the A572 corridor. Of particular relevance to the performance of this corridor, the proposed Parkside Link Road has been included in the DS2b and DS2 scenarios.

7.6.11. This scheme forms a new link from M6 J22 across to the A49 Newton Road. Winwick Lane to the east of J22 will be widened to form a short length of dual carriageway to a new roundabout junction with the Link Road, which ties into the existing Parkside Road and follows its alignment for a short distance before turning west towards the A49 Newton Road at a proposed new signalised junction. Interim junctions and accesses along the link provide a tie into the existing Parkside Road and access for future development.

7.6.12. Table 26 summarises the maximum forecast v/c values at each junction.

Table 26: Maximum v/c values A572

	2033 DM		2033 DS1		2033 DS2a		2033 DS2b		2033 DS2		2033 DS2c	
Junction	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Parr Street/Ashcroft Street	100	100	100	101	100	100	100	100	100	96	100	100
Parr Stocks Road/Chancery Lane	89	86	90	89	90	87	86	87	83	83	83	78
Broad Oak road/Chancery Lane	53	69	56	73	54	72	55	76	54	74	55	77
Crow Lane West/Market Street	89	81	95	87	94	86	87	82	86	80	86	80
Crow Lane West/Vista Road	92	95	97	100	96	100	88	97	86	97	78	83
Crow Lane West/Belvedere Road	49	68	62	70	59	68	60	62	59	61	60	65
Crow Lane West/Victoria Road	52	50	63	70	58	64	60	56	57	52	63	63
Crow Lane West/Queens Drive	46	46	61	55	59	52	61	43	59	42	58	44
Southworth Road/ Parkside Road/ Newton Road/ Golbourne Dale Road	61	77	73	92	70	91	84	78	82	74	85	72
Crow Lane West/High Street	51	49	81	70	74	66	64	58	60	55	60	52
Church Road/Southworth Road	98	88	105	91	105	90	104	86	104	84	104	87

Summary of Impact: A572

The majority of junctions are forecast to operate within practical capacity and at a similar level under DS2 compared with the DM

The junction of Parr Street/Ashcroft Street is forecast to continue to operate at around absolute capacity.

The junction of Church Road/Southworth Road is forecast to perform slightly worse than in the DM during the AM peak, with a forecast maximum v/c greater than 100%. It is recommended that a further review of signal timings be undertaken to improve the operation of this junction.

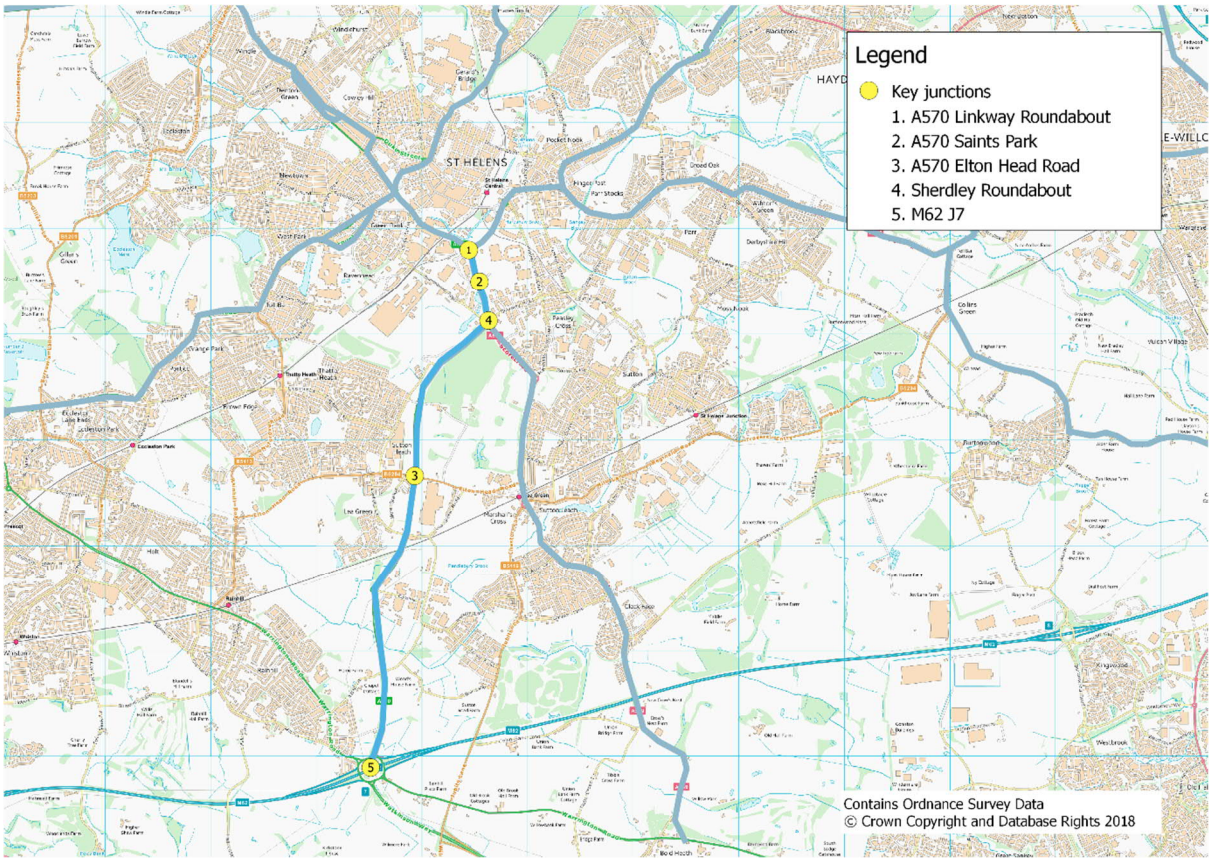
7.7 A570 LINKWAY M62 J7 TO ST HELENS

Current Conditions

7.7.1. The A570 forms the main radial approach route to St Helens from the M62 and areas to the south. It is a high speed dual carriageway, subject to National Speed Limit (70mph), with limited access points. It oversails or runs beneath several minor roads, with other junctions restricted to left in left out access. It has large at grade roundabout junctions with more significant roads and access points as follows:

- Elton Head Road roundabout (to be upgraded to a signalised crossroads design, which is included in the 2033 DM)
- Stonecross/Sherdley Roundabout
- Saints Retail Park
- A58 Linkway roundabout

Figure 39: A570 M62 J7 Corridor



7.7.2. The key junctions at the M6, Elton Head Road and Sherdley Roundabout experience significant queues and delays during weekday peak periods, as shown in the base year model results, which indicate maximum v/c percentages above 90% indicating these junctions are exceeding their practical capacity.

Future Conditions (2033 DM)

7.7.3. Table 27 below provides a summary of the highest forecast v/c ratio on each of the key junctions on the route. The junctions at Linkway and Saints Retail Park experience increases in forecast maximum v/c percentages, although it is evident that they are predicted to remain within practical capacity.

7.7.4. The committed improvements to the A570/Elton Head balance out the increased traffic flow due to the committed developments and background traffic growth – although the junction is forecast to continue to operate around or above practical capacity.

7.7.5. The Sherdley Roundabout and M62 J7 experience increased forecast maximum v/c ratios, and are forecast to reach absolute capacity.

Impact of LPPO Sites (2033 DS1)

7.7.6. It can be seen from Table 27 below that forecast junction operation along the A570 corridor is generally similar to that for the Do Minimum scenario at the majority of junctions, with the highest v/c values increasing by up to around 5 percentage points. The junctions at Elton Head Road, Sherdley Roundabout and M62 J7 remain above practical capacity.

7.7.7. Therefore, additional consideration has been given to the likely performance of these junctions under a series of sensitivity tests representing additional mitigation.

Table 27: Maximum v/c values A570

	2017 Base Year		2033 DM		2033 DS1	
Junction	AM	PM	AM	PM	AM	PM
A570 Linkway roundabout	54	69	76	62	75	65
A570 Saints Park	54	59	50	44	51	43
A570 Elton Head Road	100	90	97	89	97	91
Sherdley Roundabout	91	94	96	101	100	102
M62 J7	96	96	100	100	102	101

Impact of Potential Mitigation (2033 DS2a, 2b, 2 and 2c)

7.7.8. As described in the previous chapter, further forecasts have been run to assess the impact of various potential mitigation measures on the junctions along the A570 corridor. Of relevance to the performance of this corridor, a proposed upgrade to M62 J7 has been included in the DS2b and DS scenarios.

7.7.9. St Helens Council have recently commissioned a study of the A570/Sherdley roundabout, but at the time of writing, this study is at an early stage and a preferred option has not been identified, therefore this has not been included in this TA.

7.7.10. Table 28 summarises the maximum forecast v/c values at each junction.

Table 28: Maximum v/c values A570

	2033 DM		2033 DS1		2033 DS2a		2033 DS2b		2033 DS2		2033 DS2c	
Junction	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
A570 Linkway roundabout	76	62	75	65	77	62	83	71	83	72	84	70
A570 Saints Park	50	44	51	43	50	44	54	49	54	50	55	50
A570 Elton Head Road	97	89	97	91	97	90	95	88	94	87	93	84
Sherdley Roundabout	96	101	100	102	97	102	95	101	95	100	95	101
M62 J7	100	100	102	101	102	101	100	102	100	102	100	102

Summary of Impact: A570

The forecast operation of junctions on this corridor under DS2 is generally similar to or slightly better than that under the DM, demonstrating that the committed and assumed highway improvements largely mitigate for the impact of increased traffic due to the LPPO Sites.

7.8 A58 PRESCOT TO ST HELENS

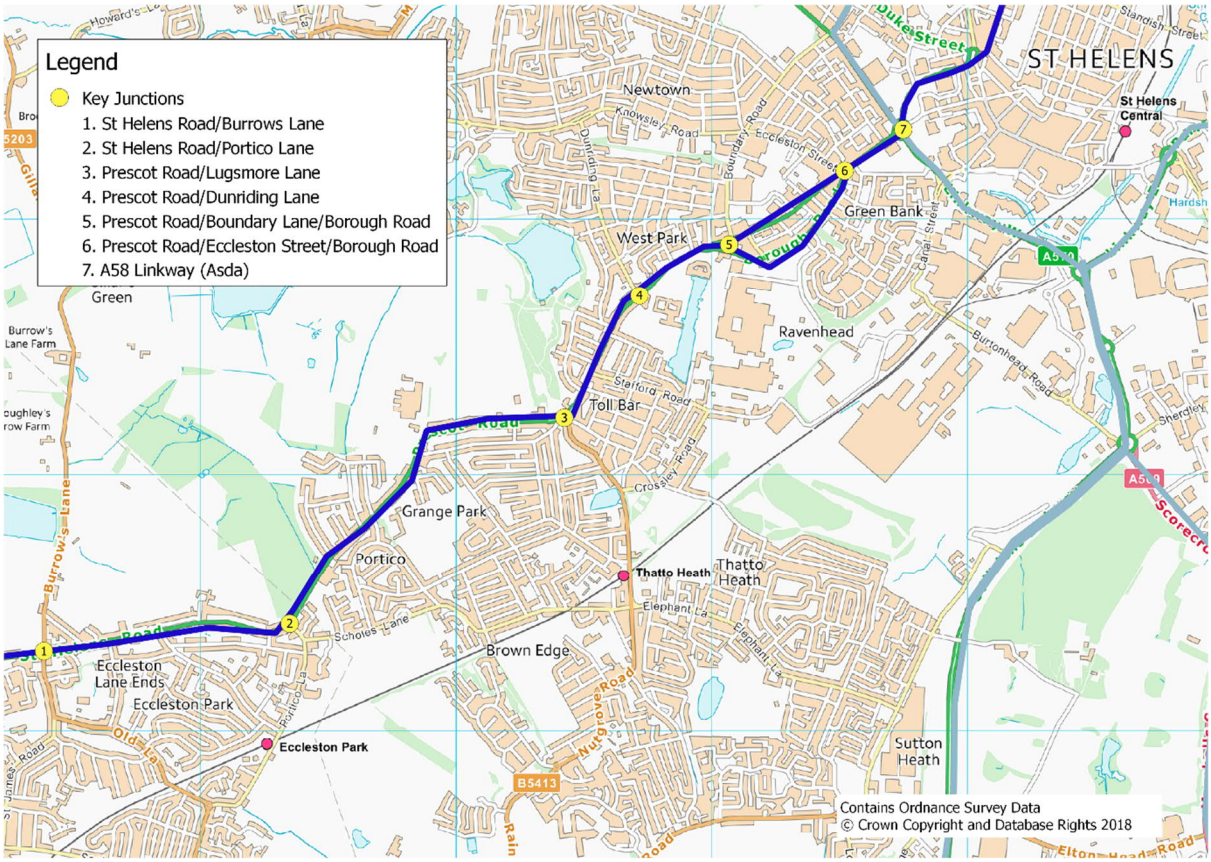
Current Conditions

7.8.1. The A58 forms the main radial approach route to St Helens from the M57, Prescot and areas to the west. It is a dual carriageway, subject to a 40mph speed limit, with limited access points from the M57 to the roundabout junction with St Helens Road. Thereafter, the speed limit reduces to 30mph and the route becomes a single carriageway with frontage activity.

7.8.2. It has at grade junctions with more significant roads as follows:

- B5201 St James Road/Burrows Lane (signals)
- Portico Lane (signals)
- Lugsmore Lane (signals)
- Dunriding Lane (signals)
- Gyratory Croppers Hill/Borough Road
- Roundabout with A58 Linkway

Figure 40: A58 Prescot to St Helens Corridor



7.8.3. From the base year traffic model it is evident (Table 29) that the key junctions at the Burrows Lane, Portico Lane and the A58/Linkway experience queues and delays during weekday peak periods. At these locations the maximum v/c percentages are above 90% indicating these junctions are exceeding their practical capacity.

Future Conditions (2033 DM)

7.8.4. Table 29 below provides a summary of the highest forecast v/c ratio on each of the key junctions on the route. The junctions at Linkway and Portico Lane are forecast to experience increases in maximum v/c percentages, although remain within absolute capacity.

7.8.5. The Burrows Lane junction is forecast to improve slightly, with all other junctions experiencing an increase in forecast maximum v/s although remain within absolute capacity.

Impact of LPPO Sites (2033 DS1)

7.8.6. It can be seen from Table 29 below that forecast junction operation along the A58 corridor is generally similar to that for the Do Minimum scenario at the majority of junctions, with the highest v/c values increasing by up to around 5 percentage points. At Lugsmore Lane the forecast increase in v/c is greater but the junction remains within practical capacity.

7.8.7. Therefore, additional consideration has been given to the likely performance of these junctions under a series of sensitivity tests representing additional mitigation.

Table 29: Maximum v/c values A58

	2017 Base Year		2033 DM		2033 DS1	
Junction	AM	PM	AM	PM	AM	PM
St Helens Road/Burrows Lane	100	101	99	95	101	99
St Helens Road/Portico Lane	93	94	100	98	100	100
Prescot Road/Lugsmore Lane	50	54	62	52	72	56
Prescot Road/Dunriding Lane	43	47	50	53	54	56
Prescot Road/Boundary Lane/Borough Road	24	42	26	32	26	33
Prescot Road/Eccleston Street/Borough Road	49	88	68	88	76	89
A58 Linkway (Asda)	97	83	100	90	100	94

Impact of Potential Mitigation (2033 DS2a, 2b, 2 and 2c)

7.8.8. As described in the previous chapter, further forecasts have been run to assess the impact of various potential mitigation measures on the junctions along the A58 corridor.

7.8.9. Table 30 summarises the maximum forecast v/c values at each junction.

Table 30: Maximum v/c values A58

	2033 DM		2033 DS1		2033 DS2a		2033 DS2b		2033 DS2		2033 DS2c	
Junction	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
St Helens Road/Burrows Lane	99	95	101	99	100	98	99	99	99	98	100	97
St Helens Road/Portico Lane	100	98	100	100	100	98	99	97	97	96	99	99
Prescot Road/Lugsmore Lane	62	52	72	56	70	55	65	56	63	55	64	57
Prescot Road/Dunriding Lane	50	53	54	56	52	55	54	57	52	56	55	58
Prescot Road/Boundary Lane/Borough Road	26	32	26	33	26	31	27	33	27	32	27	33
Prescot Road/Eccleston Street/Borough Road	68	88	76	89	69	88	71	89	69	88	71	89
A58 Linkway (Asda)	100	90	100	94	100	91	100	89	100	86	100	86

Summary of Impact: A58

The forecast operation of junctions on this corridor under DS2 is generally similar to or slightly better than that under the DM, demonstrating that the committed and assumed highway improvements largely mitigate for the impact of the increased traffic due to the LPPO Sites.

7.9 A599 CLIPSLEY LANE/CHURCH ROAD

Current Conditions

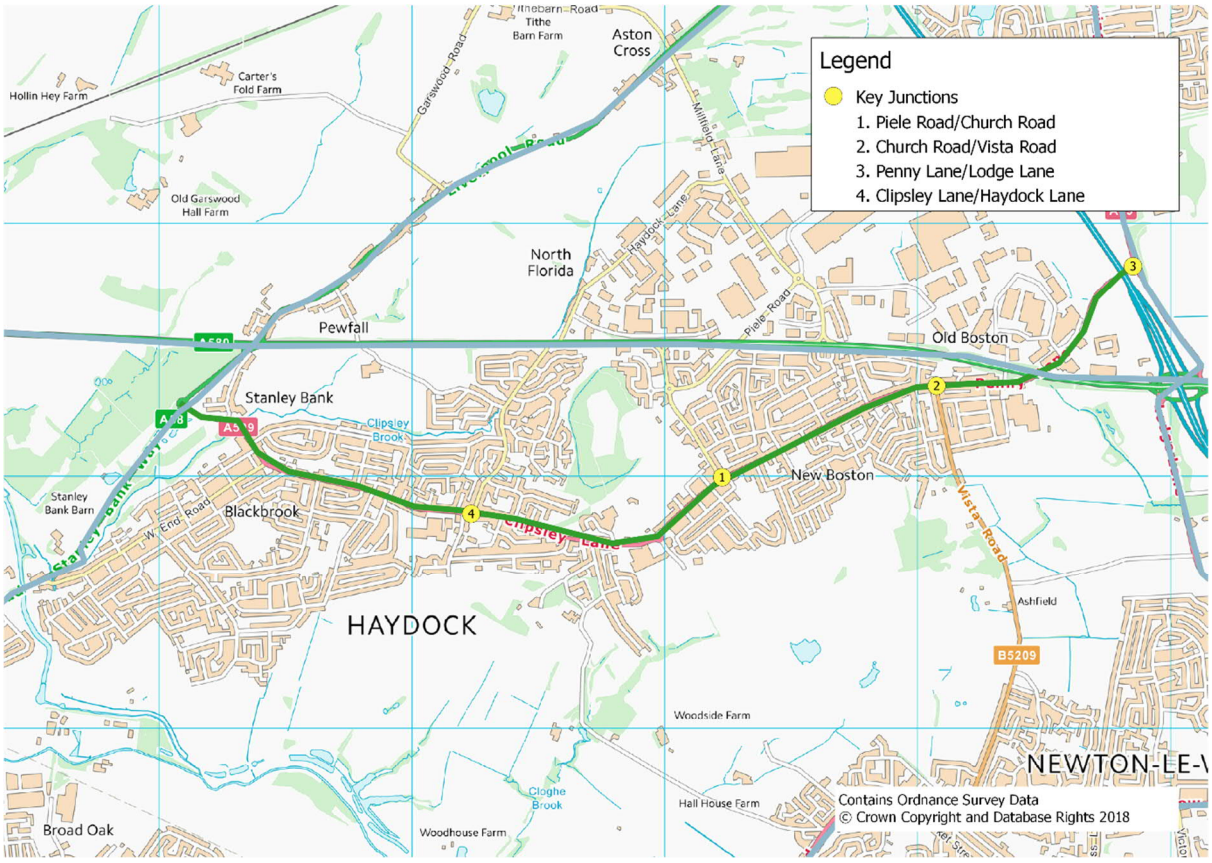
7.9.1. The A599 forms an alternative approach route to St Helens from the north east and Ashton in Makerfield, from a junction with the A49 Lodge Lane close to M6 J23, running beneath the A580 East Lancashire Road without a direct connection, then through industrial areas in New Boston and Haydock before joining the A58 radial route.

7.9.2. It is a single carriageway route with a 40mph speed limit from the A49, reducing to 30mph as it reaches the industrial estate. It passes through industrial areas and residential areas with significant frontage activity including bus stops and on street parking.

7.9.3. It has at grade junctions with more significant roads as follows:

- A49 Lodge Lane (currently a priority T-junction with a committed safety/capacity scheme to be upgraded to signal control)
- Vista Road (mini roundabout)
- Piele Road (traffic signals)
- Haydock Lane (traffic signals)

Figure 41: A599 Corridor



7.9.4. Whilst the base year traffic model indicates that there are some delays along the route during peak periods, the key junctions operate within practical capacity, as shown Table 31, which indicate maximum v/c percentages are below 85-90%.

Table 31: Maximum v/c values A599

	2017 Base Year		2033 DM		2033 DS1	
Junction	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**
Piele Rd/Church Rd	33	31	73	35	88	46
Church Rd/Vista Rd	28	40	64	42	79	51
Penny Lane/Lodge Lane	76	77	92	84	91	84
Clipsley Lane/Haydock Lane	35	37	60	44	59	44

Future Conditions (2033 DM)

7.9.5. The Table 32 provides a summary of the highest forecast v/c ratio on each of the key junctions for the DM. The traffic growth associated with the committed developments and SHLAA sites causes the forecast maximum v/c percentages to increase at the junctions with Church Road and Vista Road, although they both remain within practical capacity.

7.9.6. The junction with Lodge Lane is forecast to slightly exceed practical capacity during the AM peak period.

Impact of LPPO Sites (2033 DS1)

7.9.7. It can be seen from Table 32 below that forecast junction operation is generally similar to that for the Do Minimum scenario at the majority of junctions. The highest increase in forecast v/c values are at Church Road and Vista Road, but it is noted that these junctions remain within practical capacity. This junction is proposed and thus final design and signal timings were not available at the time of writing.

7.9.8. As in the DM scenario, the junction with Lodge Lane is forecast to slightly exceed practical capacity during the AM peak period. Therefore, additional consideration has been given to the likely performance of this junction under a series of sensitivity tests representing additional mitigation.

Impact of Potential Mitigation (2033 DS2a, 2b, 2 and 2c)

7.9.9. Table 32 summarises the maximum forecast v/c values at each junction. It can be seen that the forecast operation of the Vista Road and Haydock Lane junctions under DS2 is generally similar to, or slightly better than that under the DM. The maximum v/c increase is at Church Road, but the junction remains within practical capacity. Therefore, the committed and assumed highway improvements are likely to largely mitigate for the impact of increased traffic due to the Local Plan allocations.

Table 32: Maximum v/c values A599

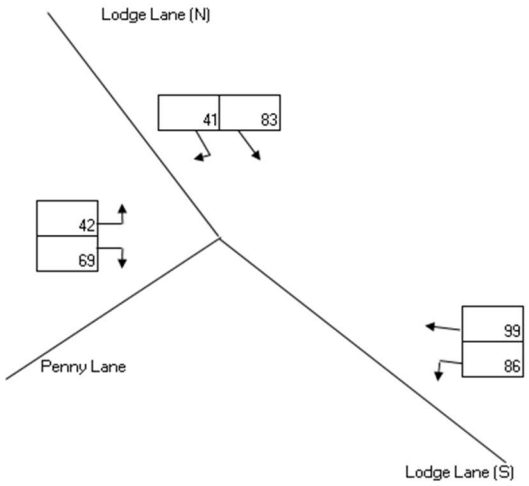
	2033 DM		2033 DS1		2033 DS2a		2033 DS2b		2033 DS		2033 DS2c	
Junction	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Piele Rd/Church Rd	73	35	88	46	85	44	91	43	87	42	86	46
Church Rd/Vista Rd	64	42	79	51	76	49	49	53	46	51	69	54
Penny Lane/Lodge Lane	92	84	91	84	91	83	99	91	99	92	101	102
Clipsley Lane/Haydock Lane	60	44	59	44	58	44	59	44	57	44	63	51

7.9.10. The exception to this is the junction at Lodge Lane/Penny Lane. A more detailed review of the forecast operation of this junction indicates that the assumed signal staging and timings are not optimal. Specifically, the v/c values for the western and northern arms of the junction are very low compared with those on the southern arm.

7.9.11. It is anticipated that an update to the signal staging and timings would result in an acceptable forecast level of performance. However, the timescales for production of this Transport Assessment have precluded a more detailed investigation of this issue at the time of writing.

7.9.12. Therefore, it is proposed to review the operation of this junction, in order to draw a more robust conclusion on the operation of this junction.

Figure 42: v/c values Penny Lane/Lodge Lane



Summary of Impact: A599

The committed and assumed highway improvements are likely to largely mitigate for the impact of increased traffic due to the LPPO Sites.

The exception to this is the junction at Lodge Lane/Penny Lane Therefore it is proposed that a review be undertaken, in order to draw a more robust conclusion on the operation of this junction.

7.10 A569 MARSHALLS CROSS ROAD

Current Conditions

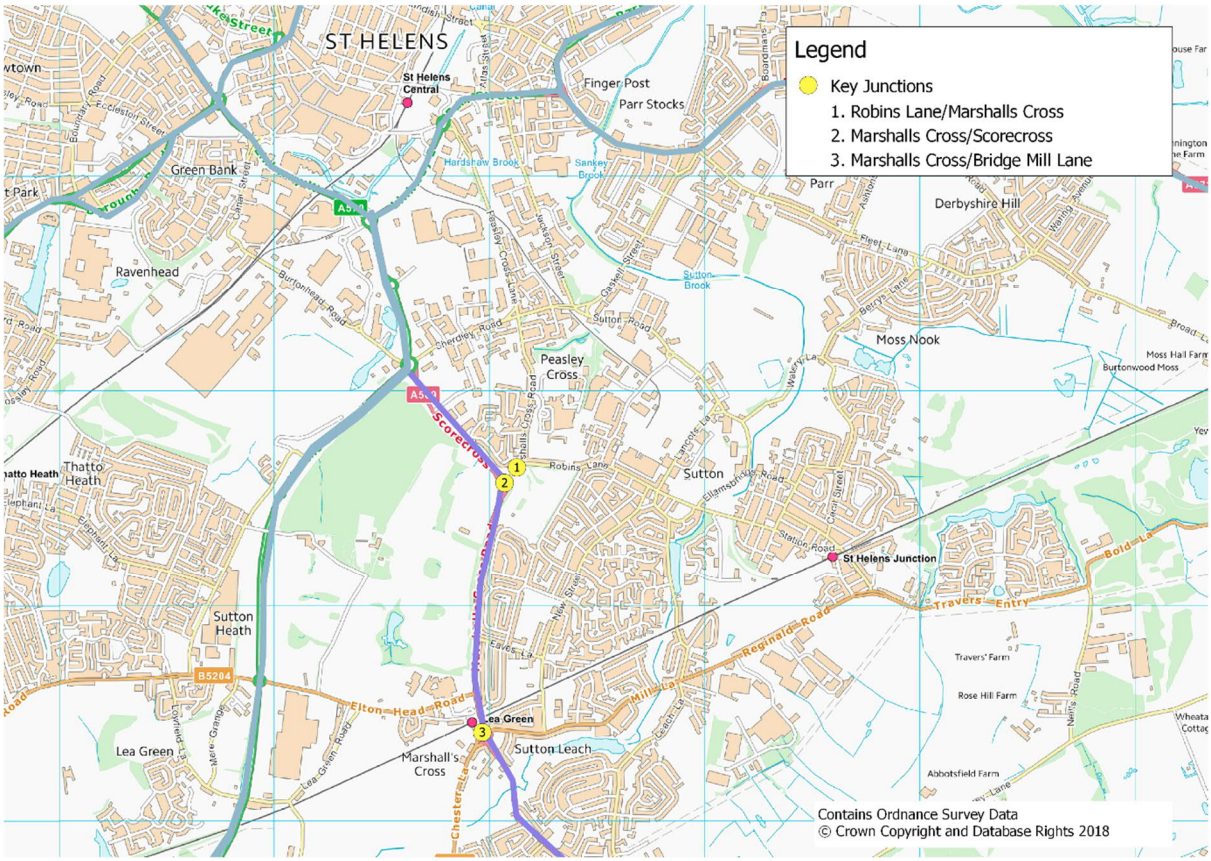
7.10.1. The A569 forms an alternative approach route to St Helens from the south, from a junction with the A57 Warrington Road, running beneath the M62 without a direct connection, then through residential areas of Marshalls Cross and Peasley Cross before joining the A58 Linkway at Sherdley roundabout.

7.10.2. To the south of the M62, it is a single carriageway route subject to National Speed Limit (60mph), reducing to 30mph as it reaches the urban boundary. It becomes a dual carriageway between the Mill Lane and Scorecross roundabout junctions then reverts back to a single carriageway to the junction with A58 Linkway.

7.10.3. The corridor has at grade junctions with more significant roads as follows:

- Marshalls Cross Road/Bridge Mill Lane (roundabout)
- Marshalls Cross Road/ Scorecross (roundabout)
- Marshalls Cross Road/Robins Lane (mini roundabout)

Figure 43: A569 Corridor



7.10.4. The base year traffic model suggests that whilst there are some delays along the route during peak periods, the key junctions operate within practical capacity, as shown in the base year model results, which indicate maximum v/c percentages below 85-90%.

Future Conditions (2033 DM)

7.10.5. Table 33 also provides a summary of the highest forecast v/c ratio on each of the key junctions for the 2033 DM. The traffic growth associated with the committed developments and SHLAA sites causes the forecast maximum v/c percentages to increase, although all junctions remain well within practical capacity.

Impact of LPPO Sites (2033 DS1)

7.10.6. Finally, it can be seen from Table 33 that the forecast junction operation under DS1 is generally similar to that for the DM scenario, with all junctions remaining well within practical capacity.

Table 33: Maximum v/c values A569

	2033 Base Year		2033 DM		2033 DS1	
Junction	AM	PM	AM	PM	AM	PM
Robins Lane/Marshalls Cross	42	49	61	48	63	55
Marshalls Cross/Scorecross	34	44	41	38	38	42
Marshalls Cross/Bridge Mill Lane	32	31	40	40	48	44

Impact of Potential Mitigation (2033 DS2a, 2b, 2 and 2c)

7.10.7. It can be seen that the forecast operation of all junctions under DS2 is generally similar to that under the DM, with all junctions forecast to remain within practical capacity.

7.10.8. Therefore, the committed and assumed highway improvements are likely to largely mitigate for the impact of increased traffic due to the Local Plan allocations.

Table 34: Maximum v/c values A569

	2033 DM		2033 DS1		2033 DS2a		2033 DS2b		2033 DS2		2033 DS2c	
Junction	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Robins Lane/Marshalls Cross	61	48	63	55	61	49	67	49	63	47	64	47
Marshalls Cross/Scorecross	41	38	38	42	38	40	44	40	45	39	43	40
Marshalls Cross/Bridge Mill Lane	40	40	48	44	46	43	52	47	50	46	49	46

Summary of Impact: A569

The committed and assumed highway improvements are likely to largely mitigate for the impact of increased traffic due to the LPPO Sites.

7.11 A57 WARRINGTON ROAD

Current Conditions

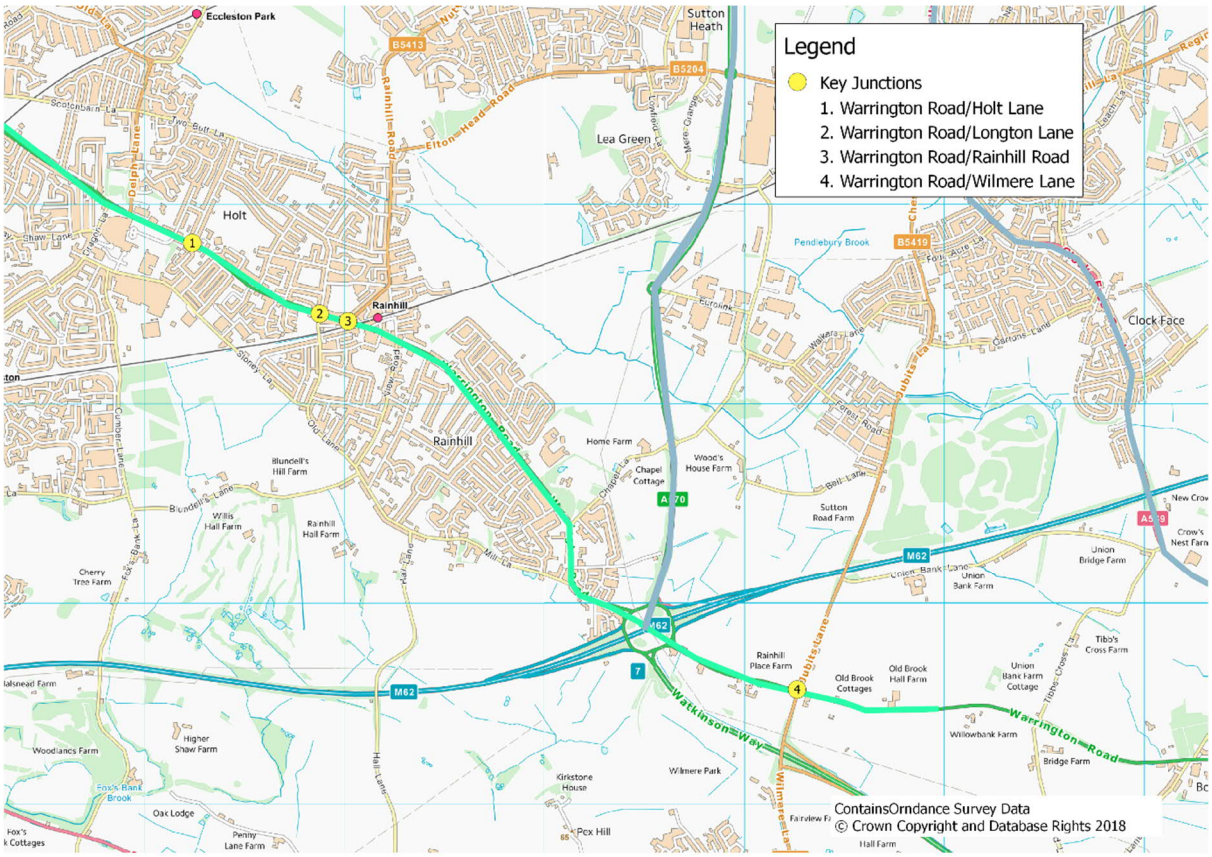
7.11.1. The A57 forms the route from Warrington to destinations in the north and west including Rainhill and Prescot. It passes through Great Sankey and Bold Heath to the west of Warrington and joins the M62 at Junction 7 at large signalised roundabout.

7.11.2. It is a single carriageway route with a 50mph speed limit through rural sections, reducing to 30mph as it passes through residential areas.

7.11.3. It has at grade junctions with more significant roads as follows:

- Wilmere Lane/Jubits Lane (traffic signals)
- Rainhill Road (traffic signals)
- Longton Lane (traffic signals)
- Holt Lane (traffic signals)

Figure 44: A57 Corridor



As evidenced from the base year traffic model, whilst there are some delays along the route during peak periods, particularly though Rainhill, most of the key junctions operate within practical capacity. The exception to this being the Rainhill Road junction during the morning peak hour and the Wilmere Lane junction during the evening peak hour, which both have maximum v/c values between 90% and 100% indicating that these junctions are approaching absolute capacity during these periods.

7.11.4. Table 35 below provides a summary of the highest forecast v/c ratio on each of the key junctions for the DM. The forecast operation at the Holt Lane, Longton Lane and Rainhill Road junctions remain very similar to that in the base year.

7.11.5. The traffic growth associated with the committed developments and SHLAA sites causes the forecast maximum v/c percentages to increase at the Wilmere Lane junction, although this remains within absolute capacity.

Impact of LPPO Sites (2033 DS1)

7.11.6. It can be seen from Table 35 below that forecast junction operation is generally similar to that for the Do Minimum scenario, with the Holt Lane and Longton Lane junctions remaining within practical capacity, and the Rainhill Road and Wilmere Lane junctions remaining within absolute capacity.

Table 35: Maximum v/c values A57

	2017 Base Year		2033 DM		2033 DS1	
Junction	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**
Warrington Rd/Holt Lane	53	47	47	48	46	49
Warrington Rd/Longton Lane	37	52	38	51	31	50
Warrington Rd/Rainhill Rd	94	89	93	88	98	95
Warrington Rd/Wilmere Lane	70	93	97	100	100	100

Impact of Potential Mitigation (2033 DS2a, 2b, 2 and 2c)

7.11.7. It can be seen from Table 36 that the forecast operation of all junctions under DS2 is generally similar to, or slightly better than that under the DM. Therefore, the committed and assumed highway improvements are likely to largely mitigate for the impact of increased traffic due to the Local Plan allocations.

Table 36: Maximum v/c values A57

	2033 DM		2033 DS1		2033 DS2a		2033 DS2b		2033 DS2		2033 DS2c	
Junction	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**
Warrington Rd/Holt Lane	47	48	46	49	46	48	47	47	46	47	47	47
Warrington Rd/Longton Lane	38	51	31	50	34	50	34	51	36	50	37	51
Warrington Rd/Rainhill Rd	93	88	98	95	97	94	97	89	96	88	96	88
Warrington Rd/Wilmere Lane	97	100	100	100	98	99	97	90	94	88	96	90

Summary of Impact: A57

The committed and assumed highway improvements are likely to largely mitigate for the impact of increased traffic due to the LPPO Sites.

7.12 TOWN CENTRE JUNCTIONS A570, A571 AND A58 LINKWAY

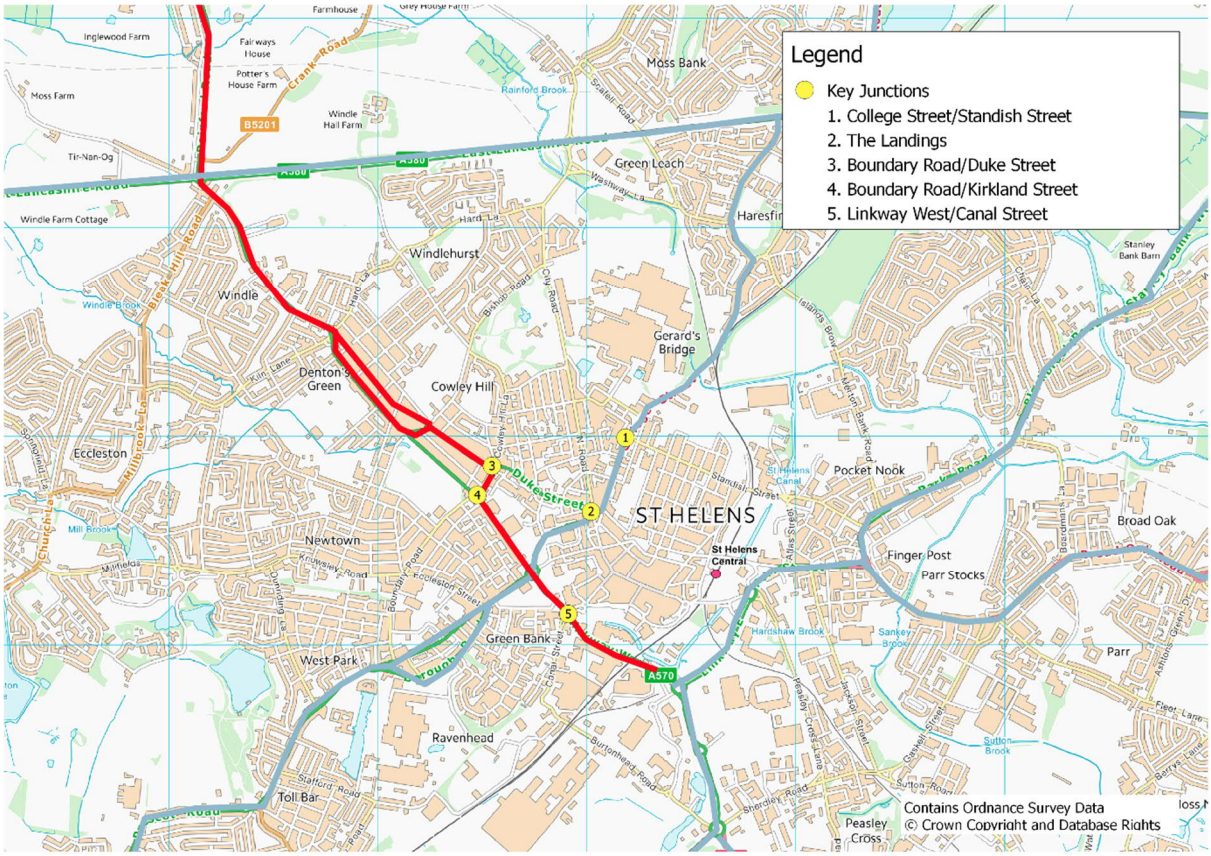
Current Conditions

7.12.1. The A58 Linkway and A570 form a partial loop around the east, south and west of the town centre, with key junctions connecting with the main radial routes. The A571 provides access to key destinations in the town centre, including car parks near the Town Hall and main shopping areas.

7.12.2. Several of the key junctions on the route have already been reviewed since they also form elements of other assessment corridors. The remaining key junctions considered are therefore:

- A571 College Street/Standish Street (traffic signals)
- The Landings (roundabout)
- A570 Boundary Road/Duke Street (traffic signals)
- A570 Boundary Road/Kirkland Street (traffic signals)
- Linkway West/Canal Street/Retail Park (traffic signals)

Figure 45: A570/A571 and A58 Corridor



7.12.3. The base year traffic model suggests that there is some queueing and delay during peak periods at these junctions, although most operate well within practical capacity. The exception is the traffic signal junction at Linkway/Canal Street, with forecast v/c values between 90 and 100%.

Future Conditions (2033 DM)

7.12.4. Table 37 provides a summary of the highest forecast v/c ratio on each of the key junctions for the DM.

7.12.5. The forecast maximum v/c values remain very similar to those in the Base Year, with most junctions forecast to operate within practical capacity. The forecast maximum v/c at the Canal Street junction increases, with the junction forecast to operate at around absolute capacity.

Impact of LPPO Sites (2033 DS1)

7.12.6. It can be seen from Table 37 that forecast junction operation is generally similar to that for the Do Minimum scenario, with most junctions remaining within practical capacity and the Canal Street junction forecast to operate at around absolute capacity.

Table 37: Maximum v/c values Town Centre

	2017 Base Year		2033 DM		2033 DS1	
Junction	AM	PM	AM	PM	AM	PM
College Street/Standish Street	59	77	63	67	66	70
The Landings	58	59	59	67	64	68
Boundary Road/Duke Street	42	38	44	30	45	31
Boundary Road/Kirkland Street	15	23	20	25	20	25
Linkway West/Canal Street	98	90	97	102	97	103

Impact of Potential Mitigation (2033 DS2a, 2b, 2 and 2c)

7.12.7. It can be seen from Table 38 below that the forecast operation of all junctions under DS2 is generally similar to, or slightly better than that under the DM. Therefore, the committed and assumed highway improvements are likely to largely mitigate for the impact of increased traffic due to the Local Plan allocations.

Table 38: Maximum v/c values Town Centre

	2033 DM		2033 DS1		2033 DS2a		2033 DS2b		2033 DS2		2033 DS2c	
Junction	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
College Street/Standish Street	63	67	66	70	64	67	67	70	67	67	65	63
The Landings	59	67	64	68	60	68	68	70	64	69	69	77
Boundary Road/Duke Street	44	30	45	31	44	30	46	31	45	31	45	29
Boundary Road/Kirkland Street	20	25	20	25	20	24	20	25	20	25	21	27
Linkway West/Canal Street	97	102	97	103	97	102	97	102	96	101	96	101

Summary of Impact: Town Centre

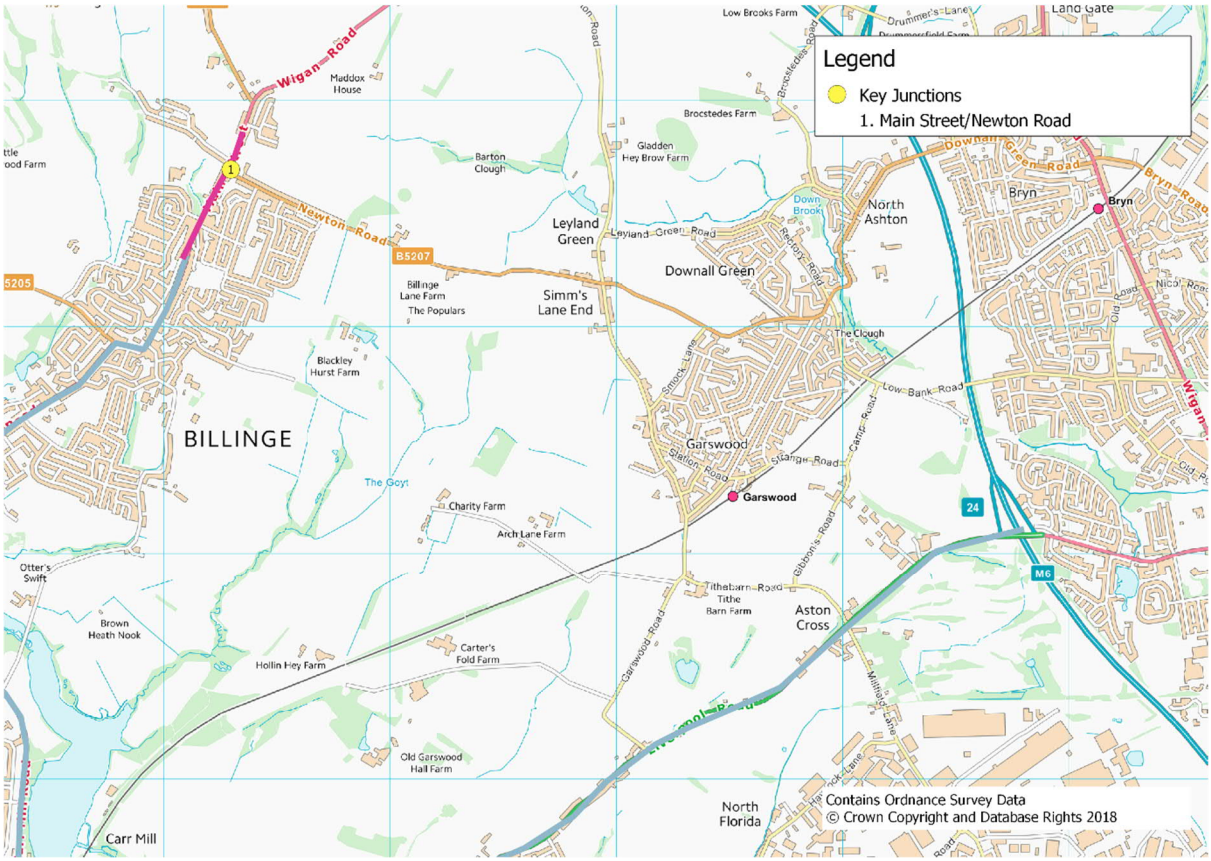
The committed and assumed highway improvements are likely to largely mitigate for the impact of increased traffic due to the LPPO Sites.

7.13 MAIN STREET/NEWTON ROAD

Current Conditions

7.13.1. This is the main junction in Billinge to the north of St Helens, where the A571 meets the B5207 at a signalised junction. Whilst there are some delays along the route during peak periods, the base year model indicates that the junction operates comfortably within practical capacity.

Figure 46: Main Street/Newton Road



Future Conditions (2033 DM)

7.13.2. The traffic growth associated with the committed developments and SHLAA sites causes the forecast maximum v/c percentages to increase, although the junction remains within absolute capacity.

Impact of LPPO Sites (2033 DS1)

7.13.3. The traffic associated with the Local Plan sites is forecast to increase the maximum v/c, particularly during the evening peak period, although the junction remains within practical capacity, with a maximum v/c below 90% as shown in Table 39.

Table 39: Maximum v/c values Main Street/Newton Road

	2017 Base Year		2033 DM		2033 DS1	
Junction	AM	PM	AM	PM	AM	PM
Main Street/Newton Road	34	37	41	69	46	85

Impact of Potential Mitigation (2033 DS2a, 2b, 2 and 2c)

7.13.4. It can be seen in Table 40 that the forecast operation of all junctions under DS2 is generally similar to that under the DM during the morning peak. During the evening peak, the forecast maximum v/c value increases, although the junction remains within practical capacity. Therefore, the committed and assumed highway improvements are likely to largely mitigate for the impact of increased traffic due to the Local Plan allocations.

Table 40: Maximum v/c values Main Street/Newton Road

	2033 DM		2033 DS1		2033 DS2a		2033 DS2b		2033 DS2		2033 DS2c	
Junction	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Main St/Newton Rd	41	69	46	85	45	81	44	77	42	78	42	70

Summary of Impact: Main Street/Newton Road

The committed and assumed highway improvements are likely to largely mitigate for the impact of increased traffic due to the LPPO Sites.

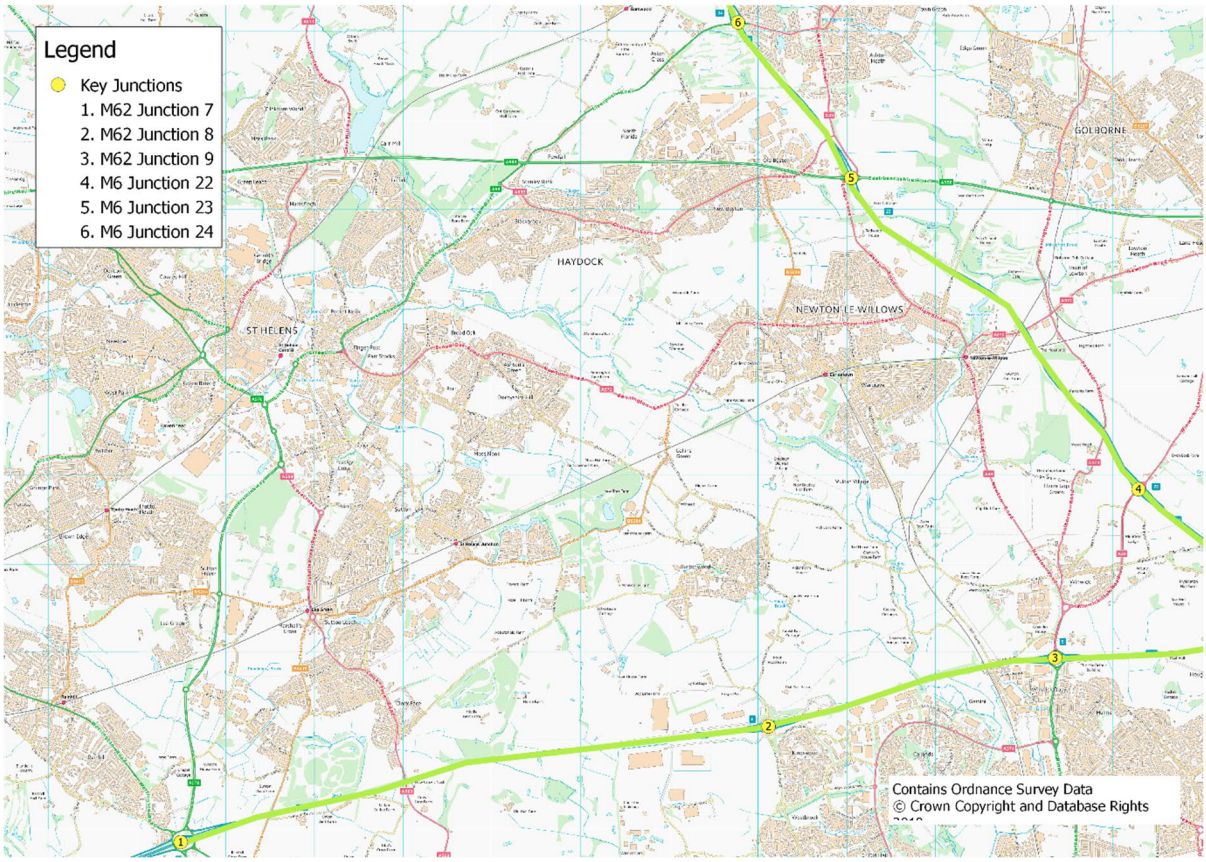
7.14 STRATEGIC ROAD NETWORK

Current Conditions

7.14.1. The town of St Helens is bounded by roads comprising of St Helens Key Route Network and Highways England's Strategic Road Network (SRN):

- The M62 runs east-west to the south of the town centre, and is an important regional corridor connecting England's east and west coast. In the study area, it has three continuous running lanes in each direction and major grade separated junctions with the M57 (Tarbock island) and M6 (Croft Interchange).
- The M6 runs north-south to the east of the town centre and is the main western north-south route in the UK, linking London with Scotland.
- The M57 runs north south to the west of the town, from the M62 to the M58, providing access into the Liverpool urban area.
- The A580 East Lancashire Road, part of the KRN, runs east-west to the north of the town, as described in section 7.4 above.
- Key junctions which have been considered within this TIA are:
- M62 Junction 7 (Linkway/A557)
- M62 Junction 8 (Burtonwood Road)
- M62 Junction 9 (A49)
- M6 Junction 22 (A49)
- M6 Junction 23 (A580 East Lancashire Road)
- M6 Junction 24 (A58 Liverpool Road)

Figure 47: Strategic Road Corridor



7.14.2. It is understood that Highways England have several committed schemes on the SRN in this area, and these have therefore been included in the Do Minimum scenario and are described in more detail in Chapter 6.

- M62 Smart Motorway Improvements
- M6 Smart Motorway Improvements
- M6 Junction 22 capacity improvements

7.14.3. Currently, as evidenced from the base year traffic model, most of the junctions experience significant queues and delays during peak periods, as does the M6 mainline. The exception to this is Junction 22, which is shown to operate within practical capacity. This is reflected in the forecast maximum v/c percentages in Table 41 below.

Future Conditions (2033 DM)

7.14.4. Table 41 below provides a summary of the highest forecast v/c ratio on each of the key junctions for the DM. M62 J7, M62 J9, M6 J23 and M6 J24 are forecast to operate at a similar level as in the base year. M62 J8 is forecast to experience increases in maximum v/c percentages which bring its level of operation above absolute capacity. M6 J22 is forecast to exceed practical capacity, although remain within absolute capacity.

Impact of LPPO Sites (2033 DS1)

7.14.5. It can be seen from Table 41 below that forecast junction operation along the SRN is generally similar to that for the Do Minimum scenario at the majority of junctions, with the highest v/c values increasing by up to around 2 percentage points.

7.14.6. At M6 J23 the forecast increase in v/c is greater during the morning peak and at M6 J24 it is greater during the evening peak.

7.14.7. Therefore, additional consideration has been given to the likely performance of these junctions under a series of sensitivity tests representing additional mitigation. Of particular significance to the SRN, the DS forecasts include potential mitigation schemes at M6 J23, M62 J7 and Parkside Link Road.

Table 41: Maximum v/c values SRN

	2017 Base Year		2033 DM		2033 DS1	
Junction	AM	PM	AM	PM	AM	PM
M62 Junction 7	96	96	100	100	102	101
M62 Junction 8	88	91	113	107	114	107
M62 Junction 9	100	100	103	98	103	100
M6 Junction 22	72	76	98	97	99	99
M6 Junction 23	100	100	107	106	115	109
M6 Junction 24	103	75	106	78	109	92

Impact of Potential Mitigation (2033 DS2a, 2b, 2 and 2c)

7.14.8. As described in the previous chapter, further forecasts have been run to assess the impact of various potential mitigation measures on the junctions on the SRN. Table 42 summarises the maximum forecast v/c values at each junction.

Table 42: Maximum v/c values SRN

	2033 DM		2033 DS1		2033 DS2a		2033 DS2b		2033 DS2		2033 DS2c	
Junction	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
M62 Junction 7	100	100	102	101	102	101	100	102	100	102	100	102
M62 Junction 8	113	107	114	107	114	107	113	107	113	107	113	106
M62 Junction 9	103	98	103	100	103	99	103	99	103	99	103	99
M6 Junction 22	98	97	99	99	99	98	99	98	98	97	98	98
M6 Junction 23	107	106	115	109	114	108	104	91	103	90	103	93
M6 Junction 24	106	78	109	92	109	90	106	85	106	84	106	84

Summary of Impact: SRN

The forecast operation of junctions on the SRN in the study area under DS2 is generally similar to, or slightly better than that under the DM, demonstrating that the committed and assumed highway improvements are likely to largely mitigate for the impact of increased traffic due to the LPPO Sites.

7.15 CONCLUSIONS

7.15.1. The current and future levels of highway network operation across the area of interest have been forecast using the recently developed St Helens SATURN Model (SHSM). In addition to reviewing the area wide impacts, more detailed consideration has been given to the main corridors and 59 key junctions on the local, key and strategic route network.

7.15.2. The methodology and scope of this highway impact assessment has been agreed through ongoing liaison with key stakeholders including St Helens Council, Highways England, neighbour authorities and Merseytravel.

In common with most urban areas across the UK, the highway network in and around St Helens currently experiences congestion, queues and delays during weekday peak periods. The impact of traffic growth (14%-16%) from committed developments and SHLAA sites, combined with ongoing general background traffic growth is forecast to worsen the level of operation at many of the key junctions during peak periods – although it is likely that this will be somewhat mitigated by the introduction of committed highway schemes.

The additional traffic growth (in the region of 14-16%) associated with traffic from the Local Plan Sites is also forecast to worsen the level of operation at some locations. However, the forecast models indicate that the impact can be substantially mitigated by a combination of committed and emerging future highway infrastructure projects, modest changes in travel behaviour and lower cost improvements across key junctions.

Based on the analysis presented in this Chapter, It is recommended that further consideration be given to the forecast operation of the following junctions and corridors:

- M6 Junction 23 (currently the subject of a joint study recently commissioned by SHC and HE)
- A580 Haydock Lane (in liaison with developers, undertake review of signal timings to ensure that the committed scheme can accommodate future growth from sites EA7, EA2 and HA3)
- A580 corridor study (including consideration of reduction in speed limit along the route)
- Church Road/Southworth Road (undertake a review of signal timings)
- Liverpool Road/Millfield Lane
- Sherdley Roundabout (currently the subject of a study recently commissioned by SHC)
- M62 Junction 7 (currently subject to a study by HE)
- M62 Junction 8
- Penny Lane/Lodge Lane (undertake a review of signal timings)

8

GLOSSARY

8 GLOSSARY

Abbreviation	Name
BBA	Liverpool City Region Better Bus Area project
BY	Base Year
CCT	Cycling City and Towns Programme
CDT	Cycling Demonstration Towns
CIHT	Chartered Institute of Highways and Transportation
CS	Core Strategy
DfT	Department for Transport
DM	Do Minimum
DOS	Degree of Saturation
DP	Delivery Plan
DPD	Development Plan Document
DS	Do Something
FQP	Freight Quality Partnership
GIS	Geographical Information System
GM	Greater Manchester
GMSF	Greater Manchester Spatial Framework
GP	General Practitioner
GV	Goods Vehicle
GVA	Gross Value Added
ha	Hectares
HE	Highways England
IMD	Index of Multiple Deprivation
J2W/JTW	Journey to Work
KRN	Key Road Network
LAD	Local Authority District
LCR	Liverpool City Region
LCRCA	Liverpool City Region Combined Authority
LCRTM	Liverpool City Region Transport Model
LCWIP	Local Cycling and Walking Infrastructure Plan

LEP	Local Enterprise Partnership
LSOA	Lower Layer Super Output Area
LSTF	Sustainable Transport Fund
LTP	Local Transport Plan
MaaS	Mobility as a Service
MCA	Mayoral Combined Authority
MCC	Manual Classified Count
MfS	Manual for Streets
MOVA	Microprocessor Optimised Vehicle Automation
MSOA	Middle Layer Super Output Area
NMU	Non-Motorised Users
NPPF	National Planning Policy Framework
NTEM	National Trip End Model
OA	2011 Census Output Area
OGV	Other Goods Vehicles
PRN	Primary Route Network
RFC	Ratio of Flow to Capacity
SATURN	Simulation and Assignment of Traffic in Urban Road Networks
SEP	Strategic Economic Plan
SHBC	St Helen's Business Case
SHC	St Helens Council
SHLAA	Strategic Housing Land Availability Assessment
SHSM	St Helens SATURN Model
SIF	Single Investment fund
SPD	Supplementary Planning Documents
SRFI	Strategic Rail Freight Interchange
SRN	Strategic Road Network
STEP	Sustainable Transport Enhancements Package
SWOT	Strategic planning technique used to help a person or organization identify the Strengths, Weaknesses, Opportunities, and Threats
TA	Transport Assessment
TAG	Transport Appraisal Guidance
TEMPro	Trip End Model Programming Software
TfL	Transport for London
TfN	Transport for the North

TIA	Transport Impact Assessment
TOCs	Train Operating Companies
TRICS	Trip Rate Information Computer System
UDP	Unitary Development Plan
WGA	Whole of Government Accounts

Name	Description
2011 Census Output Area (OA)	
Average Delay	The average transient delays and V>C queuing delays (but excludes any link-based delay from link speed-flow curves).
Average Queue	The sum of the average transient queues and the average V>C queues as summed over all turning movements and all lanes.
Average Speed	The ratio of total distance covered over the total travel time.
Chartered Institute of Highways and Transportation (CIHT)	Transportation professional institution.
Core Accessibility Indicator	Measures of accessibility by public transport/walking, cycling and car to eight service types; primary schools, secondary schools, FE colleges, GPs, hospitals, food stores, town centres and employment centres.
Core Strategy (CS)	A delivery plan document (DPD) that sets out the vision, spatial strategy and core policies for the spatial development of a Borough.
Corridors	
Cycling City and Towns Programme (CCT)	
Cycling Demonstration Towns (CDT)	
Degree of Saturation (DoS)	Is a ratio of demand to capacity on each approach to the junction where road demand is measured against the links total capacity.
Delivery Plan (DP)	A framework for development and land use decisions in the Borough.
Department for Transport (DfT)	
Development Plan Document (DPD)	A document part of the statutory development plan.
Do Minimum (DM)	Developments allocated/identified as having planning permission and/or are under construction.
Do Something (DS)	Developments allocated/identified as not having planning permission, but forecast to be a site for future development.
Freight Quality Partnership (FPQ)	A partnership between transport operators and local authorities to deal with matters of freight access and deliveries in a particular location
Geographical Information System (GIS)	A data management system designed to capture, store, retrieve, analyse and report geographic information.
Greater Manchester Spatial Framework (GMSF)	The Greater Manchester Spatial Framework is a joint plan for Greater Manchester that will provide the land for jobs and new homes across the city region.
Green Belt	The designation of land to be retained from development for areas of largely undeveloped, wild, or agricultural land surroundings.
Gross Value Added (GVA)	Gross Value Added is a measure of the value of goods and services produced in an area.
Highways England	

Index of Multiple Deprivation (IMD)	The Index of Multiple Deprivation (IMD) is a measure of multiple deprivation at the small area level.
Journey Times	The total time of modelled journeys between known sets of origins and destinations.
Key Road Network (KRN)	
Liverpool City Region (LCR)	Comprising City of Liverpool and local authority districts of Halton, Knowsley, Sefton, Liverpool City Region, St Helens, Wirral, and extends as far as Chester, Ellesmere Port and Neston, Vale Royal and West Lancashire
Liverpool City Region Better Bus Area project (BBA)	
Liverpool City Region Combined Authority (LCRCA)	
Liverpool City Region Transport Model (LCRTM)	
Local Cycling and Walking Infrastructure Plan (LCWIP)	
Local Enterprise Partnership (LEP)	A body, designated by the Secretary of State for Communities and Local Government, established for the purpose of creating or improving the conditions for economic growth in an area.
Local Model Validation Report	
Local Plan	
Local Road Network (LRN)	
Local Transport Plan (LTP)	The strategy for dealing with transport matters in Merseyside, including the improvement of local transport provision
Lower Layer Super Output Area (LSOA)	Official measure of relative deprivation for neighbourhoods.
Manual for Streets (MoS)	This manual provides guidance about the design, construction, adoption and maintenance of new residential streets.
Mayoral Combined Authority (MCA)	
Middle Layer Super Output Area (MSOA)	
Mobility as a Service (MaaS)	
MOVA	A software for single and dual-stream control of traffic signals at isolated junctions
National Planning Policy Framework (NPPF)	
New Mobility 'Culture'	A transport system that provides genuinely sustainable options and supports the continuing regeneration and economic development of city regions.
Non-Motorised Users (NMU)	
Over-capacity Queue	Queues which fail to clear resulting in over capacity of a link.

Primary Route Network (PRN)	
Ratio of Flow to Capacity (V/C)	The ratio of demand flow to capacity also given as Traffic Intensity of a link.
Simulation and Assignment of Traffic in Urban Road Networks (SATURN)	A suite of flexible network analysis program.
Single Investment Fund (SIF)	
St Helen's Business Case (SHBC)	
St Helens SATURN Model	
Strategic Economic Plan (SEP)	
Strategic Employment sites	Employment sites allocated as sites of significant size in the St Helens Local Plan Strategy.
Strategic Housing Land Availability Assessment (SHLAA)	A key evidence base document and establishes realistic assumptions about the availability, suitability and the likely economic viability of land to meet the identified housing need for housing over the plan period.
Strategic Housing Site Allocations	Land that has been safeguarded or allocated for future housing according to the St Helens Local Plan commitments.
Strategic Rail Freight Interchange (SRFI)	
Strategic Road Network (SRN)	Roads across the borough essential to free and safe movement of traffic throughout the region.
Supplementary Planning Documents (SPD)	Material consideration in determining planning applications but do not have the weight of development plan status.
Sustainable Transport Enhancements Package (STEP)	An integrated programme of investment in sustainable transport in the Liverpool City Region.
Sustainable Transport Fund (STF)	
Total Travel Time	Total time all vehicles take to travel through the simulation network (in hours).
Traccs Basemap Analysis	A multi modal travel time analysis tool.
Train Operating Companies (TOC)	
Transient Queue	Total time all vehicles spend queuing (in hours).
Transport Appraisal Guidance (TAG)	A guidance that provides information on the role of transport modelling and appraisal.
Transport Assessment (TA)	A Transport Assessment provides detailed information on a range of transport conditions before, during and following the construction of a proposed development.
Transport for London (TfL)	A local government body responsible for the transport system in Greater London.
Transport for the North (TfN)	A local government body responsible for the transport system in Northern England.

Transport Impact Assessment (TIA)	Assessment of the impacts of development on the transport network and identify reasonable solutions, applicable to the study region, to address the impacts.
Travel Distance	The total distance travelled.
TRICS	A database of trip rates for developments used in the United Kingdom for transport planning purposes
Unitary Development Plan (UDP)	Planning policy document under previous legislation.
V/C	Ratio of flow volume to capacity of a given link.
WebTAG	Online guidance documents on transport appraisal.
Whole of Government Accounts (WGA)	
Windfall sites	Sites which have not been specifically identified as available in the Local Plan process.

Appendix A: New Mobility Now

Appendix A is provided as a separate document

Appendix B: Highway Scheme Technical Notes

TECHNICAL NOTE

Project:	St Helens Local Plan TIA	**Date:**	16th April 2018
		TN Ref:	A
Subject:	Highway Schemes included in the traffic modelling		
Author:	Nick Green	**Project Ref:**	70038483

INTRODUCTION

This technical note sets out the schemes included in the forecast SATURN highway assignment models developed for the traffic impact assessment of St Helens Local Plan.

DO MINIMUM

The following schemes were included in the Do Minimum model, with the agreement of St Helens Council and Highways England for improvements to the local and strategic network respectively.

LOCAL ROAD NETWORK:

- A580/Haydock Lane

  The proposed scheme is the addition of a 40M ICD roundabout on land to the west of Haydock Lane and north of East Lancashire road. The local highway scheme change is a proposed priority junction connecting the roundabout to Haydock Lane north arm with restricted left turns only. The scheme connects East Lancashire road eastbound link with the roundabout and proposed controlled pedestrian crossing will be allocated at the junction along with pedestrian crossings at Haydock Lane south arm and across East Lancashire Road/A580 parallel to traffic. The westbound link will be widened to allow for a proposed right turn lane for site access.

- A580/A58

  As part of the A580 Enhancement programme, the scheme includes carriageway improvements with new crossing points for pedestrians and cyclists across the A580 as well as junction improvements at Haydock Industrial Estate to enable right turns. The new crossing points for pedestrians and cyclists are proposed to be located across the A580 eastbound and westbound directions and along the Stanley Bank Way junction.

- Elton Head Road/A570 St Helens Linkway

  This scheme includes junction capacity and safety improvements changes to the junction and lower speed limits on the connecting Linkway. The scheme is proposed to lower speed limits from 70 mph to 50 mph and pedestrian crossings at key intersections for cyclists. The scheme includes changes to the current junction from a roundabout to a cross junction with an off slip from St Helens Linkway to Elton Head Road on eastbound and westbound routes. New signal control locations and pedestrian crossings are to be determined as part of the safety improvements at the new junction.

- Sutton Road/Jackson Street

  This scheme includes the widening of Sutton Road west arm, from a one lane approach to two lane approach arm with an allocated right turn lane. For the junction capacity and safety improvements upgrade, the scheme will include new traffic signalling for the safety and junction capacity improvements.

- Sutton Road/Watery Lane

The scheme improvements include connecting Watery Lane and Sutton Road roundabout via a spine road. The scheme includes an additional north arm at Sutton Road roundabout connecting the new highway with the existing road network. A three arm roundabout is proposed at Watery , with two adjoining roundabouts and pedestrian refuge points.

- Windle Island

  As part of the A580 Enhancement programme, the scheme includes relocating the Crank road junction to further north along Rainford road in close proximity to the Golf club. The junction relocation includes making improvements to reduce the build-up of traffic at Windle Island.

- Penny Lane/Lodge Lane

  This scheme includes junction capacity and safety improvements at the junction to accommodate abnormal loads (6-axle trailer) turning left and right in and out of Penny Lane. The proposed scheme includes a new off slip allocated lane for left turners at Lodge Lane south arm onto Penny Lane. At the new signalised junction a new pedestrian island will be included perpendicular to traffic for car flows along Lodge Lane westbound and eastbound movement at Penny Lane approach.

STRATEGIC ROAD NETWORK:

- M62 Smart Motorway Improvements – M62 J10 – J12. This scheme includes the upgrading of the hard shoulder running and improvements to the highway capacity. The scheme links with the M60 smart motorway schemes to the east and M6 schemes to the west.

  https://www.gov.uk/government/news/major-roads-investment-in-the-north-west

- M6 Smart Motorway Improvements – M6 J21A-26

  This scheme includes the widening of the carriageway with three lanes all the way through to Manchester. The improvements include four lane running junctions from the junctions 21a to 26, with new RCTTM signs and gantries along the route.

- Junction 22 Capacity Improvements – assumed widening of circulatory carriageway by one further lane

  This scheme is to upgrade and improve junction capacity including widening the gyratory by adding an additional lane to the carriageway.

St. Johns House
Queen Street
Manchester
M2 5JB

wsp.com

Appendix A: New Mobility Now

wsp

New Mobility Now

A Practical Guide

Foreword

"New Mobility", the bundle of transport, technology and mobility changes that will become the bedrock of future transport systems, is already transforming the way we move around, live and interact with each other.

The opportunity offered by New Mobility is significant and highly valuable, particularly to city and area leaders, place-makers, transport network owners, mobility and technology providers.

The major challenge is that multiple changes are in motion and a range of outcomes are possible. Each city, suburb and rural area is entirely distinct; each one has a unique starting point and specific needs. But all have one thing in common: potential.

It is time for a new focus on the "now" of New Mobility.

In our view, there is consensus around the long-run outcomes and benefits offered by New Mobility for all types of places and routes, from land value uplift to safety, and from cleaner air to network efficiency.

This White Paper shares our thinking about how to make sense of New Mobility changes, across a range of contexts, to form a practical plan of action. We are passionate about finding ways to help you make the most of New Mobility Now.

Those who engage early and with a clear plan will benefit most.

To help with this, we have created a structured approach based around **four distinct strands** of New Mobility change and one **key enabler**. These are all in motion, now, across the world, and they each bring distinct benefits and opportunities:

- Progress towards vehicle ***automation*** (including driverless vehicles)
- Distinct from this, the evolution towards ***connected*** vehicles, transport systems and networks
- Increasing appetite for ***shared*** use (for example, via 'mobility as a service' models)
- Increasing public interest in, and a shift towards, ***electric*** vehicles

In combination, these four strands of change could take our transport networks and places towards many different futures for our transport networks and places. Leaving these changes to market forces alone is a high risk strategy that will not generate the best wider outcomes.

If we are to create New Mobility futures that are popular, fair and sustainable, we see that a fifth strand – **business models and revenue generation** – is likely to play the core enabling role, encouraging collaboration between the public and private sectors, and influencing the direction and speed of change across all four areas listed above.

If you are interested in learning more about New Mobility in your region, we can offer valuable insights for different markets around the world that go well beyond the information included here. We would be delighted to share more of these with you – please do get in touch with our team at NewMobility@wsp.com.

In the meantime, thank you for taking the time to read this White Paper. We hope you find it useful and look forward to your feedback.

David McAlister,
Global Director Transport & Infrastructure

Who should read this?

This document is written to support all those who are – and want to be – involved with bringing transport and place-making change through future mobility.

- ***Technology firms*** who are seeking to bring new solutions to market or broaden their reach and market penetration

- ***National, regional and local government organizations*** who act as stewards or guardians of our places and communities and, in some cases, also have responsibility for transport network and system operations

- ***Transport network or system operators***, often working with public sector organizations, who may wish to understand how the wider mobility landscape may change in the future

- ***Investors, developers and strategic land-owners*** who are seeking ways to maximize their uplift in value from future development and regeneration

- ***Researchers*** seeking to understand markets and where to focus their efforts or where to seek collaboration

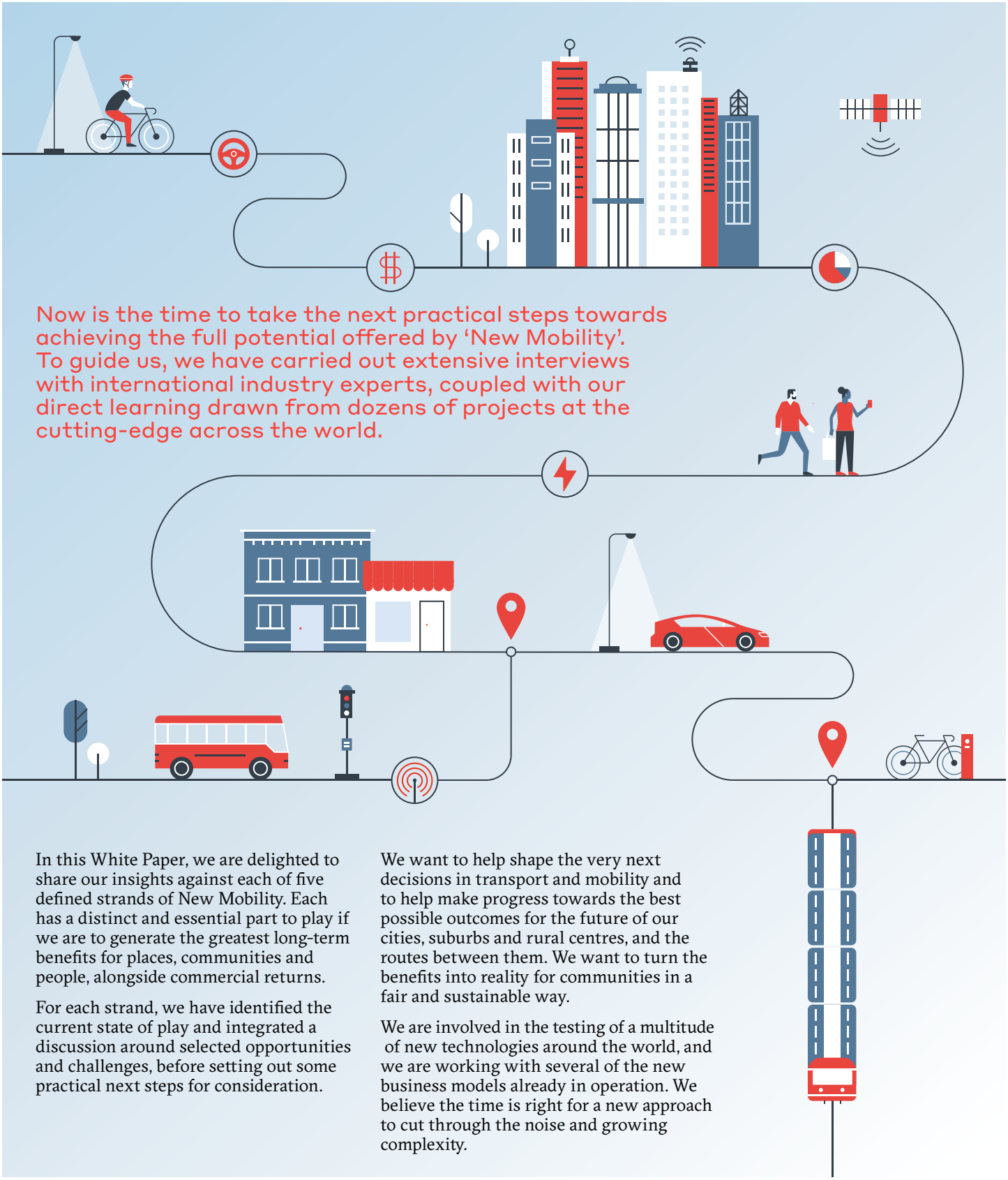
Contents

Contributors

Our sincere thanks go to the experts at the following organizations who have participated in this new research:

- APT SkiData *(UK)*
- Austroads *(Australia)*
- Business and Economic Research *(New Zealand)*
- Canadian Automated Vehicles Centre of Excellence *(Canada)*
- Canadian Urban Transit Association *(Canada)*
- City of Gothenburg *(Sweden)*
- City of Las Vegas *(US)*
- City of Mississauga *(Canada)*
- City of Toronto *(Canada)*
- Colorado Department of Transportation *(US)*
- Conference Board of Canada *(Canada)*
- Connect East *(Australia)*
- Department for Transport *(UK)*
- Department of Planning, Transport and Infrastructure *(Australia)*
- Department of Transport and Main Roads Queensland *(Australia)*
- DriveNow *(UK)*
- Drive Sweden *(Sweden)*
- Easymile *(US)*
- First Group *(US/UK)*
- Gnewt Cargo *(UK)*
- Insurance Australia Group Limited *(New Zealand)*
- Legal and General *(UK)*
- Londonewcastle *(UK)*
- LSE Cities *(UK)*
- Lyft *(US)*
- MaaS Global *(Finland)*
- Main Roads Western Australia *(Australia)*
- Maryland Department of Transportation *(US)*
- Metrolinx *(Canada)*
- Meyer Homes *(UK)*
- Ministry of Economic Development and Growth *(Canada)*
- National Transport Commission *(Australia)*
- North Central Texas Council of Governments *(US)*
- Ontario Centres of Excellence *(Canada)*
- POLIS Network *(Belgium)*
- Region of Peel *(Canada)*
- Region of Waterloo *(Canada)*
- Royal Automobile Club *(Australia)*
- Surrey County Council *(UK)*
- Taunton Deane Borough Council *(UK)*
- Telstra *(Australia)*
- Toronto Transit Commission *(Canada)*
- Transport for Greater Manchester *(UK)*
- Transport for London *(UK)*
- Transport for New South Wales *(Australia)*
- Transport Systems Catapult *(UK)*
- Transurban *(Australia)*
- Volvo *(Sweden)*
- Uber *(UK)*
- University of Michigan Transportation Research Institute *(US)*
- University of Toronto *(Canada)*
- Utah Department of Transportation *(US)*
- VicRoads *(Australia)*

New Mobility Now



Now is the time to take the next practical steps towards achieving the full potential offered by 'New Mobility'. To guide us, we have carried out extensive interviews with international industry experts, coupled with our direct learning drawn from dozens of projects at the cutting-edge across the world.

In this White Paper, we are delighted to share our insights against each of five defined strands of New Mobility. Each has a distinct and essential part to play if we are to generate the greatest long-term benefits for places, communities and people, alongside commercial returns.

For each strand, we have identified the current state of play and integrated a discussion around selected opportunities and challenges, before setting out some practical next steps for consideration.

We want to help shape the very next decisions in transport and mobility and to help make progress towards the best possible outcomes for the future of our cities, suburbs and rural centres, and the routes between them. We want to turn the benefits into reality for communities in a fair and sustainable way.

We are involved in the testing of a multitude of new technologies around the world, and we are working with several of the new business models already in operation. We believe the time is right for a new approach to cut through the noise and growing complexity.

New Mobility Now

What is really changing?

We use the term 'New Mobility' to draw together visible change across five specific themes that are already under way, to varying degrees, around the world.

These themes are featured increasingly at the heart of today's transport and mobility change. We expect them to play a continued key role in determining the form and function of transport systems and place-making in the future.

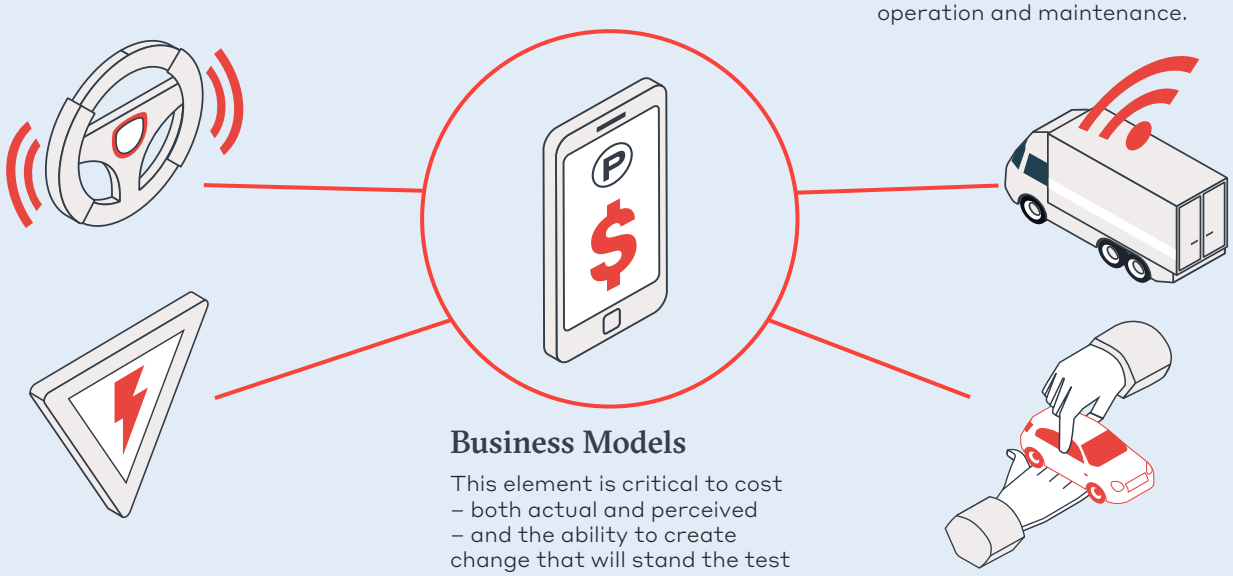
Four of these areas relate to changes in technologies that are emerging and, in some cases, already in use across the world. The fifth strand relates to the enabling potential of new business models and revenue generation, which will almost certainly play a key role in influencing and cementing change across all of the four areas above.

Automated driving

Sometimes described as 'driverless' but with many levels of actual automation in practice, automated technologies have been emerging for decades and will increasingly affect all types of light and heavy vehicles.

Connected vehicles transport systems and networks

New and existing forms of connectivity offer the potential for far greater use of safety related features, as well as real-time and off-line information which will benefit those using the network and those who are responsible for its operation and maintenance.



Business Models

This element is critical to cost – both actual and perceived – and the ability to create change that will stand the test of time. It requires imaginative, fast and decisive action.

Electric vehicles

Political support for a move away from internal combustion engines and towards electric vehicles and other future forms of propulsion is gaining momentum around the world as the local and wider air quality impacts of petrol and diesel vehicles are better understood.

Shared use

This bundle lies at the heart of place-making change and relates specifically to vehicle ownership models, and to the extent to which we might be prepared to move towards shared mobility and away from private car ownership.

New Mobility Now

Long-Term Visions

There is widespread agreement that transport and mobility change has the potential to improve conditions for growth and returns to both private and public sector.

We know that we all want to create and sustain places where we love to live and work, and we know that we want to move between and within them. These headline goals sit at the heart of most long-term visions for future places, mobility, transport networks and systems.

This ambition fits well with the approach being taken by governments around the world where there is pressure to generate economic growth and improve productivity, while accommodating more people.

Having a vision is essential, as it gives a direction of travel, but it is not enough. We don't have all of the answers, but we are certain that a detailed plan is also needed, for the following reasons:

- ***A wide range of 'New Mobility' outcomes are possible, both good and bad***. Winners and losers will vary under different circumstances. We all want the "good" and want to avoid the "bad", but mapping a route towards the best outcomes for all (both private and public sector) will demand active management, collaboration and investment.

- ***One size cannot fit all***. Each town, city and country has a different start-point and context. The details of legal, political, economic, technological, environmental, social and ethical considerations matter, and will affect what is possible and desirable.

- ***New Mobility changes are happening in parallel on several distinct fronts***. In our view, it is strategic yet short term decisions made across the five specific themes we have identified that will determine success or failure in the longer run.

What we all want from new mobility

- Emphatically, new mobility is ***not mobility for its own sake***

- ***Affordable*** and ***economically sustainable***, long-run solutions to allow investment and maintenance

- ***Profitable*** for private sector investors and technology firms, working collaboratively with national and local governments

- ***Healthy, high quality experience*** for all network users, including pedestrians and cyclists

- Maximum ***value*** and potential created for ***places***, existing and future, through land use change and efficient connectivity

- Best use made of ***existing infrastructure***. Long-run solution will work with what we have rather than rebuilding everything

- ***Safe*** and ***easy to use***, for everyone of any age

- Operationally ***efficient***, with roads-based services complementing mass transit corridors

- ***Clean*** and non-polluting

- ***Attractive*** and ***popular*** solutions that the travelling public choose to use, can afford and trust

- ***Fair*** and ***accessible*** solutions that most people can access

- ***Flexible and adaptable*** to future change and innovation

- ***Consistent*** with ***progressive policy*** and changing transport mode hierarchies

New Mobility

Next steps and action plans

There is no magic formula. Generic goals and solutions are not the answer for those who want to take action to get the most from New Mobility. Neither is doing nothing.

Technological change will happen whether we choose to engage or take no action. Those who sit back will almost certainly be left behind and, in some cases could be left with additional risks and costs due to change implemented by others, whether intended or not.

To make the most of New Mobility, starting now, we all need to home in on the very next steps according to context, appetite for risk and ability to influence. In forming a plan of action, we strongly recommend that each of the five aspects of New Mobility change is considered in terms of its relevance and importance, and the potential for specific next steps and actions.

We have written this practical guide to help with that process

And how will we know if we have collectively succeeded?

The very best New Mobility solutions will enhance the viability of communities and their distinct nature. These community identities will rely on the five strands of New Mobility to take root, grow and evolve, with easy and appropriate connections between them for the benefit of people and business.

Those who make great places and who create resilient transport systems will find that they have created distinctive solutions that work in the local context, which can be maintained for the long-run and which connect and make sense within their wider context.

Those who create and offer the very best mobility packages, infrastructure, future vehicles and technology solutions to the market will find that they are generating the necessary commercial returns, and can be flexible and adapted to suit an ever-growing demand and need on the ground.

Do you agree that there is great consensus for the long-run vision, and that it is now time to focus on the near-term action plans to make structured progress towards them?

Are you aware of places in the world where these goals would not be a natural fit?

Please share your thoughts with us at
NewMobility@wsp.com

Automated

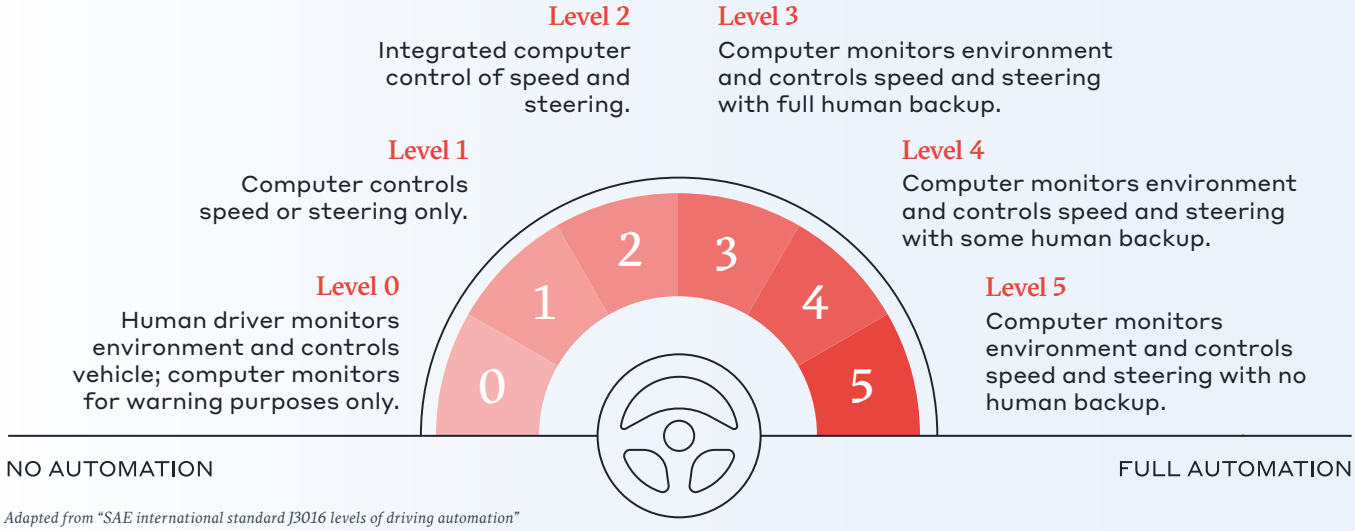
Vehicle automation is not new. Over the last thirty years, we've seen increasing levels of automation built into both light vehicles and freight. With pilots and trials ongoing around the world, increasing on-board automation in new vehicles, and some operational systems already in place, we can expect continued and rapid change.

While fully autonomous operation under all driving conditions is a possible end goal, current technological advances can be broadly divided into two camps.

The first is being brought to market by several manufacturers, where everyday driving speeds are not compromised by increasing levels of on-board automation. In 'self-driving' mode, these vehicles are now able to navigate without substantial driver intervention under defined conditions. But at no time does the driver give up legal or practical control of the vehicle, and none are able to operate on the road beyond SAE Level 3.

The second approach to the development of fully autonomous (Level 4/5) operation is based around slow speed fully driverless pods. As one example, a series of UK-based pilot trials are now live, generally on footways and in defined pedestrianized areas. These trials are more focused on 'any condition' driving at speeds where the safety-related risks are low. They are also providing insight into how these vehicles are perceived and accepted by the public.

The spectrum of automated driving



Adapted from "SAE international standard J3016 levels of driving automation"

Automated

What is an automated vehicle?

Quick facts: what is an automated vehicle?

Vehicle automation refers to the spectrum of driver assistance technologies as defined by the Society of Automotive Engineers' (SAE) International Standard J3016. The higher the level of automation, the more information the vehicle uses about the driving environment to automate driving tasks.

SAE level 1-3 is relevant today whereby the human driver is required to perform some or all of the driving task(s).

An SAE level 4+ ("autonomous") vehicle has the most advanced levels of automation. Completely "hands/feet/brain off", the vehicle navigates, reads its surroundings, and interacts with other vehicles, road users and the road infrastructure.

> *"There is definitely a role for AVs in existing cities to supplement transit services and to make it possible for more people to live without owning a car."*

?

Increasingly automated vehicles are now a way of life and fully autonomous vehicles are coming. Key questions still need to be considered:

- What can we do to increase public familiarity with – and confidence in – increasingly automated vehicles?
- How can network operators reap the full benefits of automation?
- How can we best learn from existing pilots and trials, to avoid needing them everywhere?
- Is it inevitable that an automated future is also a connected one?
- How can we manage the increasingly complex interactions between human drivers and more automated vehicles in the interim transition to SAE Level 3?
- Are there parts of the transport network where full automation would need to be mandated? When do the key benefits emerge in relation to the transition?
- How do we protect against urban sprawl as drivers regain their driving time for other tasks? Can we create attractive yet denser urban centres to counteract this risk?
- How might we combine the benefits of automation with greater shared use? If we continue to replace today's cars with increasingly automated but privately owned vehicles, how will we manage congestion or benefit from new place-making potential?
- To what extent can urban and rural areas expect to see different automation solutions and timelines? How can we ensure that the benefits of urban areas translate to rural environments?

Automated

Opportunities

In our research conversations, we found several common international themes alongside country-specific insights that will have value across wider geographies as the transition progresses.

The precise bundle of automation-related benefits will depend on local circumstances and scale, but in overview the potential opportunity includes:

Road safety

There is little doubt that a network, route or zone that is entirely automated at SAE Level 4 or above would generate substantial safety benefits, as all moving motorized vehicles would follow agreed rules for movement. There are key questions emerging around the world, and specifically in Australia, the UK, Canada and the U.S., about the extent to which these benefits will emerge during the transition period to Level 3, and also while the network contains non-automated vehicles.

One suggestion that emerged several times to address this on more strategic routes was the presumption of segregation of automated vehicles from non-automated. In our view, however, as the mixed operations issue will be temporary, this may not generate sufficient benefits to warrant the interim network modification costs.

Another option would be to define connected and automated 'zones' where all vehicles, heavy or light, must be able to operate at a defined minimum level of automation. The levels could increase and the areas covered could gradually extend as technologies become more commonplace and the benefits are better understood in practice.

The exact safety benefit remains to be seen. We know that in countries where road accident statistics are closely monitored, we tend to find that 90% of accidents are typically caused by driver error, but this does not necessarily translate directly to the same reduction in accidents. There is little doubt, however, that progress is already being made and that the shift to SAE Levels 2 and 3 will improve road network safety.

Onwards pilots and trials for automated technologies

Two key points emerged from around the world during our interviews: first, that future automation trials must be meaningful for all parties. The early definition of specific use cases with industry partners will help everyone to understand the potential future needs and deployment opportunities that will be to everyone's advantage.

The second key point, in particular from Australia, relates to the benefits of focusing on low speed experimental trials. These will set the stage for first and last mile light vehicle journeys, as well as light/mid-sized logistics vehicles. Due to their existing levels of control, high design standards and limited access/exit points, motorways may appear to be among the easiest implementation environments. However, if high-speed automation takes off too far in advance of others, we may find that the infrastructure investment required to manage two highly distinct types of traffic could be extensive and that the outcome is an increase in movement, rather than more efficient multi-modal mobility.

Hierarchy shift: focus on freight, public transit and pods

Several of our interviewees would prefer that the effort around automated vehicles be focused on freight and public transit, and that the opportunity be taken to reimagine how these two systems could work with much greater efficiency and safety, ideally at a lower cost.

In relation to public transit, the mutually beneficial relationship with shared use and models such as Mobility as a Service (MaaS) should not be missed. A more automated, connected and shared network is one within which highly efficient public ownership and shared use could thrive, in place of private vehicle ownership. This piece is missing from automated pilot use cases, but could be fundamental to our understanding and the creation of future benefits.

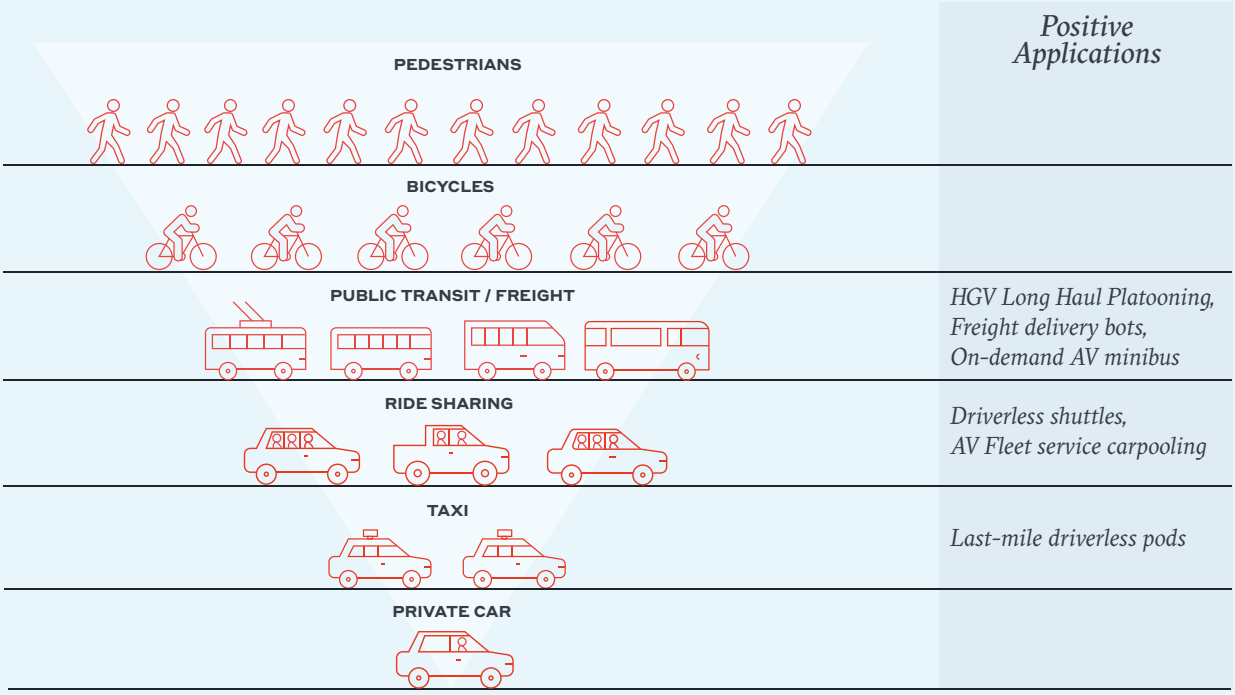
Others mentioned the related opportunity to redefine the transport mode hierarchy. This is about defining urban and suburban environments, supporting the active modes of walking and cycling, public transport and freight, as well as first and last mile movements in their local context. If and when automated vehicles become part of the public mobility offer, no matter what vehicle size, they should no longer be treated in the same way as privately owned cars.

Automated

Challenges

The roles for AVs on the modal hierarchy

Where to apply vehicle automation for a better transport system



The importance and value associated with automation will need to be considered carefully in due course. Consultees around the world were quick to point out that the provision of a service does not necessarily mean that everyone will be able to access it or use it without support.

Is Level 3 automation enough?

Our interviews uncovered an intriguing interim point in the transition towards full autonomy, once the benefits of SAE Level 3 have been realized for both light and heavy vehicles. At this point, the vehicles are still not able to move when empty, so two key area of benefit remain out of reach: urban and suburban place-making benefits (which are further boosted with reduced private vehicle ownership) and non-driver mobility, including the elderly, infirm and young. Even with higher levels of automation, some of these challenges will remain, as discussed.

Automation: is it really mobility for all?

Many of our interviewees expressed concern about the presumption that fully autonomous operation could provide mobility for everyone. Even with a future transport system that allows anyone to summon a completely driverless vehicle, it will still be the case that, for many people, the 'first metres' and 'last metres', to and from the vehicle, cannot be undertaken without additional support.

Next steps for automated navigation

OEMs (Original Equipment Manufacturers) are recognizing that their partnerships should extend beyond machine learning companies to include niche firms focusing on artificial intelligence. This will allow the automated vehicles to learn to read human gestures, rather than developing a more rigid set of codes to rely upon reading network data and traffic signals.

Another aspect, raised during discussions in Sweden, identifies that a major challenge that lies ahead in relation to all-weather fully autonomous navigation. Snow, heavy rains, sand storms and similar are all prohibitive with current technologies. The technology to 'read' the road surface needs to be completely reliable with everyday changes, for example when wet, in low light, in darkness or with glare.

Automated

Challenges

Self-parking: short-run changes to design and layout

Several of our UK-based discussions identified that today's self-parking capabilities work well for parallel and reverse parking manoeuvres but are not as well advanced for forward parking or herringbone bays, both of which are commonplace in many parts of the world. In order for the technology to take off and gain maximum exposure, flexiblity in use – and therefore popularity – these limitations will need to be overcome. Self parking offers the potential to reduce the width of parking bays and aisles therefore increase density or reduce the space needed for parking.

The impact of automation on infrastructure

It is likely that major site layouts will need to change to accommodate an increased proportion of drop-off and pick-up movements as vehicles become more automated. This is already beginning to happen as shared and MaaS solutions come onstream, and it is likely that it will increase further as 'empty operation' during parking is permitted, for example at transport interchanges and major trip attractors.

Physical impacts of freight platooning

Experts in Australia and New Zealand, based on a long history of heavy vehicles, foresee value in long-distance freight movements when platooned via connected and automated technologies. However, the same experts warn about potential issues and physical network impacts, should single lane freight loadings increase substantially.

Service vehicle automation

There are numerous opportunities for the increased automation of service vehicles, such as street cleaning, refuse collection, delivery and maintenance vehicles. Service patterns could shift, once driverless, to operate at any time of the day or night, subject to consideration of any noise disruption. This opportunity carries a potential challenge as the driver and on-board team typically represent around 50% of the cost of the service, which will lead to role changes. In some cases, roles may evolve and broaden, but it is also possible that retraining may be needed.

Managing congestion and urban sprawl for the short and longer run

One of the most frequently observed challenges for automation in relation to routes and places is congestion. Taking the automation element of New Mobility on its own, the obvious solution is to encourage a shift from non- or partly-automated vehicles towards a fleet that becomes increasingly automated over time. The key risk here is that, without some form of road user pricing, there is no direct incentive to road users to reduce congestion below its current day levels, despite the fact that almost every urban centre in the world reports congestion and poor air quality as a headline issue. In fact, if poorly managed, increased automation could add to congestion, should we reach the point where time spent in automated vehicles is perceived to be productive and low cost.

Potential solutions to these points lie not in automation alone, but also across the other four elements of New Mobility. New business models could be used to ensure that trip-making is priced and incentivized appropriately, together with an encouragement for a shift to electric vehicles to help address air quality concerns.

A combined strategy involving connectivity and a reduced proportion of private vehicle ownership could also play a key role, and would generate substantial new network efficiency. The key, of course, is to properly manage or reallocate any new-found capacity, rather than allowing it to be absorbed.

Regulatory environments encouraging genuine public/private sector collaboration

At the moment, with some notable exceptions (in particular the UK), regulation tends to lag the evolution of new automated technologies. In our view, the most efficient path is to ensure greater public/private sector collaboration and to incentivize much greater sharing of pilot study learning. If national and local governments chooses not to engage, there is a risk that the technologies will be introduced without the benefit of 'wraparound' planning and collective encouragement, potentially risking large costs associated with future network management.

An added advantage of collaborative working will be faster acceptance by the general public, as local authorities in particular are well-placed to bring through highly visible trials to build familiarity. We heard similar themes in the UK, Australia, Canada and the U.S. on this point.

> *"Parking assist is a big deal that is helping to build trust and familiarity."*

Automated

Recommended next steps

It is clear that increasing automation in its own right is progressing well, but with the other four 'pillars' of New Mobility, the combination becomes far more powerful and relevant to today's transport, mobility and place-making challenges. To make the most of this, we recommend the following ideas for consideration in short-term action plans.

For potential developers and land investors, land-owners and similar

- Collaborate with the public sector to understand the appetite for change and the regulatory environment that is likely to apply. Identify how this could best fit with future local regeneration potential.

- For live development and regeneration proposals, build in flexibility by understanding a range of forecast scenarios for varying levels of automation, sharing and connectivity. Options that allow a rapid response to changes in demand for parking, pick-up and drop-off activity are likely to be particularly valuable. Add resilience to major campus-type developments (e.g. airports, universities) by safeguarding parking land and then, under a 'monitor and manage' approach, converting it to alternative uses (landscape, residential, retail, amenity) when trigger points are met.

For strategic and local road network operators

- Consider incentivizing fleet renewal, ideally in tandem with a more responsive and flexible shared mobility or public transit offer to discourage the like-for-like replacement of today's cars with 'cleverer' cars.

- Develop relationships with technology providers and local/national planning authorities to understand next moves and recent learning from recent pilots and trials. Identify potential routes or network sections that might suit specific types of early adopter implementation for automated technologies.

- Prioritise the creation of an automated vehicle strategy, to cover your own fleets, but also to respond to other likely market changes.

- Consider the longer-term potential for a flexible automated fleet service to fill high-cost/low-demand service gaps, or to supplement levels of service on the busiest corridors.

For national and local planning authorities

- Create national/regional/local government guidance, as appropriate, to bring through new policies and potential new business models to include capital and revenue funding.

- Collaborate with others to identify changes to planning policy requirements that will consider the effects of automated vehicles and their impacts on mobility, in the context of all five pillars of change. Know what you want and engage with the relevant providers.

- Consider a 'mobility index' in place of a public transit accessibility rating, recognizing that the gap between public and private transport is likely to narrow.

- Work to build public familiarity, trust and social acceptance, with some specific and sustained messaging around the benefits of shared use.

- Strengthen high-capacity services where land use densification (from parking repurposing) and potential AV-induced congestion increases may drive further transit demand.

- Combat the risk of regional transport planning paralysis by using scenario planning to adapt traditional travel forecasting to an AV future, allowing informed decision making to continue during this transition period.

- Create a city parking redevelopment framework that is responsive to developer interest, considers compatibility of uses and minimizes AV-induced travel demand in congested areas.

Connected

Mobility futures will be much more connected. This is inevitable, as the days of 'dumb vehicles' travelling on 'dumb roads' are already behind us in many countries and cities. Many of us already travel in connected cars or public transport vehicles.

In fact, any driver using either an in-built satnav system or a smartphone to access best route advice is already connected. In most cases, the same applications transmit data in reverse to provide near-live road condition updates to other users, while others collect data for insurance purposes.

New vehicles today are typically sold with SIM-based connectivity, although in some cases this is not activated. Actual levels of day-to-day connectivity vary widely according to vehicle manufacturer and location in the world.

Connectivity today relies largely on cellular communications networks and tends to connect individual vehicles to a bespoke service. Data collected from such devices can be aggregated by service providers and road network operators to create real time understanding of a road network.

There are multiple technologies emerging around the world that are advancing the state-of-the-art in terms of V2I, V2V and V2X solutions. These solutions may be inexpensive, yet the uplift of connectivity that could be achieved through their widespread application is significant.

The next step, which is the subject of various pilots and trials today, will be to better connect the vehicles to each other, to roadside and remote infrastructure, and to other devices to transform the information available to network operators and users.

A connected network allows the vehicles travelling on it to become sophisticated mobile sensors. In return, the same vehicles are able to benefit from information gathered elsewhere.

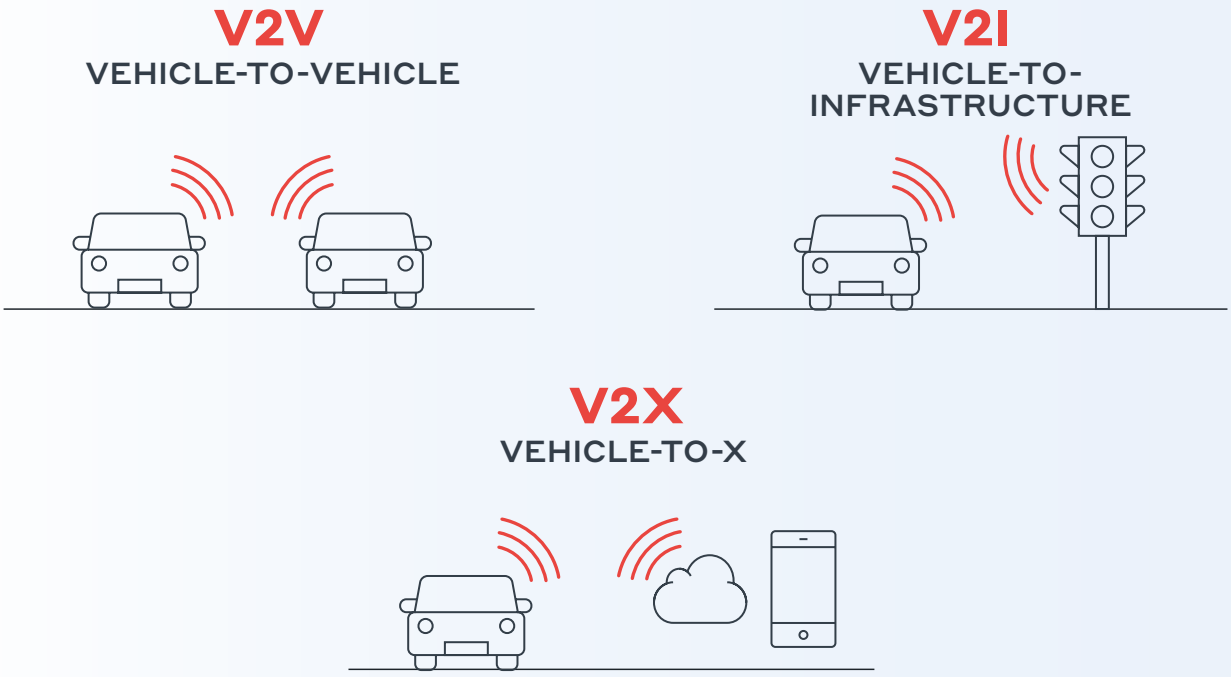
If we are to capitalise on the full benefits of connectivity, there are some critical decisions to be made now. Key questions under consideration include:

- How should we start to optimize for future connectivity in a practical sense? How might we consider road hierarchy, route importance and place?
- How do we make the right "next step" connectivity decisions that will permit our road transport systems, and the vehicles using them, to adapt and remain future-ready?
- How do we ensure access to data gathered by those who can best make use of it? Much of the data gathered is unused and some is not held by those who would find it most useful.
- How can we accelerate multi-modal connectivity to enable truly seamless end-to-end journeys? To improve network efficiency and energy use, can we achieve this in parallel with reduced private vehicle ownership?
- How important is connectivity and communications standards relative to automated technologies? Are they twin-track or discrete requirements?
- How can we fund connectivity investments and upgrades for the long term, while reducing the risk of over-burdening the public purse?

Connected

Opportunities

Basic Types of Vehicle Connectivity



"V2V has an important role for autonomous operation, but V2I is critical, not least to control and reassign traffic. Several traditional auto manufacturers have come to the conclusion that vehicle-based sensors are not sufficient by themselves for AVs."

Connected

Opportunities

Our extensive conversations with relevant professionals around the world and direct involvement with various trials confirm that there is a large and consistent benefit available from a more connected network.

Some respondents are frustrated that take-up in their part of the world seems slower than desirable, although there is a recognition that trials elsewhere will provide a valuable springboard. The precise bundle of connectivity-related benefits will depend on local circumstances, but in overview the potential opportunity includes:

Better network and fleet management

One of the primary benefits to network and fleet operators relates to real time management and operational adjustments, based on data from their own and third party equipment. The potential for moving vehicles to act as 'monitors' of flows, speeds and incidents will, in time, provide a richer picture of network operation than is available today. This could benefit both public and private sector firms, assuming that we find the right mechanisms to make the relevant data available.

Informed personal trip-making

The benefits of better connectivity to support personal trip-making decisions are now proven. In many cities, people are already able to make better informed journey choices across the full range of walk, cycle, public transport and shared/private car through app-based data reflecting near real-time conditions and costs. The acquisition of Waze by Google marked a key turning point in this area, and city-specific open data initiatives, for example in London, continue to generate substantial new activity.

Efficient navigation

There is a broad consensus that near real-time advice to drivers (and, in time, directly to automated vehicles) about optimized route choices is already beneficial. With progress towards Level 4/5 automation, we expect that live driver information about route choice and optimal speed will become a natural input to control automated movement around the network.

Healthier air quality

In the short run, if drivers respond to advice provided to their vehicles, greater connectivity offers the potential for smoother traffic flows and reduced peak time congestion, both contributing to improved air quality before the anticipated shift towards a more electrified fleet. We anticipate particular benefits in congested urban centres and along busy strategic road corridors. These benefits will play out for strategic transport network asset operators, city management organizations and, of course, people living and working in future urban centres.

Improved safety

The latest trials, and our market intelligence, confirm that there is a clear value in providing 'eyes ahead' information to light vehicles and freight about accidents or route issues. We anticipate that data about driver/vehicle behaviour, including steering, braking and indicator use, as well as the use of lights and windshield wipers to indicate weather conditions, could also give instant insight into everyday operations and decisions made by network operators. This data could also be used, in due course, to inform offline decision-making about short-term network safety improvements that would be beneficial until automated vehicle fleets become the norm.

Better road asset maintenance

On-vehicle sensors able to detect road surface quality issues have the potential to gather valuable data for road maintenance. The early detection of road surface failures or other infrastructure degradation would reduce road maintenance costs whilst targeting road surface renewal to locations where it is most needed. This could have wider benefits for road-worker safety and return on investment for network operators.

Enhanced planning

Off-line and historic vehicle movement data can be used now, subject to access, to provide a much richer source of information to support network analysis (e.g. changing journey times or route choices under defined conditions) and forward planning for the likely impacts of homes and jobs growth.

Go-anywhere infotainment

Full internet connectivity for vehicle occupants seems to be an implicit assumption of future vehicle connectivity, stretching well beyond functional connectivity and towards passenger entertainment.

Connected

Challenges

At a glance, it may seem that connectivity advances are progressing well around the world. Vehicle manufacturers and technology firms are making clear progress, and a range of trials are funded and in progress.

The links between progress in connected and automated technologies are increasingly clear and form part of the bigger picture of likely forward change. Does this mean that there is no further need to steer the connectivity agenda at a local, city, regional or national level?

No, not at all.

There are crucial aspects where key decisions and collaboration could take cities, routes and networks towards far more productive futures, with much broader connectivity benefits. It is also critical to bear in mind that the impacts of connectivity will continue to affect all types of mobility and modes, including public transport, heavy freight and logistics, cycling and walking.

The investment dilemma: smart vehicles or smart roads?

To achieve connected networks and places, one or both will need investment, but to what extent and in what balance? Recent intelligence from Australia and the UK, for example, suggests that network operators would be well-served to place much greater value on emerging digital infrastructure 'shadow' networks alongside their physical equivalents.

Trials, including several in the U.S., suggest that on-vehicle equipment is a better solution. In parallel, other research is confirming that it is possible to adapt urban streets and major highways to future mobility needs with relative ease.

Relying on vehicle manufacturers to embed the relevant technologies is not without commercial, legal or technical risk, but without careful engagement it is possible that useful data may continue to be captured and be largely ignored.

Building on this, some government agencies in Australia are now encouraging the deployment of some smart infrastructure at the roadside to improve the likelihood of seeing a wider roll-out of smart vehicle-based technologies.

Data access and equality: winners and losers?

Without careful management of data accessibility, the introduction of increasingly connected vehicles and networks could also create social and economic division. To some extent, this is the nature of a free market, but actions taken now could reduce unnecessary or unintended outcomes.

Today's road network operators essentially provide the same level of baseline driver information to all, primarily through visual cues such as signs and lines. A division is now opening up as newer, better connected vehicles and drivers are increasingly able to access additional information to optimize their journeys.

The same is happening for pedestrians, cyclists and users of public transport across the world, as data about their personal mobility choices, regardless of mode, is being gathered 24/7 by their own smartphones.

All of these changes act against people who have no access, and we can expect this risk of division to grow as the direct benefits of connectivity increase. Road network operators and local authorities will need to engage and decide how to maintain appropriate, equal and affordable levels of service for all. They will also need to find out how best to access and make productive use of data gathered by third party vehicles using their networks.

Similar questions around engagement apply to private firms wishing to make use of the same data for their own commercial purposes.

Avoiding unintended consequences for public transport, cycling and walking.

Building on the emerging findings of various connected city trials, there is a risk that we focus too heavily on vehicle-based connectivity, and in particular cars, at the expense of more sustainable and healthy modes.

Given that city policies continue to push towards greater proportions of trip-making by modes other than the private cars, it is important to recognize the risk that we might make travel in connected vehicles relatively easier, faster and cheaper, all at the expense of other modes. In time, new business and pricing models are likely to hold the key to unlocking and maintaining a healthier balance across the modes.

Connected

Challenges

Would we benefit from agreed standards and interoperable systems?

The easy and conclusive answer here is "yes, we would" because the connectivity challenge is not restricted to transport and mobility. Vehicle sales of all types and sizes, whether for private ownership or into corporate or public transport fleets, are already global. Thousands of suitably equipped vehicles could connect more fully now, all over the world, but the lack of common and widespread infrastructure and agreed standards is restricting the potential benefits.

Presenting a clear and current challenge to national, regional and local governments around the world, there are key questions to be answered around specific communications needs at various scales, such as latency and spatial accuracy, and decisions to be taken around immediate and ongoing funding. The constantly shifting technological landscape means that high level outcome-led requirements at all scales are likely to be more valuable and sustainable than specific technology regulation.

System resilience and coverage – does one size fit all?

As authorities and road network operators become more reliant upon connectivity, its availability and coverage will become more critical, as will the importance of upgrades to software and equipment. It is worth considering that the consequence of disconnection will vary by function: a lack of access to infotainment is an irritation, but down-time in safety-critical connectivity could introduce fatal risks.

This brings through some key questions around system design, capacity, flexibility and resilience, which in turn suggests that solutions will vary and not be generic. In Canada, for example, there is already recognition that the need for connectivity across much of the remote network expanse, where demand from heavy and light vehicles is small, will be highly distinct from its urban centres. This example is at the extremes, but our recent work indicates that variations are likely to exist at local, regional and national levels. Requirements will need careful definition, although we anticipate that there will be common ground between similar places and/or route types.

Data privacy and cyber-security

Already on the public interest agenda, concerns around data privacy and security need to be addressed, not just by the data owners, but also by public authorities from a wider public interest perspective. We expect that data captured by connected vehicles and infrastructure will have increasing value for multiple parties over time. In the vast majority of cases, this will be constructive and valuable, but we cannot ignore the small minority who may have malicious intent. In the mobility sphere, this is sharply defined in terms of the need to protect the everyday safety of network users. In theory, a malicious third party could send a message into a vehicle that causes wrong information to be presented on a satnav or to takes control of steering, acceleration and/or braking functions. Where connectivity is V²I such an attack could send malicious information into a traffic control centre, and potentially beyond.

Given this core concern, it is unlikely that decisions around the appropriate use, protection and security of mobility data could be made locally or in isolation.

This is a challenging area, as new connectivity will generate more and more data that can be put to use for better public and personal decision-making. However, by definition, it will mean that we need to work harder on data security and associated risk management, as well as on generating much greater public acceptance and understanding. Various standards are being developed to protect against cyber security attacks and, as the technology becomes more sophisticated, so will the need for greater levels of security. It may be useful to keep a close watch on parallels in the mobile/cellular phone sector.

> ***"Big data is the biggest technological trend right now. We don't have to collect data on everything, but we do need to develop a data requirements specification to define what is needed, how often and its source."***

Connected

Selected highlights from connected vehicle and infrastructure pilots

Ann Arbor Connected Vehicle Test Environment, United States

- Extensive US pilot, now expanding from 115 V2I lane-kilometres in the city's north-east quadrant to cover the city of Ann Arbor
- 2800 vehicles since 2012, rising to 5000 vehicles by 2018

Michigan pavement marking trial, United States

- Low cost paint and road sign trials
- Designed for future vehicles equipped with infrared and magnetic readers

European C-ITS Corridor, Germany, Netherlands, Austria

- Multi-national collaboration along 1300 kilometre route
- Creating a connected V2X motorway from Rotterdam to Vienna via Frankfurt
- Using wifi and cellular connectivity

Connected Intelligent Transport Environment (CITE) corridor trial, UK

- Advanced connectivity across 70 kilometres of urban and motorway network
- 30 month funded V2X test-bed

A2/M2 Connected Corridor Pilot, UK

- Creating a connected corridor from London to Europe via Dover
- Test-bed for V2V and V2I connectivity

Cross-Europe platooned freight convoys, Belgium, Denmark, Germany, Netherlands, Sweden

- 2016 trial of connected and automated technologies, working together
- Six wifi-connected freight platoons with on-board radar and optical sensors

Melbourne Integrated Multimodal EcoSystem, Australia

- Australia's first large-scale connected vehicle ecosystem
- Involves five government agencies and 20 industry partners

Connected

Recommended next steps

The critical input of the connectivity strand means that we can have confidence in the need for continued investment in the broad connectivity arena. To maximize the overall benefits for places, routes and people, the links between these aspects will be crucial.

The greatest benefits of connectivity will be created by those stakeholders who invest time and effort to think about what information they need and why they need it, when and from whom. In particular, seemingly small decisions made – or not made – about data access and ownership could have significant future consequences for both private and public sector.

In addition to the opportunities and challenges explored above, here are a series of next steps to consider.

For potential developers and land investors, land-owners and similar:

- Engage with the relevant public and local authorities to understand local appetites for innovation and the short/medium term value of new connectivity in existing places or within a future development portfolio.

- Look for existing smart city trials that could benefit development and regeneration proposals where they are relatively easy to 'translocate', ideally straddling both the connectivity and shared mobility streams.

- Seek advice on emerging technologies and consider the specific benefits, for future residents, employees and visitors, as relevant.

For strategic and local road network operators:

- Understand what data is already being collected by vehicles and people already using your networks.

- Start to define how connectivity might vary to suit specific network needs across your unique balance of city, suburban and rural networks, as well as where there are gaps and what might be done to fill them.

- Consider where additional connectivity data would be of greatest value to your network operation, and engage with the relevant stakeholders. This may include data at the interface between national and city networks.

- Engage with others to understand the existing position in terms of connectivity strategies, and the future role of road network operators in your context. Decisions made will affect the need for future investment and revenue streams.

- Understand funding opportunities for pilots, trials and early adoption of connected technologies across the V2V, V2I and V2X landscapes.

- Support and/or seek national government decisions around connectivity and data standards

- Recognize the value of the road infrastructure as a valuable physical asset, on which mobility-focused technology providers depend. If not in place, make links on this basis with key technology providers and start early conversations about collaborative working potential across the automated and connected strands.

For national and local planning authorities

- Understand the potential and appetite to support long-run investment in transport and mobility connectivity, perhaps through new business models.

- Recognize and investigate the opportunity to tap into new sources of data that might support local planning, place-making and operation. These could be beneficial at the day-to-day level or more strategically.

- Encourage links between strategic land-owners and connected technology providers, and look for ways to collaborate for long-run community benefit.

- Support and/or seek national government decisions around connectivity and data standards

Electric

The air quality agenda has reached a tipping point and countries, cities, car manufacturers and fleet operators are now reconsidering vehicle propulsion options. The result is a shift from petrol-fuelled combustion engines towards a focused strategy for the electrification of vehicle fleets.

Today's electric vehicles remain a small proportion of the total, but one that is growing and is well supported by both government and the vehicle manufacturers.

In 2017, multiple governments set tangible policy goals to ban petrol and diesel cars in the 2030-2040 horizon. These decisions are linked to the Paris Climate Agreement, from which the U.S. has since withdrawn (despite commitments by New York City and elsewhere).

Interestingly, there has also been positive momentum in the private sector demonstrated by car manufacturers, presenting their own commitments to manufacture electric vehicles, in some cases only offering electric and hybrid versions of the vehicle fleet.

What is an Electric Vehicle?

An electric vehicle (EV) consists of a powertrain with an electric motor as the primary source of propulsion. In this report, we are considering the shift towards plug-in hybrid electric vehicles (PHEV), battery electric vehicles (BEV), and fuel cell electric vehicles (FCEV) as opposed to (conventional) hybrid electric vehicles (HEVs). The latter tend to provide improved fuel efficiency, but operate in a similar way to 'traditional' vehicles. The former present significant implications about the charging infrastructure needed and how vehicles will be able to access it.

There is a growing recognition of the need to consider electric mobility strategies as part of a broader and fully integrated national electrification agenda. Still, there are a number of more subtle issues for consideration in the context of the wider New Mobility debate:

- Should we subsidizte private ownership of new electric vehicles?
- What about the charging infrastructure? A lack of infrastructure or energy network capacity is a showstopper.
- How can we best maintain the necessary charging infrastructure? Does smart charging and vehicle-to-grid charging affect these investment decisions?
- Where is the best location for the charging infrastructure? Do these locations consider changes in vehicle trip patterns associated with all five aspects of future New Mobility beyond the electric strand itself?
- How can we create a productive energy network that capitalizes on the full potential of electric vehicles? How does this fit within any wider constraints on the energy grid?
- What proportion of the vehicle fleet can be electrified? Is there potential and appetite for retrofitted designs? How can an electric strategy support public transport and freight operational needs?
- How environmentally friendly is electrification of the entire vehicle fleet? Are there alternative means of propulsion that will become more efficient and environmentally friendly in the future?

Electric

Opportunities

Of all five aspects of New Mobility, the immediate benefits of an electric fleet are highly visible and well-recognized across government, the private sector and consumers.

The precise extent of the benefits will depend on the local circumstances, but there is a general consensus that the key opportunities include:

- Healthier air quality, particularly in urban centres, due to reduced local emissions.
- Reduced costs for users, initially only available over shorter journeys due to battery life and vehicle range, but expected to increase as developments in battery technology continue.
- Better vehicle reliability relative to petrol and diesel models, due to a simple mechanical powertrain and a reduction in the number of systems within the vehicle.

New government commitments

Germany

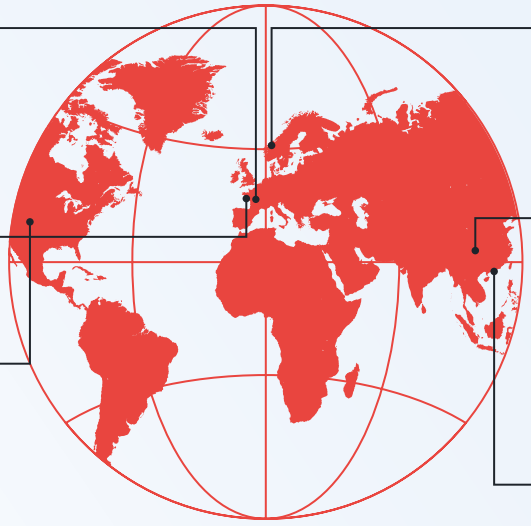
Prime Minister in favour of a ban of new petrol and diesel cars by 2030 or 2040' , but government not yet wiling to set a firm date

France

Ban petrol and diesel cars by 2040

United States

Cities throughout the US are supportive of the Paris climate change initiative.



Norway

Full electric goal by 2025, supported by a 25% tax exemption on electric vehicle purchases

China

Considering joining the initiative on a similar timeline; rapid uptake in electric vehicles and charging points. New cleaner fuel 'Hydrozine' has been developed from corn stockpiles.

Hong Kong

Tesla sales fell after the government slashes the tax break

Private sector commitments

- Tesla: fully electric fleet
- Volvo: exclusively electric and hybrid vehicle manufacture from 2019
- Jaguar Land Rover: exclusively electric and hybrid vehicle manufacture from 2020
- Mercedes: will offer entire fleet as electric and hybrid versions by 2022
- Volkswagen: will offer entire fleet as electric and hybrid versions by 2030
- Uber: will offer a fully hybrid and electric fleet in London by the end of 2019, assuming that current licensing discussions can be resolved
- TEO Taxi Montreal, Canada: all electric taxi fleet
- Taxi Electric, Schiphol Airport: all electric taxi fleet

Electric

Challenges

The conversion to an all-electric fleet could, subject to the charging infrastructure being in place, continue ahead of many other aspects of New Mobility. Our interviews around the world confirm that the challenges in this area are distinct but well understood.

That said, there are clear opportunities to link fleet electrification with other aspects of New Mobility change, which could increase the overall benefits further.

Reliable, available charging infrastructure dictates the local uptake of electric vehicles

Regulation of the technology (both charging points and visibility of pricing) is therefore key to widespread distribution. Without sufficient density of charge points, drivers may suffer range anxiety due to limited battery life.

In planning terms, this raises an interesting angle around the location of charge points. Poorly planned infrastructure could lead to an increase in distance travelled on the network, therefore adding to congestion and delay.

We heard from several stakeholders that the utilities industries should advise on the best locations for high capacity charging stations on the energy grid. To maximize efficiency, there is also a need to understand the best model for vehicle-to-grid charging and energy storage.

Models

Ownership models for electric vehicles are now centred on sales or leases for private use, although there is some evidence of taxi firms encouraging an all-electric fleet.

Today, many governments offer tax incentives for new vehicle purchase/hire, and also for charging costs. It is not clear what will happen when these incentives expire.

Our discussions revealed a general consensus for movement towards a combined electric and shared mobility strategy, possibly incorporating aspects of the automated and connected streams due to the natural evolution of on-board vehicle technologies over time.

Short term regulation changes to reduce adoption barriers

The regulation ecosystem needs to adapt and reduce barriers to EV fleet adoption.

As one example, the TEO taxi in Montreal needed permission from the province to delink the taxi registration between the driver and vehicle. This allowed a single taxi permit to be registered to a particular driver who used several vehicles, thereby allowing them to cycle between fully charged vehicles.

Large fleet operators, including freight haulers, local authority services, public transport and private hire fleets, have an major opportunity to change the electric vehicle mix significantly within a very short timescale. This relies on them having confidence that the vehicles and supporting regulation will meet their everyday operational requirements.

Vehicle charging

Electric vehicle charging metadata needs to be factored into the business model and pricing mechanisms, as and when these start to emerge around the world.

There is a challenge ahead to ensure that users pay to reflect the impact of their network use, for example according to the real-time capacity of the energy grid and the 'green-ness' of the energy supplied.

Longer run shift to inductive charging

Further into the future, a shared, electric and increasingly automated network would become more viable if inductive charging technologies enabled the vehicles to restore battery power while moving.

Inductive charging could be particularly beneficial on heavily used future public transit corridors into and across inner city locations.

Fuels beyond electric?

There are other fuel options and distribution methods that could challenge the economic and environmental credentials of an electric mobility strategy.

Today's ambitious electric vehicle production depends on the global supply of rare battery minerals (primarily lithium and cobalt). China's initiative to use E10 biofuel, containing 10 percent ethanol, is headed towards a planned 2020 roll-out across the country.

Electric

Recommended next steps

There is little doubt that electric vehicles are gaining public confidence and popularity. It is possible that other new propulsion technologies will emerge, but at this point the shift to electric has buy-in from both the public and private sector.

The wider benefit for places and congested routes relates to air quality, and this adds a valuable set of benefits to the parallel shifts towards a more connected, automated and shared fleet.

Specific local next steps will vary according to circumstances, but some ideas that could help to get the most from these evolutionary changes are set out below from the perspective of key stakeholders:

For potential developers and land investors, land-owners and similar:

- Recognizing the strong uptake in practice, target electric charging infrastructure provision beyond evolving policy levels. Consider a range of charging types to accommodate needs of shared, freight and personal vehicles for short-term and long-term charging demands.

- As a very simple step, prioritize the convenient location of electric vehicle parking bays over traditional parking bays.

- Explore opportunities to work with local transport and/or planning authorities to establish sites for a shared electric fleet that could transform mobility within major regeneration proposals, noting that their use and cost should align with the need to encourage walking and cycling, and avoid competition with public transport.

- Engage, possibly through planning authorities, with energy sector partners to better understand and prioritize the optimum locations for new development and regeneration in relation to renewable and sustainable energy supplies. Explore on-site renewable energy generation opportunities.

- Consider medium term vehicle to grid opportunities on local energy network.

For strategic and local road network operators:

- Consider ways to encourage the use of electric vehicles on the network, such as information about available charge points. There may be links with the connectivity stream here, similar to cycle hire docking point availability apps.

- Understand the barriers to uptake and, if appropriate, consider the appetite for introducing or facilitating a fleet of electric vehicles for shared use (similar to a current car club model) to complement other modes.

For energy suppliers:

- Seek collaboration along the supply chain to advise on what constitutes a clean energy strategy by time, location and level of vehicle charging.

- Explore opportunities for vehicle to grid charging and highlight the benefits to consumers from new revenue streams associated with energy being put back into the grid.

For national and local planning authorities

- Tie regional and local electric mobility strategies to a national electrification agenda, similar to Germany's 'Energywende'.

- Consider new targets for ultra low emission zones in specific locations, especially in congested urban locations.

- Support developers and fleet operators in bringing through creative electric vehicle solutions, perhaps in combination with other aspects of New Mobility.

- Encourage electrification for authority -owned/leased fleet vehicles unless limited by operational requirements.

- Establish comprehensive policy standards for electric charging provision by location and land use, without incentivizing inner city private car ownership.

- Expand the availability of rapid charging stations across the on-street network and review parking policies to support the use of shared electric vehicles.

- Explore policy/pricing measures to encourage smart charging and new business models for the installation of new charging infrastructure.

Shared

Shared mobility is a well-established concept that has accelerated and diversified over recent years, mainly due to the rapid changes offered by the availability of digital information and app-based tools. The basic premise is that sharing can create much more efficient patterns of network use at costs that are less than private car ownership.

In the context of the transition to New Mobility, a greater degree of shared use also brings forward the potential for significant place-making benefits for our cities and rural centres. This will be maximized if the shared use is put together in a collaborative way to create a single system rather than encouraging competition.

What is Shared mobility?

"Shared mobility" is used to describe any transportation service that is shared by users. It includes all forms of public transit such as buses, metro and trains, all of which are – by definition – shared by users, but also extends to much smaller vehicles and individual modes of transport.

The sharing can take place simultaneously using the same vehicle (for example, ride-sharing and courier network services offering on-demand logistics) or consecutively (for example, bike sharing and car clubs). Taxi and quasi-taxi (sometimes known as 'ride-sourcing') services are part of the shared mobility picture, and an area where there has been substantial recent change due to the emergence of Uber, Lyft and others.

The key is that all users are able to access suitable vehicles on a short-term basis, as-needed. None of them are owned by the users and access is typically charged on a pay-as-you-go or subscription basis.

Where does Mobility as a Service or MaaS fit in? MaaS formalizes the shared mobility offer by commercializing it for either personal travel or the shipment of goods. A particular trip can take advantage of one or more of the above shared mobility options to produce a seamless journey experience. A wide range of on-demand services are on offer, across the range shown above, with the exact options dependent on location, origin and destination. Trips are usually planned and booked via digital apps and similar, with costs that are either pay-as-you-go or bundled.

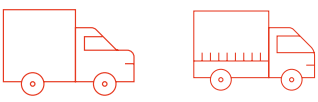
MaaS models work best where there is already a wide range of transport modes, where data access is relatively open, where operators offer contactless sales or e-ticketing, and where they are open to third parties selling their services.

Traditional public transportation services, such as buses and trains

Vanpools, carpools, shuttles, transport network companies (TNCs) and rideshare pools

Carsharing, bikesharing, scooter sharing in all its forms

Flexible goods movement and courier network services (CNS)



Shared

Definition

In many modern societies, learning to drive is often a rite of passage, as is car ownership. Nevertheless, over recent years, the high cost of living in urban centres, new public interest in sustainable lifestyles and the emergence of smartphone-based mobility apps have supported a proliferation of new shared mobility options. Until now, these have tended to be focus on urban areas where demand and returns are likely to be greater.

Smartphone availability has transformed the commercial marketplace for personal shared mobility, enabling the emergence of Uber, Gett, Lyft and many similar firms offering pay-as-you-go car-based trips on demand for individuals or shared groups.

Contactless payment cards continue to transform everyday access to public transit systems, bypassing the need for specialist ticketing or travelcard systems.

In parallel, bike sharing schemes have seen a rapid take-off, growing from an initial scheme in Amsterdam in 1965 to 75 schemes in 2005, and now to 750+ separate schemes around the world.

We also anticipate that car clubs and peer-to-peer models now being promoted by many car manufacturers, including fractional vehicle ownership, will continue to grow in popularity from now.

The operating models across the modes and companies vary, but they all share a common reliance on data and analytics to manage both vehicles and user booking requests.

Looking ahead, the potential for shared mobility is large, and there is a great deal of flexibility in the concept to suit a wider range of situations and locations that have not yet been fully explored.

We foresee that the outcome of this will be a continued blurring of the boundaries between long-established public transit and new shared forms of private hire, minibus and carpooling. These present challenges for transport network regulators and operators in the context of everyday network management, but also opportunities for better collaboration, for example to infill routes that have traditionally been 'difficult' to support in a commercial sense until now.

The ongoing transition is supported by better service information to help users understand the range of shared mobility options on offer. This is being achieved by popular journey planner applications ranging from Citymapper in London to the Digital Matatus project that has been used to map Nairobi's informal minibus sector.

Meanwhile, the freight industry is responding to increased volumes of households and businesses ordering items online with an expectation of fast delivery. Shared mobility in this sector is focused on reducing 'empty running' through freight brokerage platforms, via shared and consolidated deliveries and through a more efficient means of last-mile logistics.

Key questions that need resolution over the short term include:

- How can we better use data to inform new opportunities for shared mobility services? How can the data generated by an increasingly connected transport network be joined into existing app platforms for shared mobility?
- How do we best accommodate new shared mobility services in our existing streets, developments and infrastructure?
- What are the opportunities for shared mobility in the freight and logistics sector?
- Does the shared mobility 'offer' vary between cities, suburbs, towns and rural centres? How can we create powerful collaboration between service operators, transport network operators and local authorities to generate the best solutions?
- How can we improve incentives to adopt shared mobility while improving equitable social access for all?
- How can we start to work towards the longer run place-making benefits on offer from shared mobility, in the context of an increasingly connected and automated network?

Shared

Opportunities

The strongest consensus of our research engagement from both public and private sector emerged around our shared mobility investigation.

This is probably because the concept is relatively well understood and visible in many locations around the world. An overview of the key opportunities offered by shared mobility is summarized below.

Increased network efficiency

There is consensus that increased use of shared mobility would allow us to move more people and goods, more efficiently and effectively, using fewer vehicles and without the need for extra infrastructure capacity. This uplift is likely to be maximized where it is possible to provide shared first and last mile services to link in with the highest capacity transit options. Smaller vehicles have the potential to play a key role in infilling radial routes in particular, especially where there is no mass transit equivalent.

With freight, empty running is reduced as digital platforms efficiently match goods movements with available load capacity on the network. This helps operators in terms of their commercial returns but also aids network operators by reducing the numbers of heavy and light goods vehicles on local and strategic networks.

New place-making potential and reduced need for parking

The unique potential offered by shared mobility relates to new place-making potential.

Regardless of currency, there are millions if not billions to be made in the hearts of the largest cities around the world, where land values and the potential for uplift tends to be the greatest. 10–15% of total urban land area is typically used for parking (both on and off street), and if we can move towards a New Mobility solution that relies on shared mobility then some or all can be reallocated for other uses. In smaller centres and more rural areas, the land value uplift will be smaller but there is still potential to create better, more liveable places.

In combination with the other strands of New Mobility, this creates a powerful force for productive change, and could enable the creation of substantial new homes, jobs and leisure space. This place-making benefit is only activated if the sharing strand remains a key part of the New Mobility bundle, and is managed collaboratively between planners, network operators and service providers.

Reaffirm a fair modal hierarchy

Well-managed shared mobility will create new opportunities to strengthen a sustainable modal hierarchy, with active modes – pedestrians and cyclists – at the top. This, in turn, will help to create and maintain better places and routes for all.

The parallel challenge is to ensure that any disruption affects private car trips and does not compete with active modes, successful high capacity bus or fixed infrastructure such as rail, light rail and metro schemes. Much of this will be driven by perceived pricing and the journey experienced across the different transport mode options for a specific route.

Access to services

Planned and delivered alongside new development, shared mobility strategies will provide a more equitable, improved level of access to jobs and other public services. This will benefit new residents and employees, but also those living and working in the surrounding areas, either directly or indirectly, by relieving pressure on congested services.

"Mobility Orientated Development"

With the New Mobility model, we see the potential for a new 'mobility oriented development' strategy, with shared mobility at the heart of plans to facilitate increased densities and development locations that would previously have been unviable or politically unacceptable. This would require a new index for measuring mobility that takes into account the full range of new options for movement, incorporated into planning policy.

The concept of 'transit oriented development' (TOD) and close variants has existed around the world for some time. A TOD strategy has the goal of promoting sustainable development and growth around the most accessible points on the transport networks. This has typically been centred around single major rail interchange stations.

OEMs show a willingness to learn

Our research and direct experience around the world confirms that many of the firms at the forefront of the shared mobility transition are already enhancing their understanding of transport planning and policy as it relates to New Mobility goals. Some manufacturers, for example, are learning from their car clubs experience with a view to applying their new knowledge to shared (and increasingly connected and automated) vehicles in the future.

Shared

Challenges

New platforms enabling shared mobility are already perceived by many as a quick win, offering benefits without significant investment in new infrastructure.

Greater collaboration between public authorities and private sector providers

One of the core challenges is that these platforms are operated by private sector firms in parallel, but not in close collaboration with, public sector authorities who are responsible for the everyday performance of road and rail networks.

There is also a great deal of confusion about MaaS operation in practice. Commercial returns tend to be held by the private sector operator, while local government authorities are not putting their weight behind greater use, even where it could benefit their own investment plans. Policies are emerging, and engagement to create win/win operating models are beginning to form. However, truly collaborative work for mutual benefit, across both supply and demand sides, remains rare.

To achieve this, new business models and cooperation between entities that have historically competed for customers will be needed. For example, in the U.S., shared mobility largely operates at a state and/or local level, which can make expansion and innovation complicated. It is likely that stronger guidance at federal or national levels to generate greater consistency will be needed, but will be a challenge.

Balancing transport policy and innovation: foster innovation or seek greater regulatory powers?

Shared models and digital platform enabled mobility services are highly adaptable to different cities and can be implemented quickly. This is proven by the rapid uptake in shared solutions for car-based and bike-based solutions across multiple cities around the world.

The key question for city authorities is whether to welcome innovation or to regulate against it to protect and maintain their control of transport operations. In reality, the challenge is to balance the two.

Building confidence in shared mobility solutions, rather than hard infrastructure

The mitigation of development impacts has tended to be based on physical infrastructure elements including parking, public transit and road network upgrades. New shared mobility models are more virtual and fluid in nature, operating on existing networks rather than providing any hard infrastructure in themselves. There is a significant challenge to build confidence that shared mobility services can be secured in perpetuity to support existing and new development.

Buses and shared mobility

Our research confirms that some bus services (including those subsidized by government funding) are already suffering significant competition from shared mobility choices. The challenge – and the opportunity – is for the bus operators to decide how best to engage with the transition to an increasingly shared mobility model. Demand for mass movement along key corridors shows no sign of reducing, but operating models involving fixed routes and fares risk losing appeal.

Some bus operators are starting to respond to this challenge, with plans to provide high quality demand responsive transit in rural areas and small towns, perhaps using a wider range of vehicle sizes and perhaps still with government subsidy. In urban and suburban areas, current experiments to provide fixed-route, flexible frequency services that infill other routes are being watched with interest.

A social backlash against sharing?

We tend to underestimate the level of attachment of some people to their existing (and future) cars at our peril. It seems that there are generational changes in play, and we can expect that these will continue to shift over time. But the issue will resolve itself. With real estate and property prices continuing to rise, cars may become a stronger status symbol than in the past.

Policy-makers and service providers have a challenge ahead to convince communities, perhaps gradually, of the benefits of shared mobility and incentivize the most efficient outcomes at a local level.

> *"With regard to cities and AVs, we have designed away from the private car for the last 20 years... the next step should be no different."*

Shared

Recent selected highlights for shared mobility

As shared mobility options are already operational across the world, a small selection of interesting and leading-edge examples are included below:

Lyft & Amtrak collaboration, US

— Lyft first/last mile option is offered as an integrated option when purchasing an Amtrak ticket

San Francisco, US

— At Parcmerced, car-free residents are credited with $100/month to use with Uber, Clipper and Getaround
— Half of city-wide Uber trips are UberPOOL. Half of Lyft trips are Lyft Line

Evolution of Citymapper, London

— Working with Transport for London and taking advantage of its open data approach
— Filling gaps in public transit
— Live trials of a 'pop-up' circular bus route in central London completed in 2017

TimoCom freight transport, Europe

— Connects road haulers, freight forwarders and manufacturers
— Carries more than 500m tons of freight each year
— Typically has 750,000 live 'offers' of vehicle space to transport freight

Moda Living & Uber partnership, UK-wide

— Property developer Moda Living offers car-free living
— Residents receive up to £100/month to use on Uber services

Uber in Tangocho and Nakatonbetsu, Japan

— On-demand rural town service to give access to key services for the elderly
— Uber is licensed to operate in places too small to support public transport

Beeline SG, Singapore

— Offers an open, cloud-based smart mobility platform for shuttle buses
— Commuters are empowered to 'crowd-start' and suggest new routes

oBike, Sydney & Melbourne, Australia

— Shared bike scheme just launched
— Push-back from councils who consider the shared bikes as clutter and nuisance

Shared

Recommended next steps

A good shared mobility strategy has the potential to improve network efficiency, enable better place-making and free up space for alternative uses, while reducing over-reliance on private cars.

The greatest benefits can be realized when the developers and strategic land investors embrace shared mobility as a key objective, and where service operators bring new collaborative innovations to market that provide a return to both the provider and the public sector, together with an improved service for all user groups.

In the wider New Mobility context, shared mobility strategies are likely to work best where:

- There is recognition that ***unique solutions will be needed to suit the local context***, including demographic, cultural and regulatory aspects. The existing urban fabric of a city will play a part in determining its suitability for different shared solutions, which will affect uptake.

- Consideration is given to ***incentives for walking and cycling***, rather than using shared mobility as a push towards vehicle-based shared journeys. This will promote healthy mobility but also much more efficient solutions.

- ***Public and private sector collaboration*** is strongest, to address accessibility and operational efficiency issues. The most efficient solutions will enable data sharing for a wide range of purposes, crossing ownership boundaries and perhaps reflecting reciprocal arrangements. Google's Waze, for example, contains data that can support car-pooling, and cities may wish to consider the extent to which they could support this effort rather than funding alternatives.

A short series of possible next steps for specific stakeholder groups is suggested below but is not intended to be exhaustive:

For potential developers and land investors, land-owners and similar:

- Consider opportunities for collaboration in providing shared mobility 'car-free' living from the outset.

- Challenge policy which dictates parking minimums and ensure developments are supported by a strong sustainable suite of travel options.

- Recognize the potential impact of a reduction in private car ownership on development design, for example in relation to parking design, and its potential adaptation for future alternative uses.

For strategic and local road network operators:

- Engage more closely with shared mobility operators to understand the potential for more collaborative service definition.

- Analyze options for greater network efficiency through greater sharing and more efficient vehicle occupancy, and build this into network investment plans as appropriate.

- Act as a convener, perhaps with the planning authority, between shared mobility service providers and public transport operators, to create efficient solutions that work for all.

Shared

Recommended next steps

For public transport operators and funders:

- Understand loss-making routes or specific low-patronage services and work to create (or partner to include) a wider range of better quality service options. This may be particularly applicable in a rural or first mile / last mile context.

- Recognize the value of existing data collected on route operation and performance, and seek to share this on open platforms to allow others to promote and understand the services.

- Form partnerships with shared mobility providers and operators of MaaS digital platforms to build better analytical shared datasets that can inform service quality reviews and future service amendments.

For national and local planning authorities:

- Incentivize collaboration between public and private sector operators in the shared mobility space, and seek consensus around common objectives that benefit each

- Consider how 'Mobility Orientated Development' might be measured against planning and mobility objectives, explicitly enabling shared mobility to drive development planning processes and support uplifts in development densities.

- Linked to this, investigate the creation of a New Mobility index to measure accessibility levels (considering access to public transport, electric charging, multiple shared mobility options, time mapping and walk/cycle options)

- Develop policy and quality targets for the range of sharing mobility models. These could relate to reliability, cleanliness, affordability service indicators applied to carsharing (car clubs, fractional ownership), ridesharing, public transport and bikesharing in order to achieve specific modal shares and reduction in private car usage.

- Consider policy incentives for shared mobility options such as preferential parking/drop-off locations, high occupancy lanes or signal prioritization.

For shared mobility service operators:

- Take the next steps around collaboration with key stakeholders at national, regional and local levels (as appropriate) to better embed the service offer as a key part of the wider whole.

- Understand the potential for demand and revenue growth through the above process, and the quid pro quo sharing of a proportion of these returns with network owners and operators.

- Better understand the needs of the public sector, in particular the generation of wider non-commercial benefits, to support the growth of commercial shared mobility services across a greater proportion of the population.

Business Models and Revenues

The chosen business model, in particular its reach, its incentives, its influence and its 'teeth', acts as a fundamental enabler for the whole of the New Mobility concept. Done well, this enabler could take separate elements of change related to automated, connected, electric and shared mobility and bind them together so they are mutually reinforcing.

Some specific aspects of New Mobility already have their own commercial business models, but these tend to operate in relative isolation between private businesses and consumers. Decisions about vehicle purchases, season ticket renewal or membership of a car club, to take just three examples, are entirely separate.

In most countries, car users are unaware of the full economic and social cost of their decision to drive, as most of the costs are sunk (vehicle purchase, insurance, road tax and similar) before deciding to make a particular trip.

Now and increasingly in future, new forms of data will give us the potential to use much more refined pricing mechanisms to manage network behaviour, assure fair access and achieve the transport vision we want. These can then be fine-tuned in real-time to manage network efficiency, whilst generating revenues for improved transport infrastructure, future service provision and social access.

In terms of returns, greater collaboration between the public and private sectors should include agreements to define and ring-fence returns to network operators and maintainers, fleet operators and similar.

Key questions that need resolution over the short term include:

- How can pricing be used to encourage an optimal transition?
- How can trip pricing be used to avoid increasingly automated mobility leading to extra demand and/or distance travelled?
- Is it possible to build a business model where the users' perceived cost of travel is less than today?
- Can multi-modal trip pricing be integrated so that users make the 'right' decisions for system-wide efficiency, incentivizing the best decisions and behaviours for wider public interest?
- How can existing shared mobility business models be adjusted so they align better and help to fund local plans for new and maintained infrastructure, in particular roads?
- What regulatory controls will be needed to manage New Mobility business models, and at what level (national, regional or local)?
- How can regulation be best used to achieve specific objectives such as cross service subsidies, special pricing strategies or access for all?

Business Models and Revenues

Current trends

Regulation are needed in the new business models, pricing and regulation in the context of the four core aspects of New Mobility.

Fuel taxes as a base for infrastructure funding are unsustainable

Many countries are experiencing decreases in revenue streams because of the increased fuel efficiency of vehicles.

Since the latter is very desirable for other objectives, fuel taxes as a funding base are unsustainable for the future. As alternatives, carbon taxes and distance-based charging are increasingly under consideration in different regions around the world. Our interviews and research show that appetites for wider road pricing, in particular, are growing in many economies around the world.

Electric vehicles are gaining market share

Adding to the fuel tax challenge, the rise of electric vehicles, admittedly from a very low base, is expected to create a larger tax revenue deficit in time.

To counteract the current high cost of vehicle purchase, countries and cities are implementing a range of policies to increase the uptake of electric vehicles. These include purchase subsidies, free charging, free parking and use of bus lanes.

These are needed to counteract future changes in fuel prices and the falling price of second hand non-electric cars, but in time we expect to see moves that reconsider vehicle ownership models and go a step further by encouraging people to give up private ownership altogether.

Car manufacturers are already exploring new pricing models

The private sector is already moving towards new ownership models.

In a move away from a flat fee ownership model (i.e. selling a car), most manufacturers now offer leasing, fractional ownership and pay-per-use pricing, each of which marks a move towards selling mobility rather than a physical vehicle. The latest moves are similar to a software technology service applied to hardware, with Tesla, for example, offering remote upgrades to access new functionality and performance, via software updates, for a fee.

Air quality problems and global warming require a policy-led reduction in transport-based emissions

Countries and cities are looking at diesel and petrol car bans starting between 2030 and 2040.

Several European cities already have environmental zones around city centres for heavy vehicles, cars or both.

Any new pricing and regulation models should take the opportunity to act against emissions, the prevalence of polluting vehicles and overall levels of congestion.

Urbanization is already putting increased pressure on infrastructure capacity

Different countries already apply relatively blunt methods of regulation and taxation to reduce the use of privately owned cars.

License plate based bans in China and South America are an example, as are additional purchase taxes applied to vehicles in Denmark and The Netherlands. Singapore and Beijing restrict the number of vehicles that can be registered, and cities such as Oslo and Barcelona are working on banning cars from specific areas.

Many cities still permit development on the presumption of minimum parking standards

This policy was designed to ensure that sufficient parking would be available around new urban developments to avoid wider impacts on existing residents.

To discourage car ownership, many cities are now seeking reductions in typical development-related parking provisions or switching to a maximum parking provision model.

Parking revenues underpin local urban investment

Pulling against change, many local authorities around the world are heavily reliant on income generated by parking and enforcement charges.

The degree of ring-fencing varies but any onward change in the business model would need to demonstrate how it would replace this revenue stream.

Business Models and Revenues

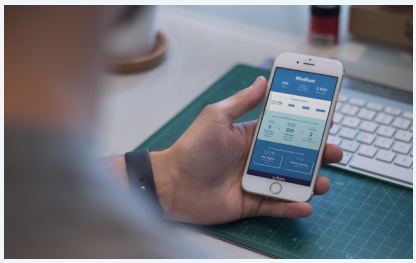
Mobility pricing examples

1 British Columbia's Carbon Tax, Canada

Introduced in 2008, a revenue neutral carbon tax covers around 70% of British Columbia's greenhouse gas emissions, including transport. It has reduced total emissions by 5-15%.

2 London Congestion Charge

The Draft Mayor's Transport Strategy references a pay-per-mile mechanism. Low Emission Zones could be suitable test beds for new road pricing.



3 Whim, Helsinki, Finland

The Whim platform, a MaaS Global Pilot scheme, offers bundled mobility for a pay-as-you-go price or monthly fee.

4 Melbourne CityLink & 407 Express Tollway in Toronto

Locations of vehicles can be identified and movement profiles built up. Few people take up the anonymity option offered.

5 Singapore's Electronic Road Pricing System

The first and most sophisticated congestion charging system in the world with the ability to vary prices based on traffic conditions and by vehicle type, time and location.

Business Models and Revenues

Looking Ahead

We see potential in particular for new business models that wrap up all four aspects of New Mobility – automated, connected, electric and shared – to encourage a purposeful shift towards the best possible outcomes for our places and people over the long-run.

The single enabler across all of these areas is the fast-expanding availability of data, which is the key to a fair and accessible future mobility system for all. It is unlikely that a generic business model will work, as needs and priorities will vary between countries, and at the level of individual cities and regions, as will costs and benefits.

It seems possible that some of the more advanced pricing models already on the market, in particular those in the shared mobility space, could adapt to cover a wider remit with a wider range of stakeholders in both the public and private sector.

On this basis, we offer a range of guiding principles for the creation of a New Mobility business model:

- To create a fair, sustainable and politically acceptable operating model that is self-maintaining and makes the most of all four aspects of New Mobility, recognizing their unique individual contributions to desirable wider outcomes.

- To create the right conditions for collaboration between key stakeholders at a range of levels, to maximize public participation, preserve existing revenue streams for the public sector (e.g. parking income) and commercial returns for all partners.

- To guard against unnecessary increases in vehicle kilometres and congestion, via a mix of planning policy to prevent sprawl coupled with dynamic pricing that builds in incentives for shared mobility and travel at less busy times. Surcharges should apply for highly inefficient or, in time with automation, empty running.

- To provide an integrated multi-modal system for the efficient completion of end-to-end journeys, where pricing reflects the options chosen in an intuitive way and where unnecessary competition is minimized. It should be possible to create a model where trip costs reflect not just distance and speed, but also the range of alternatives on offer.

- To persuade against personal private vehicle ownership via visible incentives, given that it is unlikely that government will legislate directly in this area. The business model should reflect a relatively high cost of entry and ongoing participation costs for those choosing to use their own vehicles over the long term, once alternatives are in place and proven.

- To plan for and fund new development, across the residential, commercial and leisure sectors, that underpins New Mobility principles in terms of both physical layout, but also everyday operation from day one. Find ways to engage both long-term strategic land investors and those with shorter-term interests.

- To give clarity to the distribution of public sector income for wider benefit, for example to enable access for all, to fund public realm improvements or to invest in transport infrastructure and service upgrades. Coupled with individual experiences of mobility, this will be a core element that influences public perceptions and long-run popularity.

- To consider differential application and costs according to location, recognizing that options in urban, suburban and rural areas will be dramatically different and that mobility needs will vary.

- To incentivize electrification (or other future sources of energy) while reflecting cost variability. Factors such as affordability of electricity, environmental cleanliness of local electricity generation and distribution challenges (particularly in rural and remote areas such as the Canadian territories and the Australian outback) will each have an influence.

- To start to set New Mobility targets and carry out scenario tests, from now, for a range of outcomes reflecting different future values of mobility and time, and then to keep a close watch on the actual influencers of this value in the context of New Mobility change.

- To begin now.

Conclusion

Everyone reading this will have a personal and professional stake in creating a purposeful transition to the best possible New Mobility outcomes. What "best" looks like will, of course, vary according to your specific interests and goals, so individual plans of action are needed for the next steps.

In closing, we summarize the core benefits brought by each strand of New Mobility and then offer five simple steps by which you could define your unique pathway, starting now.

The need for all five New Mobility strands

The transition to New Mobility is underway. Some countries and cities are ahead of others and appetites vary, but onward change against the four key aspects – automated, connected, shared and electric – is inevitable. The fifth element, business models, acts as the enabler or "glue" between the other four.

We are convinced that all five aspects are essential, as they each add distinct value to the potential on offer from New Mobility. Without any one element, we are unlikely to maximize the benefits of the transition.

- The ***automated*** and ***connected*** strands, together, are the two pieces that will ***transform future network efficiency, safety and access to mobility***. They will allow the creation of a ***single data-led multi-modal transport system***. Without the other New Mobility strands, however, they are unlikely to reduce demand or associated congestion, nor can they be expected to create substantial improvements in air quality or the quality of our places.

- The ***electric*** strand (or alternative fuels yet to emerge) is the primary New Mobility element that holds the ***key to substantially cleaner air*** for our communities in the long-run.

- The ***sharing*** strand holds the ***transformational power around future place-making across our cities, towns and rural centres***. This is because there could be far fewer vehicles parked, compared with today. This is only possible if we can encourage a substantial move away from private vehicle ownership by offering a high quality, flexible and affordable mobility service that works as well as (or better than) today's car ownership and lease models.

- Finally, the ***business model*** strand, linked closely with pricing, will unlock the shift from today's seemingly eclectic selection of pilots and operating models across the automated, connected and electric strands to a truly sustainable New Mobility 'bundle' for the long-run. The shared mobility strand already has various business models in operation, but we see that these would evolve and become more integrated with the wider New Mobility concept. In the interests of simplicity but also to maximize returns, we will want to move towards ***integrated system operation*** where the cost of trip-making are clear and understandable, and where levels of use are maximized but in a way that ***manages congestion*** and ***encourages efficiency***.

  New Mobility business models also hold the key to ***capturing commercial returns for both private sector participants*** (whose returns should increase through collaboration) ***and public sector bodies*** who are responsible for maintaining and investing in our multi-modal transport networks over time. It is also the core piece that will steer public engagement and opinion, building popularity as long as the quality of service is good and user costs are perceived to be fair and affordable.

Unfortunately there is no easily defined single "bundle" that will work everywhere. It will be the local application, and onward growth, of specific yet tailored solutions that will bring genuine benefit to our places and routes of the future. Some players have the power to generate widespread multi-national change, while others hold much more local influence as enablers and agents of change on the ground. Each needs the other if they want to maximize popularity, commercial returns and wider benefits.

Conclusion

Five steps to New Mobility success

Five steps

The following five steps could be taken by any organization to make the best progress towards New Mobility.

Step 1

Map your 'now' against the five elements of New Mobility

Using the chapters of this publication as a guide, take time to map your current position against each of the five New Mobility elements, relative to others. In doing this, consider their relevance and importance, your current and intended level of engagement and the urgency for any change.

Some organizations will have an interest in one or two specific strands of New Mobility as a priority, particularly those bringing a specific technological solution to market. Others, particularly the planning and transport authorities, are more likely to find that a balanced approach across all five strands, with an eye on wider social benefit as well as direct commercial returns, is most likely to generate the greatest value.

Step 2

Understand appetites for change

The key choice that is open to all of us is the extent to which we each choose to engage and lead change from now. Appetites for New Mobility and the power to accelerate or hold back change vary widely. This range is particularly visible in the public sector, at both national and local scales, from 'we'll wait and see' to 'we want to be at the front". We would suggest that a simple exercise to consider your own – and relevant others' – appetite(s) for change could be highly valuable.

There may be nothing wrong with waiting on some aspects of New Mobility, although the risks of doing nothing when others are increasingly active should be considered carefully.

It is worth bearing in mind that we do not need to do everything, everywhere, and that given the range of live operations, pilots and trials already in play, it should be entirely possible to adapt learning from one place to another.

As a final point, being keen to engage with New Mobility does not mean that everything has to be decided and mapped out now. There will be many unknowns, and much more change ahead, so the first step is to identify what decisions are really needed now and which can wait.

Conclusion

Five steps to New Mobility success

Step 3

Collaborate, consciously

Throughout this White Paper, we have homed in on better collaboration as a major opportunity.

We are absolutely clear that collaboration is the key to maximizing returns and generating faster change towards productive New Mobility outcomes.

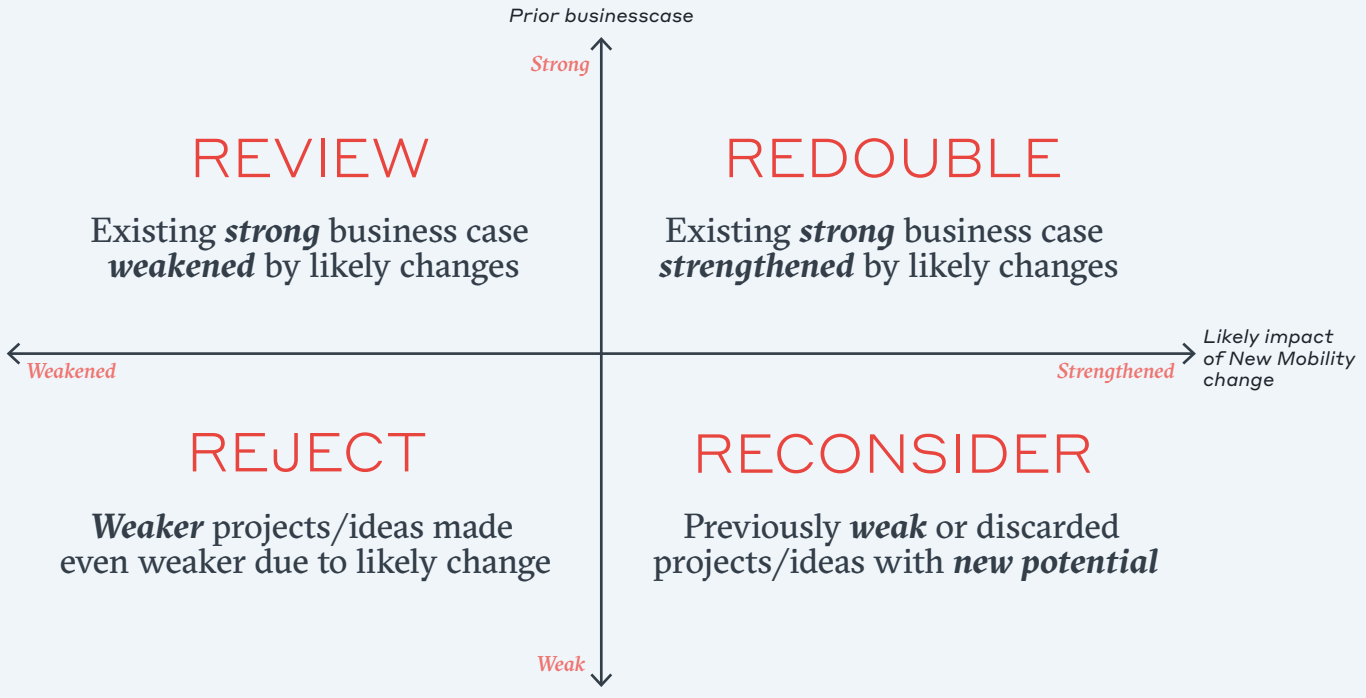
It is clear that nobody will make the most of the transition to New Mobility if they try to achieve it alone. We need all sorts of people – enablers, technologists, funders and visionaries – to craft and shape the landscape, then reshape it as necessary, as onward change will not stand still.

That said, it is not about collaboration for its own sake, or automatic collaboration with anyone who happens to ask. We would recommend a much more conscious process, where possible partners and stakeholders are considered and approached for the specific value and opportunity that they bring, and their alignment with your plans and goals. The process is, by definition, two-way.

We can see this beginning to happen in practice. We are moving from connected and automated vehicle trials designed to prove a specific technology, to efforts to marshal this learning and to understand the potential and impacts on places and routes. Similarly, some of the newer shared mobility providers are now learning that collaboration and the formulation of shared goals with the relevant national and local planning and transit authorities can pay dividends in terms of their integration with – rather than competition with – other modes and services.

The other aspect of vital collaboration is with the travelling public. New Mobility is a highly technical and specialized area, and yet the everyday experience of moving around our places and networks is familiar to everyone. Efforts to explain, listen and demystify the changes ahead will be the key to public perception and popularity.

New Mobility Business Case Framework



Conclusion

Step 4

Adapt what you already have

Having focused on aspects of change, it is easy to forget that some of what is already planned or available could be adapted to suit New Mobility futures. In the case of infrastructure, where is there potential to get more from the existing network? Similarly, for proposed developments, how can we adapt existing plans to fit with what we see ahead?

The simple framework above can be helpful in rethinking and adapting existing investment plans.

Step 5

Find your 'springboard'

Through the previous steps, a series of early actions will emerge. Some will be well defined and others will need further exploration before they can be added to plans for next steps. Our final recommendation is to identify a specific 'springboard' or focal point that can be delivered in the short term to make a statement about the tone, style and speed of your move towards New Mobility in your context. This might reflect a prior involvement in existing pilots and trials or an area where you are already in a market leadership position, or it might be an area where you are lagging, but where you can see enormous short-run potential for visible change and benefit.

In combination, these five steps should provide a balanced start-point for an action plan across all the strands of New Mobility, with plenty of routes for immediate focus and action. We hope that the details of this publication will provide useful connections to recent examples and learning from around the world, as well as insight into the current opportunities and challenges of New Mobility.

We would love to hear your feedback on this research and sincerely hope that you have found it helpful. If you would like to speak to one of our local experts about New Mobility in your region or elsewhere, please do get in touch at NewMobility@wsp.com.

#FutureReady

#NewMobility

Authors

This publication is a collaborative effort of our experts from around the world.

Rachel Skinner
UK

Toby Thornton
UK

Martyn Crawford
UK

Scott Benjamin
Australia

Scott Shogan
USA

Dirk van Amelsfort
Sweden

Daniel Haufschild
Canada

Alec Knowles
Canada

Ian Patey
UK

Giles Perkins
UK

Richard Delplace
Australia

Emily Ellis
UK

WSP is one of the world's leading engineering professional services consulting firms. We are dedicated to our local communities and propelled by international brainpower. We are technical experts and strategic advisors including engineers, technicians, scientists, architects, planners, surveyors and environmental specialists, as well as other design, program and construction management professionals. We design lasting solutions in the Property & Buildings, Transportation & Infrastructure, Environment, Industry, Resources (including Mining and Oil & Gas) and Power & Energy sectors as well as project delivery and strategic consulting services. With more than 37,000 talented people in more than 500 offices across 40 countries, we engineer projects that will help societies grow for lifetimes to come.

WSP Global Inc.
1600, René-Lévesque Blvd. W.
16th Floor
Montreal, Quebec
H3H 1P9

wsp.com